Local Government Energy Audit Report

Joyanne D. Miller Elementary School

July 11, 2019

Prepared for:

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

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

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

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

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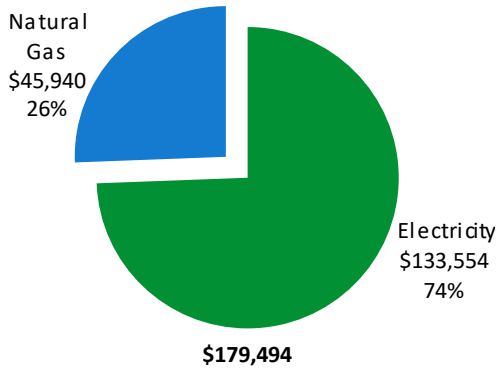
1 EXECUTIVE SUMMARY

The New Jersey Board of Public Utilities (NJBPU) has sponsored this Local Government Energy Audit (LGEA) report for Joyanne D. Miller Elementary 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 Energy Services (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: $179,494 Electricity: 932,105 kWh Natural Gas: 36,321 Therms	
ENERGY STAR® Benchmarking Score	93 *(1-100 scale)*	Congratulations, your building performs better than the national average. This report has suggestions about how to keep your building running efficiently, further improve performance and lower your energy bills even more.

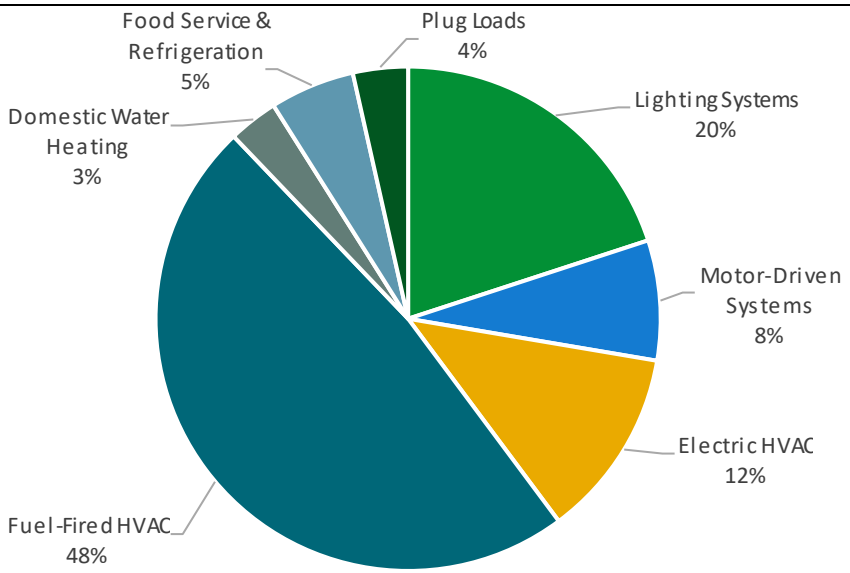


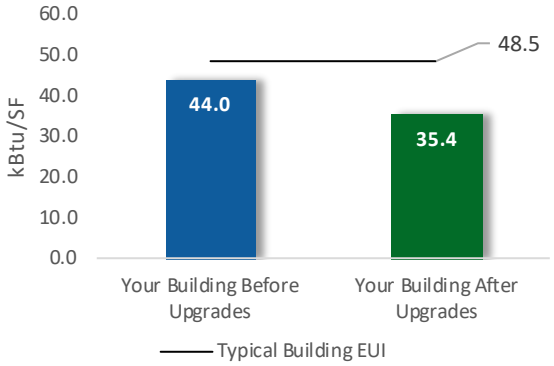
Figure 1 - Energy Use by System

POTENTIAL IMPROVEMENTS

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

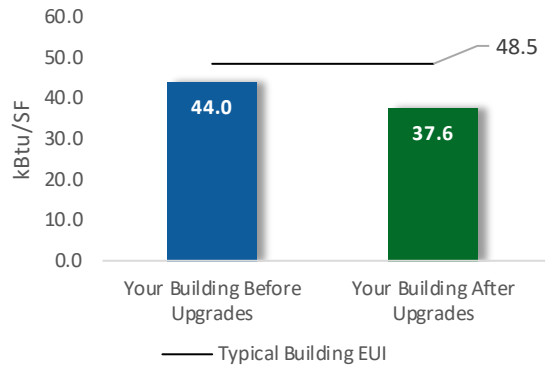
Scenario 1: Full Package (all evaluated measures)

Installation Cost	$1,378,802
Potential Rebates & Incentives[1]	$43,332
Annual Cost Savings	$53,559
Annual Energy Savings	Electricity: 367,081 kWh Natural Gas: 762 Therms
Greenhouse Gas Emission Savings	189 Tons
Simple Payback	24.9 Years
Site Energy Savings (all utilities)	20%



Scenario 2: Cost Effective Package[2]

Installation Cost	$184,742
Potential Rebates & Incentives	$31,172
Annual Cost Savings	$39,731
Annual Energy Savings	Electricity: 270,266 kWh Natural Gas: 796 Therms
Greenhouse Gas Emission Savings	141 Tons
Simple Payback	3.9 Years
Site Energy Savings (all utilities)	15%



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	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Lifetime Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		**232,700**	**63.3**	**-43**	**$32,795**	**$491,931**	**$191,735**	**$26,597**	**$165,138**	**5.0**	**229,270**
	Install LED Fixtures	41,961	10.4	-3	$5,969	$89,539	$107,457	$5,840	$101,617	17.0	41,856
ECM 1	Retrofit Fixtures with LED Lamps	190,739	53.0	-40	$26,826	$402,393	$84,278	$20,757	$63,521	2.4	187,414
Lighting Control Measures		**54,376**	**15.0**	**-11**	**$7,647**	**$61,178**	**$79,582**	**$9,365**	**$70,217**	**9.2**	**53,425**
ECM 2	Install Occupancy Sensor Lighting Controls	49,434	13.6	-10	$6,952	$55,618	$72,982	$9,365	$63,617	9.2	48,569
ECM 3	Install High/Low Lighting Controls	4,942	1.3	-1	$695	$5,560	$6,600	$0	$6,600	9.5	4,855
Motor Upgrades		**8,337**	**3.9**	**0**	**$1,195**	**$46**	**$62,682**	**$0**	**$62,682**	**52.5**	**8,395**
	Premium Efficiency Motors	21	0.0	0	$3	$46	$913	$0	$913	299.8	21
Variable Frequency Drive (VFD) Measures		**22,603**	**3.8**	**83**	**$4,289**	**$65,633**	**$18,930**	**$1,000**	**$17,930**	**4.2**	**32,483**
ECM 4	Install VFDs on Heating Water Pumps	16,242	3.1	0	$2,327	$34,908	$14,082	$0	$14,082	6.1	16,356
	Install Boiler Draft Fan VFDs	1,322	0.9	0	$189	$2,842	$5,265	$0	$5,265	27.8	1,332
ECM 5	Install VFDs on Kitchen Hood Fan Motors	5,644	0.0	83	$1,859	$27,883	$4,076	$1,000	$3,076	1.7	15,405
Electric Unitary HVAC Measures		**38,385**	**48.8**	**0**	**$5,500**	**$82,497**	**$1,005,238**	**$6,320**	**$998,918**	**181.6**	**38,653**
	Install High Efficiency Air Conditioning Units	38,385	48.8	0	$5,500	$82,497	$1,005,238	$6,320	$998,918	181.6	38,653
HVAC System Improvements		**3,355**	**0.0**	**0**	**$481**	**$7,210**	**$10,875**	**$0**	**$10,875**	**22.6**	**3,378**
	Implement Demand Control Ventilation (DCV)	3,355	0.0	0	$481	$7,210	$10,875	$0	$10,875	22.6	3,378
Domestic Water Heating Upgrade		**0**	**0.0**	**48**	**$603**	**$6,032**	**$748**	**$0**	**$748**	**1.2**	**5,584**
ECM 6	Install Low-Flow DHW Devices	0	0.0	48	$603	$6,032	$748	$0	$748	1.2	5,584
Food Service & Refrigeration Measures		**7,326**	**0.8**	**0**	**$1,050**	**$11,199**	**$9,013**	**$50**	**$8,963**	**8.5**	**7,377**
ECM 7	Refrigerator/Freezer Case Electrically Commutated Motors	1,311	0.2	0	$188	$2,817	$1,517	$0	$1,517	8.1	1,320
	Replace Refrigeration Equipment	4,061	0.5	0	$582	$6,982	$7,037	$0	$7,037	12.1	4,089
ECM 8	Vending Machine Control	1,954	0.2	0	$280	$1,400	$460	$50	$410	1.5	1,968
TOTALS		**367,081**	**135.7**	**76**	**$53,559**	**$725,727**	**$1,378,802**	**$43,332**	**$1,335,470**	**24.9**	**378,566**

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

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

Figure 2 – Evaluated Energy Improvements

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

1.1 Planning Your Project

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

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

Pick Your Installation Approach

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

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

Energy Conservation Measure		SmartStart	Direct Install	Pay For Performance
ECM 1	Retrofit Fixtures with LED Lamps	X		X
ECM 2	Install Occupancy Sensor Lighting Controls	X		X
ECM 3	Install High/Low Lighting Controls			X
ECM 4	Install VFDs on Hot Water Pumps			X
ECM 5	Install VFDs on Single-Speed Kitchen Hoods	X		X
ECM 6	Install Low-Flow Domestic Hot Water Devices			X
ECM 7	Refrigerator/Freezer Case Electrically Commutated Motors			X
ECM 8	Vending Machine Control	X		X

Figure 3 – Funding Options

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

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

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

Individual Measures with SmartStart

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

Turnkey Installation with Direct Install

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

Whole Building Approach with Pay for Performance

Pay for Performance can be a good option for medium to large sized facilities to achieve deep energy savings. Pay for Performance allows you to install as many measures as possible under a single project as well as address measures that may not qualify for other programs. Many facilities pursuing an Energy Savings Improvement Program 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 Joyanne D. Miller Elementary 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 January 8, 2019, TRC performed an energy audit at Joyanne D. Miller Elementary School located in Egg Harbor Township, New Jersey. TRC met with Shawn Braue to review the facility operations and help focus our investigation on specific energy-using systems.

Joyanne D. Miller Elementary School is a two-story, 154,700 square foot building built in 2003. Spaces include: classrooms, a gymnasium, offices, a cafeteria, corridors, stairwells, conference rooms, a commercial kitchen and mechanical spaces.

Three cold water booster pumps supply domestic cold water to the School building via a lead-lag manual scheme, the system is in good condition.

2.2 Building Occupancy

The facility is occupied year-round and school is scheduled from September through July during a year. Typical weekday occupancy is 165 staff and 1114 students.

Summer occupancy includes a month-long summer school program and continuing maintenance activities. There are no weekend activities.

Building Name	Weekday/Weekend	Operating Schedule
Joyanne D. Miller Elementary School	Weekday	6:00 AM - 6:00 PM
	Weekend	Unoccupied

Figure 4 - Building Occupancy Schedule

2.3 Building Envelope

Building walls are concrete block over structural steel with a brick facade. The roof is flat and covered with black membrane, and it is in good condition.

Steel trusses support a pitched roof with a metal deck covered with a standing seam metal roofing system. Roof encloses conditioned space. The thermal barrier at the roof deck.

Most of the windows are double glazed and have aluminum frames with a thermal break. The glass-to-frame seals are in good condition. The operable window weather seals are in good condition, showing no evidence of excessive wear. Exterior doors have aluminum frames and are in good condition with undamaged door seals.

Building Windows

Building Roof

Building Walls and Doors

Building Exterior

2.4 Lighting Systems

The primary interior lighting system uses 32-Watt linear fluorescent T8 lamps. There are also several 27-Watt T5HO (High Output) fixtures. Additionally, there are some compact fluorescent lamps (CFL), incandescent, and LED general purpose lamps. Typically, T8 fluorescent lamps use electronic ballasts.

Fixture types include 2-, 3- and 4-lamp, 2- and 4-foot long troffers, recessed or surface mounted fixtures, and 2-foot fixtures with U-bend and linear tube lamps. Most fixtures are in good condition. Most lighting fixtures are controlled manually by wall switches.

Gymnasium fixtures have 150-Watt metal halide lamps that are manually controlled. Library fixtures have decorative pendant type CFL lamps and are manually controlled. All exit signs are LED.

Interior lighting levels were generally sufficient.

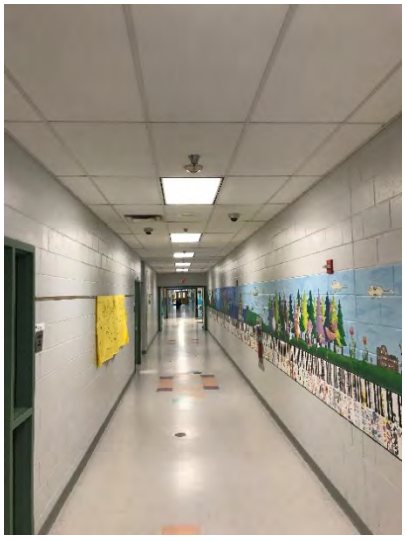
Photo Room Lighting

Library Decorative Lighting

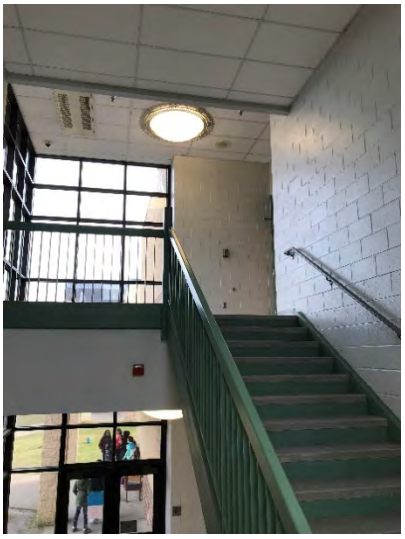
Gym Lighting

Library Lighting

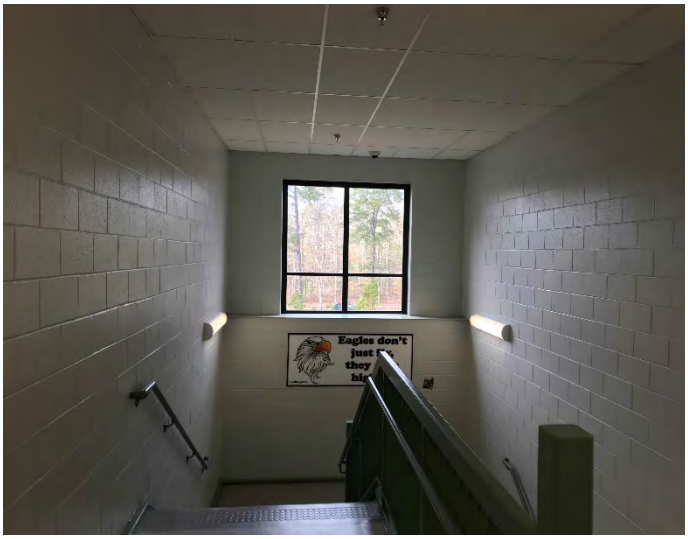
Boiler Room Lighting



Hallway Lighting



Staircase Decorative Lighting



Staircase Linear Lighting

Exterior fixtures include wall mounted 100-Watt metal halide fixtures, with door mounted 26-Watt CFL area fixtures. The pole mounted parking lot fixtures have 175-Watt metal halide lamp and are controlled by a timeclock. All exterior light fixtures are controlled by a time clock.

Exterior Bollard Fixture

Exterior Wall Flush Fixture

2.5 Air Handling Systems

Unit Ventilators

There are a total of 160 VAV Unit ventilators that have 0.5 hp supply fan motors, zone valves that operate with a BMS system. This system is original to the building and appears to be in good operating condition.

Packaged Units

The school area is served by packaged roof top units (RTUs). There are 15 Aaon packaged AC units ranging in size from 15 to 40-ton capacity. These units are equipped with economizers that are in fair condition.

There are a total of 23 Greenheck VFD-controlled exhaust fans on the roof, which serves different areas of the school; the fan motors vary in capacity from 0.2 hp to 0.5 hp. There is a 5 hp kitchen hood exhaust fan that serves the kitchen as well.

The larger area of school is served by multiple packaged roof top units, including:

Unit	Area Served	Size (tons)	Efficiency (EER)
RTU-1	A Wing 1st Fl	25	9.30
RTU-2	A Wing 2nd Fl	40	9.30
RTU-3	B Wing 1st Fl	40	9.30
RTU-4	B Wing 2nd Fl	30	9.30
RTU-5	C Wing 1st Fl	25	9.30
RTU-6	C Wing 2nd Fl	40	9.30
RTU-7	D Wing 1st Fl	40	9.30
RTU-8	D Wing 2nd Fl	30	9.30
RTU-9	Admin Office	30	9.30
RTU-10	Service Media Center	40	9.30
RTU-11	Gymnasium	30	9.30
RTU-12	Music	15	9.30
RTU-13	Cafeteria North	30	9.30
RTU-14	Cafeteria South	30	9.30
RTU-15	Kitchen	15	9.30

Air Conditioners

IDF/MDF rooms uses nine 1.5 ton EMI ductless mini-split air conditioning (AC) units with efficiencies ranging between 10 and 10.30 EER. The units are in fair condition. They are not ENERGY STAR® labeled.

The HVAC system controlled by BMS system.

RTU on Roof

Condensing Unit for Split System

Ductless Mini split AC

Make up air Unit in Boiler Room

2.6 Heating Hot Water Systems

Two Unilux® 2800 MBh non-condensing hot water boilers serve the building heating load needs. The burners are fully-modulating with a nominal efficiency of 80%. Each boiler has a 1.5 hp combustion air fan. The boilers are configured in an automated control scheme. Both boilers required under high load conditions. Installed in 2003, they are in fair condition. There is a service contract in place.

The boilers are configured in a constant flow primary distribution with two 15 hp constant speed hot water pumps operating with an automated control scheme. The boilers provide hot water to unit ventilators and RTUs throughout the building.

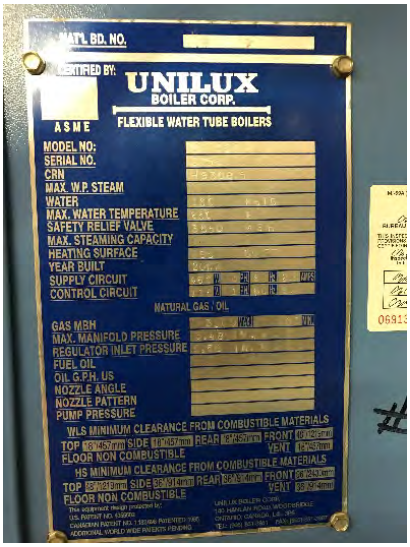
One Sterling make up air unit (MAU-1) provides conditioned combustion air to the boiler room with 273 MBh output capacity and 79% heating efficiency to supply conditioned combustion air.

Hot water is supplied at 173°F when the outside air temperature is low, and the setpoint is adjusted linearly to 150°F when the outside air is above 55°F. The hot water return temperature is typically 135.7°F.

Boilers

Heating Hot Water Pumps

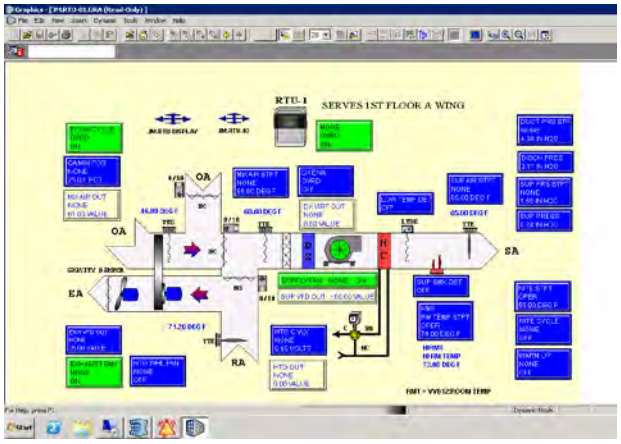
Cold Water Booster Pumps



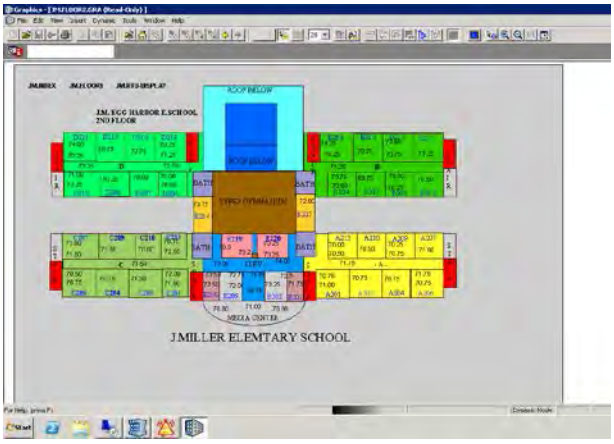
Boiler Nameplate

2.7 Building Energy Management Systems (EMS)

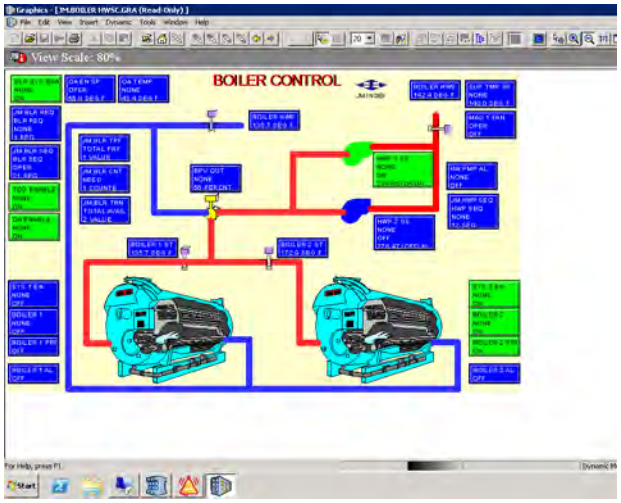
A Siemens EMS controls the HVAC equipment, the boilers, unit ventilators, and the rooftop package units. The EMS provides equipment scheduling control and monitors and controls space temperatures, supply air temperatures, humidity, heating water loop temperatures, and chilled water loop temperatures.



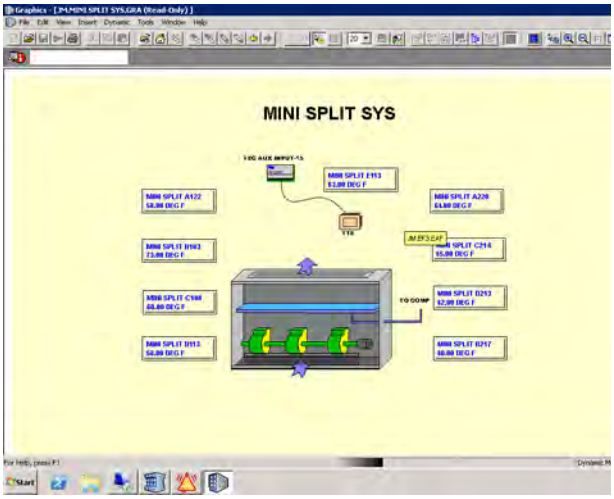
RTU Control on BMS



School Floor Plan on BMS



Hot Water System



Mini Split on BMS

2.8 Domestic Hot Water

Hot water is produced by a 400-gallon PVI 600 MBh gas-fired storage water heater (DWH-1) with an 80% efficiency. The hot water heater has a 0.3 hp draft fan.

At the time of the site visit, the domestic water heaters were set at 130°F.

One 0.3 hp circulation pumps distribute water to end uses. The circulation pumps operate continuously.

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

Image 1 DHW Heater

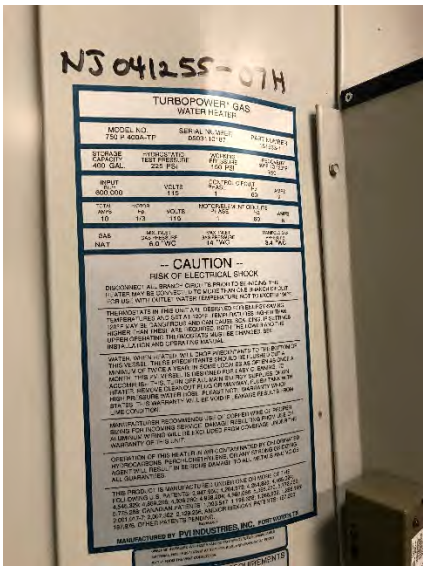


Image 2 DHW Heater Nameplate

2.9 Food Service Equipment

The kitchen has mixed gas and electric equipment that are used to prepare lunches and dinners for students. Most of the cooking is done using three convection electric ovens. Bulk prepared foods are held in three electric holding cabinets. There are three electric steamers and one gas griddle to make cooking process faster and easier. 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.

Serving Table

Electric Steamers

Electric Ovens

Kitchen Equipment

2.10 Refrigeration

The kitchen has two stand-up refrigerators with solid doors. There are four chest type milk coolers to store milk beverages. All stand-up refrigerators are high-efficiency units in good condition; all milk coolers are standard efficiency.

The walk-in refrigerator has an estimated 1-ton compressor located on roof and a two-fan evaporator with evaporator fan controls.

The walk-in medium temperature freezer has a 1-ton compressor located on the roof and a three-fan evaporator with evaporator fan controls and electric defrost control.

Temperature in both Walk-in units are controlled by BMS.

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

Walk-in Freezer

Walk-in Cooler

Milk Cooler

Stand-Up Refrigerator

2.11 Plug Load & Vending Machines

The utility bill analysis indicates that plug loads consume approximately 3.52% percent of total building energy use. This is lower than a typical building.

The staff at Joyanne D. Miller Elementary School seems to already be doing a great job at managing your electrical plug loads. This report makes additional suggestions for ECMs in this area as well as Energy Efficient Best Practices.

There are approximately 535 computer work stations throughout the facility. Plug loads throughout the building include general cafeteria and office equipment. There are classroom typical loads such as Smartboards, projectors, printers and fans.

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

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

Vending Machines

Refrigerator

Copy Machine

Microwave

2.12 Water-Using Systems

There are 15 restrooms with toilets, urinals, and sinks. Faucet flow rates are at 2.2 gallons per minute (gpm) or higher. Toilets are rated at 1.6 gallons per flush (gpf), and urinals are rated at 1.2 gpf.

Girls and boy's locker rooms are infrequently used. The showerheads are rated at 2.5 gpm.

2.13 On-Site Generation

Miller School has a 15.275 kW photovoltaic (PV) array with approximately 65 modules that was installed in 2011. This system provides approximately 10-15% of the electricity used at the Elementary School.

Miller School has an emergency generator that, in the event of a power outage, serves critical services (lighting, elevator, heating - boiler and pumps) and is only used for emergency needs.

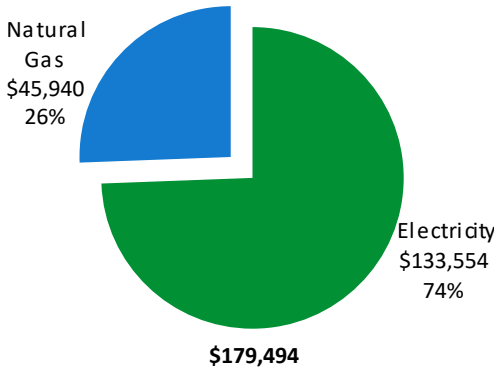
Power Generator

Solar Array on Roof

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	932,105 kWh	$133,554
Natural Gas	36,321 Therms	$45,940
Total		**$179,494**



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

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

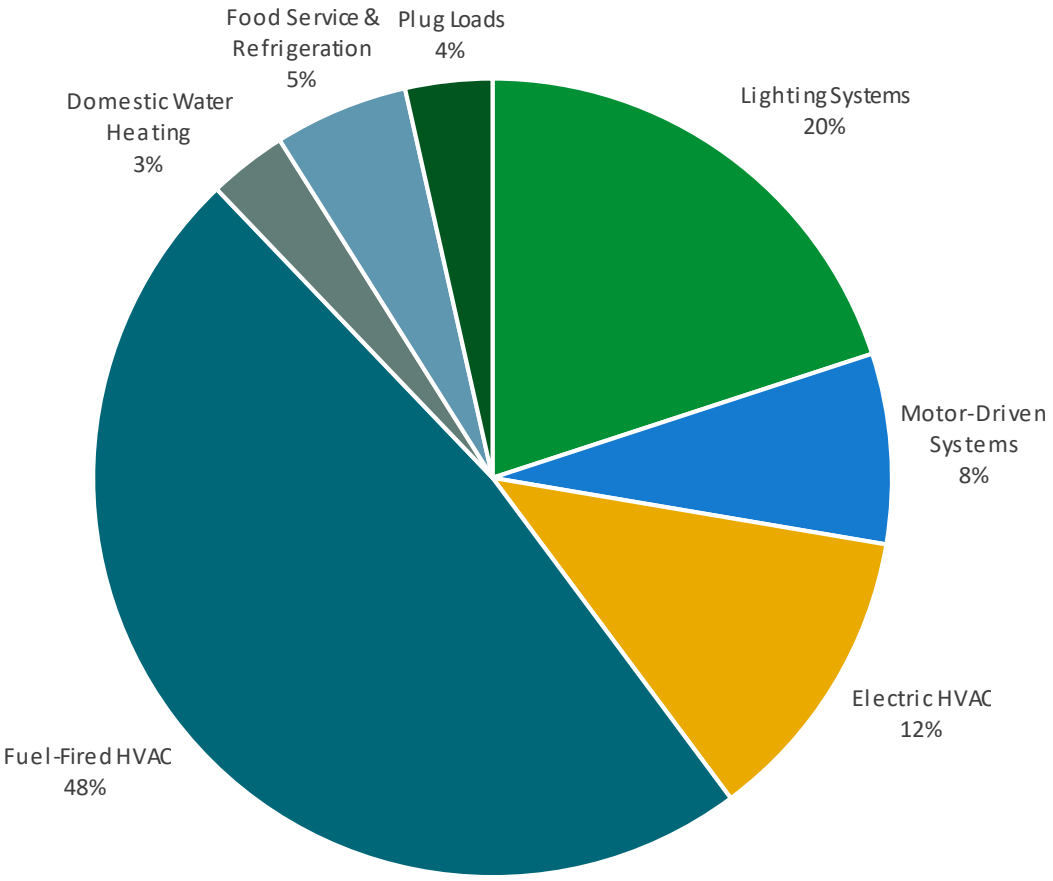
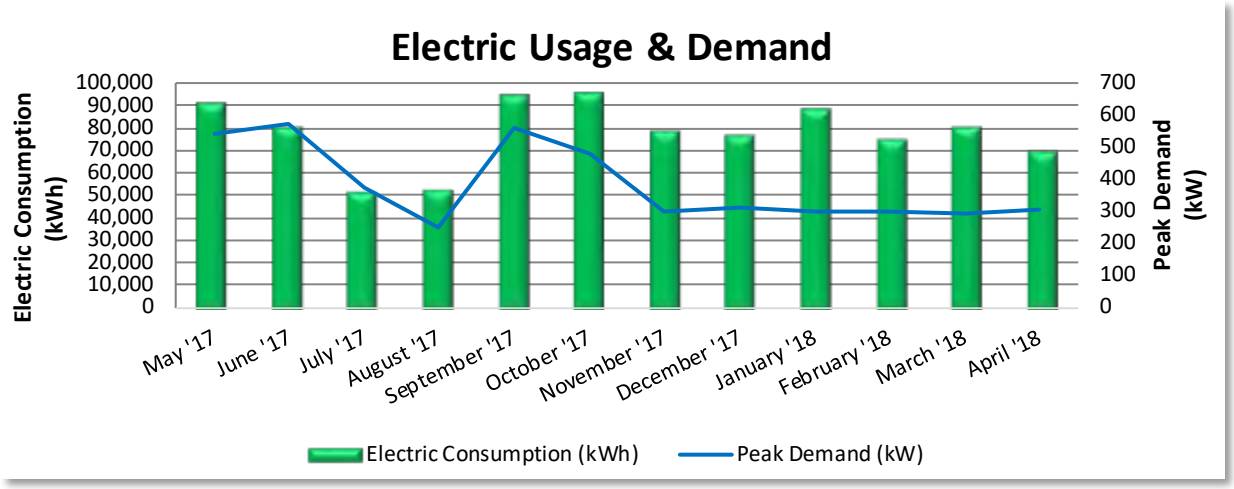


Figure 5 - Energy Balance

3.1 Electricity

Atlantic City Electric delivers electricity under rate class Annual General Service Secondary.



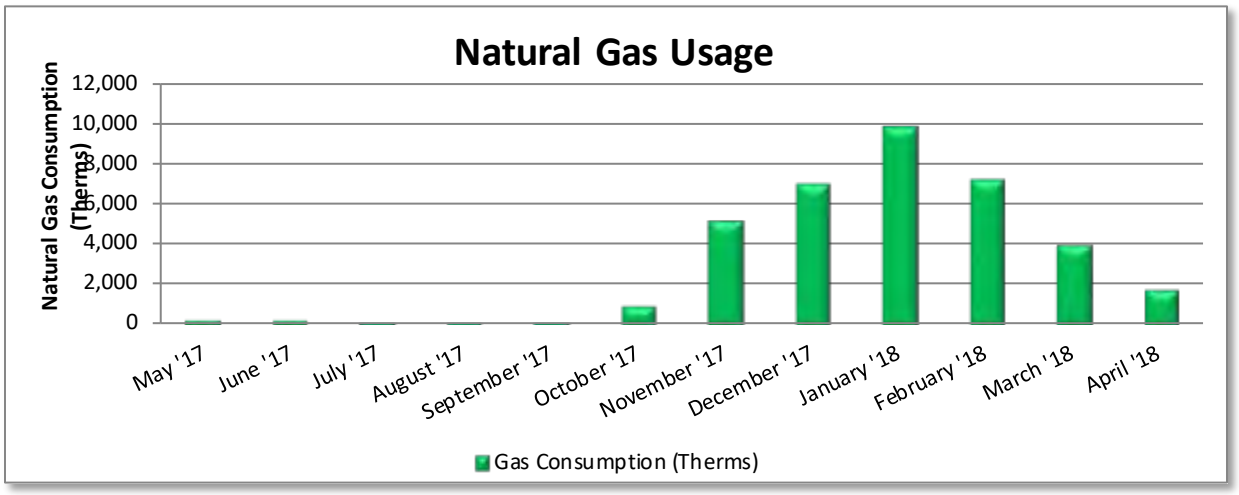
Electric Billing Data					
Period Ending	**Days in Period**	**Electric Usage (kWh)**	**Demand (kW)**	**Demand Cost**	**Total Electric Cost**
5/31/17	31	90,375	544		$14,576
6/30/17	30	80,265	573		$15,296
7/31/17	31	51,858	374		$7,939
8/31/17	31	52,376	250		$7,312
9/30/17	30	94,627	563		$12,034
10/31/17	31	95,211	481		$12,505
11/30/17	30	78,064	300		$10,463
12/31/17	31	76,946	309		$10,583
1/31/18	31	88,022	298		$12,410
2/28/18	28	74,860	300		$10,537
3/31/18	31	79,969	296		$10,487
4/30/18	30	69,532	303		$9,413
Totals	**365**	**932,105**	**573**	**$0**	**$133,554**
Annual	**365**	**932,105**	**573**	**$0**	**$133,554**

Notes:

- Peak demand of 573 kW occurred in June '17.
- The average electric cost over the past 12 months was $0.143/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.
- Some of the electricity generated on-site is used on-site and the remainder is exported to the grid.

3.2 Natural Gas

South Jersey Gas delivers natural gas under rate class General Service.



Gas Billing Data			
Period Ending	**Days in Period**	**Natural Gas Usage (Therms)**	**Natural Gas Cost**
5/31/17	31	217	$256
6/30/17	30	197	$326
7/31/17	31	41	$67
8/31/17	31	93	$134
9/30/17	30	73	$105
10/31/17	31	963	$1,110
11/30/17	30	5,159	$6,351
12/31/17	31	6,957	$8,566
1/31/18	31	9,796	$12,032
2/28/18	28	7,145	$8,902
3/31/18	31	3,921	$4,820
4/30/18	30	1,759	$3,271
Totals	**365**	**36,321**	**$45,940**
Annual	**365**	**36,321**	**$45,940**

Notes:

- The average gas cost for the past 12 months is $1.265/therm, which is the blended rate used throughout the analysis.

3.3 Benchmarking

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

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

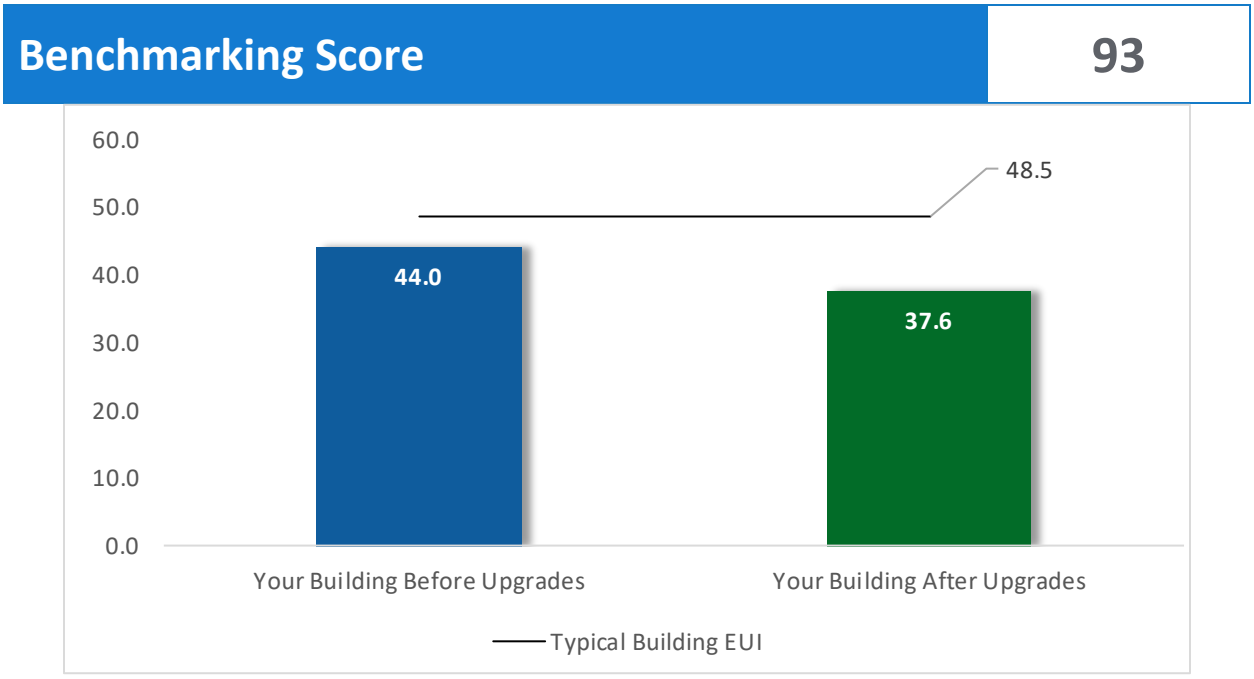


Figure 6 - Energy Use Intensity Comparison

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

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

Tracking Your Energy Performance

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

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

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

For more information on ENERGY STAR® and Portfolio Manager®, visit their website[3].

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

4 ENERGY CONSERVATION MEASURES

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

Calculations of energy use and savings are based on the current version of *New Jersey's Clean Energy Program Protocols to Measure Resource Savings*, which is approved by the New Jersey Board of Public Utilities. 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.

#	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		**232,700**	**63.3**	**-43**	**$32,795**	**$191,735**	**$26,597**	**$165,138**	**5.0**	**229,270**
	Install LED Fixtures	41,961	10.4	-3	$5,969	$107,457	$5,840	$101,617	17.0	41,856
ECM 1	Retrofit Fixtures with LED Lamps	190,739	53.0	-40	$26,826	$84,278	$20,757	$63,521	2.4	187,414
Lighting Control Measures		**54,376**	**15.0**	**-11**	**$7,647**	**$79,582**	**$9,365**	**$70,217**	**9.2**	**53,425**
ECM 2	Install Occupancy Sensor Lighting Controls	49,434	13.6	-10	$6,952	$72,982	$9,365	$63,617	9.2	48,569
ECM 3	Install High/Low Lighting Controls	4,942	1.3	-1	$695	$6,600	$0	$6,600	9.5	4,855
Motor Upgrades		**21**	**0.0**	**0**	**$3**	**$913**	**$0**	**$913**	**299.8**	**21**
	Premium Efficiency Motors	21	0.0	0	$3	$913	$0	$913	299.8	21
Variable Frequency Drive (VFD) Measures		**23,208**	**4.0**	**83**	**$4,376**	**$23,423**	**$1,000**	**$22,423**	**5.1**	**33,093**
ECM 4	Install VFDs on Heating Water Pumps	16,242	3.1	0	$2,327	$14,082	$0	$14,082	6.1	16,356
	Install Boiler Draft Fan VFDs	1,322	0.9	0	$189	$5,265	$0	$5,265	27.8	1,332
ECM 5	Install VFDs on Kitchen Hood Fan Motors	5,644	0.0	83	$1,859	$4,076	$1,000	$3,076	1.7	15,405
Electric Unitary HVAC Measures		**38,385**	**48.8**	**0**	**$5,500**	**$1,005,238**	**$6,320**	**$998,918**	**181.6**	**38,653**
	Install High Efficiency Air Conditioning Units	38,385	48.8	0	$5,500	$1,005,238	$6,320	$998,918	181.6	38,653
HVAC System Improvements		**3,355**	**0.0**	**0**	**$481**	**$10,875**	**$0**	**$10,875**	**22.6**	**3,378**
	Implement Demand Control Ventilation (DCV)	3,355	0.0	0	$481	$10,875	$0	$10,875	22.6	3,378
Domestic Water Heating Upgrade		**0**	**0.0**	**48**	**$603**	**$748**	**$0**	**$748**	**1.2**	**5,584**
ECM 6	Install Low-Flow DHW Devices	0	0.0	48	$603	$748	$0	$748	1.2	5,584
Food Service & Refrigeration Measures		**7,326**	**0.8**	**0**	**$1,050**	**$9,013**	**$50**	**$8,963**	**8.5**	**7,377**
ECM 7	Refrigerator/Freezer Case Electrically Commutated Motors	1,311	0.2	0	$188	$1,517	$0	$1,517	8.1	1,320
	Replace Refrigeration Equipment	4,061	0.5	0	$582	$7,037	$0	$7,037	12.1	4,089
ECM 8	Vending Machine Control	1,954	0.2	0	$280	$460	$50	$410	1.5	1,968
TOTALS		**359,371**	**132.0**	**76**	**$52,455**	**$1,321,527**	**$43,332**	**$1,278,195**	**24.4**	**370,802**

* - 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		**190,739**	**53.0**	**-40**	**$26,826**	**$84,278**	**$20,757**	**$63,521**	**2.4**	**187,414**
ECM 1	Retrofit Fixtures with LED Lamps	190,739	53.0	-40	$26,826	$84,278	$20,757	$63,521	2.4	187,414
Lighting Control Measures		**54,376**	**15.0**	**-11**	**$7,647**	**$79,582**	**$9,365**	**$70,217**	**9.2**	**53,425**
ECM 2	Install Occupancy Sensor Lighting Controls	49,434	13.6	-10	$6,952	$72,982	$9,365	$63,617	9.2	48,569
ECM 3	Install High/Low Lighting Controls	4,942	1.3	-1	$695	$6,600	$0	$6,600	9.5	4,855
Variable Frequency Drive (VFD) Measures		**21,886**	**3.1**	**83**	**$4,186**	**$18,159**	**$1,000**	**$17,159**	**4.1**	**31,761**
ECM 4	Install VFDs on Heating Water Pumps	16,242	3.1	0	$2,327	$14,082	$0	$14,082	6.1	16,356
ECM 5	Install VFDs on Kitchen Hood Fan Motors	5,644	0.0	83	$1,859	$4,076	$1,000	$3,076	1.7	15,405
Domestic Water Heating Upgrade		**0**	**0.0**	**48**	**$603**	**$748**	**$0**	**$748**	**1.2**	**5,584**
ECM 6	Install Low-Flow DHW Devices	0	0.0	48	$603	$748	$0	$748	1.2	5,584
Food Service & Refrigeration Measures		**3,265**	**0.4**	**0**	**$468**	**$1,977**	**$50**	**$1,927**	**4.1**	**3,288**
ECM 7	Refrigerator/Freezer Case Electrically Commutated Motors	1,311	0.2	0	$188	$1,517	$0	$1,517	8.1	1,320
ECM 8	Vending Machine Control	1,954	0.2	0	$280	$460	$50	$410	1.5	1,968
TOTALS		**270,266**	**71.5**	**80**	**$39,731**	**$184,742**	**$31,172**	**$153,570**	**3.9**	**281,472**

* - 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		**232,700**	**63.3**	**-43**	**$32,795**	**$191,735**	**$26,597**	**$165,138**	**5.0**	**229,270**
	Install LED Fixtures	41,961	10.4	-3	$5,969	$107,457	$5,840	$101,617	17.0	41,856
ECM 1	Retrofit Fixtures with LED Lamps	190,739	53.0	-40	$26,826	$84,278	$20,757	$63,521	2.4	187,414

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 Elementary School, which should help reduce future maintenance costs.

Install LED Fixtures

Replace existing fixtures containing metal halide and compact fluorescent lamps with new LED light fixtures. This measure saves energy by installing LEDs, which use less power than other technologies with a comparable light output.

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

Installing LED fixtures has a long payback period and may not be justifiable based simply on energy considerations. Typically, the marginal cost of purchasing LED fixtures can be justified by the marginal savings from the improved lighting conditions. When the equipment will eventually need replacement, consider purchasing LED fixtures that produces maximum savings by consuming less electricity.

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, parking lot, and exterior fixtures.

ECM 1: Retrofit Fixtures with LED Lamps

Replace linear fluorescent, CFLs, 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: offices, conference rooms, classrooms, gymnasium, library, restrooms, areas, all areas with fluorescent fixtures with T8 tubes, and storage rooms.

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		**54,376**	**15.0**	**-11**	**$7,647**	**$79,582**	**$9,365**	**$70,217**	**9.2**	**53,425**
ECM 2	Install Occupancy Sensor Lighting Controls	49,434	13.6	-10	$6,952	$72,982	$9,365	$63,617	9.2	48,569
ECM 3	Install High/Low Lighting Controls	4,942	1.3	-1	$695	$6,600	$0	$6,600	9.5	4,855

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

ECM 2: Install Occupancy Sensor Lighting Controls

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

ECM 3: Install High/Low Lighting Controls

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

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

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

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

Affected building areas: hallways.

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

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		**8,337**	**3.9**	**0**	**$1,195**	**$62,682**	**$0**	**$62,682**	**52.5**	**8,395**
	Premium Efficiency Motors	21	0.0	0	$3	$913	$0	$913	299.8	21

Premium Efficiency Motors

Replace 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.

Premium efficiency motors have been proposed to be installed in conjunction with proposed VFD motor measures and to replace some old standard efficiency motors in VAV unit ventilators. Non-inverter duty rated motors will need to be replaced when the VFD measure is implemented.

Installing premium efficiency motors has a long payback period and may not be justifiable based simply on energy considerations. Typically, the marginal cost of purchasing premium efficiency motors can be justified by the marginal savings from the improved efficiency. When the motors will eventually need replacement, consider purchasing NEMA premium efficiency motors that produce maximum savings by consuming less electricity.

The table on the following page summarizes the affected motors.

Location	Area(s)/System(s) Served	Motor Quantity	Motor Application	HP Per Motor	Additional Motor Description
Boiler Room	B-1	1	Combustion Air Fan	1.5	Boiler Burner Motor
Boiler Room	B-2	1	Combustion Air Fan	1.5	Boiler Burner Motor
Boiler Room	HHWP-1	1	Heating Hot Water Pump	15.0	Hot water pump motor
Boiler Room	HHWP-2	1	Heating Hot Water Pump	15.0	Hot water pump motor
Kitchen Hood	EF-8	1	Kitchen Hood Exhaust Fan	5.0	Exhaust Fan
Classrooms and lobby	VAV Fan	160	Supply Fan	0.5	VAV fan motor

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		**22,603**	**3.8**	**83**	**$4,289**	**$18,930**	**$1,000**	**$17,930**	**4.2**	**32,483**
ECM 4	Install VFDs on Heating Water Pumps	16,242	3.1	0	$2,327	$14,082	$0	$14,082	6.1	16,356
	Install Boiler Draft Fan VFDs	1,322	0.9	0	$189	$5,265	$0	$5,265	27.8	1,332
ECM 5	Install VFDs on Kitchen Hood Fan Motors	5,644	0.0	83	$1,859	$4,076	$1,000	$3,076	1.7	15,405

Variable frequency drives control motors for fans, pumps, and process equipment based on the actual output required of the driven equipment. Energy savings result from more efficient control of motor energy usage when equipment operates at partial load. The magnitude of energy savings depends on the estimated amount of time that the motor would operate at partial load. For equipment with proposed VFDs, we have included replacing the controlled motor with a new motor —unless the existing motor meets or exceeds IHP 2014 standards—to conservatively account for the cost of an inverter duty rated motor. The savings and cost associated with the new motor are presented with the Premium Efficiency Motor measures. If the proposed VFD measure is not selected for implementation the motor replacement should be reevaluated.

ECM 4: Install VFDs on Heating Water Pumps

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

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

Affected pumps: HHWP-1 and 2.

Install Boiler Draft Fan VFDs

Replace existing volume control devices on boiler draft fans, such as inlet vanes or dampers, with VFDs. Inlet vanes or dampers are an inefficient means of controlling the air volume compared to VFDs. The existing volume control device will be removed or permanently disabled, and the control signal will be redirected to the VFD to determine proper fan motor speed.

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

Installing VFDs on boiler draft fans has a long payback period and may not be justifiable based simply on energy considerations. Typically, the marginal cost of installing VFDs can be justified by the marginal savings from the improved efficiency.

Additional maintenance savings may result from this measure. VFDs are solid state electronic devices, which generally requires less maintenance than mechanical air volume control devices.

ECM 5: Install VFDs on Kitchen Hood Fan Motors

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

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

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		**38,385**	**48.8**	**0**	**$5,500**	**$1,005,238**	**$6,320**	**$998,918**	**181.6**	**38,653**
	Install High Efficiency Air Conditioning Units	38,385	48.8	0	$5,500	$1,005,238	$6,320	$998,918	181.6	38,653

Replacing the unitary HVAC units has a long payback period and may not be justifiable based simply on energy considerations. However, most of the units at the Elementary School 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 SS-1 to 9 and RTU-1-15 are eventually replaced, consider purchasing equipment that exceeds the minimum efficiency required by building codes.

Install High-Efficiency Air Conditioning Units

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

4.6 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)
HVAC System Improvements		**3,355**	**0.0**	**0**	**$481**	**$10,875**	**$0**	**$10,875**	**22.6**	**3,378**
	Implement Demand Control Ventilation (DCV)	3,355	0.0	0	$481	$10,875	$0	$10,875	22.6	3,378

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.

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.

Installing demand control ventilation system has a long payback period and may not be justifiable based simply on energy considerations. Typically, the marginal cost of installing DCV can be justified by the marginal savings from the improved efficiency. When DCV will eventually implement, consider system that exceeds the minimum efficiency required by building codes.

Affected building areas: gymnasium, cafeteria, and the Media Service Center.

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**	**48**	**$603**	**$748**	**$0**	**$748**	**1.2**	**5,584**
ECM 6	Install Low-Flow DHW Devices	0	0.0	48	$603	$748	$0	$748	1.2	5,584

ECM 6: Install Low-Flow DHW Devices

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

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

Low-flow devices reduce the overall water flow from the fixture, while still providing adequate pressure for washing. Pre-rinse spray valves (PRSVs)—often used in commercial and institutional kitchens—remove food waste from dishes prior to dishwashing.

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		**7,326**	**0.8**	**0**	**$1,050**	**$9,013**	**$50**	**$8,963**	**8.5**	**7,377**
ECM 7	Refrigerator/Freezer Case Electrically Commutated Motors	1,311	0.2	0	$188	$1,517	$0	$1,517	8.1	1,320
	Replace Refrigeration Equipment	4,061	0.5	0	$582	$7,037	$0	$7,037	12.1	4,089
ECM 8	Vending Machine Control	1,954	0.2	0	$280	$460	$50	$410	1.5	1,968

ECM 7: Refrigerator/Freezer Case Electrically Commutated Motors

Replace shaded pole or permanent split capacitor (PSC) motors with electronically commutated (EC) motors in walk-in coolers and freezers. 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.

Replace Refrigeration Equipment

Replace existing milk coolers with new ENERGY STAR® rated equipment. The energy savings associated with this measure come from reduced energy usage due to more efficient technology and reduced run times.

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

ECM 8: Vending Machine Control

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

5 ENERGY EFFICIENT BEST PRACTICES

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

Energy Tracking with ENERGY STAR® Portfolio Manager®

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

Doors and Windows

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

Window Treatments/Coverings

Use high-reflectivity films or cover windows with shades or shutters to reduce solar heat gain and reduce the load on cooling and heating systems. Older, single pane windows and east or west-facing windows are especially prone to solar heat gain. In addition, use shades or shutters at night during cold weather to reduce heat loss.

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.

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

Lighting Controls

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

Motor Controls

Electric motors often run unnecessarily, and this is an overlooked opportunity to save energy. These motors should be identified and turned off when appropriate. For example, exhaust fans often run unnecessarily when ventilation requirements are already met. Whenever possible, use automatic devices such as twist timers or occupancy sensors to turn off motors when they are not needed.

Motor Maintenance

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

Fans to Reduce Cooling Load

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

Thermostat Schedules and Temperature Resets

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

Economizer Maintenance

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

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

AC System Evaporator/Condenser Coil Cleaning

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

HVAC Filter Cleaning and Replacement

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

Duct Sealing

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

Boiler Maintenance

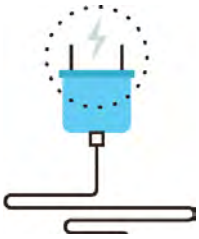
Many boiler problems develop slowly over time, so regular inspection and maintenance is essential to keeping the heating system running efficiently and preventing expensive repairs. Annual tune-ups should include a combustion analysis to analyze the exhaust from the boilers and to ensure the boiler is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

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.

Plug Load Controls



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

Computer Power Management Software

Many computers consume power during nights, weekends, and holidays. Screen savers are commonly confused as a power management strategy. This contributes to avoidable, excessive electrical energy consumption. There are innovative power management software packages available that are designed to deliver significant energy saving and provide ongoing tracking measurements. A central power management platform helps enforce energy savings policies as well as identify and eliminate underutilized devices

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

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 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.

The amount of free area, ease of installation in parking lot, and the lack of shading elements contribute to the **high** potential. A PV array located in the parking lot be feasible in addition to the one you already have on roof. 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.

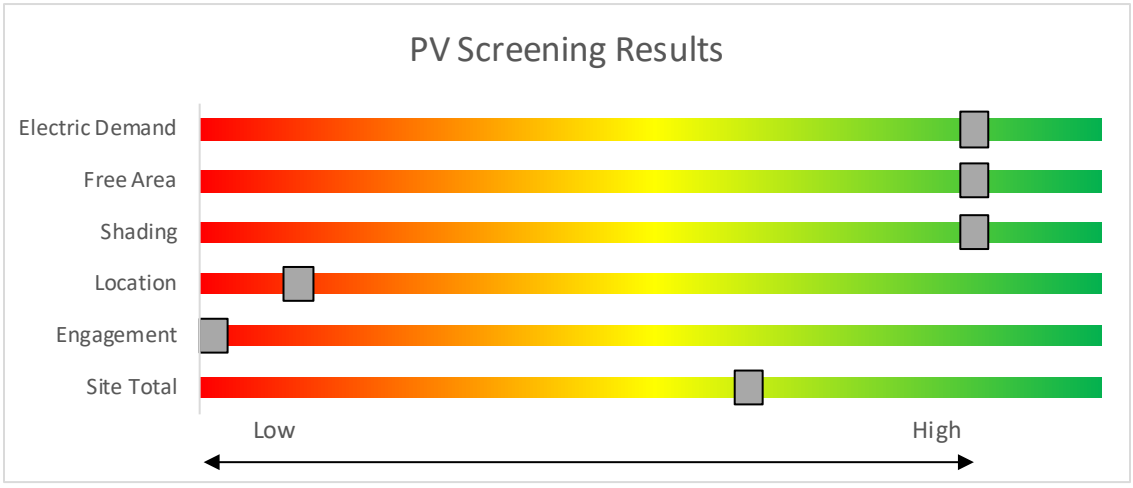


Figure 9 - Photovoltaic Screening

Solar Renewable Energy Credit (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) generate electricity at the Elementary School 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 Elementary School has **no** potential for installing a cost-effective CHP system.

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

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

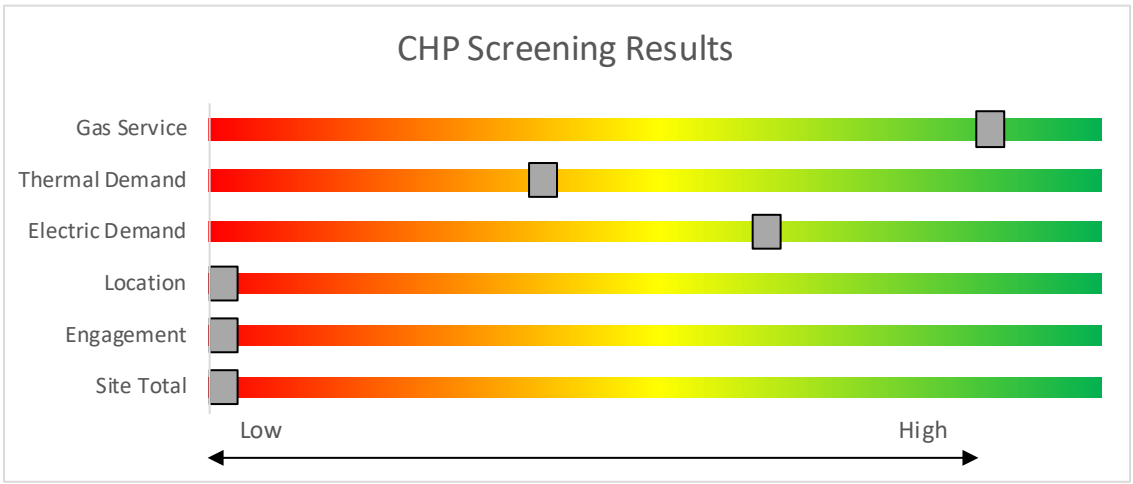


Figure 10 - Combined Heat and Power Screening

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

7 PROJECT FUNDING AND INCENTIVES

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

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.

7.3 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.

7.4 SREC Registration Program

The SREC 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
Walk In Cooler	4	LED Screw-In Lamps: Bulb (9.5W) - 1L	Wall Switch	S	10	2,400		None	No	4	LED Screw-In Lamps: Bulb (9.5W) - 1L	Wall Switch	10	2,400	0.0	0	0	$0	$0	$0	0.0
Walk In Freezer	6	LED Screw-In Lamps: Bulb (9.5W) - 1L	Wall Switch	S	10	2,400		None	No	6	LED Screw-In Lamps: Bulb (9.5W) - 1L	Wall Switch	10	2,400	0.0	0	0	$0	$0	$0	0.0
Gym E140	28	Metal Halide: (1) 250W Lamp	Wall Switch	S	295	2,400	NR, 2	Fixture Replacement	Yes	28	LED - Fixtures: Decorative: Other	Occupancy Sensor	75	1,656	4.9	17,981	-4	$2,529	$9,813	$210	3.8
Parking Lot	31	Metal Halide: (1) 175W Lamp	Timeclock		215	2,160	NR	Fixture Replacement	No	31	LED - Fixtures: Large Pole/Arm-Mounted Area/Roadway Fixture	Timeclock	53	2,160	2.5	10,881	0	$1,559	$37,030	$0	23.8
Exterior	43	Metal Halide: (1) 100W Lamp	Timeclock		128	2,160	NR	Fixture Replacement	No	43	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Timeclock	30	2,160	2.1	9,102	0	$1,304	$41,537	$4,300	28.6
Exterior	26	Metal Halide: (1) 100W Lamp	Timeclock		128	2,160	NR	Fixture Replacement	No	26	LED - Fixtures: Bollard Fixture	Timeclock	30	2,160	1.3	5,504	0	$789	$18,652	$1,300	22.0
Exterior	1	Metal Halide: (1) 100W Lamp	Timeclock		128	2,160	NR	Fixture Replacement	No	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Timeclock	30	2,160	0.0	212	0	$30	$966	$100	28.6
Break Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.2	586	0	$82	$489	$95	4.8
E104	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	1	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,400	0.0	148	0	$21	$73	$20	2.6
Break Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.2	586	0	$82	$489	$95	4.8
E122	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	1, 2	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.2	781	0	$110	$562	$115	4.1
E123	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	1, 2	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.2	781	0	$110	$562	$115	4.1
E131	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.1	391	0	$55	$416	$75	6.2
E138	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.1	391	0	$55	$416	$75	6.2
Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	1	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,400	0.0	148	0	$21	$73	$20	2.6
E151 Art	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.2	586	0	$82	$489	$95	4.8
F102	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	1, 2	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.2	781	0	$110	$562	$115	4.1
Cafeteria	28	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	28	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	1.3	4,656	-1	$655	$2,074	$490	2.4
Cafeteria	28	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	28	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	1.3	4,656	-1	$655	$2,074	$490	2.4
Kitchen	18	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	18	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.8	2,993	-1	$421	$1,256	$305	2.3
F112	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	2,400	0.0	131	0	$18	$55	$15	2.2
F114 Kitchen Office	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	2,400	0.0	131	0	$18	$55	$15	2.2
F118	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	2,400	0.0	131	0	$18	$55	$15	2.2
E116	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	2,400	0.0	131	0	$18	$55	$15	2.2
E140 Gym	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.2	665	0	$94	$489	$95	4.2

	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
F103	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.2	665	0	$94	$489	$95	4.2
F104	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.2	665	0	$94	$489	$95	4.2
Rest Area	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	499	0	$70	$434	$80	5.1
B116 Classroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
B115 Computer Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	499	0	$70	$434	$80	5.1
B114 Classroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
B113 Clasroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
B112 Computer Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	499	0	$70	$434	$80	5.1
B111 Classroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
B110 Classroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
B109 Computer Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	499	0	$70	$434	$80	5.1
B108 Classroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
Rest Area	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	499	0	$70	$434	$80	5.1
A101 Classroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
A102 Computer Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	499	0	$70	$434	$80	5.1
A103 Classroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
A104 Classroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
A105 Computer Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	499	0	$70	$434	$80	5.1
A106 Classroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
A107 Classroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
A108 Computer Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	499	0	$70	$434	$80	5.1
A109 Classroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
E144	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	499	0	$70	$434	$80	5.1
C101 Classroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
C102 Computer Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	499	0	$70	$434	$80	5.1

	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
C103 Classroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
C104 Classroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
C105 Computer Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	499	0	$70	$434	$80	5.1
C106 Classroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
C107 Classroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
C108 Computer Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	499	0	$70	$434	$80	5.1
C109 Classroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
Rest Area	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	499	0	$70	$434	$80	5.1
D108 Classroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
D109 Computer Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	499	0	$70	$434	$80	5.1
D110 Classroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
D111 Classroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
D112 Computer Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	499	0	$70	$434	$80	5.1
D113 Classroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
D114 Classroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
D115 Computer Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	499	0	$70	$434	$80	5.1
D116 Classroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
Rest Area	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	499	0	$70	$434	$80	5.1
Rest Area	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	499	0	$70	$434	$80	5.1
B216 Classroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
B215 Computer Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	499	0	$70	$434	$80	5.1
B214 Classroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
B213 Clasroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
B212 Computer Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	499	0	$70	$434	$80	5.1
B211 Classroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7

	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
B210 Classroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
B209 Computer Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	499	0	$70	$434	$80	5.1
B208 Classroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
Rest Area	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	499	0	$70	$434	$80	5.1
A201 Classroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
A202 Computer Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	499	0	$70	$434	$80	5.1
A203 Classroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
A204 Classroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
A205 Computer Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	499	0	$70	$434	$80	5.1
A206 Classroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
A207 Classroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
A208 Computer Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	499	0	$70	$434	$80	5.1
A209 Classroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
C201 Classroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
C202 Computer Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	499	0	$70	$434	$80	5.1
C203 Classroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
C204 Classroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
C205 Computer Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	499	0	$70	$434	$80	5.1
C206 Classroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
C207 Classroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
C208 Computer Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	499	0	$70	$434	$80	5.1
C209 Classroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
Rest Area	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	499	0	$70	$434	$80	5.1
D208 Classroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
D209 Computer Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	499	0	$70	$434	$80	5.1

	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
D210 Classroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
D211 Classroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
D212 Computer Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	499	0	$70	$434	$80	5.1
D213 Classroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
D214 Classroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
D215 Computer Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	499	0	$70	$434	$80	5.1
D216 Classroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
Rest Area	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	499	0	$70	$434	$80	5.1
E203 AV	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
F119 Boiler	26	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	800	1	Relamp	No	26	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	800	0.6	755	0	$106	$949	$260	6.5
Cafeteria	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.5	1,995	0	$281	$927	$215	2.5
Kitchen	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.5	1,774	0	$249	$854	$195	2.6
Custodian	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	200	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	200	0.0	7	0	$1	$37	$10	26.0
F112	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,400	0.0	87	0	$12	$37	$10	2.2
F110 Receiving	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.2	554	0	$78	$453	$85	4.7
F111 Custodial	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	200	1, 2	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	138	0.2	74	0	$10	$562	$115	43.0
F117 Storage	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	200	1, 2	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	138	0.1	28	0	$4	$226	$30	50.2
E120	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	222	0	$31	$189	$40	4.8
Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,400	0.0	87	0	$12	$37	$10	2.2
Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,400	0.0	87	0	$12	$37	$10	2.2
E101 Main Office	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	333	0	$47	$380	$65	6.7
Main Office Hallway	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 3	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,656	0.5	1,774	0	$249	$1,184	$160	4.1
Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,400	0.0	87	0	$12	$37	$10	2.2
Main Office	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	333	0	$47	$380	$65	6.7
E110 Storage	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	200	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	200	0.0	7	0	$1	$37	$10	26.0

	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
E136 MDF	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	222	0	$31	$189	$40	4.8
E134 Elevator	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,400	0.0	174	0	$25	$73	$20	2.2
E133	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	222	0	$31	$189	$40	4.8
E125	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,400	0.0	87	0	$12	$37	$10	2.2
Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,400	0.0	87	0	$12	$37	$10	2.2
Rest Area	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	443	0	$62	$416	$75	5.5
Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,400	0.0	87	0	$12	$37	$10	2.2
E130	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.2	554	0	$78	$453	$85	4.7
E135	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.2	887	0	$125	$562	$115	3.6
E139	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.2	554	0	$78	$453	$85	4.7
E152	19	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	19	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.6	2,106	0	$296	$964	$225	2.5
F101 Music	24	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	24	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.7	2,660	-1	$374	$1,416	$310	3.0
F105 Music	24	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	24	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.7	2,660	-1	$374	$1,416	$310	3.0
E147	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	443	0	$62	$416	$75	5.5
B104 Group Study Room	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.5	1,663	0	$234	$818	$185	2.7
B wing Boys	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	333	0	$47	$380	$65	6.7
B wing Girls	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	333	0	$47	$380	$65	6.7
B103 IDF	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.2	665	0	$94	$489	$95	4.2
B116 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,330	0	$187	$708	$155	3.0
B114 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,330	0	$187	$708	$155	3.0
B107 Planning	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.3	1,109	0	$156	$635	$135	3.2
B106	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	222	0	$31	$189	$40	4.8
B105 Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,400	0.0	87	0	$12	$37	$10	2.2
B113 Clasroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,330	0	$187	$708	$155	3.0
B111 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,330	0	$187	$708	$155	3.0

	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
B110 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,330	0	$187	$708	$155	3.0
B108 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,330	0	$187	$708	$155	3.0
E148	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	443	0	$62	$416	$75	5.5
A wing Boys	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	333	0	$47	$380	$65	6.7
A wing Girls	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	333	0	$47	$380	$65	6.7
A101 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,330	0	$187	$708	$155	3.0
A103 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,330	0	$187	$708	$155	3.0
A104 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,330	0	$187	$708	$155	3.0
A106 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,330	0	$187	$708	$155	3.0
A107 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,330	0	$187	$708	$155	3.0
A109 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,330	0	$187	$708	$155	3.0
A110 Planning	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.3	1,109	0	$156	$635	$135	3.2
A112 Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	200	1, 2	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	138	0.1	18	0	$3	$189	$20	65.1
A111 Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,400	0.0	87	0	$12	$37	$10	2.2
A113 Small Group Room	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.5	1,663	0	$234	$818	$185	2.7
A116 IDF	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.2	665	0	$94	$489	$95	4.2
E143	19	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	19	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.6	2,106	0	$296	$964	$225	2.5
C101 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,330	0	$187	$708	$155	3.0
C103 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,330	0	$187	$708	$155	3.0
C104 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,330	0	$187	$708	$155	3.0
C106 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,330	0	$187	$708	$155	3.0
C107 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,330	0	$187	$708	$155	3.0
C109 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,330	0	$187	$708	$155	3.0
C110 Planning	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.3	1,109	0	$156	$635	$135	3.2
C111	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	222	0	$31	$189	$40	4.8

	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
C112 Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,400	0.0	87	0	$12	$37	$10	2.2
C113 Group Study room	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.5	1,663	0	$234	$818	$185	2.7
C wing Boys	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	333	0	$47	$380	$65	6.7
C wing Girls	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	333	0	$47	$380	$65	6.7
C116 IDF	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.2	665	0	$94	$489	$95	4.2
D104	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.5	1,663	0	$234	$818	$185	2.7
D107	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.3	1,109	0	$156	$635	$135	3.2
D105	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,400	0.0	87	0	$12	$37	$10	2.2
D106 Restroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	222	0	$31	$189	$20	5.4
D108 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,330	0	$187	$708	$155	3.0
D110 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,330	0	$187	$708	$155	3.0
D111 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,330	0	$187	$708	$155	3.0
D113 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,330	0	$187	$708	$155	3.0
D114 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,330	0	$187	$708	$155	3.0
D116 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,330	0	$187	$708	$155	3.0
D103 IDF	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.2	665	0	$94	$489	$95	4.2
D wing Boys	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	333	0	$47	$380	$65	6.7
D wing Girls	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	333	0	$47	$380	$65	6.7
B204 Group Study Room	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.5	1,663	0	$234	$818	$185	2.7
B wing Boys 2nd Fl	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	333	0	$47	$380	$65	6.7
B wing Girls 2nd Fl	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	333	0	$47	$380	$65	6.7
B203 IDF	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.2	665	0	$94	$489	$95	4.2
B216 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,330	0	$187	$708	$155	3.0
B214 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,330	0	$187	$708	$155	3.0
B207 Planning	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.3	1,109	0	$156	$635	$135	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
B206	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	222	0	$31	$189	$40	4.8
B205 Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,400	0.0	87	0	$12	$37	$10	2.2
B213 Clasroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,330	0	$187	$708	$155	3.0
B211 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,330	0	$187	$708	$155	3.0
B210 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,330	0	$187	$708	$155	3.0
B208 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,330	0	$187	$708	$155	3.0
A wing Boys 2nd Fl	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	333	0	$47	$380	$65	6.7
A wing Girls 2nf Fl	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	333	0	$47	$380	$65	6.7
A201 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,330	0	$187	$708	$155	3.0
A203 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,330	0	$187	$708	$155	3.0
A204 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,330	0	$187	$708	$155	3.0
A206 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,330	0	$187	$708	$155	3.0
A207 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,330	0	$187	$708	$155	3.0
A209 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,330	0	$187	$708	$155	3.0
A210 Planning	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.3	1,109	0	$156	$635	$135	3.2
A212 Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	200	1, 2	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	138	0.1	18	0	$3	$189	$20	65.1
A211 Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,400	0.0	87	0	$12	$37	$10	2.2
A213 Small Group Room	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.5	1,663	0	$234	$818	$185	2.7
A216 IDF	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.2	665	0	$94	$489	$95	4.2
C201 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,330	0	$187	$708	$155	3.0
C203 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,330	0	$187	$708	$155	3.0
C204 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,330	0	$187	$708	$155	3.0
C206 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,330	0	$187	$708	$155	3.0
C207 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,330	0	$187	$708	$155	3.0
C209 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,330	0	$187	$708	$155	3.0

	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
C210 Planning	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.3	1,109	0	$156	$635	$135	3.2
C211	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	222	0	$31	$189	$40	4.8
C212 Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,400	0.0	87	0	$12	$37	$10	2.2
C213 Group Study room	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.5	1,663	0	$234	$818	$185	2.7
C wing Boys 2nd Fl	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	333	0	$47	$380	$65	6.7
C wing Girls 2nd Fl	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	333	0	$47	$380	$65	6.7
C216 IDF	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.2	665	0	$94	$489	$95	4.2
D204	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.5	1,663	0	$234	$818	$185	2.7
D207	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.3	1,109	0	$156	$635	$135	3.2
D205	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,400	0.0	87	0	$12	$37	$10	2.2
D206 Restroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	222	0	$31	$189	$20	5.4
D208 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,330	0	$187	$708	$155	3.0
D210 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,330	0	$187	$708	$155	3.0
D211 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,330	0	$187	$708	$155	3.0
D213 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,330	0	$187	$708	$155	3.0
D214 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,330	0	$187	$708	$155	3.0
D216 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,330	0	$187	$708	$155	3.0
D203 IDF	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.2	665	0	$94	$489	$95	4.2
D wing Boys 2nd Fl	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	333	0	$47	$380	$65	6.7
D wing Girls 2nd Fl	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	333	0	$47	$380	$65	6.7
Outer Stair C	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,400	0.1	261	0	$37	$110	$30	2.2
Outer Stair B	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,400	0.1	261	0	$37	$110	$30	2.2
Outer Stair A	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,400	0.1	261	0	$37	$110	$30	2.2
Outer Stair D	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,400	0.1	261	0	$37	$110	$30	2.2
Inner Stair A	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1	Relamp	No	7	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,400	0.2	610	0	$86	$256	$70	2.2

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Inner Stair B	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1	Relamp	No	7	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,400	0.2	610	0	$86	$256	$70	2.2
Inner Stair C	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1	Relamp	No	7	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,400	0.2	610	0	$86	$256	$70	2.2
Inner Stair D	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1	Relamp	No	7	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,400	0.2	610	0	$86	$256	$70	2.2
E218 Speech	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	443	0	$62	$416	$75	5.5
E215 CST	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	333	0	$47	$380	$65	6.7
E214 Break Room	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.6	2,217	0	$312	$1,270	$270	3.2
E219 Group	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.3	1,109	0	$156	$635	$135	3.2
E210 CST	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.2	665	0	$94	$489	$95	4.2
E209 Computer Lab	21	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	21	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.6	2,328	0	$327	$1,307	$280	3.1
E219A	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.3	1,109	0	$156	$635	$135	3.2
E220	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.3	1,109	0	$156	$635	$135	3.2
E201	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.2	665	0	$94	$489	$95	4.2
E202	21	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	21	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.6	2,328	0	$327	$1,307	$280	3.1
E220A	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.3	1,109	0	$156	$635	$135	3.2
E225	19	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	19	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.6	2,106	0	$296	$1,234	$260	3.3
E224	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	222	0	$31	$189	$40	4.8
E221	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	443	0	$62	$416	$75	5.5
E206 Library	42	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	42	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	1.3	4,656	-1	$655	$2,344	$525	2.8
E206 Library	34	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	34	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	1.0	3,769	-1	$530	$1,782	$410	2.6
E206 Library	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	443	0	$62	$416	$75	5.5
E208	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	333	0	$47	$380	$65	6.7
E207	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.2	665	0	$94	$489	$95	4.2
Elevator	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,400	0.0	174	0	$25	$73	$20	2.2
Stage	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.5	1,774	0	$249	$1,124	$230	3.6
Stage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,400	0.0	174	0	$25	$73	$20	2.2

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Stage Storage	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	200	1, 2	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	138	0.2	55	0	$8	$335	$60	35.3
Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	200	1, 2	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	138	0.1	18	0	$3	$189	$20	65.1
1st & 2nd Fl Hallway	148	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 3	Relamp	Yes	148	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,656	4.5	16,406	-3	$2,307	$10,338	$1,480	3.8
Vestibule 1	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	443	0	$62	$262	$40	3.6
Vestibule 2	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	1, 2	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	443	0	$62	$262	$40	3.6
Trophy Case	2	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	S	27	2,400	1	Relamp	No	2	LED - Linear Tubes: (1) 3' Lamp	Wall Switch	11	2,400	0.0	87	0	$12	$37	$10	2.2
Showcase	8	Linear Fluorescent - T8: 2' T8 (17W) - 1L	Wall Switch	S	22	2,400	1	Relamp	No	8	LED - Linear Tubes: (1) 2' Lamp	Wall Switch	9	2,400	0.1	285	0	$40	$130	$24	2.6
Showcase	2	Linear Fluorescent - T8: 2' T8 (17W) - 1L	Wall Switch	S	22	2,400	1	Relamp	No	2	LED - Linear Tubes: (1) 2' Lamp	Wall Switch	9	2,400	0.0	71	0	$10	$33	$6	2.6
Showcase	2	Linear Fluorescent - T8: 2' T8 (17W) - 1L	Wall Switch	S	22	2,400	1	Relamp	No	2	LED - Linear Tubes: (1) 2' Lamp	Wall Switch	9	2,400	0.0	71	0	$10	$33	$6	2.6
Trophy Case	2	Linear Fluorescent - T8: 2' T8 (17W) - 1L	Wall Switch	S	22	2,400	1	Relamp	No	2	LED - Linear Tubes: (1) 2' Lamp	Wall Switch	9	2,400	0.0	71	0	$10	$33	$6	2.6
E117 Main Office	4	Linear Fluorescent - T5HO: 4' T5HO (54W) - 2L	Wall Switch	S	117	2,400	1, 2	Relamp	Yes	4	LED - Linear Tubes: (2) 4' T5HO (25W) Lamps	Occupancy Sensor	51	1,656	0.2	864	0	$121	$498	$35	3.8
E115	2	Linear Fluorescent - T5HO: 4' T5HO (54W) - 2L	Wall Switch	S	117	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (2) 4' T5HO (25W) Lamps	Occupancy Sensor	51	1,656	0.1	432	0	$61	$384	$35	5.7
E114	3	Linear Fluorescent - T5HO: 4' T5HO (54W) - 2L	Wall Switch	S	117	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (2) 4' T5HO (25W) Lamps	Occupancy Sensor	51	1,656	0.2	648	0	$91	$441	$35	4.5
E113	3	Linear Fluorescent - T5HO: 4' T5HO (54W) - 2L	Wall Switch	S	117	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (2) 4' T5HO (25W) Lamps	Occupancy Sensor	51	1,656	0.2	648	0	$91	$441	$35	4.5
E110	2	Linear Fluorescent - T5HO: 4' T5HO (54W) - 2L	Wall Switch	S	117	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (2) 4' T5HO (25W) Lamps	Occupancy Sensor	51	1,656	0.1	432	0	$61	$384	$35	5.7
E107	3	Linear Fluorescent - T5HO: 4' T5HO (54W) - 2L	Wall Switch	S	117	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (2) 4' T5HO (25W) Lamps	Occupancy Sensor	51	1,656	0.2	648	0	$91	$441	$35	4.5
E106	3	Linear Fluorescent - T5HO: 4' T5HO (54W) - 2L	Wall Switch	S	117	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (2) 4' T5HO (25W) Lamps	Occupancy Sensor	51	1,656	0.2	648	0	$91	$441	$35	4.5
E105	2	Linear Fluorescent - T5HO: 4' T5HO (54W) - 2L	Wall Switch	S	117	2,400	1, 2	Relamp	Yes	2	LED - Linear Tubes: (2) 4' T5HO (25W) Lamps	Occupancy Sensor	51	1,656	0.1	432	0	$61	$384	$35	5.7
E103	3	Linear Fluorescent - T5HO: 4' T5HO (54W) - 2L	Wall Switch	S	117	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (2) 4' T5HO (25W) Lamps	Occupancy Sensor	51	1,656	0.2	648	0	$91	$441	$35	4.5
E101 Main Office	4	Linear Fluorescent - T5HO: 4' T5HO (54W) - 2L	Wall Switch	S	117	2,400	1, 2	Relamp	Yes	4	LED - Linear Tubes: (2) 4' T5HO (25W) Lamps	Occupancy Sensor	51	1,656	0.2	864	0	$121	$498	$35	3.8
E119	3	Linear Fluorescent - T5HO: 4' T5HO (54W) - 2L	Wall Switch	S	117	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (2) 4' T5HO (25W) Lamps	Occupancy Sensor	51	1,656	0.2	648	0	$91	$441	$35	4.5
E205	3	Linear Fluorescent - T5HO: 4' T5HO (54W) - 2L	Wall Switch	S	117	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (2) 4' T5HO (25W) Lamps	Occupancy Sensor	51	1,656	0.2	648	0	$91	$441	$35	4.5
E204	3	Linear Fluorescent - T5HO: 4' T5HO (54W) - 2L	Wall Switch	S	117	2,400	1, 2	Relamp	Yes	3	LED - Linear Tubes: (2) 4' T5HO (25W) Lamps	Occupancy Sensor	51	1,656	0.2	648	0	$91	$441	$35	4.5
Kitchen	13	LED Screw-In Lamps: Bulb (9.5W) - 1L	Wall Switch	S	10	2,400		None	No	13	LED Screw-In Lamps: Bulb (9.5W) - 1L	Wall Switch	10	2,400	0.0	0	0	$0	$0	$0	0.0
Cafeteria	26	LED - Fixtures: Downlight Recessed	Wall Switch	S	17	2,400	2	None	Yes	26	LED - Fixtures: Downlight Recessed	Occupancy Sensor	17	1,656	0.1	362	0	$51	$540	$70	9.2

	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
Cafeteria	26	LED - Fixtures: Downlight Recessed	Wall Switch	S	17	2,400	2	None	Yes	26	LED - Fixtures: Downlight Recessed	Occupancy Sensor	17	1,656	0.1	362	0	$51	$540	$70	9.2
Cafeteria	35	LED - Fixtures: Decorative Pendant	Wall Switch	S	17	2,400	2	None	Yes	35	LED - Fixtures: Decorative Pendant	Occupancy Sensor	17	1,656	0.1	487	0	$68	$540	$70	6.9
F119 Boiler	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
Gym E140	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	14	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	14	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Kitchen	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
F110 Receiving	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
E101 Main Office	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
E151 Art	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
Outer Staris	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
Inner Stair A	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
Inner Stair B	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
Inner Stair C	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
Inner Stair D	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
E209 Computer Lab	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
E206 Library	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
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
1st & 2nd Fl Hallway	43	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	43	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Vestibule 1	2	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Vestibule 2	2	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Outer Stair C	2	Compact Fluorescent: Decorative Pendant (40W) - 3L	Wall Switch	S	120	2,400	1	Relamp	No	2	LED Screw-In Lamps: Decorative Pendant	Wall Switch	84	2,400	0.1	190	0	$27	$114	$0	4.3
Outer Stair B	2	Compact Fluorescent: Decorative Pendant (40W) - 3L	Wall Switch	S	120	2,400	1	Relamp	No	2	LED Screw-In Lamps: Decorative Pendant	Wall Switch	84	2,400	0.1	190	0	$27	$114	$0	4.3
Outer Stair A	2	Compact Fluorescent: Decorative Pendant (40W) - 3L	Wall Switch	S	120	2,400	1	Relamp	No	2	LED Screw-In Lamps: Decorative Pendant	Wall Switch	84	2,400	0.1	190	0	$27	$114	$0	4.3
Outer Stair D	2	Compact Fluorescent: Decorative Pendant (40W) - 3L	Wall Switch	S	120	2,400	1	Relamp	No	2	LED Screw-In Lamps: Decorative Pendant	Wall Switch	84	2,400	0.1	190	0	$27	$114	$0	4.3
E206 Library	2	Compact Fluorescent: Decorative Pendant (40W) - 3L	Wall Switch	S	120	2,400	1, 2	Relamp	Yes	2	LED Screw-In Lamps: Decorative Pendant	Occupancy Sensor	84	1,656	0.1	328	0	$46	$384	$35	7.6

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
1st & 2nd Fl Hallway	4	Compact Fluorescent: Decorative Pendant (40W) - 3L	Wall Switch	S	120	2,400	1, 3	Relamp	Yes	4	LED Screw-In Lamps: Decorative Pendant	High/Low Control	84	1,656	0.2	655	0	$92	$428	$0	4.6
E206 Library	4	Compact Fluorescent: Decorative Pendant (26W) - 2L	Wall Switch	S	52	2,400	1, 2	Relamp	Yes	4	LED Screw-In Lamps: Decorative Pendant	Occupancy Sensor	36	1,656	0.1	284	0	$40	$416	$35	9.5
Kitchen	12	Compact Fluorescent: 4 Pin CFL (26W) - 2L	Wall Switch	S	52	2,400	1, 2	Relamp	Yes	12	LED Screw-In Lamps: Other	Occupancy Sensor	36	1,656	0.2	852	0	$120	$708	$35	5.6
E117 Main Office	8	Compact Fluorescent: 4 Pin CFL (26W) - 2L	Wall Switch	S	52	2,400	1, 2	Relamp	Yes	8	LED Screw-In Lamps: Other	Occupancy Sensor	36	1,656	0.2	568	0	$80	$562	$35	6.6
E115	4	Compact Fluorescent: 4 Pin CFL (26W) - 2L	Wall Switch	S	52	2,400	1, 2	Relamp	Yes	4	LED Screw-In Lamps: Other	Occupancy Sensor	36	1,656	0.1	284	0	$40	$416	$35	9.5
E110	7	Compact Fluorescent: 4 Pin CFL (26W) - 2L	Wall Switch	S	52	2,400	1, 2	Relamp	Yes	7	LED Screw-In Lamps: Other	Occupancy Sensor	36	1,656	0.1	497	0	$70	$526	$35	7.0
E105	4	Compact Fluorescent: 4 Pin CFL (26W) - 2L	Wall Switch	S	52	2,400	1, 2	Relamp	Yes	4	LED Screw-In Lamps: Other	Occupancy Sensor	36	1,656	0.1	284	0	$40	$416	$35	9.5
E103	9	Compact Fluorescent: 4 Pin CFL (26W) - 2L	Wall Switch	S	52	2,400	1, 2	Relamp	Yes	9	LED Screw-In Lamps: Other	Occupancy Sensor	36	1,656	0.2	639	0	$90	$599	$35	6.3
E101 Main Office	8	Compact Fluorescent: 4 Pin CFL (26W) - 2L	Wall Switch	S	52	2,400	1, 2	Relamp	Yes	8	LED Screw-In Lamps: Other	Occupancy Sensor	36	1,656	0.2	568	0	$80	$562	$35	6.6
E119	9	Compact Fluorescent: 4 Pin CFL (26W) - 2L	Wall Switch	S	52	2,400	1, 2	Relamp	Yes	9	LED Screw-In Lamps: Other	Occupancy Sensor	36	1,656	0.2	639	0	$90	$599	$35	6.3
E121	3	Compact Fluorescent: 4 Pin CFL (26W) - 2L	Wall Switch	S	52	2,400	1	Relamp	No	3	LED Screw-In Lamps: Other	Wall Switch	36	2,400	0.0	124	0	$17	$110	$0	6.3
Rest Area	3	Compact Fluorescent: 4 Pin CFL (26W) - 2L	Wall Switch	S	52	2,400	1	Relamp	No	3	LED Screw-In Lamps: Other	Wall Switch	36	2,400	0.0	124	0	$17	$110	$0	6.3
Rest Area	3	Compact Fluorescent: 4 Pin CFL (26W) - 2L	Wall Switch	S	52	2,400	1	Relamp	No	3	LED Screw-In Lamps: Other	Wall Switch	36	2,400	0.0	124	0	$17	$110	$0	6.3
Rest Area	3	Compact Fluorescent: 4 Pin CFL (26W) - 2L	Wall Switch	S	52	2,400	1	Relamp	No	3	LED Screw-In Lamps: Other	Wall Switch	36	2,400	0.0	124	0	$17	$110	$0	6.3
Rest Area	3	Compact Fluorescent: 4 Pin CFL (26W) - 2L	Wall Switch	S	52	2,400	1	Relamp	No	3	LED Screw-In Lamps: Other	Wall Switch	36	2,400	0.0	124	0	$17	$110	$0	6.3
Rest Area	3	Compact Fluorescent: 4 Pin CFL (26W) - 2L	Wall Switch	S	52	2,400	1	Relamp	No	3	LED Screw-In Lamps: Other	Wall Switch	36	2,400	0.0	124	0	$17	$110	$0	6.3
Rest Area	3	Compact Fluorescent: 4 Pin CFL (26W) - 2L	Wall Switch	S	52	2,400	1	Relamp	No	3	LED Screw-In Lamps: Other	Wall Switch	36	2,400	0.0	124	0	$17	$110	$0	6.3
Rest Area	3	Compact Fluorescent: 4 Pin CFL (26W) - 2L	Wall Switch	S	52	2,400	1	Relamp	No	3	LED Screw-In Lamps: Other	Wall Switch	36	2,400	0.0	124	0	$17	$110	$0	6.3
Rest Area	3	Compact Fluorescent: 4 Pin CFL (26W) - 2L	Wall Switch	S	52	2,400	1	Relamp	No	3	LED Screw-In Lamps: Other	Wall Switch	36	2,400	0.0	124	0	$17	$110	$0	6.3
Rest Area	3	Compact Fluorescent: 4 Pin CFL (26W) - 2L	Wall Switch	S	52	2,400	1	Relamp	No	3	LED Screw-In Lamps: Other	Wall Switch	36	2,400	0.0	124	0	$17	$110	$0	6.3
E206 Library	15	Compact Fluorescent: 4 Pin CFL (26W) - 2L	Wall Switch	S	52	2,400	1, 2	Relamp	Yes	15	LED Screw-In Lamps: Other	Occupancy Sensor	36	1,656	0.3	1,065	0	$150	$818	$35	5.2
1st & 2nd Fl Hallway	26	Compact Fluorescent: 4 Pin CFL (26W) - 2L	Wall Switch	S	52	2,400	1, 3	Relamp	Yes	26	LED Screw-In Lamps: Other	High/Low Control	36	1,656	0.5	1,845	0	$260	$1,816	$0	7.0
Exterior	13	Compact Fluorescent: 4 Pin CFL (26W) - 2L	Timeclock		52	2,160	1	Relamp	No	13	LED Screw-In Lamps: Ceiling Mount	Timeclock	36	2,160	0.1	438	0	$63	$475	$0	7.6

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
Boiler Room	B-1	1	Combustion Air Fan	1.5	82.5%	No	B	1,300	NR, NR	Yes	84.0%	Yes	1	0.5	682	0	$98	$3,546	$0	36.3
Boiler Room	B-2	1	Combustion Air Fan	1.5	82.5%	No	B	1,300	NR, NR	Yes	84.0%	Yes	1	0.5	682	0	$98	$3,546	$0	36.3
Boiler Room	HHWP-1	1	Heating Hot Water Pump	15.0	91.0%	No	W	1,696	NR, 4	Yes	93.0%	Yes	1	1.6	8,121	0	$1,164	$7,041	$0	6.1
Boiler Room	HHWP-2	1	Heating Hot Water Pump	15.0	91.0%	No	W	1,696	NR, 4	Yes	93.0%	Yes	1	1.6	8,121	0	$1,164	$7,041	$0	6.1
Boiler Room	DWH-1	1	Combustion Air Fan	0.3	68.0%	No	W	1,300		No	68.0%	No		0.0	0	0	$0	$0	$0	0.0
Boiler Room	DCWP-1	1	Other	5.0	84.0%	No	W	1,300		No	84.0%	No		0.0	0	0	$0	$0	$0	0.0
Boiler Room	DCWP-2	1	Other	5.0	85.5%	No	W	1,300		No	85.5%	No		0.0	0	0	$0	$0	$0	0.0
Boiler Room	MAU-1	1	Makeup Air Fan	1.5	82.5%	Yes	W	1,300		No	82.5%	No		0.0	0	0	$0	$0	$0	0.0
Boiler Room	Fire System Pump	1	Process Pump	50.0	92.4%	No	W	0		No	92.4%	No		0.0	0	0	$0	$0	$0	0.0
Boiler Room	Recirculation Pump	1	Other	0.3	62.0%	No	W	1,300		No	62.0%	No		0.0	0	0	$0	$0	$0	0.0
Kitchen Hood	EF-8	1	Kitchen Hood Exhaust Fan	5.0	89.5%	No	W	1,750	NR, 5	Yes	89.5%	Yes	1	0.0	5,644	83	$1,859	$4,076	$1,000	1.7
Area A	EF-1	1	Exhaust Fan	0.5	68.0%	Yes	W	1,560		No	68.0%	No		0.0	0	0	$0	$0	$0	0.0
Area B	EF-2	1	Exhaust Fan	0.3	68.0%	Yes	W	1,560		No	68.0%	No		0.0	0	0	$0	$0	$0	0.0
Area C	EF-3	1	Exhaust Fan	0.5	68.0%	Yes	W	1,560		No	68.0%	No		0.0	0	0	$0	$0	$0	0.0
Area D	EF-4	1	Exhaust Fan	0.3	68.0%	Yes	W	1,560		No	68.0%	No		0.0	0	0	$0	$0	$0	0.0
Fume Hood	EF-5	1	Exhaust Fan	0.3	68.0%	No	W	1,560		No	68.0%	No		0.0	0	0	$0	$0	$0	0.0
Fume Hood	EF-6	1	Exhaust Fan	0.3	68.0%	No	W	1,560		No	68.0%	No		0.0	0	0	$0	$0	$0	0.0
Elevator	EF-7	1	Exhaust Fan	0.3	68.0%	Yes	W	1,560		No	68.0%	No		0.0	0	0	$0	$0	$0	0.0
Dish Hood	EF-9	1	Exhaust Fan	0.5	68.0%	No	W	0		No	68.0%	No		0.0	0	0	$0	$0	$0	0.0
Area F	EF-10	1	Exhaust Fan	0.3	68.0%	Yes	W	1,560		No	68.0%	No		0.0	0	0	$0	$0	$0	0.0

		Existing Conditions							Proposed Conditions					Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	Motor Quantity	Motor Application	HP Per Motor	Full Load Efficiency	VFD Control?	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
Area F	EF-11	1	Exhaust Fan	0.3	68.0%	Yes	W	1,560		No	68.0%	No		0.0	0	0	$0	$0	$0	0.0
Elec A120	EF-12	1	Exhaust Fan	0.3	68.0%	Yes	W	1,560		No	68.0%	No		0.0	0	0	$0	$0	$0	0.0
Elec B120	EF-13	1	Exhaust Fan	0.3	68.0%	Yes	W	1,560		No	68.0%	No		0.0	0	0	$0	$0	$0	0.0
Elec C106	EF-14	1	Exhaust Fan	0.3	68.0%	Yes	W	1,560		No	68.0%	No		0.0	0	0	$0	$0	$0	0.0
Elec D114	EF-15	1	Exhaust Fan	0.3	68.0%	Yes	W	1,560		No	68.0%	No		0.0	0	0	$0	$0	$0	0.0
Elec A219	EF-16	1	Exhaust Fan	0.3	68.0%	Yes	W	1,560		No	68.0%	No		0.0	0	0	$0	$0	$0	0.0
Elec B218	EF-17	1	Exhaust Fan	0.3	68.0%	Yes	W	1,560		No	68.0%	No		0.0	0	0	$0	$0	$0	0.0
Elec C213	EF-18	1	Exhaust Fan	0.3	68.0%	Yes	W	1,560		No	68.0%	No		0.0	0	0	$0	$0	$0	0.0
Elec C214	EF-19	1	Exhaust Fan	0.3	68.0%	Yes	W	1,560		No	68.0%	No		0.0	0	0	$0	$0	$0	0.0
Art Room	EF-20	1	Exhaust Fan	0.3	68.0%	No	W	1,560		No	68.0%	No		0.0	0	0	$0	$0	$0	0.0
Art Room	EF-21	1	Exhaust Fan	0.3	68.0%	No	W	1,560		No	68.0%	No		0.0	0	0	$0	$0	$0	0.0
Fume Hood	SF-1	1	Exhaust Fan	0.2	68.0%	No	W	1,560		No	68.0%	No		0.0	0	0	$0	$0	$0	0.0
Fume Hood	SF-2	1	Exhaust Fan	0.2	68.0%	No	W	1,560		No	68.0%	No		0.0	0	0	$0	$0	$0	0.0
Classrooms and lobby	VAV Fan	160	Supply Fan	0.5	72.0%	No	W	1,560	NR	Yes	78.2%	No		3.6	7,689	0	$1,102	$56,362	$0	51.2

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
A122	SS-1	1	Ductless Mini-Split AC	1.50		B	NR	Yes	1	Ductless Mini-Split AC	1.50		18.00		0.4	224	0	$32	$4,109	$0	127.9
B119	SS-2	1	Ductless Mini-Split AC	1.50		B	NR	Yes	1	Ductless Mini-Split AC	1.50		18.00		0.4	224	0	$32	$4,109	$0	127.9
C108	SS-3	1	Ductless Mini-Split AC	1.50		B	NR	Yes	1	Ductless Mini-Split AC	1.50		18.00		0.4	224	0	$32	$4,109	$0	127.9
D113	SS-4	1	Ductless Mini-Split AC	1.50		B	NR	Yes	1	Ductless Mini-Split AC	1.50		18.00		0.4	224	0	$32	$4,109	$0	127.9
E113	SS-5	1	Ductless Mini-Split AC	1.50		B	NR	Yes	1	Ductless Mini-Split AC	1.50		18.00		0.4	224	0	$32	$4,109	$0	127.9
A220	SS-6	1	Ductless Mini-Split AC	1.50		B	NR	Yes	1	Ductless Mini-Split AC	1.50		18.00		0.4	224	0	$32	$4,109	$0	127.9
B217	SS-7	1	Ductless Mini-Split AC	1.50		B	NR	Yes	1	Ductless Mini-Split AC	1.50		18.00		0.4	224	0	$32	$4,109	$0	127.9
C214	SS-8	1	Ductless Mini-Split AC	1.50		B	NR	Yes	1	Ductless Mini-Split AC	1.50		18.00		0.4	224	0	$32	$4,109	$0	127.9
D213	SS-9	1	Ductless Mini-Split AC	1.50		B	NR	Yes	1	Ductless Mini-Split AC	1.50		18.00		0.4	224	0	$32	$4,109	$0	127.9
Horizontal	UH-1	1	Electric Resistance Heat		4.00	W		No							0.0	0	0	$0	$0	$0	0.0
Cabinet Recessed	UH-2	1	Electric Resistance Heat		1.16	W		No							0.0	0	0	$0	$0	$0	0.0
Cabinet Recessed	UH-3	1	Electric Resistance Heat		1.16	W		No							0.0	0	0	$0	$0	$0	0.0
Cabinet Recessed	UH-4	1	Electric Resistance Heat		2.38	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	RTU-11 Gym	1	Packaged AC	30.00		B	NR	Yes	1	Packaged AC	30.00		11.00		3.0	2,393	0	$343	$66,479	$0	193.9
Roof	RTU-5 C Wing 1st Fl	1	Packaged AC	25.00		B	NR	Yes	1	Packaged AC	25.00		11.00		2.5	1,994	0	$286	$42,185	$1,975	140.7
Roof	RTU-6 C Wing 2nd Fl	1	Packaged AC	40.00		B	NR	Yes	1	Packaged AC	40.00		11.00		4.0	3,191	0	$457	$88,639	$0	193.9
Roof	RTU-12 Music	1	Packaged AC	15.00		B	NR	Yes	1	Packaged AC	15.00		11.00		1.3	1,033	0	$148	$20,908	$1,185	133.2
Roof	RTU-7 D Wing 1st Fl	1	Packaged AC	40.00		B	NR	Yes	1	Packaged AC	40.00		11.00		4.0	3,191	0	$457	$88,639	$0	193.9
Roof	RTU-8 D Wing 2nd Fl	1	Packaged AC	30.00		B	NR	Yes	1	Packaged AC	30.00		11.00		3.0	2,393	0	$343	$66,479	$0	193.9
Roof	RTU-10 Service Media Center	1	Packaged AC	40.00		B	NR	Yes	1	Packaged AC	40.00		11.00		4.0	3,191	0	$457	$88,639	$0	193.9

		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 (kBtu/hr)	Remaining Useful Life	ECM #	Install High Efficiency System?	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (kBtu/hr)	Cooling Mode Efficiency (SEER/EER)	Heating Mode Efficiency (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	RTU-9 Admin Office	1	Packaged AC	30.00		B	NR	Yes	1	Packaged AC	30.00		11.00		3.0	2,393	0	$343	$66,479	$0	193.9
Roof	RTU-1 A Wing 1st Fl	1	Packaged AC	25.00		B	NR	Yes	1	Packaged AC	25.00		11.00		2.5	1,994	0	$286	$42,185	$1,975	140.7
Roof	RTU-2 A Wing 2nd Fl	1	Packaged AC	40.00		B	NR	Yes	1	Packaged AC	40.00		11.00		4.0	3,191	0	$457	$88,639	$0	193.9
Roof	RTU-3 B Wing 1st Fl	1	Packaged AC	40.00		B	NR	Yes	1	Packaged AC	40.00		11.00		4.0	3,191	0	$457	$88,639	$0	193.9
Roof	RTU-4 B Wing 2nd Fl	1	Packaged AC	30.00		B	NR	Yes	1	Packaged AC	30.00		11.00		3.0	2,393	0	$343	$66,479	$0	193.9
Roof	RTU-14 Cafeteria South	1	Packaged AC	30.00		B	NR	Yes	1	Packaged AC	30.00		11.00		3.0	2,393	0	$343	$66,479	$0	193.9
Roof	RTU-13 Cafeteria North	1	Packaged AC	30.00		B	NR	Yes	1	Packaged AC	30.00		11.00		3.0	2,393	0	$343	$66,479	$0	193.9
Roof	RTU-15	1	Packaged AC	15.00		B	NR	Yes	1	Packaged AC	15.00		11.00		1.3	1,033	0	$148	$20,908	$1,185	133.2

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	B-1	1	Non-Condensing Hot Water Boiler	######	W		No						0.0	0	0	$0	$0	$0	0.0
Boiler Room	B-2	1	Non-Condensing Hot Water Boiler	######	W		No						0.0	0	0	$0	$0	$0	0.0
Boiler Room	MAU-1	1	Furnace	273.00	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	RTU-11 Gym	NR	2.00	30.00	0.00		0.0	774	0	$111	$2,719	$0	24.5
Roof	RTU-14 Cafeteria South	NR	2.00	30.00	0.00		0.0	774	0	$111	$2,719	$0	24.5
Roof	RTU-13 Cafeteria North	NR	2.00	30.00	0.00		0.0	774	0	$111	$2,719	$0	24.5
Roof	RTU-10 Service Media Center	NR	2.00	40.00	0.00		0.0	1,032	0	$148	$2,719	$0	18.4

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	DWH-1	1	Storage Tank Water Heater (> 50 Gal)	W		No						0.0	0	0	$0	$0	$0	0.0

Low-Flow Device Recommendations

	Recommendation Inputs					Energy Impact & Financial Analysis						
Location	ECM #	Device Quantity	Device Type	Existing Flow Rate (gpm)	Proposed Flow Rate (gpm)	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Restrooms	6	42	Faucet Aerator (Lavatory)	2.20	0.50	0.0	0	40	$504	$301	$0	0.6
Restrooms	6	5	Showerhead	2.50	2.00	0.0	0	8	$99	$447	$0	4.5

Walk-In Cooler/Freezer Inventory & Recommendations

	Existing Conditions		Proposed Conditions				Energy Impact & Financial Analysis						
Location	Cooler/ Freezer Quantity	Case Type/Temperature	ECM #	Install EC Evaporator Fan Motors?	Install Electric Defrost Control?	Install Evaporator Fan Control?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen	1	Cooler (35F to 55F)	7	Yes	No	No	0.1	524	0	$75	$607	$0	8.1
Kitchen	1	Medium Temp Freezer (0F to 30F)	7	Yes	No	No	0.1	786	0	$113	$910	$0	8.1

Commercial Refrigerator/Freezer Inventory & Recommendations

	Existing Conditions			Proposed Conditions		Energy Impact & Financial Analysis						
Location	Quantity	Refrigerator/ Freezer Type	ENERGY STAR Qualified?	ECM #	Install ENERGY STAR Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen	2	Stand-Up Refrigerator, Solid Door (16 - 30 cu. ft.)	Yes		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	4	Refrigerator Chest	No	NR	Yes	0.5	4,061	0	$582	$7,037	$0	12.1

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
Kitchen	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	Insulated Food Holding Cabinet (Full Size)	Yes		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	3	Electric Convection Oven (Full Size)	Yes		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	3	Electric Steamer	Yes		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	1	Gas Griddle (4 Feet Width)	No		No	0.0	0	0	$0	$0	$0	0.0

Plug Load Inventory

	Existing Conditions			
Location	Quantity	Equipment Description	Energy Rate (W)	ENERGY STAR Qualified?
Classrooms	535	Computers	120.0	Yes
Classrooms	32	Small Printer	46.0	No
Classrooms	7	Medium Printer	55.0	No
Staffrooms	7	Big Printer	600.0	No
Main Office	1	Paper Shredder	50.0	No
Classrooms	23	Projectors	120.0	No
Classrooms	10	Microwave	800.0	No
Classrooms	9	Big Refrigerator	255.0	No
Classrooms	7	Coffee Machine	1,200.0	No
Staffrooms	1	Toaster	300.0	No
Staffrooms	1	Toaster Oven	550.0	No
Classrooms	10	Portable Fan	45.0	No
Lounge	4	Plasma Tv	120.0	No
Kitchen	4	Steam Table	1,200.0	No
Kitchen	4	Steam Table	3,630.0	No

APPENDIX B: ENERGY STAR® STATEMENT OF ENERGY PERFORMANCE

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

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ENERGY STAR® Statement of Energy Performance

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ENERGY STAR® Score[1]

Dr. Joyanne D Miller ES

Primary Property Type: K-12 School
Gross Floor Area (ft²): 154,700
Built: 2003

For Year Ending: April 30, 2018
Date Generated: February 01, 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
Dr. Joyanne D Miller ES 2 Adler Ave Egg Harbor Township, New Jersey 08234	_____ . (___)___-_____	____ _____ . (___)___-_____ _____

Property ID: 6630968

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
44 kBtu/ft²

Source EUI
76.1 kBtu/ft²

Annual Energy by Fuel

Natural Gas (kBtu)	3,632,052 (53%)
Electric - Solar (kBtu)	529,259 (8%)
Electric - Grid (kBtu)	2,651,083 (39%)

National Median Comparison

National Median Site EUI (kBtu/ft²)	80.3
National Median Source EUI (kBtu/ft²)	138.6
% Diff from National Median Source EUI	-45%

Annual Emissions

Greenhouse Gas Emissions (Metric Tons CO2e/year)	462

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.