Local Government Energy Audit Report

Lindenwold High School

October 8, 2019

Prepared for:

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Disclaimer

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

TRC Companies, Inc. (TRC) reviewed the energy conservation measures and estimates of energy savings were reviewed 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 installation costs on our experience at similar facilities, pricing from local contractors and vendors, and/or cost estimates from RS Means. We encourage the owner of the facility to independently confirm these cost estimates and to obtain multiple estimates when considering measure installations. Actual installation costs can vary widely based on individual measures and conditions. TRC and NJBPU do not guarantee installed cost estimates and shall in no event be held liable should actual installed costs vary from estimates.

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

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

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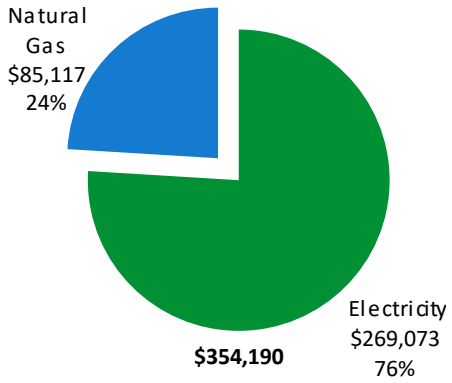
1 EXECUTIVE SUMMARY

The New Jersey Board of Public Utilities (NJBPU) has sponsored this Local Government Energy Audit (LGEA) report for Lindenwold High 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 Companies, Inc. (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: $354,190 Electricity: 2,178,746 kWh Natural Gas: 91,006 Therms	
ENERGY STAR® Benchmarking Score	18 *(1-100 scale)*	This building performs at or below the national average. This report contains suggestions about how to improve building performance and reduce energy costs.

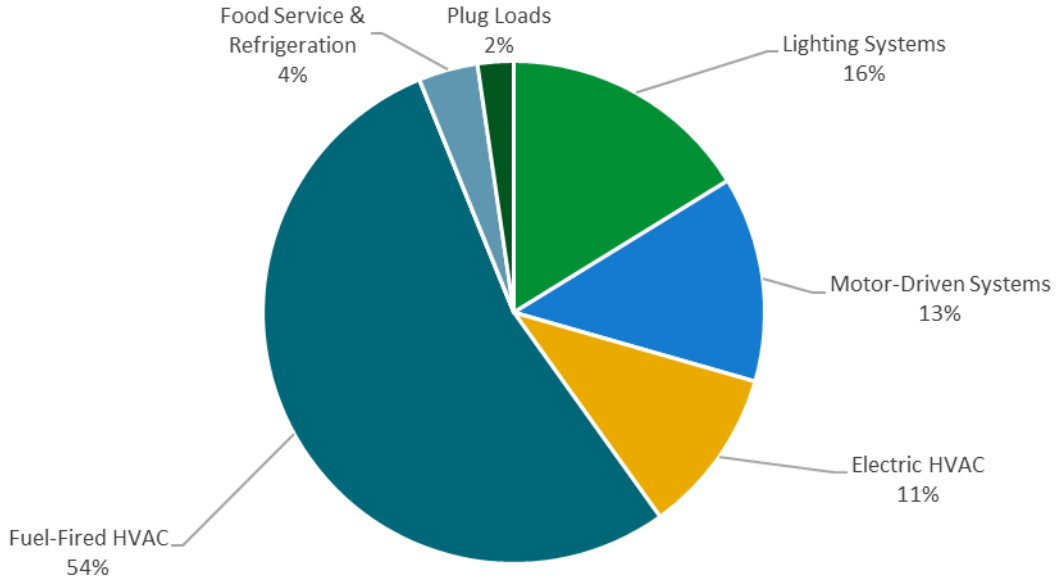


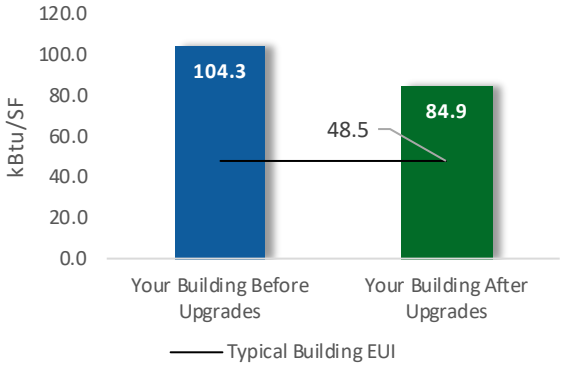
Figure 1 - Energy Use by System

POTENTIAL IMPROVEMENTS

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

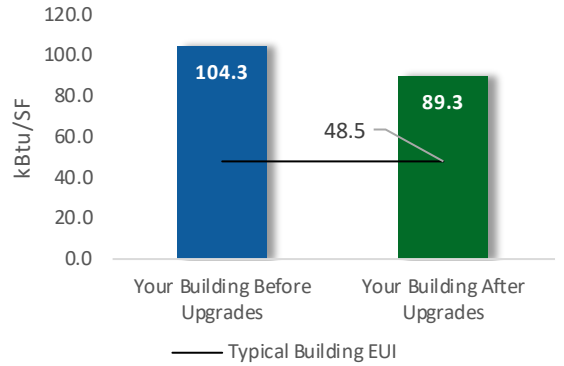
Scenario 1: Full Package (all evaluated measures)

Installation Cost	$654,774
Potential Rebates & Incentives[1]	$42,679
Annual Cost Savings	$95,636
Annual Energy Savings	Electricity: 730,587 kWh Natural Gas: 5,783 Therms
Greenhouse Gas Emission Savings	402 Tons
Simple Payback	6.4 Years
Site Energy Savings (all utilities)	19%



Scenario 2: Cost Effective Package[2]

Installation Cost	$354,553
Potential Rebates & Incentives	$33,028
Annual Cost Savings	$86,572
Annual Energy Savings	Electricity: 702,176 kWh
Greenhouse Gas Emission Savings	353 Tons
Simple Payback	3.7 Years
Site Energy Savings (all utilities)	14%



On-site Generation Potential

Photovoltaic	None
Combined Heat and Power	None

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

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

#	Energy Conservation Measure	*Cost Effective?*	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Lifetime Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades			**488,420**	**70.5**	**-95**	**$59,429**	**$891,433**	**$159,084**	**$21,551**	**$137,533**	**2.3**	**480,687**
ECM 1	Install LED Fixtures	Yes	153,338	18.9	-25	$18,699	$280,482	$84,182	$13,120	$71,062	3.8	151,427
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	1,198	0.2	0	$146	$2,185	$303	$30	$273	1.9	1,177
ECM 3	Retrofit Fixtures with LED Lamps	Yes	333,884	51.5	-69	$40,584	$608,766	$74,599	$8,401	$66,198	1.6	328,082
Lighting Control Measures			**68,471**	**8.7**	**-14**	**$8,322**	**$66,578**	**$31,109**	**$2,530**	**$28,579**	**3.4**	**67,274**
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	58,723	7.5	-12	$7,137	$57,099	$23,684	$2,530	$21,154	3.0	57,696
ECM 5	Install High/Low Lighting Controls	Yes	9,748	1.2	-2	$1,185	$9,479	$7,425	$0	$7,425	6.3	9,578
Variable Frequency Drive (VFD) Measures			**131,030**	**32.9**	**0**	**$16,182**	**$242,731**	**$157,056**	**$8,547**	**$148,509**	**9.2**	**131,946**
ECM 6	Install VFDs on Constant Volume (CV) Fans	Yes	131,030	32.9	0	$16,182	$242,731	$157,056	$8,547	$148,509	9.2	131,946
Electric Unitary HVAC Measures			**28,411**	**12.8**	**0**	**$3,509**	**$52,631**	**$118,347**	**$5,167**	**$113,180**	**32.3**	**28,610**
ECM 7	Install High Efficiency Air Conditioning Units	No	28,411	12.8	0	$3,509	$52,631	$118,347	$5,167	$113,180	32.3	28,610
Gas Heating (HVAC/Process) Replacement			**0**	**0.0**	**594**	**$5,555**	**$111,099**	**$181,875**	**$4,485**	**$177,390**	**31.9**	**69,541**
ECM 8	Install High Efficiency Hot Water Boilers	No	0	0.0	440	$4,115	$82,302	$163,749	$1,285	$162,464	39.5	51,516
ECM 9	Install High Efficiency Furnaces	No	0	0.0	154	$1,440	$28,797	$18,126	$3,200	$14,926	10.4	18,025
Domestic Water Heating Upgrade			**0**	**0.0**	**94**	**$879**	**$8,787**	**$237**	**$0**	**$237**	**0.3**	**11,000**
ECM 10	Install Low-Flow DHW Devices	Yes	0	0.0	94	$879	$8,787	$237	$0	$237	0.3	11,000
Food Service & Refrigeration Measures			**14,255**	**1.0**	**0**	**$1,760**	**$18,308**	**$7,066**	**$400**	**$6,666**	**3.8**	**14,354**
ECM 11	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	1,376	0.2	0	$170	$2,549	$1,820	$0	$1,820	10.7	1,386
ECM 12	Refrigeration Controls	Yes	5,746	0.1	0	$710	$11,354	$3,867	$200	$3,667	5.2	5,786
ECM 13	Vending Machine Control	Yes	7,132	0.8	0	$881	$4,404	$1,380	$200	$1,180	1.3	7,182
TOTALS (COST EFFECTIVE MEASURES)			**702,176**	**113.2**	**-16**	**$86,572**	**$1,227,836**	**$354,553**	**$33,028**	**$321,525**	**3.7**	**705,261**
TOTALS (ALL MEASURES)			**730,587**	**126.0**	**578**	**$95,636**	**$1,391,566**	**$654,774**	**$42,679**	**$612,095**	**6.4**	**803,411**

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

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

Figure 2 – Evaluated Energy Improvements

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

1.1 Planning Your Project

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

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

Pick Your Installation Approach

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

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

Energy Conservation Measure		SmartStart	Direct Install	Pay For Performance
ECM 1	Install LED Fixtures	x		x
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	x		x
ECM 3	Retrofit Fixtures with LED Lamps	x		x
ECM 4	Install Occupancy Sensor Lighting Controls	x		x
ECM 5	Install High/Low Lighting Controls			x
ECM 6	Install VFDs on Constant Volume (CV) HVAC	x		x
ECM 7	Install High Efficiency Electric AC	x		x
ECM 8	Install High Efficiency Hot Water Boilers	x		x
ECM 9	Install High Efficiency Furnaces	x		x
ECM 10	Install Low-Flow Domestic Hot Water Devices			x
ECM 11	Refrigerator/Freezer Case Electrically Commutated Motors			x
ECM 12	Refrigeration Controls	x		x
ECM 13	Vending Machine Control	x		x

Figure 3 – Funding Options

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

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

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

Individual Measures with SmartStart

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

Turnkey Installation with Direct Install

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

Whole Building Approach with Pay for Performance

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

More Options from Around the State

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

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

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

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

Ongoing Electric Savings with Demand Response

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

2 EXISTING CONDITIONS

The New Jersey Board of Public Utilities (NJBPU) has sponsored this Local Government Energy Audit (LGEA) Report for Lindenwold High School. This report provides information on how your facility uses energy, identifies energy conservation measures (ECMs) that can reduce your energy use, and provides information and assistance to help you implement the ECMs. This report also contains valuable information on financial incentives from New Jersey's Clean Energy Program (NJCEP) for implementing ECMs.

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

2.1 Site Overview

On May 29, 2019, TRC performed an energy audit at Lindenwold High School located in Lindenwold, New Jersey. TRC met with Wade Carter to review the facility operations and help focus our investigation on specific energy-using systems.

Lindenwold High School is a two-story, 158,575 square foot building built in 2001. Spaces include: classrooms, gymnasium, locker rooms, auditorium, offices, cafeteria, hallways, stairwells, closets, storage rooms, a commercial kitchen and mechanical spaces.

The site has solar PV panels on the roof and parking lot served by three 75 kW inverters and one 500 kW inverter. The site is under a PPA for the solar generation.

The school is also served by a gas fired emergency back-up generator.

2.2 Building Occupancy

The facility is occupied 12 months out of the year. Typical weekday occupancy is 109 staff and 547 students.

Building Name	Weekday/Weekend	Operating Schedule
Lindenwold High School	Weekday	07:00 AM - 11:00 PM
	Weekend	07:00 AM - 03:00 PM (Saturday Only)

Figure 4 - Building Occupancy Schedule

2.3 Building Envelope

Building walls are concrete block over structural steel with a stone facade. The roof is flat and covered with black membrane and gravel on the top layer. At the time of the site visit, it was observed that the roof and envelope were leaky and there was a repair crew on site working on those leaks.

Most of the windows are double glazed and have aluminum frames. The glass-to-frame seals are in fair condition. Exterior doors are fireproof with aluminum frames and are in fair condition. Degraded window and door seals increase drafts and outside air infiltration.

Building Envelope

Exterior Door

Roof

Window

2.4 Lighting Systems

The primary interior lighting system uses 54-Watt linear fluorescent T5HO lamps and 32-Watt linear fluorescent T8 lamps. There are also several fixtures with 32-Watt U-tube fluorescent lamps. Additionally, there are a few fixtures with 3-foot, 30-Watt linear fluorescent T12 lamps. Several compact fluorescent (CFL) lamps with estimated ratings of 23-Watts and 55-Watts are used. Typically, T8 fluorescent lamps use electronic ballasts.

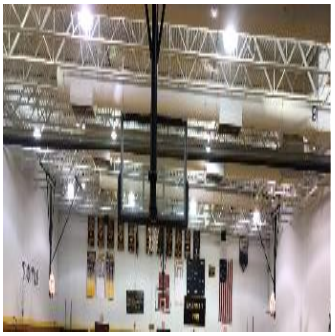
Fluorescent fixture types include 1-lamp, 2-lamp, 3-lamp, or 4-lamp, 2-foot, 3-foot, or 4-foot long and U-Bend troffers, suspended, or surface mounted fixtures. Similarly, CFL lamps are situated in a mix of suspended, recessed, and surface mounted fixtures.

The auditorium and stage have a few 75-Watt LED fixtures and mostly 400-Watt Metal Halide (MH) fixtures. The main gym, aux gym, weight room and control rooms have MH fixtures with varying wattages. Most exit signs use LED sources.

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

Most interior lighting fixtures are manually controlled, and the others are controlled using occupancy sensors.

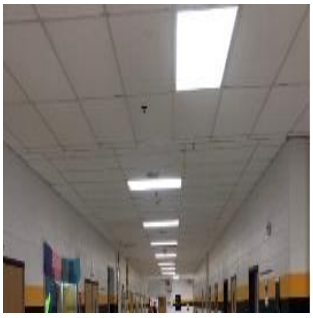
Hanging Linear T8 Fixture



Gym Lighting Fixtures

U-Bend Fluorescent Fixture

Stage Lighting Fixtures



Hallway Lighting Fixtures

Exit Sign

Exterior fixtures include wall packs and canopy lights with a mixture of MH, CFL and LED lamps of varying wattages. The pole mounted flood fixtures equal number of LED and MH lamps.

Exterior light fixtures are controlled by timeclocks, occupancy sensors or photocell, depending on the fixture.

Exterior Pole Mounted Fixtures

Exterior Canopy Fixture

Exterior Wall pack Fixture

Time Clock Controller

2.5 Air Handling Systems

Air Handling Units (AHU)

Most of the building zones are conditioned by air handling units equipped with chilled water cooling coils and heating hot water coils to serve their respective zone's cooling and heating requirements. Most of these air handling units have supply fans with motor ratings ranging between 1 hp and 10 hp and return fans with motor ratings ranging between 1/3 hp and 5 hp. The supply and return fans in all AHUs operate at constant speed with the exception of AHU-8 and AHU-19 which serve multi-zone VAV systems and are equipped with variable frequency drives (VFD)s.

All AHUs are controlled by the building energy management system (EMS).

Unit Ventilators

There are 23 unit ventilators that provide heating and cooling to classrooms. Unit ventilators have supply fan motors and electronically controlled outside air dampers and a 4-pipe heating and cooling coil system. This system is original to the building and appears to be in fair operating condition. These units are all controlled by the building EMS.

Packaged Units

A few building areas are served with individual packaged air conditioning units that are controlled by the EMS. The units have cooling capacities of 40-tons and 70-tons. Heating is provided by integral gas-fired furnaces.

Refer to Appendix A for detailed information about each unit.

Air Conditioners

The server rooms, TV studio, and other office areas use split system air conditioning (AC) units. These vary in capacity between 2-tons and 3.5-tons. The units are in fair condition. They range in efficiency between 11 EER to 13 EER.

Rooftop AHUs

Rooftop Packaged Unit

Classroom Unit Ventilator

Split System AC Condensing Units

2.6 Heating Hot Water and Domestic Hot Water Systems

Two Smith 4,298 MBh hot water boilers and one 734 MBh hot water boiler serve most of the building's heating load and domestic hot water needs. The burners on all boilers are modulating with a nominal efficiency of 80% for the larger boilers and 81.5% for the smaller boiler. The boilers are configured in an automated control scheme. All boilers are required under high load conditions. These boilers are original to the building and are nearing their end of effective useful life.

The hydronic distribution system is a 4- pipe heating and cooling system that serves the air handling units and unit ventilators throughout the building.

The boilers serve a primary-only distribution system with two variable speed 25 hp heating hot water pumps operating in lead/lag fashion to serve the heating hot water loop throughout the building. The heating hot water loop is only operational during the winter months.

The boiler system also serves a heat exchanger that is used for heating the domestic hot water required for the restrooms, locker rooms, and the kitchen. This heat exchanger is primarily served by the smaller 734 MBh boiler during the non-winter months.

All rooftop packaged units are equipped with gas-fired furnaces to serve their respective heating loads. These furnaces have capacity of 100 MBh each.

HHW Boilers

HHW Boiler

DHW Heat Exchanger

HHW Pumps

2.7 Chilled Water Systems

The chiller plant consists of one 365-ton, McQuay, R-22, air-cooled screw chiller that is located on the ground level outside the building. The chilled water system is configured into primary and secondary loops. The primary loop is served by two constant speed chilled water pumps (P5 & P6) that are rated at 20-hp each. The secondary loop is served by two variable speed chilled water pumps (P7 & P8) that are rated at 40-hp each.

Air-Cooled Screw Chiller

2.8 Building Energy Management Systems (EMS)

An Eccotrol EMS controls the HVAC equipment including the boilers, the chiller, the air handlers, unit ventilators, and the package units. The EMS provides equipment scheduling control and monitors and controls space temperatures, supply air temperatures, humidity, heating water loop temperatures, and chilled water loop temperatures.

BEMS Screenshot

2.9 Food Service Equipment

The kitchen has a mixture of gas and electric equipment that is used to prepare meals, breakfasts and lunches for students and staff. Most cooking is done using a gas-fired oven. Bulk prepared foods are held in an electric holding cabinet. Equipment is high efficiency and is in fair condition.

The dishwasher is an ENERGY STAR® high temperature single tank conveyor type unit.

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

Kitchen Equipment

Oven

Dishwasher

2.10 Refrigeration

The kitchen has several stand-up refrigerators with either solid or glass doors. There are also a few refrigerator chests. All equipment is high efficiency and in fair condition.

The walk-in cooler has an estimated 2.59-ton compressor located on the roof and three, 1/20 hp fan evaporator.

The walk-in medium temperature freezer has an estimated 2.66-ton compressor located on the roof and 1/20 hp three 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 & Freezer

Stand-Up Refrigerators

Refrigerator Chest

2.11 Plug Load & Vending Machines

The utility bill analysis indicates that plug loads consume approximately 2% of total building energy use. This is lower than a typical building.

You seem to already be doing a great job managing your electrical plug loads. This report makes additional suggestions for ECMs in this area as well as Energy Efficient Best Practices.

There are 102 computer work stations along with 793 Chromebooks throughout the facility. Plug loads throughout the building include general café and office equipment.

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

The school also has a server room with a constant server load and a 11 kW electric kiln.

There are four refrigerated beverage vending machines and two non-refrigerated vending machines. Vending machines are not equipped with occupancy-based controls.

Computers

Photocopier

Microwave Oven

Dryer

Beverage Vending Machine

Refrigerators

2.12 Water-Using Systems

There are approximately 25 restrooms with toilets, urinals, and sinks. Faucet flow rates are at 2.2 gallons per minute (gpm) or higher.

Girls and boy's locker rooms are frequently used. The showerheads are all low flow.

2.13 On-Site Generation

Lindenwold High School has an approximately 725 kW photovoltaic (PV) array located on the roof and parking lot of the facility under a PPA with the solar energy provider. This system provides approximately 60% of the electricity used at this facility.

The school also has an emergency generator that, in the event of a power outage, serves critical services and is only used for emergency needs.

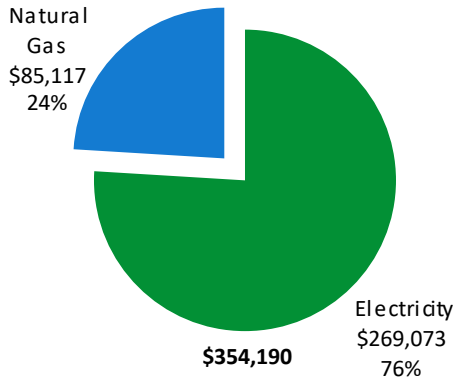
Rooftop Solar PV Array

Gas Fired Back-Up Generator

3 Energy Use and Costs

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

Utility Summary		
Fuel	**Usage**	**Cost**
Electricity	2,178,746 kWh	$269,073
Natural Gas	91,006 Therms	$85,117
Total		**$354,190**



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

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

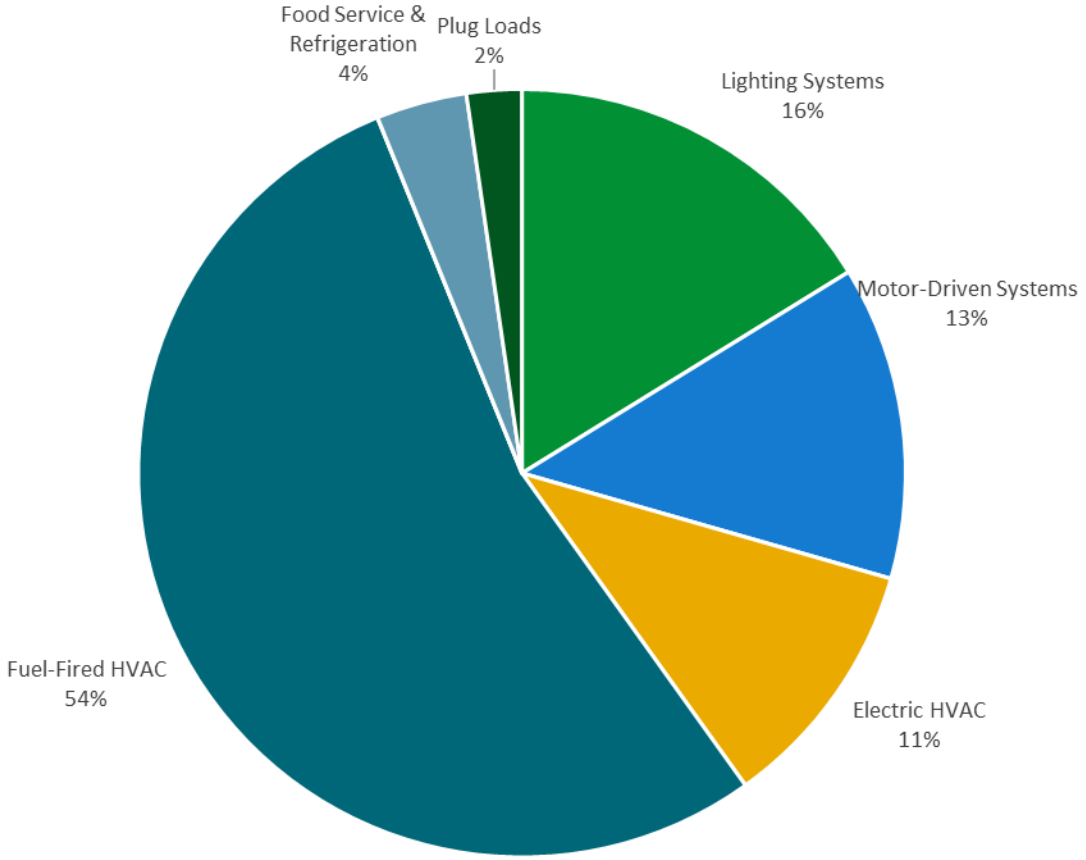
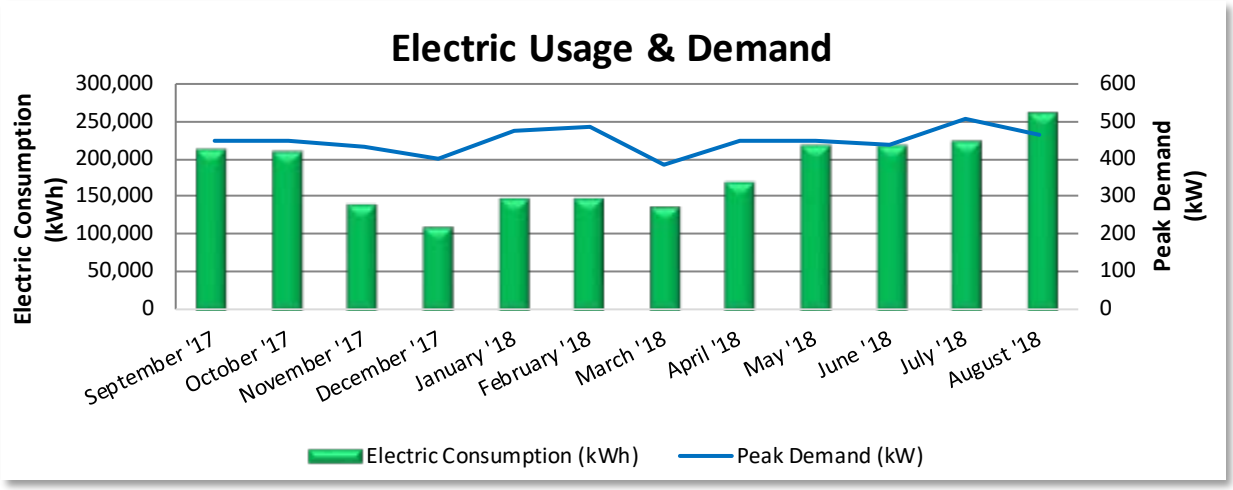


Figure 5 - Energy Balance

3.1 Electricity

Atlantic City Electric delivers electricity under rate class General Service Secondary, with electric production provided by Constellation, a third-party supplier. Additional electricity is generated on site.



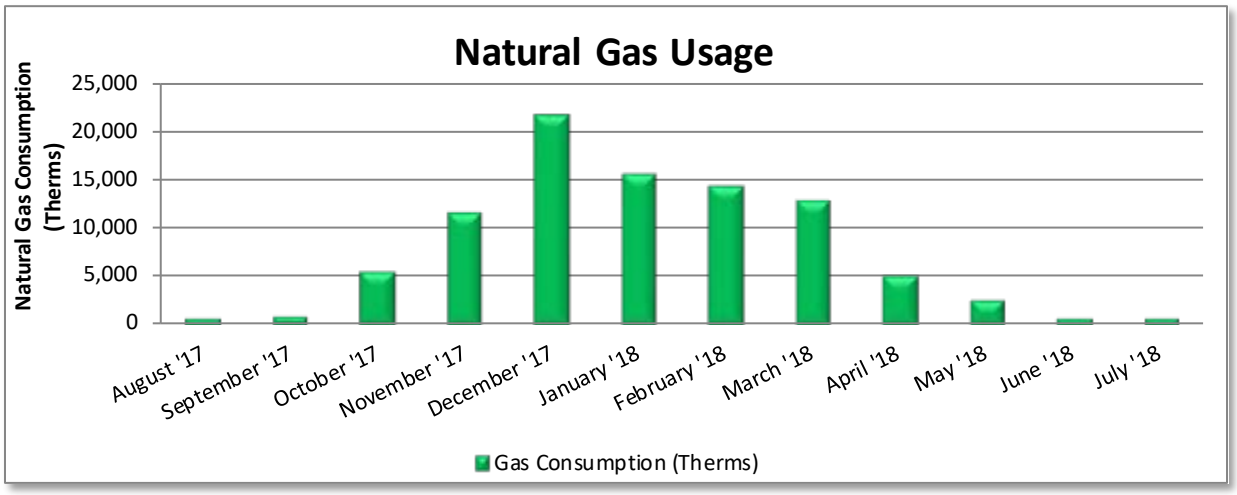
Electric Billing Data					
Period Ending	**Days in Period**	**Electric Usage (kWh)**	**Demand (kW)**	**Demand Cost**	**Total Electric Cost**
9/28/17	29	209,597	448		$25,053
10/30/17	32	207,210	448		$25,457
11/29/17	30	139,320	433		$18,385
12/28/17	29	110,586	403		$15,505
1/30/18	33	147,561	473		$20,865
2/27/18	28	145,824	488		$19,830
3/28/18	29	136,356	385		$17,516
4/29/18	32	168,370	450		$21,610
5/30/18	31	217,534	450		$26,248
6/28/18	29	216,161	437		$24,384
7/30/18	32	222,487	508		$26,364
8/30/18	31	257,742	467		$27,854
Totals	**365**	**2,178,746**	**508**	**$0**	**$269,073**
Annual	**365**	**2,178,746**	**508**	**$0**	**$269,073**

Notes:

- Peak demand of 508 kW occurred in July 2018.
- The average electric cost over the past 12 months was $0.123/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 Terraform Power. Most of the electricity generated on-site is used on-site and the remainder is exported to the grid.
- Please note that power generated through solar accounts for approximately 60% of the energy consumption of the facility. This may affect the grid impacted savings and incentives if the savings are in excess of what is being purchased from the electric grid.

3.2 Natural Gas

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



Gas Billing Data			
Period Ending	**Days in Period**	**Natural Gas Usage (Therms)**	**Natural Gas Cost**
9/13/17	34	779	$903
10/10/17	27	881	$953
11/9/17	30	5,454	$4,970
12/8/17	29	11,543	$10,560
1/11/18	34	21,642	$19,876
2/8/18	28	15,573	$14,308
3/12/18	32	14,238	$13,628
4/11/18	30	12,875	$12,184
5/9/18	28	5,025	$4,742
6/12/18	34	2,500	$2,466
7/12/18	30	633	$738
8/13/18	32	611	$490
Totals	**368**	**91,754**	**$85,817**
Annual	**365**	**91,006**	**$85,117**

Notes:

- The average gas cost for the past 12 months is $0.935/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 *Portfolio Manager®* software. Benchmarking compares your building's energy use to that of similar buildings across the county, 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.

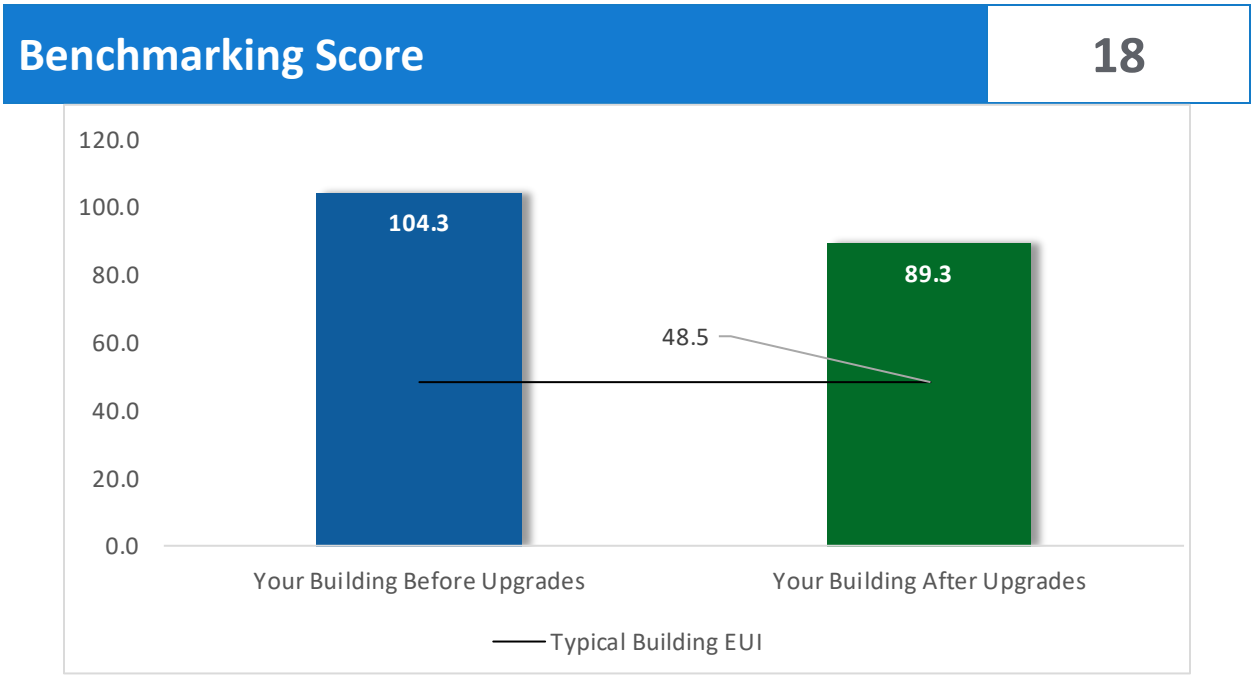


Figure 6 - Energy Use Intensity Comparison

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

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

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[3].

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

4 Energy Conservation Measures

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

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

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

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

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

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		**488,420**	**70.5**	**-95**	**$59,429**	**$159,084**	**$21,551**	**$137,533**	**2.3**	**480,687**
ECM 1	Install LED Fixtures	153,338	18.9	-25	$18,699	$84,182	$13,120	$71,062	3.8	151,427
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	1,198	0.2	0	$146	$303	$30	$273	1.9	1,177
ECM 3	Retrofit Fixtures with LED Lamps	333,884	51.5	-69	$40,584	$74,599	$8,401	$66,198	1.6	328,082
Lighting Control Measures		**68,471**	**8.7**	**-14**	**$8,322**	**$31,109**	**$2,530**	**$28,579**	**3.4**	**67,274**
ECM 4	Install Occupancy Sensor Lighting Controls	58,723	7.5	-12	$7,137	$23,684	$2,530	$21,154	3.0	57,696
ECM 5	Install High/Low Lighting Controls	9,748	1.2	-2	$1,185	$7,425	$0	$7,425	6.3	9,578
Variable Frequency Drive (VFD) Measures		**131,030**	**32.9**	**0**	**$16,182**	**$157,056**	**$8,547**	**$148,509**	**9.2**	**131,946**
ECM 6	Install VFDs on Constant Volume (CV) Fans	131,030	32.9	0	$16,182	$157,056	$8,547	$148,509	9.2	131,946
Electric Unitary HVAC Measures		**28,411**	**12.8**	**0**	**$3,509**	**$118,347**	**$5,167**	**$113,180**	**32.3**	**28,610**
ECM 7	Install High Efficiency Air Conditioning Units	28,411	12.8	0	$3,509	$118,347	$5,167	$113,180	32.3	28,610
Gas Heating (HVAC/Process) Replacement		**0**	**0.0**	**594**	**$5,555**	**$181,875**	**$4,485**	**$177,390**	**31.9**	**69,541**
ECM 8	Install High Efficiency Hot Water Boilers	0	0.0	440	$4,115	$163,749	$1,285	$162,464	39.5	51,516
ECM 9	Install High Efficiency Furnaces	0	0.0	154	$1,440	$18,126	$3,200	$14,926	10.4	18,025
Domestic Water Heating Upgrade		**0**	**0.0**	**94**	**$879**	**$237**	**$0**	**$237**	**0.3**	**11,000**
ECM 10	Install Low-Flow DHW Devices	0	0.0	94	$879	$237	$0	$237	0.3	11,000
Food Service & Refrigeration Measures		**14,255**	**1.0**	**0**	**$1,760**	**$7,066**	**$400**	**$6,666**	**3.8**	**14,354**
ECM 11	Refrigerator/Freezer Case Electrically Commutated Motors	1,376	0.2	0	$170	$1,820	$0	$1,820	10.7	1,386
ECM 12	Refrigeration Controls	5,746	0.1	0	$710	$3,867	$200	$3,667	5.2	5,786
ECM 13	Vending Machine Control	7,132	0.8	0	$881	$1,380	$200	$1,180	1.3	7,182
TOTALS		**730,587**	**126.0**	**578**	**$95,636**	**$654,774**	**$42,679**	**$612,095**	**6.4**	**803,411**

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

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

Figure 7 – All Evaluated ECMs

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		**488,420**	**70.5**	**-95**	**$59,429**	**$159,084**	**$21,551**	**$137,533**	**2.3**	**480,687**
ECM 1	Install LED Fixtures	153,338	18.9	-25	$18,699	$84,182	$13,120	$71,062	3.8	151,427
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	1,198	0.2	0	$146	$303	$30	$273	1.9	1,177
ECM 3	Retrofit Fixtures with LED Lamps	333,884	51.5	-69	$40,584	$74,599	$8,401	$66,198	1.6	328,082
Lighting Control Measures		**68,471**	**8.7**	**-14**	**$8,322**	**$31,109**	**$2,530**	**$28,579**	**3.4**	**67,274**
ECM 4	Install Occupancy Sensor Lighting Controls	58,723	7.5	-12	$7,137	$23,684	$2,530	$21,154	3.0	57,696
ECM 5	Install High/Low Lighting Controls	9,748	1.2	-2	$1,185	$7,425	$0	$7,425	6.3	9,578
Variable Frequency Drive (VFD) Measures		**131,030**	**32.9**	**0**	**$16,182**	**$157,056**	**$8,547**	**$148,509**	**9.2**	**131,946**
ECM 6	Install VFDs on Constant Volume (CV) Fans	131,030	32.9	0	$16,182	$157,056	$8,547	$148,509	9.2	131,946
Domestic Water Heating Upgrade		**0**	**0.0**	**94**	**$879**	**$237**	**$0**	**$237**	**0.3**	**11,000**
ECM 10	Install Low-Flow DHW Devices	0	0.0	94	$879	$237	$0	$237	0.3	11,000
Food Service & Refrigeration Measures		**14,255**	**1.0**	**0**	**$1,760**	**$7,066**	**$400**	**$6,666**	**3.8**	**14,354**
ECM 11	Refrigerator/Freezer Case Electrically Commutated Motors	1,376	0.2	0	$170	$1,820	$0	$1,820	10.7	1,386
ECM 12	Refrigeration Controls	5,746	0.1	0	$710	$3,867	$200	$3,667	5.2	5,786
ECM 13	Vending Machine Control	7,132	0.8	0	$881	$1,380	$200	$1,180	1.3	7,182
TOTALS		**702,176**	**113.2**	**-16**	**$86,572**	**$354,553**	**$33,028**	**$321,525**	**3.7**	**705,261**

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

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

Figure 8 – Cost Effective ECMs

4.1 Lighting

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		**488,420**	**70.5**	**-95**	**$59,429**	**$159,084**	**$21,551**	**$137,533**	**2.3**	**480,687**
ECM 1	Install LED Fixtures	153,338	18.9	-25	$18,699	$84,182	$13,120	$71,062	3.8	151,427
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	1,198	0.2	0	$146	$303	$30	$273	1.9	1,177
ECM 3	Retrofit Fixtures with LED Lamps	333,884	51.5	-69	$40,584	$74,599	$8,401	$66,198	1.6	328,082

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

ECM 1: Install LED Fixtures

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

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

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

Affected building areas: main gym, aux gym, auditorium, stage, control room and exterior wallpacks and exterior pole fixtures.

ECM 2: Retrofit Fluorescent Fixtures with LED Lamps and Drivers

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

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

Affected building areas: T12 fixtures in hallway A.

ECM 3: Retrofit Fixtures with LED Lamps

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

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

Affected building areas: all areas with fluorescent fixtures with T8 tubes, T5HO tubes, U-bend T8 tubes and 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 ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Control Measures		**68,471**	**8.7**	**-14**	**$8,322**	**$31,109**	**$2,530**	**$28,579**	**3.4**	**67,274**
ECM 4	Install Occupancy Sensor Lighting Controls	58,723	7.5	-12	$7,137	$23,684	$2,530	$21,154	3.0	57,696
ECM 5	Install High/Low Lighting Controls	9,748	1.2	-2	$1,185	$7,425	$0	$7,425	6.3	9,578

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

ECM 4: Install Occupancy Sensor Lighting Controls

Install occupancy sensors to control lighting fixtures in areas that are frequently unoccupied, even for short periods. For most spaces, we recommend 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, locker rooms, library, restrooms, and storage rooms.

ECM 5: Install High/Low Lighting Controls

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

Lighting fixtures with these controls operate at default low levels when the area is unoccupied to provide minimal lighting to meet security or safety requirements. 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 taken into account when selecting retrofit lamps and bulbs for the areas proposed for high/low control.

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

Affected building areas: hallways.

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

4.3 Variable Frequency Drives (VFD)

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Variable Frequency Drive (VFD) Measures		**131,030**	**32.9**	**0**	**$16,182**	**$157,056**	**$8,547**	**$148,509**	**9.2**	**131,946**
ECM 6	Install VFDs on Constant Volume (CV) Fans	131,030	32.9	0	$16,182	$157,056	$8,547	$148,509	9.2	131,946

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 motor —unless the existing motor meets or exceeds IHP 2014 standards—to conservatively account for the cost of an inverter duty rated motor.

ECM 6: Install VFDs on Constant Volume (CV) Fans

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

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

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

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

Affected air handlers: supply and return fans in all AHUs except AHU-8 and AHU-19; supply fans in all packaged units with DX cooling.

4.4 Electric Unitary HVAC

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Electric Unitary HVAC Measures		**28,411**	**12.8**	**0**	**$3,509**	**$118,347**	**$5,167**	**$113,180**	**32.3**	**28,610**
ECM 7	Install High Efficiency Air Conditioning Units	28,411	12.8	0	$3,509	$118,347	$5,167	$113,180	32.3	28,610

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 at this facility 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 [equipment name] is eventually replaced, consider purchasing equipment that exceeds the minimum efficiency required by building codes.

ECM 7: Install High Efficiency Air Conditioning Units

Replace 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 load, and the estimated annual operating hours.

This measure is part of a measure to replace package units at this site and as such must be considered in combination with ECM 9.

4.5 Gas-Fired Heating

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Gas Heating (HVAC/Process) Replacement		**0**	**0.0**	**594**	**$5,555**	**$181,875**	**$4,485**	**$177,390**	**31.9**	**69,541**
ECM 8	Install High Efficiency Hot Water Boilers	0	0.0	440	$4,115	$163,749	$1,285	$162,464	39.5	51,516
ECM 9	Install High Efficiency Furnaces	0	0.0	154	$1,440	$18,126	$3,200	$14,926	10.4	18,025

ECM 8: Install High Efficiency Hot Water Boilers

Replace older inefficient hot water boilers with high efficiency hot water boilers. Energy savings results from improved combustion efficiency and reduced standby losses at low loads.

For the purposes of this analysis, we evaluated the replacement of boilers on a one-for-one basis with equipment of the same capacity. We recommend that you work with your mechanical design team to select boilers that are sized appropriately for the heating load at this facility. In many cases installing multiple modular boilers rather than one or two large boilers will result in higher overall plant efficiency while providing additional system redundancy.

Replacing the boilers has a long payback and may not be justifiable based simply on energy considerations. However, the boilers [are nearing, have reached] the end of their normal useful life. Typically, the marginal cost of purchasing high efficiency boilers can be justified by the marginal savings from the improved efficiency. When the boiler is eventually replaced, consider purchasing boilers that exceed the minimum efficiency required by building codes. We also recommend working with your mechanical design team to determine whether the heating system can operate with return water temperatures below 130°F, which would allow the use of condensing boilers.

ECM 9: Install High Efficiency Furnaces

Replace standard efficiency furnaces with condensing furnaces. Improved combustion technology and heat exchanger design optimize heat recovery from the combustion gases which can significantly improve furnace efficiency. Savings result from improved system efficiency.

Note: these units produce acidic condensate that requires proper drainage.

This measure is part of a measure to replace package units at this site and as such must be considered in combination with ECM 7.

4.6 Domestic Water Heating

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Domestic Water Heating Upgrade		**0**	**0.0**	**94**	**$879**	**$237**	**$0**	**$237**	**0.3**	**11,000**
ECM 10	Install Low-Flow DHW Devices	0	0.0	94	$879	$237	$0	$237	0.3	11,000

ECM 10: Install Low-Flow DHW Devices

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

Device	Flow Rate
Faucet aerators (lavatory)	0.5 gpm

Low-flow devices reduce the overall water flow from the fixture, while still providing adequate pressure for washing.

Additional cost savings may result from reduced water usage.

4.7 Food Service & Refrigeration Measures

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Food Service & Refrigeration Measures		**14,255**	**1.0**	**0**	**$1,760**	**$7,066**	**$400**	**$6,666**	**3.8**	**14,354**
ECM 11	Refrigerator/Freezer Case Electrically Commutated Motors	1,376	0.2	0	$170	$1,820	$0	$1,820	10.7	1,386
ECM 12	Refrigeration Controls	5,746	0.1	0	$710	$3,867	$200	$3,667	5.2	5,786
ECM 13	Vending Machine Control	7,132	0.8	0	$881	$1,380	$200	$1,180	1.3	7,182

ECM 11: Refrigerator/Freezer Case Electrically Commutated Motors

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

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

ECM 12: Refrigeration Controls

Defrost controllers can be used to override defrost of evaporator fans when the defrost operation is not necessary, which reduces annual energy consumption. This measure is applicable to existing evaporator fans with a traditional electric defrost mechanism.

Many walk-in coolers and freezers have evaporator fans that run continuously. The measure adds a control system feature to automatically shut off evaporator fans when not needed.

Energy savings for each of the control measures account for reduction in compressor and fan operating hours as well as reduction in the refrigeration heat load as appropriate.

ECM 13: Vending Machine Control

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

5 ENERGY EFFICIENT BEST PRACTICES

A whole building maintenance plan will extend equipment life; improve occupant comfort, health, and safety; and reduce energy and maintenance costs. You may already be doing some of these things— see our list below for potential additions to your maintenance plan. Be sure to consult with qualified equipment specialists for details on proper maintenance and system operation.

Energy Tracking with ENERGY STAR® Portfolio Manager®

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

Doors and Windows

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

Lighting Maintenance

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

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

Lighting Controls

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

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

Motor Maintenance

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

Fans to Reduce Cooling Load

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

Thermostat Schedules and Temperature Resets

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

Economizer Maintenance

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

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

Chiller Maintenance

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

AC System Evaporator/Condenser Coil Cleaning

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

HVAC Filter Cleaning and Replacement

Air filters should be checked regularly (often monthly) and cleaned or replaced when appropriate. Air filters reduce indoor air pollution, increase occupant comfort, and help keep equipment operating efficiently. If the building has a building management system, consider installing a differential pressure switch across filters to send an alarm about premature fouling or overdue filter replacement. Over time, filters become less 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.

Duct Sealing

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

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. Boilers should be cleaned according to the manufacturer's instructions to remove soot and scale from the water side or fire side of the boiler.

Furnace Maintenance

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

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[5] or download a copy of EPA's "WaterSense™ at Work: Best Management Practices for Commercial and Institutional Facilities"[6] to get ideas for creating a water management plan and best practices for a wide range of water using systems.

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

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

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

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

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

Procurement Strategies

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

6 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.

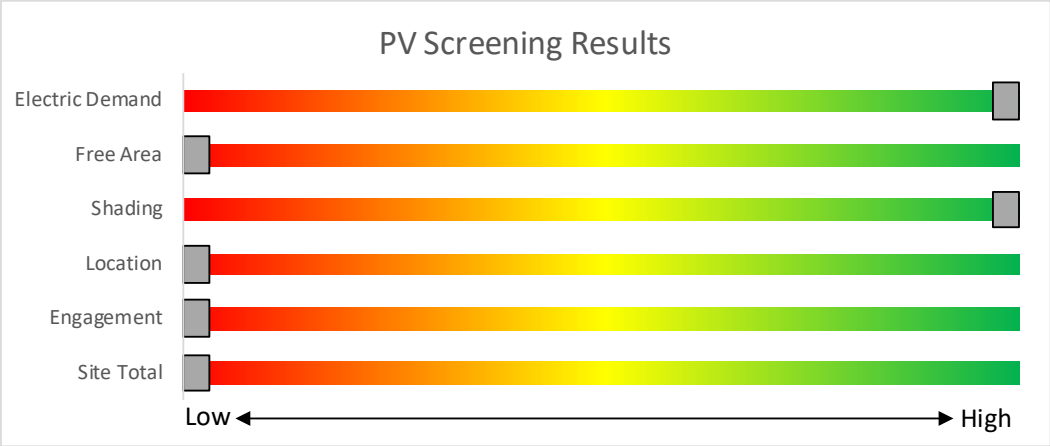
6.1 Solar Photovoltaic

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 **no** potential for installing additional PV arrays.

This facility does not appear to meet the minimum criteria for a cost-effective solar PV installation. To be cost-effective, a solar PV array needs certain minimum criteria, such as sustained electric demand and sufficient flat or south-facing rooftop or other unshaded space on which to place the PV panels.

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	None	
System Potential	0	kW DC STC
Electric Generation	0	kWh/yr
Displaced Cost	$0	/yr
Installed Cost	$0	

Figure 9 - Photovoltaic Screening

Solar Renewable Energy Certificate (SREC) Registration Program (SRP)

Rebates are not available for solar projects, but owners of solar projects MUST register their projects in the SREC Registration Program before starting construction. Once your PV system is up and running, you periodically earn credits, which can then be sold on the open market for up to 15 years.

If you are considering installing solar photovoltaics on your building, visit www.njcleanenergy.com/srec for more information about the SREC Registration Program.

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:

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

6.2 Combined Heat and Power

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

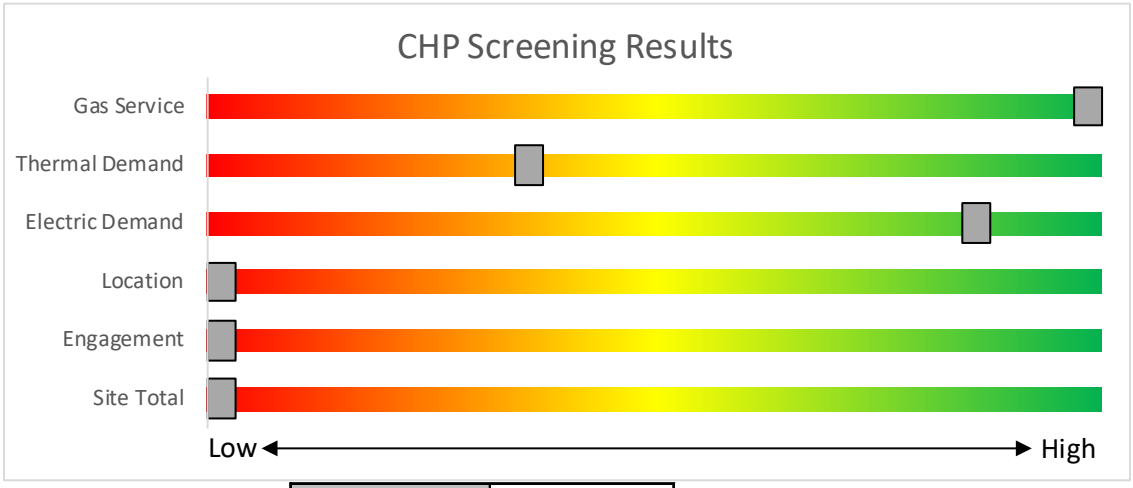
CHP systems typically produce a portion of the electric power used on-site, with the balance of electric power needs supplied by the local utility company. The heat is used to supplement (or replace) existing boilers and provide space heating and/or domestic hot water heating. Waste heat can also be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

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

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

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

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



Potential	None	
System Type	None	
System Potential	180	kW
Electric Generation	1,260,596	kWh/yr
Thermal Generation	6,606,939	MBtu/yr
Displaced Cost	$90,711	/yr
Installed Cost	$578,000	

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Figure 10 - Combined Heat and Power Screening

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

7 PROJECT FUNDING AND INCENTIVES

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

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

7.1 SmartStart

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

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

Equipment with Prescriptive Incentives Currently Available:

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

Incentives

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

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

How to Participate

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

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

7.2 Direct Install

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

Incentives

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

How to Participate

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

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

7.3 Pay for Performance - Existing Buildings

Pay for Performance works for larger customers with a peak demand over 200 kW. The minimum installed scope of work must include at least two unique measures that results in at least 15% source energy savings, and lighting cannot make up the majority of the savings. P4P is a generally a good option for medium-to-large sized facilities looking to implement as many measures as possible under a single project to achieve deep energy savings. This program has an added benefit of addressing measures that may not qualify for other programs. Many facilities pursuing an Energy Savings Improvement Program loan also use this program.

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

Incentives

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

How to Participate

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

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

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

7.4 Combined Heat and Power

The Combined Heat & Power (CHP) program provides incentives for eligible CHP or

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

Incentives

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

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

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

How to Participate

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

7.5 Energy Savings Improvement Program

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

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

How to Participate

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

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

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

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

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

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

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

7.6 SREC Registration Program

The SREC (Solar Renewable Energy Certificate) Registration Program (SRP) is used to register the intent to install solar projects in New Jersey. Rebates are not available for solar projects, but owners of solar projects *must* register their projects prior to the start of construction to establish the project's eligibility to earn SRECs. Registration of the intent to participate in New Jersey's solar marketplace provides market participants with information about the pipeline of anticipated new solar capacity and insight into future SREC pricing.

After the registration is accepted, construction is complete, and final paperwork has been submitted and is deemed complete, the project is issued a New Jersey certification number, which enables it to generate New Jersey SRECs. SRECs are generated once the solar project has been authorized to be energized by the Electric Distribution Company (EDC).

Each time a solar installation generates 1,000 kilowatt-hours (kWh) of electricity, an SREC is earned. Solar project owners report the energy production to the SREC Tracking System. This reporting allows SRECs to be placed in the customer's electronic account. SRECs can then be sold on the SREC Tracking System, providing revenue for the first 15 years of the project's life.

Electricity suppliers, the primary purchasers of SRECs, are required to pay a Solar Alternative Compliance Payment (SACP) if they do not meet the requirements of New Jersey's Solar Renewable Portfolio Standard. Purchasing SRECs can help them meet those requirements. As SRECs are traded in a competitive market, the price may vary significantly. The actual price of an SREC during a trading period fluctuates depending on supply and demand.

Information about the SRP can be found at: www.njcleanenergy.com/srec.

8 Energy Purchasing and Procurement Strategies

8.1 Retail Electric Supply Options

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

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

A list of licensed third-party electric suppliers is available at the NJBPU website[7].

8.2 Retail Natural Gas Supply Options

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

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

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

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

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

[8] 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	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Boiler Room	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	5,115	3	Relamp	No	8	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	5,115	0.2	1,485	0	$181	$292	$80	1.2
Boiler Room	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
Gym Storage - Boys	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	5,115	3, 4	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,529	0.2	1,890	0	$230	$562	$80	2.1
Main Gym	28	Metal Halide: (1) 400W Lamp	Wall Switch	S	458	5,115	1, 4	Fixture Replacement	Yes	28	LED - Fixtures: High-Bay	Occupancy Sensor	137	3,529	7.3	57,218	-12	$6,955	$22,237	$4,270	2.6
Main Gym	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	5,115	3, 4	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	3,529	0.2	1,665	0	$202	$562	$115	2.2
Main Gym	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
Boys Locker Room	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	5,115	3, 4	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,529	0.5	3,780	-1	$459	$854	$195	1.4
Boys Locker Room	3	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	3	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Shower Room	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,790	3, 4	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,925	0.2	773	0	$94	$489	$95	4.2
Restroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	5,115	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,529	0.1	709	0	$86	$380	$65	3.7
Gym Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	5,115	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,529	0.1	709	0	$86	$380	$65	3.7
Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	5,115	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	5,115	0.0	186	0	$23	$37	$10	1.2
Gym Storage - Girls	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,790	3, 4	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,925	0.2	1,031	0	$125	$562	$80	3.8
Girls Locker Room	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	5,115	3, 4	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,529	0.5	3,780	-1	$459	$854	$195	1.4
Girls Locker Room	3	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	3	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Shower Room	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,790	3, 4	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,925	0.2	773	0	$94	$489	$95	4.2
Restroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	5,115	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,529	0.1	709	0	$86	$380	$65	3.7
Gym Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	5,115	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,529	0.1	709	0	$86	$380	$65	3.7
Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	5,115	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	5,115	0.0	186	0	$23	$37	$10	1.2
Laundry Room	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	5,115	3, 4	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,529	0.2	1,418	0	$172	$489	$95	2.3
Laundry Room	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
Weight Room	7	Metal Halide: (1) 250W Lamp	Wall Switch	S	295	5,115	1, 4	Fixture Replacement	Yes	7	LED - Fixtures: Ceiling Mount	Occupancy Sensor	89	3,529	1.2	9,214	-2	$1,120	$2,350	$105	2.0
Weight Room	2	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Room B111	5	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	5,115	3, 4	Relamp	Yes	5	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,529	0.2	1,772	0	$215	$544	$110	2.0
Room B111	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Aux Gym	12	Metal Halide: (1) 250W Lamp	Wall Switch	S	295	5,115	1, 4	Fixture Replacement	Yes	12	LED - Fixtures: High-Bay	Occupancy Sensor	89	3,529	2.0	15,795	-3	$1,920	$9,569	$1,835	4.0
Aux Gym	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	5,115	3, 4	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	3,529	0.2	1,665	0	$202	$562	$115	2.2
Aux Gym	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
Storage Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,790	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,790	0.0	101	0	$12	$37	$10	2.2
Storage Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,790	3, 4	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,925	0.1	387	0	$47	$380	$30	7.4
Kitchen	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	5,115	3, 4	Relamp	Yes	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,529	0.7	5,670	-1	$689	$1,146	$275	1.3
Kitchen	4	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Kitchen	11	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	5,115	3, 4	Relamp	Yes	11	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	3,529	0.6	4,579	-1	$557	$1,073	$255	1.5
Storage Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,790	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,925	0.1	387	0	$47	$380	$30	7.4
Storage Room	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	2,790	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	2,790	0.0	89	0	$11	$72	$10	5.8
Restroom	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	2,790	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	2,790	0.0	89	0	$11	$72	$10	5.8
Restroom	1	Compact Fluorescent: 23W CFL 2-Pin Plug-In - 1L	Wall Switch	S	23	2,790	3	Relamp	No	1	LED Lamps: LED 2-Pin - 1L	Wall Switch	16	2,790	0.0	21	0	$3	$25	$1	9.4
Storage Room	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	5,115	3, 4	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,529	0.2	1,418	0	$172	$489	$60	2.5
Office	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	5,115	3	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	5,115	0.0	279	0	$34	$55	$15	1.2
Walk-In Units	6	Compact Fluorescent: 23W CFL Screw-In - 1L	Wall Switch	S	23	2,790	3	Relamp	No	6	LED Lamps: LED Screw-In - 1L	Wall Switch	16	2,790	0.0	127	0	$15	$211	$6	13.3
Cafeteria G	112	Linear Fluorescent - T5HO: 4' T5HO (54W) - 1L	Wall Switch	S	62	5,115	3, 4	Relamp	Yes	112	LED - Linear Tubes: (1) 4' T5HO (25W) Lamp	Occupancy Sensor	26	3,529	3.6	27,983	-6	$3,401	$5,295	$210	1.5
Cafeteria G	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 G	66	Linear Fluorescent - T5HO: 4' T5HO (54W) - 1L	Wall Switch	S	62	5,115	3, 4	Relamp	Yes	66	LED - Linear Tubes: (1) 4' T5HO (25W) Lamp	Occupancy Sensor	26	3,529	2.1	16,490	-3	$2,004	$2,976	$105	1.4
Library G	2	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Library G	8	Compact Fluorescent: 55W CFL 4-Pin Plug-In - 8L	Wall Switch	S	440	5,115	3, 4	Relamp	Yes	8	LED Lamps: LED 4-Pin - 8L	Occupancy Sensor	308	3,529	1.3	10,239	-2	$1,245	$2,202	$99	1.7
Office	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	5,115	3, 4	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,529	0.3	2,126	0	$258	$599	$125	1.8
Office	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 Room	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	4,650	3, 4	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,209	0.2	1,289	0	$157	$489	$60	2.7
Electrical Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,790	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,790	0.0	101	0	$12	$37	$10	2.2
IT Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	5,115	3, 4	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,529	0.2	1,418	0	$172	$489	$95	2.3

	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	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Room C108	15	Linear Fluorescent - T5HO: 4' T5HO (54W) - 1L	Wall Switch	S	62	5,115	3, 4	Relamp	Yes	15	LED - Linear Tubes: (1) 4' T5HO (25W) Lamp	Occupancy Sensor	26	3,529	0.5	3,748	-1	$456	$762	$35	1.6
Room C108	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
Room C109	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	5,115	3, 4	Relamp	Yes	3	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	3,529	0.2	1,249	0	$152	$489	$95	2.6
Room C109	5	Compact Fluorescent: 55W CFL 4-Pin Plug-In - 4L	Wall Switch	S	220	5,115	3, 4	Relamp	Yes	5	LED Lamps: LED 4-Pin - 4L	Occupancy Sensor	154	3,529	0.4	3,200	-1	$389	$874	$55	2.1
Room C109	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
A Hallway	46	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	5,115	3, 5	Relamp	Yes	46	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	3,529	1.4	10,868	-2	$1,321	$3,480	$460	2.3
A Hallway	5	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	5	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Front Lobby (Hall)	26	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	5,115	3, 5	Relamp	Yes	26	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	3,529	1.2	9,214	-2	$1,120	$2,549	$390	1.9
Front Lobby (Hall)	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
Room A100	16	Linear Fluorescent - T5HO: 4' T5HO (54W) - 1L	Wall Switch	S	62	5,115	3, 4	Relamp	Yes	16	LED - Linear Tubes: (1) 4' T5HO (25W) Lamp	Occupancy Sensor	26	3,529	0.5	3,998	-1	$486	$795	$35	1.6
Room A101	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	5,115	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,529	0.1	709	0	$86	$380	$65	3.7
Storage Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	2,790	3	Relamp	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,790	0.0	54	0	$7	$18	$5	2.0
A Hallway	6	Linear Fluorescent - T12: 3' T12 (30W) - 1L	Wall Switch	S	46	5,115	2, 5	Relamp & Reballast	Yes	6	LED - Linear Tubes: (1) 3' Lamp	High/Low Control	11	3,529	0.2	1,308	0	$159	$528	$30	3.1
Room 104	45	Linear Fluorescent - T5HO: 4' T5HO (54W) - 1L	Wall Switch	S	62	8,760	3, 4	Relamp	Yes	45	LED - Linear Tubes: (1) 4' T5HO (25W) Lamp	Occupancy Sensor	26	6,044	1.4	19,255	-4	$2,340	$2,287	$105	0.9
Room 104	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
Storage Room 1	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	4,650	3	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	4,650	0.0	253	0	$31	$55	$15	1.3
Restroom	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	4,650	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	4,650	0.0	148	0	$18	$72	$10	3.5
Storage Room2	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	4,650	3	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	4,650	0.0	253	0	$31	$55	$15	1.3
Restroom	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	4,650	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	4,650	0.0	148	0	$18	$72	$10	3.5
Office 1	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	3,209	3	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,209	0.0	175	0	$21	$55	$15	1.9
Office 2	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	3,209	3	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,209	0.0	175	0	$21	$55	$15	1.9
Storage Room	5	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	4,650	3, 4	Relamp	Yes	5	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,209	0.2	1,611	0	$196	$544	$75	2.4
Storage Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	4,650	3	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	4,650	0.0	253	0	$31	$55	$15	1.3
Room A105	8	Linear Fluorescent - T8: 5' T8 (40W) - 2L	Wall Switch	S	79	4,650	3, 4	Relamp	Yes	8	LED - Linear Tubes: (2) 5' Lamps	Occupancy Sensor	40	3,209	0.3	2,103	0	$256	$596	$35	2.2
Room A105	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Office 1	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	3,209	3	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,209	0.1	349	0	$42	$110	$30	1.9
Office 2	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	3,209	3	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,209	0.1	349	0	$42	$110	$30	1.9
Storage Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	3,529	3	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,529	0.1	384	0	$47	$110	$30	1.7
Room A106	20	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	3,529	3	Relamp	No	20	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,529	0.7	3,843	-1	$467	$1,095	$300	1.7
Room A106	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	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	5,115	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,529	0.1	709	0	$86	$380	$65	3.7
Storage	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	5,115	3	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	5,115	0.0	279	0	$34	$55	$15	1.2
Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	5,115	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,529	0.1	709	0	$86	$380	$30	4.1
Room A108	27	Linear Fluorescent - T5HO: 4' T5HO (54W) - 1L	Wall Switch	S	62	5,115	3, 4	Relamp	Yes	27	LED - Linear Tubes: (1) 4' T5HO (25W) Lamp	Occupancy Sensor	26	3,529	0.9	6,746	-1	$820	$1,426	$70	1.7
Room A108	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 Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	5,115	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,529	0.1	709	0	$86	$380	$30	4.1
Room A107	17	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	5,115	3, 4	Relamp	Yes	17	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,529	0.8	6,025	-1	$732	$1,201	$290	1.2
Room A107	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
Room A107	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	5,115	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	5,115	0.0	163	0	$20	$72	$10	3.1
Storage	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	4,650	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	4,650	0.0	148	0	$18	$72	$10	3.5
Room 109	51	Linear Fluorescent - T5HO: 4' T5HO (54W) - 1L	Wall Switch	S	62	5,115	3, 4	Relamp	Yes	51	LED - Linear Tubes: (1) 4' T5HO (25W) Lamp	Occupancy Sensor	26	3,529	1.6	12,742	-3	$1,549	$2,483	$105	1.5
Storage	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	2,790	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	2,790	0.0	89	0	$11	$72	$10	5.8
Room 110	34	Linear Fluorescent - T5HO: 4' T5HO (54W) - 1L	Occupancy Sensor	S	62	3,209	3	Relamp	No	34	LED - Linear Tubes: (1) 4' T5HO (25W) Lamp	Occupancy Sensor	26	3,209	0.9	4,380	-1	$532	$1,116	$0	2.1
Storage Room	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Occupancy Sensor	S	62	1,925	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,925	0.0	61	0	$7	$72	$10	8.4
Storage Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	3,209	3	Relamp	No	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	3,209	0.0	62	0	$8	$18	$5	1.8
Boys Restroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	3,209	3	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,209	0.1	349	0	$42	$110	$30	1.9
Boys Restroom	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Occupancy Sensor	S	62	3,209	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	3,209	0.0	102	0	$12	$72	$10	5.0
Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	2,790	3	Relamp	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,790	0.0	54	0	$7	$18	$5	2.0
Girls Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	3,209	3	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,209	0.0	175	0	$21	$55	$15	1.9
Girls Restroom	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Occupancy Sensor	S	62	3,209	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	3,209	0.0	102	0	$12	$72	$10	5.0

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Room A111	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	4,650	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,209	0.1	644	0	$78	$380	$65	4.0
Room A112	5	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	5,115	3, 4	Relamp	Yes	5	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,529	0.2	1,772	0	$215	$544	$110	2.0
Front Entrance	4	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	5,115	3, 5	Relamp	Yes	4	LED - Linear Tubes: (2) U-Lamp	High/Low Control	33	3,529	0.1	883	0	$107	$515	$40	4.4
Guidance Office	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	5,115	3, 4	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,529	0.3	2,126	0	$258	$599	$125	1.8
Office 1	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	3,529	3	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,529	0.1	577	0	$70	$164	$45	1.7
Copy Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	5,115	3, 4	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,529	0.1	1,063	0	$129	$434	$80	2.7
Office 2	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	3,529	3	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,529	0.1	577	0	$70	$164	$45	1.7
Office 2	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Occupancy Sensor	S	62	3,529	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	3,529	0.0	113	0	$14	$72	$10	4.6
Office 3	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	5,115	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,529	0.1	709	0	$86	$380	$65	3.7
Office 3	2	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	5,115	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	3,529	0.1	441	0	$54	$261	$40	4.1
Office 4	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	5,115	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,529	0.1	709	0	$86	$380	$65	3.7
Office 4	2	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	5,115	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	3,529	0.1	441	0	$54	$261	$40	4.1
Office 5	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	5,115	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,529	0.1	709	0	$86	$380	$65	3.7
Office 5	2	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	5,115	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	3,529	0.1	441	0	$54	$261	$40	4.1
Conference Room	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	5,115	3, 4	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,529	0.3	2,126	0	$258	$599	$125	1.8
Main Office	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	5,115	3, 4	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,529	0.4	3,189	-1	$388	$763	$170	1.5
Main Office	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
Principals Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	5,115	3, 4	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,529	0.2	1,418	0	$172	$489	$95	2.3
Break Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	5,115	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,529	0.1	709	0	$86	$380	$65	3.7
Break Room	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	5,115	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	5,115	0.0	163	0	$20	$72	$10	3.1
Restroom	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	5,115	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	5,115	0.0	163	0	$20	$72	$10	3.1
Closet	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	5,115	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	5,115	0.0	163	0	$20	$72	$10	3.1
Vice Principal	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	5,115	3, 4	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,529	0.2	1,418	0	$172	$489	$95	2.3
Attendance	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	5,115	3, 4	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,529	0.2	1,418	0	$172	$489	$95	2.3
Attendance	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	5,115	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	5,115	0.0	163	0	$20	$72	$10	3.1

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Mail Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	5,115	3	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	5,115	0.0	279	0	$34	$55	$15	1.2
B Hallway	32	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	5,115	3, 5	Relamp	Yes	32	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	3,529	1.0	7,560	-2	$919	$2,518	$320	2.4
B Hallway	5	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	5	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Storage Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,650	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,209	0.1	430	0	$52	$343	$20	6.2
Room B104	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	4,650	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,209	0.1	644	0	$78	$380	$65	4.0
Room B103	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	4,650	3, 4	Relamp	Yes	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,209	0.7	5,155	-1	$627	$1,146	$275	1.4
Room B105	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	3,209	3	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,209	0.4	2,096	0	$255	$657	$180	1.9
Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	3,209	3	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,209	0.1	349	0	$42	$110	$30	1.9
Office	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
School Store	5	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	5,115	3, 4	Relamp	Yes	5	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,529	0.2	1,772	0	$215	$544	$110	2.0
Closet	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	5,115	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	5,115	0.0	163	0	$20	$72	$10	3.1
Closet	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
Boys Restroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	3,209	3	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,209	0.1	349	0	$42	$110	$30	1.9
Boys Restroom	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Occupancy Sensor	S	62	3,209	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	3,209	0.0	102	0	$12	$72	$10	5.0
Girls Restroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	3,209	3	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,209	0.1	349	0	$42	$110	$30	1.9
Girls Restroom	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Occupancy Sensor	S	62	3,209	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	3,209	0.0	102	0	$12	$72	$10	5.0
Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	2,790	3	Relamp	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,790	0.0	54	0	$7	$18	$5	2.0
Room B100	16	Linear Fluorescent - T5HO: 4' T5HO (54W) - 1L	Occupancy Sensor	S	62	3,209	3	Relamp	No	16	LED - Linear Tubes: (1) 4' T5HO (25W) Lamp	Occupancy Sensor	26	3,209	0.4	2,061	0	$251	$525	$0	2.1
Office	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	4,650	3	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	4,650	0.0	253	0	$31	$55	$15	1.3
Room B106	16	Linear Fluorescent - T5HO: 4' T5HO (54W) - 1L	Wall Switch	S	62	5,115	3, 4	Relamp	Yes	16	LED - Linear Tubes: (1) 4' T5HO (25W) Lamp	Occupancy Sensor	26	3,529	0.5	3,998	-1	$486	$795	$35	1.6
Mens Restroom	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	5,115	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	5,115	0.0	163	0	$20	$72	$10	3.1
Womens Restroom	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	5,115	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	5,115	0.0	163	0	$20	$72	$10	3.1
Exit 10	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	5,115	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	5,115	0.0	163	0	$20	$72	$10	3.1
Exit 15	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	5,115	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	5,115	0.0	163	0	$20	$72	$10	3.1
E Hallway	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	5,115	3, 5	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	3,529	0.4	2,835	-1	$345	$888	$120	2.2

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
E Hallway	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
Room E107	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	5,115	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	5,115	0.0	186	0	$23	$37	$10	1.2
Room E107	7	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	5,115	3, 4	Relamp	Yes	7	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,529	0.3	2,481	-1	$302	$653	$140	1.7
Room E107	2	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	5,115	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	3,529	0.1	441	0	$54	$261	$40	4.1
Room E107	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	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	5,115	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,529	0.1	709	0	$86	$380	$65	3.7
Restroom 1	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	5,115	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	5,115	0.0	163	0	$20	$72	$10	3.1
Restroom 2	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	5,115	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	5,115	0.0	163	0	$20	$72	$10	3.1
Mechanical Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	5,115	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	5,115	0.0	186	0	$23	$37	$10	1.2
Room E104	20	Linear Fluorescent - T5HO: 4' T5HO (54W) - 1L	Occupancy Sensor	S	62	3,209	3	Relamp	No	20	LED - Linear Tubes: (1) 4' T5HO (25W) Lamp	Occupancy Sensor	26	3,209	0.5	2,576	-1	$313	$656	$0	2.1
Room E103	20	Linear Fluorescent - T5HO: 4' T5HO (54W) - 1L	Occupancy Sensor	S	62	3,209	3	Relamp	No	20	LED - Linear Tubes: (1) 4' T5HO (25W) Lamp	Occupancy Sensor	26	3,209	0.5	2,576	-1	$313	$656	$0	2.1
Room E106	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	3,209	3	Relamp	No	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,209	0.1	699	0	$85	$219	$60	1.9
Room E102	20	Linear Fluorescent - T5HO: 4' T5HO (54W) - 1L	Occupancy Sensor	S	62	3,209	3	Relamp	No	20	LED - Linear Tubes: (1) 4' T5HO (25W) Lamp	Occupancy Sensor	26	3,209	0.5	2,576	-1	$313	$656	$0	2.1
Room E101	20	Linear Fluorescent - T5HO: 4' T5HO (54W) - 1L	Occupancy Sensor	S	62	3,209	3	Relamp	No	20	LED - Linear Tubes: (1) 4' T5HO (25W) Lamp	Occupancy Sensor	26	3,209	0.5	2,576	-1	$313	$656	$0	2.1
Room E100	20	Linear Fluorescent - T5HO: 4' T5HO (54W) - 1L	Occupancy Sensor	S	62	3,209	3	Relamp	No	20	LED - Linear Tubes: (1) 4' T5HO (25W) Lamp	Occupancy Sensor	26	3,209	0.5	2,576	-1	$313	$656	$0	2.1
Exit 4	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	5,115	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	5,115	0.0	163	0	$20	$72	$10	3.1
E Hallway	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	5,115	3, 5	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	3,529	0.4	2,835	-1	$345	$888	$120	2.2
E Hallway	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
Stairwell	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	5,115	3	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	5,115	0.1	557	0	$68	$110	$30	1.2
Stairwell	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	5,115	3	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	5,115	0.0	90	0	$11	$33	$6	2.4
Room E200	36	Linear Fluorescent - T5HO: 4' T5HO (54W) - 1L	Occupancy Sensor	S	62	3,209	3	Relamp	No	36	LED - Linear Tubes: (1) 4' T5HO (25W) Lamp	Occupancy Sensor	26	3,209	0.9	4,638	-1	$564	$1,181	$0	2.1
Room E200	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 Room	5	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	5,115	3, 4	Relamp	Yes	5	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,529	0.2	1,772	0	$215	$544	$75	2.2
Needs Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,790	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,790	0.0	101	0	$12	$37	$10	2.2
Boys Restroom	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	3,209	3	Relamp	No	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,209	0.1	699	0	$85	$219	$60	1.9

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Boys Restroom	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Occupancy Sensor	S	62	3,209	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	3,209	0.0	102	0	$12	$72	$10	5.0
Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	2,790	3	Relamp	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,790	0.0	54	0	$7	$18	$5	2.0
Girls Restroom	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	3,209	3	Relamp	No	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,209	0.1	699	0	$85	$219	$60	1.9
Girls Restroom	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Occupancy Sensor	S	62	3,209	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	3,209	0.0	102	0	$12	$72	$10	5.0
Room E202	36	Linear Fluorescent - T5HO: 4' T5HO (54W) - 1L	Occupancy Sensor	S	62	3,209	3	Relamp	No	36	LED - Linear Tubes: (1) 4' T5HO (25W) Lamp	Occupancy Sensor	26	3,209	0.9	4,638	-1	$564	$1,181	$0	2.1
Room E202	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
Room E201	20	Linear Fluorescent - T5HO: 4' T5HO (54W) - 1L	Occupancy Sensor	S	62	3,209	3	Relamp	No	20	LED - Linear Tubes: (1) 4' T5HO (25W) Lamp	Occupancy Sensor	26	3,209	0.5	2,576	-1	$313	$656	$0	2.1
Storage Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,790	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,925	0.1	258	0	$31	$343	$20	10.3
Room E204	36	Linear Fluorescent - T5HO: 4' T5HO (54W) - 1L	Occupancy Sensor	S	62	3,209	3	Relamp	No	36	LED - Linear Tubes: (1) 4' T5HO (25W) Lamp	Occupancy Sensor	26	3,209	0.9	4,638	-1	$564	$1,181	$0	2.1
Storage Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	5,115	3	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	5,115	0.0	279	0	$34	$55	$15	1.2
Common Area	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	5,115	3, 4	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,529	0.2	1,418	0	$172	$489	$95	2.3
Common Area	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
Room E203	21	Linear Fluorescent - T5HO: 4' T5HO (54W) - 1L	Occupancy Sensor	S	62	3,209	3	Relamp	No	21	LED - Linear Tubes: (1) 4' T5HO (25W) Lamp	Occupancy Sensor	26	3,209	0.6	2,705	-1	$329	$689	$0	2.1
Room E205	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	3,209	3	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,209	0.1	524	0	$64	$164	$45	1.9
Room E205	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Occupancy Sensor	S	62	3,209	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	3,209	0.0	102	0	$12	$72	$10	5.0
Room E206	36	Linear Fluorescent - T5HO: 4' T5HO (54W) - 1L	Occupancy Sensor	S	62	3,209	3	Relamp	No	36	LED - Linear Tubes: (1) 4' T5HO (25W) Lamp	Occupancy Sensor	26	3,209	0.9	4,638	-1	$564	$1,181	$0	2.1
Room E206	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 1	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,650	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,209	0.1	430	0	$52	$343	$20	6.2
Storage 2	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,650	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,209	0.1	430	0	$52	$343	$20	6.2
Room E207	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Occupancy Sensor	S	62	3,209	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	3,209	0.0	102	0	$12	$72	$10	5.0
Room E207	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	3,209	3	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,209	0.1	524	0	$64	$164	$45	1.9
Restroom 1	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	4,650	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	4,650	0.0	148	0	$18	$72	$10	3.5
Restroom 2	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	4,650	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	4,650	0.0	148	0	$18	$72	$10	3.5
Stairwell	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	5,115	3	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	5,115	0.1	557	0	$68	$110	$30	1.2
D Hallway	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	5,115	3, 5	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	3,529	0.4	2,835	-1	$345	$888	$120	2.2

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
D Hallway	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
Storage Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,650	3, 4	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,209	0.1	644	0	$78	$380	$30	4.5
Mechanical Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,790	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,790	0.0	101	0	$12	$37	$10	2.2
Room D100	36	Linear Fluorescent - T5HO: 4' T5HO (54W) - 1L	Wall Switch	S	62	5,115	3, 4	Relamp	Yes	36	LED - Linear Tubes: (1) 4' T5HO (25W) Lamp	Occupancy Sensor	26	3,529	1.2	8,994	-2	$1,093	$1,721	$70	1.5
Room D101	20	Linear Fluorescent - T5HO: 4' T5HO (54W) - 1L	Occupancy Sensor	S	62	3,209	3	Relamp	No	20	LED - Linear Tubes: (1) 4' T5HO (25W) Lamp	Occupancy Sensor	26	3,209	0.5	2,576	-1	$313	$656	$0	2.1
Room D102	20	Linear Fluorescent - T5HO: 4' T5HO (54W) - 1L	Occupancy Sensor	S	62	3,209	3	Relamp	No	20	LED - Linear Tubes: (1) 4' T5HO (25W) Lamp	Occupancy Sensor	26	3,209	0.5	2,576	-1	$313	$656	$0	2.1
Room D103	20	Linear Fluorescent - T5HO: 4' T5HO (54W) - 1L	Occupancy Sensor	S	62	3,209	3	Relamp	No	20	LED - Linear Tubes: (1) 4' T5HO (25W) Lamp	Occupancy Sensor	26	3,209	0.5	2,576	-1	$313	$656	$0	2.1
Room D105	20	Linear Fluorescent - T5HO: 4' T5HO (54W) - 1L	Occupancy Sensor	S	62	3,209	3	Relamp	No	20	LED - Linear Tubes: (1) 4' T5HO (25W) Lamp	Occupancy Sensor	26	3,209	0.5	2,576	-1	$313	$656	$0	2.1
Room D106	20	Linear Fluorescent - T5HO: 4' T5HO (54W) - 1L	Occupancy Sensor	S	62	3,209	3	Relamp	No	20	LED - Linear Tubes: (1) 4' T5HO (25W) Lamp	Occupancy Sensor	26	3,209	0.5	2,576	-1	$313	$656	$0	2.1
Room D107	20	Linear Fluorescent - T5HO: 4' T5HO (54W) - 1L	Occupancy Sensor	S	62	3,209	3	Relamp	No	20	LED - Linear Tubes: (1) 4' T5HO (25W) Lamp	Occupancy Sensor	26	3,209	0.5	2,576	-1	$313	$656	$0	2.1
Room D108	15	Linear Fluorescent - T5HO: 4' T5HO (54W) - 1L	Occupancy Sensor	S	62	3,209	3	Relamp	No	15	LED - Linear Tubes: (1) 4' T5HO (25W) Lamp	Occupancy Sensor	26	3,209	0.4	1,932	0	$235	$492	$0	2.1
Exit 28	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	5,115	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	5,115	0.0	163	0	$20	$72	$10	3.1
Stairwell	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	5,115	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	5,115	0.0	186	0	$23	$37	$10	1.2
Stairwell	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	5,115	3	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	5,115	0.1	557	0	$68	$110	$30	1.2
D Hallway	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	5,115	3, 5	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	3,529	0.4	2,835	-1	$345	$888	$120	2.2
D Hallway	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
Room D201	20	Linear Fluorescent - T5HO: 4' T5HO (54W) - 1L	Occupancy Sensor	S	62	3,209	3	Relamp	No	20	LED - Linear Tubes: (1) 4' T5HO (25W) Lamp	Occupancy Sensor	26	3,209	0.5	2,576	-1	$313	$656	$0	2.1
Room D200	36	Linear Fluorescent - T5HO: 4' T5HO (54W) - 1L	Occupancy Sensor	S	62	3,209	3	Relamp	No	36	LED - Linear Tubes: (1) 4' T5HO (25W) Lamp	Occupancy Sensor	26	3,209	0.9	4,638	-1	$564	$1,181	$0	2.1
Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,790	3	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	2,790	0.0	152	0	$18	$55	$15	2.2
Room 202	36	Linear Fluorescent - T5HO: 4' T5HO (54W) - 1L	Occupancy Sensor	S	62	3,209	3	Relamp	No	36	LED - Linear Tubes: (1) 4' T5HO (25W) Lamp	Occupancy Sensor	26	3,209	0.9	4,638	-1	$564	$1,181	$0	2.1
Boys Restroom	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	3,209	3	Relamp	No	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,209	0.1	699	0	$85	$219	$60	1.9
Boys Restroom	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Occupancy Sensor	S	62	3,209	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	3,209	0.0	102	0	$12	$72	$10	5.0
Girls Restroom	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	3,209	3	Relamp	No	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,209	0.1	699	0	$85	$219	$60	1.9
Girls Restroom	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Occupancy Sensor	S	62	3,209	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	3,209	0.0	102	0	$12	$72	$10	5.0
Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	2,790	3	Relamp	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,790	0.0	54	0	$7	$18	$5	2.0

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Room D203	36	Linear Fluorescent - T5HO: 4' T5HO (54W) - 1L	Occupancy Sensor	S	62	3,209	3	Relamp	No	36	LED - Linear Tubes: (1) 4' T5HO (25W) Lamp	Occupancy Sensor	26	3,209	0.9	4,638	-1	$564	$1,181	$0	2.1
Room D204	20	Linear Fluorescent - T5HO: 4' T5HO (54W) - 1L	Occupancy Sensor	S	62	3,209	3	Relamp	No	20	LED - Linear Tubes: (1) 4' T5HO (25W) Lamp	Occupancy Sensor	26	3,209	0.5	2,576	-1	$313	$656	$0	2.1
Room D207	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	3,209	3	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,209	0.1	349	0	$42	$110	$30	1.9
Room D206	36	Linear Fluorescent - T5HO: 4' T5HO (54W) - 1L	Occupancy Sensor	S	62	3,209	3	Relamp	No	36	LED - Linear Tubes: (1) 4' T5HO (25W) Lamp	Occupancy Sensor	26	3,209	0.9	4,638	-1	$564	$1,181	$0	2.1
Room D205	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Occupancy Sensor	S	62	3,209	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	3,209	0.0	102	0	$12	$72	$10	5.0
Room D205	5	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	3,209	3	Relamp	No	5	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,209	0.2	874	0	$106	$274	$75	1.9
Mens Restroom	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	4,650	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	4,650	0.0	148	0	$18	$72	$10	3.5
Womens Restroom	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	4,650	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	4,650	0.0	148	0	$18	$72	$10	3.5
Room D208	36	Linear Fluorescent - T5HO: 4' T5HO (54W) - 1L	Occupancy Sensor	S	62	3,209	3	Relamp	No	36	LED - Linear Tubes: (1) 4' T5HO (25W) Lamp	Occupancy Sensor	26	3,209	0.9	4,638	-1	$564	$1,181	$0	2.1
Mech Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,790	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,790	0.0	101	0	$12	$37	$10	2.2
Stairwell	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	5,115	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	5,115	0.0	163	0	$20	$72	$10	3.1
Stairwell	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	5,115	3	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	5,115	0.0	371	0	$45	$73	$20	1.2
Stairwell	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	5,115	3	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	5,115	0.0	279	0	$34	$55	$15	1.2
C Hallway	21	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	5,115	3, 5	Relamp	Yes	21	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	3,529	0.6	4,961	-1	$603	$1,667	$210	2.4
Room C101	18	Linear Fluorescent - T5HO: 4' T5HO (54W) - 1L	Occupancy Sensor	S	62	3,209	3	Relamp	No	18	LED - Linear Tubes: (1) 4' T5HO (25W) Lamp	Occupancy Sensor	26	3,209	0.5	2,319	0	$282	$591	$0	2.1
Room C103	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Occupancy Sensor	S	33	3,209	3	Relamp	No	3	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	3,209	0.0	169	0	$21	$98	$18	3.9
Room C103	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	3,209	3	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,209	0.1	524	0	$64	$164	$45	1.9
Room C104	20	Linear Fluorescent - T5HO: 4' T5HO (54W) - 1L	Occupancy Sensor	S	62	3,209	3	Relamp	No	20	LED - Linear Tubes: (1) 4' T5HO (25W) Lamp	Occupancy Sensor	26	3,209	0.5	2,576	-1	$313	$656	$0	2.1
Room C105	18	Linear Fluorescent - T5HO: 4' T5HO (54W) - 1L	Occupancy Sensor	S	62	3,209	3	Relamp	No	18	LED - Linear Tubes: (1) 4' T5HO (25W) Lamp	Occupancy Sensor	26	3,209	0.5	2,319	0	$282	$591	$0	2.1
Room C106	20	Linear Fluorescent - T5HO: 4' T5HO (54W) - 1L	Occupancy Sensor	S	62	3,209	3	Relamp	No	20	LED - Linear Tubes: (1) 4' T5HO (25W) Lamp	Occupancy Sensor	26	3,209	0.5	2,576	-1	$313	$656	$0	2.1
Boys Restroom	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Occupancy Sensor	S	62	3,209	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	3,209	0.0	102	0	$12	$72	$10	5.0
Boys Restroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	3,209	3	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,209	0.1	349	0	$42	$110	$30	1.9
Girls Restroom	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Occupancy Sensor	S	62	3,209	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	3,209	0.0	102	0	$12	$72	$10	5.0
Girls Restroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	3,209	3	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,209	0.1	349	0	$42	$110	$30	1.9
Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,650	3	Relamp	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	4,650	0.0	90	0	$11	$18	$5	1.2

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Room C107	20	Linear Fluorescent - T5HO: 4' T5HO (54W) - 1L	Occupancy Sensor	S	62	3,209	3	Relamp	No	20	LED - Linear Tubes: (1) 4' T5HO (25W) Lamp	Occupancy Sensor	26	3,209	0.5	2,576	-1	$313	$656	$0	2.1
Storage Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,650	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,209	0.1	430	0	$52	$343	$20	6.2
Exit 22	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	4,650	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	4,650	0.0	148	0	$18	$72	$10	3.5
Exterior Pole	24	Metal Halide: (1) 250W Lamp	Timeclock		295	5,110	1	Fixture Replacement	No	24	LED - Fixtures: Outdoor Pole/Arm-Mounted Area/Roadway Fixture	Timeclock	89	5,110	2.5	25,325	0	$3,128	$22,334	$2,400	6.4
Exterior Panel	24	LED - Fixtures: Downlight Surface Mount	Photocell		21	4,380		None	No	24	LED - Fixtures: Downlight Surface Mount	Photocell	21	4,380	0.0	0	0	$0	$0	$0	0.0
Exterior Recessed	16	Metal Halide: (1) 50W Lamp	Occupancy Sensor		72	3,209	1	Fixture Replacement	No	16	LED - Fixtures: Downlight Recessed	Occupancy Sensor	22	3,209	0.4	2,587	0	$320	$2,428	$80	7.3
Exterior Wallpack	26	Compact Fluorescent: 42W CFL Screw-In - 1L	Timeclock		42	4,745	3	Relamp	No	26	LED Lamps: LED Screw-In - 1L	Timeclock	29	4,745	0.2	1,554	0	$192	$915	$26	4.6
Exterior Wallpack	5	Metal Halide: (1) 175W Lamp	Timeclock		215	4,745	1	Fixture Replacement	No	5	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Timeclock	65	4,745	0.4	3,571	0	$441	$4,830	$500	9.8
Exterior Wallpack	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Timeclock		55	4,745		None	No	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Timeclock	55	4,745	0.0	0	0	$0	$0	$0	0.0
Exterior Wallpack	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Timeclock		9	4,745		None	No	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Timeclock	9	4,745	0.0	0	0	$0	$0	$0	0.0
Outside Storage	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,790	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,790	0.0	101	0	$12	$37	$10	2.2
Stage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	5,115	3	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	5,115	0.0	371	0	$45	$73	$20	1.2
Stage	2	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Stage	4	Metal Halide: (1) 400W Lamp	Wall Switch	S	458	5,115	1	Fixture Replacement	No	4	LED - Fixtures: High-Bay	Wall Switch	137	5,115	0.9	7,215	-2	$877	$3,100	$600	2.9
Stage	2	LED - Fixtures: High-Bay	Wall Switch	S	75	5,115		None	No	2	LED - Fixtures: High-Bay	Wall Switch	75	5,115	0.0	0	0	$0	$0	$0	0.0
Auditorium	23	Metal Halide: (1) 400W Lamp	Wall Switch	S	458	5,115	1, 4	Fixture Replacement	Yes	23	LED - Fixtures: High-Bay	Occupancy Sensor	137	3,529	6.0	47,001	-10	$5,713	$18,362	$3,520	2.6
Auditorium	7	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	7	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Control Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	5,115	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	5,115	0.0	186	0	$23	$37	$10	1.2
Control Room	2	Metal Halide: (1) 50W Lamp	Wall Switch	S	72	5,115	1	Fixture Replacement	No	2	LED - Fixtures: Ceiling Mount	Wall Switch	22	5,115	0.1	567	0	$69	$594	$20	8.3
Ticket Stand	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,790	3	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	2,790	0.0	152	0	$18	$55	$15	2.2
Storage Room 1	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	2,790	3	Relamp	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,790	0.0	54	0	$7	$18	$5	2.0
Cat Walk	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	5,115	3	Relamp	No	8	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	5,115	0.2	1,485	0	$181	$292	$80	1.2
Storage Room 2	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	2,790	3	Relamp	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,790	0.0	54	0	$7	$18	$5	2.0

Motor Inventory & Recommendations

		Existing Conditions							Proposed Conditions					Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	Motor Quantity	Motor Application	HP Per Motor	Full Load Efficiency	VFD Control?	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	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Roof	Refrigeration Room	1	Exhaust Fan	0.3	68.5%	No	W	2,745		No	68.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Kitchen	1	Exhaust Fan	0.3	68.5%	No	W	2,745		No	68.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Kitchen	1	Kitchen Hood Exhaust Fan	1.5	80.0%	No	W	2,400		No	80.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Kitchen	1	Makeup Air Fan	1.0	80.0%	No	W	2,745		No	80.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	AHU-25	1	Supply Fan	1.5	84.0%	No	W	3,450	6	No	86.5%	Yes	1	0.4	1,813	0	$224	$3,391	$120	14.6
Roof	AHU-5	1	Supply Fan	2.0	84.0%	No	W	3,450	6	No	86.5%	Yes	1	0.6	2,417	0	$299	$3,261	$160	10.4
Roof	AHU-6	1	Supply Fan	2.0	84.0%	No	W	3,450	6	No	86.5%	Yes	1	0.6	2,417	0	$299	$3,261	$160	10.4
Roof	AHU-28	1	Supply Fan	1.0	80.0%	No	W	3,450	6	No	85.5%	Yes	1	0.3	1,346	0	$166	$3,010	$80	17.6
Roof	AHU-8	1	Supply Fan	10.0	89.5%	Yes	W	3,450		No	89.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	EF	7	Exhaust Fan	0.3	68.5%	No	W	2,745		No	68.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	EF	3	Exhaust Fan	0.3	68.5%	No	W	2,745		No	68.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	AHU-12	1	Return Fan	2.0	84.0%	No	W	3,450	6	No	86.5%	Yes	1	0.6	2,417	0	$299	$3,261	$160	10.4
Roof	AHU-9	1	Supply Fan	1.5	80.0%	No	W	3,450	6	No	86.5%	Yes	1	0.5	2,054	0	$254	$3,391	$120	12.9
Roof	AHU-10	1	Return Fan	3.0	86.5%	No	W	3,450	6	No	89.5%	Yes	1	0.9	3,549	0	$438	$3,884	$240	8.3
Roof	AHU-4	1	Supply Fan	5.0	87.5%	No	W	3,450	6	No	89.5%	Yes	1	1.5	5,737	0	$709	$4,076	$400	5.2
Roof	AHU-27	1	Supply Fan	3.0	86.5%	No	W	3,450	6	No	89.5%	Yes	1	0.9	3,549	0	$438	$3,884	$240	8.3
Roof	AHU-26	1	Supply Fan	3.0	86.5%	No	W	3,450	6	No	89.5%	Yes	1	0.9	3,549	0	$438	$3,884	$240	8.3
Roof	AHU-19	1	Supply Fan	7.5	87.5%	Yes	W	3,450		No	87.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	AHU-3	1	Supply Fan	5.0	87.5%	No	W	3,450	6	No	89.5%	Yes	1	1.5	5,737	0	$709	$4,076	$400	5.2
Roof	AHU-23	1	Supply Fan	5.0	87.5%	No	W	3,450	6	No	89.5%	Yes	1	1.5	5,737	0	$709	$4,076	$400	5.2

		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?	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	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Roof	AHU-20	1	Supply Fan	7.5	87.5%	No	W	3,450	6	No	91.0%	Yes	1	2.3	8,845	0	$1,092	$4,738	$600	3.8
Roof	AHU-20	1	Supply Fan	7.5	87.5%	No	W	3,450	6	No	91.0%	Yes	1	2.3	8,845	0	$1,092	$4,738	$600	3.8
Roof	EF	4	Exhaust Fan	0.3	68.5%	No	W	2,745		No	68.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	EF	1	Exhaust Fan	0.3	68.5%	No	W	2,745		No	68.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	EF	4	Exhaust Fan	0.3	68.5%	No	W	2,745		No	68.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	AHU-13	1	Supply Fan	2.0	84.0%	No	W	3,450	6	No	86.5%	Yes	1	0.6	2,417	0	$299	$3,261	$160	10.4
Roof	AHU-14	1	Supply Fan	1.5	80.0%	No	W	3,450	6	No	86.5%	Yes	1	0.5	2,054	0	$254	$3,391	$120	12.9
Roof	AHU-1	1	Supply Fan	1.5	80.0%	No	W	3,450	6	No	86.5%	Yes	1	0.5	2,054	0	$254	$3,391	$120	12.9
Roof	AHU-2	1	Supply Fan	1.5	80.0%	No	W	3,450	6	No	86.5%	Yes	1	0.5	2,054	0	$254	$3,391	$120	12.9
Roof	EF	1	Exhaust Fan	0.3	68.5%	No	W	2,745		No	68.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	EF	1	Exhaust Fan	0.3	68.5%	No	W	2,745		No	68.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	EF	1	Exhaust Fan	0.5	68.5%	No	W	2,745		No	68.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	AHU-25	1	Return Fan	1.0	80.0%	No	W	3,450	6	No	85.5%	Yes	1	0.3	1,346	0	$166	$3,010	$80	17.6
Roof	AHU-5	1	Return Fan	1.0	80.0%	No	W	3,450	6	No	85.5%	Yes	1	0.3	1,346	0	$166	$3,010	$80	17.6
Roof	AHU-27	1	Return Fan	1.5	80.0%	No	W	3,450	6	No	86.5%	Yes	1	0.5	2,054	0	$254	$3,391	$120	12.9
Roof	AHU-26	1	Return Fan	1.5	80.0%	No	W	3,450	6	No	86.5%	Yes	1	0.5	2,054	0	$254	$3,391	$120	12.9
Roof	AHU-23	1	Return Fan	3.0	86.5%	No	W	3,450	6	No	89.5%	Yes	1	0.9	3,549	0	$438	$3,884	$240	8.3
Roof	AHU-19	1	Return Fan	3.0	86.5%	Yes	W	3,450		No	86.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	AHU-3	1	Return Fan	1.5	80.0%	No	W	3,450	6	No	86.5%	Yes	1	0.5	2,054	0	$254	$3,391	$120	12.9
Roof	AHU-20	1	Return Fan	5.0	87.5%	No	W	3,450	6	No	89.5%	Yes	1	1.5	5,737	0	$709	$4,076	$400	5.2

		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?	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	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Roof	AHU-21	1	Return Fan	5.0	87.5%	No	W	3,450	6	No	89.5%	Yes	1	1.5	5,737	0	$709	$4,076	$400	5.2
Roof	AHU-6	1	Return Fan	1.5	80.0%	No	W	3,450	6	No	86.5%	Yes	1	0.5	2,054	0	$254	$3,391	$120	12.9
Roof	AHU-14	1	Return Fan	1.5	80.0%	No	W	3,450	6	No	86.5%	Yes	1	0.5	2,054	0	$254	$3,391	$120	12.9
Roof	AHU-13	1	Return Fan	0.3	68.5%	No	W	3,450	6	No	73.4%	Yes	1	0.1	526	0	$65	$2,728	$27	41.6
Roof	AHU-1	1	Return Fan	0.8	81.8%	No	W	3,450	6	No	81.8%	Yes	1	0.2	885	0	$109	$2,756	$60	24.7
Roof	AHU-2	1	Return Fan	0.8	81.8%	No	W	3,450	6	No	81.8%	Yes	1	0.2	885	0	$109	$2,756	$60	24.7
Roof	AHU-4	1	Return Fan	5.0	87.5%	No	W	3,450	6	No	89.5%	Yes	1	1.5	5,737	0	$709	$4,076	$400	5.2
Roof	AHU-8	1	Return Fan	5.0	87.5%	Yes	W	3,450		No	87.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	AHU-12	1	Supply Fan	2.0	84.0%	No	W	3,450	6	No	86.5%	Yes	1	0.6	2,417	0	$299	$3,261	$160	10.4
Roof	AHU-9	1	Return Fan	0.8	81.8%	No	W	3,450	6	No	81.8%	Yes	1	0.2	885	0	$109	$2,756	$60	24.7
Roof	AHU-10	1	Return Fan	1.5	80.0%	No	W	3,450	6	No	86.5%	Yes	1	0.5	2,054	0	$254	$3,391	$120	12.9
Roof	AHU-28	1	Return Fan	0.8	81.8%	No	W	3,450	6	No	81.8%	Yes	1	0.2	885	0	$109	$2,756	$60	24.7
Boiler Room	Boiler Combustion Air	2	Combustion Air Fan	3.0	80.0%	No	W	2,745		No	80.0%	No		0.0	0	0	$0	$0	$0	0.0
Boiler Room	Boiler Induced Air Blower	2	Combustion Air Fan	1.5	80.0%	No	W	2,745		No	80.0%	No		0.0	0	0	$0	$0	$0	0.0
Boiler Room	HHW Circlation pump (to HX)	1	Heating Hot Water Pump	0.5	68.5%	No	W	2,745		No	68.5%	No		0.0	0	0	$0	$0	$0	0.0
Boiler Room	HHW Loop	2	Heating Hot Water Pump	25.0	91.7%	Yes	W	4,067		No	91.7%	No		0.0	0	0	$0	$0	$0	0.0
Boiler Room	Secondary CHW Loop	2	Chilled Water Pump	40.0	93.0%	Yes	W	858		No	93.0%	No		0.0	0	0	$0	$0	$0	0.0
Boiler Room	Primary CHW Loop	2	Chilled Water Pump	20.0	91.5%	No	W	858		No	91.5%	No		0.0	0	0	$0	$0	$0	0.0
Gym Storage	AHU-15	1	Supply Fan	1.5	80.0%	No	W	3,450	6	No	86.5%	Yes	1	0.5	2,054	0	$254	$3,391	$120	12.9
Gym Storage	AHU-22	1	Supply Fan	1.5	80.0%	No	W	3,450	6	No	86.5%	Yes	1	0.5	2,054	0	$254	$3,391	$120	12.9

		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?	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	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Gym Storage	AHU-18	1	Supply Fan	1.5	80.0%	No	W	3,450	6	No	86.5%	Yes	1	0.5	2,054	0	$254	$3,391	$120	12.9
Gym Storage	AHU-23	1	Supply Fan	1.5	80.0%	No	W	3,450	6	No	86.5%	Yes	1	0.5	2,054	0	$254	$3,391	$120	12.9
Gym Storage	AHU-30	1	Supply Fan	1.5	80.0%	No	W	3,450	6	No	86.5%	Yes	1	0.5	2,054	0	$254	$3,391	$120	12.9
Gym Storage	AHU	1	Supply Fan	1.5	80.0%	No	W	3,450	6	No	86.5%	Yes	1	0.5	2,054	0	$254	$3,391	$120	12.9
Storage Room	AHU-7	1	Supply Fan	1.5	80.0%	No	W	3,450	6	No	86.5%	Yes	1	0.5	2,054	0	$254	$3,391	$120	12.9
Kitchen	Dishwasher	1	Process Pump	2.0	86.5%	No	W	2,745		No	86.5%	No		0.0	0	0	$0	$0	$0	0.0
Mechanical Room	Elevator	2	Process Pump	15.0	70.0%	No	W	3,391		No	70.0%	No		0.0	0	0	$0	$0	$0	0.0
Storage Room	AHU-29	1	Supply Fan	1.5	80.0%	No	W	3,450	6	No	86.5%	Yes	1	0.5	2,054	0	$254	$3,391	$120	12.9
Wood Shop	Wood Shop Dust Collector EF	1	Exhaust Fan	0.3	68.5%	No	W	2,745		No	68.5%	No		0.0	0	0	$0	$0	$0	0.0
Wood Shop	Wood Shop Process Motor	1	Process Fan	3.0	80.0%	No	W	2,745		No	80.0%	No		0.0	0	0	$0	$0	$0	0.0
Art Room	Art Room	1	Exhaust Fan	0.3	68.5%	No	W	2,745		No	68.5%	No		0.0	0	0	$0	$0	$0	0.0
Classrooms	Classrooms	23	Supply Fan	0.3	68.5%	No	W	3,450		No	68.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	AHU-4	1	Supply Fan	5.0	87.5%	No	W	3,450	6	No	89.5%	Yes	1	1.5	5,737	0	$709	$4,076	$400	5.2
Roof	Packaged DX 1, 2, 4, 5, 6, 7 & 9	7	Supply Fan	2.0	84.0%	No	B	3,450		No	84.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Packaged DX 8	1	Supply Fan	1.5	80.0%	No	B	3,450		No	80.0%	No		0.0	0	0	$0	$0	$0	0.0

Electric 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)	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/EER)	Heating Mode Efficiency (COP)	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Roof	DX3	1	Split-System AC	3.50		B	7	Yes	1	Split-System AC	3.50		14.00		0.1	229	0	$28	$5,237	$322	173.8
Roof	Server Room	1	Split-System AC	2.00		B	7	Yes	1	Split-System AC	2.00		14.00		0.2	475	0	$59	$2,992	$184	47.9
Roof	Server Room	1	Split-System AC	2.00		B	7	Yes	1	Split-System AC	2.00		14.00		0.2	475	0	$59	$2,992	$184	47.9
Roof	DX4	1	Packaged AC	7.50		B	7	Yes	1	Packaged AC	7.50		11.50		1.6	3,490	0	$431	$13,366	$548	29.7
Roof	DX8	1	Packaged AC	4.00		B	7	Yes	1	Packaged AC	4.00		14.00		1.0	2,278	0	$281	$9,076	$368	31.0
Roof	DX5	1	Packaged AC	7.50		B	7	Yes	1	Packaged AC	7.50		11.50		1.6	3,490	0	$431	$13,366	$548	29.7
Roof	DX6	1	Packaged AC	7.50		B	7	Yes	1	Packaged AC	7.50		11.50		1.6	3,490	0	$431	$13,366	$548	29.7
Roof	DX9	1	Packaged AC	7.50		B	7	Yes	1	Packaged AC	7.50		11.50		1.6	3,490	0	$431	$13,366	$548	29.7
Roof	DX1	1	Packaged AC	7.50		B	7	Yes	1	Packaged AC	7.50		11.50		1.6	3,490	0	$431	$13,366	$548	29.7
Roof	DX2	1	Packaged AC	7.50		B	7	Yes	1	Packaged AC	7.50		11.50		1.6	3,490	0	$431	$13,366	$548	29.7
Roof	DX7	1	Packaged AC	7.50		B	7	Yes	1	Packaged AC	7.50		11.50		1.6	3,490	0	$431	$13,366	$548	29.7
Ground Floor	Studio (TV)	1	Split-System AC	3.00		B	7	Yes	1	Split-System AC	3.00		14.00		0.2	522	0	$64	$4,489	$276	65.4

Electric Chiller Inventory & Recommendations

		Existing Conditions				Proposed Conditions								Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	Chiller Quantity	System Type	Cooling Capacity per Unit (Tons)	Remaining Useful Life	ECM #	Install High Efficiency Chillers?	Chiller Quantity	System Type	Constant/ Variable Speed	Cooling Capacity (Tons)	Full Load Efficiency (kW/Ton)	IPLV Efficiency (kW/Ton)	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Ground Floor	Chilled Water Loop	1	Air-Cooled Screw Chiller	365.00	W		No							0.0	0	0	$0	$0	$0	0.0

Fuel Heating 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)	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	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Boiler Room	HHW Loop	2	Non-Condensing Hot Water Boiler	######	B	8	Yes	2	Non-Condensing Hot Water Boiler	######	85.00%	Ec	0.0	0	411	$3,842	$147,282	$0	38.3
Roof	DX-1, 2, 4, 5, 6, 7 & 9	7	Furnace	100.00	B	9	Yes	7	Furnace	100.00	95.00%	AFUE	0.0	0	135	$1,260	$15,860	$2,800	10.4
Roof	DX-8	1	Furnace	100.00	B	9	Yes	1	Furnace	100.00	95.00%	AFUE	0.0	0	19	$180	$2,266	$400	10.4
Boiler Room	HHW Loop	1	Non-Condensing Hot Water Boiler	734.00	B	8	Yes	1	Non-Condensing Hot Water Boiler	734.00	85.00%	Et	0.0	0	29	$273	$16,467	$1,285	55.6

DHW Inventory & Recommendations

		Existing Conditions			Proposed Conditions						Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	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	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Room 110	Room 110	1	Storage Tank Water Heater (≤ 50 Gal)	W		No						0.0	0	0	$0	$0	$0	0.0

Low-Flow Device Recommendations

	Recommedation Inputs					Energy Impact & Financial Analysis						
Location	ECM #	Device Quantity	Device Type	Existing Flow Rate (gpm)	Proposed Flow Rate (gpm)	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Restrooms	10	33	Faucet Aerator (Lavatory)	2.20	0.50	0.0	0	94	$879	$237	$0	0.3

Walk-In Cooler/Freezer Inventory & Recommendations

	Existing Conditions		Proposed Conditions				Energy Impact & Financial Analysis						
Location	Cooler/ Freezer Quantity	Case Type/Temperature	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	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen	1	Cooler (35F to 55F)	11, 12	Yes	No	Yes	0.1	2,353	0	$291	$2,584	$75	8.6
Kitchen	1	Medium Temp Freezer (0F to 30F)	11, 12	Yes	Yes	Yes	0.1	4,769	0	$589	$3,103	$125	5.1

Commercial Refrigerator/Freezer Inventory & Recommendations

	Existing Conditions			Proposed Conditions		Energy Impact & Financial Analysis						
Location	Quantity	Refrigerator/ Freezer 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	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen	1	Refrigerator Chest	Yes		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	1	Stand-Up Refrigerator, Solid Door (31 - 50 cu. ft.)	Yes		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	2	Stand-Up Refrigerator, Solid Door (16 - 30 cu. ft.)	Yes		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	4	Stand-Up Refrigerator, Glass Door (16 - 30 cu. ft.)	Yes		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	2	Refrigerator Chest	Yes		No	0.0	0	0	$0	$0	$0	0.0

Cooking Equipment Inventory & Recommendations

	Existing Conditions			Proposed Conditions		Energy Impact & Financial Analysis						
Location	Quantity	Equipment Type	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	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen	2	Gas Convection Oven (Full Size)	Yes		No	0.0	0	0	FALSE	$0	$0	#DIV/0!
Kitchen	1	Gas Steamer	Yes		No	0.0	0	0	FALSE	$0	$0	#DIV/0!
Kitchen	1	Gas Steamer	Yes		No	0.0	0	0	FALSE	$0	$0	#DIV/0!
Kitchen	1	Insulated Food Holding Cabinet (Full Size)	Yes		No	0.0	0	0	FALSE	$0	$0	#DIV/0!

Dishwasher Inventory & Recommendations

	Existing Conditions					Proposed Conditions		Energy Impact & Financial Analysis						
Location	Quantity	Dishwasher Type	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	Total Installation Cost	Total Incentives	Payback w/ Incentives in Years
Kitchen	1	Single Tank Conveyor (High Temp)	Electric	N/A	Yes		No	0.0	0	0	$0	$0	$0	0.0

Plug Load Inventory

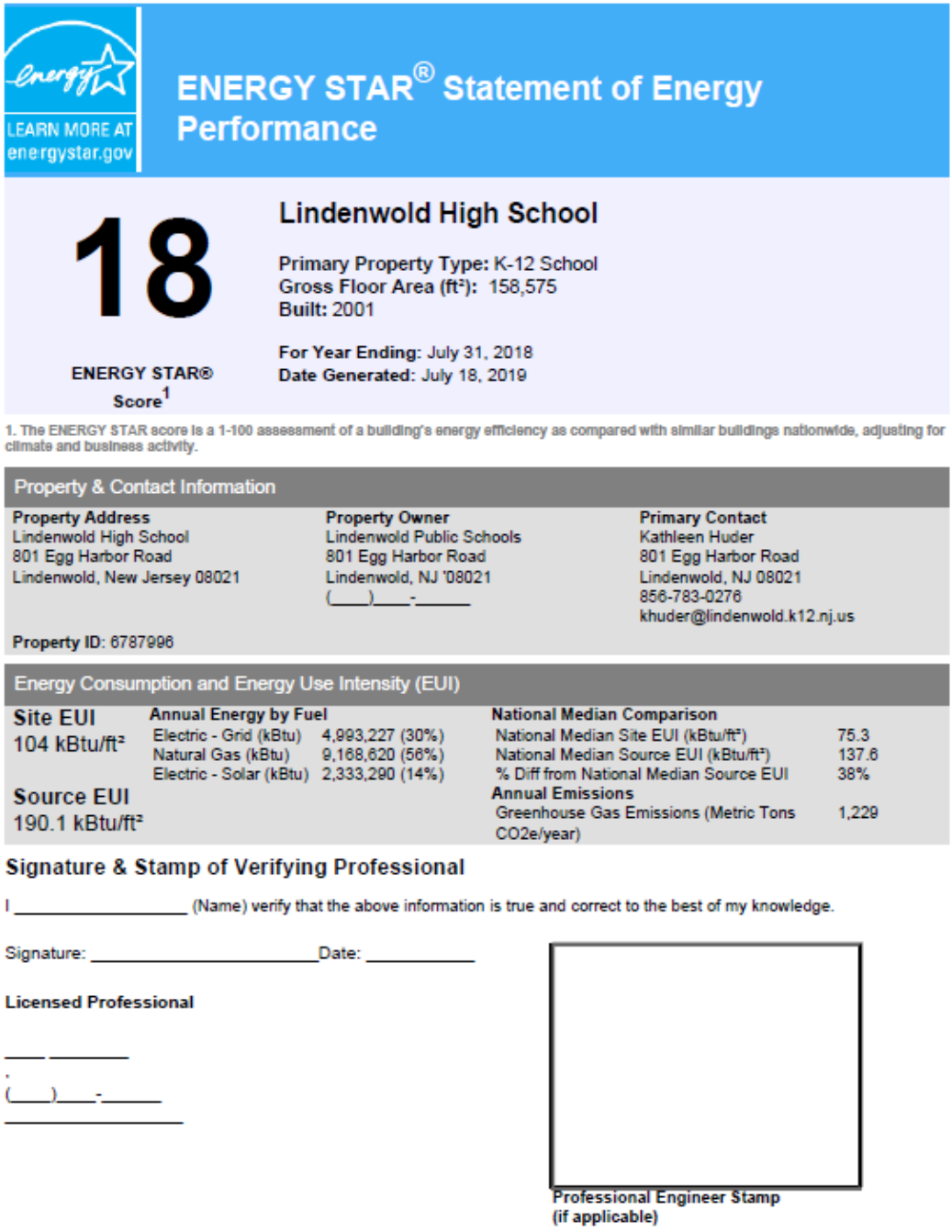
	Existing Conditions			
Location	Quantity	Equipment Description	Energy Rate (W)	ENERGY STAR Qualified?
Throughout Building	102	Desktop Computer	120.0	Yes
Throughout Building	33	Desktop Printer	60.0	Yes
Throughout Building	1	Washing Machine	900.0	Yes
Throughout Building	1	Dryer	5,000.0	Yes
Throughout Building	16	Microwave	500.0	Yes
Throughout Building	5	Refrigerator	172.0	Yes
Throughout Building	5	Toaster	850.0	Yes
Throughout Building	5	Water Cooler	92.0	Yes
Kiln Room	1	Kiln	11,000.0	Yes
Break Room	2	Electric Stove	500.0	Yes
Throughout Building	13	Coffee Machine	900.0	Yes
Throughout Building	10	Small Fridge	153.0	Yes
Throughout Building	3	Copy Machine	200.0	Yes
Throughout Building	793	Chromebook	40.0	Yes
Server Room	1	Servers	1,500.0	Yes

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	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Boys Locker Room	1	Refrigerated	13	Yes	0.2	1,612	0	$199	$230	$50	0.9
Cafeteria	2	Refrigerated	13	Yes	0.4	3,224	0	$398	$460	$100	0.9
B106	1	Refrigerated	13	Yes	0.2	1,612	0	$199	$230	$50	0.9
B106	1	Non-Refrigerated	13	Yes	0.0	343	0	$42	$230	$0	5.4
Main Lobby	1	Non-Refrigerated	13	Yes	0.0	343	0	$42	$230	$0	5.4

APPENDIX B: ENERGY STAR® STATEMENT OF ENERGY PERFORMANCE

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



ENERGY STAR® Statement of Energy Performance

LEARN MORE AT energystar.gov

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ENERGY STAR® Score[1]

Lindenwold High School

Primary Property Type: K-12 School
Gross Floor Area (ft²): 158,575
Built: 2001

For Year Ending: July 31, 2018
Date Generated: July 18, 2019

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
Lindenwold High School 801 Egg Harbor Road Lindenwold, New Jersey 08021	Lindenwold Public Schools 801 Egg Harbor Road Lindenwold, NJ '08021 (____)____-_____	Kathleen Huder 801 Egg Harbor Road Lindenwold, NJ 08021 856-783-0276 khuder@lindenwold.k12.nj.us

Property ID: 6787996

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
104 kBtu/ft²

Source EUI
190.1 kBtu/ft²

Annual Energy by Fuel	
Electric - Grid (kBtu)	4,993,227 (30%)
Natural Gas (kBtu)	9,168,620 (56%)
Electric - Solar (kBtu)	2,333,290 (14%)

National Median Comparison	
National Median Site EUI (kBtu/ft²)	75.3
National Median Source EUI (kBtu/ft²)	137.6
% Diff from National Median Source EUI	38%
Annual Emissions	
Greenhouse Gas Emissions (Metric Tons CO2e/year)	1,229

Signature & Stamp of Verifying Professional

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

Signature: _____Date: _____

Licensed Professional

____ _____
,
(____)____-_____
_____

Professional Engineer 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 gases:* 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.
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.