Local Government Energy Audit Report

West New York Public School No. 3 (Robert Menendez)

April 1, 2022

Prepared for:
West New York Board of Education
600 55th Street
West New York, New Jersey 07093

Prepared by:
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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 of 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.

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ENERGY EFFICIENCY INCENTIVE & REBATE TRANSITION

For the purposes of your LGEA, estimated incentives and rebates are included as placeholders for planning purposes. New Jersey utilities are rolling out their own energy efficiency programs, which your project may be eligible for depending on individual measures, quantities, and size of the building.

In 2018, Governor Murphy signed into law the landmark legislation known as the Clean Energy Act. The law called for a significant overhaul of New Jersey's clean energy systems by building sustainable infrastructure in order to fight climate change and reduce carbon emissions, which will in turn create well-paying local jobs, grow the state's economy, and improve public health while ensuring a cleaner environment for current and future residents.

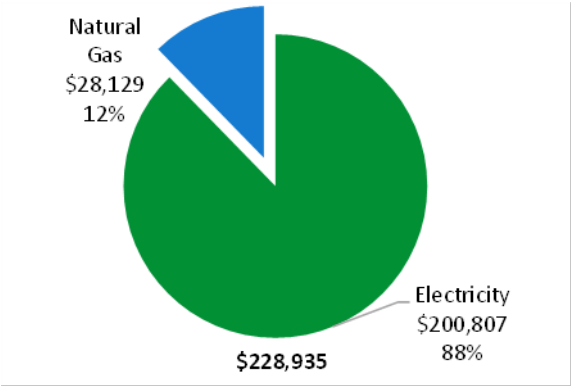
These "next generation" energy efficiency programs feature new ways of managing and delivering programs historically administered by New Jersey's Clean Energy Program™ (NJCEP). All of the investor-owned gas and electric utility companies will now also offer complementary energy efficiency programs and incentives directly to customers like you. NJCEP will still offer programs for new construction, renewable energy, the Energy Savings Improvement Program (ESIP), and large energy users.

New utility programs are expected to start rolling out in the spring and summer of 2021. Keep up to date with developments by visiting the NJCEP website.

1 EXECUTIVE SUMMARY

The New Jersey Board of Public Utilities (NJBPU) has sponsored this Local Government Energy Audit (LGEA) report for West New York Public School No. 3 (Robert Menendez). 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: $228,935 Electricity: 1,283,485 kWh Natural Gas: 29,033 Therms	
ENERGY STAR® Benchmarking Score	41 *(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.

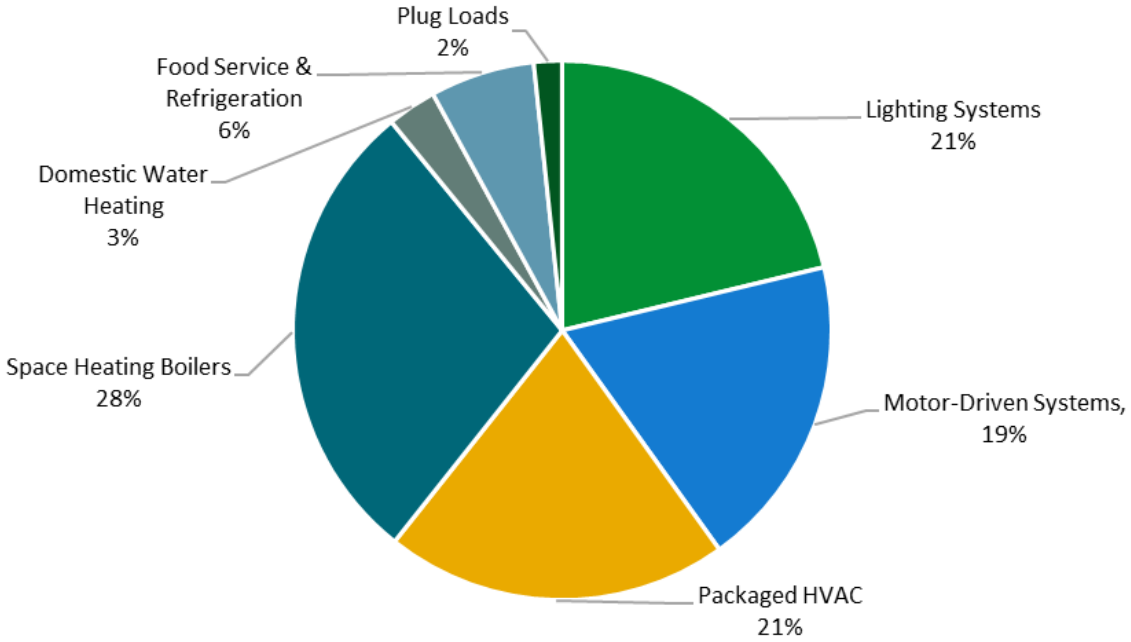


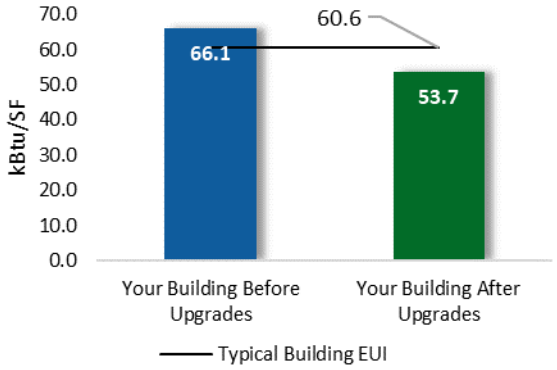
Figure 1 - Energy Use by System

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.

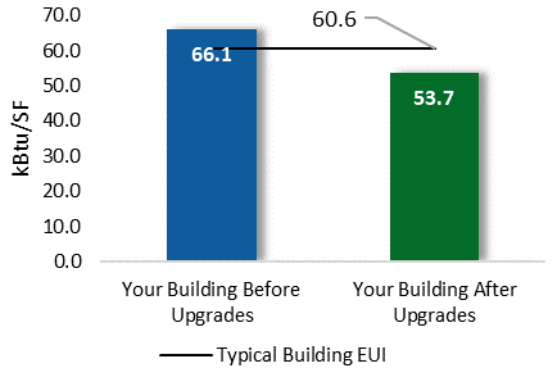
Scenario 1: Full Package (All Evaluated Measures)

Installation Cost	$215,259
Potential Rebates & Incentives[1]	$43,532
Annual Cost Savings	$61,713
Annual Energy Savings	Electricity: 392,230 kWh Natural Gas: 357 Therms
Greenhouse Gas Emission Savings	200 Tons
Simple Payback	2.8 Years
Site Energy Savings (All Utilities)	19%



Scenario 2: Cost Effective Package[2]

Installation Cost	$215,179
Potential Rebates & Incentives	$43,532
Annual Cost Savings	$61,713
Annual Energy Savings	Electricity: 392,230 kWh Natural Gas: 357 Therms
Greenhouse Gas Emission Savings	200 Tons
Simple Payback	2.8 Years
Site Energy Savings (all utilities)	19%



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			**221,335**	**39.5**	**-40**	**$34,241**	**$82,116**	**$15,952**	**$66,164**	**1.9**	**218,192**
ECM 1	Install LED Fixtures	Yes	41,764	2.3	-3	$6,505	$22,151	$3,300	$18,851	2.9	41,705
ECM 2	Retrofit Fixtures with LED Lamps	Yes	179,571	37.2	-37	$27,736	$59,966	$12,652	$47,314	1.7	176,487
Lighting Control Measures			**38,098**	**6.6**	**-8**	**$5,883**	**$36,782**	**$16,270**	**$20,512**	**3.5**	**37,432**
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	24,265	4.4	-5	$3,747	$20,132	$2,655	$17,477	4.7	23,840
ECM 4	Install High/Low Lighting Controls	Yes	13,834	2.2	-3	$2,136	$16,650	$13,615	$3,035	1.4	13,592
Variable Frequency Drive (VFD) Measures			**110,700**	**32.8**	**0**	**$17,319**	**$65,834**	**$11,200**	**$54,634**	**3.2**	**111,474**
ECM 5	Install VFDs on Constant Volume (CV) Fans	Yes	110,700	32.8	0	$17,319	$65,834	$11,200	$54,634	3.2	111,474
HVAC System Improvements			**0**	**0.0**	**12**	**$115**	**$108**	**$30**	**$78**	**0.7**	**1,391**
ECM 6	Install Pipe Insulation	Yes	0	0.0	12	$115	$108	$30	$78	0.7	1,391
Food Service & Refrigeration Measures			**824**	**0.1**	**0**	**$129**	**$607**	**$80**	**$527**	**4.1**	**830**
ECM 7	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	824	0.1	0	$129	$607	$80	$527	4.1	830
Custom Measures			**21,273**	**0.0**	**72**	**$4,025**	**$29,732**	**$0**	**$29,732**	**7.4**	**29,837**
ECM 8	Retro-Commissioning Study	Yes	21,273	0.0	72	$4,025	$29,732	$0	$29,732	7.4	29,837
TOTALS (COST EFFECTIVE MEASURES)			**392,230**	**79.1**	**36**	**$61,713**	**$215,179**	**$43,532**	**$171,647**	**2.8**	**399,157**
TOTALS (ALL MEASURES)			**392,230**	**79.1**	**36**	**$61,713**	**$215,179**	**$43,532**	**$171,647**	**2.8**	**399,157**

* - 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.

For details on these programs please visit New Jersey's Clean Energy Program website or contact your utility provider.

Options from Around the State

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

For larger facilities with limited capital availability to implement ECMs, project financing may be available through the ESIP. Supported directly by the NJBPU, ESIP provides government agencies with project development, design, and implementation support services, as well as attractive financing for implementing ECMs. You have already taken the first step as an LGEA customer, because this report is required to participate in ESIP.

Resiliency with Return on Investment through Combined Heat 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.

Ongoing Electric Savings with Demand Response

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

2 EXISTING CONDITIONS

The New Jersey Board of Public Utilities (NJBPU) has sponsored this Local Government Energy Audit (LGEA) Report for West New York Public School No. 3 (Robert Menendez). This report provides information on how your facility uses energy, identifies energy conservation measures (ECMs) that can reduce your energy use, and provides information and assistance to help you implement the ECMs.

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

2.1 Site Overview

On August 18, 2021, TRC performed an energy audit at West New York Public School No. 3 (Robert Menendez) located in West New York, New Jersey. TRC met with Rick Solares and Tony Perez to review the facility operations and help focus our investigation on specific energy-using systems.

West New York Public School No. 3 (Robert Menendez) is a three-story, 110,120 square foot building built in 2012. Spaces include classrooms and offices, as well as an auditorium, a gymnasium, a cafeteria, a kitchen, computer labs, a library, lounges, corridors, stairwells, restrooms, storage rooms, and electrical and mechanical spaces.

2.2 Building Occupancy

The facility is occupied from September to July, with the school year ending for students in July and restarting in September. Weekend occupancy varies, and the facility closes at 8:00 PM on weekdays. During a typical day, the facility is occupied by approximately 90 staff and 800 students.

Building Name	Weekday/Weekend	Operating Schedule
West New York Public School No. 3 (Robert Menendez)	Weekday	7:00 AM - 8:00 PM
	Weekend	Varies

Figure 3 - Building Occupancy Schedule

2.3 Building Envelope

West New York Public School No. 3 (Robert Menendez) is a three-floor building. Building walls are concrete block over structural steel with a brick facade. The roof is flat, covered with a grey membrane, and in good condition.

Most of the windows are double glazed and have aluminum frames with thermal breaks. The glass-to-frame seals are in good condition. The operable window weather seals are in good condition, showing no evidence of excess wear. Exterior doors have aluminum frames and are in good condition with undamaged door seals. Overall, the building envelope appears in good condition.

Windows

Exterior doors

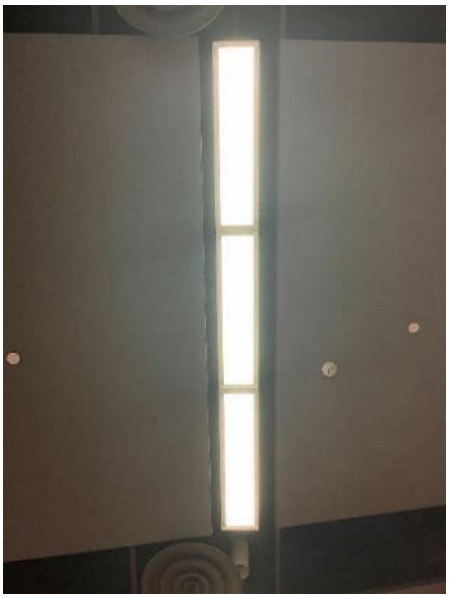
Facade

Roof

2.4 Lighting Systems

The primary interior lighting system uses 32-Watt fluorescent T8 lamps. Fixture types include 1-lamp, 2-lamp, and 3-lamp, 4-foot long recessed, surface mounted, and pendant fixtures with linear and U-bend tube lamps. There are eight-foot fluorescent fixtures in the auditorium. Additionally, there are several 26W and 40W compact fluorescent lamps (CFL) and 9W LED lamps serving smaller spaces or used as additional lighting.

Gymnasium fixtures have manually controlled 320W metal halide high bay fixtures. Interior lighting in the building is controlled using both wall switches and occupancy sensors. All exit signs are 2W LED lamps. All fixtures are in good condition. Interior lighting levels were generally sufficient. Exterior fixtures include pole mounted and wall packs with 250W high-pressure sodium and 100W metal halide fixtures respectively. There are also wall mount and recessed fixtures with 26W CFLs. Exterior light fixtures are controlled by a timeclock.



Auditorium T8 fixtures

26W CFL

Exterior 26W CFL fixtures

250 W High-pressure sodium pole fixture

Exterior metal halide fixture

2ft U-bend T8 fixture

Occupancy sensors

Exit sign

2.5 Air Handling Systems

Unitary Electric Heating, Ventilation, and Air Conditioning (HVAC) Equipment

Several parts of the 1st, 2nd, and 3rd floor including the computer lab, kitchen office, and the teacher's office are cooled using split AC units. The capacity of these units is typically 2-tons with an EER of 13. The units are controlled using programmable thermostat within the respective zones. Additionally, there is a split system air source heat pump. All the units were within their useful life.

Split AC outdoor units

Programmable thermostat – Computer lab

Packaged Units

The auditorium, gym, and the cafeteria are conditioned by McQuay packaged units RTU 1, 2, and 3. These units have direct expansion cooling and gas fired furnaces for heating the respective spaces. The units have cooling capacities of 30, 25 and 36-tons with an EER rating of 10, and heating capacities of 400, 320 and 500 MBh respectively. All the units have constant speed supply and return fans, and the temperature controls are managed by a building energy management system (EMS). The units are within their useful life.

Fan Coil Units

Various areas, including classrooms corridors, and hallways are heated and cooled by fan coil units with hot water and chilled water coils.

McQuay packaged RTUs units

McQuay packaged RTUs units

2.6 Heating Hot Water Systems

Two Cleaver Brooks 4184 MBh non-condensing hot water boilers serve the building heating load. The burners are fully modulating with a nominal efficiency of 81%. The boilers are configured in an automated lead-lag control scheme. Both boilers are required under high load conditions. The boilers are original to the building and in good condition. There is a service contract in place.

The boilers serve a primary -secondary distribution system with five 20 hp VFD controlled hot water pumps operating with a lead-lag control scheme. The boilers provide hot water to the AHU 1, 2, and 3 and to fan coil units throughout the building.

Non-condensing boilers

Heating hot water pumps

VFD control

Heating hot water pumps

2.7 Chilled Water Systems

The chiller plant consists of a two 160-ton, McQuay, air cooled screw chillers (CH1 and CH2). The chillers are configured in a primary distribution loop with three VFD-controlled primary pumps (P6, P7 and P8).

The chilled water supply temperature is reset based on outside air temperature. Chilled water is distributed at 42°F when the outside air temperature is above 60°F, and the setpoint is reset to 50°F when the outside air is below 55°F.

The chiller plant supplies chilled water to air handlers 1, 2, and 3 with constant speed supply and return fans. The chiller is original to the school and in good condition.

Chiller

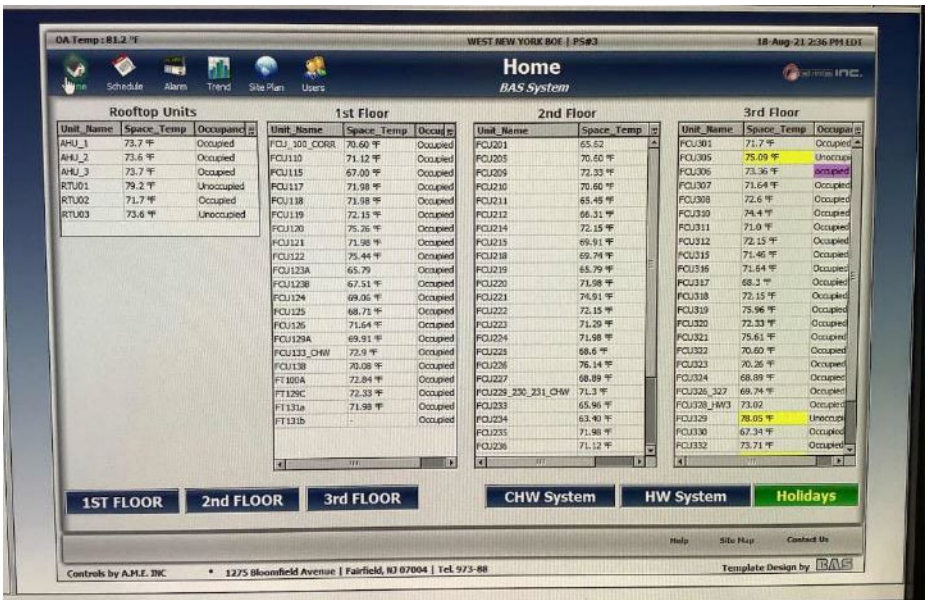
Chiller

Chilled water pump

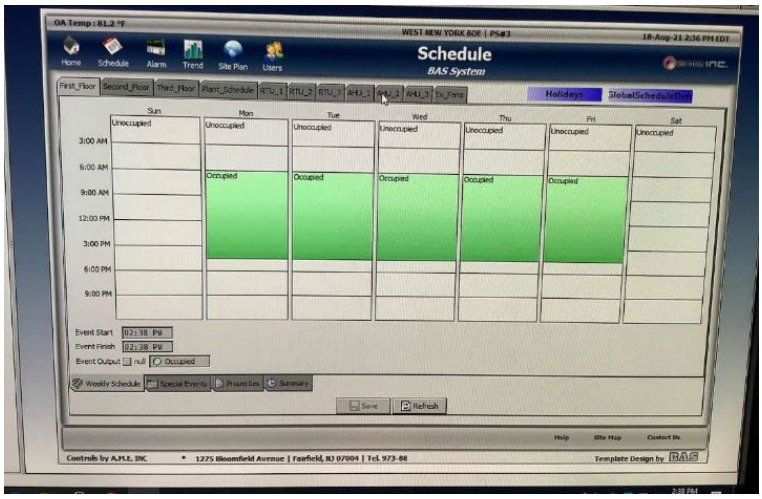
Chilled water pump VFD

2.8 Building EMS

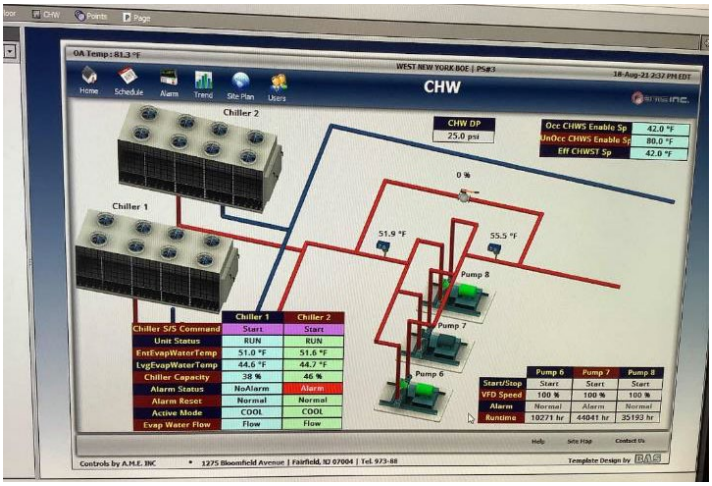
An AME Inc.® EMS controls the HVAC equipment, the boilers, the chillers, the air handlers, and the package units. The EMS provides equipment scheduling control and monitors and controls space temperatures, supply air temperatures, humidity, heating water loop temperatures, and chilled water loop temperatures.



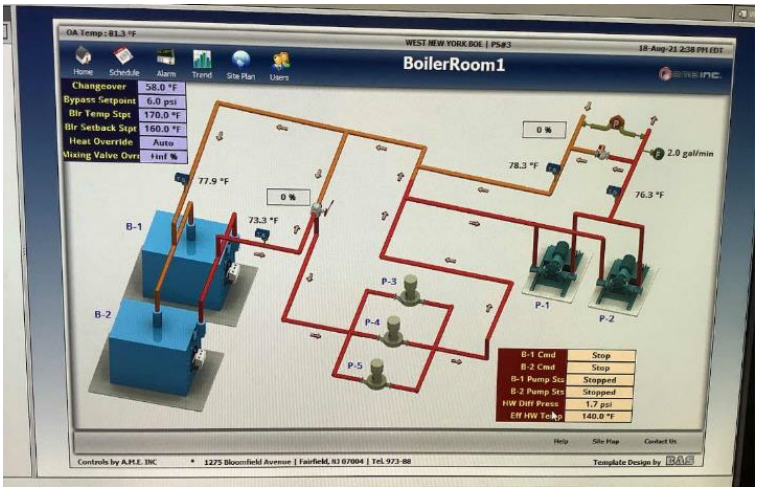
Space temperatures - BMS



Scheduling - BMS



Chillers and Chiller water pumps - BMS



Boilers and hot water pumps - BMS

2.9 Domestic Hot Water

Hot water is produced by a small gas fired Mighty Therm 2® boiler with an estimated input capacity of 200 MBh and an efficiency rating of 85%. The water is stored and distributed from a 120-gallon insulated storage tank. The boiler was installed in 2016, in good condition and well maintained.

The domestic hot water pipes are partially insulated, and the existing insulation is in good condition. Further insulation has also been evaluated.

Domestic hot water

Circulation pump

2.10 Food Service Equipment

The kitchen has a mix of gas and electric equipment that is used to prepare meals for students and staff. Most cooking is done using a convection oven and conventional gas-fired stove. Bulk prepared foods are held in several electric holding cabinets and served from warm serving tables. Equipment is standard efficiency and are good condition.

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

Convection over

Gas-fired stove

Serving tables

Food holding cabinet

2.11 Refrigeration

The kitchen has two stand-up refrigerators and freezers with solid doors. All equipment is efficient and in good condition.

The walk-in refrigerator has an estimated 0.67-ton compressor located in the kitchen and a one-fan evaporator with defroster controls. The walk-in medium temperature freezer has a 1.75-ton compressor and a one fan evaporator also with defroster controls.

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

Walk-in cooler

Stand-up refrigerator

2.12 Plug Load and Vending Machines

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

There are approximately 128 computer workstations throughout the facility. Plug loads throughout the building include general cafe and office equipment. There are classroom typical loads such as smart boards and projectors, typical office loads such as copiers, printers, microwaves, coffee machines, and mini fridges. There are several residential style refrigerators throughout the building that are used to store food. These vary in condition and efficiency.

Residential refrigerator

Printer/Copier

2.13 Water-Using Systems

The faucet flow rates are at 1.6 gallons per minute (gpm) and toilets are rated at 1.0 gallons per flush (gpf).

2.14 On-Site Generation

West New York Public School No. 3 (Robert Menendez) has a rooftop photovoltaic (PV) array with approximately 312 panels. The total array size and install date were not provided by the applicant. This system provides approximately 7.6% of the electricity used. Some electricity generated by the panels is sold back to the grid.

West New York Public School No. 3 (Robert Menendez) has an emergency generator that, in the event of a power outage, serves the entire building and is only used for emergency needs.

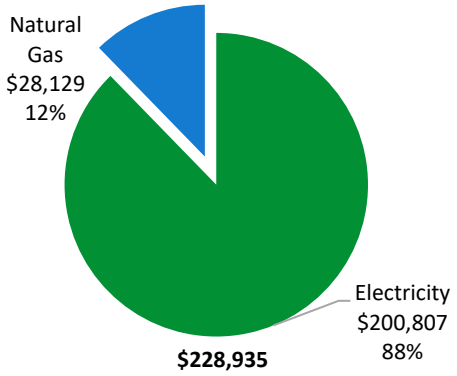
Solar PV

Solar PV

3 Energy Use and Costs

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

Utility Summary		
Fuel	**Usage**	**Cost**
Electricity	1,283,485 kWh	$200,807
Natural Gas	29,033 Therms	$28,129
Total		**$228,935**



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

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

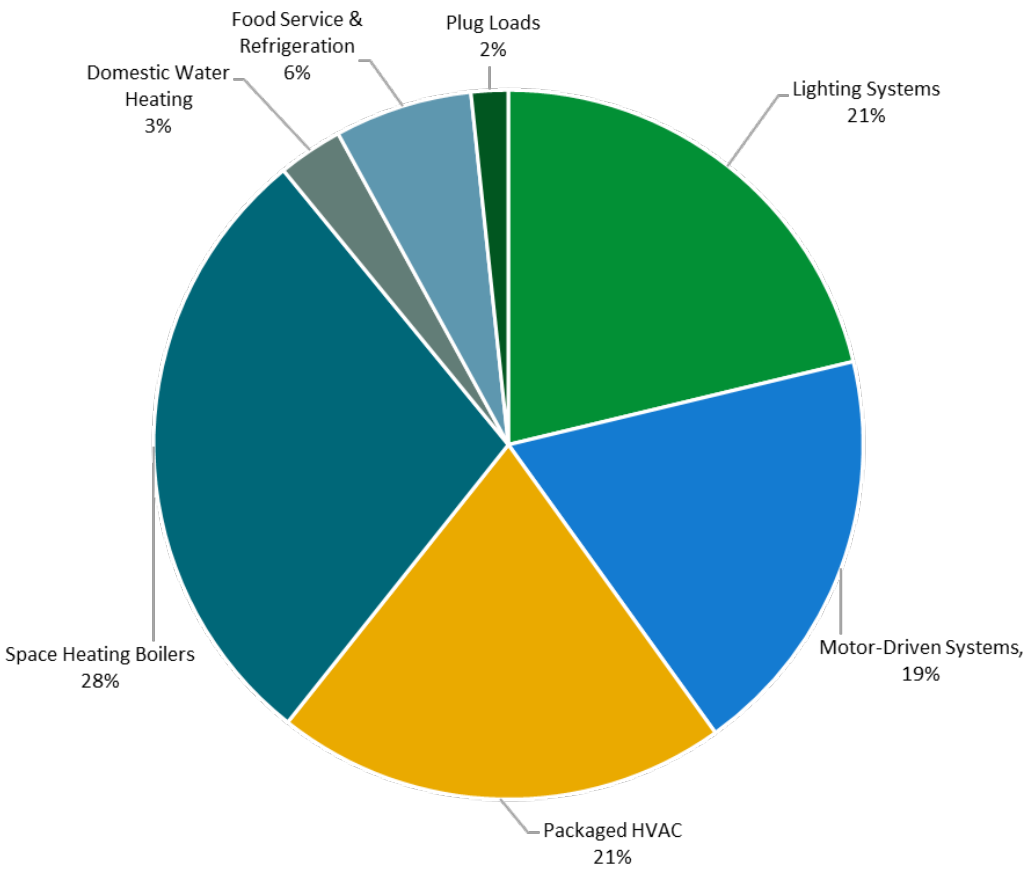
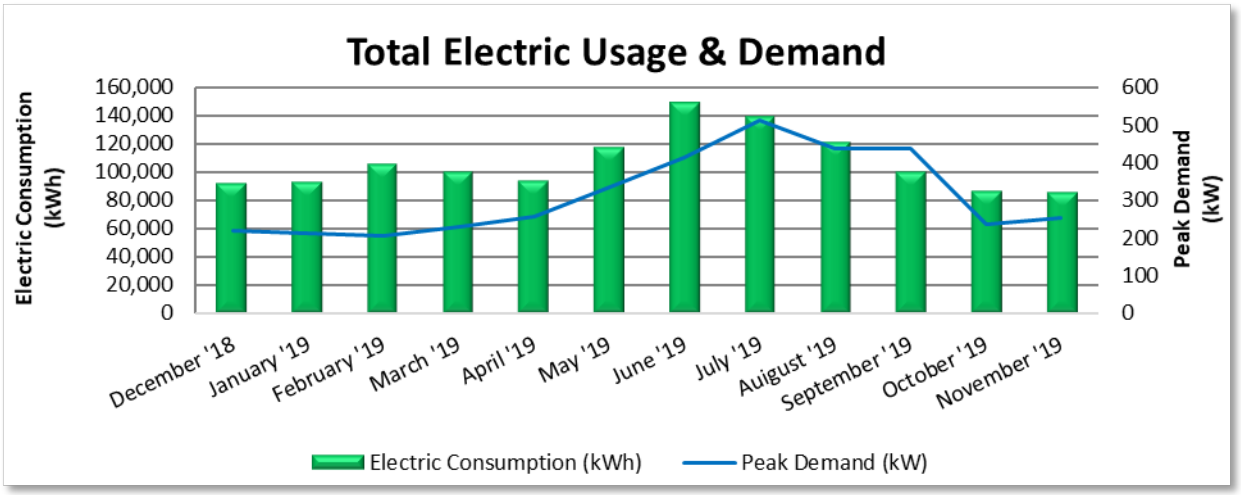
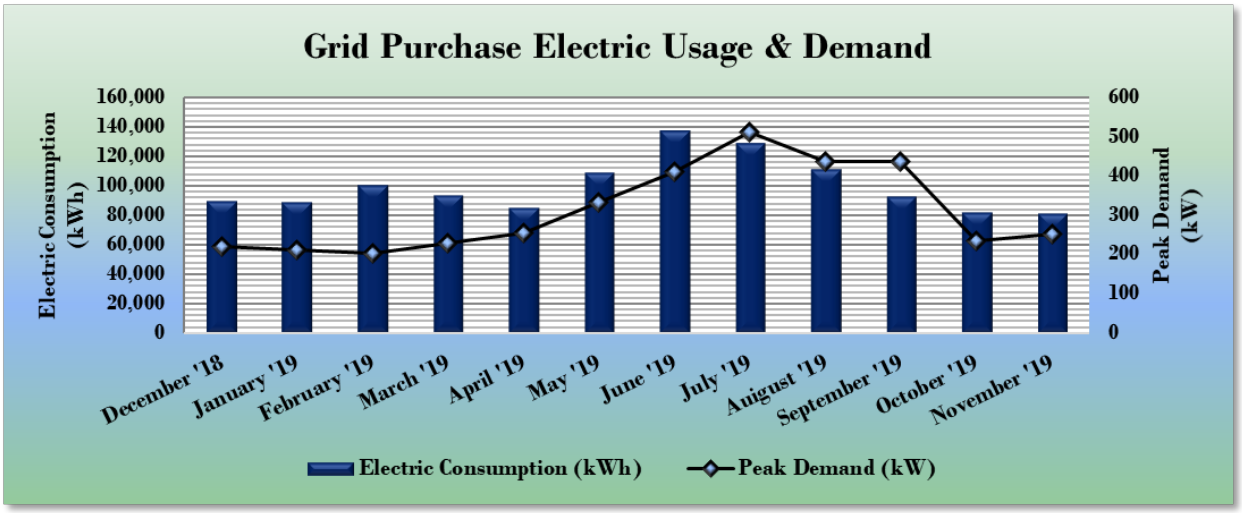


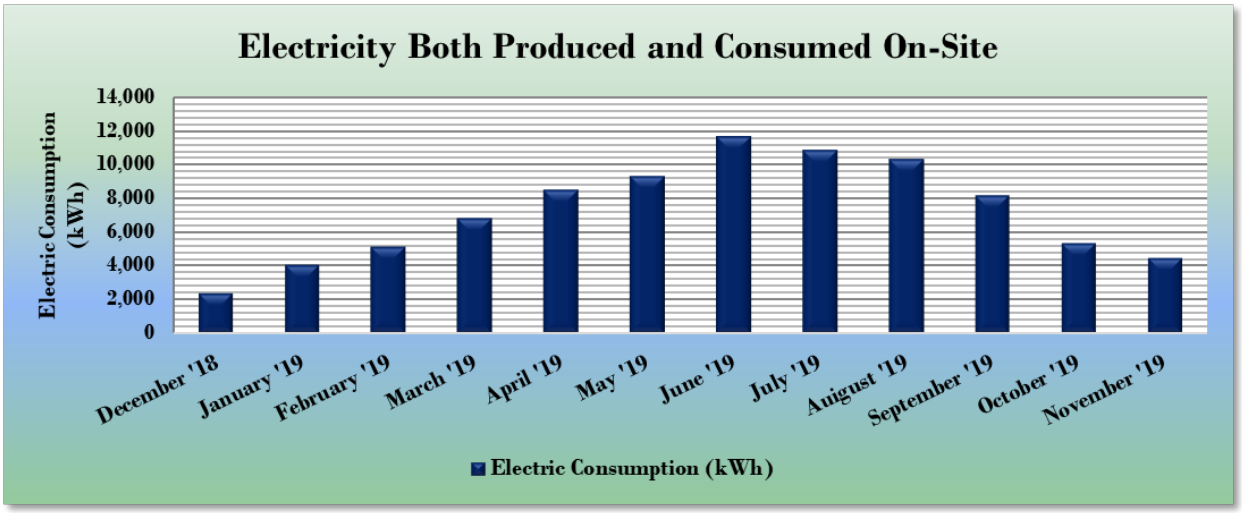
Figure 4 - Energy Balance

3.1 Electricity

PSE&G delivers electricity under rate class Large Power & Lighting Secondary (LPLS).







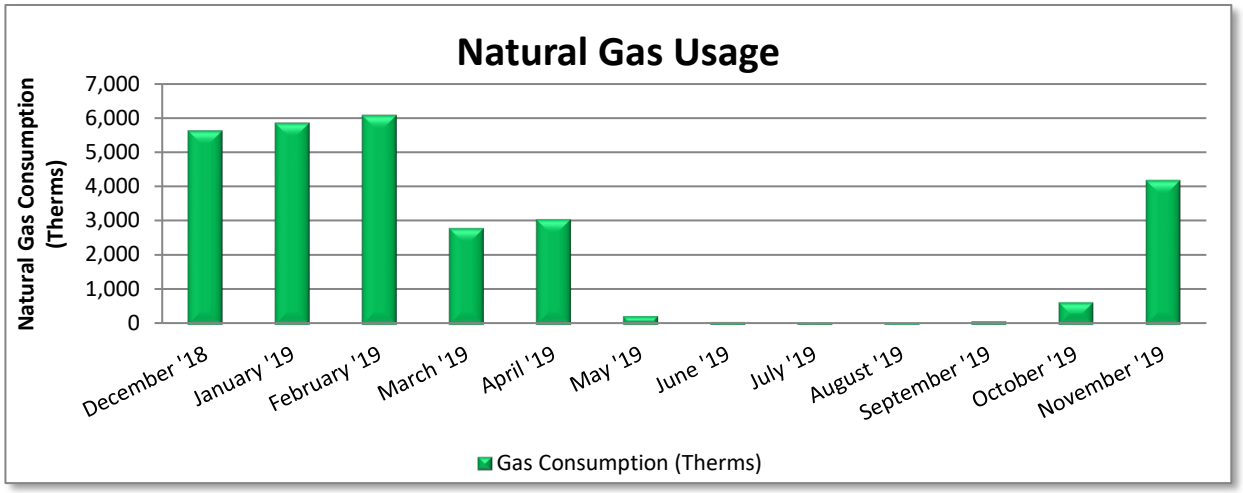
Electric Billing Data					
Period Ending	Days in Period	Electric Usage (kWh)	Demand (kW)	Demand Cost	Total Electric Cost
1/16/19	30	91,907	219	$824	$15,492
2/14/19	29	92,431	211	$794	$15,478
3/17/19	31	105,044	204	$769	$17,556
4/16/19	30	99,705	230	$866	$16,549
5/16/19	30	93,040	256	$960	$15,246
6/18/19	33	117,441	334	$4,232	$17,286
7/17/19	29	148,815	412	$5,219	$22,274
8/15/19	29	138,970	513	$6,503	$22,064
9/16/19	32	120,900	437	$5,529	$19,385
10/15/19	29	100,153	436	$1,637	$14,121
11/13/19	29	86,498	236	$889	$12,381
12/16/19	33	85,065	253	$953	$12,423
Totals	**364**	**1,279,969**	**513**	**$29,174**	**$200,256**
Annual	**365**	**1,283,485**	**513**	**$29,254**	**$200,807**

Notes:

- Peak demand of 513 kW occurred in July '19.
- Average demand over the past 12 months was 312 kW.
- The average electric cost over the past 12 months was $0.156/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.
- On-site generation is through a PPA, and the site purchases the generated electricity from G&S Hudson Solar LLC. Some of the electricity generated on-site is used on-site and the remainder is exported to the grid.
- The first graph shows combined electricity consumption.
- The second graph shows energy consumed from the grid.
- The third graph reflects energy produced by the solar panels and consumed on site.
- The solar meter does not capture kW load and is not displayed on the third graph.

3.2 Natural Gas

PSE&G delivers natural gas under rate class Large Volume Gas (LVG).



Gas Billing Data			
Period Ending	**Days in Period**	**Natural Gas Usage (Therms)**	**Natural Gas Cost**
1/7/19	30	5,634	$4,689
2/6/19	30	5,860	$4,864
3/8/19	30	6,085	$5,374
4/8/19	31	2,795	$3,203
5/8/19	30	3,060	$3,458
6/6/19	29	256	$411
7/8/19	32	71	$177
8/6/19	29	53	$165
9/5/19	30	32	$154
10/4/19	29	100	$192
11/4/19	31	654	$1,411
12/5/19	31	4,195	$3,798
Totals	**362**	**28,794**	**$27,897**
Annual	**365**	**29,033**	**$28,129**

Notes:

- The average gas cost for the past 12 months is $0.969/therm, which is the blended rate used throughout the analysis.
- The reduced natural gas consumption during the summer months likely reflects usage for domestic hot water and cooking equipment only.

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	**41**

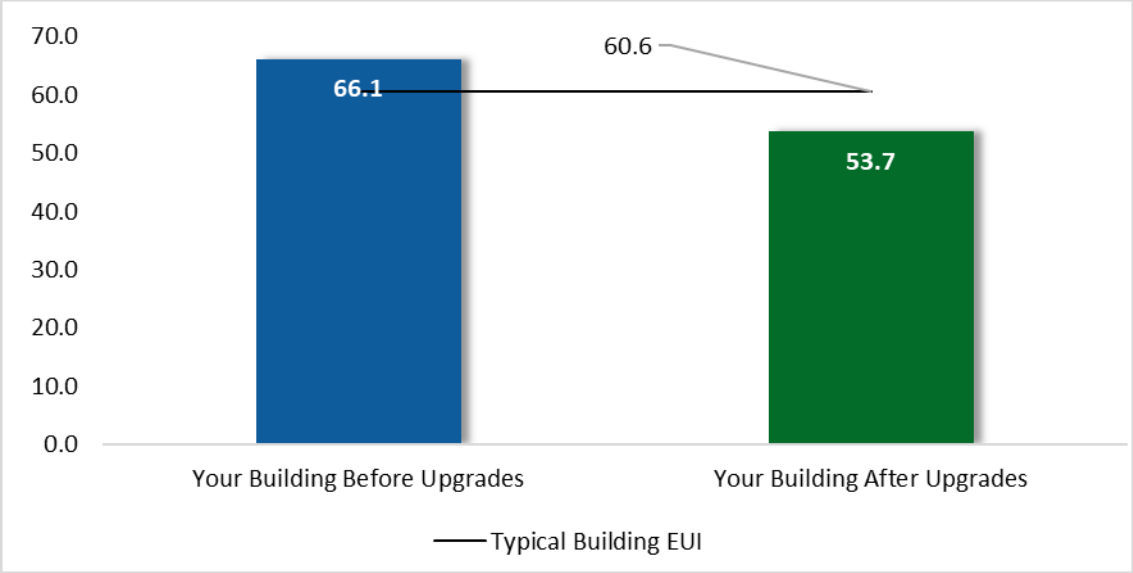


Figure 5 - Energy Use Intensity Comparison[3]

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 we have already entered the monthly utility data shown above for you. Account login information for your account will be sent via email.

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

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

4 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 are based on previously run state rebate programs. New utility programs are expected to start rolling out in the spring and summer of 2021. Keep up to date with developments by visiting the NJCEP website. Some measures and proposed upgrades may be eligible for higher incentives than those shown below.

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

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		**221,335**	**39.5**	**-40**	**$34,241**	**$82,116**	**$15,952**	**$66,164**	**1.9**	**218,192**
ECM 1	Install LED Fixtures	41,764	2.3	-3	$6,505	$22,151	$3,300	$18,851	2.9	41,705
ECM 2	Retrofit Fixtures with LED Lamps	179,571	37.2	-37	$27,736	$59,966	$12,652	$47,314	1.7	176,487
Lighting Control Measures		**38,098**	**6.6**	**-8**	**$5,883**	**$36,782**	**$16,270**	**$20,512**	**3.5**	**37,432**
ECM 3	Install Occupancy Sensor Lighting Controls	24,265	4.4	-5	$3,747	$20,132	$2,655	$17,477	4.7	23,840
ECM 4	Install High/Low Lighting Controls	13,834	2.2	-3	$2,136	$16,650	$13,615	$3,035	1.4	13,592
Variable Frequency Drive (VFD) Measures		**110,700**	**32.8**	**0**	**$17,319**	**$65,834**	**$11,200**	**$54,634**	**3.2**	**111,474**
ECM 5	Install VFDs on Constant Volume (CV) Fans	110,700	32.8	0	$17,319	$65,834	$11,200	$54,634	3.2	111,474
HVAC System Improvements		**0**	**0.0**	**12**	**$115**	**$108**	**$30**	**$78**	**0.7**	**1,391**
ECM 6	Install Pipe Insulation	0	0.0	12	$115	$108	$30	$78	0.7	1,391
Food Service & Refrigeration Measures		**824**	**0.1**	**0**	**$129**	**$607**	**$80**	**$527**	**4.1**	**830**
ECM 7	Refrigerator/Freezer Case Electrically Commutated Motors	824	0.1	0	$129	$607	$80	$527	4.1	830
Custom Measures		**21,273**	**0.0**	**72**	**$4,025**	**$29,732**	**$0**	**$29,732**	**7.4**	**29,837**
ECM 8	Retro-Commissioning Study	21,273	0.0	72	$4,025	$29,732	$0	$29,732	7.4	29,837
TOTALS		**392,230**	**79.1**	**36**	**$61,713**	**$215,179**	**$43,532**	**$171,647**	**2.8**	**399,157**

* - 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	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			**221,335**	**39.5**	**-40**	**$34,241**	**$82,116**	**$15,952**	**$66,164**	**1.9**	**218,192**
ECM 1	Install LED Fixtures	Yes	41,764	2.3	-3	$6,505	$22,151	$3,300	$18,851	2.9	41,705
ECM 2	Retrofit Fixtures with LED Lamps	Yes	179,571	37.2	-37	$27,736	$59,966	$12,652	$47,314	1.7	176,487
Lighting Control Measures			**38,098**	**6.6**	**-8**	**$5,883**	**$36,782**	**$16,270**	**$20,512**	**3.5**	**37,432**
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	24,265	4.4	-5	$3,747	$20,132	$2,655	$17,477	4.7	23,840
ECM 4	Install High/Low Lighting Controls	Yes	13,834	2.2	-3	$2,136	$16,650	$13,615	$3,035	1.4	13,592
Variable Frequency Drive (VFD) Measures			**110,700**	**32.8**	**0**	**$17,319**	**$65,834**	**$11,200**	**$54,634**	**3.2**	**111,474**
ECM 5	Install VFDs on Constant Volume (CV) Fans	Yes	110,700	32.8	0	$17,319	$65,834	$11,200	$54,634	3.2	111,474
HVAC System Improvements			**0**	**0.0**	**12**	**$115**	**$108**	**$30**	**$78**	**0.7**	**1,391**
ECM 6	Install Pipe Insulation	Yes	0	0.0	12	$115	$108	$30	$78	0.7	1,391
Food Service & Refrigeration Measures			**824**	**0.1**	**0**	**$129**	**$607**	**$80**	**$527**	**4.1**	**830**
ECM 7	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	824	0.1	0	$129	$607	$80	$527	4.1	830
Custom Measures			**21,273**	**0.0**	**72**	**$4,025**	**$29,732**	**$0**	**$29,732**	**7.4**	**29,837**
ECM 8	Retro-Commissioning Study	Yes	21,273	0.0	72	$4,025	$29,732	$0	$29,732	7.4	29,837
TOTALS			**392,230**	**79.1**	**36**	**$61,713**	**$215,179**	**$43,532**	**$171,647**	**2.8**	**399,157**

* - 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		**221,335**	**39.5**	**-40**	**$34,241**	**$82,116**	**$15,952**	**$66,164**	**1.9**	**218,192**
ECM 1	Install LED Fixtures	41,764	2.3	-3	$6,505	$22,151	$3,300	$18,851	2.9	41,705
ECM 2	Retrofit Fixtures with LED Lamps	179,571	37.2	-37	$27,736	$59,966	$12,652	$47,314	1.7	176,487

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

ECM 1: Install LED Fixtures

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

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

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

Affected building areas: gymnasium and exterior fixtures.

ECM 2: Retrofit Fixtures with LED Lamps

Replace linear fluorescent and CFL sources 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 or CFLs.

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		**38,098**	**6.6**	**-8**	**$5,883**	**$36,782**	**$16,270**	**$20,512**	**3.5**	**37,432**
ECM 3	Install Occupancy Sensor Lighting Controls	24,265	4.4	-5	$3,747	$20,132	$2,655	$17,477	4.7	23,840
ECM 4	Install High/Low Lighting Controls	13,834	2.2	-3	$2,136	$16,650	$13,615	$3,035	1.4	13,592

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: auditorium, offices, restrooms, and library.

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 reduced light output is appropriate.

Affected Building Areas: hallways and stairwells.

4.3 Variable Frequency Drives (VFD)

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Variable Frequency Drive (VFD) Measures		**110,700**	**32.8**	**0**	**$17,319**	**$65,834**	**$11,200**	**$54,634**	**3.2**	**111,474**
ECM 5	Install VFDs on Constant Volume (CV) Fans	110,700	32.8	0	$17,319	$65,834	$11,200	$54,634	3.2	111,474

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 5: Install VFDs on Constant Volume (CV) Fans

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

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

For air handlers with direct expansion cooling systems, the minimum air flow across the cooling coil required to prevent the coil from freezing must be determined during the final project design. The control system programming should maintain the minimum air flow whenever the compressor is operating. Prior to implementation, verify minimum fan speed in cooling mode with the manufacturer. Note that savings will vary depending on the operating characteristics of each AHU.

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

Affected Air Handlers: AHU 1,2,3 and RTU 1,2,3.

4.4 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		**0**	**0.0**	**12**	**$115**	**$108**	**$30**	**$78**	**0.7**	**1,391**
ECM 6	Install Pipe Insulation	0	0.0	12	$115	$108	$30	$78	0.7	1,391

ECM 6: Install Pipe Insulation

Install insulation on steam 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.

4.5 Food Service & Refrigeration Measures

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Food Service & Refrigeration Measures		**824**	**0.1**	**0**	**$129**	**$607**	**$80**	**$527**	**4.1**	**830**
ECM 7	Refrigerator/Freezer Case Electrically Commutated Motors	824	0.1	0	$129	$607	$80	$527	4.1	830

ECM 7: Refrigerator/Freezer Case Electrically Commutated Motors

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

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

4.6 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		**21,273**	**0.0**	**72**	**$4,025**	**$29,732**	**$0**	**$29,732**	**7.4**	**29,837**
ECM 8	Retro-Commissioning Study	21,273	0.0	72	$4,025	$29,732	$0	$29,732	7.4	29,837

ECM 8: Retro-Commissioning Study

Due to the complexity of today's HVAC systems and controls a thorough analysis and rebalance of heating, ventilation, and cooling systems should periodically be conducted. There are indications that systems may not be operating correctly or as efficiently as they could be. One important tool available to building operators to ensure proper system operation is retro commissioning.

Retro-commissioning is a common practice recommended by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) to be implemented every few years. We recommend that you contact a reputable engineering firm that specializes in energy control systems and retro-commissioning. Ask them to propose a scope of work and an outline of the procedures and processes to be implemented, including a schedule and the roles of all responsible parties.

Once goals and responsibilities are established, the objective of the investigation process is to understand how the building is currently operating, identify the issues, and determine the most cost-effective way to improve performance. The retro-commissioning agent will review building documentation, interview building occupants, and inspect and test the equipment. Information is then compiled into a report and shared with facility staff, who will select which recommendations to implement after reviewing the findings.

The implementation phase puts the selected processes into place. Typical measures may include sensor calibration, equipment schedule changes, damper linkage repair and similar relatively low-cost adjustments—although more expensive sophisticated programming and building control system upgrades may be warranted. Approved measures may be implemented by the agent, the building staff, or by subcontractors. Typically, a combination of these individuals makes up the retro-commissioning team.

After the approved measures are implemented, the team will verify that the changes are working as expected. Baseline and post-case measurements will allow building staff to monitor equipment and ensure that the benefits are maintained.

A high-level evaluation of potential savings and costs is provided for demonstration purposes only. It is a screening evaluation for the potential in HVAC control improvements. Based on industry standards and previous project experience, the potential energy savings may be up to 15% of existing HVAC energy use. The average cost of retro-commissioning studies and control improvements is $0.30 per square foot. Actual savings and costs will need to be outlined by the specific contractor engaged to perform the study. For the purposes of this report, we have conservatively estimated savings to be 3% of the HVAC energy consumption baseline.

5 Energy Efficient Best Practices

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

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

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

Energy Tracking with ENERGY STAR Portfolio Manager

You've heard it before—you cannot manage what you do not measure. ENERGY STAR Portfolio Manager is an online tool that you can use to measure and track energy and water consumption, as well as greenhouse gas emissions[4] . Your account has already been established. Now you can continue to keep tabs on your energy performance every month.

Lighting Maintenance

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

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

Lighting Controls

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

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

Motor Maintenance

Motors have many moving parts. As these parts degrade over time, the efficiency of the motor is reduced. Routine maintenance prevents damage to motor components. Routine maintenance should include cleaning surfaces and ventilation openings on motors to prevent overheating, lubricating moving parts to reduce friction, inspecting belts and pulleys for wear and to ensure they are at proper alignment and tension, and cleaning and lubricating bearings. Consult a licensed technician to assess these and other motor maintenance strategies.

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

AC System Evaporator/Condenser Coil Cleaning

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

HVAC Filter Cleaning and Replacement

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

Boiler Maintenance

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

Furnace Maintenance

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

Optimize HVAC Equipment Schedules

EMS typically provide advanced controls for building HVAC systems, including chillers, boilers, air handling units, rooftop units and exhaust fans. The EMS 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 EMS features, when in proper adjustment, can improve comfort for building occupants and save substantial energy.

Know your EMS 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 EMS (if available) to optimize the building warmup sequence. Most EMS 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.

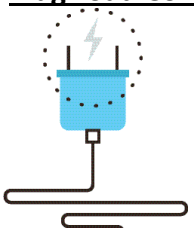
Water Heater Maintenance

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.

Plug Load Controls



Reducing plug loads is a common way to decrease your electrical use. Limiting the energy use of plug loads can include increasing occupant awareness, removing under-used equipment, installing hardware controls, and using software controls. Consider enabling the most aggressive power settings on existing devices or install load sensing or

occupancy sensing (advanced) power strips[5]. Your local utility may offer incentives or rebates for this equipment.

Water Conservation

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

For more information regarding water conservation go to the EPA's WaterSense website[6] or download a copy of EPA's "WaterSense at Work: Best Management Practices for Commercial and Institutional Facilities"[7] to get ideas for creating a water management plan and best practices for a wide range of water using systems.

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

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

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

Procurement Strategies

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

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

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

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

6 On-site Generation

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

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

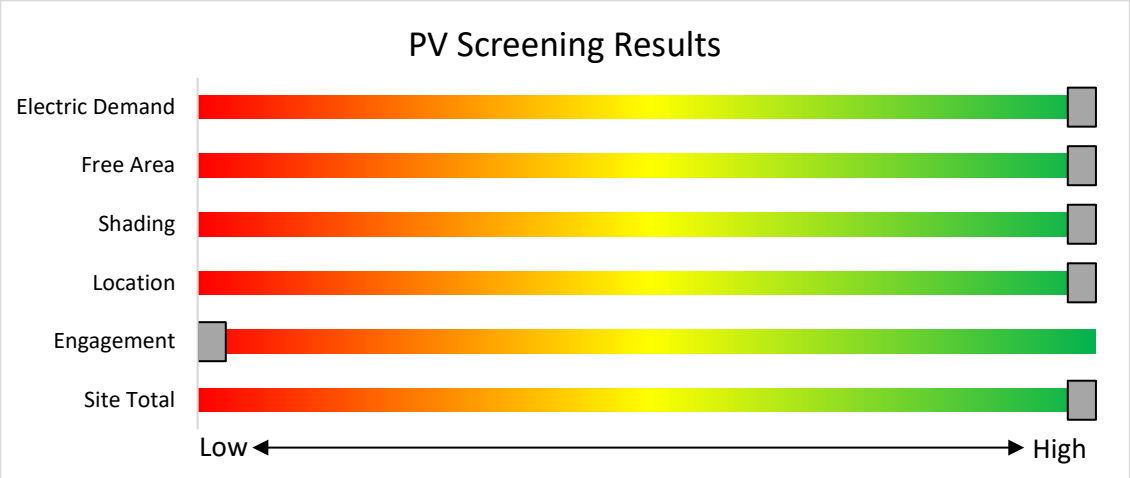
6.1 Solar Photovoltaic

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

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

The amount of free area, ease of installation (location), and the lack of shading elements contribute to a good expansion potential. An additional PV array located on the roof may be feasible. If you are interested in pursuing the expansion 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	129	kW DC STC
Electric Generation	153,687	kWh/yr
Displaced Cost	$24,040	/yr
Installed Cost	$335,400	

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.

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.

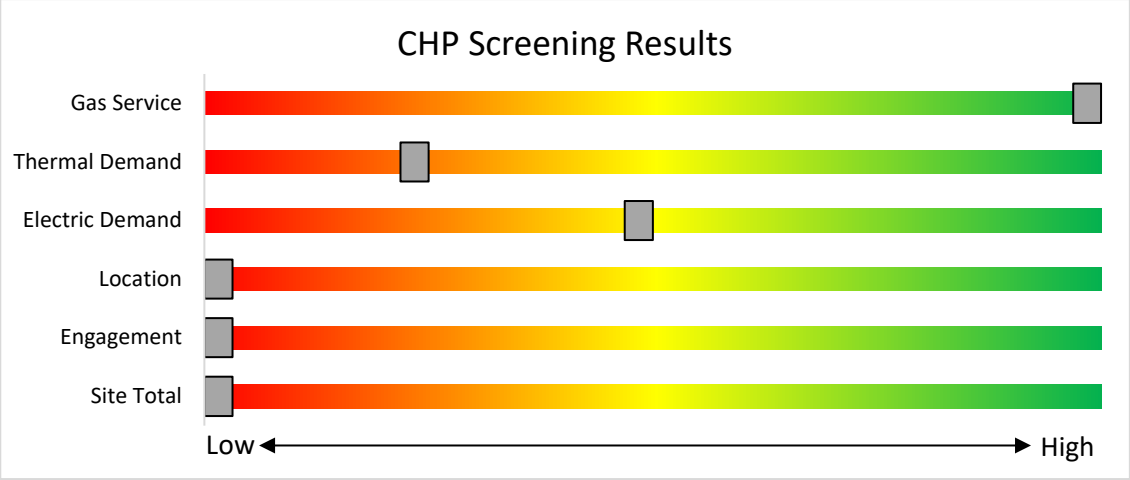


Figure 9 - Combined Heat and Power Screening

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 PROJECT FUNDING AND INCENTIVES

Ready to improve your building's performance? Your utility provider may be able to help.

7.1 Utility Energy Efficiency Programs

New utility programs are expected to start rolling out in the spring and summer of 2021. Keep up to date with developments by visiting the NJCEP website.

8 New Jersey's Clean Energy Programs

New Jersey's Clean Energy Program will continue to offer some energy efficiency programs.

8.1 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.

8.2 Energy Savings Improvement Program

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

8.3 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 effective August 28, 2021.

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. The program is currently under development with the goal of holding the first solicitation by early-to-mid 2022. 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..

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.

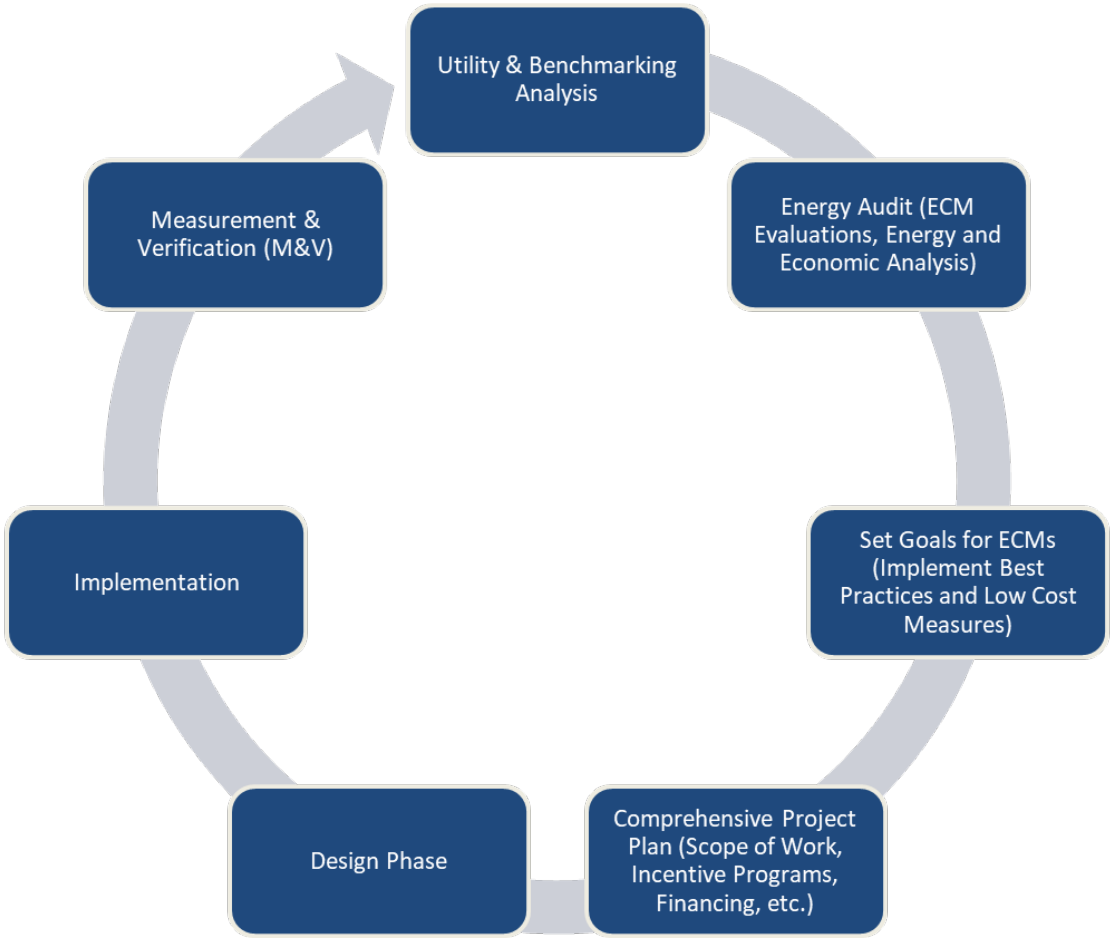


Figure 10 – Project Development Cycle

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[8].

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[9].

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

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

APPENDIX A: EQUIPMENT INVENTORY & RECOMMENDATIONS

Lighting Inventory & Recommendations

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Auditorium	18	Compact Fluorescent: (1) 26W Double Biaxial Plug-In Lamp	Wall Switch	S	26	4,030	2, 3	Relamp	Yes	18	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	19	2,781	0.2	1,029	0	$159	$765	$88	4.3
Auditorium	12	Compact Fluorescent: (1) 26W Double Biaxial Plug-In Lamp	Occupancy Sensor	S	26	2,780	2	Relamp	No	12	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	19	2,780	0.1	257	0	$40	$150	$12	3.5
Auditorium	1	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Wall Switch	S	52	4,030	2	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Wall Switch	37	4,030	0.0	66	0	$10	$25	$2	2.2
Auditorium	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
Auditorium	2	Linear Fluorescent - T8: 2' T8 (17W) - 1L	Wall Switch	S	22	4,030	2, 3	Relamp	Yes	2	LED - Linear Tubes: (1) 2' Lamp	Occupancy Sensor	9	2,781	0.0	143	0	$22	$33	$6	1.2
Auditorium	22	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,030	2, 3	Relamp	Yes	22	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,781	0.3	2,145	0	$331	$942	$180	2.3
Auditorium	55	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,030	2, 3	Relamp	Yes	55	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,781	1.7	10,238	-2	$1,581	$3,088	$690	1.5
Auditorium	12	Linear Fluorescent - T8: 8' T8 (59W) - 1L	Wall Switch	S	58	4,030	3	None	Yes	12	Linear Fluorescent - T8: 8' T8 (59W) - 1L	Occupancy Sensor	58	2,781	0.2	956	0	$148	$270	$35	1.6
Boiler Room 113	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
Boiler Room 113	20	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	500	2, 3	Relamp	Yes	20	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	345	0.9	693	0	$107	$1,635	$370	11.8
Cafeteria	28	Compact Fluorescent: (2) 42W Triple Biaxial Plug-In Lamps	Wall Switch	S	84	4,030	2, 3	Relamp	Yes	28	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	59	2,781	0.9	5,373	-1	$830	$1,296	$126	1.4
Cafeteria	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
Cafeteria	16	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	4,030	2, 3	Relamp	Yes	16	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,781	0.9	5,247	-1	$810	$1,708	$390	1.6
Classroom 115	8	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	8	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.1	294	0	$45	$108	$8	2.2
Classroom 115	3	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	3	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	138	0	$21	$75	$6	3.2
Classroom 115	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,780	2	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,780	0.0	202	0	$31	$73	$20	1.7
Classroom 115	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.2	908	0	$140	$329	$90	1.7
Classroom 117	11	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	11	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.1	404	0	$62	$149	$11	2.2
Classroom 117	1	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	46	0	$7	$25	$2	3.2
Classroom 117	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,780	2	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,780	0.0	202	0	$31	$73	$20	1.7
Classroom 117	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	8	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.3	1,211	0	$187	$438	$120	1.7
Classroom 118	11	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	11	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.1	404	0	$62	$149	$11	2.2
Classroom 118	1	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	46	0	$7	$25	$2	3.2
Classroom 118	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,780	2	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,780	0.0	202	0	$31	$73	$20	1.7
Classroom 118	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	8	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.3	1,211	0	$187	$438	$120	1.7

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Classroom 119	11	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	11	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.1	404	0	$62	$149	$11	2.2
Classroom 119	1	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	46	0	$7	$25	$2	3.2
Classroom 119	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,780	2	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,780	0.0	202	0	$31	$73	$20	1.7
Classroom 119	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	8	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.3	1,211	0	$187	$438	$120	1.7
Classroom 120	11	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	11	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.1	404	0	$62	$149	$11	2.2
Classroom 120	1	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	46	0	$7	$25	$2	3.2
Classroom 120	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,780	2	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,780	0.0	202	0	$31	$73	$20	1.7
Classroom 120	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	8	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.3	1,211	0	$187	$438	$120	1.7
Classroom 121	11	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	11	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.1	404	0	$62	$149	$11	2.2
Classroom 121	1	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	46	0	$7	$25	$2	3.2
Classroom 121	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,780	2	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,780	0.0	202	0	$31	$73	$20	1.7
Classroom 121	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	8	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.3	1,211	0	$187	$438	$120	1.7
Classroom 122	11	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	11	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.1	404	0	$62	$149	$11	2.2
Classroom 122	1	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	46	0	$7	$25	$2	3.2
Classroom 122	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,780	2	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,780	0.0	202	0	$31	$73	$20	1.7
Classroom 122	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	8	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.3	1,211	0	$187	$438	$120	1.7
Classroom 123a	11	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	11	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.1	404	0	$62	$149	$11	2.2
Classroom 123a	1	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	46	0	$7	$25	$2	3.2
Classroom 123a	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
Classroom 123a	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,780	2	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,780	0.0	202	0	$31	$73	$20	1.7
Classroom 123a	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	8	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.3	1,211	0	$187	$438	$120	1.7
Classroom 123b	11	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	11	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.1	404	0	$62	$149	$11	2.2
Classroom 123b	1	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	46	0	$7	$25	$2	3.2
Classroom 123b	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
Classroom 123b	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,780	2	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,780	0.0	202	0	$31	$73	$20	1.7

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Classroom 123b	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	8	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.3	1,211	0	$187	$438	$120	1.7
Classroom 124	11	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	11	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.1	404	0	$62	$149	$11	2.2
Classroom 124	1	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	46	0	$7	$25	$2	3.2
Classroom 124	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,780	2	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,780	0.0	202	0	$31	$73	$20	1.7
Classroom 124	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	8	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.3	1,211	0	$187	$438	$120	1.7
Classroom 126	12	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	12	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.1	440	0	$68	$162	$12	2.2
Classroom 126	2	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	2	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	92	0	$14	$50	$4	3.2
Classroom 126	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.1	303	0	$47	$110	$30	1.7
Classroom 301	3	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	3	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.0	110	0	$17	$41	$3	2.2
Classroom 301	8	Compact Fluorescent: (2) 40W Biaxial Plug-In Lamps	Occupancy Sensor	S	80	2,780	2	Relamp	No	8	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	56	2,780	0.1	587	0	$91	$216	$16	2.2
Classroom 306	5	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	5	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.0	183	0	$28	$68	$5	2.2
Classroom 306	6	Compact Fluorescent: (2) 40W Biaxial Plug-In Lamps	Occupancy Sensor	S	80	2,780	2	Relamp	No	6	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	56	2,780	0.1	440	0	$68	$162	$12	2.2
Classroom 306	1	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	46	0	$7	$25	$2	3.2
Classroom 306	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.1	454	0	$70	$164	$45	1.7
Classroom 307	5	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	5	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.0	183	0	$28	$68	$5	2.2
Classroom 307	6	Compact Fluorescent: (2) 40W Biaxial Plug-In Lamps	Occupancy Sensor	S	80	2,780	2	Relamp	No	6	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	56	2,780	0.1	440	0	$68	$162	$12	2.2
Classroom 307	1	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	46	0	$7	$25	$2	3.2
Classroom 307	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.1	454	0	$70	$164	$45	1.7
Classroom 308	5	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	5	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.0	183	0	$28	$68	$5	2.2
Classroom 308	6	Compact Fluorescent: (2) 40W Biaxial Plug-In Lamps	Occupancy Sensor	S	80	2,780	2	Relamp	No	6	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	56	2,780	0.1	440	0	$68	$162	$12	2.2
Classroom 308	1	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	46	0	$7	$25	$2	3.2
Classroom 308	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.1	454	0	$70	$164	$45	1.7
Classroom 310	6	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	6	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.1	220	0	$34	$81	$6	2.2
Classroom 310	6	Compact Fluorescent: (2) 40W Biaxial Plug-In Lamps	Occupancy Sensor	S	80	2,780	2	Relamp	No	6	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	56	2,780	0.1	440	0	$68	$162	$12	2.2
Classroom 310	5	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	5	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.1	229	0	$35	$125	$10	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
Classroom 310	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.1	454	0	$70	$164	$45	1.7
Classroom 311	5	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	5	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.0	183	0	$28	$68	$5	2.2
Classroom 311	6	Compact Fluorescent: (2) 40W Biaxial Plug-In Lamps	Occupancy Sensor	S	80	2,780	2	Relamp	No	6	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	56	2,780	0.1	440	0	$68	$162	$12	2.2
Classroom 311	1	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	46	0	$7	$25	$2	3.2
Classroom 311	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.1	454	0	$70	$164	$45	1.7
Classroom 312	5	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	5	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.0	183	0	$28	$68	$5	2.2
Classroom 312	6	Compact Fluorescent: (2) 40W Biaxial Plug-In Lamps	Occupancy Sensor	S	80	2,780	2	Relamp	No	6	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	56	2,780	0.1	440	0	$68	$162	$12	2.2
Classroom 312	1	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	46	0	$7	$25	$2	3.2
Classroom 312	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.1	454	0	$70	$164	$45	1.7
Classroom 315	5	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	5	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.0	183	0	$28	$68	$5	2.2
Classroom 315	6	Compact Fluorescent: (2) 40W Biaxial Plug-In Lamps	Occupancy Sensor	S	80	2,780	2	Relamp	No	6	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	56	2,780	0.1	440	0	$68	$162	$12	2.2
Classroom 315	1	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	46	0	$7	$25	$2	3.2
Classroom 315	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.1	454	0	$70	$164	$45	1.7
Classroom 316	5	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	5	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.0	183	0	$28	$68	$5	2.2
Classroom 316	6	Compact Fluorescent: (2) 40W Biaxial Plug-In Lamps	Occupancy Sensor	S	80	2,780	2	Relamp	No	6	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	56	2,780	0.1	440	0	$68	$162	$12	2.2
Classroom 316	1	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	46	0	$7	$25	$2	3.2
Classroom 316	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.1	454	0	$70	$164	$45	1.7
Classroom 317	3	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	3	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.0	110	0	$17	$41	$3	2.2
Classroom 317	2	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	2	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	92	0	$14	$50	$4	3.2
Classroom 317	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.1	454	0	$70	$164	$45	1.7
Classroom 318	5	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	5	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.0	183	0	$28	$68	$5	2.2
Classroom 318	6	Compact Fluorescent: (2) 40W Biaxial Plug-In Lamps	Occupancy Sensor	S	80	2,780	2	Relamp	No	6	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	56	2,780	0.1	440	0	$68	$162	$12	2.2
Classroom 318	1	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	46	0	$7	$25	$2	3.2
Classroom 318	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.1	454	0	$70	$164	$45	1.7
Classroom 319	5	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	5	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.0	183	0	$28	$68	$5	2.2

	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
Classroom 319	6	Compact Fluorescent: (2) 40W Biaxial Plug-In Lamps	Occupancy Sensor	S	80	2,780	2	Relamp	No	6	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	56	2,780	0.1	440	0	$68	$162	$12	2.2
Classroom 319	1	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	46	0	$7	$25	$2	3.2
Classroom 319	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.1	454	0	$70	$164	$45	1.7
Classroom 320	5	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	5	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.0	183	0	$28	$68	$5	2.2
Classroom 320	6	Compact Fluorescent: (2) 40W Biaxial Plug-In Lamps	Occupancy Sensor	S	80	2,780	2	Relamp	No	6	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	56	2,780	0.1	440	0	$68	$162	$12	2.2
Classroom 320	1	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	46	0	$7	$25	$2	3.2
Classroom 320	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.1	454	0	$70	$164	$45	1.7
Classroom 321	5	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	5	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.0	183	0	$28	$68	$5	2.2
Classroom 321	6	Compact Fluorescent: (2) 40W Biaxial Plug-In Lamps	Occupancy Sensor	S	80	2,780	2	Relamp	No	6	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	56	2,780	0.1	440	0	$68	$162	$12	2.2
Classroom 321	1	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	46	0	$7	$25	$2	3.2
Classroom 321	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.1	454	0	$70	$164	$45	1.7
Classroom 322	3	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	3	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.0	110	0	$17	$41	$3	2.2
Classroom 322	1	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	46	0	$7	$25	$2	3.2
Classroom 322	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	2,780	2	Relamp	No	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,780	0.0	54	0	$8	$18	$5	1.6
Classroom 322	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.1	454	0	$70	$164	$45	1.7
Classroom 323	3	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	3	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.0	110	0	$17	$41	$3	2.2
Classroom 323	1	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	46	0	$7	$25	$2	3.2
Classroom 323	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	2,780	2	Relamp	No	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,780	0.0	54	0	$8	$18	$5	1.6
Classroom 323	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.1	454	0	$70	$164	$45	1.7
Classroom 329	2	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	2	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	92	0	$14	$50	$4	3.2
Classroom 329	4	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	2,780	2	Relamp	No	4	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,780	0.1	214	0	$33	$73	$20	1.6
Classroom 329	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.4	1,816	0	$281	$657	$180	1.7
Classroom 330	6	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	6	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.1	220	0	$34	$81	$6	2.2
Classroom 330	1	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	46	0	$7	$25	$2	3.2
Classroom 330	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	2,780	2	Relamp	No	2	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,780	0.0	107	0	$17	$37	$10	1.6

	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
Classroom 330	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.2	908	0	$140	$329	$90	1.7
Classroom 332	1	Compact Fluorescent: (2) 40W Biaxial Plug-In Lamps	Occupancy Sensor	S	80	2,780	2	Relamp	No	1	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	56	2,780	0.0	73	0	$11	$27	$2	2.2
Classroom 332	2	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	2	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	92	0	$14	$50	$4	3.2
Classroom 332	6	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	2,780	2	Relamp	No	6	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,780	0.1	321	0	$50	$110	$30	1.6
Classroom 332	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.1	303	0	$47	$110	$30	1.7
Classroom 333	5	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	5	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.0	183	0	$28	$68	$5	2.2
Classroom 333	6	Compact Fluorescent: (2) 40W Biaxial Plug-In Lamps	Occupancy Sensor	S	80	2,780	2	Relamp	No	6	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	56	2,780	0.1	440	0	$68	$162	$12	2.2
Classroom 333	1	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	46	0	$7	$25	$2	3.2
Classroom 333	0	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	2,780	2	Relamp	No	0	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,780	0.0	0	0	$0	$0	$0	0.0
Classroom 333	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.1	454	0	$70	$164	$45	1.7
Classroom 335	2	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	2	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.0	73	0	$11	$27	$2	2.2
Classroom 335	4	Compact Fluorescent: (2) 40W Biaxial Plug-In Lamps	Occupancy Sensor	S	80	2,780	2	Relamp	No	4	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	56	2,780	0.1	294	0	$45	$108	$8	2.2
Classroom 335	1	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	46	0	$7	$25	$2	3.2
Classroom 335	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	2,780	2	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,780	0.0	161	0	$25	$55	$15	1.6
Classroom 335	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	8	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.3	1,211	0	$187	$438	$120	1.7
Computer Lab 324	3	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	3	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	138	0	$21	$75	$6	3.2
Computer Lab 324	6	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	2,780	2	Relamp	No	6	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,780	0.1	321	0	$50	$110	$30	1.6
Computer Lab 324	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.3	1,362	0	$210	$493	$135	1.7
Corridor - Receiving	12	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Wall Switch	S	40	4,030	2, 4	Relamp	Yes	12	LED Lamps: PL-L (Biax) Lamps	High/Low Control	28	2,781	0.2	1,100	0	$170	$612	$432	1.1
Corridor - Receiving	5	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	5	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Corridor - Receiving	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	4,030	2	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	4,030	0.0	248	0	$38	$73	$20	1.4
Corridor - Receiving	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	4,030	2	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	4,030	0.0	248	0	$38	$73	$20	1.4
Corridor - Stair D	7	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Wall Switch	S	40	4,030	2, 4	Relamp	Yes	7	LED Lamps: PL-L (Biax) Lamps	High/Low Control	28	2,781	0.1	642	0	$99	$545	$252	3.0
Corridor - Stair D	2	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Wall Switch	S	52	4,030	2, 4	Relamp	Yes	2	LED Lamps: GX23 (Plug-In) Lamps	High/Low Control	37	2,781	0.0	235	0	$36	$50	$4	1.3
Corridor - Stair D	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
Corridor 1st	23	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Wall Switch	S	40	4,030	2, 4	Relamp	Yes	23	LED Lamps: PL-L (Biax) Lamps	High/Low Control	28	2,781	0.3	2,109	0	$326	$1,211	$828	1.2
Corridor 1st	6	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	6	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Corridor 1st	32	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,030	2, 4	Relamp	Yes	32	LED - Linear Tubes: (1) 4' Lamp	High/Low Control	15	2,781	0.5	3,120	-1	$482	$1,934	$1,280	1.4
Corridor 1st	5	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	4,030	2, 4	Relamp	Yes	5	LED - Linear Tubes: (4) 4' Lamps	High/Low Control	58	2,781	0.3	1,640	0	$253	$590	$275	1.2
Corridor 326	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 326	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,780	2	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,780	0.0	202	0	$31	$73	$20	1.7
Corridor Gym	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	4,030	2, 4	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	2,781	0.1	838	0	$129	$389	$150	1.9
Corridor Stage	2	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Wall Switch	S	52	4,030	2, 4	Relamp	Yes	2	LED Lamps: GX23 (Plug-In) Lamps	High/Low Control	37	2,781	0.0	235	0	$36	$50	$4	1.3
Corridor Stage	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 Stair C Exit	2	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Wall Switch	S	52	4,030	2, 4	Relamp	Yes	2	LED Lamps: GX23 (Plug-In) Lamps	High/Low Control	37	2,781	0.0	235	0	$36	$275	$74	5.5
Electrical Room 112	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
Electrical Room 112	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	500	2, 3	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	345	0.5	416	0	$64	$927	$215	11.1
Electrical Room 112a	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	500	2	Relamp	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	500	0.0	10	0	$1	$18	$5	8.9
Electrical Room 128	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	500	2	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	500	0.0	36	0	$6	$73	$20	9.5
Electrical Room 134	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	500	2	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	500	0.0	27	0	$4	$55	$15	9.5
Electrical Room 228	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	500	2	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	500	0.0	27	0	$4	$55	$15	9.5
Electrical Room 325	1	Compact Fluorescent: (2) 40W Biaxial Plug-In Lamps	Occupancy Sensor	S	80	500	2	Relamp	No	1	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	56	500	0.0	13	0	$2	$27	$2	12.3
Elevator	6	LED Lamps: (1) 8.5W A19 Screw-In Lamp	Wall Switch	S	9	500	3	None	Yes	6	LED Lamps: (1) 8.5W A19 Screw-In Lamp	Occupancy Sensor	9	345	0.0	9	0	$1	$270	$35	175.0
Gymnasium 102	24	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Wall Switch	S	52	4,030	2, 3	Relamp	Yes	24	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,781	0.5	2,816	-1	$435	$1,140	$118	2.3
Gymnasium 102	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
Gymnasium 102	12	Metal Halide: (1) 320W Lamp	Wall Switch	S	365	4,030	1, 3	Fixture Replacement	Yes	12	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Occupancy Sensor	96	2,781	2.6	15,893	-3	$2,454	$6,524	$635	2.4
Janitorial - Kitchen	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	500	2	Relamp	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	500	0.0	10	0	$1	$18	$5	8.9
Janitorial 106	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	500	2	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	500	0.0	27	0	$4	$55	$15	9.5
Kitchen	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
Kitchen	8	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,030	2, 3	Relamp	Yes	8	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,781	0.1	780	0	$120	$416	$75	2.8

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen	14	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	4,030	2, 3	Relamp	Yes	14	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,781	0.6	3,909	-1	$604	$1,037	$245	1.3
Library	12	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Wall Switch	S	52	4,030	2, 3	Relamp	Yes	12	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,781	0.2	1,408	0	$217	$570	$59	2.3
Library	14	Compact Fluorescent: (1) 42W Triple Biaxial Plug-In Lamp	Wall Switch	S	42	4,030	2, 3	Relamp	Yes	14	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	30	2,781	0.2	1,322	0	$204	$459	$49	2.0
Library	5	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	5	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Library	19	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,030	2, 3	Relamp	Yes	19	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,781	0.3	1,853	0	$286	$887	$165	2.5
Library	36	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,030	2, 3	Relamp	Yes	36	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,781	1.1	6,701	-1	$1,035	$2,125	$465	1.6
Library	27	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,030	2, 3	Relamp	Yes	27	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,781	0.8	5,026	-1	$776	$1,526	$340	1.5
Lounge 133	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	2,780	2	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,780	0.0	161	0	$25	$55	$15	1.6
Lounge 133	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.4	1,816	0	$281	$657	$180	1.7
Main Entrance	4	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Wall Switch	S	52	4,030	2, 3	Relamp	Yes	4	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,781	0.1	469	0	$72	$370	$43	4.5
Main Lobby	32	Compact Fluorescent: (1) 42W Triple Biaxial Plug-In Lamp	Wall Switch	S	42	4,030	2, 4	Relamp	Yes	32	LED Lamps: PL-L (Biax) Lamps	High/Low Control	30	2,781	0.5	3,022	-1	$467	$1,782	$1,152	1.4
Main Lobby	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
Main Lobby	16	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,030	2, 4	Relamp	Yes	16	LED - Linear Tubes: (1) 4' Lamp	High/Low Control	15	2,781	0.3	1,560	0	$241	$967	$640	1.4
Main Lobby	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,030	2, 4	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,781	0.6	3,723	-1	$575	$1,630	$900	1.3
Main Office 129	7	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	7	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.2	1,060	0	$164	$383	$105	1.7
Mechanical - Elevator 103	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,030	2, 3	Relamp	Yes	2	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,781	0.0	195	0	$30	$153	$30	4.1
Mechanical - Sprinkler Valve Room 109	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.1	303	0	$47	$110	$30	1.7
Nurses Office 110	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	8	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.3	1,211	0	$187	$438	$120	1.7
Office - 111	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.1	454	0	$70	$164	$45	1.7
Office - 116	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	4,030	2, 3	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,781	0.1	558	0	$86	$226	$30	2.3
Office - 127	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.1	605	0	$94	$219	$60	1.7
Office - 129A	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.1	303	0	$47	$110	$30	1.7
Office - 129B	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.2	908	0	$140	$329	$90	1.7
Office - 129C	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.1	303	0	$47	$110	$30	1.7
Office - 129D	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,030	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,781	0.1	372	0	$57	$189	$40	2.6

	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
Office - 130	2	Compact Fluorescent: (2) 40W Biaxial Plug-In Lamps	Wall Switch	S	80	4,030	2, 3	Relamp	Yes	2	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	56	2,781	0.1	367	0	$57	$170	$24	2.6
Office - 229	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	4,030	2, 3	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,781	0.1	558	0	$86	$226	$50	2.0
Office - 230	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,030	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,781	0.1	372	0	$57	$189	$40	2.6
Office - 232A	2	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	2	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	92	0	$14	$50	$4	3.2
Office - 232A	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,780	2	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,780	0.1	303	0	$47	$110	$30	1.7
Office - 326A	3	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	3	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.0	110	0	$17	$41	$3	2.2
Office - 326B	1	Compact Fluorescent: (2) 40W Biaxial Plug-In Lamps	Occupancy Sensor	S	80	2,780	2	Relamp	No	1	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	56	2,780	0.0	73	0	$11	$27	$2	2.2
Office - 326B	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,780	2	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,780	0.1	303	0	$47	$110	$30	1.7
Office - 326C	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,780	2	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,780	0.0	202	0	$31	$73	$20	1.7
Office - 326D	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,780	2	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,780	0.0	202	0	$31	$73	$20	1.7
Office - 328	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,780	2	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,780	0.0	202	0	$31	$73	$20	1.7
Office - Custodian 139	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	4,030	2, 3	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,781	0.1	558	0	$86	$226	$50	2.0
Office - Gym	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.1	303	0	$47	$110	$30	1.7
Office - Kitchen	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	4,030	2, 3	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,781	0.1	558	0	$86	$226	$50	2.0
Office - Receiving Room 138	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 - Receiving Room 138	7	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	4,030	2, 3	Relamp	Yes	7	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,781	0.3	1,954	0	$302	$653	$140	1.7
Restroom - 115	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,030	2, 3	Relamp	Yes	2	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,781	0.0	195	0	$30	$153	$30	4.1
Restroom - 117	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,030	2, 3	Relamp	Yes	2	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,781	0.0	195	0	$30	$153	$30	4.1
Restroom - 118	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,030	2, 3	Relamp	Yes	2	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,781	0.0	195	0	$30	$153	$30	4.1
Restroom - 119	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,030	2, 3	Relamp	Yes	2	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,781	0.0	195	0	$30	$153	$30	4.1
Restroom - 120	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,030	2, 3	Relamp	Yes	2	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,781	0.0	195	0	$30	$153	$30	4.1
Restroom - 121	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,030	2, 3	Relamp	Yes	2	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,781	0.0	195	0	$30	$153	$30	4.1
Restroom - 122	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,030	2, 3	Relamp	Yes	2	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,781	0.0	195	0	$30	$153	$30	4.1
Restroom - 123a	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,030	2, 3	Relamp	Yes	2	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,781	0.0	195	0	$30	$153	$30	4.1
Restroom - 123b	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,030	2, 3	Relamp	Yes	2	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,781	0.0	195	0	$30	$153	$30	4.1

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Restroom - 124	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,030	2, 3	Relamp	Yes	2	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,781	0.0	195	0	$30	$153	$30	4.1
Restroom - Female 108	3	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Wall Switch	S	52	4,030	2, 3	Relamp	Yes	3	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,781	0.1	352	0	$54	$345	$41	5.6
Restroom - Female 108	5	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,030	2, 3	Relamp	Yes	5	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,781	0.1	488	0	$75	$361	$60	4.0
Restroom - Female 208	4	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Wall Switch	S	52	4,030	2, 3	Relamp	Yes	4	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,781	0.1	469	0	$72	$370	$43	4.5
Restroom - Female 208	12	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,030	2, 3	Relamp	Yes	12	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,781	0.2	1,170	0	$181	$489	$95	2.2
Restroom - Male 107	3	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Wall Switch	S	52	4,030	2, 3	Relamp	Yes	3	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,781	0.1	352	0	$54	$345	$41	5.6
Restroom - Male 107	5	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,030	2, 3	Relamp	Yes	5	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,781	0.1	488	0	$75	$361	$60	4.0
Restroom - Male 207	4	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Wall Switch	S	52	4,030	2, 3	Relamp	Yes	4	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,781	0.1	469	0	$72	$370	$43	4.5
Restroom - Male 207	12	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,030	2, 3	Relamp	Yes	12	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,781	0.2	1,170	0	$181	$489	$95	2.2
Restroom - Nurse	2	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Wall Switch	S	52	4,030	2, 3	Relamp	Yes	2	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,781	0.0	235	0	$36	$166	$24	3.9
Restroom - Staff Men 104	3	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Wall Switch	S	52	4,030	2, 3	Relamp	Yes	3	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,781	0.1	352	0	$54	$345	$41	5.6
Restroom - Staff Men 104	5	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,030	2, 3	Relamp	Yes	5	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,781	0.1	488	0	$75	$361	$60	4.0
Restroom - Staff Men 135	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,030	2, 3	Relamp	Yes	2	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,781	0.0	195	0	$30	$153	$30	4.1
Restroom - Staff Women 105	3	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Wall Switch	S	52	4,030	2, 3	Relamp	Yes	3	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,781	0.1	352	0	$54	$345	$41	5.6
Restroom - Staff Women 105	5	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,030	2, 3	Relamp	Yes	5	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,781	0.1	488	0	$75	$361	$60	4.0
Restroom - Staff Women 136	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,030	2, 3	Relamp	Yes	2	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,781	0.0	195	0	$30	$153	$30	4.1
Stage	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
Stage	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	4,030	2, 3	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,781	0.2	1,117	0	$172	$489	$95	2.3
Stairs A	2	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Wall Switch	S	52	4,030	2, 3	Relamp	Yes	2	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,781	0.0	235	0	$36	$166	$24	3.9
Stairs A	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
Stairs A	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,030	2, 3	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,781	0.5	3,351	-1	$517	$1,197	$250	1.8
Stairs B	2	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Wall Switch	S	52	4,030	2, 3	Relamp	Yes	2	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,781	0.0	235	0	$36	$166	$24	3.9
Stairs B	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
Stairs B	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,030	2, 3	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,781	0.5	3,351	-1	$517	$1,197	$250	1.8
Stairs C	2	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Wall Switch	S	52	4,030	2, 3	Relamp	Yes	2	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,781	0.0	235	0	$36	$166	$24	3.9

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Stairs C	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
Stairs C	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,030	2, 3	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,781	0.5	3,351	-1	$517	$1,197	$250	1.8
Stairs D	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
Stairs D	11	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,030	2, 3	Relamp	Yes	11	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,781	0.3	2,048	0	$316	$672	$145	1.7
Storage - 231	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	345	0.1	46	0	$7	$189	$20	23.7
Storage - Kitchen 1	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	500	2	Relamp	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	500	0.0	10	0	$1	$18	$5	8.9
Storage 101	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	500	2, 3	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	345	0.3	208	0	$32	$599	$125	14.8
Storage 102C	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	500	2, 3	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	345	0.1	69	0	$11	$226	$30	18.3
Storage 102D	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	500	2, 3	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	345	0.1	69	0	$11	$226	$30	18.3
Storage 125	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	500	2	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	500	0.0	36	0	$6	$73	$20	9.5
Storage 137	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	500	2, 3	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	345	0.1	69	0	$11	$226	$30	18.3
Storage 140	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	500	2	Relamp	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	500	0.0	10	0	$1	$18	$5	8.9
Storage 232B	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	500	2, 3	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	345	0.2	139	0	$21	$335	$60	12.9
Storage 327	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	500	2	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	500	0.0	36	0	$6	$73	$20	9.5
Storage 329A	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	500	2	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	500	0.1	82	0	$13	$164	$45	9.5
Storage 334	2	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	500	2	Relamp	No	2	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	500	0.0	17	0	$3	$50	$4	18.1
Storage 334	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	500	2	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	500	0.1	54	0	$8	$110	$30	9.5
Walk-in Cooler	1	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	S	9	500		None	No	1	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	9	500	0.0	0	0	$0	$0	$0	0.0
Walk-in Cooler	1	Linear Fluorescent - T5HO: 4' T5HO (54W) - 2L	Wall Switch	S	117	500	2	Relamp	No	1	LED - Linear Tubes: (2) 4' T5HO (25W) Lamps	Wall Switch	51	500	0.0	36	0	$6	$57	$10	8.4
Walk-in Freezer	1	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	S	9	500		None	No	1	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	9	500	0.0	0	0	$0	$0	$0	0.0
Walk-in Freezer	2	Linear Fluorescent - T5HO: 4' T5HO (54W) - 2L	Wall Switch	S	117	500	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' T5HO (25W) Lamps	Occupancy Sensor	51	345	0.1	90	0	$14	$230	$40	13.7
Classroom 205	4	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	4	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.0	147	0	$23	$54	$4	2.2
Classroom 205	8	Compact Fluorescent: (2) 40W Biaxial Plug-In Lamps	Occupancy Sensor	S	80	2,780	2	Relamp	No	8	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	56	2,780	0.1	587	0	$91	$216	$16	2.2
Classroom 209	5	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	5	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.0	183	0	$28	$68	$5	2.2
Classroom 209	6	Compact Fluorescent: (2) 40W Biaxial Plug-In Lamps	Occupancy Sensor	S	80	2,780	2	Relamp	No	6	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	56	2,780	0.1	440	0	$68	$162	$12	2.2

	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
Classroom 209	1	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	46	0	$7	$25	$2	3.2
Classroom 209	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.1	454	0	$70	$164	$45	1.7
Classroom 210	5	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	5	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.0	183	0	$28	$68	$5	2.2
Classroom 210	6	Compact Fluorescent: (2) 40W Biaxial Plug-In Lamps	Occupancy Sensor	S	80	2,780	2	Relamp	No	6	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	56	2,780	0.1	440	0	$68	$162	$12	2.2
Classroom 210	1	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	46	0	$7	$25	$2	3.2
Classroom 210	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.1	454	0	$70	$164	$45	1.7
Classroom 211	5	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	5	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.0	183	0	$28	$68	$5	2.2
Classroom 211	6	Compact Fluorescent: (2) 40W Biaxial Plug-In Lamps	Occupancy Sensor	S	80	2,780	2	Relamp	No	6	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	56	2,780	0.1	440	0	$68	$162	$12	2.2
Classroom 211	1	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	46	0	$7	$25	$2	3.2
Classroom 211	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.1	454	0	$70	$164	$45	1.7
Classroom 212	5	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	5	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.0	183	0	$28	$68	$5	2.2
Classroom 212	6	Compact Fluorescent: (2) 40W Biaxial Plug-In Lamps	Occupancy Sensor	S	80	2,780	2	Relamp	No	6	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	56	2,780	0.1	440	0	$68	$162	$12	2.2
Classroom 212	1	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	46	0	$7	$25	$2	3.2
Classroom 212	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.1	454	0	$70	$164	$45	1.7
Classroom 214	8	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	8	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.1	294	0	$45	$108	$8	2.2
Classroom 214	8	Compact Fluorescent: (2) 40W Biaxial Plug-In Lamps	Occupancy Sensor	S	80	2,780	2	Relamp	No	8	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	56	2,780	0.1	587	0	$91	$216	$16	2.2
Classroom 214	1	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	46	0	$7	$25	$2	3.2
Classroom 214	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.1	605	0	$94	$219	$60	1.7
Classroom 215	5	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	5	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.0	183	0	$28	$68	$5	2.2
Classroom 215	6	Compact Fluorescent: (2) 40W Biaxial Plug-In Lamps	Occupancy Sensor	S	80	2,780	2	Relamp	No	6	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	56	2,780	0.1	440	0	$68	$162	$12	2.2
Classroom 215	1	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	46	0	$7	$25	$2	3.2
Classroom 215	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.1	454	0	$70	$164	$45	1.7
Classroom 218	5	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	5	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.0	183	0	$28	$68	$5	2.2
Classroom 218	6	Compact Fluorescent: (2) 40W Biaxial Plug-In Lamps	Occupancy Sensor	S	80	2,780	2	Relamp	No	6	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	56	2,780	0.1	440	0	$68	$162	$12	2.2
Classroom 218	2	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	2	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	92	0	$14	$50	$4	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
Classroom 218	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.1	454	0	$70	$164	$45	1.7
Classroom 219	5	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	5	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.0	183	0	$28	$68	$5	2.2
Classroom 219	6	Compact Fluorescent: (2) 40W Biaxial Plug-In Lamps	Occupancy Sensor	S	80	2,780	2	Relamp	No	6	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	56	2,780	0.1	440	0	$68	$162	$12	2.2
Classroom 219	1	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	46	0	$7	$25	$2	3.2
Classroom 219	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.1	454	0	$70	$164	$45	1.7
Classroom 220	5	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	5	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.0	183	0	$28	$68	$5	2.2
Classroom 220	6	Compact Fluorescent: (2) 40W Biaxial Plug-In Lamps	Occupancy Sensor	S	80	2,780	2	Relamp	No	6	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	56	2,780	0.1	440	0	$68	$162	$12	2.2
Classroom 220	1	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	46	0	$7	$25	$2	3.2
Classroom 220	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.1	454	0	$70	$164	$45	1.7
Classroom 221	2	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	2	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	92	0	$14	$50	$4	3.2
Classroom 221	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,780	2	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,780	0.1	303	0	$47	$110	$30	1.7
Classroom 222	5	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	5	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.0	183	0	$28	$68	$5	2.2
Classroom 222	6	Compact Fluorescent: (2) 40W Biaxial Plug-In Lamps	Occupancy Sensor	S	80	2,780	2	Relamp	No	6	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	56	2,780	0.1	440	0	$68	$162	$12	2.2
Classroom 222	1	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	46	0	$7	$25	$2	3.2
Classroom 222	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.1	454	0	$70	$164	$45	1.7
Classroom 223	5	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	5	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.0	183	0	$28	$68	$5	2.2
Classroom 223	6	Compact Fluorescent: (2) 40W Biaxial Plug-In Lamps	Occupancy Sensor	S	80	2,780	2	Relamp	No	6	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	56	2,780	0.1	440	0	$68	$162	$12	2.2
Classroom 223	1	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	46	0	$7	$25	$2	3.2
Classroom 223	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.1	454	0	$70	$164	$45	1.7
Classroom 224	5	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	5	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.0	183	0	$28	$68	$5	2.2
Classroom 224	6	Compact Fluorescent: (2) 40W Biaxial Plug-In Lamps	Occupancy Sensor	S	80	2,780	2	Relamp	No	6	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	56	2,780	0.1	440	0	$68	$162	$12	2.2
Classroom 224	1	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	46	0	$7	$25	$2	3.2
Classroom 224	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.1	454	0	$70	$164	$45	1.7
Classroom 225	5	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	5	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.0	183	0	$28	$68	$5	2.2
Classroom 225	6	Compact Fluorescent: (2) 40W Biaxial Plug-In Lamps	Occupancy Sensor	S	80	2,780	2	Relamp	No	6	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	56	2,780	0.1	440	0	$68	$162	$12	2.2

	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
Classroom 225	1	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	46	0	$7	$25	$2	3.2
Classroom 225	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.1	454	0	$70	$164	$45	1.7
Classroom 226	5	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	5	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.0	183	0	$28	$68	$5	2.2
Classroom 226	6	Compact Fluorescent: (2) 40W Biaxial Plug-In Lamps	Occupancy Sensor	S	80	2,780	2	Relamp	No	6	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	56	2,780	0.1	440	0	$68	$162	$12	2.2
Classroom 226	1	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	46	0	$7	$25	$2	3.2
Classroom 226	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.1	454	0	$70	$164	$45	1.7
Classroom 233	7	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	7	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.1	257	0	$40	$95	$7	2.2
Classroom 233	2	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	2	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	92	0	$14	$50	$4	3.2
Classroom 233	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	8	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.3	1,211	0	$187	$438	$120	1.7
Classroom 234	7	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	7	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.1	257	0	$40	$95	$7	2.2
Classroom 234	2	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	2	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	92	0	$14	$50	$4	3.2
Classroom 234	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	8	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.3	1,211	0	$187	$438	$120	1.7
Classroom 235	7	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	7	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.1	257	0	$40	$95	$7	2.2
Classroom 235	2	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	2	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	92	0	$14	$50	$4	3.2
Classroom 235	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	8	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.3	1,211	0	$187	$438	$120	1.7
Classroom 236	6	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	6	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.1	220	0	$34	$81	$6	2.2
Classroom 236	5	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	5	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.1	229	0	$35	$125	$10	3.2
Classroom 236	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	2,780	2	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,780	0.0	161	0	$25	$55	$15	1.6
Classroom 236	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.2	908	0	$140	$329	$90	1.7
Classroom 237	6	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	6	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.1	220	0	$34	$81	$6	2.2
Classroom 237	1	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	46	0	$7	$25	$2	3.2
Classroom 237	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.4	1,816	0	$281	$657	$180	1.7
Computer Lab 227	8	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Occupancy Sensor	S	40	2,780	2	Relamp	No	8	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	28	2,780	0.1	294	0	$45	$108	$8	2.2
Computer Lab 227	2	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	52	2,780	2	Relamp	No	2	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,780	0.0	92	0	$14	$50	$4	3.2
Computer Lab 227	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.4	1,816	0	$281	$657	$180	1.7

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Corridor 2nd	36	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Wall Switch	S	40	4,030	2, 4	Relamp	Yes	36	LED Lamps: PL-L (Biax) Lamps	High/Low Control	28	2,781	0.5	3,300	-1	$510	$1,836	$1,296	1.1
Corridor 2nd	9	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Wall Switch	S	52	4,030	2, 4	Relamp	Yes	9	LED Lamps: GX23 (Plug-In) Lamps	High/Low Control	37	2,781	0.2	1,056	0	$163	$675	$333	2.1
Corridor 2nd	27	Compact Fluorescent: (1) 42W Triple Biaxial Plug-In Lamp	Wall Switch	S	42	4,030	2, 4	Relamp	Yes	27	LED Lamps: PL-L (Biax) Lamps	High/Low Control	30	2,781	0.4	2,549	-1	$394	$1,490	$972	1.3
Corridor 2nd	14	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	14	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Corridor 2nd	4	LED - Fixtures: High-Bay	Wall Switch	S	32	4,030	4	None	Yes	4	LED - Fixtures: High-Bay	High/Low Control	32	2,781	0.0	176	0	$27	$225	$140	3.1
Corridor 2nd	45	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,030	2, 4	Relamp	Yes	45	LED - Linear Tubes: (1) 4' Lamp	High/Low Control	15	2,781	0.7	4,388	-1	$678	$2,622	$1,800	1.2
Corridor 2nd	8	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	4,030	2, 4	Relamp	Yes	8	LED - Linear Tubes: (4) 4' Lamps	High/Low Control	58	2,781	0.4	2,624	-1	$405	$1,034	$440	1.5
Electrical Room 213a	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	500	2, 3	Relamp	Yes	2	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	345	0.0	24	0	$4	$153	$30	32.8
Janitorial 206	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	500	2	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	500	0.0	27	0	$4	$55	$15	9.5
Lounge 237a	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,780	2	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,780	0.1	303	0	$47	$110	$30	1.7
Office - 201	4	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Occupancy Sensor	S	62	2,780	2	Relamp	No	4	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	2,780	0.1	355	0	$55	$290	$40	4.6
Office - 202	4	Compact Fluorescent: (2) 40W Biaxial Plug-In Lamps	Occupancy Sensor	S	80	2,780	2	Relamp	No	4	LED Lamps: PL-L (Biax) Lamps	Occupancy Sensor	56	2,780	0.1	294	0	$45	$108	$8	2.2
Restroom - Staff Men 217	1	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Wall Switch	S	52	4,030	2	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Wall Switch	37	4,030	0.0	66	0	$10	$25	$2	2.2
Restroom - Staff Men 217	8	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,030	2, 3	Relamp	Yes	8	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,781	0.1	780	0	$120	$416	$75	2.8
Restroom - Staff Women 216	1	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Wall Switch	S	52	4,030	2	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Wall Switch	37	4,030	0.0	66	0	$10	$25	$2	2.2
Restroom - Staff Women 216	8	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,030	2, 3	Relamp	Yes	8	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,781	0.1	780	0	$120	$416	$75	2.8
Storage 213	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	500	2	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	500	0.0	36	0	$6	$73	$20	9.5
Storage 237b	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	500	2	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	500	0.1	54	0	$8	$110	$30	9.5
Corridor - 3rd	1	Compact Fluorescent: (1) 39W Triple Biaxial Plug-In Lamp	Wall Switch	S	39	4,030	2	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Wall Switch	28	4,030	0.0	49	0	$8	$13	$1	1.5
Corridor 3rd	33	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Wall Switch	S	40	4,030	2, 4	Relamp	Yes	33	LED Lamps: PL-L (Biax) Lamps	High/Low Control	28	2,781	0.5	3,025	-1	$467	$1,796	$1,188	1.3
Corridor 3rd	25	Compact Fluorescent: (1) 42W Triple Biaxial Plug-In Lamp	Wall Switch	S	42	4,030	2, 4	Relamp	Yes	25	LED Lamps: PL-L (Biax) Lamps	High/Low Control	30	2,781	0.4	2,361	0	$365	$1,463	$900	1.5
Corridor 3rd	8	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	8	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Corridor 3rd	45	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,030	2, 4	Relamp	Yes	45	LED - Linear Tubes: (1) 4' Lamp	High/Low Control	15	2,781	0.7	4,388	-1	$678	$2,622	$1,800	1.2
Corridor 3rd	5	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	4,030	2, 4	Relamp	Yes	5	LED - Linear Tubes: (4) 4' Lamps	High/Low Control	58	2,781	0.3	1,640	0	$253	$590	$275	1.2
Electrical Room 309a	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	500	2, 3	Relamp	Yes	2	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	345	0.0	24	0	$4	$153	$30	32.8

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Janitorial 302	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	500	2	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	500	0.0	27	0	$4	$55	$15	9.5
Mechanical 302A	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	4,030	2, 3	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,781	0.1	838	0	$129	$434	$80	2.7
Restroom - Male 303	4	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Wall Switch	S	52	4,030	2, 3	Relamp	Yes	4	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	2,781	0.1	469	0	$72	$370	$43	4.5
Restroom - Male 303	12	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,030	2, 3	Relamp	Yes	12	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,781	0.2	1,170	0	$181	$489	$95	2.2
Restroom - Staff Men 314	1	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Wall Switch	S	52	4,030	2	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Wall Switch	37	4,030	0.0	66	0	$10	$25	$2	2.2
Restroom - Staff Men 314	9	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,030	2, 3	Relamp	Yes	9	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,781	0.1	878	0	$136	$434	$80	2.6
Restroom - Staff Women 313	1	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Wall Switch	S	52	4,030	2	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Wall Switch	37	4,030	0.0	66	0	$10	$25	$2	2.2
Restroom - Staff Women 313	9	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,030	2, 3	Relamp	Yes	9	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,781	0.1	878	0	$136	$434	$80	2.6
Storage 309	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	500	2	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	500	0.1	54	0	$8	$110	$30	9.5
Exterior	8	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Timeclock		52	4,380	2	Relamp	No	8	LED Lamps: GX23 (Plug-In) Lamps	Timeclock	37	4,380	0.0	526	0	$82	$200	$16	2.2
Exterior	6	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Timeclock		52	4,380	2	Relamp	No	6	LED Lamps: GX23 (Plug-In) Lamps	Timeclock	37	4,380	0.0	394	0	$62	$150	$12	2.2
Exterior	21	Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps	Timeclock		52	4,380	2	Relamp	No	21	LED Lamps: GX23 (Plug-In) Lamps	Timeclock	37	4,380	0.0	1,380	0	$216	$525	$42	2.2
Exterior	8	High-Pressure Sodium: (1) 250W Lamp	Timeclock		295	4,380	1	Fixture Replacement	No	8	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Timeclock	75	4,380	0.0	7,709	0	$1,206	$3,766	$400	2.8
Exterior	22	Metal Halide: (1) 100W Lamp	Timeclock		128	4,380	1	Fixture Replacement	No	22	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Timeclock	30	4,380	0.0	9,443	0	$1,477	$5,778	$1,100	3.2
Exterior	24	Metal Halide: (1) 100W Lamp	Timeclock		128	4,380	1	Fixture Replacement	No	24	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Timeclock	30	4,380	0.0	10,302	0	$1,612	$6,303	$1,200	3.2
Roof	1	Compact Fluorescent: (1) 39W Triple Biaxial Plug-In Lamp	Photocell	S	39	5,037	2	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Photocell	28	5,037	0.0	61	0	$9	$13	$1	1.2

Motor Inventory & Recommendations

		Existing Conditions									Proposed Conditions					Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	Motor Quantity	Motor Application	HP Per Motor	Full Load Efficiency	VFD Control?	Manufacturer	Model	Remaining Useful Life	Annual Operating Hours	ECM #	Install High Efficiency Motors?	Full Load Efficiency	Install VFDs?	Number of VFDs	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Roof E	Various - Chiller 1	8	Supply Fan	2.0	86.5%	No	McQuay	AGS160CH27-ER10	B	3,200		No	86.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof E	Various - Chiller 2	8	Supply Fan	2.0	86.5%	No	McQuay	AGS160CH27-ER10	B	3,200		No	86.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof E	Media center AHU 1	1	Supply Fan	7.5	91.7%	No	Lon Marks	RDS800CYY		3,200	5	No	91.7%	Yes	1	2.1	7,322	0	$1,146	$4,761	$1,000	3.3
Roof E	Media center AHU 1	1	Return Fan	3.0	89.5%	No	Lon Marks	RDS800CYY		3,200	5	No	89.5%	Yes	1	0.9	3,001	0	$469	$3,812	$200	7.7
Roof E	AHU 2	1	Supply Fan	15.0	92.4%	No	Lon Marks	RDS800CYY		3,200	5	No	92.4%	Yes	1	4.3	14,532	0	$2,274	$7,086	$1,200	2.6
Roof E	AHU 2	1	Return Fan	5.0	89.5%	No	Lon Marks	RDS800CYY		3,200	5	No	89.5%	Yes	1	1.5	5,001	0	$782	$4,197	$900	4.2
Roof E	Classrooms - AHU 3	1	Supply Fan	20.0	93.0%	No	Lon Marks	RDS800CYY		3,200	5	No	93.0%	Yes	1	5.7	19,252	0	$3,012	$8,850	$1,300	2.5
Roof E	Classrooms - AHU 3	1	Return Fan	10.0	91.7%	No	Lon Marks	RDS800CYY		3,200	5	No	91.7%	Yes	1	3.0	9,762	0	$1,527	$5,375	$1,100	2.8
Roof E	RTU-1 Auditorium	1	Supply Fan	15.0	92.4%	No	McQuay	RPS030CLA	B	3,200	5	No	92.4%	Yes	1	4.3	14,532	0	$2,274	$7,086	$1,200	2.6
Roof E	RTU-1 Auditorium	1	Return Fan	5.0	89.5%	No	McQuay	RPS030CLA	B	3,200	5	No	89.5%	Yes	1	1.5	5,001	0	$782	$4,197	$900	4.2
Roof E	RTU-2 Gym	1	Supply Fan	10.0	91.7%	No	McQuay	RPS025CLA	B	3,200	5	No	91.7%	Yes	1	2.9	9,762	0	$1,527	$5,375	$1,100	2.8
Roof E	RTU-2 Gym	1	Return Fan	5.0	89.5%	No	McQuay	RPS025CLA	B	3,200	5	No	89.5%	Yes	1	1.5	5,001	0	$782	$4,197	$900	4.2
Roof E	RTU-3 Cafeteria	1	Supply Fan	15.0	92.4%	No	McQuay	RPS036CLA	B	3,200	5	No	92.4%	Yes	1	4.3	14,532	0	$2,274	$7,086	$1,200	2.6
Roof E	RTU-3 Cafeteria	1	Return Fan	3.0	89.5%	No	McQuay	RPS036CLA	B	3,200	5	No	89.5%	Yes	1	0.9	3,001	0	$469	$3,812	$200	7.7
Electrical Room 112	Electrical Room 112	1	Air Compressor	0.5	77.0%	No	Marathon		B	200		No	77.0%	No		0.0	0	0	$0	$0	$0	0.0
Janitorial 106	Janitorial 106	1	Air Compressor	0.5	77.0%	No	Marathon		B	200		No	77.0%	No		0.0	0	0	$0	$0	$0	0.0
Mechanical - Sprinkler Valve Room 109	Mechanical - Sprinkler Valve Room 109	1	Air Compressor	0.5	77.0%	No	Marathon		B	200		No	77.0%	No		0.0	0	0	$0	$0	$0	0.0
Mechanical 302A	Mechanical 302A	3	Chilled Water Pump	15.0	91.0%	Yes			W	1,092		No	91.0%	No		0.0	0	0	$0	$0	$0	0.0
Boiler Room 113	Boiler Room 113	2	Combustion Air Fan	7.5	89.5%	No	Cleaver Brooks		W	720		No	89.5%	No		0.0	0	0	$0	$0	$0	0.0
Electrical Room 112	Various	1	Exhaust Fan	0.3	60.0%	No				3,080		No	60.0%	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
Roof	Various	1	Exhaust Fan	0.3	60.0%	No				3,080		No	60.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Various	2	Exhaust Fan	0.3	60.0%	No				3,080		No	60.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Various	3	Exhaust Fan	0.3	60.0%	No				3,080		No	60.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Various	1	Exhaust Fan	0.3	60.0%	No				3,080		No	60.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof - Lower	Various	3	Exhaust Fan	0.3	60.0%	No				3,080		No	60.0%	No		0.0	0	0	$0	$0	$0	0.0
Boiler Room 113	DHW	1	DHW Circulation Pump	0.2	60.0%	No				3,080		No	60.0%	No		0.0	0	0	$0	$0	$0	0.0
Boiler Room 113	DHW - Kitchen	1	DHW Circulation Pump	0.2	60.0%	No				3,080		No	60.0%	No		0.0	0	0	$0	$0	$0	0.0
Boiler Room 113	DHW	1	DHW Circulation Pump	0.2	60.0%	No				3,080		No	60.0%	No		0.0	0	0	$0	$0	$0	0.0
Boiler Room 113	P1 P2	2	Heating Hot Water Pump	20.0	93.0%	Yes				720		No	93.0%	No		0.0	0	0	$0	$0	$0	0.0
Boiler Room 113	P3 P4 P5	3	Heating Hot Water Pump	20.0	93.0%	Yes				720		No	93.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof lower	Roof lower	1	Kitchen Hood Exhaust Fan	0.5	77.0%	No				3,080		No	77.0%	No		0.0	0	0	$0	$0	$0	0.0
Mechanical Elevator	Mechanical	1	Other	20.0	72.0%	No				620		No	72.0%	No		0.0	0	0	$0	$0	$0	0.0
Classrooms	Classrooms	65	Fan Coil Unit	0.3	60.0%	No				1,200		No	60.0%	No		0.0	0	0	$0	$0	$0	0.0

Packaged HVAC Inventory & Recommendations

		Existing Conditions									Proposed Conditions								Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (MBh)	Cooling Mode Efficiency (SEER/IEER/EER)	Heating Mode Efficiency	Manufacturer	Model	Remaining Useful Life	ECM #	Install High Efficiency System?	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (MBh)	Cooling Mode Efficiency (SEER/IEER/EER)	Heating Mode Efficiency	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Boiler Room 113	Boiler Room 113	1	Electric Resistance Heat		17.06		1 COP					No							0.0	0	0	$0	$0	$0	0.0
Mechanical - Sprinkler Valve Room 109	Mechanical - Sprinkler Valve Room 109	1	Electric Resistance Heat		17.06		1 COP					No							0.0	0	0	$0	$0	$0	0.0
Mechanical 302A	Mechanical 302A	1	Electric Resistance Heat		17.06		1 COP					No							0.0	0	0	$0	$0	$0	0.0
Exterior	Exterior	2	Electric Resistance Heat		17.06		1 COP					No							0.0	0	0	$0	$0	$0	0.0
Exterior	Exterior	4	Electric Resistance Heat		5.12		1 COP					No							0.0	0	0	$0	$0	$0	0.0
Roof	1st, 2nd and 3rd floor	3	Split-System	2.00		13.00		Mitsubishi	PUY-A24NHA2	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	HVAC 3A	1	Split-System Air-Source HP	2.87	36.40	16.00	7.7 HSPF	Mitsubishi	MXZ-4C36NA2	W		No							0.0	0	0	$0	$0	$0	0.0
Roof - Lower	Kitchen office/Teachers office	1	Split-System	2.00		13.00		Mitsubishi	PUY-A24NHA2	W		No							0.0	0	0	$0	$0	$0	0.0
Roof E	RTU-1 Auditorium	1	Package Unit	30.00	400.00	10.00	0.8 Et	McQuay	RPS030CLA	W		No							0.0	0	0	$0	$0	$0	0.0
Roof E	RTU-2 Gym	1	Package Unit	25.00	320.00	10.00	0.8 Et	McQuay	RPS025CLA	W		No							0.0	0	0	$0	$0	$0	0.0
Roof E	RTU-3 Cafeteria	1	Package Unit	36.00	500.00	10.00	0.8 Et	McQuay	RPS036CLA	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
Roof E	Various - Chiller 1	1	Air-Cooled Screw Chiller	160.00	McQuay	AGS160CH27-ER10	W		No							0.0	0	0	$0	$0	$0	0.0
Roof E	Various - Chiller 2	1	Air-Cooled Screw Chiller	160.00	McQuay	AGS160CH27-ER10	W		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
Boiler room 113	Various	2	Non-Condensing Hot Water Boiler	4,184	Cleaver Brooks	CB-700-150-125	W		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
Boiler room 113	DHW	6	15	2.00	0.0	0	12	$115	$108	$30	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
Boiler room 113	Restrooms and kitchen	1	Boiler	Mighty Therm 2		W		No						0.0	0	0	$0	$0	$0	0.0

Walk-In Cooler/Freezer Inventory & Recommendations

	Existing Conditions				Proposed Conditions				Energy Impact & Financial Analysis						
Location	Cooler/ Freezer Quantity	Case Type/Temperature	Manufacturer	Model	ECM #	Install EC Evaporator Fan Motors?	Install Electric Defrost Control?	Install Evaporator Fan Control?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Roof lower	1	Cooler (35F to 55F)	Bally	BESA008H2	7	Yes	No	No	0.0	412	0	$64	$303	$40	4.1
Roof lower	1	Medium Temp Freezer (0F to 30F)	Bally	BESA0211	7	Yes	No	No	0.0	412	0	$64	$303	$40	4.1

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
Kitchen	2	Stand-Up Freezer, Glass Door (>50 cu. ft.)			No		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	1	Stand-Up Refrigerator, Solid Door (>50 cu. ft.)			No		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	1	Stand-Up Refrigerator, Solid Door (31 - 50 cu. ft.)			No		No	0.0	0	0	$0	$0	$0	0.0

Cooking Equipment Inventory & Recommendations

	Existing Conditions					Proposed Conditions		Energy Impact & Financial Analysis						
Location	Quantity	Equipment Type	Manufacturer	Model	High Efficiency Equipement?	ECM #	Install High Efficiency Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen	1	Gas Combination Oven/Steam Cooker (15 - 28 Pans)	Cleveland		No		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	1	Gas Convection Oven (Full Size)	Southbend		No		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	1	Gas Griddle (3 Feet Width)	Cleveland		No		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	4	Insulated Food Holding Cabinet (3/4 Size)	Witco, Lakeside		No		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	1	Gas Rack Oven (Single)	Southbend		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
PS NO.3	8	Coffee Machine	400	No		
PS NO.3	128	Desktop	145	No		
PS NO.3	14	Laptop cart	50	No		
PS NO.3	9	Microwave	900	No		
PS NO.3	1	Deli Slicer	200	No		
PS NO.3	2	Paper shredder	200	No		
PS NO.3	87	Printer Medium	80	No		
PS NO.3	3	Printer-Copier	200	No		
PS NO.3	2	Projector	250	No		
PS NO.3	8	Refrigerator mini	60	No		
PS NO.3	2	Refrigerator residential	220	No		
PS NO.3	4	Serving table	1,500	No		
PS NO.3	55	Smart Board	5	No		
PS NO.3	2	Television	100	No		
PS NO.3	1	Toaster Oven	1,200	No		
PS NO.3	1	Water cooler	550	No		

Custom (High Level) Measure Analysis

Retro-Commissioning Study

Building Square Footage	110,120		Fuel Utility Rate	$9.689	MMBtu
Percent of Conditioned Area Impacted	90%		Blended Electric Utility Rate	$0.156	kWh

Existing Conditions						Proposed Conditions					Energy Impact & Financial Analysis										
Description	Area(s)/System(s) Served	Remaining Useful Life	Total HVAC Motor Usage kWh	Total HVAC Electric Usage kWh	Total HVAC Fuel Usage MMBtu	Description	% Savings HVAC Motor Usage kWh	% Savings HVAC Electric Usage kWh	% Savings HVAC Fuel Usage MMBtu	Estimated Cost per Sqft	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Base Incentives	Enhanced Incentives	Total Incentives	Total Net Cost	Payback w/o Incentives in Years	Simple Payback w/ Incentives in Years
HVAC Controls Not Currently Optimized	HVAC Equipment & Systems	3	392,211	316,892	2,396	Retro-Commissioning Study	3%	3%	3%	$0.30	0.00	21,273	72	$4,025	$29,732	$0	$0	$0	$29,732	7.39	7.39

APPENDIX B: ENERGY STAR STATEMENT OF ENERGY PERFORMANCE

Energy use intensity (EUI) is presented in terms of *site energy* and *source energy*. Site energy is the amount of fuel and electricity consumed by a building as reflected in utility bills. Source energy includes fuel consumed to generate electricity consumed at the site, factoring in electric production and distribution losses for the region.

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ENERGY STAR® Statement of Energy Performance

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ENERGY STAR® Score[1]

West New York Public School No. 3 (Robert Menendez)

Primary Property Type: K-12 School
Gross Floor Area (ft²): 110,120
Built: 2012

For Year Ending: December 31, 2019
Date Generated: October 18, 2021

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
West New York Public School No. 3 (Robert Menendez) 600 55th Street West New York, New Jersey 07093	West New York Board of Education 6028 Broadway West New York, NJ 07093 (201) 553-4000	Dean Austin 6028 Broadway West New York, NJ 07093 (201) 553-4000 x 30063 daustin@wnyschools.net

Property ID: 15337584

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
65.6 kBtu/ft²

Source EUI
133.1 kBtu/ft²

Annual Energy by Fuel	
Electric - Solar (kBtu)	296,673 (4%)
Natural Gas (kBtu)	2,879,412 (40%)
Electric - Grid (kBtu)	4,048,515 (56%)

National Median Comparison	
National Median Site EUI (kBtu/ft²)	60.6
National Median Source EUI (kBtu/ft²)	122.8
% Diff from National Median Source EUI	8%
Annual Emissions	
Greenhouse Gas Emissions (Metric Tons CO2e/year)	556

Signature & Stamp of Verifying Professional

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

LP Signature: _____ Date: _____

Licensed Professional

___ _____
,
(___)___-_____
_____

Professional Engineer or Registered Architect Stamp (if applicable)

APPENDIX C: GLOSSARY

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

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

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