Local Government Energy Audit Report

Dr. Michael Conti School

October 22, 2021

Prepared for:

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Disclaimer

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

TRC 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.

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

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

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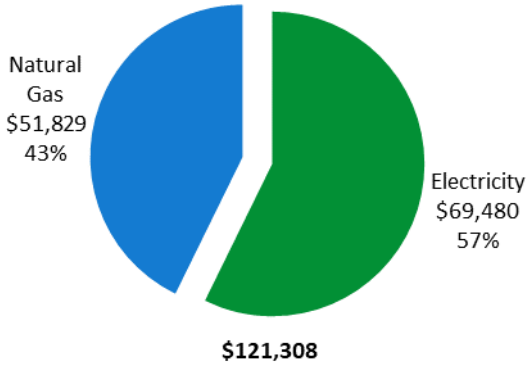
1 EXECUTIVE SUMMARY

The New Jersey Board of Public Utilities (NJBPU) has sponsored this Local Government Energy Audit (LGEA) report for Dr. Michael Conti School. 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: $121,308 Electricity: 680,783 kWh Natural Gas: 62,864 Therms	
ENERGY STAR® Benchmarking Score	67 *(1-100 scale)*	Congratulations, your building performs better than the national average. This report has suggestions about how to keep your building running efficiently, further improve performance, and lower your energy bills even more.

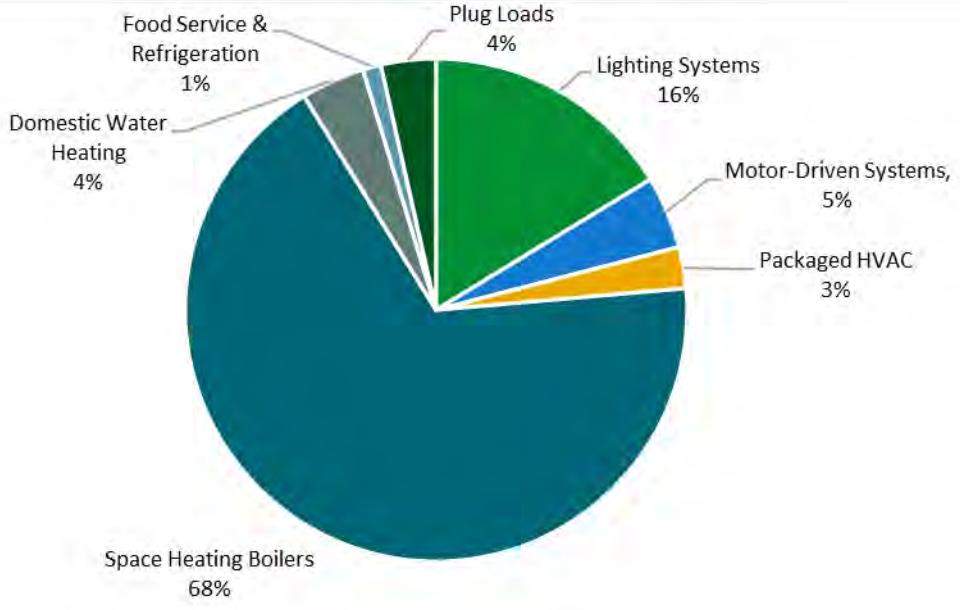


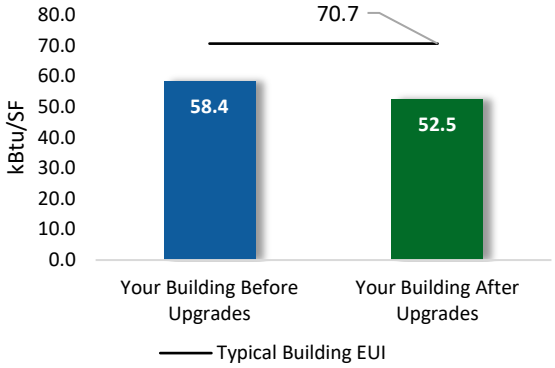
Figure 1 - Energy Use by System

POTENTIAL IMPROVEMENTS

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

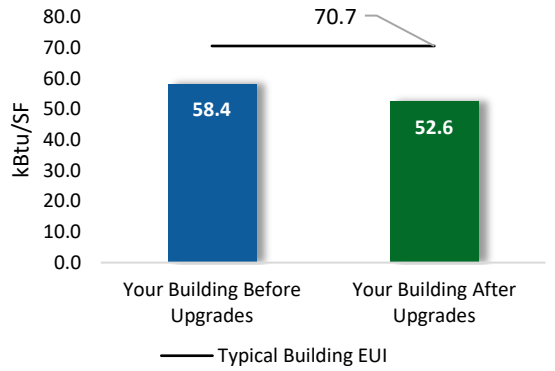
Scenario 1: Full Package (all evaluated measures)

Installation Cost	$134,368
Potential Rebates & Incentives[1]	$27,670
Annual Cost Savings	$25,862
Annual Energy Savings	Electricity: 256,914 kWh Natural Gas: -434 Therms
Greenhouse Gas Emission Savings	127 Tons
Simple Payback	4.1 Years
Site Energy Savings (all utilities)	10%



Scenario 2: Cost Effective Package[2]

Installation Cost	$122,428
Potential Rebates & Incentives	$27,470
Annual Cost Savings	$25,589
Annual Energy Savings	Electricity: 254,235 kWh Natural Gas: -434 Therms
Greenhouse Gas Emission Savings	125 Tons
Simple Payback	3.7 Years
Site Energy Savings (all utilities)	10%



On-site Generation Potential

Photovoltaic	High
Combined Heat and Power	None

[1] Incentives are based on current SmartStart Prescriptive incentives. Other Program incentives may apply.

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

#	Energy Conservation Measure	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			**201,122**	**36.7**	**-46**	**$20,145**	**$88,547**	**$22,167**	**$66,380**	**3.3**	**197,112**
ECM 1	Install LED Fixtures	Yes	6,389	2.0	-1	$640	$8,653	$765	$7,888	12.3	6,261
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	908	0.3	0	$91	$772	$120	$652	7.2	890
ECM 3	Retrofit Fixtures with LED Lamps	Yes	193,825	34.4	-45	$19,414	$79,122	$21,282	$57,840	3.0	189,960
Lighting Control Measures			**47,411**	**8.5**	**-11**	**$4,749**	**$32,146**	**$4,635**	**$27,511**	**5.8**	**46,466**
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	45,487	8.3	-10	$4,556	$30,796	$3,330	$27,466	6.0	44,580
ECM 5	Install High/Low Lighting Controls	Yes	1,924	0.2	0	$193	$1,350	$1,305	$45	0.2	1,886
Motor Upgrades			**1,730**	**0.4**	**0**	**$177**	**$6,223**	**$0**	**$6,223**	**35.3**	**1,742**
ECM 6	Premium Efficiency Motors	No	1,730	0.4	0	$177	$6,223	$0	$6,223	35.3	1,742
Variable Frequency Drive (VFD) Measures			**949**	**0.1**	**0**	**$97**	**$5,717**	**$200**	**$5,517**	**57.0**	**956**
ECM 7	Install VFDs on Condensate Pumps	No	949	0.1	0	$97	$5,717	$200	$5,517	57.0	956
Domestic Water Heating Upgrade			**0**	**0.0**	**14**	**$113**	**$208**	**$208**	**$0**	**0.0**	**1,611**
ECM 8	Install Low-Flow DHW Devices	Yes	0	0.0	14	$113	$208	$208	$0	0.0	1,611
Food Service & Refrigeration Measures			**5,702**	**0.7**	**0**	**$582**	**$1,527**	**$460**	**$1,067**	**1.8**	**5,742**
ECM 9	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	524	0.1	0	$54	$607	$160	$447	8.3	528
ECM 10	Vending Machine Control	Yes	5,178	0.6	0	$528	$920	$300	$620	1.2	5,214
TOTALS (COST EFFECTIVE MEASURES)			**254,235**	**45.8**	**-43**	**$25,589**	**$122,428**	**$27,470**	**$94,958**	**3.7**	**250,931**
TOTALS (ALL MEASURES)			**256,914**	**46.3**	**-43**	**$25,862**	**$134,368**	**$27,670**	**$106,698**	**4.1**	**253,628**

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

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

Figure 2 – Evaluated Energy Improvements

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

New Jersey's Clean Energy Programs give you the flexibility to do a little or a lot. Rebates, incentives, and financing are available to help reduce both your installation costs and your energy bills. If you are planning to take advantage of these programs, make sure to review incentive program guidelines before proceeding. This is important because in most cases you will need to submit applications for the incentives before purchasing materials or starting installation.

The potential ECMs identified for this building likely qualify for multiple incentive and funding programs. Based on current program rules and requirements, your measures are likely to qualify for the following programs:

Energy Conservation Measure		SmartStart	Direct Install	Pay For Performance
ECM 1	Install LED Fixtures	x	x	
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	x	x	
ECM 3	Retrofit Fixtures with LED Lamps	x	x	
ECM 4	Install Occupancy Sensor Lighting Controls	x	x	
ECM 5	Install High/Low Lighting Controls	x	x	
ECM 6	Premium Efficiency Motors		x	
ECM 7	Install VFDs on Condensate Pumps	x	x	
ECM 8	Install Low-Flow DHW Devices	x	x	
ECM 9	Refrigerator/Freezer Case Electrically Commutated	x	x	
ECM 10	Vending Machine Control	x	x	

Figure 3 – Funding Options

New Jersey's Clean Energy Programs At-A-Glance

	SmartStart Flexibility to install at your own pace	**Direct Install** Turnkey installation	**Pay for Performance** Whole building upgrades
Who should use it?	Buildings installing individual measures or small group of measures.	Small to mid-size facilities that can bundle multiple measures together. Average peak demand should be below 200 kW. Not suitable for significant building shell issues.	Mid to large size facilities looking to implement as many measures as possible at one time. Peak demand should be over 200 kW.
How does it work?	Use in-house staff or your preferred contractor.	Pre-approved contractors pass savings along to you via reduced material and labor costs.	Whole-building approach to energy upgrades designed to reduce energy use by at least 15%. The more you save, the higher the incentives.
What are the Incentives?	Fixed incentives for specific energy efficiency measures.	Incentives pay up to 70% of eligible costs, up to $125,000 per project. You pay the remaining 30% directly to the contractor.	Incentives are paid out in three installments. The first installment is meant to help offset the costs of the initial engineering study. The subsequent incentives are paid based on the level of energy savings up to 50% of the total project cost. See Section 7.3 for all incentive details.
How do I participate?	Submit an application for the specific equipment to be installed.	Contact a participating contractor in your region.	Contact a pre-qualified Partner to develop your Energy Reduction Plan and set your energy savings targets.

Take the next step by visiting **www.njcleanenergy.com** for program details, applications, and to contact a qualified contractor.

Individual Measures with SmartStart

For facilities wishing to pursue only selected individual measures (or planning to phase implementation of selected measures over multiple years), incentives are available through the SmartStart program. To participate, you can use internal resources or an outside firm or contractor to perform the final design of the ECM(s) and install the equipment. Program pre-approval is required for some SmartStart incentives, so only after receiving pre-approval should you proceed with ECM installation.

Turnkey Installation with Direct Install

The Direct Install program provides turnkey installation of multiple measures through an authorized network of participating contractors. This program can provide substantially higher incentives than SmartStart, up to 70% of the cost of selected measures. Direct Install contractors will assess and verify individual measure eligibility, and, in most cases, they perform the installation work. The Direct Install program is available to sites with an average peak demand of less than 200 kW.

Whole Building Approach with Pay for Performance

Pay for Performance can be a good option for medium to large sized facilities to achieve deep energy savings. Pay for Performance allows you to install as many measures as possible under a single project as well as address measures that may not qualify for other programs. Many facilities pursuing an Energy Savings Improvement Program (ESIP) loan also use this program. Pay for Performance works for larger customers with a peak demand over 200 kW. The minimum installed scope of work must include at least two unique measures resulting in at least 15% energy savings, where lighting cannot make up the majority of the savings.

More Options from Around the State

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

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

Resiliency with Return on Investment through Combined Heat & Power (CHP)

The CHP program provides incentives for combined heat and power (aka cogeneration) and waste heat to power projects. Combined heat and power systems generate power on-site and recover heat from the generation system to meet on-site thermal loads. Waste heat to power systems use waste heat to generate power. You will work with a qualified developer who will design a system that meets your building's heating and cooling needs.

Ongoing Electric Savings with Demand Response

The Demand Response Energy Aggregator program reduces electric loads at commercial facilities when wholesale electricity prices are high or when the reliability of the electric grid is threatened due to peak power demand. By enabling commercial facilities to reduce 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 Dr. Michael Conti School. This report provides information on how your facility uses energy, identifies energy conservation measures (ECMs) that can reduce your energy use, and provides information and assistance to help you implement the ECMs. This report also contains valuable information on financial incentives from New Jersey's Clean Energy Program (NJCEP) for implementing ECMs.

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

2.1 Site Overview

On March 24, 2021, TRC performed an energy audit at Dr. Michael Conti School located in Jersey City, New Jersey. TRC met with Peter Serrano to review the facility operations and help focus our investigation on specific energy-using systems.

Dr. Michael Conti School is a four-story, 148,049 square foot building built in 1919. Spaces include classrooms, offices, library, gymnasium, auditorium, cafeteria, corridors, stairwells, restrooms, storage rooms, and basement electrical and mechanical space.

Lighting is provided mainly by linear fluorescent T8 fixtures. The facility has two gas-fired hot water boilers and several window air conditioning (AC) units that provide heating and cooling to spaces. There is one passenger elevator. There is an abandoned pool at this site; the associated equipment is not used.

2.2 Building Occupancy

The facility is occupied from September through June, with the school year ending for students in June and restarting in September. The weekend occupancies vary, and the facility closes at 10:00 PM. During the winter, a single custodian is in the facility on the weekends for the boiler and maintenance activities. During a typical day, the facility is occupied by approximately 145 staff and 675 students.

Building Name	Weekday/Weekend	Operating Schedule
Dr. Michael Conti School	Weekday	6:00 AM - 10:00 PM
	Weekend	Varies

Figure 4 - Building Occupancy Schedule

2.3 Building Envelope

Dr. Michael Conti School is a four-story building with a basement. The auditorium section of the building consists of three floors, and the gymnasium section of the building consists of two floors. Building walls are concrete block over structural steel with a brick facade. The roof is flat with a black membrane partially covered with gravel pebbles and is in fair condition.

The windows are single glazed and have aluminum frames with thermal breaks. The glass-to-frame seals are in fair condition. The operable window weather seals are in fair condition, showing some evidence of excess wear. Exterior doors have aluminum frames and are in fair condition with worn door seals. Degraded window and door seals increase drafts and outside air infiltration. Overall, the building envelope appears in fair condition.

Building Walls & Windows

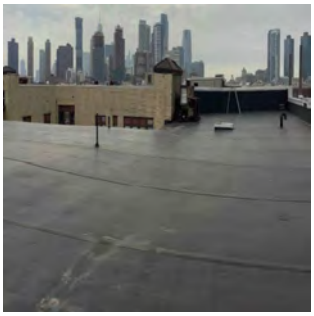
Entrance & Exit Doors

Entrance & Exit Doors

Building Walls & Windows

Building Walls & Windows

Roof with Gravel Pebble Cover



Roof with Membrane Cover

2.4 Lighting Systems

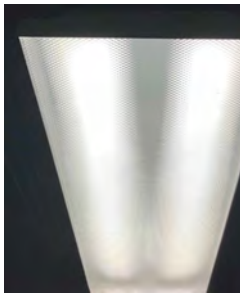
The primary interior lighting system uses 32-Watt linear fluorescent T8 lamps. Fixture types include 1-lamp, 2-lamp, 3-lamp, and 4-lamp, 4-foot long recessed, surface mounted, and pendant fixtures with linear tube lamps. Boiler room fluorescent tube lighting has been replaced with LED sources. Additionally, there are some two-foot T8 fixtures with 17-Watt lamps and eight-foot T12 fixtures with 75-Watt lamps.

A variety of metal halide lamps, LED fixtures, compact fluorescent lamps (CFL), and incandescent lamps are used in various parts of the building. For example, auditorium fixtures incorporate manually controlled incandescent, metal halide, T8 and T12 linear fluorescent fixtures.

Exit signs throughout the building use LED sources.

Lighting in most spaces is controlled by manual wall switches while fixtures in stairwells, most hallways, and several bathrooms are controlled by wall mounted occupancy sensors. All light fixtures are in good condition. Interior lighting levels were generally sufficient.

Exterior fixtures include wall mounted fixtures with LED lamps. Exterior light fixtures are controlled by a timer; however, some were observed to be operating during the day.



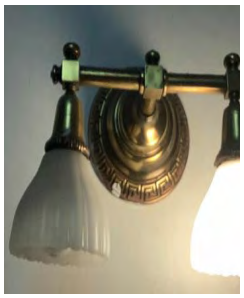
Linear Fluorescent T8 Fixtures

Linear Fluorescent T8 Fixtures

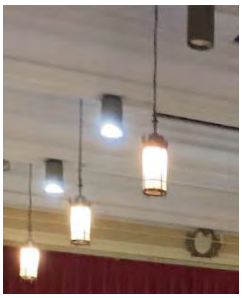
LED Fixture

Occupancy Sensor

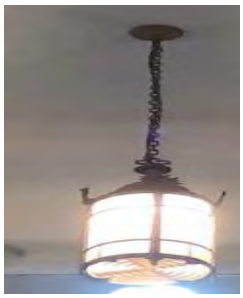
Occupancy Sensor



Auditorium Wall & Ceiling Mounted Fixtures



Auditorium Wall & Ceiling Mounted Fixtures



Auditorium Wall & Ceiling Mounted Fixtures

Exterior Wall Mounted Fixtures

Exterior Wall Mounted Fixtures

2.5 Air Handling Systems

Packaged Units

Classrooms 217 and 218 are served by a single direct exchange packaged air conditioning roof top unit (RTU) with gas-fired heating. The unit has a 96 MBh heating capacity and a 5.0-ton cooling capacity. The unit is in good condition, with an efficiency rating of 12.2 EER.

Packaged RTU

Unitary Electric HVAC Equipment

Dr. Michael Conti School is mainly conditioned by window air conditioning (AC) units. These vary in capacity between 5 MBh and 25 MBh, and range in efficiency between 9.4 EER and 11.9 EER. The units are in good condition, and most were ENERGY STAR® labeled.

Storage room 201 is conditioned by a portable AC unit with a heat pump. The unit has a heating capacity of 10.7 MBh and cooling capacity of 13.5 MBh. The unit is in good condition with an efficiency of 9.5 EER and is not ENERGY STAR® labeled.

Window AC Unit

Portable AC Unit

2.6 Heating Steam Systems

The heating system consists of three Superior gas-fired steam boilers, each with an output capacity of 6,836 MBh. The burners are fully modulating with a nominal efficiency of 80%. The boilers are configured in a lead-lag control scheme. Multiple boilers are required under high load conditions. The boilers provide hot water to cast iron radiators throughout the building. Installed in 1993, they are in fair condition. There is a service contract in place.

A 2-pipe steam distribution system serves the building heating terminals. There are three 2 hp boiler feed pumps and six condensate pumps ranging from 1/3 to 5 hp in the boiler room.

Steam Boiler #1

Steam Boiler #1

Condensate Pumps

Boiler Feed Water Pumps

Boiler Feed Water Pumps

2.7 Domestic Hot Water

Hot water is produced by a 160 MBH gas-fired AO Smith boiler with an 80% efficiency rating. The boiler was installed in 2020 and is in good condition. Hot water is also produced by a heat exchanger with two, 5 hp pumps using steam from the space heating boilers and stored in a large tank. One, 1/15 hp and one, 1/6 hp circulation pump distribute water to end uses. The circulation pumps operate continuously. The domestic hot water pipes are insulated, and the insulation is in good condition.

Hot Water Boiler

Heat Exchanger

Domestic Hot Water Storage Tank

2.8 Food Service Equipment

The cafeteria has a mix of gas and electric equipment that is used to prepare meals for students and staff. All cooking is done using two convection gas-fired ovens. Bulk prepared foods are held in an electric holding cabinet. Equipment is not high efficiency and is in fair condition.

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

Gas-fired Convection Oven

Electric Holding Cabinet

2.9 Refrigeration

The cafeteria has three high-efficiency, stand-up refrigerators with solid doors and two standard-efficiency refrigerator chests. The walk-in medium temperature freezer has a 0.54-ton compressor located on the roof and a two-fan evaporator. The walk-in freezer is equipped with evaporator fan and electric defrost controls. Equipment is in good condition.

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

Stand-Up Refrigerator

Walk-In Freezer

2.10 Plug Load & 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 218 computer workstations throughout the facility. Plug loads throughout the building include general café and office equipment. There are classroom typical loads such as smart boards and projectors, and typical office loads such as copiers, printers, microwaves, coffee machines, and mini fridges.

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

There are three refrigerated beverage vending machines and one non-refrigerated vending machine. Vending machines are not equipped with occupancy-based controls.

Refrigerated Vending Machine

Residential-Style Refrigerator

2.11 Water-Using Systems

There are 29 restrooms with toilets, urinals, and sinks. Faucet flow rates are at 2.2 gallons per minute (gpm) or higher.

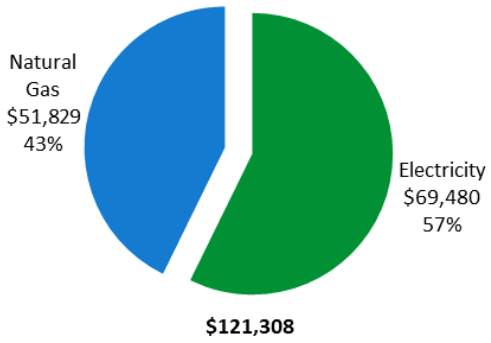
Typical Restroom Sink

Typical Restroom Sink

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	680,783 kWh	$69,480
Natural Gas	62,864 Therms	$51,829
Total		**$121,308**



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

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

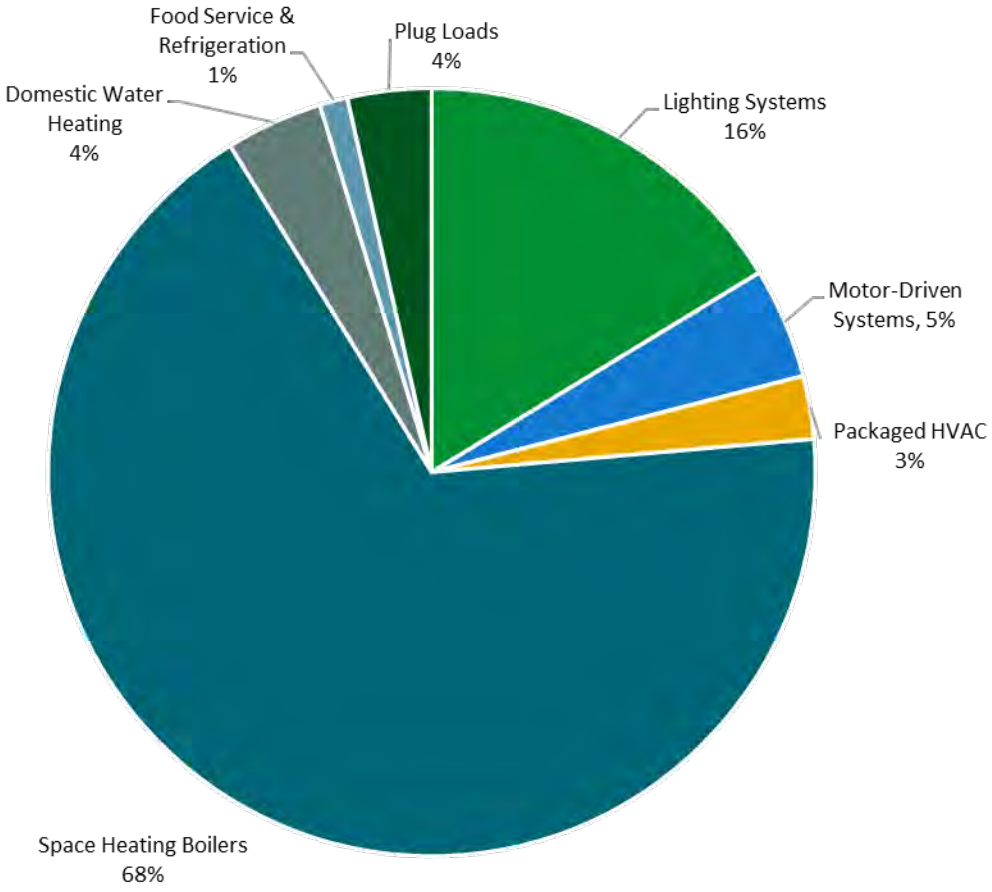
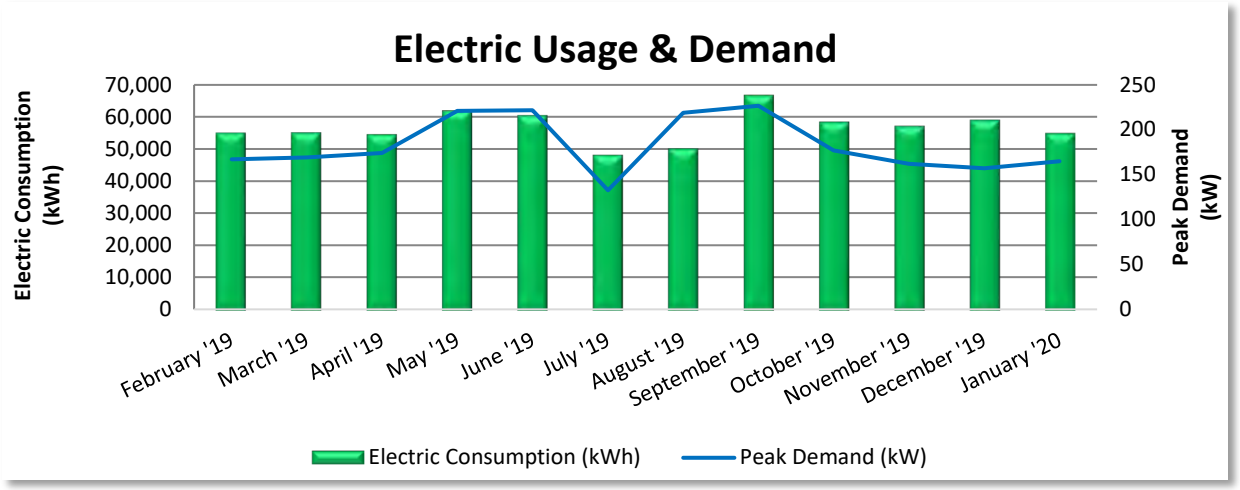


Figure 5 - Energy Balance

3.1 Electricity

PSE&G delivers electricity under rate class Large Power & Lighting Primary (LPLP).



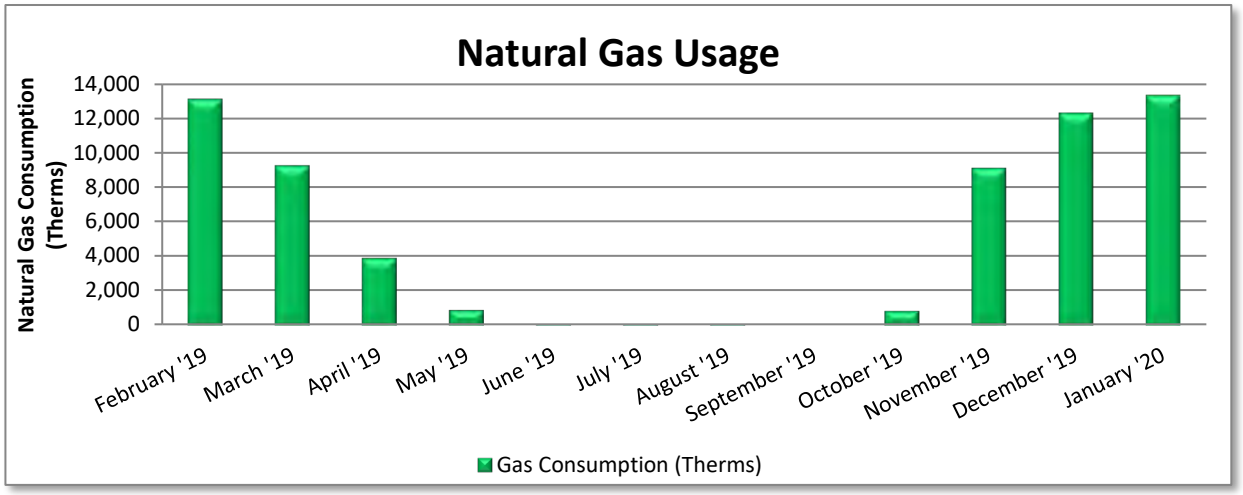
Electric Billing Data					
Period Ending	**Days in Period**	**Electric Usage (kWh)**	**Demand (kW)**	**Demand Cost**	**Total Electric Cost**
3/7/19	30	54,961	167	$293	$5,093
4/5/19	29	55,056	169	$297	$5,102
5/7/19	32	54,486	174	$304	$4,796
6/6/19	30	61,845	221	$2,530	$7,705
7/8/19	32	60,356	222	$2,539	$7,194
8/6/19	29	48,154	133	$1,517	$6,278
9/5/19	30	50,061	219	$2,506	$7,125
10/4/19	29	66,657	227	$397	$6,065
11/4/19	31	58,326	177	$310	$4,370
12/5/19	31	57,059	162	$284	$5,431
1/7/20	33	58,956	157	$275	$5,477
2/5/20	29	54,866	165	$289	$4,843
Totals	**365**	**680,783**	**227**	**$11,541**	**$69,480**
Annual	**365**	**680,783**	**227**	**$11,541**	**$69,480**

Notes:

- Peak demand of 227 kW occurred in September 2019.
- Average demand over the past 12 months was 183 kW.
- The average electric cost over the past 12 months was $0.102/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.
- There was a drop-in electricity usage for July ’19 and August ’19, which corresponds with reduced summer occupancy.

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**
3/6/19	30	13,106	$11,445
4/4/19	29	9,256	$5,676
5/6/19	32	3,897	$2,419
6/5/19	30	890	$645
7/5/19	30	49	$165
8/5/19	31	51	$164
9/4/19	30	51	$164
10/3/19	29	0	$138
11/1/19	29	833	$2,492
12/4/19	33	9,113	$8,072
1/6/20	33	12,291	$10,042
2/4/20	29	13,328	$10,407
Totals	**365**	**62,864**	**$51,829**
Annual	**365**	**62,864**	**$51,829**

Notes:

- The average gas cost for the past 12 months is $0.824/therm, which is the blended rate used throughout the analysis.
- There is minimal natural gas consumption from May to October which reflects usage for domestic hot water and food service equipment.

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	67

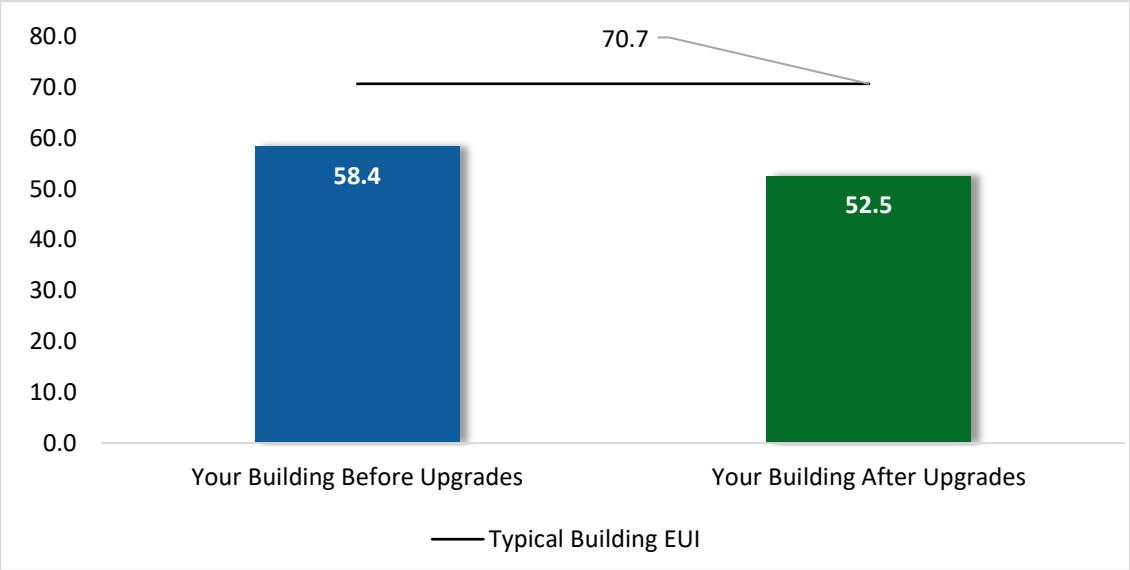


Figure 6 - Energy Use Intensity Comparison[3]

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

Energy use intensity (EUI) measures energy consumption per square foot and is the standard metric for comparing buildings' energy performance. A lower EUI means better performance and less energy consumed. A number of factors can cause a building to vary from the "typical" energy usage. Local weather conditions, building age and insulation levels, equipment efficiency, daily occupancy hours, changes in occupancy throughout the year, equipment operating hours, and occupant behavior all contribute to a building's energy use and the benchmarking score.

[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].

[4] https://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/earn-recognition/energy-star-certification/how-app-1.

4 Energy Conservation Measures

The goal of this audit report is to identify and evaluate potential energy efficiency improvements, provide information about the cost effectiveness of those improvements, and recognize potential financial incentives from NJBPU. Most energy conservation measures have received preliminary analysis of feasibility which identifies expected ranges of savings and costs. This level of analysis is typically sufficient to demonstrate project cost-effectiveness and help prioritize energy measures.

Calculations of energy use and savings are based on the current version of the *New Jersey's Clean Energy Program Protocols to Measure Resource Savings*, which is approved by the NJBPU. Further analysis or investigation may be required to calculate more precise savings based on specific circumstances.

Operation and maintenance costs for the proposed new equipment will generally be lower than the current costs for the existing equipment—especially if the existing equipment is at or past its normal useful life. We have conservatively assumed there to be no impact on overall maintenance costs over the life of the equipment.

Financial incentives are based on the current NJCEP prescriptive SmartStart program. A higher level of investigation may be necessary to support any SmartStart Custom, Pay for Performance, or Direct Install incentive applications. Some measures and proposed upgrades may be eligible for higher incentives than those shown below through other NJCEP programs described in a following section of this report.

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

#	Energy Conservation Measure	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			**201,122**	**36.7**	**-46**	**$20,145**	**$88,547**	**$22,167**	**$66,380**	**3.3**	**197,112**
ECM 1	Install LED Fixtures	Yes	6,389	2.0	-1	$640	$8,653	$765	$7,888	12.3	6,261
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	908	0.3	0	$91	$772	$120	$652	7.2	890
ECM 3	Retrofit Fixtures with LED Lamps	Yes	193,825	34.4	-45	$19,414	$79,122	$21,282	$57,840	3.0	189,960
Lighting Control Measures			**47,411**	**8.5**	**-11**	**$4,749**	**$32,146**	**$4,635**	**$27,511**	**5.8**	**46,466**
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	45,487	8.3	-10	$4,556	$30,796	$3,330	$27,466	6.0	44,580
ECM 5	Install High/Low Lighting Controls	Yes	1,924	0.2	0	$193	$1,350	$1,305	$45	0.2	1,886
Motor Upgrades			**1,730**	**0.4**	**0**	**$177**	**$6,223**	**$0**	**$6,223**	**35.3**	**1,742**
ECM 6	Premium Efficiency Motors	No	1,730	0.4	0	$177	$6,223	$0	$6,223	35.3	1,742
Variable Frequency Drive (VFD) Measures			**949**	**0.1**	**0**	**$97**	**$5,717**	**$200**	**$5,517**	**57.0**	**956**
ECM 7	Install VFDs on Condensate Pumps	No	949	0.1	0	$97	$5,717	$200	$5,517	57.0	956
Domestic Water Heating Upgrade			**0**	**0.0**	**14**	**$113**	**$208**	**$208**	**$0**	**0.0**	**1,611**
ECM 8	Install Low-Flow DHW Devices	Yes	0	0.0	14	$113	$208	$208	$0	0.0	1,611
Food Service & Refrigeration Measures			**5,702**	**0.7**	**0**	**$582**	**$1,527**	**$460**	**$1,067**	**1.8**	**5,742**
ECM 9	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	524	0.1	0	$54	$607	$160	$447	8.3	528
ECM 10	Vending Machine Control	Yes	5,178	0.6	0	$528	$920	$300	$620	1.2	5,214
TOTALS			**256,914**	**46.3**	**-43**	**$25,862**	**$134,368**	**$27,670**	**$106,698**	**4.1**	**253,628**

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

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

Figure 7 – All Evaluated ECMs

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		**201,122**	**36.7**	**-46**	**$20,145**	**$88,547**	**$22,167**	**$66,380**	**3.3**	**197,112**
ECM 1	Install LED Fixtures	6,389	2.0	-1	$640	$8,653	$765	$7,888	12.3	6,261
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	908	0.3	0	$91	$772	$120	$652	7.2	890
ECM 3	Retrofit Fixtures with LED Lamps	193,825	34.4	-45	$19,414	$79,122	$21,282	$57,840	3.0	189,960
Lighting Control Measures		**47,411**	**8.5**	**-11**	**$4,749**	**$32,146**	**$4,635**	**$27,511**	**5.8**	**46,466**
ECM 4	Install Occupancy Sensor Lighting Controls	45,487	8.3	-10	$4,556	$30,796	$3,330	$27,466	6.0	44,580
ECM 5	Install High/Low Lighting Controls	1,924	0.2	0	$193	$1,350	$1,305	$45	0.2	1,886
Domestic Water Heating Upgrade		**0**	**0.0**	**14**	**$113**	**$208**	**$208**	**$0**	**0.0**	**1,611**
ECM 8	Install Low-Flow DHW Devices	0	0.0	14	$113	$208	$208	$0	0.0	1,611
Food Service & Refrigeration Measures		**5,702**	**0.7**	**0**	**$582**	**$1,527**	**$460**	**$1,067**	**1.8**	**5,742**
ECM 9	Refrigerator/Freezer Case Electrically Commutated Motors	524	0.1	0	$54	$607	$160	$447	8.3	528
ECM 10	Vending Machine Control	5,178	0.6	0	$528	$920	$300	$620	1.2	5,214
TOTALS		**254,235**	**45.8**	**-43**	**$25,589**	**$122,428**	**$27,470**	**$94,958**	**3.7**	**250,931**

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

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

Figure 8 – Cost Effective ECMs

4.1 Lighting

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		**201,122**	**36.7**	**-46**	**$20,145**	**$88,547**	**$22,167**	**$66,380**	**3.3**	**197,112**
ECM 1	Install LED Fixtures	6,389	2.0	-1	$640	$8,653	$765	$7,888	12.3	6,261
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	908	0.3	0	$91	$772	$120	$652	7.2	890
ECM 3	Retrofit Fixtures with LED Lamps	193,825	34.4	-45	$19,414	$79,122	$21,282	$57,840	3.0	189,960

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

ECM 1: Install LED Fixtures

Replace existing fixtures containing high intensity discharge (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 fixtures.

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

Affected building areas: auditorium and gas meter room fixtures.

ECM 2: Retrofit Fluorescent Fixtures with LED Lamps and Drivers

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

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

Affected building areas: auditorium fluorescent fixtures with T12 tubes.

ECM 3: Retrofit Fixtures with LED Lamps

Replace fluorescent, CFL, and incandescent lamps with LED lamps. Many LED tubes are direct replacements for existing fluorescent tubes and can be installed while leaving the fluorescent fixture ballast in place. LED lamps can be used in existing fixtures as a direct replacement for most other lighting technologies.

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 incandescent lamps, storage rooms using 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		**47,411**	**8.5**	**-11**	**$4,749**	**$32,146**	**$4,635**	**$27,511**	**5.8**	**46,466**
ECM 4	Install Occupancy Sensor Lighting Controls	45,487	8.3	-10	$4,556	$30,796	$3,330	$27,466	6.0	44,580
ECM 5	Install High/Low Lighting Controls	1,924	0.2	0	$193	$1,350	$1,305	$45	0.2	1,886

Lighting controls reduce energy use by turning off or lowering lighting fixture power levels when not in use. A comprehensive approach to lighting design should upgrade the lighting fixtures and the controls together for maximum energy savings and improved lighting for occupants.

ECM 4: Install Occupancy Sensor Lighting Controls

Install occupancy sensors to control lighting fixtures in areas that are frequently unoccupied, even for short periods. For most spaces, we recommend that lighting controls use dual technology sensors, which reduce the possibility of lights turning off unexpectedly.

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

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

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

Affected building areas: offices, classrooms, auditorium, gymnasium, library, lounges, and restrooms.

ECM 5: Install High/Low Lighting Controls

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

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

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

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

Affected building areas: basement hallways.

For this type of measure the occupancy sensors will generally be ceiling or fixture mounted. Sufficient sensor coverage must be provided to ensure that lights turn on in each area as an occupant approaches.

4.3 Motors

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Motor Upgrades		**1,730**	**0.4**	**0**	**$177**	**$6,223**	**$0**	**$6,223**	**35.3**	**1,742**
ECM 6	Premium Efficiency Motors	1,730	0.4	0	$177	$6,223	$0	$6,223	35.3	1,742

ECM 6: Premium Efficiency Motors

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

Affected motors on next page:

Location	Area(s)/System(s) Served	Motor Quantity	Motor Application	HP Per Motor	Additional Motor Description
Roof	Gymnasium	1	Exhaust Fan	0.5	EF 1 Gym
Roof	Exhaust Fan 18a	1	Exhaust Fan	1.0	EF 18a
Roof	Exhaust Fan 18b	1	Exhaust Fan	1.0	EF 18b
Roof	Exhaust Fan 1a	1	Exhaust Fan	0.5	EF 1a
Roof	Exhaust Fan 19a	1	Exhaust Fan	0.5	EF 19a
Roof	Exhaust Fan 19b	1	Exhaust Fan	0.5	EF 19b
Roof	Exhaust Fan 22a	1	Exhaust Fan	0.3	EF 22a
Roof	Exhaust Fan 20a	1	Exhaust Fan	0.3	EF 20a
Roof	Exhaust Fan 20b	1	Exhaust Fan	0.3	EF 20b
Roof	Exhaust Fan 21a	1	Exhaust Fan	0.3	EF 21a
Roof	Exhaust Fan 21b	1	Exhaust Fan	0.3	EF 21b
Roof	Exhaust Fan 22b	1	Exhaust Fan	0.3	EF 22b

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

4.4 Variable Frequency Drives (VFD)

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Variable Frequency Drive (VFD) Measures		**949**	**0.1**	**0**	**$97**	**$5,717**	**$200**	**$5,517**	**57.0**	**956**
ECM 7	Install VFDs on Condensate Pumps	949	0.1	0	$97	$5,717	$200	$5,517	57.0	956

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

ECM 7: Install VFDs on Condensate Pumps

We evaluated installing VFDs to control the condensate return pump(s). The condensate pump flow will have to be controlled to work in conjunction with the boiler feed water pump. The VFD control feedback should be based on a pressure transducer located in the main steam header. Before implementing this measure co-ordinate with the pump and boiler manufacturer.

Energy savings result from reducing the pump motor speed (and power) at reduced condensate flow from the condensate receiver. The magnitude of energy savings is based on the estimated amount of time that the pumping system will operate at reduced load.

4.5 Domestic Water Heating

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Domestic Water Heating Upgrade		**0**	**0.0**	**14**	**$113**	**$208**	**$208**	**$0**	**0.0**	**1,611**
ECM 8	Install Low-Flow DHW Devices	0	0.0	14	$113	$208	$208	$0	0.0	1,611

ECM 8: Install Low-Flow DHW Devices

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

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

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

4.6 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		**5,702**	**0.7**	**0**	**$582**	**$1,527**	**$460**	**$1,067**	**1.8**	**5,742**
ECM 9	Refrigerator/Freezer Case Electrically Commutated Motors	524	0.1	0	$54	$607	$160	$447	8.3	528
ECM 10	Vending Machine Control	5,178	0.6	0	$528	$920	$300	$620	1.2	5,214

ECM 9: Refrigerator/Freezer Case Electrically Commutated Motors

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

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

ECM 10: Vending Machine Control

Vending machines operate continuously, even during unoccupied hours. Install occupancy sensor controls to reduce energy use. These controls power down vending machines when the vending machine area has been vacant for some time, and they power up the machines at necessary regular intervals or when the surrounding area is occupied. Energy savings are dependent on the vending machine and activity level in the area surrounding the machines.

5 Energy Efficient Best Practices

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

Operation and maintenance (O&M) plans enhance the operational efficiency of HVAC and other energy intensive systems and could save between 5 to 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, planned capital upgrades, and 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 will 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 can't manage what you don't measure. ENERGY STAR® Portfolio Manager® is an online tool that you can use to measure and track energy and water consumption, as well as greenhouse gas emissions[5]. Your account has already been established. Now you can continue to keep tabs on your energy performance every month.

Weatherization

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

Doors and Windows

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

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

Lighting Maintenance

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

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

Lighting Controls

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

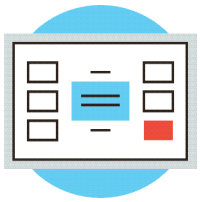
Motor Maintenance

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

Fans to Reduce Cooling Load

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

Thermostat Schedules and Temperature Resets



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

Economizer Maintenance

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

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

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.

Ductwork Maintenance

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

The biggest symptoms of clogged air ducts are differing temperatures throughout the building and areas with limited airflow from supply registers. If a particular air duct is clogged, then air flow will only be cut off to some rooms in the building - not all of them. The reduced airflow will make it more difficult for those areas to reach the temperature setpoint which will cause the HVAC system to run longer to cool or heat that area properly. If you suspect clogged air ducts, ensure that all areas in front of supply registers are clear of items that may block or restrict air flow, and check for fire dampers or balancing dampers that have failed closed.

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

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

Steam Trap Repair and Replacement

Steam traps are a crucial part of delivering heat from the boiler to the space heating units. Steam traps are automatic valves that remove condensate from the system. If the traps fail closed, condensate can build up in the steam supply side of the trap which reduces the flow in the steam lines and thermal capacity of the radiators. Or they may fail open, allowing steam into the condensate return lines resulting in wasted energy, water and hammering. Losses can be significantly reduced by testing and replacing equipment as they start to fail. Repair or replace traps that are blocked or allowing steam to pass. Inspect steam traps as part of a regular steam system maintenance plan.

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.

Water Heater Maintenance

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

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

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

Water Conservation

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

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

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

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

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

Procurement Strategies

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

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

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

6 On-site Generation

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

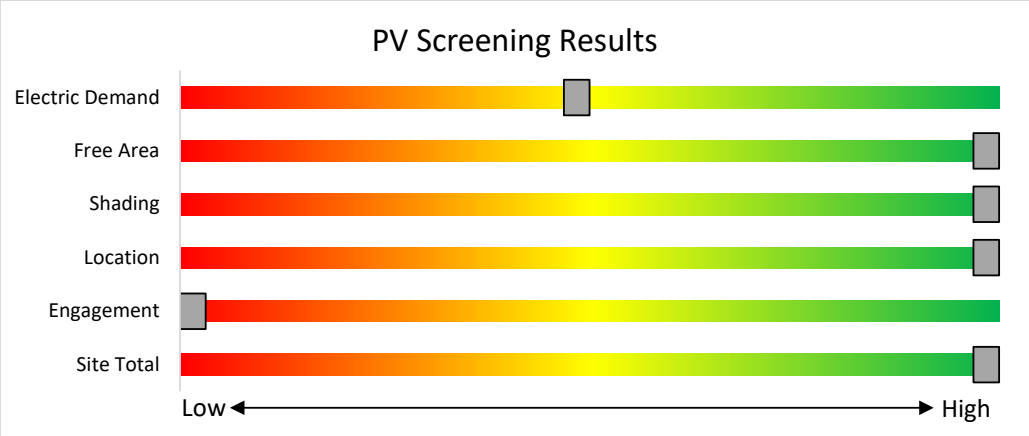
6.1 Solar Photovoltaic

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 the high potential. A PV array located on the roof may be feasible. If you are interested in pursuing the installation of PV, we recommend conducting a full feasibility study.

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



Potential	High	
System Potential	183	kW DC STC
Electric Generation	218,021	kWh/yr
Displaced Cost	$22,250	/yr
Installed Cost	$475,800	

Figure 9 - Photovoltaic Screening

Transition Incentive (TI) Program

The TI program is a bridge between the Legacy SREC Program and a to-be determined Successor Incentive Program. The program is used to register the intent to install solar projects in New Jersey. Rebates are not available for solar projects, but owners of solar projects *must* register their projects prior to the start of construction to establish the project's eligibility to earn TRECs (Transition Incentive Renewable Energy Certificates). The Transition Incentive is structured as a factorized renewable energy certificate. The factors allow the TI Program to provide differentiated financial incentives for different types of solar installation.

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:

Transition Incentive (TI) Program: https://www.njcleanenergy.com/renewable-energy/programs/transition-incentive-program

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

6.2 Combined Heat and Power

Combined heat and power (CHP) generates electricity at the facility and puts waste heat energy to good use. Common types of CHP systems are reciprocating engines, microturbines, fuel cells, backpressure steam turbines, and (at large facilities) gas turbines.

CHP systems typically produce a portion of the electric power used on-site, with the balance of electric power needs supplied by the local utility company. The heat is used to supplement (or replace) existing boilers and provide space heating and/or domestic hot water heating. Waste heat can also be routed through absorption chillers for space cooling.

The key criteria used for screening is the amount of time that the CHP system would operate at full load and the facility's ability to use the recovered heat. Facilities with a continuous need for large quantities of waste heat are the best candidates for CHP.

A preliminary screening based on heating and electrical demand, siting, and interconnection shows that the facility has no potential for installing a cost-effective CHP system.

Based on a preliminary analysis, the facility does not appear to meet the minimum requirements for a cost-effective CHP installation. The lack of gas service, low or infrequent thermal load, and lack of space for siting the equipment are the most significant factors contributing to the lack of CHP potential.

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

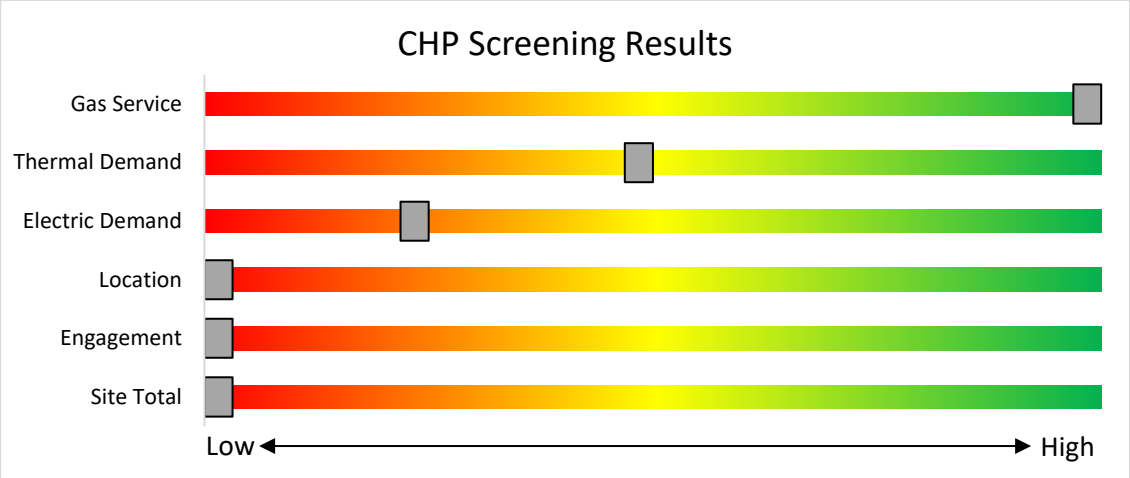


Figure 10 - Combined Heat and Power Screening

Find a qualified firm that specializes in commercial CHP cost assessment and installation: http://www.njcleanenergy.com/commercial-industrial/programs/nj-smartstart-buildings/tools-and-resources/tradeally/approved_vendorsearch/

7 PROJECT FUNDING AND INCENTIVES

Ready to improve your building's performance? New Jersey's Clean Energy Programs can help. Pick the program that works best for you. Incentive programs that may apply to this facility are identified in the Executive Summary. This section provides an overview of currently available New Jersey Clean Energy Programs.

	SmartStart *Flexibility to install at your own pace*	**Direct Install** *Turnkey installation*	**Pay for Performance** *Whole building upgrades*
Who should use it?	Buildings installing individual measures or small group of measures.	Small to mid-size facilities that can bundle multiple measures together. Average peak demand should be below 200 kW. Not suitable for significant building shell issues.	Mid to large size facilities looking to implement as many measures as possible at one time. Peak demand should be over 200 kW.
How does it work?	Use in-house staff or your preferred contractor.	Pre-approved contractors pass savings along to you via reduced material and labor costs.	Whole-building approach to energy upgrades designed to reduce energy use by at least 15%. The more you save, the higher the incentives.
What are the Incentives?	Fixed incentives for specific energy efficiency measures.	Incentives pay up to 70% of eligible costs, up to $125,000 per project. You pay the remaining 30% directly to the contractor.	Incentives are paid out in three installments. The first installment is meant to help offset the costs of the initial engineering study. The subsequent incentives are paid based on the level of energy savings up to 50% of the total project cost. See Section 7.3 for all incentive details.
How do I participate?	Submit an application for the specific equipment to be installed.	Contact a participating contractor in your region.	Contact a pre-qualified Partner to develop your Energy Reduction Plan and set your energy savings targets.
Take the next step by visiting **www.njcleanenergy.com** for program details, applications, and to contact a qualified contractor.			

7.1 SmartStart

SmartStart offers incentives for installing prescriptive and custom energy efficiency measures at your facility. This program provides an effective mechanism for securing incentives for energy efficiency measures installed individually or as part of a package of energy upgrades. This program serves most common equipment types and sizes.

SmartStart routinely adds, removes, or modifies incentives from year-to-year for various energy-efficient equipment based on market trends and new technologies.

Equipment with Prescriptive Incentives Currently Available:

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

Incentives

The SmartStart Prescriptive program provides fixed incentives for specific energy efficiency measures. Prescriptive incentives vary by equipment type.

SmartStart Custom provides incentives for more unique or specialized technologies or systems that are not addressed through prescriptive incentives. Custom incentives are calculated at $0.16/kWh and $1.60/therm based on estimated annual savings. Incentives are capped at 50% of the total installed incremental project cost, or a project cost buy down to a one-year payback (whichever is less). Program incentives are capped at $500,000 per electric account and $500,000 per natural gas account, per fiscal year.

How to Participate

Submit an application for the specific equipment to be installed. Many applications are designed as rebates, although others require application approval prior to installation. You can work with your preferred contractor or use internal staff to install measures.

Visit www.njcleanenergy.com/SSB for a detailed program description, instructions for applying, and applications.

7.2 Direct Install

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

Incentives

The program pays up to 70% of the total installed cost of eligible measures, up to $125,000 per project. Each entity is limited to incentives up to $250,000 per fiscal year.

How to Participate

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

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

7.3 Pay for Performance - Existing Buildings

Pay for Performance works for larger customers with a peak demand over 200 kW. The minimum installed scope of work must include at least two unique measures that results in at least 15% source energy savings, and lighting cannot make up the majority of the savings.

P4P is a generally a good option for medium-to-large sized facilities looking to implement as many measures as possible under a single project to achieve deep energy savings. This program has an added benefit of addressing measures that may not qualify for other programs. Many facilities pursuing an Energy Savings Improvement Program loan also use this program.

Based on the site building and utility data provided, the facility does not meet the requirements of the current P4P program.

Incentives

Incentives are based on estimated and achieved energy savings ranging from $0.18-$0.22/kWh and $1.80-$2.50/therm, capped at the lesser of 50% total project cost, or $1 million per electric account and $1 million per natural gas account, per fiscal year, not to exceed $2 million per project. An incentive of $0.15/square foot is also available to offset the cost of developing the Energy Reduction Plan (see below) contingent on the project moving forward with measure installation.

How to Participate

Contact one of the pre-approved consultants and contractors ("Partners"). Under direct contract to you, they will help further evaluate the measures identified in this report through development of the energy reduction plan), assist you in implementing selected measures, and verify actual savings one year after the installation. Your Partner will also help you apply for incentives.

Approval of the final scope of work is required by the program prior to installation. Installation can be done by the contractor of your choice (some P4P Partners are also contractors) or by internal staff, but the Partner remains involved throughout construction to ensure compliance with the program requirements.

Detailed program descriptions, instructions for applying, applications and list of Partners can be found at www.njcleanenergy.com/P4P.

7.4 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 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.

7.5 Energy Savings Improvement Program

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

ESIP provides government agencies in New Jersey with a flexible tool to improve and reduce energy usage with minimal expenditure of new financial resources. NJCEP incentive programs described above can also be used to help further reduce the total project cost of eligible measures.

How to Participate

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

(1) Use an energy services company or "ESCO."

(2) Use independent engineers and other specialists, or your own qualified staff, to provide and manage the requirements of the program through bonds or lease obligations.

(3) Use a hybrid approach of the two options described above where the ESCO is used for some services and independent engineers, or other specialists or qualified staff, are used to deliver other requirements of the program.

After adopting a resolution with a chosen implementation approach, the development of the energy savings plan (ESP) can begin. The ESP demonstrates that the total project costs of the ECMs are offset by the energy savings over the financing term, not to exceed 15 years. The verified savings will then be used to pay for the financing.

The ESIP approach may not be appropriate for all energy conservation and energy efficiency improvements. Carefully consider all alternatives to develop an approach that best meets your needs. A detailed program description and application can be found at www.njcleanenergy.com/ESIP.

ESIP is a program delivered directly by the NJBPU and is not an NJCEP incentive program. As mentioned above, you can use NJCEP incentive programs to help further reduce costs when developing the energy savings plan. Refer to the ESIP guidelines at the link above for further information and guidance on next steps.

7.6 Transition Incentive (TI) Program

The TI program is a bridge between the Legacy SREC Program and a to-be determined Successor Incentive Program. The program is used to register the intent to install solar projects in New Jersey. Rebates are not available for solar projects, but owners of solar projects *must* register their projects prior to the start of construction to establish the project's eligibility to earn TRECs (Transition Incentive Renewable Energy Certificates). The Transition Incentive is structured as a factorized renewable energy certificate. The factors allow the TI Program to provide differentiated financial incentives for different types of solar installations. NJBPU calculates the value of a Transition Renewable Energy Certificate (TREC) by multiplying the base compensation rate ($152/MWh) by the project's assigned factor (i.e. $152 x 0.85 = $129.20/MWh). The TREC factors are defined based on the chart below:

Project Type	Factor
Subsection (t): landfill, brownfield, areas of historic fill	1.00
Grid supply (Subsection (r)) rooftop	1.00
Net metered non-residential rooftop and carport	1.00
Community solar	0.85
Grid supply (Subsection (r)) ground mount	0.60
Net metered residential ground mount	0.60
Net metered residential rooftop and carport	0.60
Net metered non-residential ground mount	0.60

After the registration is accepted, construction is complete, and final paperwork has been submitted and is deemed complete, the project is issued a New Jersey certification number, which enables it to generate New Jersey TRECs.

Eligible projects may generate TRECs for 15 years following the commencement of commercial operations (also referred to as the "Transition Incentive Qualification Life"). After 15 years, projects may be eligible for a NJ Class I REC.

TRECs will be used by the identified compliance entities to satisfy a compliance obligation tied to a new Transition Incentive Renewable Portfolio Standard ("TI-RPS"), which will exist in parallel with, and completely separate from, the existing Solar RPS for Legacy SRECs. The TI-RPS is a carve-out of the current Class I RPS requirement. The creation of TRECs is based upon metered generation supplied to PJM-EIS General Attribute Tracking System ("GATS") by the owners of eligible facilities or their agents. GATS would create one TREC for each MWh of energy produced from a qualified facility.

TRECs will be purchased monthly by a TREC Administrator who will allocate the TRECs 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.

Solar projects help the State of New Jersey reach renewable energy goals outlined in the state's Energy Master Plan. The Transition Incentive Program online portal is now open to new applications effective May 1, 2020. There are instructions on "How and When to Transfer my SRP Registration to the Transition Incentive Program". If you are considering installing solar photovoltaics on your building, visit the following link for more information:

https://www.njcleanenergy.com/renewable-energy/programs/transition-incentive-program

8 PROJECT DEVELOPMENT

Energy conservation measures (ECMs) have been identified for your site and their energy and economic analyses are provided within this LGEA report. 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 includes the review of multiple bids for project work, incorporate potential operational & maintenance (O&M) cost savings and maximize your incentive potential.

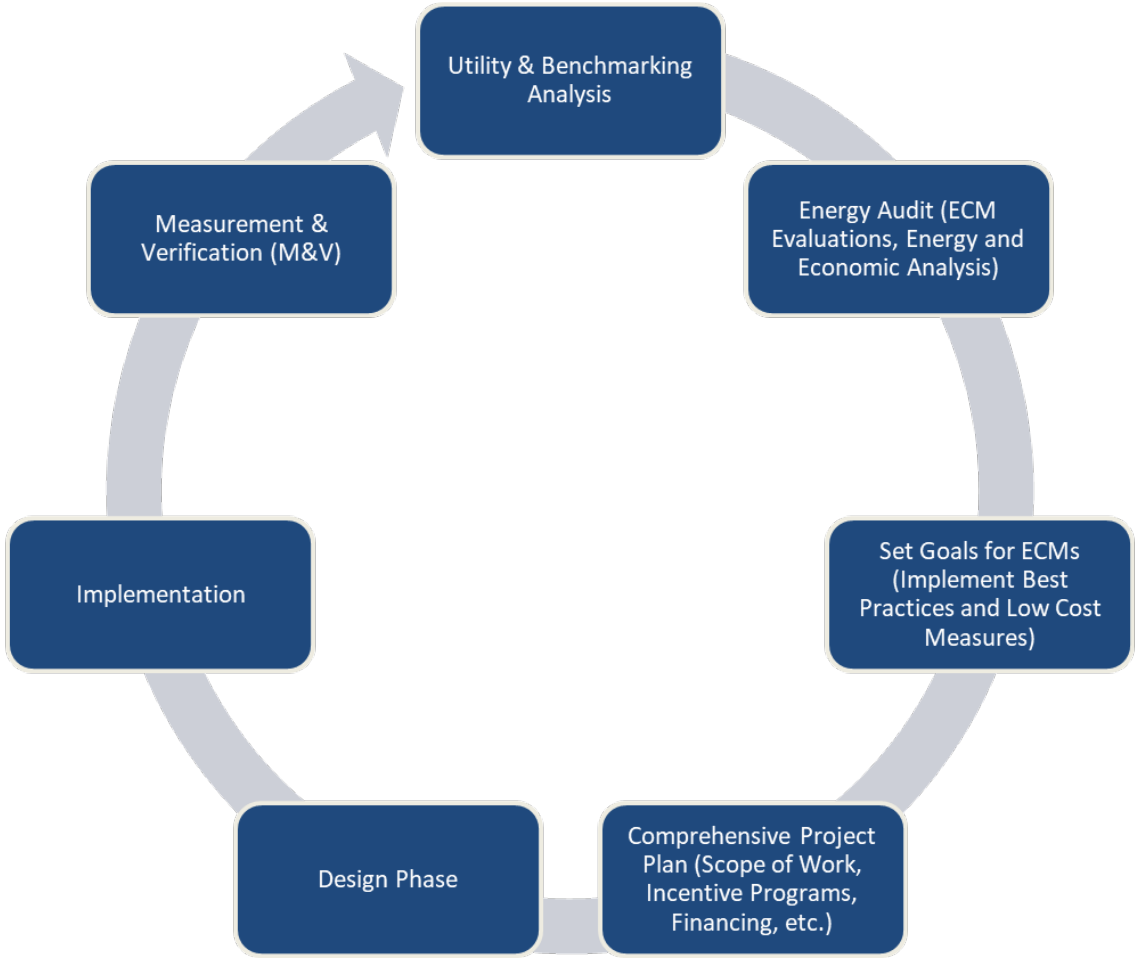


Figure 11 – Project Development Cycle

9 Energy Purchasing and Procurement Strategies

9.1 Retail Electric Supply Options

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

If your facility is not purchasing electricity from a third-party supplier, consider shopping for a reduced rate from third-party electric suppliers. If your facility already buys electricity from a third-party supplier, review and compare prices at the end of each contract year.

A list of licensed third-party electric suppliers is available at the NJBPU website[8].

9.2 Retail Natural Gas Supply Options

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

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

If your facility does not already purchase natural gas from a third-party supplier, consider shopping for a reduced rate from third-party natural gas suppliers. If your facility already purchases natural gas from a third-party supplier, review and compare prices at the end of each contract year.

A list of licensed third-party natural gas suppliers is available at the NJBPU website[9].

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

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

APPENDIX A: EQUIPMENT INVENTORY & RECOMMENDATIONS

Lighting Inventory & Recommendations

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
101 Classroom	14	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	14	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.5	2,859	-1	$286	$1,292	$315	3.4
102 Classroom	14	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	14	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.5	2,859	-1	$286	$1,292	$315	3.4
103a Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	3,520	3, 4	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,429	0.1	1,042	0	$104	$562	$115	4.3
103b Classroom	8	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	8	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.3	1,633	0	$164	$854	$195	4.0
104 Office	6	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	3,520	3, 4	Relamp	Yes	6	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,429	0.2	1,562	0	$156	$708	$155	3.5
104a Classroom	6	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	6	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.2	1,225	0	$123	$708	$155	4.5
104b Classroom	6	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	6	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.2	1,225	0	$123	$708	$155	4.5
104b storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	607	0.0	74	0	$7	$189	$20	22.8
105 Classroom	13	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	13	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.5	2,654	-1	$266	$1,219	$295	3.5
105 Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	607	0.0	74	0	$7	$189	$20	22.8
106 Classroom	13	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	13	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.5	2,654	-1	$266	$1,219	$295	3.5
106 Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	607	0.0	74	0	$7	$189	$20	22.8
107 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.4	2,450	-1	$245	$1,146	$275	3.6
107 Bathroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 4L	Wall Switch	S	63	3,520	3	Relamp	No	1	LED - Linear Tubes: (4) 2' Lamps	Wall Switch	34	3,520	0.0	102	0	$10	$65	$12	5.2
107 Storage	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	880	0.0	29	0	$3	$37	$10	9.1
108 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.4	2,450	-1	$245	$1,146	$275	3.6
108 Bathroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 4L	Occupancy Sensor	S	63	2,429	3	Relamp	No	1	LED - Linear Tubes: (4) 2' Lamps	Occupancy Sensor	34	2,429	0.0	70	0	$7	$65	$12	7.5
108 Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	607	0.0	74	0	$7	$189	$20	22.8
109 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.4	2,450	-1	$245	$1,146	$275	3.6
109 Bathroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 4L	Occupancy Sensor	S	63	2,429	3	Relamp	No	1	LED - Linear Tubes: (4) 2' Lamps	Occupancy Sensor	34	2,429	0.0	70	0	$7	$65	$12	7.5
109 Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	607	0.0	74	0	$7	$189	$20	22.8
110 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.4	2,450	-1	$245	$1,146	$275	3.6
110 Bathroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 4L	Occupancy Sensor	S	63	2,429	3	Relamp	No	1	LED - Linear Tubes: (4) 2' Lamps	Occupancy Sensor	34	2,429	0.0	70	0	$7	$65	$12	7.5
110 Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	607	0.0	74	0	$7	$189	$20	22.8
111 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.4	2,450	-1	$245	$1,146	$275	3.6

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
111 Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	607	0.0	74	0	$7	$189	$20	22.8
111a Server Room	2	Incandescent: (1) 100W Screw-in Lamps	Wall Switch	S	100	3,520	3, 4	Relamp	Yes	2	LED Lamps: A19 Lamps	Occupancy Sensor	15	2,429	0.1	631	0	$63	$150	$22	2.0
111b Storage	4	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	880	3, 4	Relamp	Yes	4	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	607	0.0	77	0	$8	$189	$20	21.8
112 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.4	2,450	-1	$245	$1,146	$275	3.6
112 Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	607	0.0	74	0	$7	$189	$20	22.8
113 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.4	2,450	-1	$245	$1,146	$275	3.6
113 Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	607	0.0	74	0	$7	$189	$20	22.8
114 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.4	2,450	-1	$245	$1,146	$275	3.6
114 Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	607	0.0	74	0	$7	$189	$20	22.8
115 Main Office	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	3,520	3, 4	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,429	0.4	3,125	-1	$313	$1,146	$275	2.8
115 Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	607	0.0	74	0	$7	$189	$20	22.8
116 Classroom	14	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	14	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.5	2,859	-1	$286	$1,292	$315	3.4
306b Classroom	6	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	6	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.2	1,225	0	$123	$708	$155	4.5
Auditorium	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
Auditorium	8	Incandescent: (1) 100W Screw-in Lamps	Wall Switch	S	100	1,760	3, 4	Relamp	Yes	8	LED Lamps: A19 Lamps	Occupancy Sensor	15	1,214	0.4	1,262	0	$126	$408	$43	2.9
Auditorium	12	Incandescent: (5) 100W Screw-in Lamps	Wall Switch	S	500	1,760	3, 4	Relamp	Yes	12	LED Lamps: A19 Lamps	Occupancy Sensor	75	1,214	2.7	9,467	-2	$948	$1,304	$95	1.3
Auditorium	6	Linear Fluorescent - T12: 8' T12 (75W) - 2L	Wall Switch	S	158	1,760	2, 4	Relamp & Reballast	Yes	6	LED - Linear Tubes: (2) 8' Lamps	Occupancy Sensor	72	1,214	0.3	1,144	0	$115	$1,042	$155	7.7
Auditorium	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,760	3, 4	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,214	0.1	443	0	$44	$489	$95	8.9
Auditorium	15	Metal Halide: (1) 250W Lamp	Wall Switch	S	295	1,760	1, 4	Fixture Replacement	Yes	15	LED - Fixtures: Architectural Flood/Spot Luminaire	Occupancy Sensor	75	1,214	1.8	6,422	-1	$643	$8,032	$785	11.3
Auditorium Hallway	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
Auditorium Hallway	2	Incandescent: (1) 100W Screw-in Lamps	Wall Switch	S	100	5,632	3, 4	Relamp	Yes	2	LED Lamps: A19 Lamps	Occupancy Sensor	15	3,886	0.1	1,010	0	$101	$150	$22	1.3
Exterior Lighting	11	LED - Fixtures: Security	Timeclock		30	4,015		None	No	11	LED - Fixtures: Security	Timeclock	30	4,015	0.0	0	0	$0	$0	$0	0.0
Exterior Lighting	1	LED - Fixtures: Wall Pack	Timeclock		40	4,015		None	No	1	LED - Fixtures: Wall Pack	Timeclock	40	4,015	0.0	0	0	$0	$0	$0	0.0
Janitor Closet 1	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	880	0.0	29	0	$3	$37	$10	9.1
Janitor Closet 2	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	880	0.0	29	0	$3	$37	$10	9.1

	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
Main Hallway	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
Main Hallway	57	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	S	114	3,886	3	Relamp	No	57	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	3,886	1.6	12,404	-3	$1,242	$4,163	$1,140	2.4
Medical Office	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,520	3, 4	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,429	0.1	739	0	$74	$453	$85	5.0
Principals Office 2	1	Incandescent: (1) 100W Screw-in Lamps	Wall Switch	S	100	3,520	3	Relamp	No	1	LED Lamps: A19 Lamps	Wall Switch	15	3,520	0.0	299	0	$30	$17	$1	0.5
Principals Office 2	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,520	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,520	0.0	116	0	$12	$37	$10	2.3
Principal Office Bathroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 4L	Wall Switch	S	63	3,520	3	Relamp	No	1	LED - Linear Tubes: (4) 2' Lamps	Wall Switch	34	3,520	0.0	102	0	$10	$65	$12	5.2
Principals Office 1	8	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	3,520	3, 4	Relamp	Yes	8	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,429	0.3	2,083	0	$209	$854	$195	3.2
Restroom - Female 2	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,429	3	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,429	0.0	240	0	$24	$110	$30	3.3
Restroom - Male 2	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,429	3	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,429	0.0	240	0	$24	$110	$30	3.3
Stair 1	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
Stair 1	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor		62	2,429	3	Relamp	No	7	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,429	0.1	561	0	$56	$256	$70	3.3
Stair 2	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
Stair 2	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	3,520	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,520	0.0	116	0	$12	$37	$10	2.3
Stair 2	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor		62	2,429	3	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,429	0.1	481	0	$48	$219	$60	3.3
Stair 3	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
Stair 3	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	3,520	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,520	0.0	116	0	$12	$37	$10	2.3
Stair 3	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor		62	2,429	3	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,429	0.1	481	0	$48	$219	$60	3.3
Stair 4	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
Stair 4	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor		62	2,429	3	Relamp	No	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,429	0.1	641	0	$64	$292	$80	3.3
Stair 4	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	3,520	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,520	0.0	116	0	$12	$37	$10	2.3
Stair 5	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
Stair 5	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor		62	2,429	3	Relamp	No	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,429	0.1	641	0	$64	$292	$80	3.3
Stair 6	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
Stair 6	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor		62	2,429	3	Relamp	No	7	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,429	0.1	561	0	$56	$256	$70	3.3
Stock Storage 1	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	607	0.1	148	0	$15	$262	$40	15.0

	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
Teachers Lounge 1	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,520	3, 4	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,429	0.1	443	0	$44	$380	$65	7.1
Teachers Lounge - Bathroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,520	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,520	0.0	116	0	$12	$37	$10	2.3
201 CST Lounge	6	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	3,520	3, 4	Relamp	Yes	6	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,429	0.2	1,562	0	$156	$708	$155	3.5
201 Office 1	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	3,520	3, 4	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,429	0.1	521	0	$52	$262	$60	3.9
201 Office 2	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	3,520	3, 4	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,429	0.1	521	0	$52	$262	$60	3.9
201 Office 3	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	3,520	3, 4	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,429	0.1	521	0	$52	$262	$60	3.9
201 Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	607	0.0	74	0	$7	$189	$20	22.8
202 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.4	2,450	-1	$245	$1,146	$275	3.6
202 Storage	1	LED Lamps: (1) 10.5W Plug-In Lamp	Wall Switch	S	11	880		None	No	1	LED Lamps: (1) 10.5W Plug-In Lamp	Wall Switch	11	880	0.0	0	0	$0	$0	$0	0.0
203 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.4	2,450	-1	$245	$1,146	$275	3.6
203 Storage	1	Incandescent: (1) 100W Screw-in Lamps	Wall Switch	S	100	880	3	Relamp	No	1	LED Lamps: A19 Lamps	Wall Switch	15	880	0.0	75	0	$7	$17	$1	2.2
204 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.4	2,450	-1	$245	$1,146	$275	3.6
204 Storage	1	Incandescent: (1) 100W Screw-in Lamps	Wall Switch	S	100	880	3	Relamp	No	1	LED Lamps: A19 Lamps	Wall Switch	15	880	0.0	75	0	$7	$17	$1	2.2
205 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.4	2,450	-1	$245	$1,146	$275	3.6
205 Storage	1	Incandescent: (1) 100W Screw-in Lamps	Wall Switch	S	100	880	3	Relamp	No	1	LED Lamps: A19 Lamps	Wall Switch	15	880	0.0	75	0	$7	$17	$1	2.2
206 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.4	2,450	-1	$245	$1,146	$275	3.6
206 Storage	1	LED Lamps: (1) 10.5W Plug-In Lamp	Wall Switch	S	11	880		None	No	1	LED Lamps: (1) 10.5W Plug-In Lamp	Wall Switch	11	880	0.0	0	0	$0	$0	$0	0.0
207 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.4	2,450	-1	$245	$1,146	$275	3.6
207 Storage	1	LED Lamps: (1) 10.5W Plug-In Lamp	Wall Switch	S	11	880		None	No	1	LED Lamps: (1) 10.5W Plug-In Lamp	Wall Switch	11	880	0.0	0	0	$0	$0	$0	0.0
208 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.4	2,450	-1	$245	$1,146	$275	3.6
208 Bathroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,520	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,520	0.0	116	0	$12	$37	$10	2.3
208 Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	607	0.0	74	0	$7	$189	$20	22.8
209 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.4	2,450	-1	$245	$1,146	$275	3.6
209 Bathroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,520	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,520	0.0	116	0	$12	$37	$10	2.3
209 Storage	1	Incandescent: (1) 100W Screw-in Lamps	Wall Switch	S	100	880	3	Relamp	No	1	LED Lamps: A19 Lamps	Wall Switch	15	880	0.0	75	0	$7	$17	$1	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
210 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.4	2,450	-1	$245	$1,146	$275	3.6
210 Bathroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,520	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,520	0.0	116	0	$12	$37	$10	2.3
210 Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	607	0.0	74	0	$7	$189	$20	22.8
211 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.4	2,450	-1	$245	$1,146	$275	3.6
211 Bathroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,520	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,520	0.0	116	0	$12	$37	$10	2.3
211 Storage	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	880	0.0	29	0	$3	$37	$10	9.1
212 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.4	2,450	-1	$245	$1,146	$275	3.6
212 Bathroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,520	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,520	0.0	116	0	$12	$37	$10	2.3
212 Storage	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	880	3	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	880	0.0	44	0	$4	$55	$15	9.1
213 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.4	2,450	-1	$245	$1,146	$275	3.6
213 Bathroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,520	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,520	0.0	116	0	$12	$37	$10	2.3
213 Storage	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	880	0.0	29	0	$3	$37	$10	9.1
214 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.4	2,450	-1	$245	$1,146	$275	3.6
214 Storage	1	Incandescent: (1) 100W Screw-in Lamps	Wall Switch	S	100	880	3	Relamp	No	1	LED Lamps: A19 Lamps	Wall Switch	15	880	0.0	75	0	$7	$17	$1	2.2
215 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.4	2,450	-1	$245	$1,146	$275	3.6
215 Storage	1	Incandescent: (1) 100W Screw-in Lamps	Wall Switch	S	100	880	3	Relamp	No	1	LED Lamps: A19 Lamps	Wall Switch	15	880	0.0	75	0	$7	$17	$1	2.2
216 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.4	2,450	-1	$245	$1,146	$275	3.6
216 Storage	1	LED Lamps: (1) 10.5W Plug-In Lamp	Wall Switch	S	11	880		None	No	1	LED Lamps: (1) 10.5W Plug-In Lamp	Wall Switch	11	880	0.0	0	0	$0	$0	$0	0.0
217 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.4	2,450	-1	$245	$1,146	$275	3.6
217 Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	607	0.0	74	0	$7	$189	$20	22.8
218 Classroom	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,760	3, 4	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,904	0.3	1,565	0	$157	$763	$170	3.8
219 Playroom / Classroom	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,760	3, 4	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,904	0.3	1,565	0	$157	$763	$170	3.8
2nd floor Hallway	13	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	13	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
2nd floor Hallway	57	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	S	114	3,886	3	Relamp	No	57	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	3,886	1.6	12,404	-3	$1,242	$4,163	$1,140	2.4
2nd floor Store Room	2	Incandescent: (1) 100W Screw-in Lamps	Wall Switch	S	100	880	3, 4	Relamp	Yes	2	LED Lamps: A19 Lamps	Occupancy Sensor	15	607	0.1	158	0	$16	$150	$2	9.4

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Assistant Principal Office	6	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	3,520	3, 4	Relamp	Yes	6	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,429	0.2	1,562	0	$156	$708	$155	3.5
Janitor Closet 3	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	880	0.0	29	0	$3	$37	$10	9.1
Janitor Closet 4	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	880	0.0	29	0	$3	$37	$10	9.1
Restroom - Female 3	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,429	3	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,429	0.0	240	0	$24	$110	$30	3.3
Restroom - Female 6	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,429	3	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,429	0.0	240	0	$24	$110	$30	3.3
Restroom - Male 3	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	S	114	2,429	3	Relamp	No	3	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,429	0.1	408	0	$41	$219	$60	3.9
Teachers Lounge 2	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,520	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,429	0.0	296	0	$30	$189	$40	5.0
Teachers Lounge 4	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,520	3, 4	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,429	0.1	739	0	$74	$453	$85	5.0
Teachers Lounge Bathroom 2	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,520	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,520	0.0	116	0	$12	$37	$10	2.3
Teachers Lounge Bathroom 4	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	3,520	3	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,520	0.0	56	0	$6	$33	$6	4.7
301 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.4	2,450	-1	$245	$1,146	$275	3.6
301 Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	607	0.0	74	0	$7	$189	$20	22.8
302 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.4	2,450	-1	$245	$1,146	$275	3.6
302 Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	607	0.0	74	0	$7	$189	$20	22.8
303 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.4	2,450	-1	$245	$1,146	$275	3.6
303 Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	607	0.0	74	0	$7	$189	$20	22.8
304 Classroom	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	3	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.1	613	0	$61	$489	$95	6.4
304 Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	607	0.0	74	0	$7	$189	$20	22.8
304a Classroom	6	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	6	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.2	1,225	0	$123	$708	$155	4.5
304b Classroom	6	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	6	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.2	1,225	0	$123	$708	$155	4.5
305 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.4	2,450	-1	$245	$1,146	$275	3.6
305 Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	607	0.0	74	0	$7	$189	$20	22.8
306 Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	607	0.0	74	0	$7	$189	$20	22.8
306a Classroom	6	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	6	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.2	1,225	0	$123	$708	$155	4.5
307 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.4	2,450	-1	$245	$1,146	$275	3.6

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
307 Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	607	0.0	74	0	$7	$189	$20	22.8
308 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.4	2,450	-1	$245	$1,146	$275	3.6
308 Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	607	0.0	74	0	$7	$189	$20	22.8
309 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.4	2,450	-1	$245	$1,146	$275	3.6
309 Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	607	0.0	74	0	$7	$189	$20	22.8
310 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.4	2,450	-1	$245	$1,146	$275	3.6
310 Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	607	0.0	74	0	$7	$189	$20	22.8
311 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.4	2,450	-1	$245	$1,146	$275	3.6
311 Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	607	0.0	74	0	$7	$189	$20	22.8
312 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.4	2,450	-1	$245	$1,146	$275	3.6
312 Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	607	0.0	74	0	$7	$189	$20	22.8
313 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.4	2,450	-1	$245	$1,146	$275	3.6
313 Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	607	0.0	74	0	$7	$189	$20	22.8
314 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.4	2,450	-1	$245	$1,146	$275	3.6
314 Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	607	0.0	74	0	$7	$189	$20	22.8
315 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.4	2,450	-1	$245	$1,146	$275	3.6
315 Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	607	0.0	74	0	$7	$189	$20	22.8
316 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.4	2,450	-1	$245	$1,146	$275	3.6
316 Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	607	0.0	74	0	$7	$189	$20	22.8
317 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.4	2,450	-1	$245	$1,146	$275	3.6
317 Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	607	0.0	74	0	$7	$189	$20	22.8
318 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.4	2,450	-1	$245	$1,146	$275	3.6
318 Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	607	0.0	74	0	$7	$189	$20	22.8
319 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.4	2,450	-1	$245	$1,146	$275	3.6
319 Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	607	0.0	74	0	$7	$189	$20	22.8

	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
3rd floor Hallway	13	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	13	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
3rd floor Hallway	56	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	S	114	3,886	3	Relamp	No	56	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	3,886	1.6	12,187	-3	$1,221	$4,090	$1,120	2.4
3rd floor Store Room	2	Incandescent: (1) 100W Screw-in Lamps	Wall Switch	S	100	880	3, 4	Relamp	Yes	2	LED Lamps: A19 Lamps	Occupancy Sensor	15	607	0.1	158	0	$16	$150	$2	9.4
Janitor Closet 5	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	880	0.0	29	0	$3	$37	$10	9.1
Library	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,520	3, 4	Relamp	Yes	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,429	0.2	1,330	0	$133	$599	$125	3.6
Library	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	3,520	3, 4	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,429	0.4	3,125	-1	$313	$1,146	$275	2.8
Restroom - Female 4	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,429	3	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,429	0.0	160	0	$16	$73	$20	3.3
Restroom - Female 5	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,429	3	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,429	0.0	240	0	$24	$110	$30	3.3
Restroom - Male 4	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,429	3	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,429	0.0	240	0	$24	$110	$30	3.3
Restroom - Male 5	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,429	3	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,429	0.0	160	0	$16	$73	$20	3.3
Teachers Lounge 3	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,520	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,429	0.0	296	0	$30	$189	$40	5.0
Teachers Lounge Bathroom 3	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	3,520	3	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,520	0.0	56	0	$6	$33	$6	4.7
Basement Hallway	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
Basement Hallway	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	5,632	3, 5	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	3,886	0.4	4,730	-1	$474	$1,405	$875	1.1
Basement Hallway	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	5,632	3	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	5,632	0.0	315	0	$32	$73	$20	1.7
Basement Hallway 2	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
Basement Hallway 2	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	5,632	3, 5	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	3,886	0.4	4,257	-1	$426	$1,332	$810	1.2
Boiler Room	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
Boiler Room	20	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	S	29	3,520		None	No	20	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,520	0.0	0	0	$0	$0	$0	0.0
Cafeteria	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
Cafeteria	13	LED - Fixtures: Downlight Recessed	Wall Switch	S	15	3,520	4	None	Yes	13	LED - Fixtures: Downlight Recessed	Occupancy Sensor	15	2,429	0.0	213	0	$21	$270	$35	11.0
Cafeteria	12	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	S	30	3,520	4	None	Yes	12	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	30	2,429	0.1	393	0	$39	$270	$35	6.0
Cafeteria	47	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	S	60	3,520	4	None	Yes	47	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	60	2,429	0.4	3,077	-1	$308	$1,080	$140	3.0
Basement Classroom 1 Music	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,760	3, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,904	0.3	1,391	0	$139	$708	$155	4.0
Basement Classroom 2 Applied Technology	20	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,760	3, 4	Relamp	Yes	20	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,904	0.7	4,084	-1	$409	$2,001	$470	3.7

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Custodian Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,520	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,429	0.1	591	0	$59	$416	$75	5.8
Electrical Room 1	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	880	0.0	58	0	$6	$73	$20	9.1
Electrical Room 2	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	880	0.0	29	0	$3	$37	$10	9.1
Electrical Room 3	1	Incandescent: (1) 100W Screw-in Lamps	Wall Switch	S	100	880	3	Relamp	No	1	LED Lamps: A19 Lamps	Wall Switch	15	880	0.0	75	0	$7	$17	$1	2.2
Electrical Room 3	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	880	0.0	58	0	$6	$73	$20	9.1
Elevator Mechanical Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	880	0.0	29	0	$3	$37	$10	9.1
Kitchen	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	3,520	3, 4	Relamp	Yes	3	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,429	0.1	781	0	$78	$489	$95	5.0
Gas Meter Room	3	Metal Halide: (1) 250W Lamp	Wall Switch	S	295	880	1, 4	Fixture Replacement	Yes	3	LED - Fixtures: Ceiling Mount	Occupancy Sensor	75	607	0.4	642	0	$64	$1,161	$50	17.3
Gymnasium	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	24	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,520	3, 4	Relamp	Yes	24	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,429	0.5	3,547	-1	$355	$1,416	$310	3.1
Gymnasium	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,520	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,429	0.1	591	0	$59	$416	$75	5.8
Gymnasium	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	3,520	3, 4	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,429	0.4	3,125	-1	$313	$1,146	$275	2.8
Pool - Storage room	5	Incandescent: (1) 100W Screw-in Lamps	Wall Switch	S	100	880	3, 4	Relamp	Yes	5	LED Lamps: A19 Lamps	Occupancy Sensor	15	607	0.2	394	0	$40	$202	$5	5.0
Pool - Storage room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	607	0.0	74	0	$7	$189	$20	22.8
Restroom - Female 1	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,520	3, 4	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,429	0.2	1,182	0	$118	$562	$115	3.8
Restroom - Male 1	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,520	3, 4	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,429	0.2	1,182	0	$118	$562	$115	3.8
Security Office 1	1	Incandescent: (1) 100W Screw-in Lamps	Wall Switch	S	100	3,520	3	Relamp	No	1	LED Lamps: A19 Lamps	Wall Switch	15	3,520	0.0	299	0	$30	$17	$1	0.5
Security Office 1	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,520	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,429	0.0	296	0	$30	$189	$40	5.0
Security Office 2	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,520	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,429	0.0	296	0	$30	$189	$40	5.0
Security Office 2 - Bathroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	3,520	3	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,520	0.0	56	0	$6	$33	$6	4.7
Security Office 1 - Bathroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	3,520	3	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,520	0.0	56	0	$6	$33	$6	4.7
Stock Storage 2	1	Incandescent: (1) 100W Screw-in Lamps	Wall Switch	S	100	880	3	Relamp	No	1	LED Lamps: A19 Lamps	Wall Switch	15	880	0.0	75	0	$7	$17	$1	2.2
Stock Storage 2	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	880	0.0	29	0	$3	$37	$10	9.1
Storage 1	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	607	0.1	148	0	$15	$262	$40	15.0
Storage 2	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3, 4	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	607	0.2	296	0	$30	$408	$80	11.1

	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
Storage 3	1	Compact Fluorescent: (1) 13W Spiral Plug-In Lamp	Wall Switch	S	13	880	3	Relamp	No	1	LED Lamps: A19 Lamps	Wall Switch	9	880	0.0	4	0	$0	$17	$1	46.0
Storage 3	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	607	0.0	74	0	$7	$189	$20	22.8
Storage 4	1	Compact Fluorescent: (1) 13W Spiral Plug-In Lamp	Wall Switch	S	13	880	3	Relamp	No	1	LED Lamps: A19 Lamps	Wall Switch	9	880	0.0	4	0	$0	$17	$1	46.0
Storage 4	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	607	0.0	74	0	$7	$189	$20	22.8
Storage 4 - Bathroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,520	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,520	0.0	116	0	$12	$37	$10	2.3
Storage 5	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	607	0.0	74	0	$7	$189	$20	22.8
Storage 5	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	607	0.0	74	0	$7	$189	$20	22.8
Storage 6	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	880	3, 4	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	607	0.2	296	0	$30	$408	$80	11.1

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
Boiler Room	Condensate System	1	Condensate Pump	2.0	89.0%	Yes			W	2,745		No	89.0%	No		0.0	0	0	$0	$0	$0	0.0
Boiler Room	Condensate System	1	Condensate Pump	2.0	89.0%	Yes	Baldor		W	2,745		No	89.0%	No		0.0	0	0	$0	$0	$0	0.0
111a Server Room	Auditorium	1	Exhaust Fan	0.3	65.0%	No			W	3,400		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
111b Storage	Auditorium	1	Exhaust Fan	0.3	65.0%	No			W	3,400		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Exhaust Fan	1	Exhaust Fan	0.5	70.0%	No	New York Blower		W	3,400		No	70.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Exhaust Fan	1	Exhaust Fan	0.3	65.0%	No	Penn Ventilation		W	3,400		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Auditorium	2	Exhaust Fan	0.5	70.0%	No			W	3,400		No	70.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Auditorium	2	Exhaust Fan	0.5	70.0%	No			W	3,400		No	70.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Gymnasium	1	Exhaust Fan	0.5	70.0%	No	New York Blower	GPA 241	B	3,400	6	Yes	78.2%	No		0.0	142	0	$15	$505	$0	34.7
Roof	Exhaust Fan 18a	1	Exhaust Fan	1.0	75.0%	No	New York Blower	GPA 301	B	3,400	6	Yes	85.5%	No		0.1	311	0	$32	$747	$0	23.5
Roof	Exhaust Fan 18b	1	Exhaust Fan	1.0	75.0%	No	New York Blower	GPA 301	B	3,400	6	Yes	85.5%	No		0.1	311	0	$32	$747	$0	23.5
Roof	Exhaust Fan 1a	1	Exhaust Fan	0.5	70.0%	No	New York Blower	GPA 241	B	3,400	6	Yes	78.2%	No		0.0	142	0	$15	$505	$0	34.7
Roof	Exhaust Fan 19a	1	Exhaust Fan	0.5	70.0%	No	New York Blower	GPA 241	B	3,400	6	Yes	78.2%	No		0.0	142	0	$15	$505	$0	34.7
Roof	Exhaust Fan 19b	1	Exhaust Fan	0.5	70.0%	No	New York Blower	GPA 241	B	3,400	6	Yes	78.2%	No		0.0	142	0	$15	$505	$0	34.7
2nd Floor Store Room	2nd Floor Store Room	1	Exhaust Fan	0.3	65.0%	No			W	3,400		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
3rd Floor Store Room	3rd Floor Store Room	1	Exhaust Fan	0.3	65.0%	No			W	3,400		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Gas Meter Room	Gas Meter Room	1	Exhaust Fan	0.3	65.0%	No			W	3,400		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Storage 5	Storage 5	1	Exhaust Fan	0.3	65.0%	No			W	3,400		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Storage 5	Storage 5	1	Exhaust Fan	5.0	81.5%	No			W	3,400		No	81.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Exhaust Fan 22a	1	Exhaust Fan	0.3	65.0%	No	New York Blower	GPA 181	B	3,400	6	Yes	73.4%	No		0.0	111	0	$11	$456	$0	40.4

		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
Boiler Room	Condensate System	1	Condensate Pump	5.0	84.0%	Yes			W	2,745		No	84.0%	No		0.0	0	0	$0	$0	$0	0.0
Boiler Room	Condensate System	1	Condensate Pump	5.0	84.0%	Yes			W	2,745		No	84.0%	No		0.0	0	0	$0	$0	$0	0.0
Boiler Room	Domestic Hot Water	1	DHW Circulation Pump	0.2	65.0%	No			W	8,760		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Boiler Room	Glycol Pump	2	Other	0.3	65.0%	No			W	2,745		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Boiler Room	Condensate System	2	Condensate Pump	0.3	65.0%	No			W	2,745	7	No	73.4%	Yes	2	0.1	949	0	$97	$5,717	$200	57.0
Boiler Room	Heat Exchanger	1	Heating Hot Water Pump	5.0	85.5%	No			W	2,745		No	85.5%	No		0.0	0	0	$0	$0	$0	0.0
Boiler Room	Heat Exchanger	1	Heating Hot Water Pump	5.0	81.5%	No			W	2,745		No	81.5%	No		0.0	0	0	$0	$0	$0	0.0
Elevator	Elevator	1	Other	25.0	75.5%	No			W	600		No	75.5%	No		0.0	0	0	$0	$0	$0	0.0
Restroom - Female 1	Restroom - Female 1	1	Exhaust Fan	0.3	65.0%	No			W	3,400		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Boiler Room	Domestic Hot Water	1	DHW Circulation Pump	0.1	60.0%	No			W	8,760		No	60.0%	No		0.0	0	0	$0	$0	$0	0.0
Boiler Room	Boiler System	3	Boiler Feed Water Pump	2.0	78.5%	No			W	2,745		No	78.5%	No		0.0	0	0	$0	$0	$0	0.0
Boiler Room	Boiler Room	2	Other	0.8	75.0%	No			W	2,745		No	75.0%	No		0.0	0	0	$0	$0	$0	0.0
Cafeteria	Cafeteria	6	Fan Coil Unit	0.1	89.5%	No			W	3,400		No	89.5%	No		0.0	0	0	$0	$0	$0	0.0
Classroom 1 Music	Classroom 1 Music	1	Fan Coil Unit	0.1	89.5%	No			W	3,400		No	89.5%	No		0.0	0	0	$0	$0	$0	0.0
Storage 2	Storage 2	1	Fan Coil Unit	0.1	89.5%	No			W	3,400		No	89.5%	No		0.0	0	0	$0	$0	$0	0.0
Storage 2	Storage 2	1	Exhaust Fan	0.3	65.0%	No			W	3,400		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Exhaust Fan 20a	1	Exhaust Fan	0.3	65.0%	No	New York Blower	GPA 181	B	3,400	6	Yes	73.4%	No		0.0	111	0	$11	$456	$0	40.4
Roof	Exhaust Fan 20b	1	Exhaust Fan	0.3	65.0%	No	New York Blower	GPA 181	B	3,400	6	Yes	73.4%	No		0.0	111	0	$11	$456	$0	40.4
Roof	Exhaust Fan 21a	1	Exhaust Fan	0.3	65.0%	No	New York Blower		B	3,400	6	Yes	69.5%	No		0.0	47	0	$5	$443	$0	91.5
Roof	Exhaust Fan 21b	1	Exhaust Fan	0.3	65.0%	No	New York Blower		B	3,400	6	Yes	69.5%	No		0.0	47	0	$5	$443	$0	91.5

		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	Exhaust Fan 22b	1	Exhaust Fan	0.3	65.0%	No	New York Blower	GPA 181		3,400	6	Yes	73.4%	No		0.0	111	0	$11	$456	$0	40.4
Roof	Classrooms 217 & 218	1	Supply Fan	1.5	84.0%	No	York		W	3,400		No	84.0%	No		0.0	0	0	$0	$0	$0	0.0

Packaged HVAC Inventory & Recommendations

		Existing Conditions									Proposed Conditions								Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (MBh)	Cooling Mode Efficiency (SEER/IEER/EER)	Heating Mode Efficiency	Manufacturer	Model	Remaining Useful Life	ECM #	Install High Efficiency System?	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (MBh)	Cooling Mode Efficiency (SEER/IEER/EER)	Heating Mode Efficiency	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
101 Classroom	101 Classroom	1	Window AC	1.51		10.70		GE	AEL18DQQ1	W		No							0.0	0	0	$0	$0	$0	0.0
102 Classroom	102 Classroom	1	Window AC	1.51		10.70		GE	AEL18DQQ1	W		No							0.0	0	0	$0	$0	$0	0.0
103a Office	103a Office	1	Window AC	0.67		11.40		GE	AHC08LYW1	W		No							0.0	0	0	$0	$0	$0	0.0
103b Classroom	103b Classroom	1	Window AC	0.67		11.40		GE	AHC08LYW1	W		No							0.0	0	0	$0	$0	$0	0.0
104 Office	104 Office	1	Window AC	0.67		11.40		GE	AHC08LYW1	W		No							0.0	0	0	$0	$0	$0	0.0
104a Classroom	104a Classroom	1	Window AC	0.67		11.40		GE	AHC08LYW1	W		No							0.0	0	0	$0	$0	$0	0.0
104b Classroom	104b Classroom	1	Window AC	0.67		11.40		GE	AHC08LYW1	W		No							0.0	0	0	$0	$0	$0	0.0
105 Classroom	105 Classroom	1	Window AC	1.51		10.70		GE	AEL18DQQ1	W		No							0.0	0	0	$0	$0	$0	0.0
106 Classroom	106 Classroom	1	Window AC	1.00		9.40		Soleus Air	SG-TTW-12ESE	W		No							0.0	0	0	$0	$0	$0	0.0
107 Classroom	107 Classroom	1	Window AC	1.51		10.70		GE	AEL18DQQ1	W		No							0.0	0	0	$0	$0	$0	0.0
108 Classroom	108 Classroom	1	Window AC	1.51		10.70		GE	AEL18DQQ1	W		No							0.0	0	0	$0	$0	$0	0.0
109 Classroom	109 Classroom	1	Window AC	1.51		10.70		GE	AEL18DQQ1	W		No							0.0	0	0	$0	$0	$0	0.0
110 Classroom	110 Classroom	1	Window AC	1.51		10.70		GE	AEL18DQQ1	W		No							0.0	0	0	$0	$0	$0	0.0
111 Classroom	111 Classroom	1	Window AC	1.51		10.70		GE	AEL18DQQ1	W		No							0.0	0	0	$0	$0	$0	0.0
112 Classroom	112 Classroom	1	Window AC	1.51		10.70		GE	AEL18DQQ1	W		No							0.0	0	0	$0	$0	$0	0.0
113 Classroom	113 Classroom	1	Window AC	1.51		10.70		GE	AEL18DQQ1	W		No							0.0	0	0	$0	$0	$0	0.0
114 Classroom	114 Classroom	1	Window AC	1.51		10.70		GE	AEL18DQQ1	W		No							0.0	0	0	$0	$0	$0	0.0
115 Main Office	115 Main Office	2	Window AC	1.58		11.80		Friedrich	CP18G30B	W		No							0.0	0	0	$0	$0	$0	0.0
116 Classroom	116 Classroom	1	Window AC	1.51		10.70		GE	AEL18DQQ1	W		No							0.0	0	0	$0	$0	$0	0.0
306b Classroom	306b Classroom	1	Window AC	1.29		11.80		Friedrich	CP15G10B	W		No							0.0	0	0	$0	$0	$0	0.0

		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 (kBtu/hr)	Cooling Mode Efficiency (SEER/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
Auditorium	Auditorium	4	Window AC	1.29		11.80		Friedrich		W		No							0.0	0	0	$0	$0	$0	0.0
Medical Office	Medical Office	1	Window AC	1.58		11.80		Carrier		W		No							0.0	0	0	$0	$0	$0	0.0
Principal Office 2	Principal Office 2	1	Window AC	1.58		11.80		Carrier		W		No							0.0	0	0	$0	$0	$0	0.0
Principals Office	Principals Office	1	Window AC	1.58		11.80		Friedrich	CP18G30B	W		No							0.0	0	0	$0	$0	$0	0.0
201 Storage	201 Storage	1	Window AC	1.13	10.70	9.50	2.8 COP	Friedrich	PH14B	W		No							0.0	0	0	$0	$0	$0	0.0
202 Classroom	202 Classroom	1	Window AC	1.51		10.70		GE	AEL18DQQ1	W		No							0.0	0	0	$0	$0	$0	0.0
203 Classroom	203 Classroom	1	Window AC	1.51		10.70		GE	AEL18DQQ1	W		No							0.0	0	0	$0	$0	$0	0.0
204 Classroom	204 Classroom	1	Window AC	1.51		10.70		GE	AEL18DQQ1	W		No							0.0	0	0	$0	$0	$0	0.0
205 Classroom	205 Classroom	1	Window AC	1.51		10.70		GE	AEL18DQQ1	W		No							0.0	0	0	$0	$0	$0	0.0
206 Classroom	206 Classroom	1	Window AC	1.51		10.70		GE	AEL18DQQ1	W		No							0.0	0	0	$0	$0	$0	0.0
207 Classroom	207 Classroom	1	Window AC	1.51		10.70		GE	AEL18DQQ1	W		No							0.0	0	0	$0	$0	$0	0.0
208 Classroom	208 Classroom	1	Window AC	1.51		10.70		GE	AEL18DQQ1	W		No							0.0	0	0	$0	$0	$0	0.0
209 Classroom	209 Classroom	1	Window AC	1.51		10.70		GE	AEL18DQQ1	W		No							0.0	0	0	$0	$0	$0	0.0
210 Classroom	210 Classroom	1	Window AC	2.08		10.30		Kenmore	253.7725	W		No							0.0	0	0	$0	$0	$0	0.0
211 Classroom	211 Classroom	1	Window AC	1.25		10.70		Generations	GAM159ERS3B	W		No							0.0	0	0	$0	$0	$0	0.0
212 Classroom	212 Classroom	1	Window AC	1.51		10.70		GE	AEL18DQQ1	W		No							0.0	0	0	$0	$0	$0	0.0
213 Classroom	213 Classroom	1	Window AC	1.51		10.70		GE	AEL18DQQ1	W		No							0.0	0	0	$0	$0	$0	0.0
214 Classroom	214 Classroom	1	Window AC	1.51		10.70		GE	AEL18DQQ1	W		No							0.0	0	0	$0	$0	$0	0.0
215 Classroom	215 Classroom	1	Window AC	1.51		10.70		GE	AEL18DQQ1	W		No							0.0	0	0	$0	$0	$0	0.0
216 Classroom	216 Classroom	1	Window AC	1.51		10.70		GE	AEL18DQQ1	W		No							0.0	0	0	$0	$0	$0	0.0

		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 (kBtu/hr)	Cooling Mode Efficiency (SEER/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
217 Classroom	217 Classroom	1	Window AC	1.51		10.70		GE	AEL18DQQ1	W		No							0.0	0	0	$0	$0	$0	0.0
Teachers Lounge 4	Teachers Lounge 4	1	Window AC	1.15		10.80		Panasonic	XC145HU	W		No							0.0	0	0	$0	$0	$0	0.0
301 Classroom	301 Classroom	1	Window AC	1.58		11.80		Friedrich	CP18G30B	W		No							0.0	0	0	$0	$0	$0	0.0
302 Classroom	302 Classroom	1	Window AC	1.51		10.70		GE	AEL18DQQ1	W		No							0.0	0	0	$0	$0	$0	0.0
303 Classroom	303 Classroom	1	Window AC	1.51		10.70		GE	AEL18DQQ1	W		No							0.0	0	0	$0	$0	$0	0.0
304 Classroom	304 Classroom	1	Window AC	0.42		11.00		Frigidaire	FFRA0522R19	W		No							0.0	0	0	$0	$0	$0	0.0
304b Classroom	304b Classroom	1	Window AC	0.67		11.40		GE	AHC08LYW1	W		No							0.0	0	0	$0	$0	$0	0.0
305 Classroom	305 Classroom	1	Window AC	1.51		10.70		GE	AEL18DQQ1	W		No							0.0	0	0	$0	$0	$0	0.0
307 Classroom	307 Classroom	1	Window AC	1.51		10.70		GE	AEL18DQQ1	W		No							0.0	0	0	$0	$0	$0	0.0
308 Classroom	308 Classroom	1	Window AC	1.50		11.90		GE	AHS18DXL1	W		No							0.0	0	0	$0	$0	$0	0.0
309 Classroom	309 Classroom	1	Window AC	1.51		10.70		GE	AEL18DQQ1	W		No							0.0	0	0	$0	$0	$0	0.0
310 Classroom	310 Classroom	1	Window AC	1.51		10.70		GE	AEL18DQQ1	W		No							0.0	0	0	$0	$0	$0	0.0
311 Classroom	311 Classroom	1	Window AC	1.51		10.70		GE	AEL18DQQ1	W		No							0.0	0	0	$0	$0	$0	0.0
312 Classroom	312 Classroom	1	Window AC	1.51		10.70		GE	AEL18DQQ1	W		No							0.0	0	0	$0	$0	$0	0.0
313 Classroom	313 Classroom	1	Window AC	1.51		10.70		GE	AEL18DQQ1	W		No							0.0	0	0	$0	$0	$0	0.0
314 Classroom	314 Classroom	1	Window AC	1.51		10.70		GE	AEL18DQQ1	W		No							0.0	0	0	$0	$0	$0	0.0
316 Classroom	316 Classroom	1	Window AC	1.51		10.70		GE	AEL18DQQ1	W		No							0.0	0	0	$0	$0	$0	0.0
317 Classroom	317 Classroom	1	Window AC	1.51		10.70		GE	AEL18DQQ1	W		No							0.0	0	0	$0	$0	$0	0.0
318 Classroom	318 Classroom	1	Window AC	1.51		10.70		GE	AEL18DQQ1	W		No							0.0	0	0	$0	$0	$0	0.0
319 Classroom	319 Classroom	1	Window AC	1.51		10.70		GE	AEL18DQQ1	W		No							0.0	0	0	$0	$0	$0	0.0

		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 (kBtu/hr)	Cooling Mode Efficiency (SEER/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
Cafeteria	Cafeteria	2	Window AC	1.58		11.80		Friedrich		W		No							0.0	0	0	$0	$0	$0	0.0
Cafeteria	Cafeteria	2	Window AC	1.54		10.70		Frigidaire	FRA184MT2	W		No							0.0	0	0	$0	$0	$0	0.0
Classroom 1 Music	Classroom 1 Music	1	Window AC	1.50		11.90		GE	AHS18DXL1	W		No							0.0	0	0	$0	$0	$0	0.0
Classroom 2 Applied Technology	Classroom 2 Applied Technology	1	Window AC	1.58		11.80		Friedrich	CP18G30B	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	Classrooms 217 & 218	1	Package Unit	5.00	96.00	12.20	0.8 Et	York	ZJ061N09A2AAA5A	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	Heating System	3	Forced Draft Steam Boiler	6,836	Superior	Osage 3-X-1021	W		No						0.0	0	0	$0	$0	$0	0.0

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	Domestic Hot Water	1	Boiler	AO Smith	HW-160M	W		No						0.0	0	0	$0	$0	$0	0.0

Low-Flow Device Recommendations

	Recommedation Inputs					Energy Impact & Financial Analysis						
Location	ECM #	Device Quantity	Device Type	Existing Flow Rate (gpm)	Proposed Flow Rate (gpm)	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Dr. Michael Conti School	8	29	Faucet Aerator (Lavatory)	2.20	0.50	0.0	0	14	$113	$208	$208	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
Food Preparation	1	Medium Temp Freezer (0F to 30F)	Kolpak / Bohn	17703-S / LET0651V	9	Yes	No	No	0.1	524	0	$54	$607	$160	8.3

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
Cafeteria	1	Refrigerator Chest	Beverage Air	SM34N	No		No	0.0	0	0	$0	$0	$0	0.0
Cafeteria	1	Refrigerator Chest	Powers	780	No		No	0.0	0	0	$0	$0	$0	0.0
Cafeteria	1	Stand-Up Refrigerator, Solid Door (31 - 50 cu. ft.)	True Refrigeration	T-49	Yes		No	0.0	0	0	$0	$0	$0	0.0
Cafeteria	1	Stand-Up Refrigerator, Solid Door (31 - 50 cu. ft.)	Turbo Air	M3R47-2-N	Yes		No	0.0	0	0	$0	$0	$0	0.0
Cafeteria	1	Stand-Up Refrigerator, Solid Door (31 - 50 cu. ft.)	Arctic Air	AR49E	Yes		No	0.0	0	0	$0	$0	$0	0.0

Cooking Equipment Inventory & Recommendations

	Existing Conditions					Proposed Conditions		Energy Impact & Financial Analysis						
Location	Quantity	Equipment Type	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
Food Preparation	2	Gas Convection Oven (Half Size)	Blodgett		No		No	0.0	0	0	$0	$0	$0	0.0
Cafeteria	1	Insulated Food Holding Cabinet (Full Size)	Cres Cor	H137SUA9	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
Dr. Michael Conti School	6	Coffee Machine	500	No		
Dr. Michael Conti School	218	Desktop	120	Yes		
Dr. Michael Conti School	1	Laptop	120	Yes		
Dr. Michael Conti School	13	Microwave	1,000	No		
Dr. Michael Conti School	5	3D Printer	450	No		
Dr. Michael Conti School	5	Paper Shredder	146	No		
Dr. Michael Conti School	60	Printer (Medium/Small)	450	Yes		
Dr. Michael Conti School	3	Printer/Copier (Large)	600	Yes		
Dr. Michael Conti School	2	Projector	240	No		
Dr. Michael Conti School	9	Refrigerator (Mini)	175	No		
Dr. Michael Conti School	6	Refrigerator (Residential)	340	No		
Dr. Michael Conti School	41	Smart Board	215	Yes		
Dr. Michael Conti School	2	Television	224	Yes		
Dr. Michael Conti School	11	Water Cooler	192	No		
Dr. Michael Conti School	3	Serving Table (Chilled/Heated)	3,400	No		
Dr. Michael Conti School	1	Server	1,500	No		

Vending Machine Inventory & Recommendations

	Existing Conditions		Proposed Conditions		Energy Impact & Financial Analysis						
Location	Quantity	Vending Machine Type	ECM #	Install Controls?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Teacher's Lounge	1	Non-Refrigerated	10	Yes	0.0	343	0	$35	$230	$0	6.6
Teacher's Lounge	3	Refrigerated	10	Yes	0.6	4,836	0	$494	$690	$300	0.8

APPENDIX B: ENERGY STAR® STATEMENT OF ENERGY PERFORMANCE

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

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ENERGY STAR® Statement of Energy Performance

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ENERGY STAR® Score[1]

Dr. Michael Conti School (PS #5)

Primary Property Type: K-12 School
Gross Floor Area (ft²): 148,049
Built: 1919

For Year Ending: January 31, 2020
Date Generated: April 16, 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
Dr. Michael Conti School (PS #5) 182 Merseles Street Jersey City, New Jersey 07302	Jersey City Public Schools 346 Claremont Avenue Jersey City, NJ 07305 (201) 915-6074	Regina Robinson 346 Claremont Avenue Jersey City, NJ 07305 (201) 915-6074 rrobinson@jcboe.org

Property ID: 13060657

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
58.4 kBtu/ft²

Source EUI
88.7 kBtu/ft²

Annual Energy by Fuel	
Natural Gas (kBtu)	6,326,248 (73%)
Electric - Grid (kBtu)	2,316,376 (27%)

National Median Comparison	
National Median Site EUI (kBtu/ft²)	70.7
National Median Source EUI (kBtu/ft²)	107.4
% Diff from National Median Source EUI	-17%
Annual Emissions	
Greenhouse Gas Emissions (Metric Tons CO2e/year)	558

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.