Local Government Energy Audit Report

Gloucester City Middle School

January 12, 2021

Prepared for:

Gloucester City Public Schools
500 Market Street
Gloucester City, NJ 08030

Prepared by:

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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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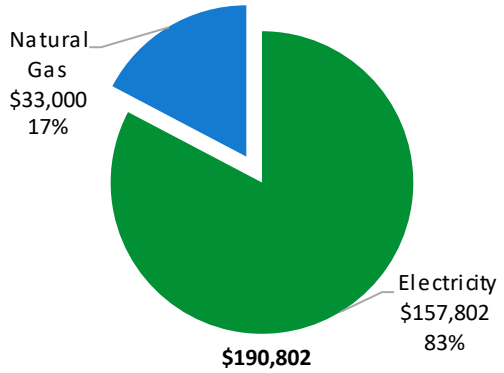
1 EXECUTIVE SUMMARY

The New Jersey Board of Public Utilities (NJBPU) has sponsored this Local Government Energy Audit (LGEA) report for Gloucester City Middle 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: $190,802 Electricity: 1,208,549 kWh Natural Gas: 39,500 Therms	
ENERGY STAR® Benchmarking Score	74 *(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.

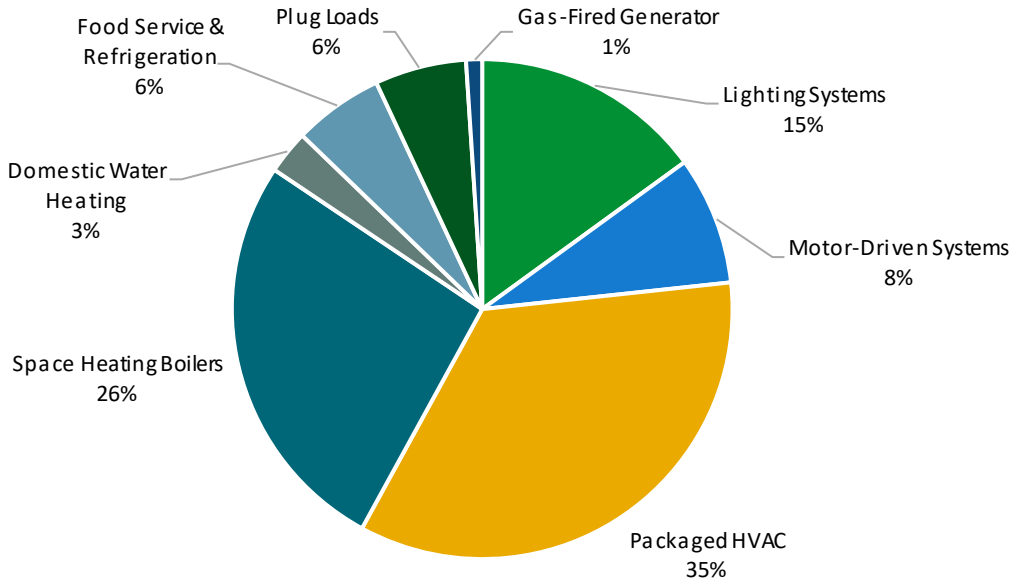


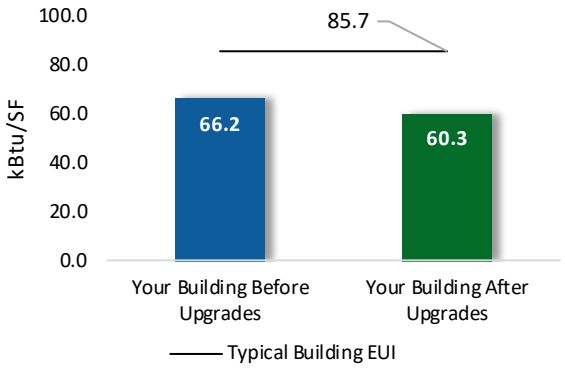
Figure 1 - Energy Use by System

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.

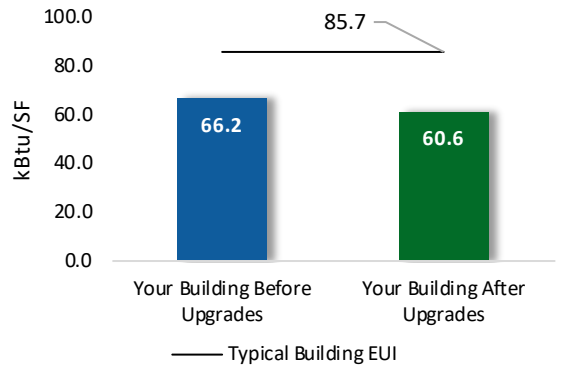
Scenario 1: Full Package (all evaluated measures)

Installation Cost	$100,928
Potential Rebates & Incentives[1]	$44,007
Annual Cost Savings	$26,598
Annual Energy Savings	Electricity: 202,374 kWh Natural Gas: 207 Therms
Greenhouse Gas Emission Savings	103 Tons
Simple Payback	2.1 Years
Site Energy Savings (all utilities)	9%



Scenario 2: Cost Effective Package[2]

Installation Cost	$89,189
Potential Rebates & Incentives	$43,207
Annual Cost Savings	$26,036
Annual Energy Savings	Electricity: 199,441 kWh Natural Gas: -6 Therms
Greenhouse Gas Emission Savings	100 Tons
Simple Payback	1.8 Years
Site Energy Savings (all utilities)	8%



On-site Generation Potential

Photovoltaic	High
Combined Heat and Power	None

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

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

#	Energy Conservation Measure	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			**187,880**	**53.8**	**-39**	**$24,205**	**$77,836**	**$42,246**	**$35,590**	**1.5**	**184,615**
ECM 1	Retrofit Fixtures with LED Lamps	Yes	187,880	53.8	-39	$24,205	$77,836	$42,246	$35,590	1.5	184,615
Lighting Control Measures			**1,639**	**0.1**	**0**	**$212**	**$1,010**	**$210**	**$800**	**3.8**	**1,629**
ECM 2	Install Occupancy Sensor Lighting Controls	Yes	877	0.1	0	$113	$810	$210	$600	5.3	862
ECM 3	Install Photocell Controls	Yes	762	0.0	0	$100	$200	$0	$200	2.0	767
Variable Frequency Drive (VFD) Measures			**10,079**	**1.6**	**31**	**$1,572**	**$17,500**	**$1,300**	**$16,200**	**10.3**	**13,737**
ECM 4	Install VFDs on Chilled Water Pumps	No	2,112	1.2	0	$276	$7,768	$800	$6,968	25.3	2,127
ECM 5	Install VFDs on Kitchen Hood Fan Motors	Yes	1,891	0.0	31	$503	$3,261	$200	$3,061	6.1	5,491
ECM 6	Install VFDs on Water Supply Pump	Yes	6,076	0.4	0	$793	$6,471	$300	$6,171	7.8	6,119
HVAC System Improvements			**821**	**0.5**	**21**	**$286**	**$3,972**	**$0**	**$3,972**	**13.9**	**3,330**
ECM 7	Install Duct Insulation	No	821	0.5	21	$286	$3,972	$0	$3,972	13.9	3,330
Domestic Water Heating Upgrade			**0**	**0.0**	**8**	**$67**	**$151**	**$151**	**$0**	**0.0**	**938**
ECM 8	Install Low-Flow DHW Devices	Yes	0	0.0	8	$67	$151	$151	$0	0.0	938
Food Service & Refrigeration Measures			**1,954**	**0.2**	**0**	**$255**	**$460**	**$100**	**$360**	**1.4**	**1,968**
ECM 9	Vending Machine Control	Yes	1,954	0.2	0	$255	$460	$100	$360	1.4	1,968
TOTALS (COST EFFECTIVE MEASURES)			**199,441**	**54.6**	**-1**	**$26,036**	**$89,189**	**$43,207**	**$45,982**	**1.8**	**200,761**
TOTALS (ALL MEASURES)			**202,374**	**56.3**	**21**	**$26,598**	**$100,928**	**$44,007**	**$56,922**	**2.1**	**206,217**

* - 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	Retrofit Fixtures with LED Lamps	x		
ECM 2	Install Occupancy Sensor Lighting Controls	x		
ECM 3	Install Photocell Controls			
ECM 4	Install VFDs on Chilled Water Pumps	x		
ECM 5	Install VFDs on Kitchen Hood Fan Motors	x		
ECM 6	Install VFDs on Water Supply Pump	x		
ECM 7	Install Duct Insulation			
ECM 8	Install Low-Flow DHW Devices	x		
ECM 9	Vending Machine Control	x		

Figure 3 – Funding Options

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

	SmartStart Flexibility to install at your own pace	**Direct Install** Turnkey installation	**Pay for Performance** Whole building upgrades
Who should use it?	Buildings installing individual measures or small group of measures.	Small to mid-size facilities that can bundle multiple measures together. Average peak demand should be below 200 kW. Not suitable for significant building shell issues.	Mid to large size facilities looking to implement as many measures as possible at one time. Peak demand should be over 200 kW.
How does it work?	Use in-house staff or your preferred contractor.	Pre-approved contractors pass savings along to you via reduced material and labor costs.	Whole-building approach to energy upgrades designed to reduce energy use by at least 15%. The more you save, the higher the incentives.
What are the Incentives?	Fixed incentives for specific energy efficiency measures.	Incentives pay up to 70% of eligible costs, up to $125,000 per project. You pay the remaining 30% directly to the contractor.	Up to 25% of installation cost, calculated based on level of energy savings per square foot.
How do I participate?	Submit an application for the specific equipment to be installed.	Contact a participating contractor in your region.	Contact a pre-qualified Partner to develop your Energy Reduction Plan and set your energy savings targets.

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

Individual Measures with SmartStart

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

Turnkey Installation with Direct Install

The Direct Install program provides turnkey installation of multiple measures through an authorized network of participating contractors. This program can provide substantially higher incentives than SmartStart, up to 70 percent 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 percent 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 Gloucester City Middle 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 October 6, 2020, TRC performed an energy audit at Gloucester City Middle School located in Gloucester City, New Jersey. TRC met with Glenn Stanley to review the facility operations and help focus our investigation on specific energy-using systems.

Gloucester City Middle School is a three-story, 122,000 square foot building built in 2017. Spaces include classrooms, offices, conference rooms, computer labs, cafeteria, electrical rooms, hallways, garage, gymnasiums, closets, commercial kitchen, locker rooms, lounges, media center, rest rooms, server rooms, stairwells, storage rooms, and mechanical rooms.

2.2 Building Occupancy

The facility is occupied year-round, with summer use for administrative offices, summer camp, and continuing maintenance activities. Typical weekday occupancy is 250 staff and 800 students.

The typical school hours are from 8:00 AM to 3:00 PM during the school year, with custodial staff hours from 6:30 AM to 11:00 PM year-round. During the summer, there is a summer camp from 8:00 AM to 12:00 PM, and administrative hours from 8:00 AM to 4:00 PM. Weekend use varies depending on events and athletics.

Building Name	Weekday/Weekend	Operating Schedule
Gloucester City Middle School (School Hours)	Weekday	8:00 AM - 3:00 PM
	Weekend	Varies
	Summer	8:00 AM - 12:00 PM
Gloucester City Middle School (Custodial Hours)	Weekday	6:30 AM - 11:00 PM
	Weekend	Varies
	Summer	6:30 AM - 11:00 PM

Figure 4 - Building Occupancy Schedule

2.3 Building Envelope

Building walls are brick and concrete masonry units (CMUs), all in good condition. The roof is flat, insulated, covered with white membrane, and it is in good condition.

Most of the windows are double-pane, operable, clear, and have metal frames. Many of the windows have internal shading. The glass-to-frame seals are in good condition. The operable window weather seals are in good condition, showing no evidence of excessive wear. Exterior doors have metal frames and are in good condition with undamaged door seals.

Building Envelope

Building Roof

Exterior Window

Exterior Door

2.4 Lighting Systems

The primary interior lighting system uses 32-Watt linear fluorescent T8 lamps. There are also several LED wall mounted fixtures in the stairwells, as well as several other general-purpose LED fixtures throughout the building. Additionally, there are some compact fluorescent lamps (CFL), halogen incandescent, and linear fluorescent T5 lamps.

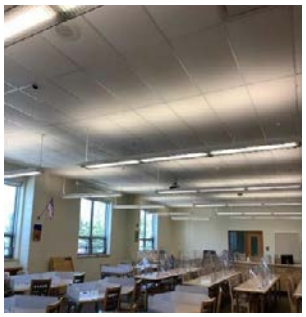
Fixture types include 1-lamp, 2-lamp, 3-lamp, or 6-lamp, 2-foot or 4-foot long troffer, recessed, surface mounted, and pendent mounted fixtures. There are also spotlights, recessed can fixtures, LED panels, track lighting, and wall mounted fixtures.

The main gymnasium is equipped with high bay fixtures with linear fluorescent lamps. The auxiliary gymnasium has high bay 2-foot by 4-foot LED panels. Lighting in both gyms are controlled through a digital lighting control system.

The cafeteria has high bay, pendent mounted fixtures with linear fluorescent lamps. Fixtures are controlled through a digital lighting control system.

Most fixtures are in good condition. Interior lighting levels were generally sufficient.

All exit signs are LED.



Media Center Pendent Mounted Lighting Fixtures

Cafeteria Pendent Mounted Lighting Fixtures

Rest Room Recessed Fixture

Stairwell Wall Mounted Fixture

Most lighting fixtures are controlled by occupancy sensors, some rooms by daylight dimming controls, and the remainder by wall switches. Many of the fixtures in the main areas and heavily occupied areas of the building are controlled through a digital lighting system that typically operates these lights from 6:00 AM to 11:00 PM.

Automated Lighting Control System

Wall Switch

Ceiling Mounted Occupancy Sensor

Wall Mounted Occupancy Sensor

Exterior fixtures include recessed can fixtures, under canopy fixtures, wall packs, and in-ground flag lighting that use a combination of CFL and LED sources. Pole mounted fixtures use LED lamps.

Exterior light fixtures are controlled by a time clock.

Wall Pack

In-Ground Flag Light Fixture

Pole Mounted Fixture

Under Canopy Can Fixtures

2.5 Air Handling Systems

Fan Coil Units

Fan coil units equipped with fractional hp constant speed supply fan motors, hot water coils, and chilled water coils are located in the ceiling of many classrooms. These units are controlled through the EMS. Stairwells and vestibules are heated by cabinet unit heaters each equipped with a fractional hp supply fan motors and hot water coils. These cabinet unit heaters are not used very often because the building envelope is in very good condition and these service spaces do not typically require additional heating.

Mechanical rooms are served by fan coil units equipped with fractional hp supply fan motors and 17.1 MBh to 18.8 MBh electric resistance heating coils.

Packaged Units

Most of the building areas are heated, cooled, and ventilated by ten packaged rooftop units. These units are equipped with supply fan motors, exhaust fan motors, outdoor air dampers, direct expansion (DX) coils, and gas-fired furnaces. Four of the units (RTU 1-4) are tied to heat recovery units and equipped with enthalpy wheels. A make-up air unit (MAU) serves the kitchen, equipped with a supply fan motor, exhaust fan motor, outdoor air damper, direct expansion (DX) coils, and gas-fired furnace. All these units are controlled through the EMS. Additional information about each unit is provided below:

Area Served	Unit Tag	Cooling Capacity (Tons)	Cooling Efficiency (IEER)	Heating Capacity (MBh)	Heating Efficiency	Supply Fan Motor (HP)	Exhaust Fan Motor (HP)	VFD Controls?
Kitchen	MAU-1	20.00	13.70	320.00	80.0%	3.00	2.00	No
Music Room & Small Office	RTU-1	6.00	13.00	96.00	80.0%	1.50	1.50	Yes
Stage	RTU-2	8.50	14.70	160.00	80.0%	1.50	1.50	Yes
Cafeteria	RTU-3	15.00	14.00	284.00	81.0%	1.50	1.50	Yes
Auxiliary Gym	RTU-4	15.00	14.00	284.00	81.0%	1.50	1.50	Yes
Kitchen	RTU-5	10.00	14.70	160.00	80.0%	3.00	0.75	Yes
Pride Classroom & Storage Area	RTU-6	4.00	15.00*	48.00	80.0%	1.00	0.50	Yes
Gymnasium	RTU-7	10.00	14.70	160.00	80.0%	3.00	0.75	Yes
Gymnasium	RTU-8	10.00	14.70	160.00	80.0%	3.00	0.75	Yes
Media Center	RTU-9	12.50	13.50	284.00	81.0%	3.00	0.50	Yes
Main Office, Child Study Team Rooms, Computer Labs, and 1st & 3rd Floor Offices	RTU-10	40.00	13.40	600.00	80.0%	15.00	1.50	Yes

*Please note that the unit marked with an asterisk has been rated in SEER instead of IEER.

Four of the packaged units have exterior ductwork that appears uninsulated. We are recommending duct insulation for RTU-3, RTU-4, RTU-7, and RTU-8 in Section 4.0. RTU-10 is a VAV system, however, we were unable to determine the number of VAV boxes and the extent of supplemental ventilation at the time of the site visit.

Refer to Appendix A for detailed information about each unit.

Kitchen MAU-1

RTU-4 & HRU-4

HRU-2 CFM Gauge

RTU-3 Uninsulated Ductwork

Unitary Electric HVAC Equipment

Several areas of the building are served by ductless mini-split system heat pumps. These units were all installed in 2015 and are in good condition. These units are controlled by individual programmable thermostats located in the area served by each unit. Additional information about each unit is provided below:

Area Served	Unit Tag	Cooling Capacity (Tons)	Cooling Efficiency (SEER)	Heating Capacity (MBh)	Heating Efficiency (COP)
Maintenance Office	CU-1	0.75	24.50	12.00	4.46
Server Room B117	CU-2	1.25	20.60	18.00	4.00
ECC Room	CU-3	1.25	20.60	18.00	4.00
Server Room C100C	CU-4	0.75	24.50	12.00	4.46
Storage Room A201B	CU-5	1.25	20.60	18.00	4.00
Server Room C203B	CU-6	0.75	24.50	12.00	4.46
Server Room C300C	CU-7	0.75	24.50	12.00	4.46
Electrical Room B116	CU-8	1.25	20.60	18.00	4.00

Server Room C300C Ductless Mini Split HP

ECC Ductless Mini-Split System HP

ECC Ductless Mini Split Local Controls

Server Room C100C Ductless Mini Split HP

Air Handling Units (AHUs)

Heating, cooling, and ventilation is provided to some areas by two dedicated outdoor air units (DOAS-1 & DOAS-2). DOAS-1 serves the first floor and half of the second floor, while DOAS-2 serves the third floor and half of the second floor. Each of these units is equipped with a 15.0 hp VFD controlled supply fan motor, a 7.5 hp VFD controlled exhaust fan motor, hot water coils served by the boiler, chilled water coils served by the chillers, an outdoor air damper, and an energy wheel. Both these units are controlled through the EMS.

DOAS-2

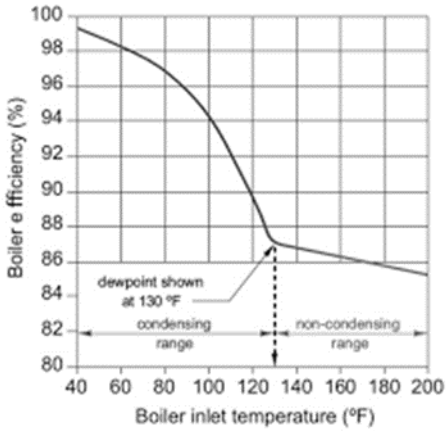
DOAS-2 VFD Controls

2.6 Heating Hot Water Systems

Three Lochinvar 1,440.0 MBh condensing hot water boilers serve the building heating load. The burners are fully modulating with a nominal efficiency of 96.0%. The boilers are configured in a lead-lag control scheme. Only one boiler is required under normal load conditions, while all are needed under high load conditions. Installed in 2016, they are in good condition.

The boilers are configured in a variable flow primary distribution with two 10.0 hp VFD controlled hot water pumps operating with a lead-lag control scheme. The boilers provide hot water to fan coil units, cabinet unit heaters, air handling units, and VAV boxes throughout the building.

Hot water is supplied at 180°F and the hot water return temperature is typically 160°F. Optimal efficiencies for condensing boilers are typically gained at return water temperatures that are 130°F or below.



Condensing Boiler

Boiler Display Screen

Heating Hot Water Pumps

Pump Controls

2.7 Chilled Water Systems

The chiller plant consists of two variable speed 90.0-ton, Trane air-cooled scroll chillers (CH-1 & CH-2) and associated pumps. The chillers operate on a lead-lag control scheme and are configured in a primary-secondary distribution loop with two 10.0 hp variable flow primary pumps (Pump 1 & Pump 2) and two 3.0 hp constant flow secondary pumps (Pump 3 & Pump 4). Variable frequency drives control the primary distribution pumps. The chiller plant supplies chilled water to fan coil units, VAV boxes, and the two air handling units. Both chillers were installed in 2015 and are in good condition.

Typically, only one of the chillers is needed to supply the cooling load unless it is an extremely hot day and then both are needed. The chilled water supply temperature is reset based on outside air temperature. Chilled water is typically distributed at 44°F and returned at around 50°F. The chiller plant is turned off from mid-October through mid-March.

Chiller 1 & 2

Insulated Chilled Water Lines

Chilled Water Pump Controls

Chilled Water Pumps 1 & 2

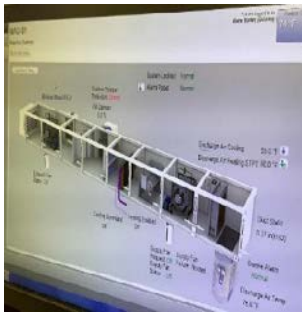
2.8 Building Energy Management Systems (EMS)

A Trane EMS controls the packaged ACs, heating recovery units, air handling units, VAV boxes, fan coil units, hot water system, and chilled water system. The EMS provides equipment scheduling control and monitors and controls space temperatures, supply air temperatures, supply air temperature setpoints, return air temperatures, humidity levels, enthalpy wheel operation status, outdoor air damper position, CO2 levels, space occupancy statuses, filter cleanliness statuses, supply fan motor statuses, exhaust fan motor statuses, economizer operation statuses, chilled water valve positions, hot water valve positions, and VAV box air flows.

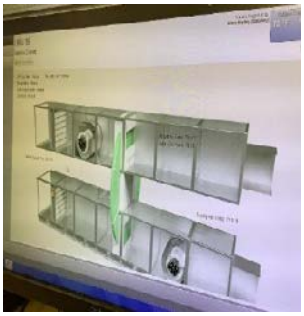
The specific controls and sensors for the chilled water and hot water system were not observed the day of the site visit.

The site staff is pleased with the current EMS and its operation.

DOAS-2 EMS Display



Make-Up Air Unit EMS Display



HRU-3 EMS Display

FCU EMS Display

2.9 Domestic Hot Water

Hot water is produced by two AO Smith 119.0-gallon, 499.9-MBh gas-fired storage water heaters, each with a 95.0% efficiency.

At the time of the site visit, the domestic water heaters were set at 140°F.

A total of four circulation pumps distribute water to end uses. Two of the pump motors are 1.5 hp each while the other two are fractional hp. The circulation pumps operate continuously. Additionally, there are two 5.0 hp cold water booster water pressure pumps that bring domestic cold water to the third floor.

The domestic hot water pipes are insulated, and the insulation is in good condition.

DHW Storage Tank Water Heaters

DHW Circulation Pump 1B

DHW Circulation Pump 2A

DHW Circulation Pump Controls

2.10 Food Service Equipment

The kitchen has a mix of gas and electric equipment that is used to prepare meals for students and staff. Most cooking is done using various gas-fired convection ovens. Additionally, there is a gas-fired fryer and two gas-fired steamers. Bulk prepared foods are held in two electric insulated food holding cabinets. Equipment is not high efficiency; however, it is in good condition.

The dishwasher is an ENERGY STAR®, high temperature, conveyor type unit. There is an electric booster water heater that has a capacity of 15.0 kW.

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

Gas-Fired Convection Oven

Gas-Fired Convection Ovens

Gas-Fired Steamers

Dishwasher

2.11 Refrigeration

The kitchen has several stand-up refrigerators with either solid or glass doors. There are also two stand-up solid door freezers. Most equipment is standard efficiency, and in good condition.

The walk-in refrigerator has an estimated 1.50-ton compressor and two 99.4-Watt fan evaporators. There is believed to be evaporator fan controls.

The walk-in low temperature freezer has an estimated 1.65-ton compressor and two 99.4-Watt fan evaporators. There is a 2,700-Watt electric defrost load. There is believed to be evaporator fan controls as well as electric defrost controls.

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

Walk-In Freezer

Stand-Up Refrigerator

Stand-Up Freezer

Stand-Up Refrigerator

2.12 Plug Load & Vending Machines

You may wish to consider paying particular attention to minimizing your plug load usage. This report makes suggestions for ECMs in this area as well as Energy Efficient Best Practices.

There are 111 computer workstations throughout the facility. Plug loads throughout the building include general café, classroom, and office equipment. There are typical loads such as coffee machines, microwaves, iPads, printers, projectors, mini fridges, speakers, TVs, toaster ovens, and water coolers.

Additionally, there are additional loads that are not as typical for a middle school, such as a clothes washer, clothes dryer, commercial coffee machine, kiln, two electric ovens, warming tables, refrigerated table, fish tanks, and popcorn machine.

There are several residential-style refrigerators throughout the building that are used to store personal food and beverage items. These vary in condition and efficiency.

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

Residential Refrigerator

Electric Oven

Popcorn Machine

Microwave

2.13 Water-Using Systems

There are 32 restrooms with toilets, urinals, and sinks. Faucet flow rates range from 0.5 gallons per minute (gpm) to 2.2 gpm or higher.

Faucet Flow

2.14 On-Site Generation

Gloucester City Middle School has a 556-kW capacity photovoltaic (PV) array with approximately 1,860 panels that was installed in 2019. Based on two months of use in 2019, this system provided approximately 7.3% of the annual electricity used at this facility. Assuming full operation over an entire year, the percentage solar contribution is expected to be considerably higher than that on an annual basis.

Gloucester City Middle School has a natural gas-powered emergency generator that, in the event of a power outage, serves the entire building and is only used for emergency needs, but is tested weekly.

Solar Canopy

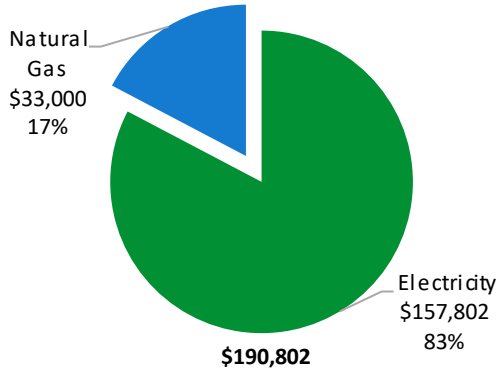
Roof Solar

Emergency Generator

3 Energy Use and Costs

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

Utility Summary		
Fuel	**Usage**	**Cost**
Electricity	1,208,549 kWh	$157,802
Natural Gas	39,500 Therms	$33,000
Total		**$190,802**



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.

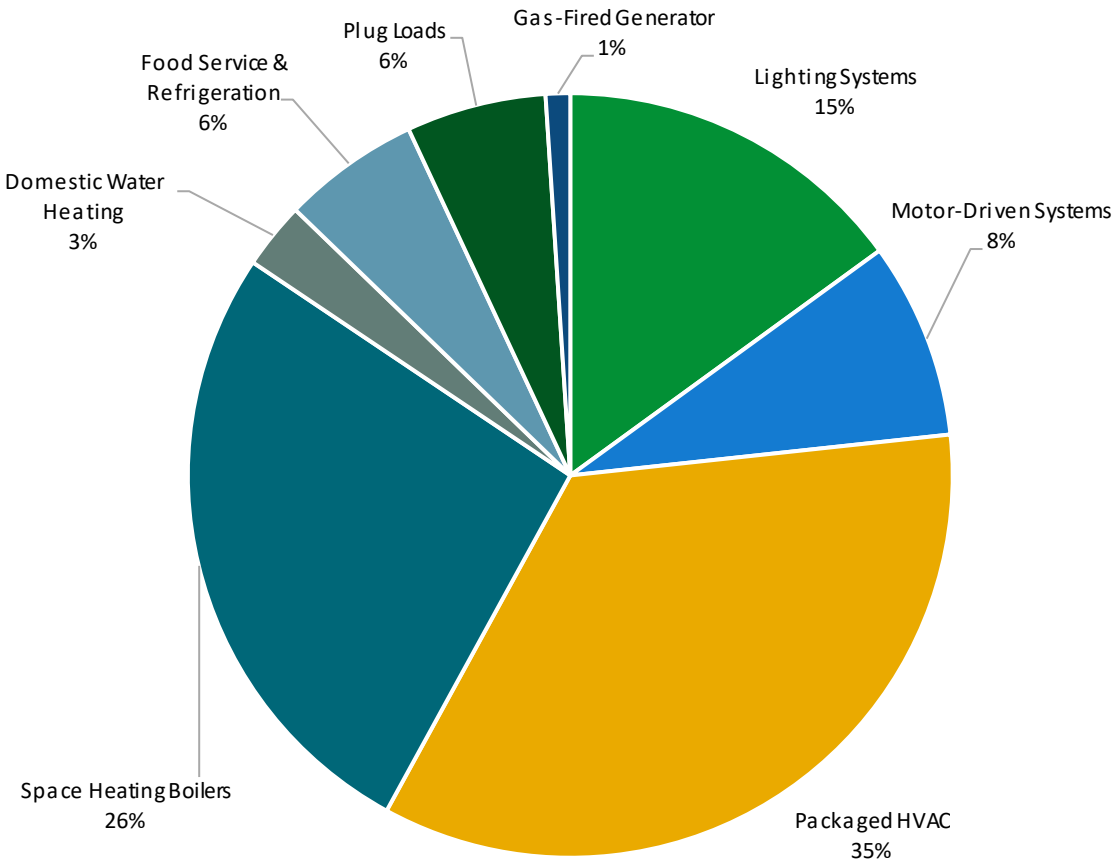
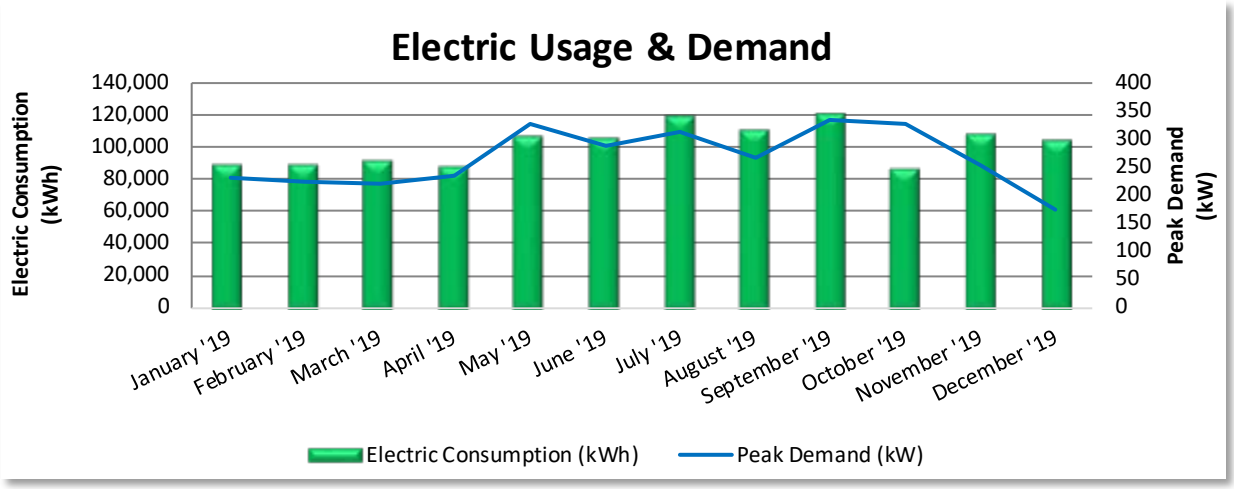


Figure 5 - Energy Balance

3.1 Electricity

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



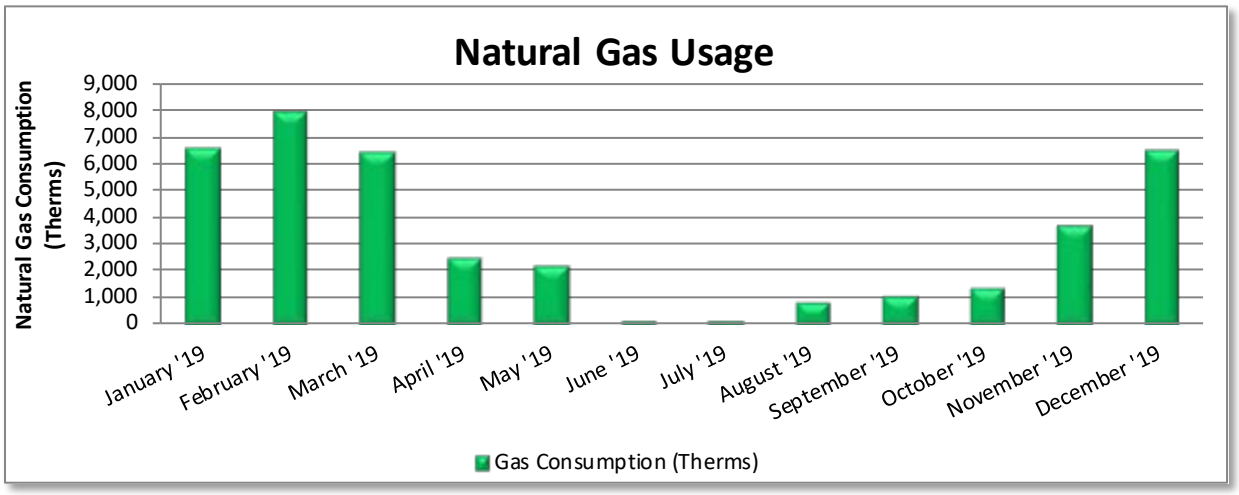
Electric Billing Data					
Period Ending	Days in Period	Electric Usage (kWh)	Demand (kW)	Demand Cost	Total Electric Cost
1/30/19	30	88,083	231	$866	$10,499
3/1/19	30	87,843	223	$837	$11,571
4/1/19	31	91,442	220	$824	$10,940
5/1/19	30	86,596	234	$877	$10,961
5/31/19	30	106,098	328	$1,230	$13,394
7/1/19	31	105,027	288	$3,652	$15,380
7/31/19	30	118,173	312	$3,953	$16,352
8/29/19	29	109,314	266	$3,367	$14,384
9/30/19	32	119,750	336	$4,252	$15,532
10/29/19	29	86,125	327	$1,229	$10,877
11/27/19	29	106,977	252	$947	$13,130
12/31/19	34	103,122	174	$794	$14,783
Totals	**365**	**1,208,549**	**336**	**$22,827**	**$157,802**
Annual	**365**	**1,208,549**	**336**	**$22,827**	**$157,802**

Notes:

- Peak demand of 336 kW occurred in September 2019.
- Average demand over the past 12 months was 266 kW.
- The average electric cost over the past 12 months was $0.131/kWh, which is the blended rate that includes energy supply, distribution, demand, and other charges. This report uses this blended rate to estimate energy cost savings.
- On-site generation is through a PPA and the site purchases the generated electricity from Conductive Power. Some of the electricity generated on-site is used on-site and the remainder is exported to the grid.

3.2 Natural Gas

PSE&G delivers natural gas under rate class LVG, with natural gas supply provided by East Coast Power, a third-party supplier.



Gas Billing Data				
Period Ending	**Days in Period**	**Natural Gas Usage (Therms)**	**Natural Gas Cost**	**TRC Estimated Usage?**
1/30/19	30	6,564	$5,280	Yes
3/1/19	30	7,902	$6,953	No
4/1/19	31	6,421	$5,732	No
5/1/19	30	2,488	$1,598	No
5/31/19	30	2,182	$1,384	No
7/1/19	31	177	$239	No
7/31/19	30	209	$250	No
8/29/19	29	859	$584	No
9/30/19	32	1,069	$710	No
10/29/19	29	1,389	$994	No
11/27/19	29	3,744	$3,743	No
12/31/19	34	6,495	$5,534	No
Totals	**365**	**39,500**	**$33,000**	
Annual	**365**	**39,500**	**$33,000**	

Notes:

- The average gas cost for the past 12 months is $0.835/therm, which is the blended rate used throughout the analysis.

3.3 Benchmarking

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

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

Benchmarking Score	**74**

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.

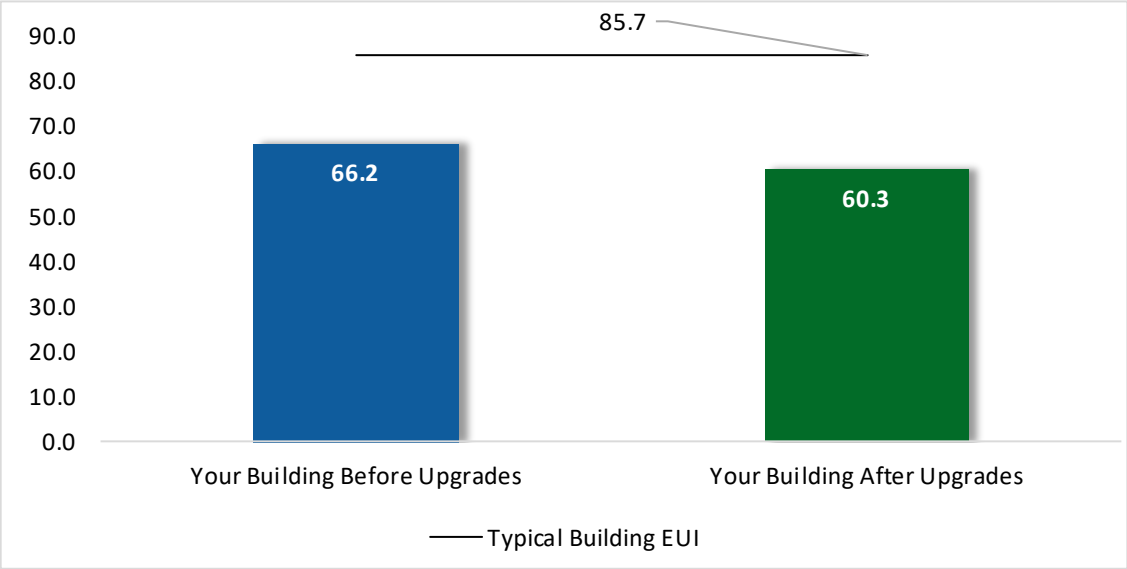


Figure 6 - Energy Use Intensity Comparison[3]

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			**187,880**	**53.8**	**-39**	**$24,205**	**$77,836**	**$42,246**	**$35,590**	**1.5**	**184,615**
ECM 1	Retrofit Fixtures with LED Lamps	Yes	187,880	53.8	-39	$24,205	$77,836	$42,246	$35,590	1.5	184,615
Lighting Control Measures			**1,639**	**0.1**	**0**	**$212**	**$1,010**	**$210**	**$800**	**3.8**	**1,629**
ECM 2	Install Occupancy Sensor Lighting Controls	Yes	877	0.1	0	$113	$810	$210	$600	5.3	862
ECM 3	Install Photocell Controls	Yes	762	0.0	0	$100	$200	$0	$200	2.0	767
Variable Frequency Drive (VFD) Measures			**10,079**	**1.6**	**31**	**$1,572**	**$17,500**	**$1,300**	**$16,200**	**10.3**	**13,737**
ECM 4	Install VFDs on Chilled Water Pumps	No	2,112	1.2	0	$276	$7,768	$800	$6,968	25.3	2,127
ECM 5	Install VFDs on Kitchen Hood Fan Motors	Yes	1,891	0.0	31	$503	$3,261	$200	$3,061	6.1	5,491
ECM 6	Install VFDs on Water Supply Pump	Yes	6,076	0.4	0	$793	$6,471	$300	$6,171	7.8	6,119
HVAC System Improvements			**821**	**0.5**	**21**	**$286**	**$3,972**	**$0**	**$3,972**	**13.9**	**3,330**
ECM 7	Install Duct Insulation	No	821	0.5	21	$286	$3,972	$0	$3,972	13.9	3,330
Domestic Water Heating Upgrade			**0**	**0.0**	**8**	**$67**	**$151**	**$151**	**$0**	**0.0**	**938**
ECM 8	Install Low-Flow DHW Devices	Yes	0	0.0	8	$67	$151	$151	$0	0.0	938
Food Service & Refrigeration Measures			**1,954**	**0.2**	**0**	**$255**	**$460**	**$100**	**$360**	**1.4**	**1,968**
ECM 9	Vending Machine Control	Yes	1,954	0.2	0	$255	$460	$100	$360	1.4	1,968
TOTALS			**202,374**	**56.3**	**21**	**$26,598**	**$100,928**	**$44,007**	**$56,922**	**2.1**	**206,217**

* - 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		**187,880**	**53.8**	**-39**	**$24,205**	**$77,836**	**$42,246**	**$35,590**	**1.5**	**184,615**
ECM 1	Retrofit Fixtures with LED Lamps	187,880	53.8	-39	$24,205	$77,836	$42,246	$35,590	1.5	184,615
Lighting Control Measures		**1,639**	**0.1**	**0**	**$212**	**$1,010**	**$210**	**$800**	**3.8**	**1,629**
ECM 2	Install Occupancy Sensor Lighting Controls	877	0.1	0	$113	$810	$210	$600	5.3	862
ECM 3	Install Photocell Controls	762	0.0	0	$100	$200	$0	$200	2.0	767
Variable Frequency Drive (VFD) Measures		**7,967**	**0.4**	**31**	**$1,296**	**$9,732**	**$500**	**$9,232**	**7.1**	**11,610**
ECM 5	Install VFDs on Kitchen Hood Fan Motors	1,891	0.0	31	$503	$3,261	$200	$3,061	6.1	5,491
ECM 6	Install VFDs on Water Supply Pump	6,076	0.4	0	$793	$6,471	$300	$6,171	7.8	6,119
Domestic Water Heating Upgrade		**0**	**0.0**	**8**	**$67**	**$151**	**$151**	**$0**	**0.0**	**938**
ECM 8	Install Low-Flow DHW Devices	0	0.0	8	$67	$151	$151	$0	0.0	938
Food Service & Refrigeration Measures		**1,954**	**0.2**	**0**	**$255**	**$460**	**$100**	**$360**	**1.4**	**1,968**
ECM 9	Vending Machine Control	1,954	0.2	0	$255	$460	$100	$360	1.4	1,968
TOTALS		**199,441**	**54.6**	**-1**	**$26,036**	**$89,189**	**$43,207**	**$45,982**	**1.8**	**200,761**

* - 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		**187,880**	**53.8**	**-39**	**$24,205**	**$77,836**	**$42,246**	**$35,590**	**1.5**	**184,615**
ECM 1	Retrofit Fixtures with LED Lamps	187,880	53.8	-39	$24,205	$77,836	$42,246	$35,590	1.5	184,615

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: Retrofit Fixtures with LED Lamps

Replace fluorescent 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: cafeteria, kitchen, exterior fixtures, and all areas with fluorescent fixtures with T8 tubes

4.2 Lighting Controls

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Control Measures		**1,639**	**0.1**	**0**	**$212**	**$1,010**	**$210**	**$800**	**3.8**	**1,629**
ECM 2	Install Occupancy Sensor Lighting Controls	877	0.1	0	$113	$810	$210	$600	5.3	862
ECM 3	Install Photocell Controls	762	0.0	0	$100	$200	$0	$200	2.0	767

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

ECM 2: Install Occupancy Sensor Lighting Controls

Install occupancy sensors to control lighting fixtures in areas that are frequently unoccupied, even for short periods. For most spaces, we recommend 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: office A102, office C102, and teacher's lounge C303.

ECM 3: Install Photocell Controls

Install photocells to eliminate exterior lighting use during daytime periods.

Photocells or photocell sensors are lighting controls used for dusk to dawn applications to automatically turn the fixtures on or off. Photo controls detect the amount of light outside and once the light level reaches a low point, the fixture will switch on. During the day the photocell will detect higher amounts of light and will turn the fixture off.

Photocells may be fixture mounted or wired externally and connected by line voltage to a single light fixture or to a series of fixtures.

This measure reduces energy use in exterior areas to restrict operation to non-daylight periods.

Affected building areas: exterior CFL fixtures.

4.3 Variable Frequency Drives (VFD)

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Variable Frequency Drive (VFD) Measures		**10,079**	**1.6**	**31**	**$1,572**	**$17,500**	**$1,300**	**$16,200**	**10.3**	**13,737**
ECM 4	Install VFDs on Chilled Water Pumps	2,112	1.2	0	$276	$7,768	$800	$6,968	25.3	2,127
ECM 5	Install VFDs on Kitchen Hood Fan Motors	1,891	0.0	31	$503	$3,261	$200	$3,061	6.1	5,491
ECM 6	Install VFDs on Water Supply Pump	6,076	0.4	0	$793	$6,471	$300	$6,171	7.8	6,119

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 4: Install VFDs on Chilled Water Pumps

We evaluated installing VFDs to control chilled water pumps. Two-way valves must serve the chilled water coils being served and the chilled water loop must have a differential pressure sensor installed. If three-way valves or a bypass leg are used in the chilled water distribution they will need to be modified when this measure is implemented. As the chilled water valves close, the differential pressure increases, and the VFD modulates the pump speed to maintain a differential pressure setpoint.

For systems with variable chilled water flow through the chiller, the minimum flow to prevent the chiller from tripping off will need to be determined during the final project design. The control system should be programmed to maintain the minimum flow through the chiller and to prevent pump cavitation.

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

Affected pumps: two 3.0 hp chilled water pumps.

ECM 5: Install VFDs on Kitchen Hood Fan Motors

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

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

ECM 6: Install VFDs on Water Supply Pump

Install VFDs to control the domestic cold water supply pumps. Since water supply systems become an open system whenever and end-use valve or fixture is opened the VFD will need to be controlled to maintain sufficient pressure in the distribution system to deliver water to the furthest point in the system.

Energy savings result from reducing the pump speed during low demand periods. Ensure that your control system includes the sensors and inputs required to optimize water flow in your water supply.

4.4 HVAC Improvements

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
HVAC System Improvements		**821**	**0.5**	**21**	**$286**	**$3,972**	**$0**	**$3,972**	**13.9**	**3,330**
ECM 7	Install Duct Insulation	821	0.5	21	$286	$3,972	$0	$3,972	13.9	3,330

ECM 7: Install Duct Insulation

There are four packaged ACs with ductwork that is located outside and is uninsulated, including: a 15.0-ton RTU serving the cafeteria (RTU-3), a 15.0-ton RTU serving the auxiliary gym (RTU-4), and two 10.0-ton RTUs serving the gymnasium (RTU-7 & 8). We evaluated installing duct insulation on the exterior ducting that is missing.

Distribution system losses are dependent on the 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.

While preparing to insulate the duct work, it is recommended to inspect for duct leakage since leaky ducts can account for 5% to 25% of the supply airflow in commercial buildings. In the case of rooftop air handlers, duct leakage can occur to the outside of the building wasting conditioned air. Eliminating duct leaks can improve ventilation system performance and reduce heating and cooling system operation.

Affected Systems: RTU-3, RTU-4, RTU-7, and RTU-8 all with insulated ductwork outside.

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**	**8**	**$67**	**$151**	**$151**	**$0**	**0.0**	**938**
ECM 8	Install Low-Flow DHW Devices	0	0.0	8	$67	$151	$151	$0	0.0	938

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

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		**1,954**	**0.2**	**0**	**$255**	**$460**	**$100**	**$360**	**1.4**	**1,968**
ECM 9	Vending Machine Control	1,954	0.2	0	$255	$460	$100	$360	1.4	1,968

ECM 9: 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 percent 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.

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.

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

Motor Maintenance

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

Destratification Fans

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

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

AC System Evaporator/Condenser Coil Cleaning

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

HVAC Filter Cleaning and Replacement

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

Boiler Maintenance

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

Furnace Maintenance

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

Optimize HVAC Equipment Schedules

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

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

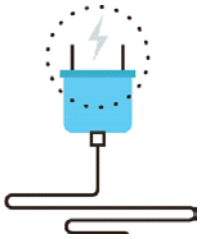
Water Heater Maintenance

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

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

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

Plug Load Controls



Reducing plug loads is a common way to decrease your electrical use. Limiting the energy use of plug loads can include increasing occupant awareness, removing under-used equipment, installing hardware controls, and using software controls. Consider enabling the most aggressive power settings on existing devices or install load sensing or occupancy sensing (advanced) power strips[6]. Your local utility may offer incentives or rebates for this equipment.

Water Conservation

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

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

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

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

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

Procurement Strategies

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

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

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

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

6 On-site Generation

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

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

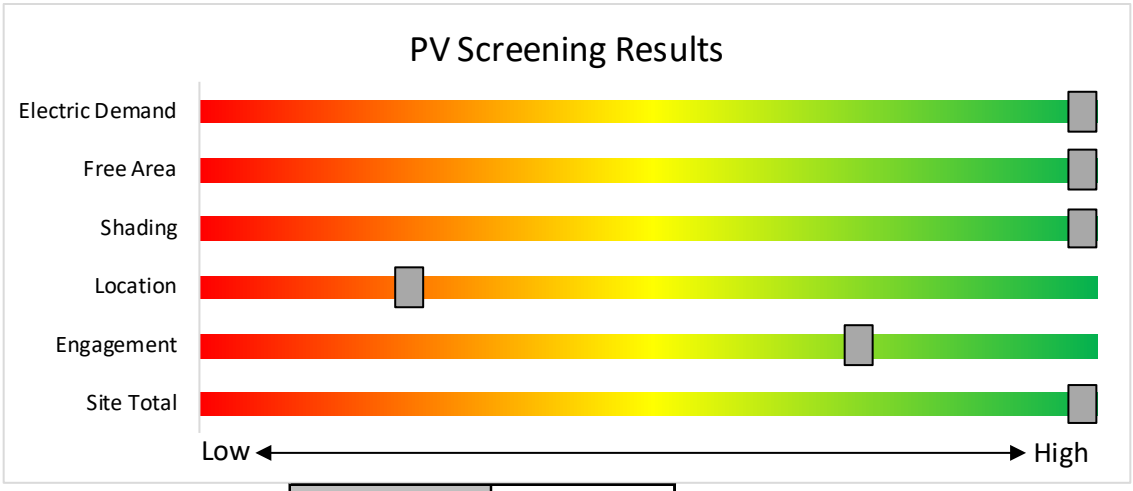
6.1 Solar Photovoltaic

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

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

The amount of free area, ease of installation (location), and the lack of shading elements contribute to the **high** potential. A PV array located in the parking lot 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	118	kW DC STC
Electric Generation	140,582	kWh/yr
Displaced Cost	$18,360	/yr
Installed Cost	$398,800	

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.

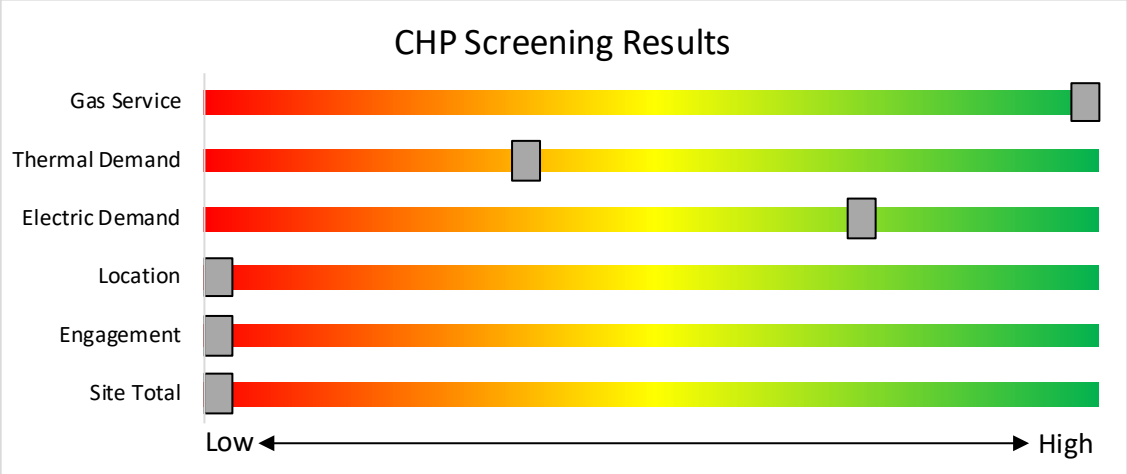


Figure 10 - Combined Heat and Power Screening

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.	Up to 25% of installation cost, calculated based on level of energy savings per square foot.
How do I participate?	Submit an application for the specific equipment to be installed.	Contact a participating contractor in your region.	Contact a pre-qualified Partner to develop your Energy Reduction Plan and set your energy savings targets.
Take the next step by visiting **www.njcleanenergy.com** for program details, applications, and to contact a qualified contractor.			

7.1 SmartStart

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

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

Equipment with Prescriptive Incentives Currently Available:

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

Incentives

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

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

How to Participate

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

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

7.2 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.

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

Incentives

The program pays up to 70 percent 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 percent of eligible costs are covered by the program, subject to program caps and eligibility, while the remaining 30 percent 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 percent 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.

The scope of work presented in this audit report does not quite meet the requirements of the current P4P program. However, due to the size of the facility and existing conditions, should additional measures be identified at a later point in time, for example through further evaluation or the Energy Savings Improvement Program process, this facility could potentially meet the requirements necessary to participate in the 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.

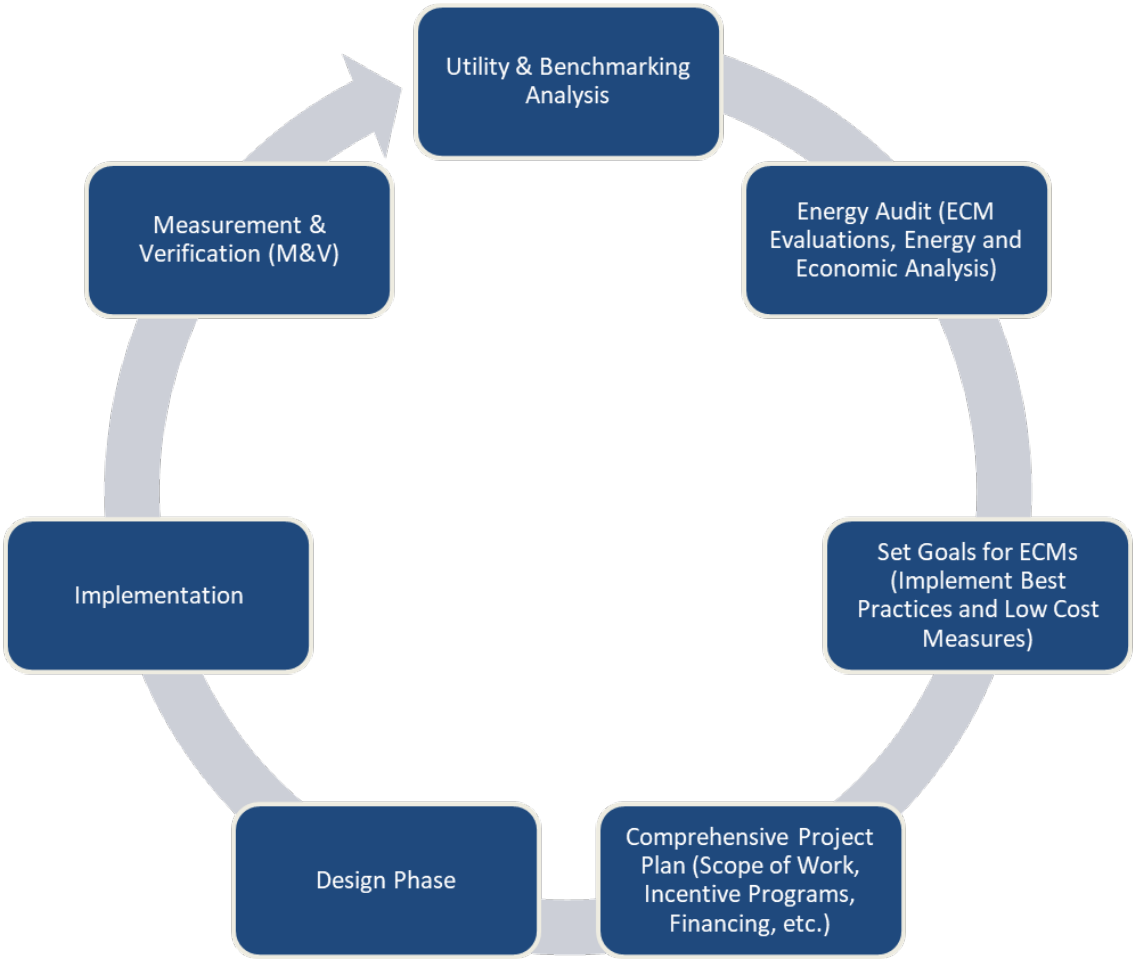


Figure 11 – Project Development Cycle

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[9].

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[10].

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

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

APPENDIX A: EQUIPMENT INVENTORY & RECOMMENDATIONS

Lighting Inventory & Recommendations

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Classroom A103	18	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,990	1	Relamp	No	18	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,990	0.6	1,950	0	$251	$986	$540	1.8
Classroom A105 OT/PT	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,990	1	Relamp	No	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,990	0.2	650	0	$84	$329	$180	1.8
Classroom A106	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,990	1	Relamp	No	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,990	0.1	433	0	$56	$219	$120	1.8
Classroom B105	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
Classroom B105	30	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,990	1	Relamp	No	30	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,990	1.1	3,251	-1	$419	$1,643	$900	1.8
Classroom B120	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	1,990	1	Relamp	No	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,990	0.2	578	0	$74	$292	$160	1.8
Classroom C105	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	1,990	1	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,990	0.0	115	0	$15	$55	$30	1.7
Classroom C105	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,990	1	Relamp	No	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,990	0.6	1,734	0	$223	$876	$480	1.8
Classroom C106	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,990	1	Relamp	No	13	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,990	0.5	1,409	0	$181	$712	$390	1.8
Classroom C107	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	1,990	1	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,990	0.0	115	0	$15	$55	$30	1.7
Classroom C107	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,990	1	Relamp	No	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,990	0.6	1,734	0	$223	$876	$480	1.8
Classroom C108	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	1,990	1	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,990	0.0	115	0	$15	$55	$30	1.7
Classroom C108	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,990	1	Relamp	No	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,990	0.6	1,734	0	$223	$876	$480	1.8
Classroom C109	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	1,990	1	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,990	0.0	115	0	$15	$55	$30	1.7
Classroom C109	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,990	1	Relamp	No	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,990	0.6	1,734	0	$223	$876	$480	1.8
Classroom C110	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	1,990	1	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,990	0.0	115	0	$15	$55	$30	1.7
Classroom C110	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,990	1	Relamp	No	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,990	0.6	1,734	0	$223	$876	$480	1.8
Classroom C111	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	1,990	1	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,990	0.0	115	0	$15	$55	$30	1.7
Classroom C111	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,990	1	Relamp	No	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,990	0.6	1,734	0	$223	$876	$480	1.8
Classroom C112	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	1,990	1	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,990	0.0	115	0	$15	$55	$30	1.7
Classroom C112	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,990	1	Relamp	No	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,990	0.6	1,734	0	$223	$876	$480	1.8
Classroom C113	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	1,990	1	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,990	0.0	115	0	$15	$55	$30	1.7
Classroom C113	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,990	1	Relamp	No	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,990	0.6	1,734	0	$223	$876	$480	1.8
Classroom C114	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	1,990	1	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,990	0.0	115	0	$15	$55	$30	1.7
Classroom C114	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,990	1	Relamp	No	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,990	0.6	1,734	0	$223	$876	$480	1.8

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Classroom C115	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	1,990	1	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,990	0.0	115	0	$15	$55	$30	1.7
Classroom C115	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,990	1	Relamp	No	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,990	0.6	1,734	0	$223	$876	$480	1.8
Classroom C116	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	1,990	1	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,990	0.0	115	0	$15	$55	$30	1.7
Classroom C116	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,990	1	Relamp	No	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,990	0.6	1,734	0	$223	$876	$480	1.8
Classroom C117	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	1,990	1	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,990	0.0	115	0	$15	$55	$30	1.7
Classroom C117	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,990	1	Relamp	No	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,990	0.6	1,734	0	$223	$876	$480	1.8
Classroom C118	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	1,990	1	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,990	0.0	115	0	$15	$55	$30	1.7
Classroom C118	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,990	1	Relamp	No	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,990	0.6	1,734	0	$223	$876	$480	1.8
Classroom C119	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	1,990	1	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,990	0.0	115	0	$15	$55	$30	1.7
Classroom C119	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,990	1	Relamp	No	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,990	0.6	1,734	0	$223	$876	$480	1.8
Classroom C203	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
Classroom C203	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	1,990	1	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,990	0.0	115	0	$15	$55	$30	1.7
Classroom C203	17	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,990	1	Relamp	No	17	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,990	0.6	1,842	0	$237	$931	$510	1.8
Classroom C205	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	1,990	1	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,990	0.0	115	0	$15	$55	$30	1.7
Classroom C205	24	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,990	1	Relamp	No	24	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,990	0.9	2,601	-1	$335	$1,315	$720	1.8
Classroom C206	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
Classroom C206	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	1,990	1	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,990	0.0	115	0	$15	$55	$30	1.7
Classroom C206	24	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,990	1	Relamp	No	24	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,990	0.9	2,601	-1	$335	$1,315	$720	1.8
Classroom C207	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	1,990	1	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,990	0.0	115	0	$15	$55	$30	1.7
Classroom C207	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,990	1	Relamp	No	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,990	0.6	1,734	0	$223	$876	$480	1.8
Classroom C208	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	1,990	1	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,990	0.0	115	0	$15	$55	$30	1.7
Classroom C208	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,990	1	Relamp	No	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,990	0.6	1,734	0	$223	$876	$480	1.8
Classroom C209	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	1,990	1	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,990	0.0	115	0	$15	$55	$30	1.7
Classroom C209	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,990	1	Relamp	No	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,990	0.6	1,734	0	$223	$876	$480	1.8
Classroom C210	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	1,990	1	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,990	0.0	115	0	$15	$55	$30	1.7

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Classroom C210	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,990	1	Relamp	No	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,990	0.6	1,734	0	$223	$876	$480	1.8
Classroom C211	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	1,990	1	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,990	0.0	115	0	$15	$55	$30	1.7
Classroom C211	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,990	1	Relamp	No	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,990	0.6	1,734	0	$223	$876	$480	1.8
Classroom C212	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	1,990	1	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,990	0.0	115	0	$15	$55	$30	1.7
Classroom C212	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,990	1	Relamp	No	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,990	0.6	1,734	0	$223	$876	$480	1.8
Classroom C213	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	1,990	1	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,990	0.0	115	0	$15	$55	$30	1.7
Classroom C213	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,990	1	Relamp	No	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,990	0.6	1,734	0	$223	$876	$480	1.8
Classroom C214	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	1,990	1	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,990	0.0	115	0	$15	$55	$30	1.7
Classroom C214	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,990	1	Relamp	No	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,990	0.6	1,734	0	$223	$876	$480	1.8
Classroom C215	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	1,990	1	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,990	0.0	115	0	$15	$55	$30	1.7
Classroom C215	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,990	1	Relamp	No	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,990	0.6	1,734	0	$223	$876	$480	1.8
Classroom C216	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	1,990	1	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,990	0.0	115	0	$15	$55	$30	1.7
Classroom C216	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,990	1	Relamp	No	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,990	0.6	1,734	0	$223	$876	$480	1.8
Classroom C217	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	1,990	1	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,990	0.0	115	0	$15	$55	$30	1.7
Classroom C217	18	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,990	1	Relamp	No	18	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,990	0.6	1,950	0	$251	$986	$540	1.8
Classroom C305	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Classroom C305	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	1,990	1	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,990	0.0	115	0	$15	$55	$30	1.7
Classroom C305	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,990	1	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,990	0.4	1,300	0	$168	$657	$360	1.8
Classroom C306	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Classroom C306	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	1,990	1	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,990	0.0	115	0	$15	$55	$30	1.7
Classroom C306	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,990	1	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,990	0.4	1,300	0	$168	$657	$360	1.8
Classroom C307	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
Classroom C307	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	High/Low Control	S	32	1,990	1	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	High/Low Control	15	1,990	0.0	115	0	$15	$55	$30	1.7
Classroom C307	27	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,990	1	Relamp	No	27	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,990	1.0	2,926	-1	$377	$1,479	$810	1.8
Classroom C308	2	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Classroom C308	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	High/Low Control	S	32	1,990	1	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	High/Low Control	15	1,990	0.0	115	0	$15	$55	$30	1.7
Classroom C308	27	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,990	1	Relamp	No	27	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,990	1.0	2,926	-1	$377	$1,479	$810	1.8
Classroom C308A	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	1,990	1	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,990	0.1	217	0	$28	$110	$60	1.8
Classroom C309	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	High/Low Control	S	32	1,990	1	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	High/Low Control	15	1,990	0.0	115	0	$15	$55	$30	1.7
Classroom C309	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,990	1	Relamp	No	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,990	0.6	1,734	0	$223	$876	$480	1.8
Classroom C310	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	1,990	1	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,990	0.0	115	0	$15	$55	$30	1.7
Classroom C310	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,990	1	Relamp	No	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,990	0.6	1,734	0	$223	$876	$480	1.8
Classroom C311	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	1,990	1	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,990	0.0	115	0	$15	$55	$30	1.7
Classroom C311	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,990	1	Relamp	No	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,990	0.6	1,734	0	$223	$876	$480	1.8
Classroom C312	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	1,990	1	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,990	0.0	115	0	$15	$55	$30	1.7
Classroom C312	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,990	1	Relamp	No	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,990	0.6	1,734	0	$223	$876	$480	1.8
Classroom C313	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	1,990	1	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,990	0.0	115	0	$15	$55	$30	1.7
Classroom C313	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,990	1	Relamp	No	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,990	0.6	1,734	0	$223	$876	$480	1.8
Classroom C314	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	1,990	1	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,990	0.0	115	0	$15	$55	$30	1.7
Classroom C314	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,990	1	Relamp	No	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,990	0.6	1,734	0	$223	$876	$480	1.8
Classroom C315	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	1,990	1	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,990	0.0	115	0	$15	$55	$30	1.7
Classroom C315	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,990	1	Relamp	No	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,990	0.6	1,734	0	$223	$876	$480	1.8
Classroom C316	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	1,990	1	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,990	0.0	115	0	$15	$55	$30	1.7
Classroom C316	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,990	1	Relamp	No	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,990	0.6	1,734	0	$223	$876	$480	1.8
Classroom C317	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	1,990	1	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,990	0.0	115	0	$15	$55	$30	1.7
Classroom C317	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,990	1	Relamp	No	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,990	0.6	1,734	0	$223	$876	$480	1.8
Classroom C318	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	1,990	1	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,990	0.0	115	0	$15	$55	$30	1.7
Classroom C318	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,990	1	Relamp	No	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,990	0.6	1,734	0	$223	$876	$480	1.8
Classroom C319	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	1,990	1	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,990	0.0	115	0	$15	$55	$30	1.7
Classroom C319	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,990	1	Relamp	No	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,990	0.6	1,734	0	$223	$876	$480	1.8

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Computer Lab A202	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
Computer Lab A202	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	2,846	1	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,846	0.0	164	0	$21	$55	$30	1.2
Computer Lab A202	24	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,846	1	Relamp	No	24	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,846	0.9	3,719	-1	$479	$1,315	$720	1.2
Conference Room A101C	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.1	620	0	$80	$219	$120	1.2
Conference Room A201C	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.1	310	0	$40	$110	$60	1.2
Conference Room A102K	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,846	1	Relamp	No	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,846	0.1	620	0	$80	$219	$120	1.2
Cafeteria	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
Cafeteria	16	Halogen Incandescent: (1) 400W Spot Light Lamp	Wall Switch	S	400	5	1	Relamp	No	16	LED Lamps: (1) 60W LED Spot Light	Wall Switch	60	5	3.9	30	0	$4	$483	$96	100.5
Cafeteria	13	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	13	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.3	1,343	0	$173	$475	$260	1.2
Cafeteria	36	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Timeclock	S	93	4,250	1	Relamp	No	36	LED - Linear Tubes: (3) 4' Lamps	Timeclock	44	4,250	1.3	8,331	-2	$1,073	$1,972	$1,080	0.8
Electrical Room 10	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.0	18	0	$2	$37	$20	7.1
Electrical Room 4	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.0	18	0	$2	$37	$20	7.1
Electrical Room 9	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.0	18	0	$2	$37	$20	7.1
Electrical Room B116	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	1	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.0	36	0	$5	$73	$40	7.1
Electrical Room C200A	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.0	18	0	$2	$37	$20	7.1
Electrical Room C200F	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.0	18	0	$2	$37	$20	7.1
Electrical Room C200H	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.0	18	0	$2	$37	$20	7.1
Electrical Room C300K	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	500	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	500	0.0	18	0	$2	$37	$20	7.1
Elevator	2	LED Lamps: (2) 15W A19 Screw-In Lamps	Timeclock	S	30	4,250		None	No	2	LED Lamps: (2) 15W A19 Screw-In Lamps	Timeclock	30	4,250	0.0	0	0	$0	$0	$0	0.0
Emergency Command Center	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	500	1	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	500	0.1	73	0	$9	$146	$80	7.1
First Floor 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
First Floor Hallway	4	LED - Linear Tubes: (1) 4' Lamp	Timeclock	S	15	4,250		None	No	4	LED - Linear Tubes: (1) 4' Lamp	Timeclock	15	4,250	0.0	0	0	$0	$0	$0	0.0
First Floor Hallway	37	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Timeclock	S	62	4,250	1	Relamp	No	37	LED - Linear Tubes: (2) 4' Lamps	Timeclock	29	4,250	0.9	5,708	-1	$735	$1,351	$740	0.8
Garage	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.1	413	0	$53	$146	$80	1.2
Ground Level	6	Compact Fluorescent: (1) 42W Spiral Plug-In Lamp	Timeclock		42	8,760	1, 3	Relamp	Yes	6	LED Lamps: (1) 29W Screw-In Lamp	Photocell	29	4,380	0.0	1,445	0	$189	$303	$12	1.5

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Ground Level	3	Compact Fluorescent: (1) 42W Spiral Plug-In Lamp	Timeclock		42	4,368	1	Relamp	No	3	LED Lamps: (1) 29W Screw-In Lamp	Timeclock	29	4,368	0.0	170	0	$22	$52	$6	2.1
Ground Level	1	LED - Fixtures: LED School Sign	Timeclock		200	8,760		None	No	1	LED - Fixtures: LED School Sign	Timeclock	200	8,760	0.0	0	0	$0	$0	$0	0.0
Ground Level	3	LED - Fixtures: In-Ground Flag Light Fixture	Timeclock		30	4,368		None	No	3	LED - Fixtures: In-Ground Flag Light Fixture	Timeclock	30	4,368	0.0	0	0	$0	$0	$0	0.0
Ground Level	23	LED - Fixtures: Ceiling Mount	Timeclock		15	4,368		None	No	23	LED - Fixtures: Ceiling Mount	Timeclock	15	4,368	0.0	0	0	$0	$0	$0	0.0
Ground Level	14	LED - Fixtures: Ceiling Mount	Timeclock		30	4,368		None	No	14	LED - Fixtures: Ceiling Mount	Timeclock	30	4,368	0.0	0	0	$0	$0	$0	0.0
Ground Level	12	LED - Fixtures: Outdoor Pole/Arm-Mounted Decorative Fixture	Timeclock		50	4,368		None	No	12	LED - Fixtures: Outdoor Pole/Arm-Mounted Decorative Fixture	Timeclock	50	4,368	0.0	0	0	$0	$0	$0	0.0
Ground Level	54	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Timeclock		20	4,368		None	No	54	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Timeclock	20	4,368	0.0	0	0	$0	$0	$0	0.0
Gymnasium	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
Gymnasium	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Timeclock	S	62	4,250	1	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Timeclock	29	4,250	0.0	309	0	$40	$73	$40	0.8
Gymnasium	30	Linear Fluorescent - T8: 4' T8 (32W) - 6L	Timeclock	S	176	4,250	1	Relamp	No	30	LED - Linear Tubes: (6) 4' Lamps	Timeclock	87	4,250	1.9	12,482	-3	$1,608	$3,286	$1,800	0.9
Auxiliary Gymnasium	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
Auxiliary Gymnasium	12	LED - Fixtures: Ambient 2x4 Fixture	Timeclock	S	60	4,250		None	No	12	LED - Fixtures: Ambient 2x4 Fixture	Timeclock	60	4,250	0.0	0	0	$0	$0	$0	0.0
First Floor Hallway	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
First Floor Hallway	22	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Timeclock	S	62	4,250	1	Relamp	No	22	LED - Linear Tubes: (2) 4' Lamps	Timeclock	29	4,250	0.5	3,394	-1	$437	$803	$440	0.8
Janitorial 2	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	250	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	250	0.0	9	0	$1	$37	$20	14.1
Janitorial 3	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	250	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	250	0.0	9	0	$1	$37	$20	14.1
Janitorial 4	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	250	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	250	0.0	9	0	$1	$37	$20	14.1
Janitorial 5	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	250	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	250	0.0	9	0	$1	$37	$20	14.1
Janitorial C300H	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	250	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	250	0.0	9	0	$1	$37	$20	14.1
Kitchen	2	Compact Fluorescent: (1) 42W A19 Screw-In Lamp	Wall Switch	S	42	4,125	1	Relamp	No	2	LED Lamps: (1) 29W Screw-In Lamp	Wall Switch	29	4,125	0.0	118	0	$15	$34	$4	2.0
Kitchen	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
Kitchen	10	Linear Fluorescent - T5: 4' T5 (28W) - 2L	Wall Switch	S	60	4,125	1	Relamp	No	10	LED - Linear Tubes: (2) 4' T5 (14.5W) Lamps	Wall Switch	30	4,125	0.2	1,361	0	$175	$571	$200	2.1
Kitchen	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,125	1	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,125	0.1	599	0	$77	$146	$80	0.9
Kitchen	22	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	4,125	1	Relamp	No	22	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	4,125	0.8	4,941	-1	$637	$1,205	$660	0.9
Loading Area	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

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Loading Area	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.1	620	0	$80	$219	$120	1.2
Locker Room B104c	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.1	310	0	$40	$110	$60	1.2
Boy's Locker Room	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	7	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.2	723	0	$93	$256	$140	1.2
Girl's Locker Room	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	7	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.2	723	0	$93	$256	$140	1.2
Lounge A101D	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,846	1	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,846	0.1	310	0	$40	$110	$60	1.2
Lounge Maintenance	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.1	517	0	$67	$183	$100	1.2
Lounge Teacher	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.1	620	0	$80	$219	$120	1.2
Lounge Teacher C303	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.1	413	0	$53	$146	$80	1.2
Lounge Teacher C303	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,125	1, 2	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.2	1,143	0	$147	$489	$190	2.0
Main Electrical Room	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
Main Electrical Room	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	1	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.1	73	0	$9	$146	$80	7.1
Main Hallway	2	LED - Linear Tubes: (1) 4' Lamp	Timeclock	S	15	4,250		None	No	2	LED - Linear Tubes: (1) 4' Lamp	Timeclock	15	4,250	0.0	0	0	$0	$0	$0	0.0
Main Hallway	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Timeclock	S	62	4,250	1	Relamp	No	18	LED - Linear Tubes: (2) 4' Lamps	Timeclock	29	4,250	0.4	2,777	-1	$358	$657	$360	0.8
Main Vestibule	7	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	7	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Main Vestibule	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Timeclock	S	62	4,250	1	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Timeclock	29	4,250	0.0	309	0	$40	$73	$40	0.8
Mechanical Boiler Room	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
Mechanical Boiler Room	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	1	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.1	73	0	$9	$146	$80	7.1
Mechanical Fire Pump Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	1	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.0	36	0	$5	$73	$40	7.1
Mechanical Pump Room	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	1	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.1	109	0	$14	$219	$120	7.1
Media Center	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
Media Center	52	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,846	1	Relamp	No	52	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,846	1.9	8,059	-2	$1,038	$2,848	$1,560	1.2
Office - Enclosed 101A	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,846	1	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,846	0.1	465	0	$60	$164	$90	1.2
Office - Enclosed A102	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Office - Enclosed A102	11	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,125	1, 2	Relamp	Yes	11	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.3	2,096	0	$270	$672	$290	1.4
Office - Enclosed A102A	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,846	1	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,846	0.1	310	0	$40	$110	$60	1.2

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Office - Enclosed A102B	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,846	1	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,846	0.1	310	0	$40	$110	$60	1.2
Office - Enclosed A102C	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,846	1	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,846	0.1	310	0	$40	$110	$60	1.2
Office - Enclosed A102D	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,846	1	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,846	0.1	310	0	$40	$110	$60	1.2
Office - Enclosed A102E	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,846	1	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,846	0.1	310	0	$40	$110	$60	1.2
Office - Enclosed A102F	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,846	1	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,846	0.1	310	0	$40	$110	$60	1.2
Office - Enclosed A102G	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,846	1	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,846	0.1	310	0	$40	$110	$60	1.2
Office - Enclosed A102H	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,846	1	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,846	0.1	310	0	$40	$110	$60	1.2
Office - Enclosed A102I	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,846	1	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,846	0.1	310	0	$40	$110	$60	1.2
Office - Enclosed A102J	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,846	1	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,846	0.1	310	0	$40	$110	$60	1.2
Office - Enclosed B101A PE	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,846	1	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,846	0.1	465	0	$60	$164	$90	1.2
Office - Enclosed B101G PE	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.1	310	0	$40	$110	$60	1.2
Office - Enclosed B106	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.0	207	0	$27	$73	$40	1.2
Office - Enclosed C101	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,846	1	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,846	0.1	465	0	$60	$164	$90	1.2
Office - Enclosed C102	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	4,125	1, 2	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,846	0.1	857	0	$110	$434	$160	2.5
Office - Enclosed C203A	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.1	620	0	$80	$219	$120	1.2
Office - Enclosed C302	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.1	310	0	$40	$110	$60	1.2
Kitchen Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.0	207	0	$27	$73	$40	1.2
Office - Enclosed Main A101	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Office - Enclosed Main A101	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.4	1,550	0	$200	$548	$300	1.2
Office - Enclosed Maintenance	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,846	1	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,846	0.1	465	0	$60	$164	$90	1.2
Office - Enclosed Nurse A104	10	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,846	1	Relamp	No	10	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,846	0.4	1,550	0	$200	$548	$300	1.2
Office - Principal A101A	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.1	413	0	$53	$146	$80	1.2
Office A201A	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,846	1	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,846	0.1	465	0	$60	$164	$90	1.2
Restroom - Female 1	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.0	207	0	$27	$73	$40	1.2
Restroom - Female 10	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.0	207	0	$27	$73	$40	1.2

	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
Restroom - Female 2	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.0	207	0	$27	$73	$40	1.2
Restroom - Female 3	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Occupancy Sensor	S	33	2,846	1	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,846	0.0	50	0	$6	$33	$12	3.2
Restroom - Female 3	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.0	207	0	$27	$73	$40	1.2
Restroom - Female 4	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.0	207	0	$27	$73	$40	1.2
Restroom - Female 5	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.0	207	0	$27	$73	$40	1.2
Restroom - Female 6	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.0	207	0	$27	$73	$40	1.2
Restroom - Female 7	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.0	207	0	$27	$73	$40	1.2
Restroom - Female 8	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Occupancy Sensor	S	33	2,846	1	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,846	0.0	50	0	$6	$33	$12	3.2
Restroom - Female 8	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.1	413	0	$53	$146	$80	1.2
Restroom - Male 1	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.0	207	0	$27	$73	$40	1.2
Restroom - Male 10	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.0	207	0	$27	$73	$40	1.2
Restroom - Male 2	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.0	207	0	$27	$73	$40	1.2
Restroom - Male 3	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Occupancy Sensor	S	33	2,846	1	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,846	0.0	50	0	$6	$33	$12	3.2
Restroom - Male 3	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.0	207	0	$27	$73	$40	1.2
Restroom - Male 4	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.0	207	0	$27	$73	$40	1.2
Restroom - Male 5	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.0	207	0	$27	$73	$40	1.2
Restroom - Male 6	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.0	207	0	$27	$73	$40	1.2
Restroom - Male 7	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.0	207	0	$27	$73	$40	1.2
Restroom - Male 8	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Occupancy Sensor	S	33	2,846	1	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,846	0.0	50	0	$6	$33	$12	3.2
Restroom - Male 8	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.1	413	0	$53	$146	$80	1.2
Restroom - Unisex 10	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.0	103	0	$13	$37	$20	1.2
Restroom - Unisex 11	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.0	103	0	$13	$37	$20	1.2
Restroom - Unisex 14	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.0	103	0	$13	$37	$20	1.2
Restroom - Unisex 3	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.0	103	0	$13	$37	$20	1.2
Restroom - Unisex 4	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.0	103	0	$13	$37	$20	1.2

	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
Restroom - Unisex 5	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.0	103	0	$13	$37	$20	1.2
Restroom - Unisex 6	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.0	103	0	$13	$37	$20	1.2
Restroom - Unisex 7	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.0	207	0	$27	$73	$40	1.2
Restroom - Unisex C119	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.0	103	0	$13	$37	$20	1.2
Restroom - Unisex Gym	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.0	103	0	$13	$37	$20	1.2
Restroom - Unisex Gym 2	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.0	103	0	$13	$37	$20	1.2
Restroom - Unisex Nurse	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.0	103	0	$13	$37	$20	1.2
Server Room B117 MDF	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	500	1	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	500	0.1	73	0	$9	$146	$80	7.1
Server Room C100C	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	500	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	500	0.0	18	0	$2	$37	$20	7.1
Server Room C203B IDF	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	500	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	500	0.0	18	0	$2	$37	$20	7.1
Server Room IDF C300C	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	500	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	500	0.0	18	0	$2	$37	$20	7.1
Stairs 1	9	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Timeclock	S	20	4,250		None	No	9	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Timeclock	20	4,250	0.0	0	0	$0	$0	$0	0.0
Stairs 1	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Timeclock	S	62	4,250	1	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Timeclock	29	4,250	0.1	926	0	$119	$219	$120	0.8
Stairs 2	12	LED - Fixtures: Outdoor Porch Wall Mount	Timeclock	S	20	4,250		None	No	12	LED - Fixtures: Outdoor Porch Wall Mount	Timeclock	20	4,250	0.0	0	0	$0	$0	$0	0.0
Stairs 2	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Timeclock	S	62	4,250	1	Relamp	No	12	LED - Linear Tubes: (2) 4' Lamps	Timeclock	29	4,250	0.3	1,851	0	$238	$438	$240	0.8
Stairs 3	8	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Timeclock	S	20	4,250		None	No	8	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Timeclock	20	4,250	0.0	0	0	$0	$0	$0	0.0
Stairs 3	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Timeclock	S	62	4,250	1	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Timeclock	29	4,250	0.1	926	0	$119	$219	$120	0.8
Storage 205A	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	250	1	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	250	0.0	18	0	$2	$73	$40	14.1
Storage 21	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	250	1	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	250	0.1	36	0	$5	$146	$80	14.1
Storage A100F	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	250	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	250	0.0	9	0	$1	$37	$20	14.1
Storage A101B	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	250	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	250	0.0	9	0	$1	$37	$20	14.1
Storage A101E	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	250	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	250	0.0	9	0	$1	$37	$20	14.1
Storage A201B	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	250	1	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	250	0.0	18	0	$2	$73	$40	14.1
Storage B101E	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	250	1	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	250	0.0	18	0	$2	$73	$40	14.1
Storage B102B	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	250	1	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	250	0.1	36	0	$5	$146	$80	14.1

	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 B102C	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	250	1	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	250	0.0	18	0	$2	$73	$40	14.1
Storage B102D	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	250	1	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	250	0.0	18	0	$2	$73	$40	14.1
Storage B103A	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	250	1	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	250	0.0	18	0	$2	$73	$40	14.1
Storage B119	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	250	1	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	250	0.1	36	0	$5	$146	$80	14.1
Storage C100E	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	250	1	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	250	0.0	18	0	$2	$73	$40	14.1
Storage C100F	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	250	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	250	0.0	9	0	$1	$37	$20	14.1
Storage C100I	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	250	1	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	250	0.0	18	0	$2	$73	$40	14.1
Storage C103A	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	250	1	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	250	0.0	18	0	$2	$73	$40	14.1
Storage C206A Kiln	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	250	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	250	0.0	9	0	$1	$37	$20	14.1
Storage C300G	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	250	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	250	0.0	9	0	$1	$37	$20	14.1
Storage C319A	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	250	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	250	0.0	9	0	$1	$37	$20	14.1
Storage Food	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	500	1	Relamp	No	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	500	0.1	109	0	$14	$219	$120	7.1
Storage Gym	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	250	1	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	250	0.0	18	0	$2	$73	$40	14.1
Storage Gym	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	250	1	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	250	0.0	18	0	$2	$73	$40	14.1
Classroom C201	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	1,990	1	Relamp	No	2	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,990	0.0	77	0	$10	$37	$20	1.7
Classroom C201	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,990	1	Relamp	No	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,990	0.3	975	0	$126	$493	$270	1.8
Classroom C202	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	1,990	1	Relamp	No	2	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,990	0.0	77	0	$10	$37	$20	1.7
Classroom C202	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,990	1	Relamp	No	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,990	0.3	975	0	$126	$493	$270	1.8
Hallway Second Floor	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
Hallway Second Floor	11	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Timeclock	S	62	4,250	1	Relamp	No	11	LED - Linear Tubes: (2) 4' Lamps	Timeclock	29	4,250	0.3	1,697	0	$219	$402	$220	0.8
Hallway Second Floor	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
Hallway Second Floor	2	LED - Linear Tubes: (1) 4' Lamp	Timeclock	S	15	4,250		None	No	2	LED - Linear Tubes: (1) 4' Lamp	Timeclock	15	4,250	0.0	0	0	$0	$0	$0	0.0
Hallway Second Floor	21	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Timeclock	S	62	4,250	1	Relamp	No	21	LED - Linear Tubes: (2) 4' Lamps	Timeclock	29	4,250	0.5	3,240	-1	$417	$767	$420	0.8
Hallway	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Timeclock	S	62	4,250	1	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Timeclock	29	4,250	0.0	309	0	$40	$73	$40	0.8
Office - Assistant Principal	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.1	310	0	$40	$110	$60	1.2

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Office - Principal	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.1	310	0	$40	$110	$60	1.2
Restroom - Unisex 1	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.0	103	0	$13	$37	$20	1.2
Restroom - Unisex 2	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,846	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,846	0.0	103	0	$13	$37	$20	1.2
Third Floor Hallway	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
Third Floor Hallway	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Timeclock	S	62	4,250	1	Relamp	No	20	LED - Linear Tubes: (2) 4' Lamps	Timeclock	29	4,250	0.5	3,086	-1	$397	$730	$400	0.8

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
Mechanical Rooms	Mechanical Rooms	5	Fan Coil Unit	0.0	65.0%	No	Trane	UHEC-051CACA	W	1,820		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Rest Room	1	Exhaust Fan	2.0	86.5%	No	Greenheck	CUBE-180HP-20	W	3,500		No	86.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Kiln	1	Exhaust Fan	0.3	65.0%	No	Greenheck	SFD-6-4A-CW-UB	W	100		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Rest Room	1	Exhaust Fan	0.1	65.0%	No	Greenheck	CUE-090-VG-6	W	3,500		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Locker Rooms	1	Exhaust Fan	0.3	65.0%	No	Greenheck	CUE-099-V6-4	W	3,500		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Science Room	1	Exhaust Fan	0.0	65.0%	No	Greenheck	CUE-070-VG-6	W	1,320		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Rest Room	1	Exhaust Fan	0.0	65.0%	No	Greenheck	CUE-060-VG-6	W	3,500		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Rest Room	1	Exhaust Fan	0.5	70.0%	No	Greenheck	CUE-121-VG-5	W	3,500		No	70.0%	No		0.0	0	0	$0	$0	$0	0.0
Classrooms	Classrooms	41	Fan Coil Unit	0.1	65.0%	Yes			W	2,250		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Stairwells & Vestibule	Stairwells & Vestibule	8	Supply Fan	0.1	65.0%	No			W	500		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Pump Room	Chilled Water System	1	Chilled Water Pump	10.0	89.5%	Yes	Echtop	JMA0104D	W	1,512		No	89.5%	No		0.0	0	0	$0	$0	$0	0.0
Pump Room	Chilled Water System	1	Chilled Water Pump	10.0	89.5%	Yes	Echtop	JMA0104D	W	1,512		No	89.5%	No		0.0	0	0	$0	$0	$0	0.0
Pump Room	Chilled Water System	1	Chilled Water Pump	3.0	87.5%	No	Echtop	GA3-AL-TF-182JM-4-B-D-3	W	1,058	4	No	89.5%	Yes	1	0.6	1,056	0	$138	$3,884	$400	25.3
Pump Room	Chilled Water System	1	Chilled Water Pump	3.0	87.5%	No	Echtop	GA3-AL-TF-182JM-4-B-D-3	W	1,058	4	No	89.5%	Yes	1	0.6	1,056	0	$138	$3,884	$400	25.3
Boiler Room	Heating Hot Water System	1	Heating Hot Water Pump	10.0	89.5%	Yes	Echtop	JMA0104D	W	2,016		No	89.5%	No		0.0	0	0	$0	$0	$0	0.0
Boiler Room	Heating Hot Water System	1	Heating Hot Water Pump	10.0	89.5%	Yes	Echtop	JMA0104D	W	2,016		No	89.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Kitchen Hood Fan	1	Kitchen Hood Exhaust Fan	2.0	86.5%	No	Greenheck	USGF-200-20-G	W	1,320	5	No	86.5%	Yes	1	0.0	1,891	31	$503	$3,261	$200	6.1
Garage	Garage Door	1	Other	0.3	65.0%	No			W	2		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Boiler Room	1	Supply Fan	0.3	65.0%	No	Greenheck	RSF-90-5	W	1,820		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Electrical Room	1	Supply Fan	0.3	65.0%	No	Greenheck	RSF-90-5	W	2,100		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0

		Existing Conditions									Proposed Conditions					Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	Motor Quantity	Motor Application	HP Per Motor	Full Load Efficiency	VFD Control?	Manufacturer	Model	Remaining Useful Life	Annual Operating Hours	ECM #	Install High Efficiency Motors?	Full Load Efficiency	Install VFDs?	Number of VFDs	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Boiler Room	Domestic Hot Water System	1	DHW Circulation Pump	1.5	77.0%	No	Echtop	BLA0012D-C	W	8,760	6	No	84.0%	Yes	1	0.2	3,038	0	$397	$3,236	$150	7.8
Boiler Room	Domestic Hot Water System	1	DHW Circulation Pump	1.5	77.0%	No	Echtop	BLA0012D-C	W	8,760	6	No	84.0%	Yes	1	0.2	3,038	0	$397	$3,236	$150	7.8
Boiler Room	Domestic Hot Water System	1	DHW Circulation Pump	0.3	65.0%	No	Marathon	RVN 58C17F532CK	W	8,760		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Boiler Room	Domestic Hot Water System	1	DHW Circulation Pump	0.2	65.0%	No	Marathon		W	8,760		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Fire Pump Room	Domestic Cold Water System	1	Water Supply Pump	5.0	88.5%	No			W	1,373		No	88.5%	No		0.0	0	0	$0	$0	$0	0.0
Fire Pump Room	Domestic Cold Water System	1	Water Supply Pump	5.0	88.5%	No			W	1,373		No	88.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Kitchen (MAU-1)	1	Supply Fan	3.0	89.5%	No	Trane	OAGD240A4	W	1,540		No	89.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	First Floor & Half of Second Floor (DOAS-1)	1	Supply Fan	15.0	93.0%	Yes	Aldes	CW8000e	W	2,300		No	93.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	First Floor & Half of Second Floor (DOAS-1)	1	Exhaust Fan	7.5	91.0%	Yes	Aldes	CW8000e	W	2,300		No	91.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Third Floor & Half of Second Floor (DOAS-2)	1	Supply Fan	15.0	93.0%	Yes	Aldes	CW8000e	W	2,300		No	93.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Third Floor & Half of Second Floor (DOAS-2)	1	Exhaust Fan	7.5	91.0%	Yes	Aldes	CW8000e	W	2,300		No	91.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Music Room & Small Office (RTU-1/HRU-1)	1	Supply Fan	1.5	86.5%	Yes	Trane	YHC072F4RMA	W	2,250		No	86.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Music Room & Small Office (RTU-1/HRU-1)	1	Exhaust Fan	1.5	86.5%	Yes	Trane	YHC072F4RMA	W	2,250		No	86.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Stage (RTU-2/HRU-2)	1	Supply Fan	1.5	86.5%	Yes	Trane	YHC102F4RHA	W	1,600		No	86.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Stage (RTU-2/HRU-2)	1	Exhaust Fan	1.5	86.5%	Yes	Trane	YHC102F4RHA	W	1,600		No	86.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Cafeteria (RTU-3/HRU-3)	1	Supply Fan	1.5	86.5%	Yes	Trane	YHD180G4RHA	W	2,250		No	86.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Cafeteria (RTU-3/HRU-3)	1	Exhaust Fan	1.5	86.5%	Yes	Trane	YHD180G4RHA	W	2,250		No	86.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Auxiliary Gym (RTU-4/HRU-4)	1	Supply Fan	1.5	86.5%	Yes	Trane	YHD180G4RHA	W	2,250		No	86.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Auxiliary Gym (RTU-4/HRU-4)	1	Exhaust Fan	1.5	86.5%	Yes	Trane	YHD180G4RHA	W	2,250		No	86.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Kitchen (RTU-5)	1	Supply Fan	3.0	89.5%	Yes	Trane	YHC120F4RMA	W	1,760		No	89.5%	No		0.0	0	0	$0	$0	$0	0.0

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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	Kitchen (RTU-5)	1	Exhaust Fan	0.8	70.0%	Yes	Trane	YHC120F4RMA	W	1,760		No	70.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Pride Classroom & Storage Area (RTU-6)	1	Supply Fan	1.0	85.5%	Yes	Trane	YHC048F4RLA	W	2,250		No	85.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Pride Classroom & Storage Area (RTU-6)	1	Exhaust Fan	0.5	70.0%	Yes	Trane	YHC048F4RLA	W	2,250		No	70.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Gymnasium (RTU-7)	1	Supply Fan	3.0	89.5%	Yes	Trane	YHC120F4RMA	W	2,250		No	89.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Gymnasium (RTU-7)	1	Exhaust Fan	0.8	70.0%	Yes	Trane	YHC120F4RMA	W	2,250		No	70.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Gymnasium (RTU-8)	1	Supply Fan	3.0	89.5%	Yes	Trane	YHC120F4RMA	W	2,250		No	89.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Gymnasium (RTU-8)	1	Exhaust Fan	0.8	70.0%	Yes	Trane	YHC120F4RMA	W	2,250		No	70.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Media Center (RTU-9)	1	Supply Fan	3.0	89.5%	Yes	Trane	YHD150G4RVA	W	2,250		No	89.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Media Center (RTU-9)	1	Exhaust Fan	0.5	70.0%	Yes	Trane	YHD150G4RVA	W	2,250		No	70.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Main Office, Child Study Team Rooms, Computer Labs, and 1st & 3rd Floor Offices (RTU-10)	1	Supply Fan	15.0	93.0%	Yes	Trane	YCD480B4TN6D3	W	2,600		No	93.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Main Office, Child Study Team Rooms, Computer Labs, and 1st & 3rd Floor Offices (RTU-10)	1	Exhaust Fan	1.5	86.5%	Yes	Trane	YCD480B4TN6D3	W	2,600		No	86.5%	No		0.0	0	0	$0	$0	$0	0.0
Elevator Room	Elevator	2	Other	10.5	91.7%	No			W	110		No	91.7%	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
Garage	Garage	1	Electric Resistance Heat		17.06		1 COP	Trane		W		No							0.0	0	0	$0	$0	$0	0.0
Main Electrical Room	Main Electrical Room	1	Electric Resistance Heat		18.77		1 COP	Trane		W		No							0.0	0	0	$0	$0	$0	0.0
Boiler Room	Boiler Room	1	Electric Resistance Heat		17.06		1 COP	Trane		W		No							0.0	0	0	$0	$0	$0	0.0
Fire Pump Room	Fire Pump Room	1	Electric Resistance Heat		17.06		1 COP	Trane		W		No							0.0	0	0	$0	$0	$0	0.0
Pump Room	Pump Room	1	Electric Resistance Heat		17.06		1 COP	Trane	UHEC-051CACA	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	Maintenance Office (CU-1)	1	Ductless Mini-Split HP	0.75	12.00	24.50	4.46 COP	Daikin	RXS09LVJU	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	Server Room B117 (CU-2)	1	Ductless Mini-Split HP	1.25	18.00	20.60	4 COP	Daikin	RXS15LVJU	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	ECC Room (CU-3)	1	Ductless Mini-Split HP	1.25	18.00	20.60	4 COP	Daikin	RXS15LVJU	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	Server Room C100C (CU-4)	1	Ductless Mini-Split HP	0.75	12.00	24.50	4.46 COP	Daikin	RXS09LVJU	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	Storage Room A201B (CU-5)	1	Ductless Mini-Split HP	1.25	18.00	20.60	4 COP	Daikin	RXS15LVJU	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	Server Room C203B (CU-6)	1	Ductless Mini-Split HP	0.75	12.00	24.50	4.46 COP	Daikin	RXS09LVJU	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	Server Room C300C (CU-7)	1	Ductless Mini-Split HP	0.75	12.00	24.50	4.46 COP	Daikin	RXS09LVJU	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	Electrical Room B116 (CU-8)	1	Ductless Mini-Split HP	1.25	18.00	20.60	4 COP	Daikin	RXS15LVJU	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	Kitchen (MAU-1)	1	Package Unit	20.00	320.00	13.70	0.8 Et	Trane	OAGD240A4	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	Music Room & Small Office (RTU-1)	1	Package Unit	6.00	96.00	13.00	0.8 Et	Trane	YHC072F4RMA	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	Stage (RTU-2)	1	Package Unit	8.50	160.00	14.70	0.8 Et	Trane	YHC102F4RHA	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	Cafeteria (RTU-3)	1	Package Unit	15.00	284.00	14.00	0.811428571428571 Et	Trane	YHD180G4RHA	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	Auxiliary Gym (RTU-4)	1	Package Unit	15.00	284.00	14.00	0.811428571428571 Et	Trane	YHD180G4RHA	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	Kitchen (RTU-5)	1	Package Unit	10.00	160.00	14.70	0.8 Et	Trane	YHC120F4RMA	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	Pride Classroom & Storage Area (RTU-6)	1	Package Unit	4.00	48.00	15.00	0.8 Et	Trane	YHC048F4RLA	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
Roof	Gymnasium (RTU-7)	1	Package Unit	10.00	160.00	14.70	0.8 Et	Trane	YHC120F4RMA	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	Gymnasium (RTU-8)	1	Package Unit	10.00	160.00	14.70	0.8 Et	Trane	YHC120F4RMA	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	Media Center (RTU-9)	1	Package Unit	12.50	284.00	13.50	0.811428571428571 Et	Trane	YHD150G4RVA	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	Main Office, Child Study Team Rooms, Computer Labs, and 1st & 3rd Floor Offices (RTU-10)	1	Package Unit	40.00	600.00	13.40	0.8 Et	Trane	YCD480B4TN6D3	W		No							0.0	0	0	$0	$0	$0	0.0

Electric Chiller Inventory & Recommendations

		Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	Chiller Quantity	System Type	Cooling Capacity per Unit (Tons)	Manufacturer	Model	Remaining Useful Life	ECM #	Install High Efficiency Chillers?	Chiller Quantity	System Type	Constant/ Variable Speed	Cooling Capacity (Tons)	Full Load Efficiency (kW/Ton)	IPLV Efficiency (kW/Ton)	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Roof	Chilled Water System (CH-1)	1	Air-Cooled Scroll Chiller	90.00	Trane	CGAM 090F 2N02 AXD2 A1A1 A1AX XA1C 1A4X XXXX XAXA 5A1D 1XXL XX	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	Chilled Water System (CH-2)	1	Air-Cooled Scroll Chiller	90.00	Trane	CGAM 090F 2N02 AXD2 A1A1 A1AX XA1C 1A4X XXXX XAXA 5A1D 1XXL XX	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 Hot Water System (B-1)	1	Condensing Hot Water Boiler	1,440	Lochinvar	FBN1501	W		No						0.0	0	0	$0	$0	$0	0.0
Boiler Room	Heating Hot Water System (B-2)	1	Condensing Hot Water Boiler	1,440	Lochinvar	FBN1501	W		No						0.0	0	0	$0	$0	$0	0.0
Boiler Room	Heating Hot Water System (B-3)	1	Condensing Hot Water Boiler	1,440	Lochinvar	FBN1501	W		No						0.0	0	0	$0	$0	$0	0.0

Duct Insulation Recommendations

		Recommendation Inputs		Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Affected	ECM #	Square Footage of Ductwork	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
Outside	Cafeteria (RTU-3)	7	120.0	0.17	251	6.7	$88.61	$1,014.00	$0.00	11.44
Outside	Auxiliary Gym (RTU-4)	7	120.0	0.17	251	6.7	$88.61	$1,014.00	$0.00	11.44
Outside	Gymnasium (RTU-7)	7	32.0	0.03	40	1.0	$13.18	$270.40	$0.00	20.52
Outside	Gymnasium (RTU-7)	7	112.0	0.08	120	3.2	$42.73	$946.40	$0.00	22.15
Outside	Gymnasium (RTU-8)	7	16.0	0.03	40	1.0	$13.18	$135.20	$0.00	10.26
Outside	Gymnasium (RTU-8)	7	70.0	0.08	120	2.9	$39.54	$591.50	$0.00	14.96

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 System (HWH-1)	1	Storage Tank Water Heater (> 50 Gal)	AO Smith	BTH 500A 200	W		No						0.0	0	0	$0	$0	$0	0.0
Boiler Room	Domestic Hot Water System (HWH-2)	1	Storage Tank Water Heater (> 50 Gal)	AO Smith	BTH 500A 200	W		No						0.0	0	0	$0	$0	$0	0.0
Kitchen	Dishwasher	1	Booster Water Heater	Insinger	Admiral 44-4	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
Classrooms	8	10	Faucet Aerator (Lavatory)	1.50	0.50	0.0	0	3	$23	$72	$72	0.0
Rest Rooms	8	11	Faucet Aerator (Lavatory)	2.20	0.50	0.0	0	5	$44	$79	$79	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
Kitchen	1	Cooler (35F to 55F)	Heat Craft	MOH020X63CFM		No	No	No	0.0	0	0	$0	$0	$0	0.0
Kitchen	1	Low Temp Freezer (-35F to -5F)	Heat Craft	MOZ035L63CF		No	No	No	0.0	0	0	$0	$0	$0	0.0

Commercial Refrigerator/Freezer Inventory & Recommendations

	Existing Conditions					Proposed Conditions		Energy Impact & Financial Analysis						
Location	Quantity	Refrigerator/ Freezer Type	Manufacturer	Model	ENERGY STAR Qualified?	ECM #	Install ENERGY STAR Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen	2	Stand-Up Freezer, Solid Door (16 - 30 cu. ft.)	Continental		No		No	0.0	0	0	$0	$0	$0	0.0
Cafeteria	2	Stand-Up Refrigerator, Glass Door (16 - 30 cu. ft.)	QBD	CD26-HC	Yes		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	1	Stand-Up Refrigerator, Glass Door (16 - 30 cu. ft.)	Universal Nolin	MC750-1	Yes		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	5	Stand-Up Refrigerator, Solid Door (31 - 50 cu. ft.)	Continental	2R	No		No	0.0	0	0	$0	$0	$0	0.0

Commercial Ice Maker Inventory & Recommendations

	Existing Conditions					Proposed Conditions		Energy Impact & Financial Analysis						
Location	Quantity	Ice Maker Type	Manufacturer	Model	ENERGY STAR Qualified?	ECM #	Install ENERGY STAR Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen	1	Ice Making Head (≥450 lbs/day), Continuous	Hoshzaki		No		No	0.0	0	0	$0	$0	$0	0.0

Cooking Equipment Inventory & Recommendations

	Existing Conditions					Proposed Conditions		Energy Impact & Financial Analysis						
Location	Quantity	Equipment Type	Manufacturer	Model	High Efficiency Equipement?	ECM #	Install High Efficiency Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen	1	Gas Convection Oven (Full Size)			No		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	1	Gas Convection Oven (Full Size)	Southbend	SLGS/22SC	No		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	1	Gas Convection Oven (Full Size)	Southbend	SLGS/22SC	No		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	1	Gas Fryer	Cleveland		No		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	1	Insulated Food Holding Cabinet (Full Size)	Continental		No		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	1	Insulated Food Holding Cabinet (Full Size)	Continental		No		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	1	Gas Steamer	Cleveland	24CGA10	No		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	1	Gas Steamer	Cleveland	24CGA10	No		No	0.0	0	0	$0	$0	$0	0.0

Dishwasher Inventory & Recommendations

	Existing Conditions							Proposed Conditions		Energy Impact & Financial Analysis						
Location	Quantity	Dishwasher Type	Manufacturer	Model	Water Heater Fuel Type	Booster Heater Fuel Type	ENERGY STAR Qualified?	ECM #	Install ENERGY STAR Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Payback w/ Incentives in Years
Kitchen	1	Single Tank Conveyor (High Temp)	Insinger	Admiral 44-4	Natural Gas	Electric	Yes		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
Classroom A103	1	Clothes Dryer	3,600		Maytag	MEDX655DW1
Classroom A103	1	Clothes Washer	720		Maytag	MVWX655DW1
Kitchen	1	Commerical Coffee Machine	1,660			
Building	7	Coffee Machine	800			
Building	111	Computer	125			
Storage Room C206A	1	Kiln	11,000			
Building	5	Microwave	800			
Classroom A103 & Maintenance Lounge	2	Electric Oven	3,000			
Classroom C307	3	Fish Tank	250			
Building	80	iPad	10			
Kitchen	1	Warming Table	3,000			
Kitchen	3	Refrigerated Table	300			
Lounge A101D	1	Popcorn Machine	850			
Building	12	Small/Medium Printer	200			
Building	6	Large Printer/Copier	1,200			
Building	54	Projector	175			
Building	3	Mini Fridge	260			
Building	7	Residential Refrigerator	800			
Cafeteria	2	Large Speaker	250			
Main Vestibule	1	TV	150			
Maintenance Lounge	1	Toaster Oven	1,200			
Building	10	Water Cooler	1,200			
Building	10	Misc Equipment	1,500			

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	9	Yes	0.0	343	0	$45	$230	$0	5.1
Teacher's Lounge	1	Refrigerated	9	Yes	0.2	1,612	0	$210	$230	$100	0.6

Miscellaneous Fuel Inventory

	Existing Conditions					
Location	Quantity	Equipment Description	Input Capacity per Unit (MBh)	ENERGY STAR Qualified?	Manufacturer	Model
Ground Level Exterior	1	Emergency Generator	2,509.2	No	Generac	SG0300KG20142S18HPLYE

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]

Gloucester City Middle School

Primary Property Type: K-12 School
Gross Floor Area (ft²): 122,000
Built: 2017

For Year Ending: December 31, 2019
Date Generated: November 04, 2020

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
Gloucester City Middle School 500 Market Street Gloucester, New Jersey 08030	Gloucester City Public Schools 1300 Market Street Gloucester City, NJ 08030 856-456-7000	Teri Weeks 1300 Market Street Gloucester City, NJ 08030 856-456-7000 x 2160 tweeks@gcsd.k12.nj.us

Property ID: 12484442

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
66.2 kBtu/ft²

Source EUI
124.2 kBtu/ft²

Annual Energy by Fuel

Electric - Grid (kBtu)	3,821,648 (47%)
Electric - Solar (kBtu)	299,190 (4%)
Natural Gas (kBtu)	3,950,028 (49%)

National Median Comparison

National Median Site EUI (kBtu/ft²)	85.7
National Median Source EUI (kBtu/ft²)	160.9
% Diff from National Median Source EUI	-23%

Annual Emissions

Greenhouse Gas Emissions (Metric Tons CO2e/year)	604

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.