Local Government Energy Audit Report

Willingboro High School

January 27, 2020

Prepared for:

Willingboro Public Schools

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Willingboro, New Jersey 08046

Prepared by:

TRC

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Disclaimer

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

TRC reviewed the energy conservation measures and estimates of energy savings 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. Cost estimates include material and labor pricing associated with installation of primary recommended equipment only. Cost estimates do not include demolition or removal of hazardous waste. 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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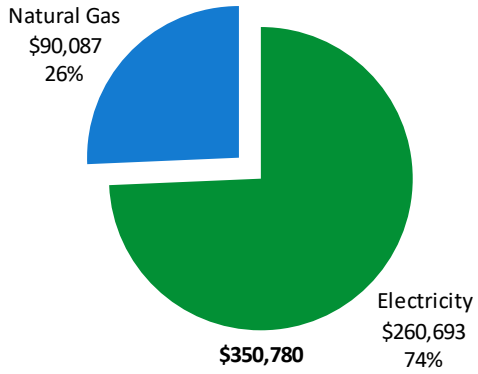
1 EXECUTIVE SUMMARY

The New Jersey Board of Public Utilities (NJBPU) has sponsored this Local Government Energy Audit (LGEA) report for Willingboro 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 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: $350,780 Electricity: 2,170,930 kWh Natural Gas: 113,066 Therms	
ENERGY STAR® Benchmarking Score	43 *(1-100 scale)*	This building performs below the national average. This report contains suggestions about how to improve building performance and reduce energy costs.

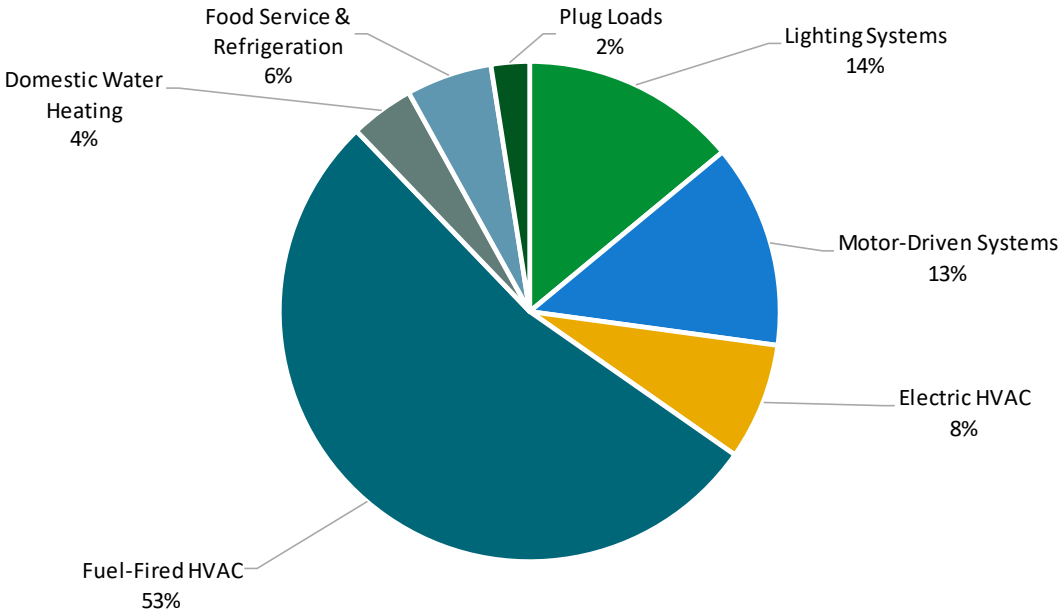


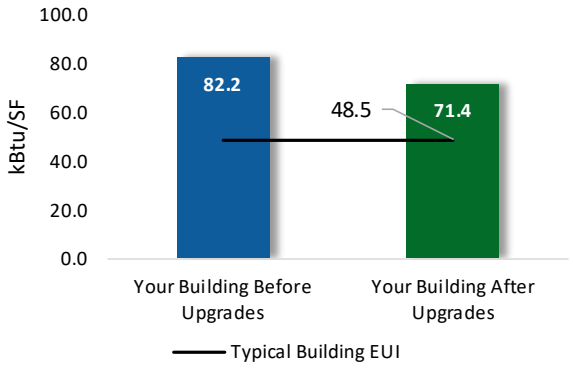
Figure 1 - Energy Use by System

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.

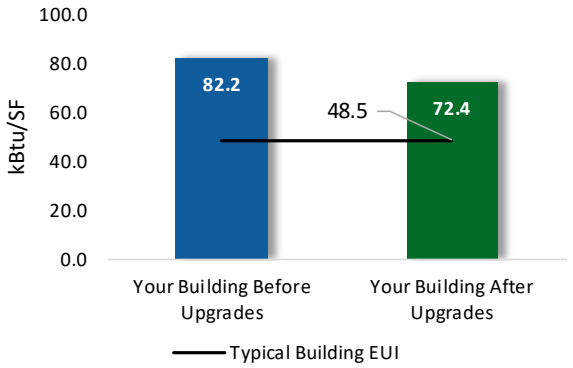
Scenario 1: Full Package (all evaluated measures)

Installation Cost	$543,315
Potential Rebates & Incentives[1]	$154,039
Annual Cost Savings	$83,193
Annual Energy Savings	Electricity: 684,398 kWh Natural Gas: 1,265 Therms
Greenhouse Gas Emission Savings	352 Tons
Simple Payback	4.7 Years
Site Energy Savings (all utilities)	13%



Scenario 2: Cost Effective Package[2]

Installation Cost	$469,102
Potential Rebates & Incentives	$152,337
Annual Cost Savings	$79,964
Annual Energy Savings	Electricity: 668,219 kWh
Greenhouse Gas Emission Savings	334 Tons
Simple Payback	4.0 Years
Site Energy Savings (all utilities)	12%



On-site Generation Potential

Photovoltaic	High
Combined Heat and Power	None

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

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

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades			**475,027**	**95.9**	**-83**	**$56,382**	**$288,586**	**$109,076**	**$179,510**	**3.2**	**468,633**
ECM 1	Install LED Fixtures	Yes	138,339	14.3	-13	$16,510	$169,574	$49,800	$119,774	7.3	137,803
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	2,000	0.5	0	$237	$932	$210	$722	3.0	1,965
ECM 3	Retrofit Fixtures with LED Lamps	Yes	334,689	81.1	-70	$39,635	$118,080	$59,066	$59,014	1.5	328,865
Lighting Control Measures			**91,242**	**22.1**	**-19**	**$10,805**	**$101,835**	**$26,040**	**$75,795**	**7.0**	**89,646**
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	85,059	20.7	-18	$10,072	$91,260	$16,380	$74,880	7.4	83,571
ECM 5	Install High/Low Lighting Controls	Yes	6,183	1.4	-1	$732	$10,575	$9,660	$915	1.2	6,075
Motor Upgrades			**578**	**0.1**	**0**	**$69**	**$2,661**	**$0**	**$2,661**	**38.4**	**582**
ECM 6	Premium Efficiency Motors	No	578	0.1	0	$69	$2,661	$0	$2,661	38.4	582
Variable Frequency Drive (VFD) Measures			**89,038**	**27.4**	**0**	**$10,692**	**$73,771**	**$15,344**	**$58,427**	**5.5**	**89,660**
ECM 7	Install VFDs on Constant Volume (CV) Fans	Yes	89,038	27.4	0	$10,692	$73,771	$15,344	$58,427	5.5	89,660
Electric Unitary HVAC Measures			**2,653**	**2.6**	**0**	**$319**	**$22,510**	**$1,152**	**$21,358**	**67.0**	**2,671**
ECM 8	Install High Efficiency Air Conditioning Units	No	2,276	2.3	0	$273	$18,911	$876	$18,035	66.0	2,291
ECM 9	Install High Efficiency Heat Pumps	No	377	0.3	0	$45	$3,599	$276	$3,323	73.4	380
HVAC System Improvements			**9,817**	**0.0**	**161**	**$2,465**	**$43,501**	**$0**	**$43,501**	**17.6**	**28,789**
ECM 10	Implement Demand Control Ventilation (DCV)	No	9,817	0.0	161	$2,465	$43,501	$0	$43,501	17.6	28,789
Domestic Water Heating Upgrade			**0**	**0.0**	**67**	**$535**	**$717**	**$717**	**$0**	**0.0**	**7,863**
ECM 11	Install Low-Flow DHW Devices	Yes	0	0.0	67	$535	$717	$717	$0	0.0	7,863
Food Service & Refrigeration Measures			**16,043**	**1.5**	**0**	**$1,927**	**$9,734**	**$1,710**	**$8,024**	**4.2**	**16,155**
ECM 12	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	2,213	0.2	0	$266	$2,123	$560	$1,563	5.9	2,229
ECM 13	Refrigeration Controls	No	3,131	0.1	0	$376	$5,541	$550	$4,991	13.3	3,153
ECM 14	Vending Machine Control	Yes	10,699	1.2	0	$1,285	$2,070	$600	$1,470	1.1	10,773
TOTALS (COST EFFECTIVE MEASURES)			**668,219**	**146.9**	**-35**	**$79,964**	**$469,102**	**$152,337**	**$316,765**	**4.0**	**668,804**
TOTALS (ALL MEASURES)			**684,398**	**149.7**	**127**	**$83,193**	**$543,315**	**$154,039**	**$389,276**	**4.7**	**703,998**

* - 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		
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	X		
ECM 3	Retrofit Fixtures with LED Lamps	X		
ECM 4	Install Occupancy Sensor Lighting Controls	X		
ECM 5	Install High/Low Lighting Controls	X		
ECM 6	Premium Efficiency Motors			
ECM 7	Install VFDs on Constant Volume (CV) Fans	X		
ECM 8	Install High Efficiency Air Conditioning Units	X		
ECM 9	Install High Efficiency Heat Pumps	X		
ECM 10	Implement Demand Control Ventilation (DCV)			
ECM 11	Install Low-Flow DHW Devices	X		
ECM 12	Refrigerator/Freezer Case Electrically Commutated Motors	X		
ECM 13	Refrigeration Controls	X		
ECM 14	Vending Machine Control	X		

Figure 3 – Funding Options

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

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

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

Individual Measures with SmartStart

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

Turnkey Installation with Direct Install

The Direct Install program provides turnkey installation of multiple measures through an authorized network of participating contractors. This program can provide substantially higher incentives than SmartStart, up to 70% 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 Willingboro 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 October 15, 2019, TRC performed an energy audit at Willingboro High School located in Willingboro, New Jersey. TRC met with Orlando L. Chandler to review the facility operations and help focus our investigation on specific energy-using systems.

Willingboro High School is a 2-story, 227,623 square foot building built in 1975. Spaces include classrooms, a gymnasium, an auxiliary gym, an auditorium, offices, a cafeteria, corridors, stairwells, a media center, resource centers, a kitchen, and electrical and mechanical spaces.

Around 2013, the school upgraded the heating, ventilation, and air conditioning (HVAC) system, installing new rooftop packaged air conditioning (AC) units, unit ventilators and associated direct expansion (DX) condensing units as well as replacing hot water boilers with condensing boilers. The air-cooled chillers are also new and were installed this year.

2.2 Building Occupancy

The facility is occupied ten months of the year. Typical weekday occupancy is 88 staff and 646 students. Summer occupancy is minimal and includes continuing maintenance and custodial activities only. There are limited weekend activities, where the school is partial occupied for sports practices on Saturdays.

Building Name	Weekday/Weekend	Operating Schedule
Willingboro High School	Weekday	6:00 AM to 6:00PM
	Weekend	Saturdays: Limited Occupancy for Sports Practice Sundays: Closed

Figure 4 - Building Occupancy Schedule

2.3 Building Envelope

Building exterior walls are brick masonry over structural steel. The roof is flat and covered with asphalt strips, and it is in fair condition. The interior walls are made of concrete masonry units (CMUs) with a painted CMU interior finish. Most of the windows are double pane glazed and have aluminum frames. The glass-to-frame seals are in fair condition. The operable window weather seals are in fair condition, showing little evidence of excessive wear. Exterior doors have aluminum frames and are in fair condition with undamaged door seals. However, it was noted that doors and windows are often left open or ajar. Open windows and doors increase drafts and outside air infiltration.

Exterior doors

Exterior Walls

Windows

Roof

2.4 Lighting Systems

The primary interior lighting system uses 32-Watt linear fluorescent T8 lamps. There are also a few 40-Watt T12 and 28-Watt T5 fixtures. Additionally, there are compact fluorescent lamps (CFL), incandescent, and LED general purpose lamps. Typically, T8 and T5 fluorescent lamps use electronic ballasts and T12 fluorescent lamps use magnetic ballasts. Fixture types include 2- 3- or 4-lamp, 2- or 4-foot long recessed and surface mounted fixtures and 2-foot fixtures with U-bend or linear tube lamps. Gymnasium fixtures have high bay high intensity discharge (HID) lamps and are manually controlled. Auditorium fixtures have high bay linear fluorescent and incandescent lamps and are manually controlled. All exit signs are LED units. Most fixtures are in good condition. Lighting fixtures are controlled manually. Interior lighting levels were generally sufficient.

CFL lamps

Auditorium lighting

Incandescent lamps

Grow lamps

Exterior fixtures include wall packs and canopy lights with HID, CFL, or LED lamps. The pole mounted fixtures in the parking lot have LED lamps, and the other roadway pole mounted fixtures have HID lamps. Exterior light fixtures are controlled by a time clock, switch, breaker panel, or photocell, depending on the fixture. The athletic field and tennis court are illuminated with HID lamps and are manually controlled by a breaker panel.

Wall-mount area fixtures

Parking pole-mount fixtures

2.5 Air Handling Systems

Unit Ventilators

Unit ventilators have constant volume fractional horsepower supply fan motors, outside air dampers, and either DX cooling coils or chilled water cooling coils that operate with a building energy management control system. Units also have hot water coils for space heating and reheat applications. This system was upgraded around 2013 and is in good operating condition.

Packaged and Split-System Units

Most of the common area spaces are served by packaged roof top units (RTUs). There are 17 units with hot water heating coils ranging in size from 150 to 500 MBh capacity. Cooling capacities for these units range from 6 to 15 tons each with efficiency ratings between 8 and 12.4 energy efficiency rating (EER). Supply fans are constant volume and have either 3.6 or 5 hp motors. The RTUs are equipped with economizers that are in good condition. Some of the office spaces are served by mini-split roof top units.

Detailed information on the type of unit and cooling and/or heating capacity is in the table below.

Unit	Quantity	Area Served	Size	Efficiency
Packaged AC	4	Rooms 302 (RTU-26), 304 (RTU-18), 305 (RTU-17), 306 (RTU-16)	10.00 tons cooling	12.40 EER
Packaged AC	1	Classroom	6.00 tons cooling	8.10 EER
Packaged AC	5	Gym (RTU-35A, B,C,D), Training Shop 303 (RTU-25)	15.00 tons cooling	12.10 EER
Packaged AC	5	Learning Resource Center (RTU-42), Training Shop 301 (RTU-27), Aux Gyms (RTU-33,37), Gym Corridors (RTU-36)	12.50 tons cooling	12.10 EER
Packaged AC	2	Girls and Boys Lockers (RTU-34,38)	30.00 tons cooling	10.60 EER
Split-System AC	8	Unit Ventilators	3.50 tons cooling	13.00 SEER
Split-System AC	20	Unit Ventilators	3.00 tons cooling	13.00 SEER
Split-System AC	4	Unit Ventilators	4.00 tons cooling	13.00 SEER
Split-System AC	2	Unit Ventilators	5.00 tons cooling	13.00 SEER
Split-System AC	2	Unit Ventilators	2.50 tons cooling	13.00 SEER
Ductless Mini-Split AC	1	Towing Room	1.50 tons cooling	9.36 EER
Ductless Mini-Split HP	1	Gym Offices	1.50 tons cooling 22 MBh heating	11.25 EER 3.51 COP
Ductless Mini-Split AC	2	Offices	0.75 tons cooling	9.00 EER

Air Handlers

The auditorium, cafeteria, computer lab, and some of the classrooms are served by air-handling units. These units have hot water coils for heating and reheat and chilled water coils for cooling. Supply fans are variable volume controlled by variable frequency drives (VFD). Motor sizes range from 1.5 hp to 15 hp each. The units are in good condition.

Unit ventilators

Air-handlers

Packaged units

Programable thermostats

2.6 Heating Hot Water Systems

Six Hydrotherm 2,781 MBh condensing hot water boilers serve the building heating load. The burners are fully-modulating with a nominal efficiency of 92.7%. The boilers are configured in a lead-lag control scheme. Multiple boilers may be required under high load conditions. Installed around 2013, they are in good condition. The hydronic distribution system is a two-pipe heating only system.

The boilers are configured in a variable flow primary distribution with two 50 hp VFD controlled hot water pumps operating with a lead-lag control scheme. The boilers provide hot water for space heating and reheat to air-handing units, rooftop packaged units, and unit ventilators throughout the school.

Condensing boilers

Heating hot water pumps

2.7 Chilled Water Systems

The chiller plant consists of three 224-ton, Daikin air-cooled screw chillers. The chillers are configured in a primary distribution loop with three VFD controlled variable flow pumps. Each pump has a 25 hp motor.

The chiller plant supplies chilled water to air handlers and to a few unit ventilators in classrooms. The chiller plant has a peak load of about 670 tons. The chiller plant is new (chillers installed in 2019) and well maintained.

Air-cooled chillers

Chilled water pumps

2.8 Building Energy Management Systems (EMS)

A Jersey State Controls EMS controls the HVAC equipment, boilers, chillers, air handlers, and the package units. The EMS provides equipment scheduling control and monitors and controls space temperatures, supply air temperatures, humidity, heating water loop temperatures, and chilled water loop temperatures.

2.9 Domestic Hot Water

Hot water is produced with a Bradford White 98 gallon 250 MBh gas-fired storage water heater(s) with an 80% efficiency. The domestic hot water pipes are insulated, and the insulation is in good condition.

Hot water heater

2.10 Food Service Equipment

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

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

Convection ovens

Gas griddles

2.11 Refrigeration

The kitchen has several stand-up refrigerators and freezers with solid doors and a small glass door stand-up refrigerator. There is a freezer chest as well as a refrigerator chest. All equipment is high efficiency and in good condition. The two walk-in refrigerators have an estimated ½ ton compressor each located on the roof above the kitchen area. One has a two-fan evaporator, and another has a one-fan evaporator. The walk-in medium temperature freezer has a 0.625 ton compressor located on the roof above the kitchen area and a two-fan evaporator. The freezer also has an 1,800 Watt electric defroster. The two reach-in coolers have a 0.625 ton compressor located on the roof above the kitchen area and a two-fan evaporator.

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

Stand-up refrigerators

Freezer chest

Reach-in refrigerated case

Evaporator fans

2.12 Plug Load & Vending Machines

The location is doing a great job managing their electrical plug loads. This report makes additional suggestions for ECMs in this area as well as energy efficient best practices. There are approximately 417 computer work stations throughout the facility. Plug loads throughout the building include general café and office equipment. There are classroom typical loads such as laptop carts, projectors, and fans. There are several residential style refrigerators throughout the building that are used to store food and beverages. These vary in condition and efficiency. There are six refrigerated beverage vending machines and three non-refrigerated vending machines. Vending machines are not equipped with occupancy-based controls.

Vending machines

Kiln

Electric domestic appliances

Café appliances

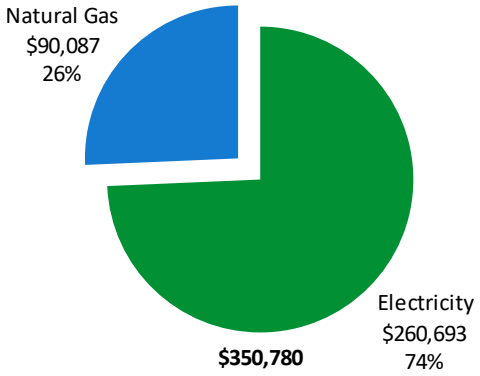
2.13 Water-Using Systems

There are restrooms with toilets, urinals, and sinks. The facility has 100 lavatory faucets with flow rates at either 1.5 or 2.2 gallons per minute (gpm) or higher. Girls and boys locker rooms are infrequently used.

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	2,170,930 kWh	$260,693
Natural Gas	113,066 Therms	$90,087
Total		**$350,780**



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

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

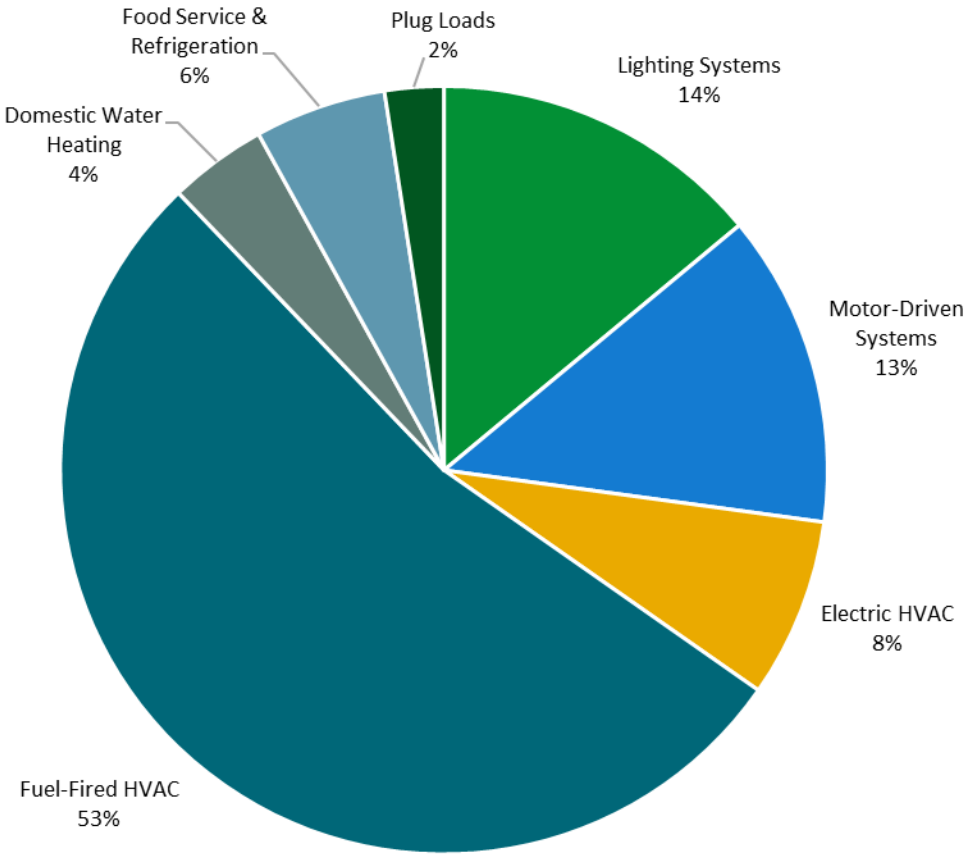
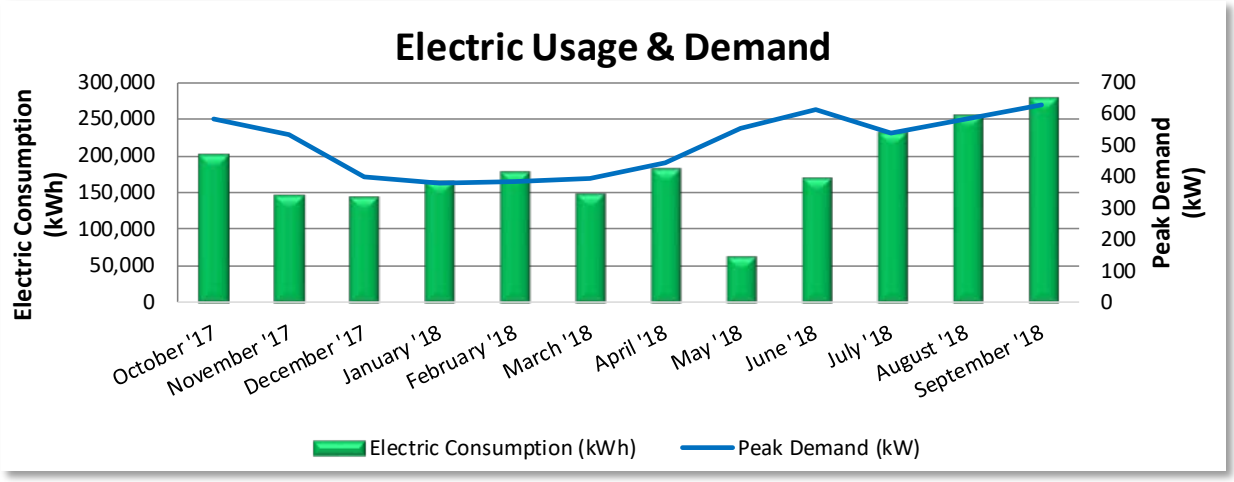


Figure 5 - Energy Balance

3.1 Electricity

PSE&G delivers and produces electricity under rate class Large Power & Lighting and Outdoor Lighting.



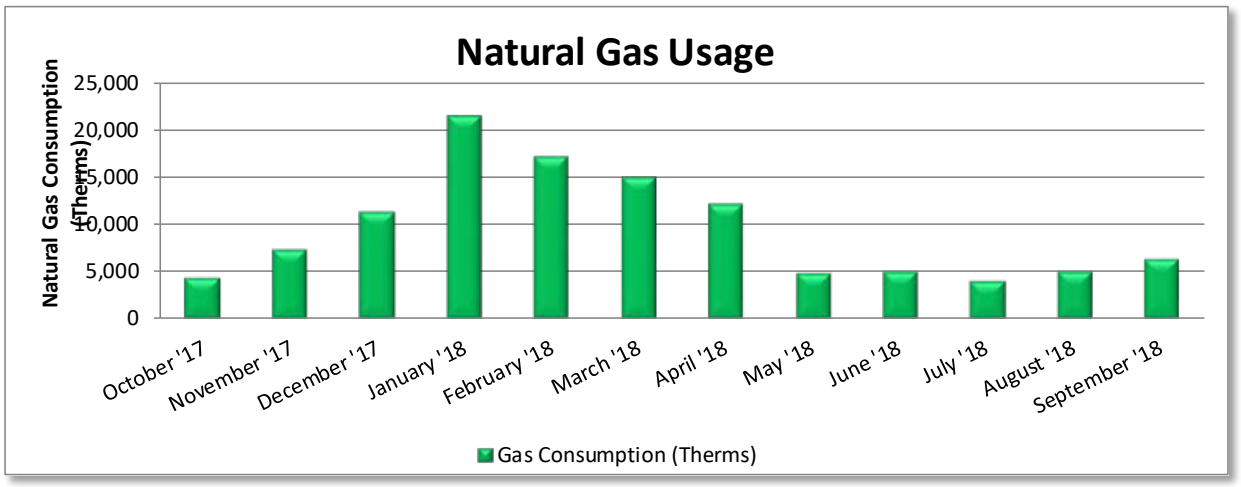
Electric Billing Data					
Period Ending	Days in Period	Electric Usage (kWh)	Demand (kW)	Demand Cost	Total Electric Cost
10/20/17	29	202,317	582	$2,227	$22,180
11/20/17	31	147,396	534	$2,045	$19,599
12/21/17	31	144,759	402	$1,537	$18,493
1/23/18	33	166,574	378	$1,446	$18,121
2/22/18	30	178,425	382	$1,460	$21,030
3/23/18	29	149,131	393	$1,473	$18,644
4/24/18	32	182,639	444	$1,618	$18,985
5/31/18	29	64,676	552	$1,972	$6,767
6/22/18	30	170,983	612	$2,157	$23,017
7/24/18	32	231,351	537	$1,921	$29,602
8/22/18	29	254,819	583	$2,087	$32,553
9/21/18	30	277,860	628	$2,245	$31,702
Totals	**365**	**2,170,930**	**628**	**$22,188**	**$260,693**
Annual	**365**	**2,170,930**	**628**	**$22,188**	**$260,693**

Notes:

- Peak demand of 628 kW occurred in September '18.
- Average demand over the past 12 months was 502 kW.
- The average electric cost over the past 12 months was $0.120/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.
- Electricity use is greatest in the summer months due to cooling loads provided by electric equipment, but a significant drop in usage occurs in May likely due to the summer break of the school.

3.2 Natural Gas

PSE&G delivers and supplies natural gas under rate class Large Volume Gas and General Service Gas.



Gas Billing Data			
Period Ending	**Days in Period**	**Natural Gas Usage (Therms)**	**Natural Gas Cost**
10/20/17	29	4,262	$2,830
11/20/17	31	7,337	$6,636
12/21/17	31	11,207	$9,658
1/23/18	33	21,501	$18,144
2/22/18	30	17,080	$15,985
3/23/18	29	14,851	$13,374
4/24/18	32	12,148	$7,423
5/23/18	29	4,825	$3,111
6/22/18	30	4,868	$3,169
7/24/18	32	3,871	$2,586
8/22/18	29	4,929	$3,193
9/21/18	30	6,185	$3,978
Totals	**365**	**113,066**	**$90,087**
Annual	**365**	**113,066**	**$90,087**

Notes:

- The average gas cost for the past 12 months is $0.797/therm, which is the blended rate used throughout the analysis.
- Gas consumption is greatest in the winter months due to the heating provided by the hot water heating system; however, some gas consumption is also noticeable in other months likely due to the reheat coils throughout the school for dehumidification.

3.3 Benchmarking

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

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

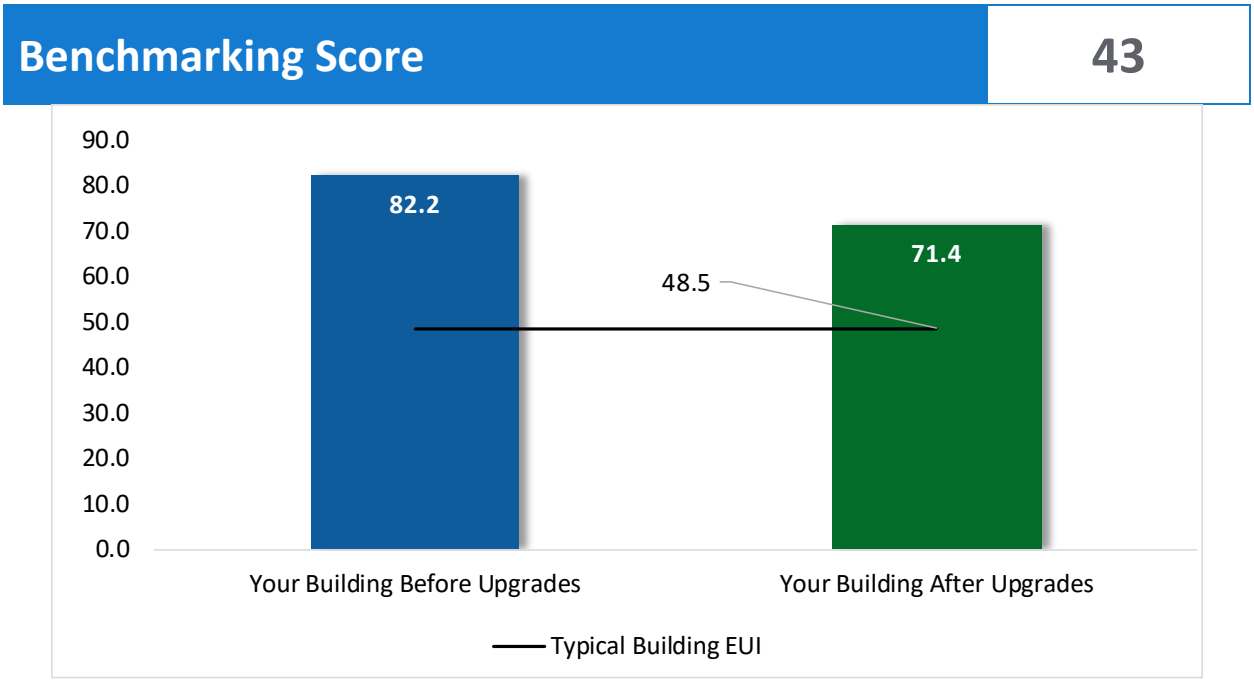


Figure 6 - Energy Use Intensity Comparison[3]

This building performs 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.

[3] Based on all evaluated ECMs

Tracking Your Energy Performance

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

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

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

For more information on ENERGY STAR® and Portfolio Manager®, visit their website[4].

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

4 ENERGY CONSERVATION MEASURES

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

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

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

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

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

#	Energy Conservation Measure	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		**475,027**	**95.9**	**-83**	**$56,382**	**$288,586**	**$109,076**	**$179,510**	**3.2**	**468,633**
ECM 1	Install LED Fixtures	138,339	14.3	-13	$16,510	$169,574	$49,800	$119,774	7.3	137,803
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	2,000	0.5	0	$237	$932	$210	$722	3.0	1,965
ECM 3	Retrofit Fixtures with LED Lamps	334,689	81.1	-70	$39,635	$118,080	$59,066	$59,014	1.5	328,865
Lighting Control Measures		**91,242**	**22.1**	**-19**	**$10,805**	**$101,835**	**$26,040**	**$75,795**	**7.0**	**89,646**
ECM 4	Install Occupancy Sensor Lighting Controls	85,059	20.7	-18	$10,072	$91,260	$16,380	$74,880	7.4	83,571
ECM 5	Install High/Low Lighting Controls	6,183	1.4	-1	$732	$10,575	$9,660	$915	1.2	6,075
Motor Upgrades		**578**	**0.1**	**0**	**$69**	**$2,661**	**$0**	**$2,661**	**38.4**	**582**
ECM 6	Premium Efficiency Motors	578	0.1	0	$69	$2,661	$0	$2,661	38.4	582
Variable Frequency Drive (VFD) Measures		**89,038**	**27.4**	**0**	**$10,692**	**$73,771**	**$15,344**	**$58,427**	**5.5**	**89,660**
ECM 7	Install VFDs on Constant Volume (CV) Fans	89,038	27.4	0	$10,692	$73,771	$15,344	$58,427	5.5	89,660
Electric Unitary HVAC Measures		**2,653**	**2.6**	**0**	**$319**	**$22,510**	**$1,152**	**$21,358**	**67.0**	**2,671**
ECM 8	Install High Efficiency Air Conditioning Units	2,276	2.3	0	$273	$18,911	$876	$18,035	66.0	2,291
ECM 9	Install High Efficiency Heat Pumps	377	0.3	0	$45	$3,599	$276	$3,323	73.4	380
HVAC System Improvements		**9,817**	**0.0**	**161**	**$2,465**	**$43,501**	**$0**	**$43,501**	**17.6**	**28,789**
ECM 10	Implement Demand Control Ventilation (DCV)	9,817	0.0	161	$2,465	$43,501	$0	$43,501	17.6	28,789
Domestic Water Heating Upgrade		**0**	**0.0**	**67**	**$535**	**$717**	**$717**	**$0**	**0.0**	**7,863**
ECM 11	Install Low-Flow DHW Devices	0	0.0	67	$535	$717	$717	$0	0.0	7,863
Food Service & Refrigeration Measures		**16,043**	**1.5**	**0**	**$1,927**	**$9,734**	**$1,710**	**$8,024**	**4.2**	**16,155**
ECM 12	Refrigerator/Freezer Case Electrically Commutated Motors	2,213	0.2	0	$266	$2,123	$560	$1,563	5.9	2,229
ECM 13	Refrigeration Controls	3,131	0.1	0	$376	$5,541	$550	$4,991	13.3	3,153
ECM 14	Vending Machine Control	10,699	1.2	0	$1,285	$2,070	$600	$1,470	1.1	10,773
TOTALS		**684,398**	**149.7**	**127**	**$83,193**	**$543,315**	**$154,039**	**$389,276**	**4.7**	**703,998**

* - 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		**475,027**	**95.9**	**-83**	**$56,382**	**$288,586**	**$109,076**	**$179,510**	**3.2**	**468,633**
ECM 1	Install LED Fixtures	138,339	14.3	-13	$16,510	$169,574	$49,800	$119,774	7.3	137,803
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	2,000	0.5	0	$237	$932	$210	$722	3.0	1,965
ECM 3	Retrofit Fixtures with LED Lamps	334,689	81.1	-70	$39,635	$118,080	$59,066	$59,014	1.5	328,865
Lighting Control Measures		**91,242**	**22.1**	**-19**	**$10,805**	**$101,835**	**$26,040**	**$75,795**	**7.0**	**89,646**
ECM 4	Install Occupancy Sensor Lighting Controls	85,059	20.7	-18	$10,072	$91,260	$16,380	$74,880	7.4	83,571
ECM 5	Install High/Low Lighting Controls	6,183	1.4	-1	$732	$10,575	$9,660	$915	1.2	6,075
Variable Frequency Drive (VFD) Measures		**89,038**	**27.4**	**0**	**$10,692**	**$73,771**	**$15,344**	**$58,427**	**5.5**	**89,660**
ECM 7	Install VFDs on Constant Volume (CV) Fans	89,038	27.4	0	$10,692	$73,771	$15,344	$58,427	5.5	89,660
Domestic Water Heating Upgrade		**0**	**0.0**	**67**	**$535**	**$717**	**$717**	**$0**	**0.0**	**7,863**
ECM 11	Install Low-Flow DHW Devices	0	0.0	67	$535	$717	$717	$0	0.0	7,863
Food Service & Refrigeration Measures		**12,912**	**1.5**	**0**	**$1,551**	**$4,193**	**$1,160**	**$3,033**	**2.0**	**13,002**
ECM 12	Refrigerator/Freezer Case Electrically Commutated Motors	2,213	0.2	0	$266	$2,123	$560	$1,563	5.9	2,229
ECM 14	Vending Machine Control	10,699	1.2	0	$1,285	$2,070	$600	$1,470	1.1	10,773
TOTALS		**668,219**	**146.9**	**-35**	**$79,964**	**$469,102**	**$152,337**	**$316,765**	**4.0**	**668,804**

* - 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		**475,027**	**95.9**	**-83**	**$56,382**	**$288,586**	**$109,076**	**$179,510**	**3.2**	**468,633**
ECM 1	Install LED Fixtures	138,339	14.3	-13	$16,510	$169,574	$49,800	$119,774	7.3	137,803
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	2,000	0.5	0	$237	$932	$210	$722	3.0	1,965
ECM 3	Retrofit Fixtures with LED Lamps	334,689	81.1	-70	$39,635	$118,080	$59,066	$59,014	1.5	328,865

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

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

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

Affected building areas: gymnasium, aux gym, weight room, and exterior 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: rooms 160P and 400A, trophy case, exam room, mechanical room, and the elevator (areas with fluorescent fixtures with T12 tubes).

ECM 3: Retrofit Fixtures with LED Lamps

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

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

Affected building areas: all areas with fluorescent fixtures with T8 tubes; classroom 301 containing fluorescent fixtures with T5 tubes; storage areas, some restrooms, catwalks, display cases, and some exterior fixtures with incandescent lamps and CFLs.

4.2 Lighting Controls

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Control Measures		**91,242**	**22.1**	**-19**	**$10,805**	**$101,835**	**$26,040**	**$75,795**	**7.0**	**89,646**
ECM 4	Install Occupancy Sensor Lighting Controls	85,059	20.7	-18	$10,072	$91,260	$16,380	$74,880	7.4	83,571
ECM 5	Install High/Low Lighting Controls	6,183	1.4	-1	$732	$10,575	$9,660	$915	1.2	6,075

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

ECM 4: Install Occupancy Sensor Lighting Controls

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

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

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

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

Affected building areas: offices, conference rooms, classrooms, gymnasium, auxiliary gym, weight room, media center, MAC center, kitchen, lockers, 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 code requirements for egress. Sensors detect occupancy using ultrasonic and/or infrared sensors. When an occupant enters the space, the lighting fixtures switch to full lighting levels. Fixtures automatically switch back to low level after a predefined period of vacancy. In parking lots and parking garages with significant ambient lighting, this control can sometimes be combined with photocell controls to turn the lights off when there is sufficient daylight.

The controller lowers the light level by dimming the fixture output. Therefore, the controlled fixtures need to have a dimmable ballast or driver. This will need to be 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 and stairwells.

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

4.3 Motors

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Motor Upgrades		**578**	**0.1**	**0**	**$69**	**$2,661**	**$0**	**$2,661**	**38.4**	**582**
ECM 6	Premium Efficiency Motors	578	0.1	0	$69	$2,661	$0	$2,661	38.4	582

ECM 6: Premium Efficiency Motors

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

Affected motors:

Location	Area(s)/System(s) Served	Motor Quantity	Motor Application	HP Per Motor	Additional Motor Description
Mechanical Room	Child Development (AHU-6), Computer Lab (AHU-7,8,9), Faculty (AHU-13)	5	Supply Fan	2.0	Trane AHUs

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

4.4 Variable Frequency Drives (VFD)

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Variable Frequency Drive (VFD) Measures		**89,038**	**27.4**	**0**	**$10,692**	**$73,771**	**$15,344**	**$58,427**	**5.5**	**89,660**
ECM 7	Install VFDs on Constant Volume (CV) Fans	89,038	27.4	0	$10,692	$73,771	$15,344	$58,427	5.5	89,660

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

ECM 7: Install VFDs on 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.

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

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

Affected air handlers: Trane THD150 and 180 units, AHU for boys and girls lockers, Trane THC120 units, and Carrier unit.

4.5 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		**2,653**	**2.6**	**0**	**$319**	**$22,510**	**$1,152**	**$21,358**	**67.0**	**2,671**
ECM 8	Install High Efficiency Air Conditioning Units	2,276	2.3	0	$273	$18,911	$876	$18,035	66.0	2,291
ECM 9	Install High Efficiency Heat Pumps	377	0.3	0	$45	$3,599	$276	$3,323	73.4	380

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

ECM 8: Install High Efficiency Air Conditioning Units

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

Affected units: Carrier 50TJ007 package unit and the Sanyo mini-split AC units.

ECM 9: Install High Efficiency Heat Pumps

We evaluated replacing standard efficiency heat pumps with high efficiency heat pumps. A higher EER or SEER rating indicates a more efficient cooling system and a higher HSPF rating indicates more efficient heating mode. 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 heating and cooling loads, and the estimated annual operating hours.

Affected units: Mitsubishi mini-split HP system.

4.6 HVAC Improvements

#	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)
HVAC System Improvements		**9,817**	**0.0**	**161**	**$2,465**	**$43,501**	**$0**	**$43,501**	**17.6**	**28,789**
ECM 10	Implement Demand Control Ventilation (DCV)	9,817	0.0	161	$2,465	$43,501	$0	$43,501	17.6	28,789

ECM 10: Implement Demand Control Ventilation (DCV)

Demand control ventilation (DCV) monitors the indoor air's carbon dioxide (CO_2) content to measure room occupancy. This data is used to regulate the amount of outdoor air provided to the space for ventilation.

Standard ventilation systems often provide outside air based on a space's estimated maximum occupancy but not actual occupancy. During low occupancy periods, the space may then be over ventilated. This wastes energy through heating and cooling the excess outside air flow. DCV reduces unnecessary outdoor air intake by regulating ventilation based on actual occupancy levels. DCV is most suited for facilities where occupancy levels vary significantly from hour to hour and day to day. We evaluated DCV for the occupied spaces below.

We evaluated the potential for DCV energy savings. Energy savings associated with DCV are based on hours of operation, space occupancy, outside air reduction, and other factors. Energy savings results from eliminating unnecessary ventilation and space conditioning.

Affected building areas: gym and auxiliary gym, learning resource center, auditorium, resource center, and cafeteria.

4.7 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**	**67**	**$535**	**$717**	**$717**	**$0**	**0.0**	**7,863**
ECM 11	Install Low-Flow DHW Devices	0	0.0	67	$535	$717	$717	$0	0.0	7,863

ECM 11: 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.

4.8 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		**16,043**	**1.5**	**0**	**$1,927**	**$9,734**	**$1,710**	**$8,024**	**4.2**	**16,155**
ECM 12	Refrigerator/Freezer Case Electrically Commutated Motors	2,213	0.2	0	$266	$2,123	$560	$1,563	5.9	2,229
ECM 13	Refrigeration Controls	3,131	0.1	0	$376	$5,541	$550	$4,991	13.3	3,153
ECM 14	Vending Machine Control	10,699	1.2	0	$1,285	$2,070	$600	$1,470	1.1	10,773

ECM 12: Refrigerator/Freezer Case Electrically Commutated Motors

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

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

ECM 13: 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 14: 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[5] . 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.

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.

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.

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

HVAC Filter Cleaning and Replacement

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

Boiler Maintenance

Many boiler problems develop slowly over time, so regular inspection and maintenance is essential to keeping the heating system running efficiently and preventing expensive repairs. Annual tune-ups should include a combustion analysis to analyze the exhaust from the boilers and to ensure the boiler is operating safely. 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.

Water Heater Maintenance

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

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

Water Conservation

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

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

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

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

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

Procurement Strategies

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

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

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

6 On-site Generation

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

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

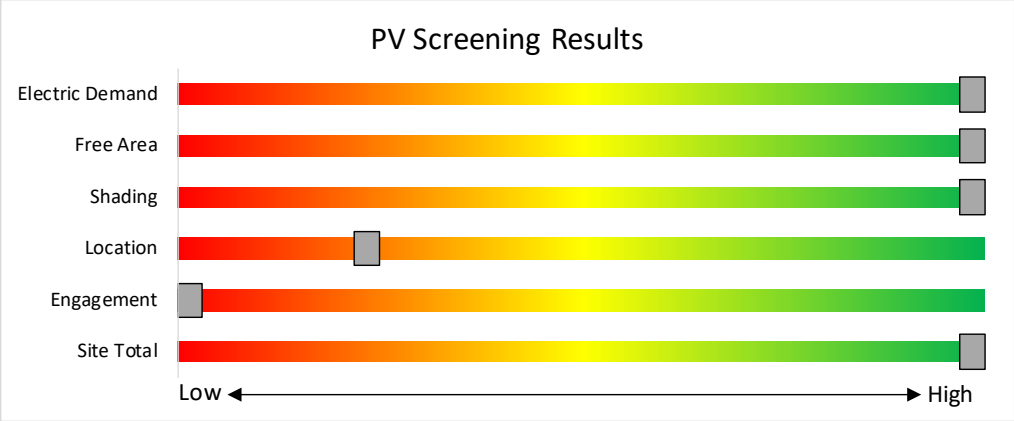
6.1 Solar Photovoltaic

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

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

The amount of free area, ease of installation (location), and the lack of shading elements contribute to the high potential. A PV array located in the parking lot may be feasible. If you are interested in pursuing the installation of PV, we recommend conducting a full feasibility study.

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



Potential	High	
System Potential	500	kW DC STC
Electric Generation	595,685	kWh/yr
Displaced Cost	$71,530	/yr
Installed Cost	$1,690,000	

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 New Jersey**: www.njcleanenergy.com/whysolar.
- **New Jersey Solar Market FAQs**: www.njcleanenergy.com/renewable-energy/program-updates-and-background-information/solar-transition/solar-market-faqs.
- **Approved Solar Installers in the New Jersey 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.

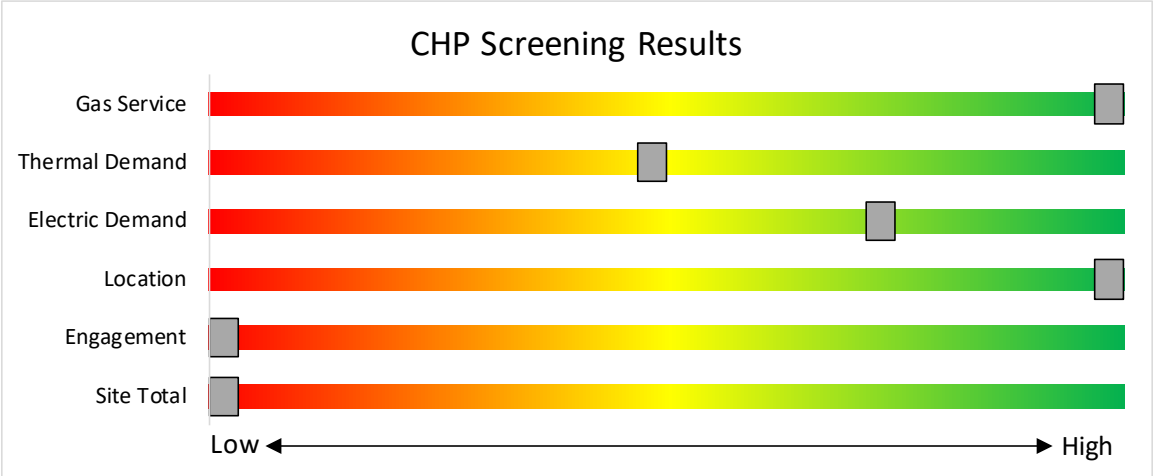
CHP systems typically produce a portion of the electric power used on-site, with the balance of electric power needs supplied by the local utility company. The heat is used to supplement (or replace) existing boilers and provide space heating and/or domestic hot water heating. Waste heat can also be 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 low and 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	100	kW
Electric Generation	815,600	kWh/yr
Thermal Generation	4,771,260	MBtu/yr
Displaced Cost	$64,763	/yr
Installed Cost	$365,000	

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 in 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 efficient equipment based on market trends and new technologies.

Equipment with Prescriptive Incentives Currently Available:

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

Incentives

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

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

How to Participate

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

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

7.2 Direct Install

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

Incentives

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

How to Participate

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

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

7.3 Pay for Performance - Existing Buildings

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

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 descriptions and application can be found at: www.njcleanenergy.com/ESIP.

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

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. SREC's 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 SREC's 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[8].

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[9].

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

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

APPENDIX A: EQUIPMENT INVENTORY & RECOMMENDATIONS

Lighting Inventory & Recommendations

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Main Office	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,816	3, 4	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,943	0.5	2,341	0	$277	$927	$430	1.8
Main Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	260	0	$31	$73	$40	1.1
Main Office	7	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	7	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,943	0.2	851	0	$101	$777	$210	5.6
140K Closet	1	Compact Fluorescent: Three Lamp Two-pin	Wall Switch	S	78	500	3	Relamp	No	1	LED Lamps: Three Lamp Two-pin	Wall Switch	55	500	0.0	13	0	$2	$38	$6	20.7
Mail Area	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,943	0.0	136	0	$16	$37	$20	1.0
140A Copy Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,943	0.1	458	0	$54	$416	$150	4.9
140C Conference Room	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,816	3, 4	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,943	0.2	917	0	$109	$562	$230	3.1
140B Principal	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,816	3, 4	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,943	0.2	917	0	$109	$562	$230	3.1
140B Closet	1	Incandescent: One Lamp Screw-in	Wall Switch	S	60	500	3	Relamp	No	1	LED Lamps: One Lamp Screw-in	Wall Switch	9	500	0.0	28	0	$3	$17	$2	4.6
140L Pawtoy	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,943	0.1	458	0	$54	$416	$150	4.9
Restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	2,816	3	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,816	0.0	50	0	$6	$33	$12	3.5
140D Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,816	3, 4	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,943	0.2	780	0	$92	$489	$190	3.2
Ladies Restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	2,816	3	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,816	0.0	50	0	$6	$33	$12	3.5
140E Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,816	3, 4	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,943	0.2	780	0	$92	$489	$190	3.2
Back Area	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.2	780	0	$92	$489	$190	3.2
140F Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	520	0	$62	$416	$150	4.3
Attendence Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	260	0	$31	$343	$40	9.8
Safe	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,816	0.0	102	0	$12	$37	$20	1.4
Copy Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	260	0	$31	$343	$40	9.8
Security Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	260	0	$31	$343	$40	9.8
Maintenance Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	520	0	$62	$416	$150	4.3
160A Guidence Office	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,816	3, 4	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,943	0.5	2,062	0	$244	$927	$430	2.0
160A Guidence Office	2	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,943	0.1	243	0	$29	$145	$40	3.6
160A Guidence Office	5	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	5	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,943	0.1	608	0	$72	$362	$100	3.6
160A Guidence Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	520	0	$62	$416	$150	4.3

	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
160B Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	520	0	$62	$416	$150	4.3
160C Computer Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	260	0	$31	$343	$40	9.8
160G Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	260	0	$31	$343	$110	7.6
160G Office	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,816	3, 4	Relamp	Yes	1	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,943	0.1	229	0	$27	$73	$40	1.2
160F Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	520	0	$62	$416	$150	4.3
160G Pantry	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	345	0.1	92	0	$11	$416	$150	24.3
160H Storage	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.0	18	0	$2	$37	$20	7.7
160S Copy Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	260	0	$31	$343	$40	9.8
160I Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	260	0	$31	$343	$40	9.8
160R Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	260	0	$31	$343	$40	9.8
160J Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	260	0	$31	$343	$40	9.8
160Q Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	260	0	$31	$343	$40	9.8
160K Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	260	0	$31	$343	$40	9.8
160 Restroom	1	Incandescent: One Lamp Screw-in	Wall Switch	S	60	2,816	3	Relamp	No	1	LED Lamps: One Lamp Screw-in	Wall Switch	9	2,816	0.0	158	0	$19	$17	$2	0.8
160 Mens Restroom	1	Incandescent: One Lamp Screw-in	Wall Switch	S	60	2,816	3	Relamp	No	1	LED Lamps: One Lamp Screw-in	Wall Switch	9	2,816	0.0	158	0	$19	$17	$2	0.8
160N Conference Room	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	520	0	$62	$416	$150	4.3
160P Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	520	0	$62	$416	$150	4.3
160P Office	1	Linear Fluorescent - T12: 4' T12 (40W) - 1L	Wall Switch	S	46	2,816	2, 4	Relamp & Reballast	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,943	0.0	111	0	$13	$51	$10	3.1
401 Classroom	32	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	32	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	1.0	4,162	-1	$493	$1,708	$780	1.9
401 Restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	2,816	3	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,816	0.0	50	0	$6	$33	$12	3.5
401A Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	500	3, 4	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	345	0.1	81	0	$10	$416	$80	34.9
401B Closet	1	Compact Fluorescent: One Lamp Screw-in	Wall Switch	S	32	500	3	Relamp	No	1	LED Lamps: One Lamp Screw-in	Wall Switch	22	500	0.0	5	0	$1	$17	$2	24.4
Custodial Closet	1	Incandescent: One Lamp Screw-in	Wall Switch	S	100	500	3, 4	Relamp	Yes	1	LED Lamps: One Lamp Screw-in	Occupancy Sensor	15	345	0.1	49	0	$6	$17	$2	2.6
Custodial Closet	2	Compact Fluorescent: Three Lamp Two-pin	Wall Switch	S	78	500	3, 4	Relamp	Yes	2	LED Lamps: Three Lamp Two-pin	Occupancy Sensor	55	345	0.1	44	0	$5	$345	$12	63.4
402 Classroom	38	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	38	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	1.1	4,943	-1	$585	$2,198	$970	2.1

	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
402A1 Storage	2	Compact Fluorescent: One Lamp Screw-in	Wall Switch	S	32	500	3, 4	Relamp	Yes	2	LED Lamps: One Lamp Screw-in	Occupancy Sensor	22	345	0.0	18	0	$2	$304	$4	139.4
402 Restroom	1	Incandescent: One Lamp Screw-in	Wall Switch	S	60	2,816	3	Relamp	No	1	LED Lamps: One Lamp Screw-in	Wall Switch	9	2,816	0.0	158	0	$19	$17	$2	0.8
Womens Restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	2,816	3	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,816	0.0	50	0	$6	$33	$12	3.5
403 Classroom	36	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	36	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	1.1	4,682	-1	$554	$2,125	$930	2.2
403C Room	2	Linear Fluorescent - T8: 8' T8 (59W) - 2L	Wall Switch	S	110	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 8' Lamps	Occupancy Sensor	72	1,943	0.1	374	0	$44	$447	$150	6.7
403C Room	1	Incandescent: One Lamp Screw-in	Wall Switch	S	60	2,816	3, 4	Relamp	Yes	1	LED Lamps: One Lamp Screw-in	Occupancy Sensor	9	1,943	0.0	167	0	$20	$17	$2	0.8
403B Room	2	Incandescent: One Lamp Screw-in	Wall Switch	S	60	2,816	3, 4	Relamp	Yes	2	LED Lamps: One Lamp Screw-in	Occupancy Sensor	9	1,943	0.1	333	0	$39	$34	$4	0.8
403B Room	2	Incandescent: One Lamp Screw-in	Wall Switch	S	100	2,816	3, 4	Relamp	Yes	2	LED Lamps: One Lamp Screw-in	Occupancy Sensor	15	1,943	0.1	555	0	$66	$304	$74	3.5
403A Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	260	0	$31	$343	$40	9.8
403 Restroom	1	Incandescent: One Lamp Screw-in	Wall Switch	S	60	2,816	3	Relamp	No	1	LED Lamps: One Lamp Screw-in	Wall Switch	9	2,816	0.0	158	0	$19	$17	$2	0.8
432 Security	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.2	780	0	$92	$489	$190	3.2
432 Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	345	0.1	46	0	$5	$343	$40	55.4
404 Classroom	40	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	40	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	1.2	5,203	-1	$616	$2,271	$1,010	2.0
404 Classo	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
404 Restroom	2	Compact Fluorescent: One Lamp Screw-in	Wall Switch	S	26	2,816	3, 4	Relamp	Yes	2	LED Lamps: One Lamp Screw-in	Occupancy Sensor	18	1,943	0.0	83	0	$10	$304	$4	30.5
404A Closet	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	345	0.1	46	0	$5	$343	$40	55.4
Hallway	13	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 5	Relamp	Yes	13	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,943	0.4	1,691	0	$200	$1,150	$935	1.1
Auditorium	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
E03 Exit	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,816	0.0	102	0	$12	$37	$20	1.4
406 Art Room	27	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	27	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.8	3,512	-1	$416	$1,526	$680	2.0
406A Storage	2	Compact Fluorescent: Two Lamp Screw-in	Wall Switch	S	36	500	3, 4	Relamp	Yes	2	LED Lamps: Two Lamp Screw-in	Occupancy Sensor	25	345	0.0	20	0	$2	$339	$8	136.5
406A Storage	1	Compact Fluorescent: One Lamp Screw-in	Wall Switch	S	18	500	3, 4	Relamp	Yes	1	LED Lamps: One Lamp Screw-in	Occupancy Sensor	13	345	0.0	5	0	$1	$17	$2	25.1
Security Office	6	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,816	3, 4	Relamp	Yes	6	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,943	0.3	1,375	0	$163	$708	$310	2.4
2nd Floor Catwalk Stair	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,816	0.0	204	0	$24	$73	$40	1.4
2nd Floor Catwalk Stair	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
TV Studio	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,816	3, 4	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,943	0.6	2,750	-1	$326	$1,146	$550	1.8
TV Studio	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	500	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	345	0.1	46	0	$5	$343	$40	55.4
Mechanical Storage	2	Compact Fluorescent: One Lamp Screw-in	Wall Switch	S	32	500	3, 4	Relamp	Yes	2	LED Lamps: One Lamp Screw-in	Occupancy Sensor	22	345	0.0	18	0	$2	$34	$4	14.1
Stage Catwalk	3	Compact Fluorescent: One Lamp Two-pin	Wall Switch	S	26	2,816	3	Relamp	No	3	LED Lamps: One Lamp Two-pin	Wall Switch	18	2,816	0.0	72	0	$9	$38	$6	3.7
Stage Catwalk	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
Mechanical Storage	9	Compact Fluorescent: One Lamp Screw-in	Wall Switch	S	32	500	3, 4	Relamp	Yes	9	LED Lamps: One Lamp Screw-in	Occupancy Sensor	22	345	0.1	82	0	$10	$425	$18	42.0
Mechanical Storage	4	Incandescent: One Lamp Screw-in	Wall Switch	S	60	500	3, 4	Relamp	Yes	4	LED Lamps: One Lamp Screw-in	Occupancy Sensor	9	345	0.2	118	0	$14	$69	$8	4.3
Mechanical Storage	2	Incandescent: One Lamp Screw-in	Wall Switch	S	60	500	3, 4	Relamp	Yes	2	LED Lamps: One Lamp Screw-in	Occupancy Sensor	9	345	0.1	59	0	$7	$34	$4	4.3
Auditorium Catwalk	5	Compact Fluorescent: One Lamp Screw-in	Wall Switch	S	13	2,816	3	Relamp	No	5	LED Lamps: One Lamp Screw-in	Wall Switch	9	2,816	0.0	60	0	$7	$86	$10	10.6
TV Studio	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.4	1,561	0	$185	$708	$310	2.2
TV Studio	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
TV Studio Storage	2	Compact Fluorescent: One Lamp Screw-in	Wall Switch	S	26	500	3, 4	Relamp	Yes	2	LED Lamps: One Lamp Screw-in	Occupancy Sensor	18	345	0.0	15	0	$2	$304	$4	171.6
Stage	12	Compact Fluorescent: Three Lamp Two-pin	Wall Switch	S	78	2,816	3, 4	Relamp	Yes	12	LED Lamps: Three Lamp Two-pin	Occupancy Sensor	55	1,943	0.3	1,499	0	$178	$720	$142	3.3
Stage	2	Linear Fluorescent - T8: 8' T8 (59W) - 2L	Wall Switch	S	110	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 8' Lamps	Occupancy Sensor	72	1,943	0.1	374	0	$44	$177	$80	2.2
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
Auditorium	74	Incandescent: One Lamp Screw-in	Wall Switch	S	200	2,816	3, 4	Relamp	Yes	74	LED Lamps: One Lamp Screw-in	Occupancy Sensor	30	1,943	9.6	41,100	-9	$4,867	$2,625	$498	0.4
Auditorium	2	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Auditorium	24	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	2,816	3, 4	Relamp	Yes	24	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	1,943	0.6	2,632	-1	$312	$1,711	$572	3.7
400A Projector	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	260	0	$31	$343	$40	9.8
400A Upstairs	2	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	S	88	2,816	2, 4	Relamp & Reballast	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	421	0	$50	$408	$40	7.4
405 Art Room	36	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	36	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	1.1	4,682	-1	$554	$2,125	$930	2.2
405 Kiln Room	2	Incandescent: One Lamp Screw-in	Wall Switch	S	75	2,816	3, 4	Relamp	Yes	2	LED Lamps: One Lamp Screw-in	Occupancy Sensor	11	1,943	0.1	417	0	$49	$304	$4	6.1
405A Storage	2	Compact Fluorescent: One Lamp Screw-in	Wall Switch	S	32	500	3, 4	Relamp	Yes	2	LED Lamps: One Lamp Screw-in	Occupancy Sensor	22	345	0.0	18	0	$2	$304	$4	139.4
405/4 Storage	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3, 4	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	345	0.2	185	0	$22	$562	$230	15.2

	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
404/5 Connection	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	260	0	$31	$343	$40	9.8
E03 Exit	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,816	0.0	102	0	$12	$37	$20	1.4
407 Band Room	48	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	48	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	1.5	6,243	-1	$739	$2,563	$1,170	1.9
407 Storage	2	Compact Fluorescent: Three Lamp Two-pin	Wall Switch	S	78	500	3, 4	Relamp	Yes	2	LED Lamps: Three Lamp Two-pin	Occupancy Sensor	55	345	0.1	44	0	$5	$345	$12	63.4
407 drum storage	4	Compact Fluorescent: Three Lamp Two-pin	Wall Switch	S	78	500	3, 4	Relamp	Yes	4	LED Lamps: Three Lamp Two-pin	Occupancy Sensor	55	345	0.1	89	0	$11	$420	$24	37.7
407 Hallway	3	Linear Fluorescent - T8: 2' T8 (17W) - 4L	Wall Switch	S	63	2,816	3, 5	Relamp	Yes	3	LED - Linear Tubes: (4) 2' Lamps	High/Low Control	34	1,943	0.1	367	0	$44	$420	$282	3.2
407 Band Office	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,816	3, 4	Relamp	Yes	3	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,943	0.2	687	0	$81	$489	$190	3.7
407 File Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	345	0.1	46	0	$5	$343	$40	55.4
407 File Storage	1	Compact Fluorescent: Three Lamp Two-pin	Wall Switch	S	78	500	3, 4	Relamp	Yes	1	LED Lamps: Three Lamp Two-pin	Occupancy Sensor	55	345	0.0	22	0	$3	$38	$6	12.0
407 File Storage 2	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	500	3, 4	Relamp	Yes	3	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	345	0.2	122	0	$14	$489	$120	25.5
408 Classroom	36	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	36	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	1.1	4,682	-1	$554	$2,125	$930	2.2
408 Stroage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	345	0.1	46	0	$5	$343	$40	55.4
408 Stroage 2	2	LED Lamps: One Lamp Screw-in	Wall Switch	S	10	500	4	None	Yes	2	LED Lamps: One Lamp Screw-in	Occupancy Sensor	10	345	0.0	3	0	$0	$270	$0	668.6
400 Music	13	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	13	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.4	1,691	0	$200	$745	$330	2.1
Winghall	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
Custodial Closet	3	Compact Fluorescent: One Lamp Screw-in	Wall Switch	S	18	500	3, 4	Relamp	Yes	3	LED Lamps: One Lamp Screw-in	Occupancy Sensor	13	345	0.0	15	0	$2	$322	$6	173.6
Maintenance	10	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	10	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,943	0.3	1,215	0	$144	$995	$270	5.0
Maintenance	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
C02 Chase	1	Compact Fluorescent: One Lamp Screw-in	Wall Switch	S	26	2,816	3	Relamp	No	1	LED Lamps: One Lamp Screw-in	Wall Switch	18	2,816	0.0	24	0	$3	$17	$2	5.3
Girls Restroom	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	520	0	$62	$416	$150	4.3
Boys Restroom	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	390	0	$46	$380	$130	5.4
Boys Restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	2,816	3, 4	Relamp	Yes	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,943	0.0	66	0	$8	$33	$12	2.6
Trophy Case	8	Linear Fluorescent - T12: 4' T12 (40W) - 1L	Wall Switch	S	46	2,816	2	Relamp & Reballast	No	8	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,816	0.2	781	0	$92	$404	$80	3.5
Main Hallway	17	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 5	Relamp	Yes	17	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,943	0.5	2,211	0	$262	$1,296	$1,015	1.1
306 Classroom	23	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,816	3, 4	Relamp	Yes	23	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,943	1.2	5,271	-1	$624	$2,220	$1,060	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
Receiving Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	500	3, 4	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	345	0.1	81	0	$10	$416	$80	34.9
Womens Restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	2,816	3	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,816	0.0	50	0	$6	$33	$12	3.5
Faculty Lounge	20	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	20	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,943	0.6	2,430	-1	$288	$1,989	$540	5.0
Faculty Storage	2	Incandescent: One Lamp Screw-in	Wall Switch	S	75	500	3, 4	Relamp	Yes	2	LED Lamps: One Lamp Screw-in	Occupancy Sensor	11	345	0.1	74	0	$9	$304	$4	34.3
Faculty Storage 2	2	Incandescent: One Lamp Screw-in	Wall Switch	S	75	500	3, 4	Relamp	Yes	2	LED Lamps: One Lamp Screw-in	Occupancy Sensor	11	345	0.1	74	0	$9	$304	$4	34.3
Mens Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,816	0.0	102	0	$12	$37	$20	1.4
Plumbing Storage	1	Compact Fluorescent: One Lamp Screw-in	Wall Switch	S	32	500	3, 4	Relamp	Yes	1	LED Lamps: One Lamp Screw-in	Occupancy Sensor	22	345	0.0	9	0	$1	$287	$2	264.7
Plumbing Storage	1	Incandescent: One Lamp Screw-in	Wall Switch	S	75	500	3, 4	Relamp	Yes	1	LED Lamps: One Lamp Screw-in	Occupancy Sensor	11	345	0.0	37	0	$4	$17	$2	3.5
E06 Exit	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,816	0.0	102	0	$12	$37	$20	1.4
Electric Room	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	520	0	$62	$416	$150	4.3
303 Classroom	32	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	32	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	1.0	4,162	-1	$493	$1,708	$780	1.9
303C Locker	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	520	0	$62	$416	$150	4.3
303A Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	260	0	$31	$343	$110	7.6
303B Storage	6	Compact Fluorescent: Two Lamp Two-pin	Wall Switch	S	52	500	3, 4	Relamp	Yes	6	LED Lamps: Two Lamp Two-pin	Occupancy Sensor	36	345	0.1	89	0	$11	$420	$24	37.7
302A plawig	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.4	1,561	0	$185	$708	$310	2.2
303D Storage	3	Incandescent: One Lamp Screw-in	Wall Switch	S	60	500	3, 4	Relamp	Yes	3	LED Lamps: One Lamp Screw-in	Occupancy Sensor	9	345	0.1	89	0	$11	$322	$6	30.0
303D Storage	1	Compact Fluorescent: One Lamp Screw-in	Wall Switch	S	26	500	3, 4	Relamp	Yes	1	LED Lamps: One Lamp Screw-in	Occupancy Sensor	18	345	0.0	7	0	$1	$17	$2	17.4
303 Classroom	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
303 Conference Room	2	Incandescent: One Lamp Screw-in	Wall Switch	S	60	2,816	3, 4	Relamp	Yes	2	LED Lamps: One Lamp Screw-in	Occupancy Sensor	9	1,943	0.1	333	0	$39	$304	$4	7.6
Kitchen Hallway	4	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,943	0.1	486	0	$58	$560	$150	7.1
Kitchen Restroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	260	0	$31	$343	$40	9.8
Kitchen Day Storage	1	Incandescent: One Lamp Screw-in	Wall Switch	S	60	500	3, 4	Relamp	Yes	1	LED Lamps: One Lamp Screw-in	Occupancy Sensor	9	345	0.0	30	0	$4	$287	$2	81.4
Kitchen Day Storage	1	Compact Fluorescent: One Lamp Screw-in	Wall Switch	S	26	500	3, 4	Relamp	Yes	1	LED Lamps: One Lamp Screw-in	Occupancy Sensor	18	345	0.0	7	0	$1	$17	$2	17.4
Kitchen AHU Room	2	LED Lamps: One Lamp Screw-in	Wall Switch	S	10	2,816		None	No	2	LED Lamps: One Lamp Screw-in	Wall Switch	10	2,816	0.0	0	0	$0	$0	$0	0.0
Kitchen Hallway	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0

	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
Kitchen Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	345	0.1	46	0	$5	$343	$40	55.4
Electrical Storage	1	LED Lamps: One Lamp Screw-in	Wall Switch	S	10	500		None	No	1	LED Lamps: One Lamp Screw-in	Wall Switch	10	500	0.0	0	0	$0	$0	$0	0.0
302 Classroom	45	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	45	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	1.4	5,853	-1	$693	$2,453	$1,110	1.9
302D Locker	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	520	0	$62	$416	$150	4.3
302C Storage	3	Compact Fluorescent: Three Lamp Two-pin	Wall Switch	S	78	500	3, 4	Relamp	Yes	3	LED Lamps: Three Lamp Two-pin	Occupancy Sensor	55	345	0.1	67	0	$8	$383	$18	46.3
302B Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	260	0	$31	$343	$40	9.8
302 Classroom	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
302 Loft	5	Incandescent: One Lamp Screw-in	Wall Switch	S	60	2,816	3, 4	Relamp	Yes	5	LED Lamps: One Lamp Screw-in	Occupancy Sensor	9	1,943	0.2	833	0	$99	$356	$10	3.5
301 Classroom	39	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	39	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	1.2	5,073	-1	$601	$2,234	$990	2.1
301 Classroom	12	Linear Fluorescent - T5: 4' T5 (28W) - 8L	Wall Switch	S	240	2,816	3, 4	Relamp	Yes	12	LED - Linear Tubes: (8) 4' Lamps	Occupancy Sensor	116	1,943	1.4	5,946	-1	$704	$2,023	$1,030	1.4
301 Classroom	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
301D Storage	6	Compact Fluorescent: One Lamp Screw-in	Wall Switch	S	26	500	3, 4	Relamp	Yes	6	LED Lamps: One Lamp Screw-in	Occupancy Sensor	18	345	0.1	44	0	$5	$373	$12	68.8
301A Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	260	0	$31	$343	$40	9.8
301B Restroom	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	390	0	$46	$380	$130	5.4
301A Storage	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	345	0.4	277	0	$33	$708	$240	14.3
301 Loft	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.2	650	0	$77	$453	$170	3.7
Cafeteria Hallway	11	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 5	Relamp	Yes	11	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,943	0.3	1,431	0	$169	$852	$670	1.1
Cafeteria Hallway	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Cafeteria	80	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,816	3, 4	Relamp	Yes	80	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,943	4.3	18,333	-4	$2,171	$7,192	$3,550	1.7
Cafeteria	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	1	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,943	0.0	122	0	$14	$72	$20	3.6
Cafeteria	4	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Cafeteria Storage	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.0	18	0	$2	$37	$20	7.7
Kitchen Office	1	Compact Fluorescent: One Lamp Screw-in	Wall Switch	S	26	2,816	3	Relamp	No	1	LED Lamps: One Lamp Screw-in	Wall Switch	18	2,816	0.0	24	0	$3	$17	$2	5.3
Kitchen Ladies Lockers	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	260	0	$31	$343	$40	9.8
Kitchen	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	7	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.2	910	0	$108	$526	$210	2.9

	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
Kitchen Walkin Cooler	1	LED Lamps: One Lamp Screw-in	Wall Switch	S	10	2,816		None	No	1	LED Lamps: One Lamp Screw-in	Wall Switch	10	2,816	0.0	0	0	$0	$0	$0	0.0
Kitchen Walkin Freezer	1	LED Lamps: One Lamp Screw-in	Wall Switch	S	10	2,816		None	No	1	LED Lamps: One Lamp Screw-in	Wall Switch	10	2,816	0.0	0	0	$0	$0	$0	0.0
Kitchen	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	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	520	0	$62	$416	$150	4.3
Boys Restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	2,816	3, 4	Relamp	Yes	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,943	0.0	66	0	$8	$33	$12	2.6
C01 Classroom	1	LED Lamps: One Lamp Screw-in	Wall Switch	S	10	2,816		None	No	1	LED Lamps: One Lamp Screw-in	Wall Switch	10	2,816	0.0	0	0	$0	$0	$0	0.0
Girls Restroom	1	LED Lamps: One Lamp Screw-in	Wall Switch	S	10	2,816		None	No	1	LED Lamps: One Lamp Screw-in	Wall Switch	10	2,816	0.0	0	0	$0	$0	$0	0.0
Custodial Closet	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	500	3	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	500	0.0	9	0	$1	$33	$12	19.7
Faculty Hallway	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 5	Relamp	Yes	10	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,943	0.3	1,301	0	$154	$815	$650	1.1
Faculty Hallway	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Nurse Hallway	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,816	3, 5	Relamp	Yes	8	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	1,943	0.4	1,561	0	$185	$888	$690	1.1
Nurse Hallway	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Office Testing	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,816	0.0	102	0	$12	$37	$20	1.4
127 Classroom	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.5	2,081	0	$246	$854	$390	1.9
128 Classroom	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.5	2,081	0	$246	$854	$390	1.9
129 Classroom	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.5	2,081	0	$246	$854	$390	1.9
Calss Hallway	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 5	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,943	0.2	780	0	$92	$444	$345	1.1
E07 Hallway	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,816	3, 5	Relamp	Yes	16	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	1,943	0.7	3,122	-1	$370	$1,551	$1,155	1.1
E07 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
E07 Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	345	0.1	46	0	$5	$343	$40	55.4
Media center	56	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	56	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,943	1.6	6,805	-1	$806	$5,138	$1,400	4.6
Media center	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
Media center	36	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,816	3, 4	Relamp	Yes	36	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,943	1.6	7,024	-1	$832	$2,782	$1,290	1.8
130D Office	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.3	1,171	0	$139	$599	$250	2.5
130C Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	260	0	$31	$343	$40	9.8

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
130B Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	520	0	$62	$416	$150	4.3
130E Computer Storage	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	345	0.1	92	0	$11	$416	$80	30.7
123 Classroom	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.5	2,081	0	$246	$854	$390	1.9
122 Classroom	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.5	2,081	0	$246	$854	$390	1.9
119 Office	6	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,816	3, 4	Relamp	Yes	6	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,943	0.3	1,375	0	$163	$708	$310	2.4
121 Classroom	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.5	2,081	0	$246	$854	$390	1.9
Offices	4	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,943	0.1	486	0	$58	$560	$150	7.1
Eng	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,816	0.0	204	0	$24	$73	$40	1.4
Eng	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,816	0.0	204	0	$24	$73	$40	1.4
Dept lines	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	260	0	$31	$343	$40	9.8
Math Department	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	260	0	$31	$343	$40	9.8
Dpeartment Head	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	260	0	$31	$343	$40	9.8
119 VP Office	6	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,816	3, 4	Relamp	Yes	6	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,943	0.3	1,375	0	$163	$708	$310	2.4
120 Classroom	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.5	2,081	0	$246	$854	$390	1.9
118 Classroom	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.3	1,171	0	$139	$599	$250	2.5
Room 119	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.3	1,301	0	$154	$635	$270	2.4
Room 117	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.3	1,301	0	$154	$635	$270	2.4
Custodial Closet	2	LED Lamps: One Lamp Screw-in	Wall Switch	S	10	500	4	None	Yes	2	LED Lamps: One Lamp Screw-in	Occupancy Sensor	10	345	0.0	3	0	$0	$270	$0	668.6
116 Classroom	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.3	1,171	0	$139	$599	$250	2.5
115 Classroom	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.3	1,171	0	$139	$599	$250	2.5
History Hallway	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 5	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,943	0.5	1,951	0	$231	$1,223	$975	1.1
History 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
114 Classroom	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.3	1,171	0	$139	$599	$250	2.5
112 Classroom	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.3	1,171	0	$139	$599	$250	2.5
Storage	2	Compact Fluorescent: One Lamp Screw-in	Wall Switch	S	32	500	3, 4	Relamp	Yes	2	LED Lamps: One Lamp Screw-in	Occupancy Sensor	22	345	0.0	18	0	$2	$304	$4	139.4

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Room 113	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.4	1,561	0	$185	$708	$310	2.2
Hallway	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 5	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,943	0.2	650	0	$77	$408	$325	1.1
Boys Restroom	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.2	780	0	$92	$489	$190	3.2
Faculty Mens RR	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,816	0.0	102	0	$12	$37	$20	1.4
C04 Change Room	1	Compact Fluorescent: One Lamp Screw-in	Wall Switch	S	26	2,816	3	Relamp	No	1	LED Lamps: One Lamp Screw-in	Wall Switch	18	2,816	0.0	24	0	$3	$17	$2	5.3
111 Classroom	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.3	1,171	0	$139	$599	$250	2.5
Storage	2	Incandescent: One Lamp Screw-in	Wall Switch	S	75	500	3, 4	Relamp	Yes	2	LED Lamps: One Lamp Screw-in	Occupancy Sensor	11	345	0.1	74	0	$9	$304	$4	34.3
110 Computer Lab	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.5	1,951	0	$231	$818	$370	1.9
110 Closet	1	Incandescent: One Lamp Screw-in	Wall Switch	S	75	500	3	Relamp	No	1	LED Lamps: One Lamp Screw-in	Wall Switch	11	500	0.0	35	0	$4	$27	$6	5.1
Media Cener Hallway	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 5	Relamp	Yes	7	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,943	0.2	910	0	$108	$706	$590	1.1
Faculty Womens RR	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,816	0.0	102	0	$12	$37	$20	1.4
Girls Restroom	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	520	0	$62	$416	$150	4.3
109 Girls PE	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.4	1,561	0	$185	$708	$310	2.2
109 Storage	1	Compact Fluorescent: One Lamp Screw-in	Wall Switch	S	26	500	3	Relamp	No	1	LED Lamps: One Lamp Screw-in	Wall Switch	18	500	0.0	4	0	$1	$17	$2	30.0
Storage	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.0	18	0	$2	$37	$20	7.7
Girls PE Hallway	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 5	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,943	0.2	780	0	$92	$444	$345	1.1
Girls PE 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
108 Classroom	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.5	2,081	0	$246	$854	$390	1.9
107 Classroom	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.5	2,081	0	$246	$854	$390	1.9
106 Classroom	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.5	2,081	0	$246	$854	$390	1.9
C03 Chase Access	1	Incandescent: One Lamp Screw-in	Wall Switch	S	75	2,816	3	Relamp	No	1	LED Lamps: One Lamp Screw-in	Wall Switch	11	2,816	0.0	197	0	$23	$17	$2	0.7
105 Classroom	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.3	1,301	0	$154	$635	$270	2.4
104 Classroom	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.5	2,081	0	$246	$854	$390	1.9
103 Classroom	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.3	1,301	0	$154	$635	$270	2.4
102 Classroom	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.5	2,081	0	$246	$854	$390	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
Bookstore	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,943	0.1	458	0	$54	$416	$150	4.9
101 Classroom	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.5	2,081	0	$246	$854	$390	1.9
GMRE01	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	260	0	$31	$343	$110	7.6
GMRE01	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.0	130	0	$15	$37	$20	1.1
126 Clasroom	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.5	2,081	0	$246	$854	$390	1.9
125 Classroom	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.5	2,081	0	$246	$854	$390	1.9
124 Classroom	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.5	2,081	0	$246	$854	$390	1.9
125 Hallway	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 5	Relamp	Yes	7	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,943	0.2	910	0	$108	$706	$590	1.1
125 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
AP Suite	6	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,816	3, 4	Relamp	Yes	6	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,943	0.3	1,375	0	$163	$708	$310	2.4
AP Storage 1	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	345	0.1	46	0	$5	$343	$40	55.4
AP Suite 3	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	260	0	$31	$343	$110	7.6
AP Suite 4	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	260	0	$31	$343	$110	7.6
AP Suite 2	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	260	0	$31	$343	$110	7.6
AP Suite 1	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	260	0	$31	$343	$110	7.6
Hallway	14	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 5	Relamp	Yes	14	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,943	0.4	1,821	0	$216	$1,186	$955	1.1
Nurse Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	520	0	$62	$416	$150	4.3
Nurse Waiting Room	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.2	650	0	$77	$453	$170	3.7
Nurse Restroom	2	Compact Fluorescent: One Lamp Screw-in	Wall Switch	S	18	2,816	3, 4	Relamp	Yes	2	LED Lamps: One Lamp Screw-in	Occupancy Sensor	13	1,943	0.0	58	0	$7	$304	$74	33.8
Nurse Restroom 2	1	LED Lamps: One Lamp Screw-in	Wall Switch	S	10	2,816		None	No	1	LED Lamps: One Lamp Screw-in	Wall Switch	10	2,816	0.0	0	0	$0	$0	$0	0.0
Exam Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	2,816	3, 4	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,943	0.0	68	0	$8	$288	$80	25.8
Exam Room	1	Linear Fluorescent - T12: 4' T12 (40W) - 1L	Wall Switch	S	46	2,816	2, 4	Relamp & Reballast	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,943	0.0	111	0	$13	$51	$10	3.1
Exam Room	1	Linear Fluorescent - T12: 4' T12 (40W) - 1L	Wall Switch	S	46	2,816	2, 4	Relamp & Reballast	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,943	0.0	111	0	$13	$51	$10	3.1
Exam Room 3	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	260	0	$31	$343	$40	9.8
E01 Exit	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.2	780	0	$92	$489	$190	3.2

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
E01 Exit	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
Stairs201	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	S	17	2,816	5	None	Yes	2	LED - Linear Tubes: (2) 2' Lamps	High/Low Control	17	1,943	0.0	33	0	$4	$225	$0	58.2
Room 202	23	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	23	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.7	2,992	-1	$354	$1,380	$600	2.2
202 Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,943	0.1	458	0	$54	$416	$150	4.9
Custodial Closet	1	Compact Fluorescent: One Lamp Screw-in	Wall Switch	S	32	500	3	Relamp	No	1	LED Lamps: One Lamp Screw-in	Wall Switch	22	500	0.0	5	0	$1	$17	$2	24.4
Room 201	23	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	23	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.7	2,992	-1	$354	$1,380	$600	2.2
201 Storage	2	Incandescent: One Lamp Screw-in	Wall Switch	S	75	500	3, 4	Relamp	Yes	2	LED Lamps: One Lamp Screw-in	Occupancy Sensor	11	345	0.1	74	0	$9	$304	$4	34.3
Office 1	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	260	0	$31	$343	$40	9.8
Office 2	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	260	0	$31	$343	$40	9.8
2nd Floor Mechanical Room	5	LED Lamps: One Lamp Screw-in	Wall Switch	S	10	2,816		None	No	5	LED Lamps: One Lamp Screw-in	Wall Switch	10	2,816	0.0	0	0	$0	$0	$0	0.0
Room 222	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.4	1,561	0	$185	$708	$310	2.2
222 Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	260	0	$31	$343	$40	9.8
222A Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.4	1,561	0	$185	$708	$310	2.2
222 Hallway	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 5	Relamp	Yes	7	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,943	0.2	910	0	$108	$706	$590	1.1
222 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
Mechanical Room	2	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	S	88	2,816	2	Relamp & Reballast	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,816	0.1	366	0	$43	$138	$40	2.3
Mechanical Room	4	Compact Fluorescent: One Lamp Screw-in	Wall Switch	S	32	2,816	3	Relamp	No	4	LED Lamps: One Lamp Screw-in	Wall Switch	22	2,816	0.0	119	0	$14	$69	$8	4.3
Bowling Storage	3	Incandescent: One Lamp Screw-in	Wall Switch	S	60	500	3, 4	Relamp	Yes	3	LED Lamps: One Lamp Screw-in	Occupancy Sensor	9	345	0.1	89	0	$11	$322	$6	30.0
Bowling Storage	3	Compact Fluorescent: One Lamp Screw-in	Wall Switch	S	26	500	3, 4	Relamp	Yes	3	LED Lamps: One Lamp Screw-in	Occupancy Sensor	18	345	0.0	22	0	$3	$52	$6	17.4
Room 223	30	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	30	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.9	3,902	-1	$462	$1,635	$740	1.9
Room 227	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,816	3, 4	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,943	0.3	1,171	0	$139	$599	$250	2.5
Exit E07	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	390	0	$46	$380	$130	5.4
Stairs S07	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	S	17	2,816	5	None	Yes	2	LED - Linear Tubes: (2) 2' Lamps	High/Low Control	17	1,943	0.0	33	0	$4	$225	$0	58.2
Class 220	30	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	30	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.9	3,902	-1	$462	$1,635	$740	1.9
Room 219	30	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	30	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.9	3,902	-1	$462	$1,635	$740	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
219 Prep Room	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	7	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.2	910	0	$108	$526	$210	2.9
Room 218	30	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	30	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.9	3,902	-1	$462	$1,635	$740	1.9
217A ESL	14	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	14	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.4	1,821	0	$216	$781	$350	2.0
217 Classroom	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.6	2,601	-1	$308	$1,270	$540	2.4
216 Science Lab	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.5	1,951	0	$231	$818	$370	1.9
216 Prep Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	390	0	$46	$380	$130	5.4
Room 215	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.5	1,951	0	$231	$818	$370	1.9
224 Classroom	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	7	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.2	910	0	$108	$526	$210	2.9
224 Cloaset	2	Incandescent: One Lamp Screw-in	Wall Switch	S	75	2,816	3, 4	Relamp	Yes	2	LED Lamps: One Lamp Screw-in	Occupancy Sensor	11	1,943	0.1	417	0	$49	$324	$12	6.3
Custodial Closet	1	Incandescent: One Lamp Screw-in	Wall Switch	S	60	500	3	Relamp	No	1	LED Lamps: One Lamp Screw-in	Wall Switch	9	500	0.0	28	0	$3	$17	$2	4.6
Display Case	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	2,816	3	Relamp	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,816	0.0	54	0	$6	$18	$10	1.3
Mechanical Room	2	Incandescent: One Lamp Screw-in	Wall Switch	S	60	2,816	3	Relamp	No	2	LED Lamps: One Lamp Screw-in	Wall Switch	9	2,816	0.1	316	0	$37	$34	$4	0.8
Mechanical Room	1	Compact Fluorescent: One Lamp Screw-in	Wall Switch	S	18	2,816	3	Relamp	No	1	LED Lamps: One Lamp Screw-in	Wall Switch	13	2,816	0.0	17	0	$2	$17	$2	7.7
214 Chemistry Room	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.5	2,081	0	$246	$854	$390	1.9
214 Prep Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	260	0	$31	$343	$40	9.8
Room 211	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.5	2,081	0	$246	$854	$390	1.9
211 Prep Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	260	0	$31	$343	$40	9.8
212 Biologoly Lab	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.5	2,081	0	$246	$854	$390	1.9
213 Prep Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	390	0	$46	$380	$130	5.4
213 Lab	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.5	2,081	0	$246	$854	$390	1.9
Exit E08	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	7	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.2	910	0	$108	$526	$210	2.9
Stairsa 03	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	S	17	2,816		None	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,816	0.0	0	0	$0	$0	$0	0.0
E08 storage	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.0	18	0	$2	$37	$20	7.7
Science Hallway	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 5	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,943	0.5	2,341	0	$277	$1,332	$1,035	1.1
Science 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

	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	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.2	780	0	$92	$489	$190	3.2
Mens Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,816	0.0	102	0	$12	$37	$20	1.4
C06 Chase Access	1	LED Lamps: One Lamp Screw-in	Wall Switch	S	10	2,816		None	No	1	LED Lamps: One Lamp Screw-in	Wall Switch	10	2,816	0.0	0	0	$0	$0	$0	0.0
225 Classroom	56	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,816	3, 4	Relamp	Yes	56	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,943	2.5	10,926	-2	$1,294	$4,147	$1,960	1.7
225 Classroom	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
225 Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	520	0	$62	$416	$150	4.3
225 Storage	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	345	0.1	92	0	$11	$416	$80	30.7
225 Office	2	Incandescent: Three Lamp Pendants	Wall Switch	S	225	2,816	3, 4	Relamp	Yes	2	LED Lamps: Three Lamp Pendants	Occupancy Sensor	34	1,943	0.3	1,250	0	$148	$373	$82	2.0
225 Hallway	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 5	Relamp	Yes	7	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,943	0.2	910	0	$108	$706	$590	1.1
225 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
Girls Restroom	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	520	0	$62	$416	$150	4.3
Womens Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,816	0.0	102	0	$12	$37	$20	1.4
Electric Storage	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3, 4	Relamp	Yes	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	345	0.3	231	0	$27	$635	$200	15.9
S02 Stairs	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	S	17	2,816	5	None	Yes	2	LED - Linear Tubes: (2) 2' Lamps	High/Low Control	17	1,943	0.0	33	0	$4	$225	$0	58.2
Exit E10	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.2	650	0	$77	$453	$170	3.7
210 Classroom	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.5	2,081	0	$246	$854	$390	1.9
209 Classroom	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.5	2,081	0	$246	$854	$390	1.9
Room 208	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.5	2,081	0	$246	$854	$390	1.9
C05 Chase Access	1	Incandescent: One Lamp Screw-in	Wall Switch	S	60	2,816	3	Relamp	No	1	LED Lamps: One Lamp Screw-in	Wall Switch	9	2,816	0.0	158	0	$19	$17	$2	0.8
206 Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,816	3, 4	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,943	0.2	917	0	$109	$562	$230	3.1
Office 1 206	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	520	0	$62	$416	$150	4.3
Office 2 206	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	520	0	$62	$416	$150	4.3
Room 205	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.5	2,081	0	$246	$854	$390	1.9
Room 207	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.5	2,081	0	$246	$854	$390	1.9
Room 204	21	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	21	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.6	2,731	-1	$323	$1,307	$560	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
204 Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	260	0	$31	$343	$110	7.6
Room 203	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.5	2,081	0	$246	$854	$390	1.9
Main Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	260	0	$31	$343	$40	9.8
School Store	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.3	1,171	0	$139	$599	$250	2.5
Math Hallway	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 5	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,943	0.5	2,341	0	$277	$1,332	$1,035	1.1
Math 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
221 A Calssroom	30	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	30	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.9	3,902	-1	$462	$1,635	$740	1.9
Mac Center Hallway	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 5	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,943	0.2	1,041	0	$123	$742	$610	1.1
Mac Center 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
Mac center	24	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,816	3, 4	Relamp	Yes	24	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,943	1.1	4,682	-1	$554	$1,855	$860	1.8
Mac Center	12	Incandescent: One Lamp Screw-in	Wall Switch	S	100	2,816	3, 4	Relamp	Yes	12	LED Lamps: One Lamp Screw-in	Occupancy Sensor	15	1,943	0.8	3,332	-1	$395	$363	$72	0.7
Mac Server Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	260	0	$31	$343	$110	7.6
Mac Center	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
Elevator	2	Linear Fluorescent - T12: 4' T12 (40W) - 1L	Wall Switch	S	46	2,816	2	Relamp & Reballast	No	2	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,816	0.0	195	0	$23	$101	$20	3.5
Stairs S01	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	S	29	2,816	5	None	Yes	2	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,943	0.0	56	0	$7	$225	$0	34.1
Exit E01	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.2	780	0	$92	$489	$190	3.2
E01 Storage	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.0	18	0	$2	$37	$20	7.7
Girls Locker Room	24	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	24	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.7	3,122	-1	$370	$1,416	$620	2.2
Girls Restroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	260	0	$31	$343	$40	9.8
Storage 111	1	Incandescent: One Lamp Screw-in	Wall Switch	S	60	500	3	Relamp	No	1	LED Lamps: One Lamp Screw-in	Wall Switch	9	500	0.0	28	0	$3	$17	$2	4.6
Girls Showers	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	390	0	$46	$110	$60	1.1
Girls Showers	9	Compact Fluorescent: Two Lamp 4-Pin	Wall Switch	S	52	2,816	3, 4	Relamp	Yes	9	LED Lamps: Two Lamp 4-Pin	Occupancy Sensor	36	1,943	0.2	749	0	$89	$495	$106	4.4
GLR Storage	2	Compact Fluorescent: Two Lamp 4-Pin	Wall Switch	S	52	500	3, 4	Relamp	Yes	2	LED Lamps: Two Lamp 4-Pin	Occupancy Sensor	36	345	0.0	30	0	$4	$320	$8	89.1
L15 Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	260	0	$31	$343	$40	9.8
L16 Coach Dressing Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	260	0	$31	$343	$40	9.8

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
L16 Crestroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	260	0	$31	$343	$40	9.8
L18 Team Room	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.2	650	0	$77	$453	$170	3.7
L18 Storage	2	Incandescent: One Lamp Screw-in	Wall Switch	S	60	500	3, 4	Relamp	Yes	2	LED Lamps: One Lamp Screw-in	Occupancy Sensor	9	345	0.1	59	0	$7	$304	$4	42.9
GLR	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
GLR Closet	2	Compact Fluorescent: Three Lamp Two-pin	Wall Switch	S	78	500	3, 4	Relamp	Yes	2	LED Lamps: Three Lamp Two-pin	Occupancy Sensor	55	345	0.1	44	0	$5	$345	$12	63.4
Gym 500	48	Metal Halide: (1) 250W Lamp	Wall Switch	S	295	2,816	1, 4	Fixture Replacement	Yes	48	LED - Fixtures: High-Bay	Occupancy Sensor	89	1,943	8.1	34,783	-7	$4,119	$38,004	$14,610	5.7
Gym 500	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
Gym Storage	2	Incandescent: One Lamp Screw-in	Wall Switch	S	60	500	3, 4	Relamp	Yes	2	LED Lamps: One Lamp Screw-in	Occupancy Sensor	9	345	0.1	59	0	$7	$304	$4	42.9
Weight Room	24	Metal Halide: (1) 250W Lamp	Wall Switch	S	295	2,816	1, 4	Fixture Replacement	Yes	24	LED - Fixtures: Low-Bay	Occupancy Sensor	89	1,943	4.0	17,391	-4	$2,059	$15,551	$7,340	4.0
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
Weight Room Storage	2	Incandescent: One Lamp Screw-in	Wall Switch	S	60	500	3, 4	Relamp	Yes	2	LED Lamps: One Lamp Screw-in	Occupancy Sensor	9	345	0.1	59	0	$7	$304	$4	42.9
Outdoor Storage	2	Incandescent: One Lamp Screw-in	Wall Switch	S	60	500	3	Relamp	No	2	LED Lamps: One Lamp Screw-in	Wall Switch	9	500	0.1	56	0	$7	$34	$4	4.6
Training Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,943	0.1	458	0	$54	$416	$150	4.9
Girls Restroom	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	520	0	$62	$416	$150	4.3
Display Case	4	Compact Fluorescent: One Lamp Two-pin	Wall Switch	S	26	2,816	3	Relamp	No	4	LED Lamps: One Lamp Two-pin	Wall Switch	18	2,816	0.0	97	0	$11	$50	$8	3.7
Ticket Booth	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	260	0	$31	$343	$40	9.8
Exit E09	8	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,816	3, 4	Relamp	Yes	8	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,943	0.4	1,833	0	$217	$854	$390	2.1
Exit E09	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
Exit E09	14	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	14	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,943	0.4	1,701	0	$201	$1,284	$350	4.6
Showcase	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,816	0.0	204	0	$24	$73	$40	1.4
Office 1	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	260	0	$31	$343	$40	9.8
Office 2	2	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,943	0.1	243	0	$29	$415	$110	10.6
Boys Restroom	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	390	0	$46	$380	$130	5.4
Boys Restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	2,816	3, 4	Relamp	Yes	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,943	0.0	66	0	$8	$33	$12	2.6
Aux Gym	24	Metal Halide: (1) 250W Lamp	Wall Switch	S	295	2,816	1, 4	Fixture Replacement	Yes	24	LED - Fixtures: High-Bay	Occupancy Sensor	89	1,943	4.0	17,391	-4	$2,059	$19,137	$7,340	5.7

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
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
Aux Gym Storage	2	Compact Fluorescent: One Lamp Screw-in	Wall Switch	S	26	500	3, 4	Relamp	Yes	2	LED Lamps: One Lamp Screw-in	Occupancy Sensor	18	345	0.0	15	0	$2	$304	$4	171.6
Boys Locker Room	22	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	22	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.7	2,862	-1	$339	$1,343	$580	2.3
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
L01 Storage	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.0	18	0	$2	$37	$20	7.7
BLR Restroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	260	0	$31	$343	$40	9.8
BLR Showers	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	390	0	$46	$110	$60	1.1
BLR Showers	9	Compact Fluorescent: Two Lamp 4-Pin	Wall Switch	S	52	2,816	3, 4	Relamp	Yes	9	LED Lamps: Two Lamp 4-Pin	Occupancy Sensor	36	1,943	0.2	749	0	$89	$495	$106	4.4
BLR Storage	2	Compact Fluorescent: Two Lamp 4-Pin	Wall Switch	S	52	500	3, 4	Relamp	Yes	2	LED Lamps: Two Lamp 4-Pin	Occupancy Sensor	36	345	0.0	30	0	$4	$320	$8	89.1
L05 Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	260	0	$31	$343	$40	9.8
L06 Coach's Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	260	0	$31	$343	$40	9.8
L06 Restroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	260	0	$31	$343	$40	9.8
L09 Team Room	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.2	780	0	$92	$489	$190	3.2
Training Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	260	0	$31	$343	$40	9.8
Electric Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	260	0	$31	$343	$40	9.8
Team Room 2	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	3, 4	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.2	780	0	$92	$489	$190	3.2
Storage	2	Compact Fluorescent: Three Lamp Two-pin	Wall Switch	S	78	500	3, 4	Relamp	Yes	2	LED Lamps: Three Lamp Two-pin	Occupancy Sensor	55	345	0.1	44	0	$5	$345	$12	63.4
Gym Storage	4	LED Lamps: One Lamp Screw-in	Wall Switch	S	10	500	4	None	Yes	4	LED Lamps: One Lamp Screw-in	Occupancy Sensor	10	345	0.0	7	0	$1	$270	$0	334.3
Boiler Room	8	Compact Fluorescent: Two Lamp Screw-in	Wall Switch	S	52	2,816	3	Relamp	No	8	LED Lamps: Two Lamp Screw-in	Wall Switch	36	2,816	0.1	387	0	$46	$276	$32	5.3
Boiler Room	4	LED Lamps: One Lamp Screw-in	Wall Switch	S	10	2,816		None	No	4	LED Lamps: One Lamp Screw-in	Wall Switch	10	2,816	0.0	0	0	$0	$0	$0	0.0
Parking Pole lights	31	LED - Fixtures: Outdoor Pole/Arm-Mounted Area/Roadway Fixture	Photocell		89	4,380		None	No	31	LED - Fixtures: Outdoor Pole/Arm-Mounted Area/Roadway Fixture	Photocell	89	4,380	0.0	0	0	$0	$0	$0	0.0
Tennis Court	20	High-Pressure Sodium: (1) 400W Lamp	Breaker Panel		465	2,816	1	Fixture Replacement	No	20	LED - Fixtures: Outdoor Pole/Arm-Mounted Area/Roadway Fixture	Breaker Panel	140	2,816	0.0	18,332	0	$2,201	$18,611	$4,000	6.6
Roadway Pole Ligths	3	High-Pressure Sodium: (1) 250W Lamp	Timeclock		295	4,380	1	Fixture Replacement	No	3	LED - Fixtures: Outdoor Pole/Arm-Mounted Area/Roadway Fixture	Timeclock	89	4,380	0.0	2,713	0	$326	$2,792	$600	6.7
Canopy Lights	24	Compact Fluorescent: One Lamp Screw-in	Timeclock		32	4,380	3	Relamp	No	24	LED Lamps: One Lamp Screw-in	Timeclock	22	4,380	0.0	1,009	0	$121	$413	$48	3.0
Wallpacks	28	Metal Halide: (1) 70W Lamp	Photocell		95	4,380	1	Fixture Replacement	No	28	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Photocell	29	4,380	0.0	8,156	0	$979	$27,047	$5,600	21.9

	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
Football Field	52	Metal Halide: (1) 400W Lamp	Breaker Panel		458	2,816	1	Fixture Replacement	No	52	LED - Fixtures: Outdoor Pole/Arm-Mounted Area/Roadway Fixture	Breaker Panel	137	2,816	0.0	46,946	0	$5,637	$48,389	$10,400	6.7
Football Storage	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	500	3	Relamp	No	12	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.0	198	0	$24	$438	$240	8.3
Football Storage	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
Football Storage	3	Compact Fluorescent: Two Lamp Screw-in	Wall Switch		52	500	3	Relamp	No	3	LED Lamps: Two Lamp Screw-in	Wall Switch	36	500	0.0	23	0	$3	$103	$12	32.5
Wallpacks	2	Metal Halide: (1) 100W Lamp	Photocell		128	4,380	1	Fixture Replacement	No	2	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Photocell	38	4,380	0.0	785	0	$94	$1,932	$400	16.3
Canopy Lights	7	LED Lamps: One Lamp Screw-in	Timeclock		10	4,380		None	No	7	LED Lamps: One Lamp Screw-in	Timeclock	10	4,380	0.0	0	0	$0	$0	$0	0.0

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
Mechanical Room	Rooms A-23 thru A-27 (AHU-2)	1	Supply Fan	1.5	86.5%	Yes	W	3,000		No	86.5%	No		0.0	0	0	$0	$0	$0	0.0
Mechanical Room	Child Development (AHU-6), Computer Lab (AHU-7,8,9), Faculty (AHU-13)	5	Supply Fan	2.0	84.0%	Yes	W	3,000	6	Yes	86.5%	No		0.1	578	0	$69	$2,661	$0	38.4
Mechanical Room	TV Studio (AHU-1)	1	Supply Fan	5.0	89.5%	Yes	W	3,000		No	89.5%	No		0.0	0	0	$0	$0	$0	0.0
Mechanical Room	Auditorium (AHU-3,4,5), Classrooms 124 129 (AHU-24), Classrooms 110-113 (AHU-26)	5	Supply Fan	7.5	91.0%	Yes	W	3,000		No	91.0%	No		0.0	0	0	$0	$0	$0	0.0
Kitchen Hallway	Cafeteria (AHU-14,15)	2	Supply Fan	15.0	93.0%	Yes	W	3,000		No	93.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Resource Center (AHU-20,21,22,23), Classrooms 220-223 (AHU-25)	6	Supply Fan	15.0	93.0%	Yes	W	3,000		No	93.0%	No		0.0	0	0	$0	$0	$0	0.0
Classrooms	Unit Ventilators	64	Supply Fan	0.1	60.0%	No	W	3,000		No	60.0%	No		0.0	0	0	$0	$0	$0	0.0
Classrooms	Unit Ventilators	2	Supply Fan	0.3	73.4%	No	W	3,000		No	73.4%	No		0.0	0	0	$0	$0	$0	0.0
Classrooms	Unit Ventilators	6	Supply Fan	0.3	69.5%	No	W	3,000		No	69.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Trane THD150 and 180 units	10	Supply Fan	5.0	89.5%	No	W	3,000	7	No	89.5%	Yes	10	14.3	46,885	0	$5,630	$40,762	$8,000	5.8
Roof	Boys and Girls Lockers	2	Supply Fan	15.0	93.0%	No	W	3,000	7	No	93.0%	Yes	2	8.6	27,073	0	$3,251	$14,082	$4,800	2.9
Roof	Trane THC120 untis	4	Supply Fan	3.6	89.5%	No	W	3,000	7	No	89.5%	Yes	4	4.1	13,503	0	$1,621	$15,536	$2,304	8.2
Roof	Carrier Unit	1	Supply Fan	1.5	84.0%	No	B	3,000	7	No	86.5%	Yes	1	0.4	1,577	0	$189	$3,391	$240	16.6
Boiler Room	Heating Hot Water System	2	Heating Hot Water Pump	50.0	94.5%	Yes	W	3,000		No	94.5%	No		0.0	0	0	$0	$0	$0	0.0
Boiler Room	Chilled Water System	3	Chilled Water Pump	25.0	93.6%	Yes	W	3,000		No	93.6%	No		0.0	0	0	$0	$0	$0	0.0
Elevator Room	Elevator	1	Other	25.0	75.5%	No	W	300		No	75.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Multiple Areas	7	Exhaust Fan	0.3	69.5%	No	W	3,000		No	69.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Multiple Areas	8	Exhaust Fan	0.2	60.0%	No	W	3,000		No	60.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Mens Restroom D1/2	1	Exhaust Fan	0.5	78.2%	No	W	3,000		No	78.2%	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	Rooms 302 (RTU-26), 304 (RTU-18), 305 (RTU-17), 306 (RTU-16)	4	Packaged AC	10.00		W		No							0.0	0	0	$0	$0	$0	0.0
Roof	Classroom	1	Packaged AC	6.00		B	8	Yes	1	Packaged AC	6.00		11.50		1.3	1,314	0	$158	$10,693	$876	62.2
Roof	Gym (RTU-35A,B,C,D), Training Shop 303 (RTU-25	5	Packaged AC	15.00		W		No							0.0	0	0	$0	$0	$0	0.0
Roof	Learning Resource Center (RTU-42), Training Shop 301 (RTU-27), Aux Gyms (RTU-33,37), Gym Corridors (RTU-36)	5	Packaged AC	12.50		W		No							0.0	0	0	$0	$0	$0	0.0
Roof	Girls and Boys Lockers (RTU-34,38)	2	Packaged AC	30.00		W		No							0.0	0	0	$0	$0	$0	0.0
Roof	Unit Ventilators	8	Split-System AC	3.50		W		No							0.0	0	0	$0	$0	$0	0.0
Roof	Unit Ventilators	20	Split-System AC	3.00		W		No							0.0	0	0	$0	$0	$0	0.0
Roof	Unit Ventilators	4	Split-System AC	4.00		W		No							0.0	0	0	$0	$0	$0	0.0
Roof	Unit Ventilators	2	Split-System AC	5.00		W		No							0.0	0	0	$0	$0	$0	0.0
Roof	Unit Ventilators	2	Split-System AC	2.50		W		No							0.0	0	0	$0	$0	$0	0.0
Roof	Towing Room	1	Ductless Mini-Split AC	1.50		B	8	Yes	1	Ductless Mini-Split AC	1.50		18.00		0.5	462	0	$55	$4,109	$0	74.1
Roof	Gym Offices	1	Ductless Mini-Split HP	1.50	22.00	B	9	Yes	1	Ductless Mini-Split HP	1.50	22.00	18.00	3.80	0.3	377	0	$45	$3,599	$276	73.4
Roof	Offices	2	Ductless Mini-Split AC	0.75		B	8	Yes	2	Ductless Mini-Split AC	0.75		18.00		0.5	500	0	$60	$4,109	$0	68.4

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 Mechanical Yard	Entire Facility	3	Air-Cooled Screw Chiller	224.00	N		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	Facility heating	6	Condensing Hot Water Boiler	2,781.00	W		No						0.0	0	0	$0	$0	$0	0.0

Demand Control Ventilation Recommendations

		Recommendation Inputs					Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Affected	ECM #	Number of Zones	Cooling Capacity of Controlled System (Tons)	Electric Heating Capacity of Controlled System (kBtu/hr)	Output Heating Capacity of Controlled System (MBh)	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	Gym	10	8.00	60.00		936.00	0.0	1,488	28	$400	$10,875	$0	27.2
Roof	Aux Gym	10	4.00	25.00		305.00	0.0	620	9	$147	$5,438	$0	37.1
Roof	Learning Resource Center	10	2.00	12.50		146.00	0.0	310	4	$72	$2,719	$0	37.9
Mechanical Room	Auditorium	10	6.00	67.00		1,491.00	0.0	1,914	44	$582	$8,157	$0	14.0
Mechanical Room	Resource Center	10	8.00	128.00		1,144.00	0.0	3,657	34	$710	$10,875	$0	15.3
Mechanical Room	Cafeteria	10	4.00	64.00		1,420.00	0.0	1,829	42	$555	$5,438	$0	9.8

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
Boiler Room	DHW System	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
Multiple Locations	11	29	Faucet Aerator (Lavatory)	2.20	0.50	0.0	0	28	$219	$208	$208	0.0
Multiple Locations	11	71	Faucet Aerator (Lavatory)	1.50	0.50	0.0	0	40	$316	$509	$509	0.0

Reach-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 Energy Efficient Doors?	Install Door Heater Control?	Install Aluminum Night Covers?	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	Cooler (35F to 55F)	12	Yes	No	No	No	No	0.0	321	0	$39	$607	$160	11.6

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	Medium Temp Freezer (0F to 30F)	12, 13	Yes	Yes	Yes	0.1	2,095	0	$252	$2,799	$410	9.5
Kitchen	1	Cooler (35F to 55F)	12, 13	Yes	No	Yes	0.1	1,163	0	$140	$2,281	$310	14.1
Kitchen	1	Cooler (35F to 55F)	12, 13	Yes	No	Yes	0.1	1,766	0	$212	$1,977	$230	8.2

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	2	Stand-Up Refrigerator, Solid Door (31 - 50 cu. ft.)	Yes		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	1	Stand-Up Refrigerator, Solid Door (>50 cu. ft.)	Yes		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	1	Stand-Up Freezer, Solid Door (>50 cu. ft.)	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	1	Stand-Up Refrigerator, Solid Door (16 - 30 cu. ft.)	Yes		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	1	Stand-Up Refrigerator, Glass Door (≤15 cu. ft.)	Yes		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	1	Refrigerator Chest	Yes		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	1	Freezer Chest	Yes		No	0.0	0	0	$0	$0	$0	0.0

Commercial Ice Maker Inventory & Recommendations

	Existing Conditions			Proposed Conditions		Energy Impact & Financial Analysis						
Location	Quantity	Ice Maker Type	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
Coach's Office	1	Ice Making Head (<450 lbs/day), Batch	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	3	Electric Griddle (3 Feet Width)	Yes		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	3	Gas Griddle (3 Feet Width)	Yes		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	1	Insulated Food Holding Cabinet (Full Size)	Yes		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	2	Insulated Food Holding Cabinet (Full Size)	Yes		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	2	Gas Convection Oven (Full Size)	Yes		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	1	Gas Convection Oven (Half Size)	Yes		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	1	Gas Conveyor Oven (<25")	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?
Multiple Locations	417	Computer	75.0	
Multiple Locations	10	Laptop	40.0	
Multiple Locations	99	Printer	20.0	
Multiple Locations	12	Copiers	515.0	
Multiple Locations	7	Paper Shredder	360.0	
Multiple Locations	60	Projector	200.0	
Multiple Locations	24	Microwave	1,000.0	
Multiple Locations	16	Minifridge	30.0	
Multiple Locations	6	Refrigerator	600.0	
Multiple Locations	6	Coffee Machine	400.0	
Multiple Locations	2	Toaster	850.0	
Multiple Locations	1	Toaster Oven	1,200.0	
Multiple Locations	5	Ceiling Fan	100.0	
Multiple Locations	12	Portable Fan	100.0	
Multiple Locations	3	Clothes Washer	900.0	
Multiple Locations	3	Clothes Dryer	1,600.0	
Multiple Locations	1	Dishwasher	1,500.0	
Multiple Locations	28	TV	120.0	
Multiple Locations	6	Water Cooler	500.0	
Multiple Locations	1	Kettle	2,000.0	
Multiple Locations	23	Floor Fan	100.0	
Multiple Locations	1	Kiln	11,000.0	
Multiple Locations	1	Electric Stove	3,000.0	
Multiple Locations	8	Servers	850.0	
Multiple Locations	12	Laptop Carts	500.0	

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
Multiple Locations	6	Refrigerated	14	Yes	1.1	9,671	0	$1,161	$1,380	$600	0.7
Multiple Locations	3	Non-Refrigerated	14	Yes	0.1	1,028	0	$123	$690	$0	5.6

APPENDIX B: ENERGY STAR® STATEMENT OF ENERGY PERFORMANCE

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

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ENERGY STAR® Statement of Energy Performance

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ENERGY STAR® Score[1]

Willingboro High School

Primary Property Type: K-12 School
Gross Floor Area (ft²): 227,623
Built: 1975

For Year Ending: August 31, 2018
Date Generated: October 30, 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
Willingboro High School 20 John F. Kennedy Way Willingboro, New Jersey 08046	Willingboro School District 440 Beverly Rancocas Rd Willingboro, NJ 08046 (609) 835-8600	Orlando Chandler 39 Industrial Drive Willingboro, NJ 08046 (609) 835-8786 ochandler@wboe.net

Property ID: 7956685

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
79.9 kBtu/ft²

Source EUI
138.3 kBtu/ft²

Annual Energy by Fuel		
Electric - Grid (kBtu)	7,067,897 (39%)	
Natural Gas (kBtu)	11,129,154 (61%)	

National Median Comparison	
National Median Site EUI (kBtu/ft²)	74.6
National Median Source EUI (kBtu/ft²)	129
% Diff from National Median Source EUI	7%
Annual Emissions	
Greenhouse Gas Emissions (Metric Tons CO2e/year)	1,307

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 gas* gases that are transparent to solar (short-wave) radiation but opaque to long-wave (infrared) radiation, thus preventing long-wave radiant energy from leaving Earth's atmosphere. The net effect is a trapping of absorbed radiation and a tendency to warm the planet's surface.
gpf	*Gallons per flush*

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

SEER	*Seasonal energy efficiency ratio:* a measure of efficiency in terms of annual cooling energy provided divided by total electric input.
SEP	*Statement of energy performance:* a summary document from the ENERGY STAR® Portfolio Manager®.
Simple Payback	The amount of time needed to recoup the funds expended in an investment or to reach the break-even point between investment and savings.
SREC	*Solar renewable energy credit*: a credit you can earn from the state for energy produced from a photovoltaic array.
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.