Local Government Energy Audit Report

Washington Community School

January 13, 2023

Prepared for:
Plainfield Board of Education
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Disclaimer

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

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

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

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

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

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ENERGY EFFICIENCY INCENTIVE & REBATE TRANSITION

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

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

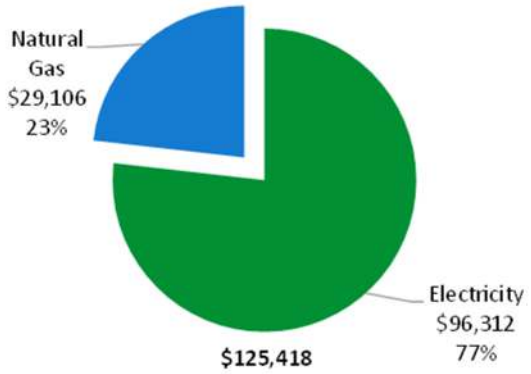
These next generation energy efficiency programs feature new ways of managing and delivering programs historically administered by New Jersey's Clean Energy Program™ (NJCEP). All of the investor-owned gas and electric utility companies will now also offer complementary energy efficiency programs and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

New utility programs are under development. Keep up to date with developments by visiting the NJCEP website.

1 EXECUTIVE SUMMARY

The New Jersey Board of Public Utilities (NJBPU) has sponsored this Local Government Energy Audit (LGEA) report for Washington Community 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: $125,418 Electricity: 795,643 kWh Natural Gas: 38,744 Therms	
ENERGY STAR® Benchmarking Score	61 *(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.

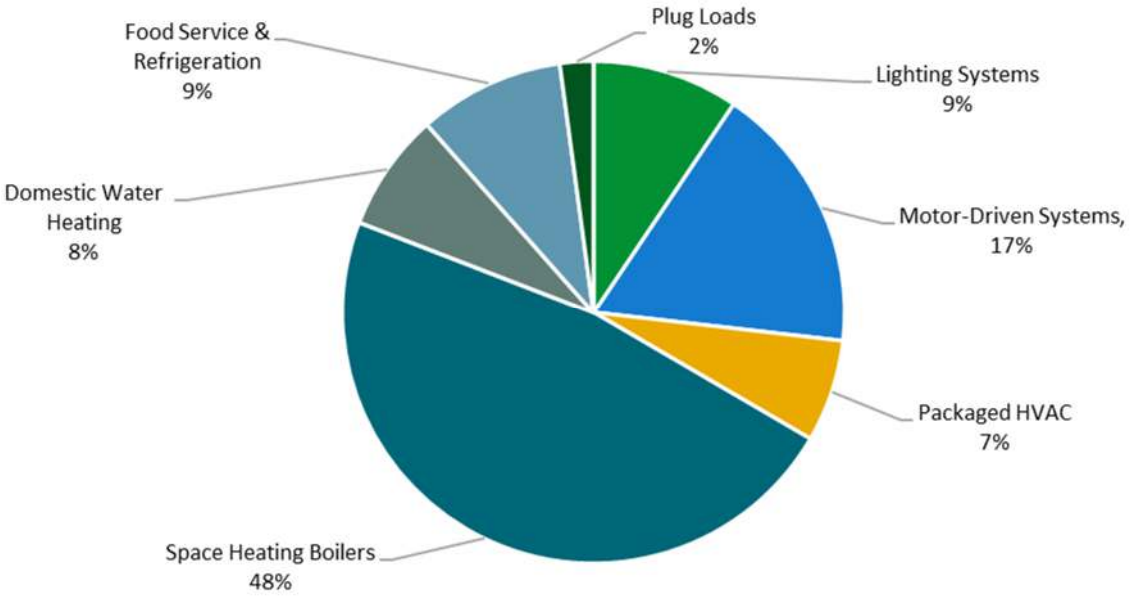


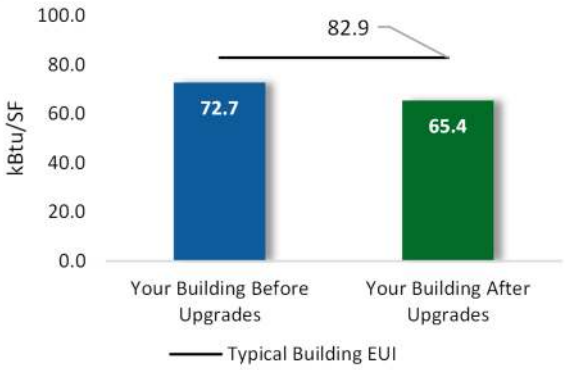
Figure 1 - Energy Use by System

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.

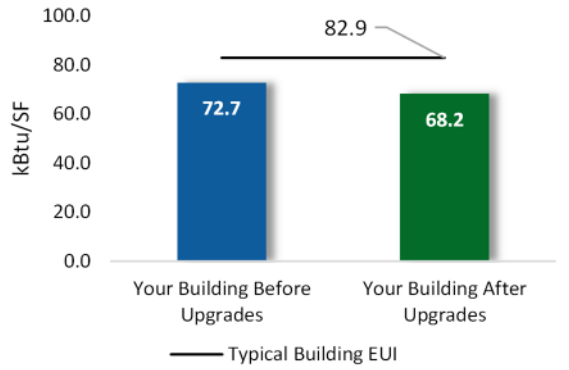
Scenario 1: Full Package (All Evaluated Measures)

Installation Cost	$425,117
Potential Rebates & Incentives[1]	$47,130
Annual Cost Savings	$25,657
Annual Energy Savings	Electricity: 165,442 kWh Natural Gas: 1,012 Therms
Greenhouse Gas Emission Savings	89 Tons
Simple Payback	14.7 Years
Site Energy Savings (All Utilities)	10%



Scenario 2: Cost Effective Package[2]

Installation Cost	$90,521
Potential Rebates & Incentives	$22,112
Annual Cost Savings	$19,027
Annual Energy Savings	Electricity: 127,666 kWh Natural Gas: -247 Therms
Greenhouse Gas Emission Savings	63 Tons
Simple Payback	3.6 Years
Site Energy Savings (all utilities)	6%



On-site Generation Potential

Photovoltaic	Medium
Combined Heat and Power	None

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

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

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades			**100,073**	**31.6**	**-19**	**$14,915**	**$55,479**	**$13,822**	**$41,657**	**2.8**	**98,517**
ECM 1	Retrofit Fixtures with LED Lamps	Yes	100,073	31.6	-19	$14,915	$55,479	$13,822	$41,657	2.8	98,517
Lighting Control Measures			**25,981**	**8.9**	**-5**	**$3,869**	**$34,812**	**$8,240**	**$26,572**	**6.9**	**25,526**
ECM 2	Install Occupancy Sensor Lighting Controls	Yes	22,811	7.8	-5	$3,397	$27,162	$3,305	$23,857	7.0	22,412
ECM 3	Install High/Low Lighting Controls	Yes	3,170	1.0	-1	$472	$7,650	$4,935	$2,715	5.8	3,115
Variable Frequency Drive (VFD) Measures			**16,255**	**1.5**	**0**	**$2,446**	**$65,726**	**$2,000**	**$63,726**	**26.1**	**16,369**
ECM 4	Install VFDs on Heating Water Pumps	No	16,255	1.5	0	$2,446	$65,726	$2,000	$63,726	26.1	16,369
Unitary HVAC Measures			**20,261**	**30.5**	**0**	**$3,049**	**$251,541**	**$19,768**	**$231,773**	**76.0**	**20,403**
ECM 5	Install High Efficiency Air Conditioning Units	No	20,261	30.5	0	$3,049	$251,541	$19,768	$231,773	76.0	20,403
Food Service & Refrigeration Measures			**2,871**	**0.3**	**126**	**$1,378**	**$17,559**	**$3,300**	**$14,259**	**10.3**	**17,630**
ECM 6	Food Service Equipment Replacement	No	0	0.0	126	$946	$14,129	$3,000	$11,129	11.8	14,739
ECM 7	Replace Refrigeration Equipment	No	1,259	0.1	0	$190	$3,200	$250	$2,950	15.6	1,268
ECM 8	Vending Machine Control	Yes	1,612	0.2	0	$243	$230	$50	$180	0.7	1,623
TOTALS (COST EFFECTIVE MEASURES)			**127,666**	**40.7**	**-25**	**$19,027**	**$90,521**	**$22,112**	**$68,409**	**3.6**	**125,666**
TOTALS (ALL MEASURES)			**165,442**	**72.9**	**101**	**$25,657**	**$425,117**	**$47,130**	**$377,987**	**14.7**	**178,446**

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

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

Figure 2 – Evaluated Energy Improvements

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

1.1 Planning Your Project

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

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

Pick Your Installation Approach

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

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

Options from Around the State

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

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

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

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

Successor Solar Incentive Program (SuSI)

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

Ongoing Electric Savings with Demand Response

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

Large Energy User Program (LEUP)

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

2 EXISTING CONDITIONS

The New Jersey Board of Public Utilities (NJBPU) has sponsored this Local Government Energy Audit (LGEA) Report for Washington Community 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.

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 September 14, 2022, TRC performed an energy audit at Washington Community School located in Plainfield, New Jersey. TRC met with facility staff to review the facility operations and help focus our investigation on specific energy-using systems.

Washington Community School is a two-story, 90,595 square foot building built in 2000. Spaces include classrooms, gymnasium, cafetorium, offices, corridors, stairwells, kitchen, and mechanical space.

2.2 Building Occupancy

The facility is occupied from September through June. Typical weekday occupancy is 86 staff and 660 students.

Summer occupancy includes a summer day camp and continuing maintenance activities. There are weekend activities.

Building Name	Weekday/Weekend	Operating Schedule
Washington Community School	Weekday	6:30 AM - 8:00 PM
	Weekend	Varied

Figure 3 - Building Occupancy Schedule

2.3 Building Envelope

Building walls are concrete block over structural steel with a brick facade. The roof is flat and covered with black membrane, and it is in fair condition. The flat roof is supported with steel trusses and a metal deck and finished with an insulated layer.

Flat Roof

Interior Structure

Building Façade

Most of the windows are double glazed and have aluminum frames with a thermal break. The glass-to-frame seals are in fair condition. The operable window weather seals are in fair condition, showing little evidence of excessive wear. Exterior doors have aluminum frames and are in good condition with undamaged door seals. Degraded window and door seals increase drafts and outside air infiltration.

Windows

Exterior Doors

Windows

2.4 Lighting Systems

The primary interior lighting system uses 32-Watt linear fluorescent T8 lamps. Additionally, there are some plug-in compact fluorescent lamp (CFL) and LED lamps. Typically, T8 fluorescent lamps use electronic ballasts.

Fixture types include 2-lamp, 3-lamp, or 4-lamp, 4-foot-long recessed troffer, and surface mounted fixtures and 2-foot fixtures with U-bend tube lamps. Most fixtures are in good condition. Gymnasium fixtures have a mix of manually controlled high bay high intensity discharge (HID) and LED lamps. All exit signs are LED. Interior lighting levels were generally sufficient. Interior lighting fixtures in are controlled manually.

Linear Fluorescent Wall Mount

U-bend Recessed Troffer

High Bay HID Fixtures

Exterior fixtures include wall packs with CFL lamps. Exterior fixtures are timer or photocell controlled.

CFL Wall Pack Fixtures

The site also has a mix of high-pressure sodium and LED pole-mounted shoe box pole top fixtures illuminating walkways and parking lot areas. The site lighting is fed from the main campus electric meter. Fixtures are controlled by a photocell; however, several were observed to be operating during the day.

HID and LED Lamped Pole Op Fixtures

2.5 Air Handling Systems

Unitary Electric HVAC Equipment

Server rooms use ductless mini split systems to provide cooling. They are 1-ton in size with an EER of 12.5. They are in fair condition.

Ductless Mini Split Systems

Packaged Units

Most of the school is conditioned by packaged roof top units (RTUs). They have hot water coils connected to the boilers described below. Each unit is equipped with a condenser for cooling ranging in size from 10 tons to 60 tons. Most units are in poor condition except for the newer Trane unit.

McQuay RTU

Trane RTU

Aaon RTU

2.6 Heating Hot Water Systems

Four Aerco 2,000 MBh hot water boilers serve the building's heating load. The boilers are configured in an automated control scheme. Multiple boilers are required under high load conditions. They are in good condition.

The hydronic distribution system is a two-pipe heating system. The boilers are configured in a constant flow primary distribution with two, 7.5 hp constant speed hot water pumps operating in an automated control scheme. The boilers provide hot water to RTUs throughout the building.

Boilers

System Controls

Heating Hot Water Pumps

2.7 Domestic Hot Water

Hot water for general building use is produced by a 125-gallon, 140 MBh gas-fired storage water heater with an efficiency rating of 80%. The kitchen has a 250-gallon, 720 MBh gas-fired storage water heater with an efficiency rating of 80%. The unit appears to be oversized for the demand. We recommend that a load calculation be completed. If the unit is significantly oversized, the tank standby losses are likely excessive. Please see Section 4.6.

Two fractional hp circulation pumps distribute water to end uses. The circulation pumps operate continuously.

Building Storage Water Heater

DHW Circulation Pump

Kitchen Storage Water Heater

2.8 Food Service Equipment

The kitchen has a mix of gas and electric equipment that is used to prepare meals for students. Most cooking is done using a gas-fired oven. Bulk prepared foods are held in several electric holding cabinets. Equipment is not high efficiency and is in fair condition.

The dishwasher is a non-ENERGY STAR® high temperature, rack type unit. It has a 54-kW electric booster heater.

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

Dishwasher

Fryer

Double Rack Oven

2.9 Refrigeration

The kitchen has two stand-up refrigerators with solid doors. There is a freezer chest as well as many refrigerator chests. All equipment is high efficiency and in fair condition.

The walk-in refrigerator has an estimated ¾ ton compressor located in the kitchen and a two-fan evaporator. The walk-in low temperature freezer has an estimated 1-ton compressor located in kitchen and a two-fan evaporator.

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

Walk-in Refrigerator

Stand-up Refrigerator

Freezer Chest

2.10 Plug Load and Vending Machines

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

There are 21 computer workstations and 719 laptops throughout the facility. Plug loads throughout the building include general cafe and office equipment. There are classroom typical loads such as smartboards, projectors, and fans.

There are three residential and six mini refrigerator-style refrigerators throughout the building. These vary in condition and efficiency.

There is one refrigerated beverage vending machine. The vending machine is not equipped with occupancy-based controls.

Refrigerator

Refrigerated Vending Machine

Water Fountain

2.11 Water-Using Systems

There are 28 restrooms with toilets and sinks. Faucet flow rates are at 1.5 gallons per minute (gpm) or lower.

Kitchen Sink

Kitchen Sink

2.12 On-Site Generation

Washington Community School has a 255-kW photovoltaic (PV) array with 759 panels. This system provides approximately 29% of the electricity used.

Solar Array

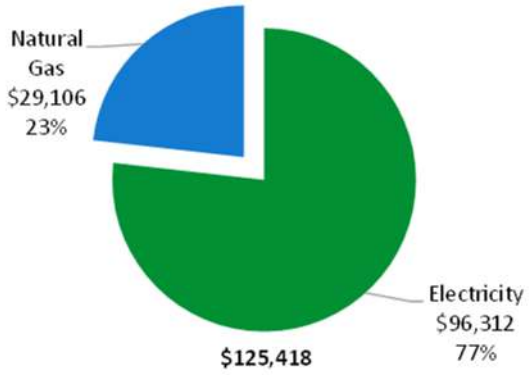
Inverters

Solar Array

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	795,643 kWh	$96,312
Natural Gas	38,744 Therms	$29,106
Total		**$125,418**



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

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

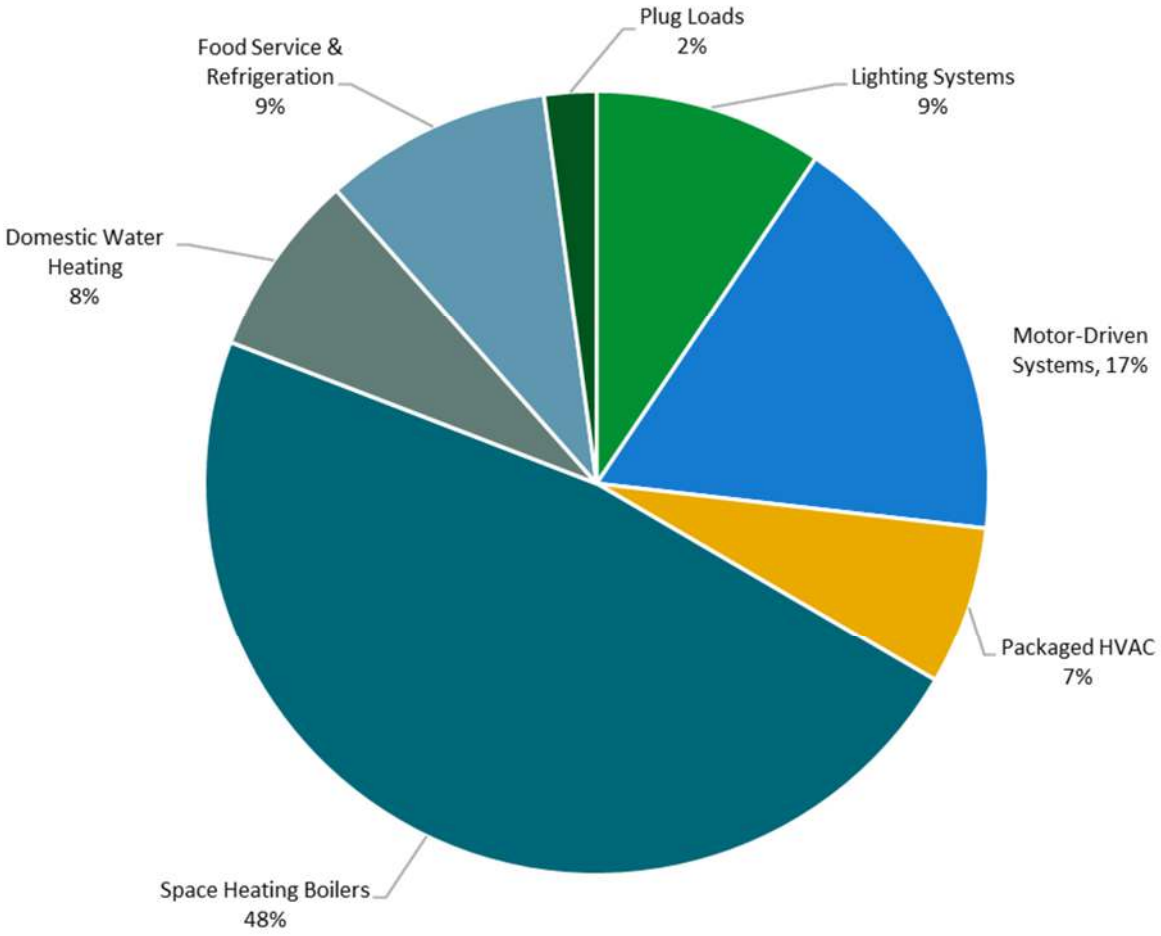
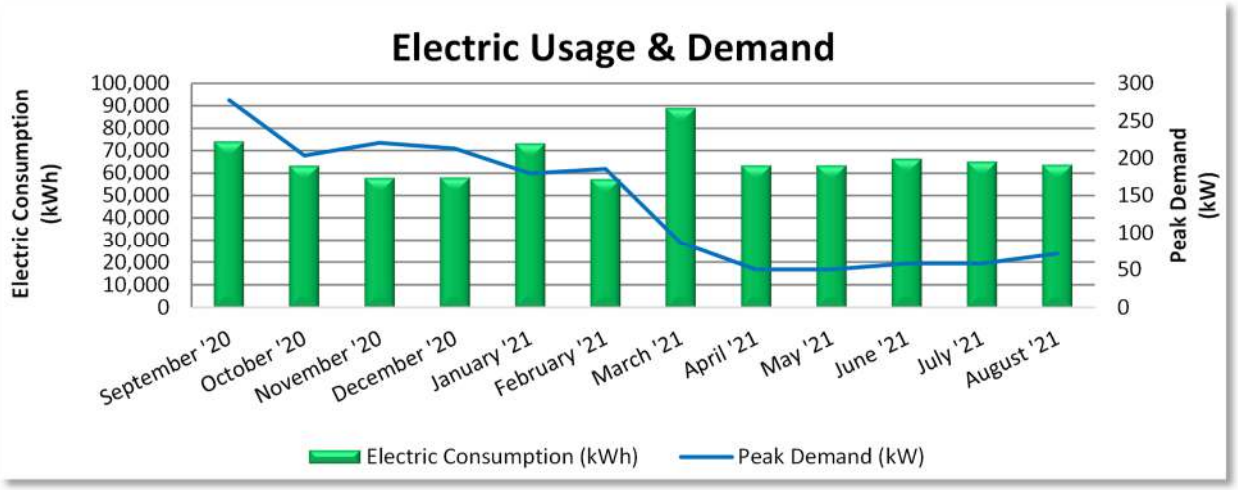


Figure 4 - Energy Balance

3.1 Electricity

PSE&G delivers electricity under rate class Large Power and Lighting Secondary, with electric production provided by Constellation Energy, a third-party supplier.



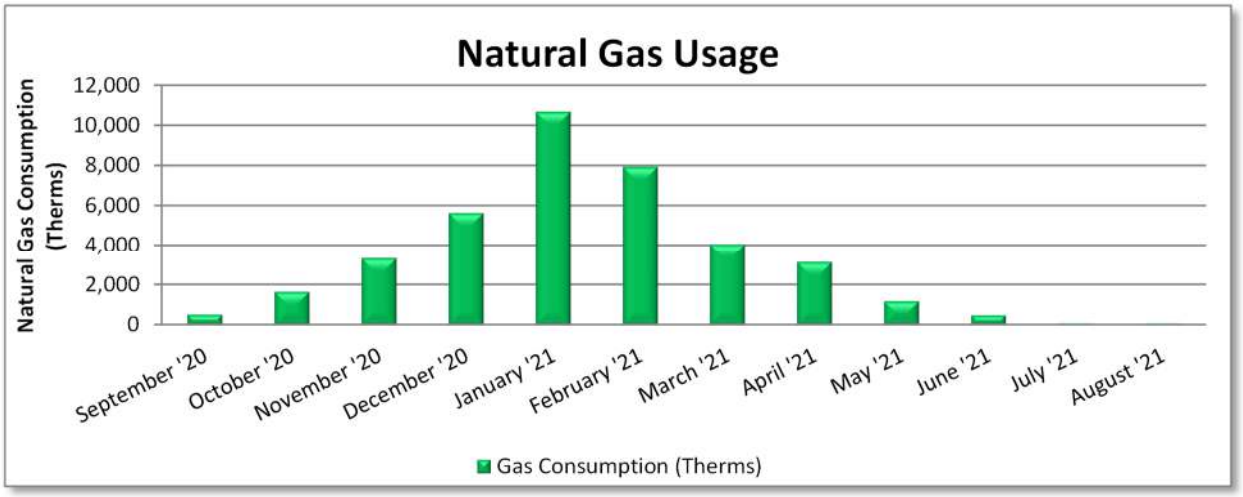
Electric Billing Data					
Period Ending	**Days in Period**	**Electric Usage (kWh)**	**Demand (kW)**	**Demand Cost**	**Total Electric Cost**
9/30/20	30	74,151	278	3,529	10,934
10/31/20	31	63,391	203	765	7,773
11/30/20	30	57,908	221	829	7,481
12/31/20	31	58,085	213	800	7,666
1/31/21	31	73,240	179	675	8,731
2/28/21	28	57,412	186	699	7,651
3/31/21	31	89,106	87	325	9,018
4/30/21	30	63,467	50	188	7,147
5/31/21	31	63,471	50	189	7,251
6/30/21	30	66,431	58	746	7,460
7/31/21	31	65,180	58	746	7,501
8/31/21	31	63,801	72	916	7,700
Totals	**365**	**795,643**	**278**	**$10,407**	**$96,312**
Annual	**365**	**795,643**	**278**	**$10,407**	**$96,312**

Notes:

- Peak demand of 278 kW occurred in September 2020.
- Average demand over the past 12 months was 138 kW.
- The average electric cost over the past 12 months was $0.150/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 Advanced Solar. All the electricity generated on-site is used on-site.

3.2 Natural Gas

PSE&G delivers natural gas under rate class Large Volume Gas, with natural gas supply provided by UGI Energy, a third-party supplier.



Gas Billing Data			
Period Ending	**Days in Period**	**Natural Gas Usage (Therms)**	**Natural Gas Cost**
9/24/20	30	514	$403
10/23/20	29	1,654	$1,088
11/23/20	31	3,334	$2,921
12/24/20	31	5,635	$4,247
1/26/21	33	10,673	$7,385
2/25/21	30	7,928	$5,874
3/26/21	29	4,054	$3,621
4/27/21	32	3,134	$1,956
5/26/21	29	1,183	$820
6/25/21	30	476	$396
7/27/21	32	81	$198
8/25/21	29	78	$196
Totals	**365**	**38,744**	**$29,106**
Annual	**365**	**38,744**	**$29,106**

Notes:

- The average gas cost for the past 12 months is $0.751/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	**61**

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.

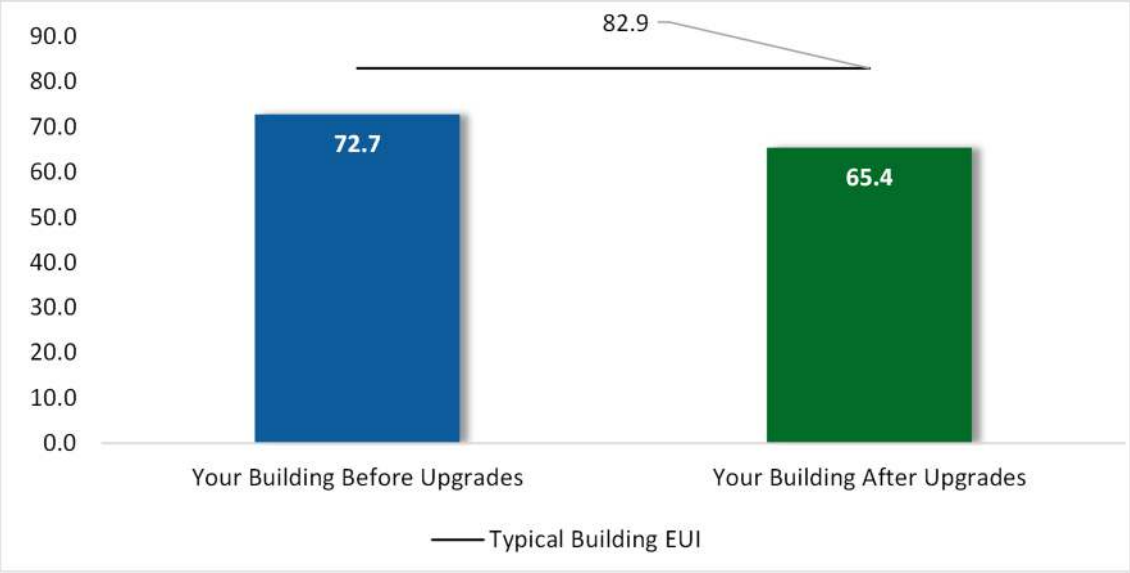


Figure 5 - Energy Use Intensity Comparison[3]

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

[3] Based on all evaluated ECMs

Tracking Your Energy Performance

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

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

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

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

4 Energy Conservation Measures

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

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

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

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

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

#	Energy Conservation Measure	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			**100,073**	**31.6**	**-19**	**$14,915**	**$55,479**	**$13,822**	**$41,657**	**2.8**	**98,517**
ECM 1	Retrofit Fixtures with LED Lamps	Yes	100,073	31.6	-19	$14,915	$55,479	$13,822	$41,657	2.8	98,517
Lighting Control Measures			**25,981**	**8.9**	**-5**	**$3,869**	**$34,812**	**$8,240**	**$26,572**	**6.9**	**25,526**
ECM 2	Install Occupancy Sensor Lighting Controls	Yes	22,811	7.8	-5	$3,397	$27,162	$3,305	$23,857	7.0	22,412
ECM 3	Install High/Low Lighting Controls	Yes	3,170	1.0	-1	$472	$7,650	$4,935	$2,715	5.8	3,115
Variable Frequency Drive (VFD) Measures			**16,255**	**1.5**	**0**	**$2,446**	**$65,726**	**$2,000**	**$63,726**	**26.1**	**16,369**
ECM 4	Install VFDs on Heating Water Pumps	No	16,255	1.5	0	$2,446	$65,726	$2,000	$63,726	26.1	16,369
Unitary HVAC Measures			**20,261**	**30.5**	**0**	**$3,049**	**$251,541**	**$19,768**	**$231,773**	**76.0**	**20,403**
ECM 5	Install High Efficiency Air Conditioning Units	No	20,261	30.5	0	$3,049	$251,541	$19,768	$231,773	76.0	20,403
Food Service & Refrigeration Measures			**2,871**	**0.3**	**126**	**$1,378**	**$17,559**	**$3,300**	**$14,259**	**10.3**	**17,630**
ECM 6	Food Service Equipment Replacement	No	0	0.0	126	$946	$14,129	$3,000	$11,129	11.8	14,739
ECM 7	Replace Refrigeration Equipment	No	1,259	0.1	0	$190	$3,200	$250	$2,950	15.6	1,268
ECM 8	Vending Machine Control	Yes	1,612	0.2	0	$243	$230	$50	$180	0.7	1,623
TOTALS			**165,442**	**72.9**	**101**	**$25,657**	**$425,117**	**$47,130**	**$377,987**	**14.7**	**178,446**

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

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

Figure 6 – All Evaluated ECMs

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		**100,073**	**31.6**	**-19**	**$14,915**	**$55,479**	**$13,822**	**$41,657**	**2.8**	**98,517**
ECM 1	Retrofit Fixtures with LED Lamps	100,073	31.6	-19	$14,915	$55,479	$13,822	$41,657	2.8	98,517
Lighting Control Measures		**25,981**	**8.9**	**-5**	**$3,869**	**$34,812**	**$8,240**	**$26,572**	**6.9**	**25,526**
ECM 2	Install Occupancy Sensor Lighting Controls	22,811	7.8	-5	$3,397	$27,162	$3,305	$23,857	7.0	22,412
ECM 3	Install High/Low Lighting Controls	3,170	1.0	-1	$472	$7,650	$4,935	$2,715	5.8	3,115
Food Service & Refrigeration Measures		**1,612**	**0.2**	**0**	**$243**	**$230**	**$50**	**$180**	**0.7**	**1,623**
ECM 8	Vending Machine Control	1,612	0.2	0	$243	$230	$50	$180	0.7	1,623
TOTALS		**127,666**	**40.7**	**-25**	**$19,027**	**$90,521**	**$22,112**	**$68,409**	**3.6**	**125,666**

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

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

Figure 7 – Cost Effective ECMs

4.1 Lighting

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		**100,073**	**31.6**	**-19**	**$14,915**	**$55,479**	**$13,822**	**$41,657**	**2.8**	**98,517**
ECM 1	Retrofit Fixtures with LED Lamps	100,073	31.6	-19	$14,915	$55,479	$13,822	$41,657	2.8	98,517

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

ECM 1: Retrofit Fixtures with LED Lamps

Replace fluorescent, or CFL lamps with LED lamps. Many LED tubes are direct replacements for existing fluorescent tubes and can be installed while leaving the fluorescent fixture ballast in place. LED lamps can be used in existing fixtures as a direct replacement for most other lighting technologies. Be sure to specify replacement lamps that are compatible with existing dimming controls, where applicable. In some circumstances, you may need to upgrade your dimming system for optimum performance.

This measure saves energy by installing LEDs, which use less power than other lighting technologies yet provide equivalent lighting output for the space. Maintenance savings may also be available, as longer-lasting LEDs lamps will not need to be replaced as often as the existing lamps.

Affected Building Areas: all areas with fluorescent fixtures with T8 tubes or CFL lamps

4.2 Lighting Controls

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Control Measures		**25,981**	**8.9**	**-5**	**$3,869**	**$34,812**	**$8,240**	**$26,572**	**6.9**	**25,526**
ECM 2	Install Occupancy Sensor Lighting Controls	22,811	7.8	-5	$3,397	$27,162	$3,305	$23,857	7.0	22,412
ECM 3	Install High/Low Lighting Controls	3,170	1.0	-1	$472	$7,650	$4,935	$2,715	5.8	3,115

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

ECM 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: offices, classrooms, gymnasium, library, restrooms, and storage rooms.

ECM 3: Install High/Low Lighting Controls

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

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

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

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

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

Affected Building Areas: hallways and stairwells.

4.3 Variable Frequency Drives (VFD)

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Variable Frequency Drive (VFD) Measures		**16,255**	**1.5**	**0**	**$2,446**	**$65,726**	**$2,000**	**$63,726**	**26.1**	**16,369**
ECM 4	Install VFDs on Heating Water Pumps	16,255	1.5	0	$2,446	$65,726	$2,000	$63,726	26.1	16,369

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

ECM 4: Install VFDs on Heating Water Pumps

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

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

Affected Pumps: hot water pumps

4.4 Unitary HVAC

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Unitary HVAC Measures		**20,261**	**30.5**	**0**	**$3,049**	**$251,541**	**$19,768**	**$231,773**	**76.0**	**20,403**
ECM 5	Install High Efficiency Air Conditioning Units	20,261	30.5	0	$3,049	$251,541	$19,768	$231,773	76.0	20,403

Replacing the unitary HVAC units has a long payback period and may not be justifiable based simply on energy considerations. However, most of the units are nearing or have reached the end of their normal useful life. Typically, the marginal cost of purchasing a high efficiency unit can be justified by the marginal savings from the improved efficiency. When the packaged RTUs are eventually replaced, consider purchasing equipment that exceeds the minimum efficiency required by building codes.

ECM 5: Install High Efficiency Air Conditioning Units

We evaluated replacing standard efficiency packaged air conditioning units with high efficiency packaged air conditioning units. The magnitude of energy savings for this measure depends on the relative efficiency of the older unit versus the new high efficiency unit, the average cooling and heating load, and the estimated annual operating hours.

Affected Units: McQuay and Aaon RTUs.

4.5 Food Service & Refrigeration Measures

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Food Service & Refrigeration Measures		**2,871**	**0.3**	**126**	**$1,378**	**$17,559**	**$3,300**	**$14,259**	**10.3**	**17,630**
ECM 6	Food Service Equipment Replacement	0	0.0	126	$946	$14,129	$3,000	$11,129	11.8	14,739
ECM 7	Replace Refrigeration Equipment	1,259	0.1	0	$190	$3,200	$250	$2,950	15.6	1,268
ECM 8	Vending Machine Control	1,612	0.2	0	$243	$230	$50	$180	0.7	1,623

ECM 6: Food Service Equipment Replacement

Buildings that use a lot of food service equipment are often among the most energy-intensive commercial buildings. We evaluated replacing existing food service equipment with new, high-efficiency equipment. Consider replacing the following equipment with high efficiency or ENERGY STAR® labeled versions:

Location	Quantity	Equipment Type	Manufacturer	Model
Kitchen 1	1	Gas Rack Oven (Double)	Masters	Unknown
Kitchen 1	1	Gas Rack Oven (Single)	Unknown	Unknown

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

ECM 7: Replace Refrigeration Equipment

We evaluated replacing existing commercial refrigerators with new ENERGY STAR® rated equipment. The energy savings associated with this measure come from reduced energy usage, due to more efficient technology, and reduced run times.

ECM 8: 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

4.6 Measures for Future Consideration

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

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

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

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

Eliminate Oversized Domestic Hot Water Heating Systems

The existing domestic hot water (DHW) heating system includes the use of a 250-gallaon capacity gas-fired storage tank water heater which serves the kitchen. Also, the commercial dishwasher is equipped with a booster heater, potentially reducing the need for a high discharge temperature.

Uses from the original design may have changed and there may be an opportunity to upgrade the system to use a smaller hot water tank heater, or an instantaneous tankless hot water heating system.

A downsizing of capacity would mitigate losses due to oversized storage and reduce energy consumption. However, this measure was not evaluated, and it is recommended that reconfiguring the water heating system be further evaluated.

5 Energy Efficient Best Practices

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

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

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

Energy Tracking with ENERGY STAR® Portfolio Manager®

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

Lighting Maintenance

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

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

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.

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

Thermostat Schedules and Temperature Resets

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

Economizer Maintenance

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

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

AC System Evaporator/Condenser Coil Cleaning

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

HVAC Filter Cleaning and Replacement

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

Ductwork Maintenance

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

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

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

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

Boiler Maintenance

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

Label HVAC Equipment

For improved coordination in maintenance practices, we recommend labeling or re-labeling the site HVAC equipment. Maintain continuity in labeling by following labeling conventions as indicated in the facility drawings or EMS building equipment list. Use weatherproof or heatproof labeling or stickers for permanence, but do not cover over original equipment nameplates, which should be kept clean and readable whenever possible. Besides equipment, label piping for service and direction of flow when possible. Ideally, maintain a log of HVAC equipment, including nameplate information, asset tag designation, areas served, installation year, service dates, and other pertinent information.

This investment in your equipment will enhance collaboration and communication between your staff and your contracted service providers and may help you with regulatory compliance.

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.

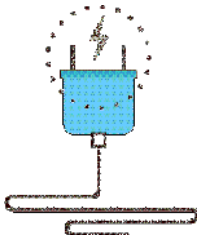
Refrigeration Equipment Maintenance

Preventative maintenance keeps commercial refrigeration equipment running reliably and efficiently. Commercial refrigerators and freezers are mission-critical equipment that can cost a fortune when they go down. Even when they appear to be working properly, refrigeration units can be consuming too much energy. Have walk-in refrigeration and freezer and other commercial systems serviced at least annually. This practice will allow systems to perform to their highest capabilities and will help identify system issues if they exist.

Maintaining your commercial refrigeration equipment can save between 5% and 10% freezers work harder to maintain the temperature inside. Worn gaskets, hinges, door handles or faulty seals cause cold air to leak from the unit, forcing the unit to run longer and use more electricity.

Regular cleaning and maintenance also help your commercial refrigeration equipment to last longer.

Plug Load Controls



Reducing plug loads is a common way to decrease your electrical use. Limiting the energy use of plug loads can include increasing occupant awareness, removing under-used equipment, installing hardware controls, and using software controls. Consider enabling the most aggressive power settings on existing devices or install load sensing or occupancy sensing (advanced) power strips[5]. Your local utility may offer incentives or rebates for this equipment.

Water Conservation

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

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

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

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

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

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

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 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.

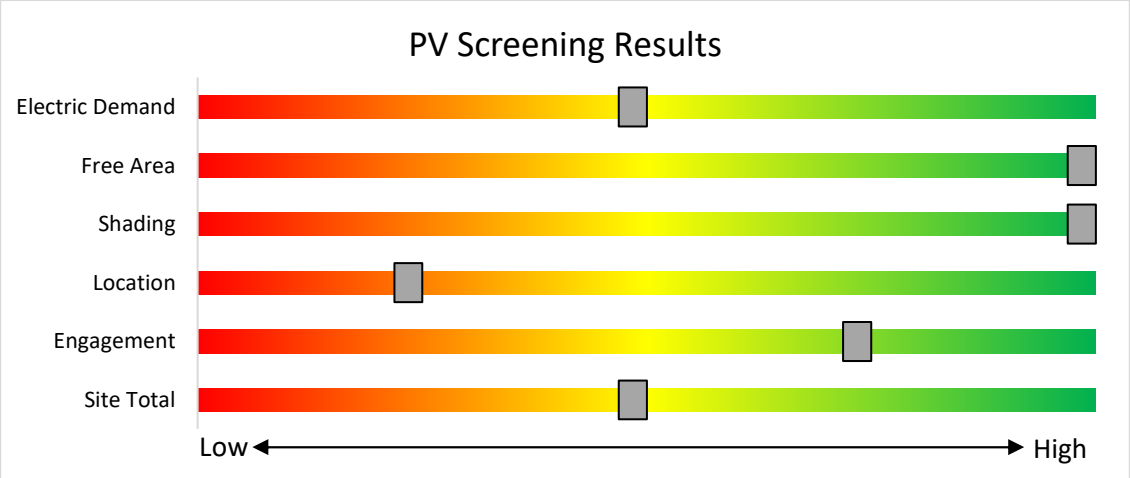
6.1 Solar Photovoltaic

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 medium potential for installing an additional PV array.

The amount of free area, ease of installation (location), and the lack of shading elements contribute to the medium 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	Medium	
System Potential	138	kW DC STC
Electric Generation	164,409	kWh/yr
Displaced Cost	$24,740	/yr
Installed Cost	$466,400	

Figure 8 - Photovoltaic Screening

Successor Solar Incentive Program (SuSI)

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

Get more information about solar power in New Jersey or find a qualified solar installer who can help you decide if solar is right for your building:

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

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

6.2 Combined Heat and Power

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

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

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

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

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

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

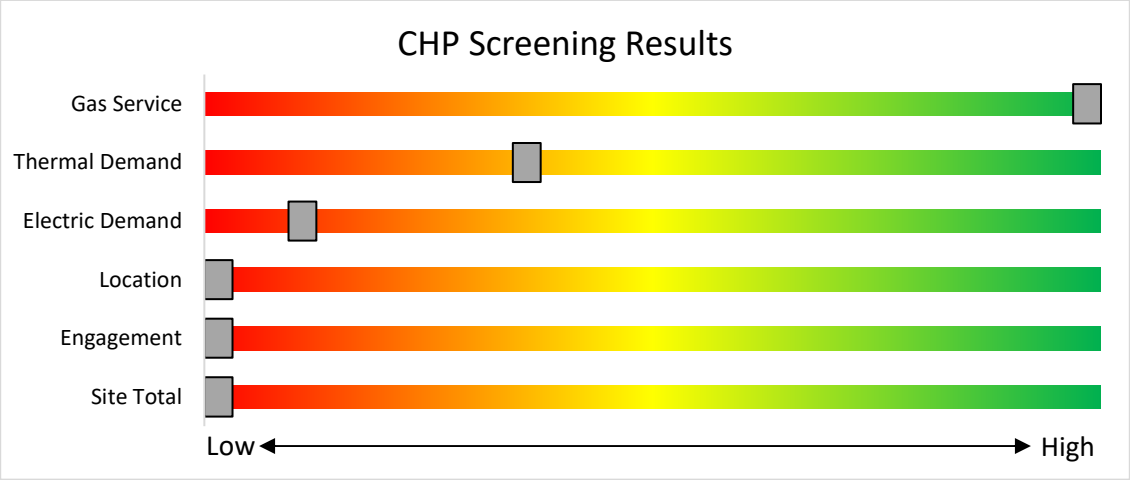


Figure 9 - Combined Heat and Power Screening

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

7 PROJECT FUNDING AND INCENTIVES

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

7.1 Utility Energy Efficiency Programs

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

These new utility programs are rolling out in the spring and summer of 2021. Keep up to date with developments by visiting:

https://www.njcleanenergy.com/transition

8 New Jersey's Clean Energy Programs

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

8.1 Large Energy Users

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

Incentives

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

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

How to Participate

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

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

8.2 Combined Heat and Power

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

Incentives

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

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

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

How to Participate

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

8.3 Successor Solar Incentive Program (SuSI)

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

Administratively Determined Incentive (ADI) Program

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

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

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

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

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

The ADI Program online portal is now open to new registrations effective August 28, 2021.

Competitive Solar Incentive Program

The Competitive Solar Incentive (CSI) Program will provide competitively set incentives for grid supply projects and net metered non-residential projects greater than 5MW. The program is currently under development with the goal of holding the first solicitation by early-to-mid 2022. For updates, please continue to check the Solar Proceedings page on the New Jersey's Clean Energy Program website.

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

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

8.4 Energy Savings Improvement Program

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

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

How to Participate

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

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

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

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

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

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

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

9 PROJECT DEVELOPMENT

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

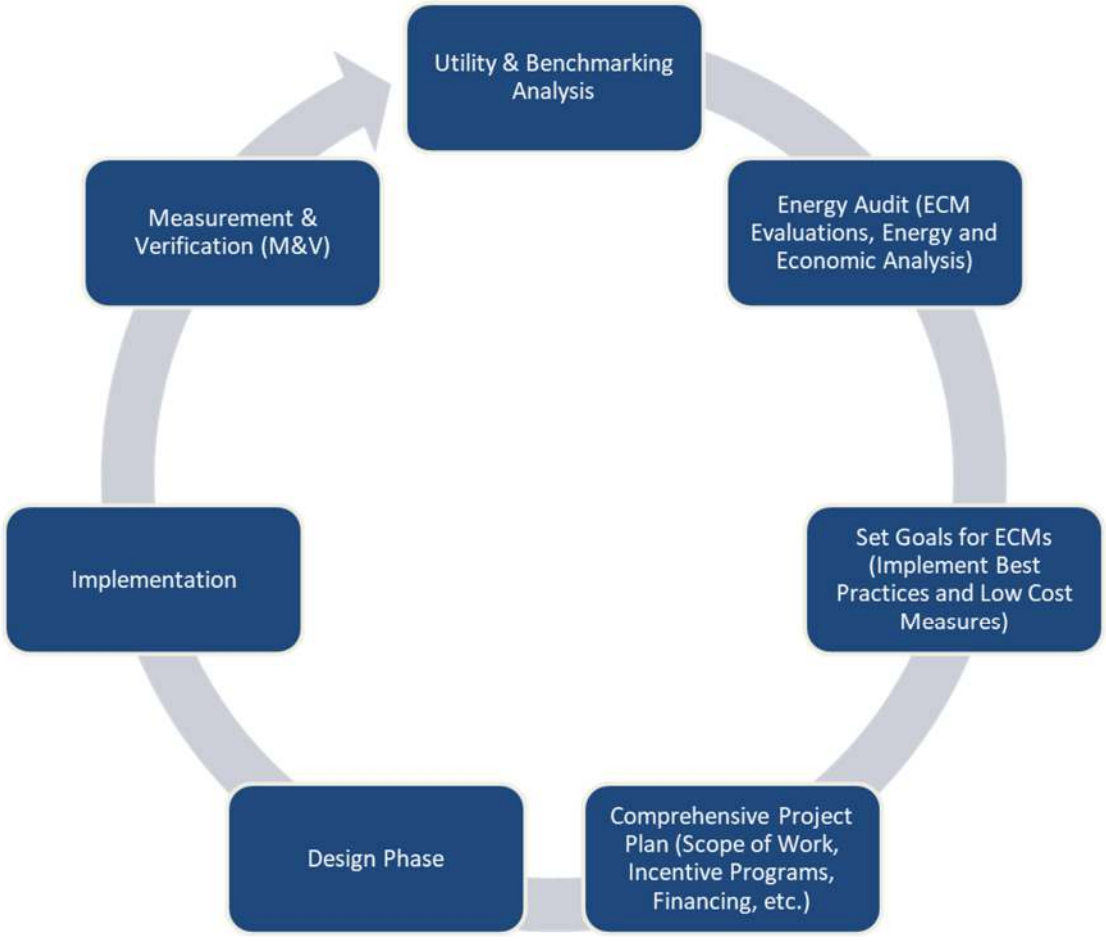


Figure 10 – Project Development Cycle

10 Energy Purchasing and Procurement Strategies

10.1 Retail Electric Supply Options

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

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

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

10.2 Retail Natural Gas Supply Options

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

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

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

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

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

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

APPENDIX A: EQUIPMENT INVENTORY & RECOMMENDATIONS

Lighting Inventory & Recommendations

	Existing Conditions						Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Classroom 112	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,760	1, 2	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,214	0.3	732	0	$109	$599	$125	4.3
Classroom 114	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 114	18	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,760	1, 2	Relamp	Yes	18	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,214	0.8	2,195	0	$327	$1,526	$340	3.6
Classroom 115	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 115	18	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,760	1, 2	Relamp	Yes	18	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,214	0.8	2,195	0	$327	$1,526	$340	3.6
Classroom 116	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 116	18	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,760	1, 2	Relamp	Yes	18	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,214	0.8	2,195	0	$327	$1,526	$340	3.6
Classroom 117	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 117	18	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,760	1, 2	Relamp	Yes	18	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,214	0.8	2,195	0	$327	$1,526	$340	3.6
Classroom 124	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 124	23	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,760	1, 2	Relamp	Yes	23	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,214	1.0	2,805	-1	$418	$1,530	$380	2.8
Classroom 124	1	U-Bend Fluorescent - T8: U T8 (32W) - 3L	Wall Switch	S	92	1,760	1, 2	Relamp	Yes	1	LED - Linear Tubes: (3) U-Lamp	Occupancy Sensor	50	1,214	0.0	112	0	$17	$109	$15	5.6
Classroom 125	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 125	23	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,760	1, 2	Relamp	Yes	23	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,214	1.0	2,805	-1	$418	$1,800	$415	3.3
Classroom 125	1	U-Bend Fluorescent - T8: U T8 (32W) - 3L	Wall Switch	S	92	1,760	1, 2	Relamp	Yes	1	LED - Linear Tubes: (3) U-Lamp	Occupancy Sensor	50	1,214	0.0	112	0	$17	$109	$15	5.6
Classroom 126	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 126	19	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,760	1, 2	Relamp	Yes	19	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,214	0.9	2,317	0	$345	$1,581	$355	3.6
Classroom 126	3	U-Bend Fluorescent - T8: U T8 (32W) - 3L	Wall Switch	S	92	1,760	1, 2	Relamp	Yes	3	LED - Linear Tubes: (3) U-Lamp	Occupancy Sensor	50	1,214	0.1	336	0	$50	$326	$45	5.6
Classroom 127	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 127	18	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,760	1, 2	Relamp	Yes	18	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,214	0.8	2,195	0	$327	$1,526	$340	3.6
Classroom 127	2	U-Bend Fluorescent - T8: U T8 (32W) - 3L	Wall Switch	S	92	1,760	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) U-Lamp	Occupancy Sensor	50	1,214	0.1	224	0	$33	$217	$30	5.6
Classroom 134	11	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,760	1, 2	Relamp	Yes	11	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,214	0.5	1,341	0	$200	$872	$200	3.4
Classroom 134	6	U-Bend Fluorescent - T8: U T8 (32W) - 3L	Wall Switch	S	92	1,760	1, 2	Relamp	Yes	6	LED - Linear Tubes: (3) U-Lamp	Occupancy Sensor	50	1,214	0.2	672	0	$100	$652	$90	5.6
Classroom 135	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 135	23	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,760	1, 2	Relamp	Yes	23	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,214	1.0	2,805	-1	$418	$1,800	$415	3.3

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Classroom 135	1	U-Bend Fluorescent - T8: U T8 (32W) - 3L	Wall Switch	S	92	1,760	1, 2	Relamp	Yes	1	LED - Linear Tubes: (3) U-Lamp	Occupancy Sensor	50	1,214	0.0	112	0	$17	$109	$15	5.6
Classroom 136	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,760	1, 2	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,214	0.5	1,463	0	$218	$927	$215	3.3
Classroom 136	1	U-Bend Fluorescent - T8: U T8 (32W) - 3L	Wall Switch	S	92	1,760	1, 2	Relamp	Yes	1	LED - Linear Tubes: (3) U-Lamp	Occupancy Sensor	50	1,214	0.0	112	0	$17	$109	$15	5.6
Classroom 137	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,760	1, 2	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,214	0.5	1,463	0	$218	$927	$215	3.3
Classroom 137	2	U-Bend Fluorescent - T8: U T8 (32W) - 3L	Wall Switch	S	92	1,760	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) U-Lamp	Occupancy Sensor	50	1,214	0.1	224	0	$33	$217	$30	5.6
Classroom 159	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 159	18	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,760	1, 2	Relamp	Yes	18	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,214	0.8	2,195	0	$327	$1,526	$340	3.6
Classroom 164	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
Classroom 164	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,760	1, 2	Relamp	Yes	13	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,214	0.6	1,585	0	$236	$982	$230	3.2
Classroom 164	1	U-Bend Fluorescent - T8: U T8 (32W) - 3L	Wall Switch	S	92	1,760	1, 2	Relamp	Yes	1	LED - Linear Tubes: (3) U-Lamp	Occupancy Sensor	50	1,214	0.0	112	0	$17	$109	$15	5.6
Classroom 165	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 165	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,760	1, 2	Relamp	Yes	13	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,214	0.6	1,585	0	$236	$982	$230	3.2
Computer Lab 131	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
Computer Lab 131	14	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,760	1, 2	Relamp	Yes	14	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,214	0.6	1,707	0	$254	$1,037	$245	3.1
Computer Lab 131	3	U-Bend Fluorescent - T8: U T8 (32W) - 3L	Wall Switch	S	92	1,760	1, 2	Relamp	Yes	3	LED - Linear Tubes: (3) U-Lamp	Occupancy Sensor	50	1,214	0.1	336	0	$50	$326	$45	5.6
Conference 110B	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,760	1, 2	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,214	0.3	732	0	$109	$599	$125	4.3
Conference 146	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,760	1, 2	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,214	0.2	488	0	$73	$489	$95	5.4
Corridor 1	2	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Corridor 1	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,760	1, 3	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,214	0.2	406	0	$61	$408	$225	3.0
Corridor 2	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
Corridor 2	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,760	1, 3	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,214	0.5	1,301	0	$194	$1,259	$720	2.8
Corridor 3 Gym/Cafeteria	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
Corridor 3 Gym/Cafeteria	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,760	1, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,214	0.1	163	0	$24	$298	$90	8.6
Corridor 1st Floor	18	Compact Fluorescent: (1) 26W Biaxial Plug-In Lamp	Wall Switch	S	26	1,760	1, 3	Relamp	Yes	18	LED Lamps: GX23 (Plug-In) Lamps	High/Low Control	19	1,214	0.2	449	0	$67	$900	$648	3.8
Corridor 1st Floor	8	Compact Fluorescent: (1) 40W Biaxial Plug-In Lamp	Wall Switch	S	40	1,760	1, 3	Relamp	Yes	8	LED Lamps: PL-L (Biax) Lamps	High/Low Control	28	1,214	0.1	320	0	$48	$558	$288	5.7

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Corridor 1st Floor	8	Compact Fluorescent: (2) 40W Biaxial Plug-In Lamps	Wall Switch	S	80	1,760	1, 3	Relamp	Yes	8	LED Lamps: PL-L (Biax) Lamps	High/Low Control	56	1,214	0.2	641	0	$95	$666	$296	3.9
Corridor 1st Floor	6	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	6	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Corridor 1st Floor	44	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,760	1, 3	Relamp	Yes	44	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,214	1.3	3,577	-1	$533	$3,407	$1,980	2.7
Corridor 1st Floor	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,760	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,760	0.0	64	0	$10	$37	$10	2.8
Corridor 1st Floor	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,760	1	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	1,760	0.0	96	0	$14	$55	$15	2.8
Corridor 1st Floor	3	U-Bend Fluorescent - T8: U T8 (32W) - 3L	Wall Switch	S	92	1,760	1, 3	Relamp	Yes	3	LED - Linear Tubes: (3) U-Lamp	High/Low Control	50	1,214	0.1	336	0	$50	$551	$150	8.0
Electrical Room 182	5	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	1,760	1, 2	Relamp	Yes	5	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,214	0.3	716	0	$107	$635	$135	4.7
Elevator 1	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	100	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	100	0.0	4	0	$1	$37	$10	49.0
Exterior 2	22	Compact Fluorescent: (1) 32W Biaxial Plug-In Lamp	Timeclock		32	4,380	1	Relamp	No	22	LED Lamps: GX23 (Plug-In) Lamps	Timeclock	23	4,380	0.0	867	0	$131	$275	$22	1.9
Exterior 2	7	High-Pressure Sodium: (1) 250W Lamp	Photocell		295	4,380	1	Relamp	No	7	LED Lamps - E39: ≤125 W Lamp	Photocell	65	4,380	0.0	7,052	0	$1,061	$1,548	$350	1.1
Exterior 2	15	LED Lamps: (1) 65W Corn Bulb Screw-In Lamp	Photocell		65	4,380		None	No	15	LED Lamps: (1) 65W Corn Bulb Screw-In Lamp	Photocell	65	4,380	0.0	0	0	$0	$0	$0	0.0
Gymnasium 1	4	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Gymnasium 1	8	LED Lamps: (1) 100W Corn Bulb Screw-In Lamp	Wall Switch	S	100	1,760	2	None	Yes	8	LED Lamps: (1) 100W Corn Bulb Screw-In Lamp	Occupancy Sensor	100	1,214	0.2	480	0	$71	$270	$35	3.3
Gymnasium 1	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,760	1, 2	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,214	0.1	163	0	$24	$189	$40	6.2
Gymnasium 1	2	Metal Halide: (1) 400W Lamp	Wall Switch	S	458	1,760	1, 2	Relamp	Yes	2	LED Lamps - E39: ≤125 W Lamp	Occupancy Sensor	100	1,214	0.6	1,506	0	$224	$820	$135	3.1
Janitorial 171JC	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	$3	$37	$10	9.8
Janitorial JC113	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	500	1	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	500	0.0	27	0	$4	$55	$15	9.8
Janitorial JC135	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	$3	$37	$10	9.8
Janitorial JC160	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	500	1	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	500	0.0	27	0	$4	$55	$15	9.8
Kitchen 1	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Kitchen 1	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,454	1, 2	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,383	0.1	319	0	$48	$189	$40	3.1
Kitchen 1 Office	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,760	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,760	0.0	64	0	$10	$37	$10	2.8
Kitchen 1 Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,760	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,760	0.0	64	0	$10	$37	$10	2.8
Kitchen 1 Storage	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,760	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,760	0.0	64	0	$10	$37	$10	2.8
Kitchen 1 Janitor	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	500	1	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	500	0.0	27	0	$4	$55	$15	9.8

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen 1	5	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	1,760	1, 2	Relamp	Yes	5	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,214	0.1	380	0	$57	$632	$85	9.7
Library 100	3	Compact Fluorescent: (1) 32W Biaxial Plug-In Lamp	Wall Switch	S	32	1,760	1, 2	Relamp	Yes	3	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	23	1,214	0.0	94	0	$14	$308	$38	19.3
Library 100	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
Library 100	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,760	1, 2	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,214	0.2	488	0	$73	$489	$95	5.4
Library 100	4	U-Bend Fluorescent - T8: U T8 (32W) - 3L	Wall Switch	S	92	1,760	1, 2	Relamp	Yes	4	LED - Linear Tubes: (3) U-Lamp	Occupancy Sensor	50	1,214	0.2	448	0	$67	$705	$95	9.1
Mechanical 110ME	1	LED Lamps: (1) 10W A19 Screw-In Lamp	Wall Switch	S	10	500		None	No	1	LED Lamps: (1) 10W A19 Screw-In Lamp	Wall Switch	10	500	0.0	0	0	$0	$0	$0	0.0
Mechanical ME133	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	1, 2	Relamp	Yes	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	345	0.3	208	0	$31	$599	$125	15.3
Multipurpose 1	6	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	6	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Multipurpose 1	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,760	1, 2	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,214	0.1	244	0	$36	$380	$65	8.7
Multipurpose 1	6	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	1,760	1, 2	Relamp	Yes	6	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,214	0.3	859	0	$128	$708	$155	4.3
Multipurpose 1	44	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	1,760	1, 2	Relamp	Yes	44	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,214	2.3	6,302	-1	$938	$4,023	$985	3.2
Office - Enclosed 100A	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,454	1, 2	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,383	0.2	957	0	$143	$489	$95	2.8
Office - Enclosed 110A	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,454	1, 2	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,383	0.2	957	0	$143	$489	$95	2.8
Office - Enclosed 120C	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,454	1, 2	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,383	0.2	1,276	0	$190	$562	$115	2.4
Office - Enclosed 122	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,454	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,383	0.1	479	0	$71	$380	$65	4.4
Office - Enclosed 122	1	U-Bend Fluorescent - T8: U T8 (32W) - 3L	Wall Switch	S	92	3,454	1, 2	Relamp	Yes	1	LED - Linear Tubes: (3) U-Lamp	Occupancy Sensor	50	2,383	0.0	220	0	$33	$109	$15	2.9
Office - Enclosed 122A	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,454	1, 2	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,383	0.2	957	0	$143	$489	$95	2.8
Office - Enclosed 122B	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,454	1, 2	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,383	0.1	718	0	$107	$434	$80	3.3
Office - Enclosed 122C	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,454	1, 2	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,383	0.1	718	0	$107	$434	$80	3.3
Office - Enclosed 132	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	3,454	1, 2	Relamp	Yes	3	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,383	0.2	843	0	$126	$489	$95	3.1
Office - Enclosed 142	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,454	1, 2	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,383	0.1	718	0	$107	$434	$80	3.3
Office - Enclosed 142A	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,454	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,383	0.1	479	0	$71	$226	$50	2.5
Office - Enclosed 142B	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,454	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,383	0.1	479	0	$71	$226	$50	2.5
Office - Enclosed 150A	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,454	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,383	0.1	479	0	$71	$226	$50	2.5
Office - Enclosed 150B	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,454	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,383	0.1	479	0	$71	$226	$50	2.5

	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
Office - Enclosed 152	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,454	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,383	0.1	479	0	$71	$226	$50	2.5
Office - Enclosed 152	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,454	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,383	0.1	479	0	$71	$226	$50	2.5
Office - Enclosed 154	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,454	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,383	0.1	479	0	$71	$226	$50	2.5
Office - Enclosed 158	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,454	1, 2	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,383	0.2	957	0	$143	$489	$95	2.8
Office - Enclosed 162	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,454	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,383	0.1	479	0	$71	$226	$50	2.5
Office - Enclosed 162	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,454	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,383	0.1	479	0	$71	$226	$50	2.5
Office - Enclosed 163	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,454	1, 2	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,383	0.2	957	0	$143	$489	$95	2.8
Office - Enclosed 181A	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	3,454	1, 2	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,383	0.1	562	0	$84	$262	$60	2.4
Office - Enclosed 181B	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	3,454	1, 2	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,383	0.1	562	0	$84	$262	$60	2.4
Office - Open Plan 110	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Office - Open Plan 110	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,454	1, 2	Relamp	Yes	8	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,383	0.4	1,914	0	$285	$708	$155	1.9
Office - Open Plan 144	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,454	1, 2	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,383	0.5	2,553	-1	$380	$1,124	$230	2.4
Restroom - Female 1	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,760	1, 2	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,214	0.1	163	0	$24	$189	$40	6.2
Restroom - Female 6	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,760	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,760	0.0	64	0	$10	$37	$10	2.8
Restroom - Female GT113	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,760	1, 2	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,214	0.1	163	0	$24	$189	$40	6.2
Restroom - Male 1	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,760	1, 2	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,214	0.1	163	0	$24	$189	$40	6.2
Restroom - Male 6	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,760	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,760	0.0	64	0	$10	$37	$10	2.8
Restroom - Male BT113	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,760	1, 2	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,214	0.1	163	0	$24	$189	$40	6.2
Restroom - Unisex 110TR	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,760	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,760	0.0	64	0	$10	$37	$10	2.8
Restroom - Unisex 122TR	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,760	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,760	0.0	64	0	$10	$37	$10	2.8
Restroom - Unisex 124CT	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,760	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,760	0.0	64	0	$10	$37	$10	2.8
Restroom - Unisex 125CT	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,760	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,760	0.0	64	0	$10	$37	$10	2.8
Restroom - Unisex 126CT	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,760	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,760	0.0	64	0	$10	$37	$10	2.8
Restroom - Unisex 127CT	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,760	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,760	0.0	64	0	$10	$37	$10	2.8
Restroom - Unisex 134	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,760	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,760	0.0	64	0	$10	$37	$10	2.8

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Restroom - Unisex 135	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,760	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,760	0.0	64	0	$10	$37	$10	2.8
Restroom - Unisex 136	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,760	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,760	0.0	64	0	$10	$37	$10	2.8
Restroom - Unisex 137	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,760	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,760	0.0	64	0	$10	$37	$10	2.8
Restroom - Unisex 164	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,760	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,760	0.0	64	0	$10	$37	$10	2.8
Restroom - Unisex 165	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,760	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,760	0.0	64	0	$10	$37	$10	2.8
Restroom - Unisex TR160	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,760	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,760	0.0	64	0	$10	$37	$10	2.8
Server Room DR123	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,000	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,000	0.0	36	0	$5	$37	$10	4.9
Storage 100SC	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,000	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,000	0.0	36	0	$5	$37	$10	4.9
Storage 144A	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,000	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,000	0.0	36	0	$5	$37	$10	4.9
Storage 144B	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,000	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,000	0.0	36	0	$5	$37	$10	4.9
Storage 173	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
Storage 173	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,000	1, 2	Relamp	Yes	7	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	690	0.2	323	0	$48	$526	$70	9.5
Storage 180A	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,000	1, 2	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	690	0.1	185	0	$28	$416	$40	13.7
Storage 180B	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,000	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,000	0.0	36	0	$5	$37	$10	4.9
Storage 180C	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,000	1, 2	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	690	0.1	185	0	$28	$416	$40	13.7
Storage 184	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,000	1, 2	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	690	0.1	185	0	$28	$416	$40	13.7
Storage 185	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,000	1, 2	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	690	0.1	185	0	$28	$416	$40	13.7
Storage GS133	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,000	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,000	0.0	36	0	$5	$37	$10	4.9
Classroom 201	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,760	1	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	1,760	0.0	96	0	$14	$55	$15	2.8
Classroom 210	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,760	1, 2	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,214	0.5	1,463	0	$218	$927	$215	3.3
Classroom 210	1	U-Bend Fluorescent - T8: U T8 (32W) - 3L	Wall Switch	S	92	1,760	1, 2	Relamp	Yes	1	LED - Linear Tubes: (3) U-Lamp	Occupancy Sensor	50	1,214	0.0	112	0	$17	$109	$15	5.6
Classroom 211	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,760	1, 2	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,214	0.5	1,463	0	$218	$927	$215	3.3
Classroom 211	3	U-Bend Fluorescent - T8: U T8 (32W) - 3L	Wall Switch	S	92	1,760	1, 2	Relamp	Yes	3	LED - Linear Tubes: (3) U-Lamp	Occupancy Sensor	50	1,214	0.1	336	0	$50	$596	$80	10.3
Classroom 212	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,760	1	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	1,760	0.0	96	0	$14	$55	$15	2.8
Classroom 214	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,760	1, 2	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,214	0.5	1,463	0	$218	$927	$215	3.3

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Classroom 215	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,760	1, 2	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,214	0.5	1,463	0	$218	$927	$215	3.3
Classroom 215	2	U-Bend Fluorescent - T8: U T8 (32W) - 3L	Wall Switch	S	92	1,760	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) U-Lamp	Occupancy Sensor	50	1,214	0.1	224	0	$33	$333	$50	8.5
Classroom 216	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,760	1, 2	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,214	0.5	1,463	0	$218	$927	$215	3.3
Classroom 216	2	U-Bend Fluorescent - T8: U T8 (32W) - 3L	Wall Switch	S	92	1,760	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) U-Lamp	Occupancy Sensor	50	1,214	0.1	224	0	$33	$333	$50	8.5
Classroom 217	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,760	1, 2	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,214	0.5	1,463	0	$218	$927	$215	3.3
Classroom 217	2	U-Bend Fluorescent - T8: U T8 (32W) - 3L	Wall Switch	S	92	1,760	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) U-Lamp	Occupancy Sensor	50	1,214	0.1	224	0	$33	$333	$50	8.5
Classroom 220	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,760	1, 2	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,214	0.4	1,097	0	$163	$763	$170	3.6
Classroom 221	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,760	1, 2	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,214	0.4	1,097	0	$163	$763	$170	3.6
Classroom 222	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,760	1, 2	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,214	0.3	732	0	$109	$599	$125	4.3
Classroom 223	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,760	1, 2	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,214	0.3	732	0	$109	$599	$125	4.3
Classroom 224	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,760	1, 2	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,214	0.5	1,463	0	$218	$927	$215	3.3
Classroom 225	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,760	1, 2	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,214	0.5	1,463	0	$218	$927	$215	3.3
Classroom 225	1	U-Bend Fluorescent - T8: U T8 (32W) - 3L	Wall Switch	S	92	1,760	1, 2	Relamp	Yes	1	LED - Linear Tubes: (3) U-Lamp	Occupancy Sensor	50	1,214	0.0	112	0	$17	$109	$15	5.6
Classroom 226	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 226	32	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,760	1, 2	Relamp	Yes	32	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,214	1.0	2,601	-1	$387	$1,978	$425	4.0
Classroom 226	8	U-Bend Fluorescent - T8: U T8 (32W) - 3L	Wall Switch	S	92	1,760	1, 2	Relamp	Yes	8	LED - Linear Tubes: (3) U-Lamp	Occupancy Sensor	50	1,214	0.3	896	0	$133	$1,140	$155	7.4
Classroom 226	4	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	1,760	1, 2	Relamp	Yes	4	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,214	0.1	304	0	$45	$560	$75	10.7
Classroom 227	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 227	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,760	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,214	0.1	244	0	$36	$226	$50	4.8
Classroom 227	2	U-Bend Fluorescent - T8: U T8 (32W) - 3L	Wall Switch	S	92	1,760	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) U-Lamp	Occupancy Sensor	50	1,214	0.1	224	0	$33	$333	$50	8.5
Classroom 230	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,760	1, 2	Relamp	Yes	13	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,214	0.6	1,585	0	$236	$982	$230	3.2
Classroom 231	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,760	1, 2	Relamp	Yes	13	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,214	0.6	1,585	0	$236	$982	$230	3.2
Classroom 233	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,760	1	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	1,760	0.0	96	0	$14	$55	$15	2.8
Classroom 234	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,760	1, 2	Relamp	Yes	13	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,214	0.6	1,585	0	$236	$982	$230	3.2
Classroom 234	1	U-Bend Fluorescent - T8: U T8 (32W) - 3L	Wall Switch	S	92	1,760	1, 2	Relamp	Yes	1	LED - Linear Tubes: (3) U-Lamp	Occupancy Sensor	50	1,214	0.0	112	0	$17	$109	$15	5.6

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Classroom 235	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,760	1, 2	Relamp	Yes	13	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,214	0.6	1,585	0	$236	$982	$230	3.2
Classroom 235	1	U-Bend Fluorescent - T8: U T8 (32W) - 3L	Wall Switch	S	92	1,760	1, 2	Relamp	Yes	1	LED - Linear Tubes: (3) U-Lamp	Occupancy Sensor	50	1,214	0.0	112	0	$17	$109	$15	5.6
Classroom 236	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,760	1, 2	Relamp	Yes	13	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,214	0.6	1,585	0	$236	$982	$230	3.2
Classroom 236	1	U-Bend Fluorescent - T8: U T8 (32W) - 3L	Wall Switch	S	92	1,760	1, 2	Relamp	Yes	1	LED - Linear Tubes: (3) U-Lamp	Occupancy Sensor	50	1,214	0.0	112	0	$17	$109	$15	5.6
Classroom 237	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,760	1	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	1,760	0.0	96	0	$14	$55	$15	2.8
Classroom 237	2	U-Bend Fluorescent - T8: U T8 (32W) - 3L	Wall Switch	S	92	1,760	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) U-Lamp	Occupancy Sensor	50	1,214	0.1	224	0	$33	$333	$50	8.5
Conference 200	11	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,760	1, 2	Relamp	Yes	11	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,214	0.5	1,341	0	$200	$872	$200	3.4
Corridor 2nd Floor	8	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	8	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Corridor 2nd Floor	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,760	1, 3	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,214	0.2	406	0	$61	$408	$225	3.0
Corridor 2nd Floor	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,760	1, 3	Relamp	Yes	1	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	1,214	0.0	122	0	$18	$280	$50	12.7
Corridor 2nd Floor	12	U-Bend Fluorescent - T8: U T8 (32W) - 3L	Wall Switch	S	92	1,760	1, 3	Relamp	Yes	12	LED - Linear Tubes: (3) U-Lamp	High/Low Control	50	1,214	0.5	1,344	0	$200	$1,754	$600	5.8
Janitorial JC213	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	500	1	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	500	0.0	27	0	$4	$55	$15	9.8
Janitorial JC232	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	500	1	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	500	0.0	27	0	$4	$55	$15	9.8
Mechanical ME223	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	$3	$37	$10	9.8
Restroom - Female 200WT	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,760	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,760	0.0	64	0	$10	$37	$10	2.8
Restroom - Female GT213	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,760	1, 2	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,214	0.1	163	0	$24	$189	$40	6.2
Restroom - Female GT232	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,760	1, 2	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,214	0.1	163	0	$24	$189	$40	6.2
Restroom - Male BT213	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,760	1, 2	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,214	0.1	163	0	$24	$189	$40	6.2
Restroom - Male BT232	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,760	1, 2	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,214	0.1	163	0	$24	$189	$40	6.2
Restroom - Male MT200	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,760	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,760	0.0	64	0	$10	$37	$10	2.8
Restroom - Unisex 224CT	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,760	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,760	0.0	64	0	$10	$37	$10	2.8
Restroom - Unisex 224CT (1)	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,760	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,760	0.0	64	0	$10	$37	$10	2.8
Server Room DR223	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,000	1	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,000	0.0	73	0	$11	$73	$20	4.9
Storage 226A	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,000	1, 2	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	690	0.1	92	0	$14	$343	$20	23.5
Storage 226B	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,000	1, 2	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	690	0.1	92	0	$14	$343	$20	23.5

	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
Storage 226SC	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,000	1, 2	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	690	0.1	92	0	$14	$343	$20	23.5
Storage 227SC	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,000	1, 2	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	690	0.1	92	0	$14	$343	$20	23.5
Storage GS222	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,000	1, 2	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	690	0.1	92	0	$14	$343	$20	23.5
Stairs 1	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	3,454	1, 3	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,383	0.0	160	0	$24	$262	$45	9.1
Stairs 3	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Stairs 3	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	3,454	1, 3	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,383	0.0	160	0	$24	$262	$45	9.1
Stairs 3	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	3,454	1, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,383	0.1	319	0	$48	$298	$90	4.4
Stairs 3	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch		93	3,454	1, 3	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	2,383	0.1	718	0	$107	$389	$150	2.2
Stairs 4	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Stairs 4	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	3,454	1, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,383	0.1	319	0	$48	$298	$90	4.4
Stairs 4	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	3,454	1, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,383	0.1	319	0	$48	$298	$90	4.4
Stairs 4	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch		93	3,454	1, 3	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	2,383	0.1	718	0	$107	$389	$150	2.2
Stairs 5	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Stairs 5	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	3,454	1, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,383	0.1	319	0	$48	$298	$90	4.4
Stairs 5	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	3,454	1, 3	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,383	0.0	160	0	$24	$37	$10	1.1
Stairs 5	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch		93	3,454	1, 3	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	2,383	0.1	718	0	$107	$389	$150	2.2

Motor Inventory & Recommendations

		Existing Conditions									Proposed Conditions					Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	Motor Quantity	Motor Application	HP Per Motor	Full Load Efficiency	VFD Control?	Manufacturer	Model	Remaining Useful Life	Annual Operating Hours	ECM #	Install High Efficiency Motors?	Full Load Efficiency	Install VFDs?	Number of VFDs	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Exterior 1	Washington Community School	1	Exhaust Fan	0.3	70.0%	No	Unknown	Unknown	W	2,745		No	70.0%	No		0.0	0	0	$0	$0	$0	0.0
Exterior 1	Washington Community School	4	Exhaust Fan	0.5	70.0%	No	Unknown	Unknown	W	2,745		No	70.0%	No		0.0	0	0	$0	$0	$0	0.0
Exterior 1	Washington Community School	8	Exhaust Fan	0.3	65.0%	No	Unknown	Unknown	W	2,745		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Exterior 1	Washington Community School	2	Exhaust Fan	0.2	65.0%	No	Unknown	Unknown	W	2,745		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Exterior 1	Washington Community School	3	Exhaust Fan	0.8	70.0%	No	Unknown	Unknown	W	2,745		No	70.0%	No		0.0	0	0	$0	$0	$0	0.0
Exterior 1	Washington Community School	1	Exhaust Fan	0.2	65.0%	No	Unknown	Unknown	W	2,745		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Mechanical 1	Washington Community School	1	Heating Hot Water Pump	7.5	88.5%	No	Baldor	M3311T	W	3,391	4	No	91.0%	Yes	1	0.8	8,437	0	$1,270	$32,863	$1,000	25.1
Mechanical 1	Washington Community School	1	Heating Hot Water Pump	7.5	91.0%	No	Baldor	M3311T	W	3,391	4	No	91.0%	Yes	1	0.7	7,818	0	$1,177	$32,863	$1,000	27.1
Mechanical 1	Washington Community School	1	DHW Circulation Pump	0.1	65.0%	No	Bell & Gossett	Unknown	W	8,760		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Storage 173	Washington Community School	1	DHW Circulation Pump	0.1	65.0%	No	Unknown	Unknown	W	8,760		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Exterior 1	Kitchen	1	Kitchen Hood Exhaust Fan	1.0	85.5%	No	Unknown	Unknown	W	500		No	85.5%	No		0.0	0	0	$0	$0	$0	0.0
Exterior 1	Washington Community School	2	Supply Fan	7.5	88.5%	No	Unknown	Unknown	W	3,000		No	88.5%	No		0.0	0	0	$0	$0	$0	0.0
Exterior 1	Washington Community School	2	Return Fan	3.0	86.5%	No	Unknown	Unknown	W	3,000		No	86.5%	No		0.0	0	0	$0	$0	$0	0.0
Exterior 1	Washington Community School	1	Supply Fan	25.0	91.7%	No	Unknown	Unknown	W	3,000		No	91.7%	No		0.0	0	0	$0	$0	$0	0.0
Exterior 1	Washington Community School	1	Return Fan	7.5	88.5%	No	Unknown	Unknown	W	3,000		No	88.5%	No		0.0	0	0	$0	$0	$0	0.0
Exterior 1	Washington Community School	1	Supply Fan	7.5	88.5%	No	Unknown	Unknown	W	3,000		No	88.5%	No		0.0	0	0	$0	$0	$0	0.0
Exterior 1	Washington Community School	1	Return Fan	3.0	86.5%	No	Unknown	Unknown	W	3,000		No	86.5%	No		0.0	0	0	$0	$0	$0	0.0
Exterior 1	Washington Community School	1	Supply Fan	25.0	93.6%	No	Unknown	Unknown	W	3,000		No	93.6%	No		0.0	0	0	$0	$0	$0	0.0
Exterior 1	Washington Community School	1	Return Fan	7.5	91.0%	No	Unknown	Unknown	W	3,000		No	91.0%	No		0.0	0	0	$0	$0	$0	0.0
Exterior 1	Washington Community School	1	Supply Fan	30.0	92.4%	Yes	Unknown	Unknown	W	3,000		No	92.4%	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
Exterior 1	Washington Community School	1	Return Fan	10.0	89.5%	Yes	Unknown	Unknown	W	3,000		No	89.5%	No		0.0	0	0	$0	$0	$0	0.0
Exterior 1	Washington Community School	1	Supply Fan	15.0	91.0%	No	Unknown	Unknown	W	3,000		No	91.0%	No		0.0	0	0	$0	$0	$0	0.0
Exterior 1	Washington Community School	1	Return Fan	10.0	89.5%	No	Unknown	Unknown	W	3,000		No	89.5%	No		0.0	0	0	$0	$0	$0	0.0
Elevator 1	Washington Community School	1	Other	15.0	70.0%	No	US Motors	Unknown	W	50		No	70.0%	No		0.0	0	0	$0	$0	$0	0.0

Packaged HVAC Inventory & Recommendations

		Existing Conditions									Proposed Conditions								Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (MBh)	Cooling Mode Efficiency (SEER/IEER/EER)	Heating Mode Efficiency	Manufacturer	Model	Remaining Useful Life	ECM #	Install High Efficiency System?	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (MBh)	Cooling Mode Efficiency (SEER/IEER/EER)	Heating Mode Efficiency	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Exterior 1	Gymnasium	2	Package Unit	18.00	216.00	10.00		McQuay	RPS018CSW	B	5	Yes	2	Package Unit	18.00	216.00	14.00		6.2	4,098	0	$617	$38,450	$3,204	57.2
Exterior 1	Washington Community School	1	Package Unit	20.00	240.00	10.00		McQuay	RPS020CSW	B	5	Yes	1	Package Unit	20.00	240.00	12.50		2.4	1,594	0	$240	$21,050	$1,700	80.7
Exterior 1	Washington Community School	2	Package Unit	60.00	720.00	10.00		McQuay	RPS060CLW	B	5	Yes	2	Package Unit	60.00	720.00	12.50		14.4	9,562	0	$1,439	$129,574	$10,200	83.0
Exterior 1	Washington Community School	1	Package Unit	50.00	600.00	12.00		Trane	SLHLF5043U56C7BE9L01A0CE0G00000000M8600	W		No							0.0	0	0	$0	$0	$0	0.0
Exterior 1	Washington Community School	1	Package Unit	6.00	136.00	10.00		Aaon	RK-06-3-E0-750	B	5	Yes	1	Package Unit	6.00	136.00	14.00		1.0	683	0	$103	$9,001	$474	83.0
Exterior 1	Washington Community School	1	Package Unit	40.00	480.00	10.00		McQuay	RPS040CLW	B	5	Yes	1	Package Unit	40.00	480.00	12.50		4.8	3,187	0	$480	$41,194	$3,400	78.8
Exterior 1	Washington Community School	1	Package Unit	10.00	205.00	10.00		Aaon	RK-10-3-E0-750	B	5	Yes	1	Package Unit	10.00	205.00	14.00		1.7	1,138	0	$171	$12,271	$790	67.0
Washington Elementary School	Washington Community School	12	Electric Resistance Heat		2.56		1 COP	Erincraft	Unkown	W		No							0.0	0	0	$0	$0	$0	0.0
Exterior 1	Washington Community School	2	Ductless Mini-Split AC	1.00		12.50		Mitsubishi	MUY-GE12NA2	W		No							0.0	0	0	$0	$0	$0	0.0
Exterior 1	Kitchen 1	1	Package Unit		200.00		0.6 AFUE	Reznor	Unkown	W		No							0.0	0	0	$0	$0	$0	0.0
Washington Elementary School	Washington Community School	2	Unit Heater		24.80			Sterling	HS-125AS	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
Mechanical 1	Washington Elementary School	3	Non-Condensing Hot Water Boiler	1,720	Aerco	Benchmark 2.0	W		No						0.0	0	0	$0	$0	$0	0.0
Mechanical 1	Washington Elementary School	1	Condensing Hot Water Boiler	1,880	Aerco	BMK2000	W		No						0.0	0	0	$0	$0	$0	0.0

DHW Inventory & Recommendations

		Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Manufacturer	Model	Remaining Useful Life	ECM #	Replace?	System Quantity	System Type	Fuel Type	System Efficiency	Efficiency Units	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen 1	Kitchen 1	1	Booster Water Heater	Hatco	C-54	W		No						0.0	0	0	$0	$0	$0	0.0
Mechanical 1	Washington Elementary School	1	Storage Tank Water Heater (> 50 Gal)	Maxim	14P 125A-MX	W		No						0.0	0	0	$0	$0	$0	0.0
Storage 173	Kitchen1	1	Storage Tank Water Heater (> 50 Gal)	Maxim	72 L 250A-MXG	N		No						0.0	0	0	$0	$0	$0	0.0

Walk-In Cooler/Freezer Inventory & Recommendations

	Existing Conditions				Proposed Conditions				Energy Impact & Financial Analysis						
Location	Cooler/ Freezer Quantity	Case Type/Temperature	Manufacturer	Model	ECM #	Install EC Evaporator Fan Motors?	Install Electric Defrost Control?	Install Evaporator Fan Control?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen 1	1	Cooler (35F to 55F)	Russell	RLH075H22-0		No	No	No	0.0	0	0	$0	$0	$0	0.0
Kitchen 1	1	Low Temp Freezer (-35F to -5F)	Cold Zone	ROR-H16L4-2S-D		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 1	1	Freezer Chest	GE	Unknown	No		No	0.0	0	0	$0	$0	$0	0.0
Kitchen 1	4	Refrigerator Chest	Unknown	Unknown	No		No	0.0	0	0	$0	$0	$0	0.0
Kitchen 1	2	Stand-Up Refrigerator, Solid Door (31 - 50 cu. ft.)	Unknown	Unknown	No	7	Yes	0.1	1,259	0	$190	$3,200	$250	15.6

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	1	Electric Fryer	Frymaster	Unknown	No		No	0.0	0	0	$0	$0	$0	0.0
Kitchen 1	2	Insulated Food Holding Cabinet (3/4 Size)	Unknown	Unknown	No		No	0.0	0	0	$0	$0	$0	0.0
Kitchen 1	1	Gas Rack Oven (Double)	Masters	Unknown	No	6	Yes	0.0	0	89	$666	$9,290	$2,000	11.0
Kitchen 1	1	Gas Rack Oven (Single)	Unknown	Unknown	No	6	Yes	0.0	0	37	$280	$4,839	$1,000	13.7
Kitchen 1	2	Electric Steamer	Unknown	Unknown	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	1	Single Tank Conveyor (High Temp)	Kobart	C44A	Natural Gas	N/A	No		No	0.0	0	0	$0	$0	$0	0.0

Plug Load Inventory

	Existing Conditions					
Location	Quantity	Equipment Description	Energy Rate (W)	ENERGY STAR Qualified?	Manufacturer	Model
Washington Elementary School	3	Coffee Machine	500	No	Unknown	Unknonw
Washington Elementary School	21	Desktop	270	No	Varied	Varied
Washington Elementary School	1	Electric Resistance Heater	1,500	No	Holmes	HFH5506
Washington Elementary School	3	Fan	200	No	Varied	Varied
Washington Elementary School	714	Laptop	75	No	Varied	Varied
Washington Elementary School	10	Microwave	800	No	Varied	Varied
Washington Elementary School	50	Apple TV	200	Yes	Apple	Unknonw
Washington Elementary School	12	Hand Dryer	500	No	Dayton	Unknonw
Washington Elementary School	51	Printer	200	No	Varied	Varied
Washington Elementary School	2	Copier	800	No	Xerox	Unknonw
Washington Elementary School	2	Projector	200	No	Unknown	Unknonw
Washington Elementary School	6	Mini Refrigerator	126	No	Varied	Varied
Washington Elementary School	3	Refrigerator	383	No	Varied	Varied
Washington Elementary School	43	Smart Board	200	No	Unknown	Unknonw
Washington Elementary School	2	Television	100	No	Unknown	Unknonw
Washington Elementary School	10	Water Fountain	200	No	Elkay	Unknonw

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
Conference 200	1	Refrigerated	8	Yes	0.2	1,612	0	$243	$230	$50	0.7

APPENDIX B: ENERGY STAR® STATEMENT OF ENERGY PERFORMANCE

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

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ENERGY STAR® Statement of Energy Performance

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ENERGY STAR® Score[1]

Washington Community School

Primary Property Type: K-12 School
Gross Floor Area (ft²): 90,595
Built: 2000

For Year Ending: July 31, 2021
Date Generated: October 24, 2022

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
Washington Community School 427 Darrow Avenue Plainfield, New Jersey 07060	PlainfieldBOE 920 Park Avenue Plainfield, NJ 07060 (908) 731-4356	Sean Sutton 920 Park Avenue Plainfield, NJ 07060 (908) 731-4356 ssutton@plainfield.k12.nj.us

Property ID: 4721353

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
73.4 kBtu/ft²

Source EUI
114.3 kBtu/ft²

Annual Energy by Fuel	
Natural Gas (kBtu)	3,894,301 (58%)
Electric - Solar (kBtu)	808,224 (12%)
Electric - Grid (kBtu)	1,949,598 (29%)

National Median Comparison	
National Median Site EUI (kBtu/ft²)	82.9
National Median Source EUI (kBtu/ft²)	129
% Diff from National Median Source EUI	-11%
Annual Emissions	
Greenhouse Gas Emissions (Metric Tons CO2e/year)	447

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.