Local Government Energy Audit:
Energy Audit Report

Cape May County Special Services District

148 Crest Haven Road

Cape May Court House, NJ 08210

Cape May County Special Services District

March 21, 2018

Final Report by:

TRC Energy Services

Disclaimer

The intent of this energy analysis report is to identify energy savings opportunities and recommend upgrades to the facility's energy using equipment and systems. Approximate savings are included in this report to help make decisions about reducing energy use at the facility. This report, however, is not intended to serve as a detailed engineering design document. Further design and analysis may be necessary in order to implement some of the measures recommended in this report.

The energy conservation measures and estimates of energy savings have been reviewed for technical accuracy. However, estimates of final energy savings are not guaranteed, because final savings may depend on behavioral factors and other uncontrollable variables. TRC Energy Services (TRC) and New Jersey Board of Public Utilities (NJBPU) shall in no event be liable should the actual energy savings vary.

Estimated installation costs are based on TRC's experience at similar facilities, pricing from local contractors and vendors, and/or cost estimates from *RS Means*. The owner of the facility is encouraged to independently confirm these cost estimates and to obtain multiple estimates when considering measure installations. Since actual installed costs can vary widely for certain 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. The owner of the facility should review available program incentives and eligibility requirements prior to selecting and installing any energy conservation measures.

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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 Cape May County Special Services District (CMCSSD).

The goal of an LGEA report is to provide you with information on how your facility uses energy, identify energy conservation measures (ECMs) that can reduce your energy use, and provide information and assistance to help facilities implement ECMs. The LGEA report also contains valuable information on financial incentives from New Jersey's Clean Energy Program (NJCEP) for implementing ECMs.

This study was conducted by TRC Energy Services (TRC), as part of a comprehensive effort to assist New Jersey school boards in controlling energy costs and protecting our environment by offering a wide range of energy management options and advice.

1.1 Facility Summary

CMCSSD is a 176,000 square foot facility comprised of various spaces such as classrooms, offices, restrooms, gymnasiums, locker rooms, lap pool, therapy pool, kitchen, cafeteria and mechanical spaces. The space is also leased to a day care center. The school has children from ages of 3 to 21 years old. The school is occupied for ten (10) months a year during weekdays from 7:30AM to 4:00PM. Only the pool is open all year on Saturdays and the entire building is closed on Sundays. There is one (1) month of summer school during July and the school is closed in August.

Space cooling in the building is provided by packaged rooftop units and split AC unit systems throughout the building. The heating in the building is provided using gas-fired, non-condensing hot water boilers in the old wing and the Bailey wing sections of the school. The HVAC systems are controlled using an Energy Management system. The lighting in the school is predominantly provided using linear T8 tubes and compact fluorescent fixtures.

A thorough description of the facility and our observations are located in Section 2.

1.2 Your Cost Reduction Opportunities

Energy Conservation Measures

TRC evaluated 11 measures which together represent an opportunity for CMCSSD to reduce annual energy costs by $93,510.90 and annual greenhouse gas emissions by 675,563 lbs CO_2e. We estimate that if all measures were implemented as recommended, the project would pay for itself in 6.4 years. The breakdown of existing and potential utility costs after project implementation are illustrated in Figure 1 and Figure 2, respectively. Together these measures represent an opportunity to reduce CMCSSD's annual energy use by 19%.

Figure 1 – Previous 12 Month Utility Costs

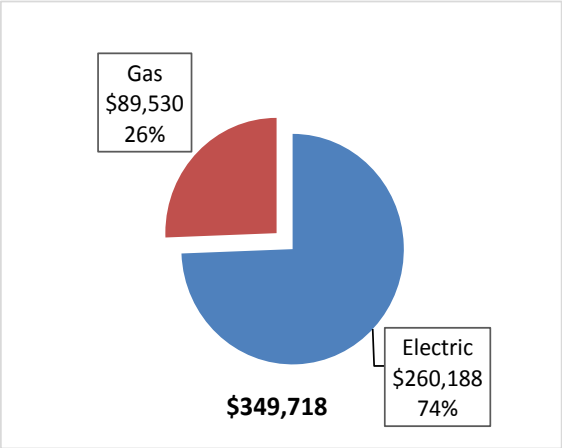
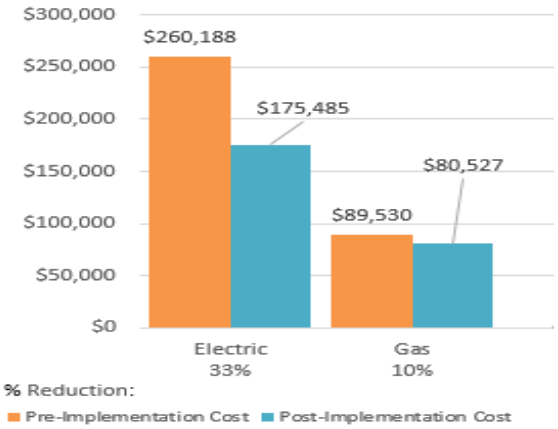


Figure 2 – Potential Post-Implementation Costs



A detailed description of CMCSSD's existing energy use can be found in Section 3.

Estimates of the total cost, energy savings, and financial incentives for the proposed energy efficient upgrades are summarized below in Figure 3. A brief description of each category can be found below and a description of savings opportunities can be found in Section 4.

Figure 3 – Summary of Energy Reduction Opportunities

Energy Conservation Measure		Recommend?	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			**345,929**	**63.8**	**0.0**	**$52,131.71**	**$206,793.09**	**$37,695.00**	**$169,098.09**	**3.2**	**348,348**
ECM 1	Install LED Fixtures	Yes	103,401	15.0	0.0	$15,582.64	$64,008.75	$13,615.00	$50,393.75	3.2	104,124
ECM 2	Retrofit Fixtures with LED Lamps	Yes	242,528	48.8	0.0	$36,549.07	$142,784.34	$24,080.00	$118,704.34	3.2	244,224
Lighting Control Measures			**39,991**	**7.9**	**0.0**	**$6,026.74**	**$40,134.00**	**$3,190.00**	**$36,944.00**	**6.1**	**40,271**
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	32,206	6.4	0.0	$4,853.39	$24,818.00	$3,170.00	$21,648.00	4.5	32,431
ECM 4	Install High/Low Lighitng Controls	Yes	7,786	1.5	0.0	$1,173.35	$15,200.00	$0.00	$15,200.00	13.0	7,840
Motor Upgrades			**1,293**	**0.3**	**0.0**	**$194.80**	**$5,778.59**	**$0.00**	**$5,778.59**	**29.7**	**1,302**
	Premium Efficiency Motors	No	1,293	0.3	0.0	$194.80	$5,778.59	$0.00	$5,778.59	29.7	1,302
Variable Frequency Drive (VFD) Measures			**74,352**	**11.5**	**0.0**	**$11,204.84**	**$52,389.63**	**$3,160.00**	**$49,229.63**	**4.4**	**74,872**
ECM 5	Install VFDs on Constant Volume (CV) HVAC	Yes	17,069	5.4	0.0	$2,572.35	$33,169.33	$3,160.00	$30,009.33	11.7	17,189
ECM 6	Install VFDs on Hot Water Pumps	Yes	57,282	6.1	0.0	$8,632.49	$19,220.30	$0.00	$19,220.30	2.2	57,683
Electric Unitary HVAC Measures			**67,120**	**51.4**	**0.0**	**$10,115.08**	**$160,426.71**	**$5,559.00**	**$154,867.71**	**15.3**	**67,590**
ECM 7	Install High Efficiency Electric AC	Yes	67,120	51.4	0.0	$10,115.08	$160,426.71	$5,559.00	$154,867.71	15.3	67,590
Gas Heating (HVAC/Process) Replacement			**0**	**0.0**	**890.8**	**$8,469.03**	**$206,973.54**	**$22,928.00**	**$184,045.54**	**21.7**	**104,298**
ECM 8	Install High Efficiency Hot Water Boilers	Yes	0	0.0	890.8	$8,469.03	$206,973.54	$22,928.00	$184,045.54	21.7	104,298
HVAC System Improvements			**30,149**	**6.8**	**0.0**	**$4,543.49**	**$6,900.00**	**$1,500.00**	**$5,400.00**	**1.2**	**30,360**
ECM 9	Install Dual Enthalpy Outside Economizer Control	Yes	30,149	6.8	0.0	$4,543.49	$6,900.00	$1,500.00	$5,400.00	1.2	30,360
Domestic Water Heating Upgrade			**7,000**	**10.8**	**-82.3**	**$1,607.31**	**$47,766.53**	**$1,640.00**	**$46,126.53**	**28.7**	**-2,587**
	Install High Efficiency Gas Water Heater	No	7,000	10.8	-138.5	$1,073.12	$47,022.80	$1,640.00	$45,382.80	42.3	-9,166
ECM 10	Install Low-Flow Domestic Hot Water Devices	Yes	0	0.0	56.2	$534.19	$743.73	$0.00	$743.73	1.4	6,579
Food Service Equipment & Refrigeration Measures			**5,716**	**2.0**	**86.7**	**$1,685.35**	**$40,025.49**	**$3,000.00**	**$37,025.49**	**22.0**	**15,903**
	Food Service Equipment Replacement	No	5,716	2.0	86.7	$1,685.35	$40,025.49	$3,000.00	$37,025.49	22.0	15,903
Plug Load Equipment Control - Vending Machine			**3,224**	**0.0**	**0.0**	**$485.81**	**$460.00**	**$0.00**	**$460.00**	**0.9**	**3,246**
ECM 11	Vending Machine Control	Yes	3,224	0.0	0.0	$485.81	$460.00	$0.00	$460.00	0.9	3,246
TOTAL OF ALL EVALUATED ECMS			**574,775**	**154.4**	**895.1**	**$96,464.17**	**$767,647.58**	**$78,672.00**	**$688,975.58**	**7.1**	**683,602**
TOTAL OF ALL RECOMMENDED ECMS			**560,766**	**141**	**947**	**$ 93,510.90**	**$ 674,704.70**	**$ 74,012.00**	**$600,692.70**	**6.4**	**675,563**
TOTAL OF ALL NON-RECOMMENDED ECMS			**14,009**	**13**	**-52**	**$ 2,953.27**	**$ 92,826.88**	**$ 4,640.00**	**$ 88,186.88**	**29.9**	**8,039**

* - All incentives presented in this table are based on NJ Smart Start Building 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).

Lighting Upgrades generally involve the replacement of existing lighting components such as lamps and ballasts (or the entire fixture) with higher efficiency lighting components. These measure save energy by reducing the power used by the lighting components due to improved electrical efficiency.

Lighting Controls measures generally involve the installation of automated controls to turn off lights or reduce light output when not needed. Automated control reduces reliance on occupant behavior for adjusting lights. These measures save energy by reducing the amount of time lights are on.

Motor Upgrades generally involve replacing older standard efficiency motors with high efficiency standard (NEMA Premium). Motors replacements generally assume the same size motors, just higher efficiency. Although occasionally additional savings can be achieved by downsizing motors to better meet current load requirements. This measure saves energy by reducing the power used by the motors, due to improved electrical efficiency.

Variable Frequency Drives (VFDs) are motor control devices. These measures control the speed of a motor so that the motor spins at peak efficiency during partial load conditions. Sensors adapt the speed to flow, temperature, or pressure settings which is much more efficient that usage a valve or damper to control flow rates, or running the motor at full speed when only partial power is needed. These measures save energy by controlling motor usage more efficiently.

Electric Unitary HVAC measures generally involve replacing older inefficient air conditioning systems with modern energy efficient systems. New air conditioning systems can provide equivalent cooling to older air condition systems at a reduced energy cost. These measures save energy by reducing the power used by the air conditioning systems, due to improved electrical efficiency.

Gas Heating (HVAC/Process) measures generally involve replacing older inefficient hydronic heating systems with modern energy efficient systems. Gas heating systems can provide equivalent heating compared to older systems at a reduced energy cost. These measures save energy by reducing the fuel demands for heating, due to improved combustion and heat transfer efficiency.

HVAC System Improvements generally involve the installation of automated controls to reduce heating and cooling demand during periods of reduced demand. These measures could encompass changing temperature setpoints, using outside air for free cooling, or limiting excessive outside air during extreme outdoor air temperature conditions. These measures save energy by reducing the demand on HVAC systems and the amount of time systems operate.

Domestic Hot Water upgrade measures generally involve replacing older inefficient domestic water heating systems with modern energy efficient systems. New domestic hot water heating systems can provide equivalent, or greater, water heating capacity compared to older systems at a reduced energy cost. These measures save energy by reducing the fuel used for domestic hot water heating due to improved heating efficiency or reducing standby losses.

Food Service Equipment & Refrigeration measures generally involve improvements in the efficiency of cooking, food service, dishwashing, and food storage equipment. These measures may include more efficient convection ovens, steamers, ice machines, or refrigeration. These measures save energy by reducing the energy usage with more energy efficient equipment.

Plug Load Equipment control measures generally involve installing automated devices that limit the power usage or operation of equipment that is plugged into an electric outlets when not in use.

Energy Efficient Practices

TRC also identified nine (9) low cost (or no cost) energy efficient practices. A facility's energy performance can be significantly improved by employing certain behavioral or operational adjustments and by performing better routine maintenance on building systems. These practices can extend equipment lifetime, improve occupant comfort, provide better health and safety, as well as reduce annual energy and O&M costs. Potential opportunities identified at CMCSSD include:

- Reduce Air Leakage
- Close Doors and Windows
- Use Window Treatments/Coverings
- Ensure Lighting Controls Are Operating Properly
- Practice Proper Use of Thermostat Schedules and Temperature Resets
- Perform Proper Boiler Maintenance
- Perform Proper Water Heater Maintenance
- Install Plug Load Controls
- Water Conservation

For details on these energy efficient practices, please refer to Section 5.

On-Site Generation Measures

TRC evaluated the potential for installing on-site generation for CMCSSD. Based on the configuration of the site and its loads there is a high potential for installing a photovoltaic (PV) array.

1.3 Implementation Planning

To realize the energy savings from the ECMs listed in this report, a project implementation plan must be developed. Available capital must be considered and decisions need to be made whether it is best to pursue individual ECMs separately, groups of ECMs, or a comprehensive approach where all ECMs are implemented together, possibly in conjunction with other facility upgrades or improvements.

Rebates, incentives, and financing are available from NJCEP, as well as other sources, to help reduce the costs associated with the implementation of energy efficiency projects. Prior to implementing any measure, please review the relevant incentive program guidelines before proceeding. This is important because in most cases you will need to submit applications for the incentives prior to purchasing materials or commencing with installation.

The ECMs outlined in this report may qualify under the following program(s):

- SmartStart
- Pay for Performance - Existing Building (P4P)
- Energy Savings Improvement Program (ESIP)

For facilities wanting 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 in this program you may utilize internal resources, or an outside firm or contractor, to do the final design of the ECM(s) and do the installation. Program pre-approval is required for some SmartStart incentives, so only after receiving pre-approval should you proceed with ECM installation. The incentive estimates listed above in Figure 3 are based on the SmartStart program. More details on this program and others are available in Section 8.

Larger facilities with an interest in a more comprehensive whole building approach to energy conservation should consider participating in the Pay for Performance (P4P) program. Projects eligible for this project program must meet minimum savings requirements. Final incentives are calculated based on actual measured performance achieved at the end of the project. The application process is more involved, and it requires working with a qualified P4P contractor, but the process may result in greater energy savings overall and more lucrative incentives, up to 50% of project's total cost.

For larger facilities with limited capital availability to implement ECMs, project financing may be available through the Energy Savings Improvement Program (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. An LGEA report (or other approved energy audit) is required for participation in ESIP. Please refer to Section 8.4 for additional information on the ESIP Program.

Additional information on relevant incentive programs is located in Section 8 or: www.njcleanenergy.com/ci.

2 FACILITY INFORMATION AND EXISTING CONDITIONS

2.1 Project Contacts

Figure 4 – Project Contacts

Name	Role	E-Mail	Phone #
Customer			
Kathleen Allen	School Business Administrator	kallen@cmcsspecialservices.org	609-465-2720 x 2211
TRC Energy Services			
Smruti Srinivasan	Auditor	ssrinivasan@trcsolutions.com	(732) 855-0033

2.2 General Site Information

On July 24, 2017, TRC performed an energy audit at CMCSSD located in Cape May Court House, New Jersey. TRC's team met with Charles Yahara to review the facility operations and help focus our investigation on specific energy-using systems.

CMCSSD is a 176,000 square foot facility comprised of various spaces such as classrooms, offices, restrooms, gymnasiums, locker rooms, lap pool, therapy pool, kitchen, cafeteria and mechanical spaces. The space is leased to a day care center, and attending children can range 3 to 21 years old. The school is occupied for ten (10) months a year during weekdays from 7:30AM to 4:00PM. Only the pool is open all year (on Saturdays).The entire building remains closed on Sundays. There is one (1) month of summer school during July and the school is completely shut down in August.

2.3 Building Occupancy

The typical schedule is presented in the table below. The facility is occupied from 7:30AM to 4:00 PM during weekdays from September to June. The lap pools are open from 8:00 AM to 2:00 PM on Saturdays. The school remains closed on Sundays. There is extended summer school during the month of July and the facility is closed in August.

The current year student enrolment of the school is 230 while the student capacity of the school is 400. The full time staff including the teachers, administration and maintenance staff are 125. There are at least 50 part time staff at any given time working in the school.

Figure 5 - Building Schedule

Building Name	Weekday/Weekend	Operating Schedule
Cape May County Special Services District	Weekday	7:30AM - 4PM
Cape May County Special Services District	Weekend	Saturday: 8AM - 2PM Sunday: No operation

2.4 Building Envelope

The original building (older section) is from the year 1981. The Bailey Wing was added in 1992. The building is constructed of concrete block and metal with a brick façade. Both sections of the building have flat roofs with EPDM material. The old building roof material has a white knight coating. The Bailey Wing has a bituminous layer on the roof. The windows in the building are double pane and are in fair condition although these are over 25 years old. The doors are aluminum or aluminum framed glass doors. The doors are automatic and the entrance doorways are preheated.



2.5 On-Site Generation

CMCSSD does not have any on-site electric generation systems currently installed.

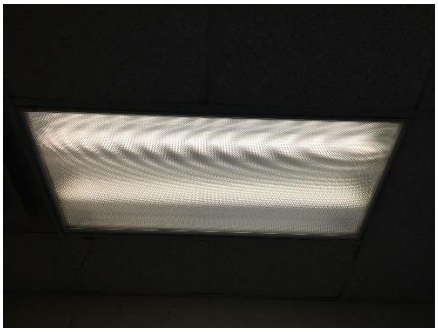
2.6 Energy-Using Systems

Please see Appendix A: Equipment Inventory & Recommendations for an inventory of the facility's equipment.

Lighting System

Lighting is provided mostly by 32-Watt linear fluorescent T8 lamps with electronic ballasts as well as some compact fluorescent lamps (CFL). Most of the fixtures are 1-lamp, 2-lamp, 3-lamp or 4-lamp 4-foot long troffers. Areas such as the closets and a few restrooms are lit using 18-Watt or 42-Watt compact fluorescent lamps or 60-Watt incandescent lamps. The lap pools and the therapy pools are lit using 400-Watt and 175-Watt metal halide fixtures respectively. With the exception of the ABC gym, lighting control in most spaces is provided by manual wall switches.

Exterior lighting is 50-Watt, 70-Watt or 150-Watt high pressure sodium (HPS) fixtures or 250-Watt metal halide lamps that are scheduled and controlled by the building management system. Although most of the exit light fixtures are 2-Watt LED fixtures, there were some non-LED fixtures that were spotted.





Hot Water (or Steam) Heating System

The hot water system consists of two (2) boiler rooms situated in each of the two (2) wings. The old building has two (2) gas fired non-condensing Weil Mc Lain boilers that have an output capacity of 2320 MBh and a combustion efficiency of 83%. The hot water from the boilers are circulated using two (2) 5 hp constant speed pumps. The boilers were observed to be functional during the summer for the dehumidification of the pools.

The Bailey Wing also has two (2) gas fired non-condensing HB Smith boilers that have an output capacity of 3180 MBh and a thermal efficiency of 79%. The hot water from the boilers are circulated using two (2) 20 hp constant flow pumps.

The boilers in the both sections function in a lead-lag fashion. During the coldest days both boilers from the respective wings are operational. Hot water is supplied at 180°F when the outside air temperature is below 20°F and the setpoint is reset to 130°F when the outside air is above 70°F. This applies to boilers in both sections.

The heat is distributed in the respective spaces using ceiling ducts, unit ventilators and fan coil units. The boilers in the old building are 36 years old and the Bailey Wing boilers are 25 years old. These are maintained well but they are past their useful life and hence evaluated for replacement.

The lap pool is heated using a gas fired Lochinvar boiler with an output capacity of 650 MBh and an efficiency of 77%. The boiler is 11 years old and well maintained. The therapy pool is heated using a heat exchanger that gets hot water from the HB Smith boiler in the old building boiler room. The water is circulated using constant volume pumps of capacities 7.5 hp (for the lap pool) and 5 hp (for the therapy pool).




Chilled Water Air Conditioning System (CHW)

Space cooling in the school is provided by two (2) air-cooled scroll chillers with 90 tons nominal cooling capacity located on the roof. There are three (3) 25 hp chilled water pumps that circulate the chilled water throughout the building. These are controlled using variable frequency drives (VFD) in order to save the electric demand. During nighttime the chillers are used to generate ice, which is used to provide/supplement space cooling during the peak hours when the demand charges are high. This set up known as the thermal energy storage is primarily used a peak kW shaving strategy. Two (2) pumps circulate the chilled water to the air handlers and operate in a lead-lag fashion. The third pump is used to circulate the water from the ice tanks to the terminal units. All three (3) pumps are equipped with variable frequency drives. There are six (6) ice storage tanks.

The chillers are operated in two (2) modes. The first mode is called the ice mode. The chillers are used to make ice that are stored in the ice storage tanks. The buildings are then cooled using the chilled water stored in these ice tanks. The ice mode is scheduled for the evenings from 8:00 PM to 5:00 AM every day during the months of May – October. The temperature of the water in the ice tanks is 24°F. The second mode is the regular operation of the chiller where chilled water is circulated to the air handlers. Only the original section of the building is cooled using the chillers. The air handlers have constant speed motors. During the peak temperatures in the summer the both modes may be required to cool the facility.

The chillers and the ice tanks are 12 years old and maintained well.



Direct Expansion Air Conditioning System (DX)

Space cooling in the old and the new sections of the school are different. The older section in the facility is cooled off the chiller and PTAC units on the walls of the offices. All the air handlers are single zone systems that have individual thermostats but are controlled using the Energy Management systems.

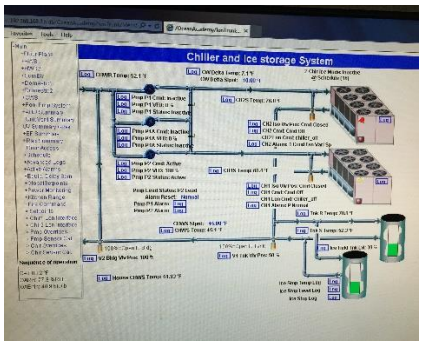
The newer sections uses roof top split AC systems in the hallways and offices. The classrooms have DX coils on the unit vents that provide cooling. These (26) classroom units are four (4) tons each and the condensers are placed on the roof or the grounds. The cooling set point in the building is 72°F.

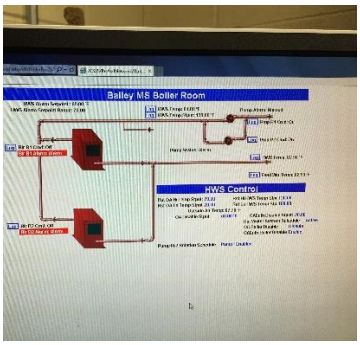
The age on the cooling equipment vary. Although the facility replaced a few roof top units after the last energy audit there are still units that are old enough and were hence evaluated for replacements.

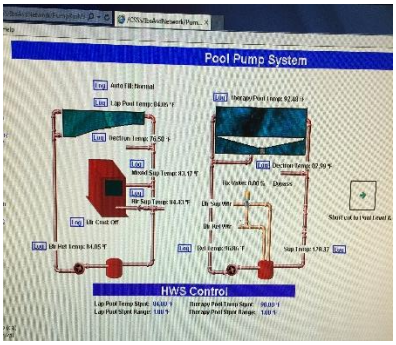


Building Energy Management System (BEMS)

The energy management system software for the facility is provided by CM3 Invensys DDC building automation system. The system controls the scheduling and temperature set points of heating and cooling equipment throughout the school. The exterior lights are also controlled using this schedule. The old section of the building completely has DDC controls. The Bailey Wing has pneumatic controls in some parts of the building.







Domestic Hot Water Heating System

The domestic hot water heating system for the facility consists of one (1) natural gas fired and one (1) electric hot water heater serving the restrooms and kitchen sinks in the old wing and the Bailey Wing respectively. The gas fired water heater has an input capacity of 1000 MBh and a 250 gallon tank capacity with an efficiency of 87%. The electric water heater has an input capacity of 36kW and a 119 gallon tank capacity. These water heaters are 25 years and 17 years old respectively and have been evaluated for replacement.

Food Service & Laundry Equipment

The facility has a fully equipped commercial kitchen and a deli. The kitchen is used to prepare lunch and snacks for all the children in the school and the staff dine at the deli. The equipment in the kitchen include gas convection oven, electric griddles, gas stove with six burners, insulated food holding cabinets, and electric convection oven. Most of the food service equipment are original to the building and were evaluated for replacement. There is also a high temperature multi-tank conveyor commercial dishwasher with an electric booster. The dishwasher was recently installed.

Refrigeration

The kitchen and the deli have two (2) reach in refrigerators and one (1) freezer. There are two (2) walk in refrigerators and one (1) walk-in freezer. Most of the refrigeration equipment are original to the building.

Building Plug Load

There are roughly 61 computer work stations and 50 laptops throughout the facility. The office plug loads include printers of various sizes, projectors, paper shredders etc. The kitchenette plug loads consists of microwave ovens, different sizes of refrigerators, coffee machines, induction stoves, toasters and toaster ovens. The facility also has wood shops that have equipment like the saws, drill presses, planers and lathes. The therapy and lap pools also have washer and dryers. Some of these equipment are ENERGY STAR® rated. There is no centralized PC power management software installed.

Upon the end of the useful life of any of these plug load equipment, we suggest that they be replaced with energy star rated equipment. The facility also has one refrigerated and one non-refrigerated vending machine. There were no controls installed on these.

2.7 Water-Using Systems

A sampling of restrooms found that the faucets are rated for 2.2 gallons per minute (gpm) or higher or lower, the toilets are rated at 2.5 gallons per flush (gpf) and the urinals are rated at 2 gpf. The faucets with higher flow rate have been recommended to be installed with low-flow fixtures so that the demand on the hot water heater is reduced.

3 SITE ENERGY USE AND COSTS

Utility data for electricity and natural gas was analyzed to identify opportunities for savings. In addition, data for electricity and natural gas was evaluated to determine the annual energy performance metrics for the building in energy cost per square foot and energy usage per square foot. These metrics are an estimate of the relative energy efficiency of this building. There are a number of factors that could cause the energy use of this building to vary from the "typical" energy usage profile for facilities with similar characteristics. Local weather conditions, building age and insulation levels, equipment efficiency, daily occupancy hours, changes in occupancy throughout the year, equipment operating hours, and energy efficient behavior of occupants all contribute to benchmarking scores. Please refer to the Benchmarking section within Section 3.4 for additional information.

3.1 Total Cost of Energy

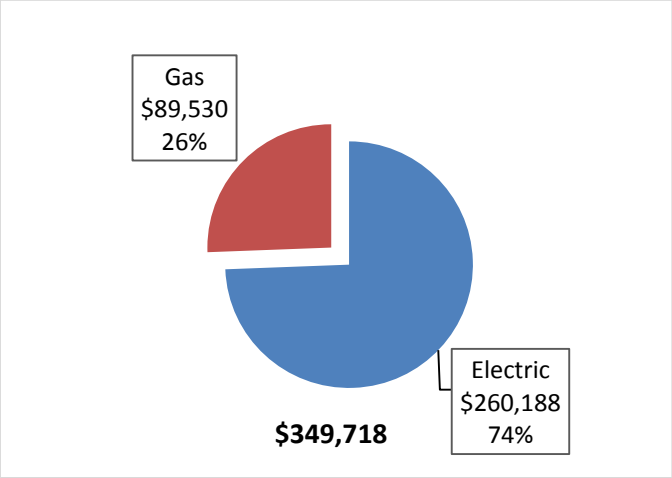
The following energy consumption and cost data is based on the last 12-month period of utility billing data that was provided for each utility. A profile of the annual energy consumption and energy cost of the facility was developed from this information.

Figure 6 - Utility Summary

Utility Summary for Cape May County Special Services District		
Fuel	**Usage**	**Cost**
Electricity	1,726,521 kWh	$260,188
Natural Gas	94,168 Therms	$89,530
Total		**$349,718**

The current annual energy cost for this facility is $349,718 as shown in the chart below.

Figure 7 - Energy Cost Breakdown



3.2 Electricity Usage

Electricity is provided by Atlantic City Electric. The average electric cost over the past 12 months was $0.151/kWh, which is the blended rate that includes energy supply, distribution, and other charges. This rate is used throughout the analyses in this report to assess energy costs and savings. The third party electric supply for the facility is provided by New Constellation. The monthly electricity consumption and peak demand are shown in the chart below.

Figure 8 - Electric Usage & Demand

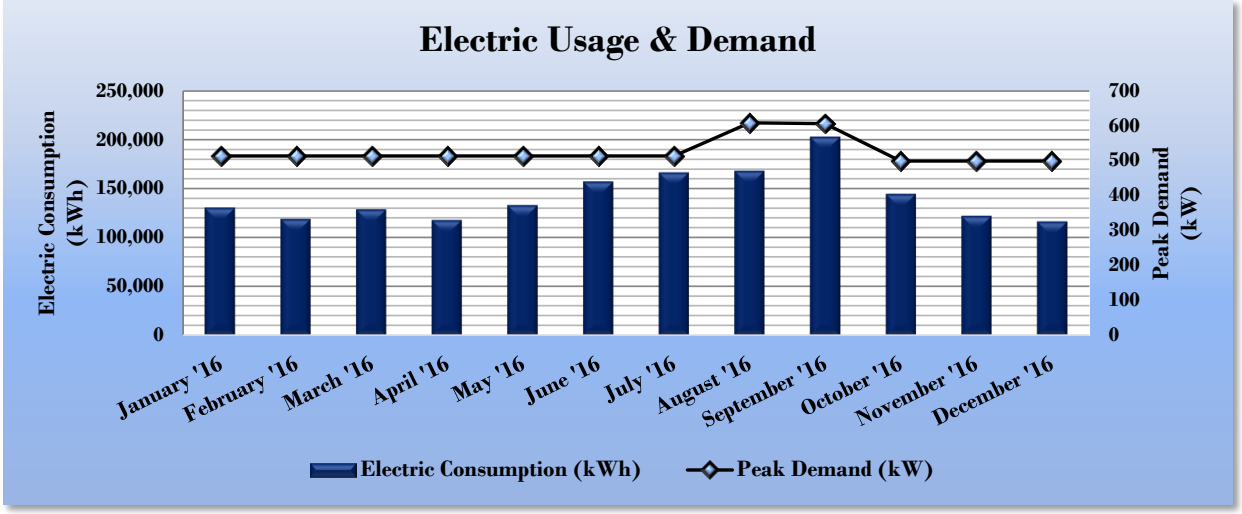


Figure 9 - Electric Usage & Demand

Electric Billing Data for Cape May County Special Services District					
Period Ending	Days in Period	Electric Usage (kWh)	Demand (kW)	Demand Cost	Total Electric Cost
1/25/16	30	130,500	514	$4,459	$19,906
2/22/16	28	119,100	514	$3,618	$17,742
3/23/16	30	128,700	514	$3,934	$19,153
4/22/16	30	117,900	514	$3,934	$17,888
5/23/16	31	133,200	514	$4,065	$19,826
6/23/16	31	157,200	514	$4,512	$23,573
7/25/16	32	166,500	514	$5,099	$25,452
8/23/16	29	168,300	609	$4,509	$24,823
9/26/16	34	203,100	606	$6,064	$30,559
10/24/16	28	144,600	499	$4,114	$21,325
11/22/16	29	122,100	499	$4,261	$18,873
12/21/16	29	116,400	499	$4,261	$18,216
Totals	**361**	**1,707,600**	**609**	**$52,831**	**$257,336**
Annual	**365**	**1,726,521**	**609**	**$53,416**	**$260,188**

3.3 Natural Gas Usage

Natural Gas is provided by South Jersey Gas. The average gas cost for the past 12 months is $0.951/therm, which is the blended rate used throughout the analyses in this report. The third party gas supply for the facility is provided by Direct Energy. The monthly gas consumption is shown in the chart below.

Figure 10 - Natural Gas Usage

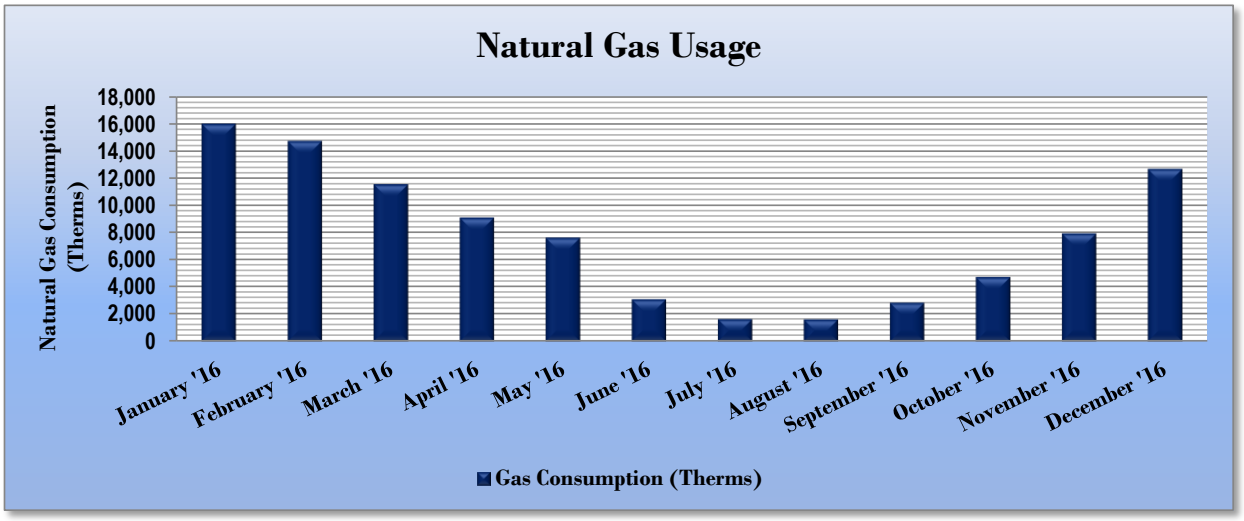


Figure 11 - Natural Gas Usage

Gas Billing Data for Cape May County Special Services District			
Period Ending	Days in Period	Natural Gas Usage (Therms)	Natural Gas Cost
1/25/16	30	15,948	$13,987
2/22/16	28	14,668	$12,751
3/23/16	30	11,503	$10,152
4/22/16	30	9,056	$8,141
5/23/16	31	7,592	$6,912
6/23/16	31	3,085	$3,388
7/25/16	32	1,629	$2,200
8/23/16	29	1,607	$2,060
9/26/16	34	2,825	$3,211
10/24/16	28	4,710	$4,872
11/22/16	29	7,894	$7,749
12/21/16	29	12,619	$13,128
Totals	**361**	**93,136**	**$88,549**
Annual	**365**	**94,168**	**$89,530**

3.4 Benchmarking

This facility was benchmarked using Portfolio Manager, an online tool created and managed by the United States Environmental Protection Agency (EPA) through the ENERGY STAR® program. Portfolio Manager analyzes your building's consumption data, cost information, and operational use details and then compares its performance against a national median for similar buildings of its type. Metrics provided by this analysis are Energy Use Intensity (EUI) and an ENERGY STAR® score for select building types.

The EUI is a measure of a facility's energy consumption per square foot, and it is the standard metric for comparing buildings' energy performance. Comparing the EUI of a building with the national median EUI for that building type illustrates whether that building uses more or less energy than similar buildings of its type on a square foot basis. 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.

Figure 12 - Energy Use Intensity Comparison – Existing Conditions

Energy Use Intensity Comparison - Existing Conditions		
	Cape May County Special Services District	National Median Building Type: School (K-12)
Source Energy Use Intensity (kBtu/ft^2)	161.3	141.4
Site Energy Use Intensity (kBtu/ft^2)	87.0	58.2

Implementation of all recommended measures in this report would improve the building's estimated EUI significantly, as shown in the table below:

Figure 13 - Energy Use Intensity Comparison – Following Installation of Recommended Measures

Energy Use Intensity Comparison - Following Installation of Recommended Measures		
	Cape May County Special Services District	National Median Building Type: School (K-12)
Source Energy Use Intensity (kBtu/ft^2)	121.4	141.4
Site Energy Use Intensity (kBtu/ft^2)	70.7	58.2

Many types of commercial buildings are also eligible to receive an ENERGY STAR® score. This score is a percentile ranking from 1 to 100. It compares your building's energy performance to similar buildings nationwide. A score of 50 represents median energy performance, while a score of 75 means your building performs better than 75 percent of all similar buildings nationwide and may be eligible for ENERGY STAR® certification. This facility has a current score of 68.

A Portfolio Manager Statement of Energy Performance (SEP) was generated for this facility, see Appendix B: ENERGY STAR® Statement of Energy Performance.

For more information on ENERGY STAR® certification go to: https://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/earn-recognition/energy-star-certification/how-app-1.

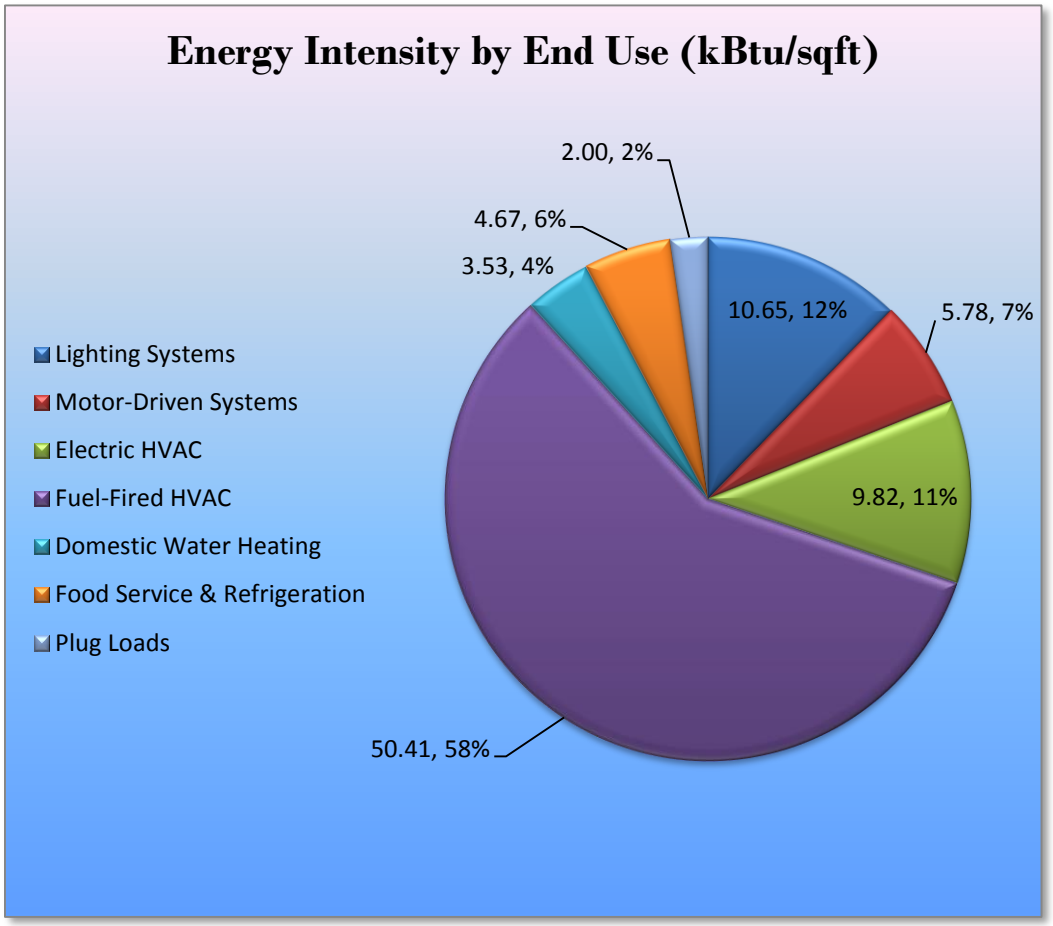
A Portfolio Manager account has been created online for your facility and you will be provided with the login information for the account. We encourage you to update your utility information in Portfolio

Manager regularly, so that you can keep track of your building's performance. 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.

3.5 Energy End-Use Breakdown

In order to provide a complete overview of energy consumption across building systems, an energy balance was performed at this facility. An energy balance utilizes standard practice engineering methods to evaluate all components of the various electric and fuel-fired systems found in a building to determine their proportional contribution to overall building energy usage. This chart of energy end uses highlights the relative contribution of each equipment category to total energy usage. This can help determine where the greatest benefits might be found from energy efficiency measures.

Figure 14 - Energy Balance (% and kBtu/SF)



4 ENERGY CONSERVATION MEASURES

Level of Analysis

The goal of this audit report is to identify potential energy efficiency opportunities, help prioritize specific measures for implementation, and provide information to the Cape May County Special Services District regarding financial incentives for which they may qualify to implement the recommended measures. For this audit report, most measures have received only a preliminary analysis of feasibility which identifies expected ranges of savings and costs. This level of analysis is usually considered sufficient to demonstrate project cost-effectiveness and help prioritize energy measures. Savings are based on the New Jersey Clean Energy Program Protocols to Measure Resource Savings dated June 29, 2016, 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. A higher level of investigation may be necessary to support any custom SmartStart or Pay for Performance, or Direct Install incentive applications. Financial incentives for the ECMs identified in this report have been calculated based the NJCEP prescriptive SmartStart program. Some measures and proposed upgrade projects may be eligible for higher incentives than those shown below through other NJCEP programs as described in Section 8. The following sections describe the evaluated measures.

4.1 Recommended ECMs

The measures below have been evaluated by the auditor and are recommended for implementation at the facility.

Figure 15 – Summary of Recommended 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		**345,929**	**63.8**	**0.0**	**$52,131.71**	**$206,793.09**	**$37,695.00**	**$169,098.09**	**3.2**	**348,348**
ECM 1	Install LED Fixtures	103,401	15.0	0.0	$15,582.64	$64,008.75	$13,615.00	$50,393.75	3.2	104,124
ECM 2	Retrofit Fixtures with LED Lamps	242,528	48.8	0.0	$36,549.07	$142,784.34	$24,080.00	$118,704.34	3.2	244,224
Lighting Control Measures		**39,991**	**7.9**	**0.0**	**$6,026.74**	**$40,134.00**	**$3,190.00**	**$36,944.00**	**6.1**	**40,271**
ECM 3	Install Occupancy Sensor Lighting Controls	32,206	6.4	0.0	$4,853.39	$24,818.00	$3,170.00	$21,648.00	4.5	32,431
ECM 4	Install High/Low Lighitng Controls	7,786	1.5	0.0	$1,173.35	$15,200.00	$0.00	$15,200.00	13.0	7,840
Variable Frequency Drive (VFD) Measures		**74,352**	**11.5**	**0.0**	**$11,204.84**	**$52,389.63**	**$3,160.00**	**$49,229.63**	**4.4**	**74,872**
ECM 5	Install VFDs on Constant Volume (CV) HVAC	17,069	5.4	0.0	$2,572.35	$33,169.33	$3,160.00	$30,009.33	11.7	17,189
ECM 6	Install VFDs on Hot Water Pumps	57,282	6.1	0.0	$8,632.49	$19,220.30	$0.00	$19,220.30	2.2	57,683
Electric Unitary HVAC Measures		**67,120**	**51.4**	**0.0**	**$10,115.08**	**$160,426.71**	**$5,559.00**	**$154,867.71**	**15.3**	**67,590**
ECM 7	Install High Efficiency Electric AC	67,120	51.4	0.0	$10,115.08	$160,426.71	$5,559.00	$154,867.71	15.3	67,590
Gas Heating (HVAC/Process) Replacement		**0**	**0.0**	**890.8**	**$8,469.03**	**$206,973.54**	**$22,928.00**	**$184,045.54**	**21.7**	**104,298**
ECM 8	Install High Efficiency Hot Water Boilers	0	0.0	890.8	$8,469.03	$206,973.54	$22,928.00	$184,045.54	21.7	104,298
HVAC System Improvements		**30,149**	**6.8**	**0.0**	**$4,543.49**	**$6,900.00**	**$1,500.00**	**$5,400.00**	**1.2**	**30,360**
ECM 9	Install Dual Enthalpy Outside Economizer Control	30,149	6.8	0.0	$4,543.49	$6,900.00	$1,500.00	$5,400.00	1.2	30,360
Domestic Water Heating Upgrade		**7,000**	**10.8**	**-82.3**	**$1,607.31**	**$47,766.53**	**$1,640.00**	**$46,126.53**	**28.7**	**-2,587**
ECM 10	Install Low-Flow Domestic Hot Water Devices	0	0.0	56.2	$534.19	$743.73	$0.00	$743.73	1.4	6,579
Plug Load Equipment Control - Vending Machine		**3,224**	**0.0**	**0.0**	**$485.81**	**$460.00**	**$0.00**	**$460.00**	**0.9**	**3,246**
ECM 11	Vending Machine Control	3,224	0.0	0.0	$485.81	$460.00	$0.00	$460.00	0.9	3,246
TOTAL OF ALL EVALUATED ECMS		**574,775**	**154.4**	**895.1**	**$96,464.17**	**$767,647.58**	**$78,672.00**	**$688,975.58**	**7.1**	**683,602**
TOTAL OF ALL RECOMMENDED ECMS		**560,766**	**141**	**947**	**$ 93,510.90**	**$ 674,704.70**	**$ 74,012.00**	**$600,692.70**	**6.4**	**675,563**

* - All incentives presented in this table are based on NJ Smart Start Building 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).

4.1.1 Lighting Upgrades

Recommended upgrades to existing lighting fixtures are summarized in Figure 16 below.

Figure 16 – Summary of Lighting Upgrade 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		**345,929**	**63.8**	**0.0**	**$52,131.71**	**$206,793.09**	**$37,695.00**	**$169,098.09**	**3.2**	**348,348**
ECM 1	Install LED Fixtures	103,401	15.0	0.0	$15,582.64	$64,008.75	$13,615.00	$50,393.75	3.2	104,124
ECM 2	Retrofit Fixtures with LED Lamps	242,528	48.8	0.0	$36,549.07	$142,784.34	$24,080.00	$118,704.34	3.2	244,224

During lighting upgrade planning and design, we recommend a comprehensive approach that considers both the efficiency of the lighting fixtures and how they are controlled.

ECM 1: Install LED Fixtures

Summary of Measure Economics

Interior/ Exterior	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)
Interior	39,034	6.6	0.0	$5,882.38	$11,658.03	$215.00	$11,443.03	1.9	39,306
Exterior	64,368	8.4	0.0	$9,700.26	$52,350.72	$13,400.00	$38,950.72	4.0	64,818

Measure Description

We recommend replacing existing exterior fixtures containing HID lamps with new high performance LED light fixtures. This measure saves energy by installing LEDs which use less power than other technologies with a comparable light output.

Additional savings from lighting maintenance can be anticipated since LEDs have lifetimes which are more than twice that of a fluorescent tubes and more than ten (10) times longer than many incandescent lamps.

ECM 2: Retrofit Fixtures with LED Lamps

Summary of Measure Economics

Interior/ Exterior	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)
Interior	242,528	48.8	0.0	$36,549.07	$142,784.34	$24,080.00	$118,704.34	3.2	244,224
Exterior	0	0.0	0.0	$0.00	$0.00	$0.00	$0.00	0.0	0

Measure Description

We recommend retrofitting existing incandescent, CFL and linear T8 tubes lighting technologies with LED lamps. Many LED tube lamps are direct replacements for existing fluorescent lamps and can be installed while leaving the fluorescent fixture ballast in place. LED bulbs 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.

Additional savings from lighting maintenance can be anticipated since LEDs have lifetimes which are more than twice that of a fluorescent tubes and more than ten (10) times longer than many incandescent lamps.

4.1.2 Lighting Control Measures

Figure 17 – Summary of Lighting Control 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 Control Measures		**39,991**	**7.9**	**0.0**	**$6,026.74**	**$40,134.00**	**$3,190.00**	**$36,944.00**	**6.1**	**40,271**
ECM 3	Install Occupancy Sensor Lighting Controls	32,206	6.4	0.0	$4,853.39	$24,818.00	$3,170.00	$21,648.00	4.5	32,431
ECM 4	Install High/Low Lighitng Controls	7,786	1.5	0.0	$1,173.35	$15,200.00	$0.00	$15,200.00	13.0	7,840

During lighting upgrade planning and design, we recommend a comprehensive approach that considers both the efficiency of the lighting fixtures and how they are controlled.

ECM 3: Install Occupancy Sensor Lighting Controls

Summary of Measure Economics

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)
32,206	6.4	0.0	$4,853.39	$24,818.00	$3,170.00	$21,648.00	4.5	32,431

Measure Description

We recommend installing occupancy sensors to control lighting fixtures that are currently controlled by manual switches in all restrooms, storage rooms, classrooms and offices areas. Lighting sensors detect occupancy using ultrasonic and/or infrared sensors. For most spaces, we recommend lighting controls use dual technology sensors, which can eliminate the possibility of any lights turning off unexpectedly. Lighting systems are enabled when an occupant is detected. Fixtures are automatically turned off after an area has been vacant for a preset period. Some controls also provide dimming options and all modern occupancy controls can be easily over-ridden by room occupants to allow them to manually turn fixtures on or off, as desired. Energy savings results from only operating lighting systems when they are required.

Occupancy sensors may be mounted on the wall at existing switch locations, mounted on the ceiling, or in remote locations. In general, wall switch replacement sensors are recommended for single occupant offices and other small rooms. Ceiling-mounted or remote mounted sensors are used in locations without local switching or where wall switches are not in the line-of-sight of the main work area and in large spaces. We recommend a comprehensive approach to lighting design that upgrades both the lighting fixtures and the controls together for maximum energy savings and improved lighting for occupants.

ECM 4: Install High/Low Lighting Controls

Summary of Measure Economics

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)
7,786	1.5	0.0	$1,173.35	$15,200.00	$0.00	$15,200.00	13.0	7,840

Measure Description

We recommend installing occupancy sensors to provide dual level lighting control for lighting fixtures in the hallways that are infrequently occupied but may require some level of continuous lighting for safety or security reasons. Typical areas for such lighting control are stairwells, interior corridors, parking lots, and parking garages.

Lighting fixtures with these controls operate at default low levels when the area is not occupied to provide minimal lighting to meet security or safety requirements. Sensors detect occupancy using ultrasonic and/or infrared sensors. The lighting systems are switched to full lighting levels whenever an occupant is

detected. Fixtures are automatically switched back to low level after an area has been vacant for a preset period of time. Energy savings results from only providing full lighting levels when it is required.

For this type of measure the occupancy sensors will generally be ceiling or fixture mounted. Sufficient sensor coverage needs to be provided to ensure that lights turn on in each area as an occupant approaches. Additional savings from reduced lighting maintenance may also result from this measure, due to reduced lamp operation.

4.1.3 Variable Frequency Drive Measures

Our recommendations for variable frequency drive (VFD) measures are summarized in Figure 18 below.

Figure 18 – Summary of Variable Frequency Drive 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)
Variable Frequency Drive (VFD) Measures		**74,352**	**11.5**	**0.0**	**$11,204.84**	**$52,389.63**	**$3,160.00**	**$49,229.63**	**4.4**	**74,872**
ECM 5	Install VFDs on Constant Volume (CV) HVAC	17,069	5.4	0.0	$2,572.35	$33,169.33	$3,160.00	$30,009.33	11.7	17,189
ECM 6	Install VFDs on Hot Water Pumps	57,282	6.1	0.0	$8,632.49	$19,220.30	$0.00	$19,220.30	2.2	57,683

ECM 5: Install VFDs on Constant Volume (CV) HVAC

Summary of Measure Economics

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)
17,069	5.4	0.0	$2,572.35	$33,169.33	$3,160.00	$30,009.33	11.7	17,189

Measure Description

We recommend installing variable frequency drives (VFDs) in all the air handler supply fans to control supply fan motor speeds to convert a constant-volume, single-zone air handling system into a variable-air-volume (VAV) system. A separate VFD is usually required to control the return fan motor or dedicated exhaust fan motor, if the air handler has one. Zone thermostats will cause the VFD to modulate fan speed to maintain the appropriate temperature in the zone, while maintaining a constant supply air temperature. Energy savings results from reducing fan speed (and power) when there is a reduced load required for the zone. The magnitude of energy savings is based on the estimated amount of time that fan motors operate at partial load.

ECM 6: Install VFDs on Hot Water Pumps

Summary of Measure Economics

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)
57,282	6.1	0.0	$8,632.49	$19,220.30	$0.00	$19,220.30	2.2	57,683

Measure Description

We recommend installing a variable frequency drives (VFD) to control the (2) 20hp and (2) 5hp hot water pumps serving the boilers in the Bailey wing and the old section respectively. This measure requires that a majority of the hot water coils be served by 2-way valves and that a differential pressure sensor is installed in the hot water loop. As the hot water valves close, the differential pressure increases. The VFD modulates pump speed to maintain a differential pressure setpoint. Energy savings results 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.

4.1.4 Electric Unitary HVAC Measures

Our recommendations for unitary HVAC measures are summarized in Figure 19 below.

Figure 19 - Summary of Unitary HVAC 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)
Electric Unitary HVAC Measures		**67,120**	**51.4**	**0.0**	**$10,115.08**	**$160,426.71**	**$5,559.00**	**$154,867.71**	**15.3**	**67,590**
ECM 7	Install High Efficiency Electric AC	67,120	51.4	0.0	$10,115.08	$160,426.71	$5,559.00	$154,867.71	15.3	67,590

ECM 7: Install High Efficiency Air Conditioning Units

Summary of Measure Economics

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)
67,120	51.4	0.0	$10,115.08	$160,426.71	$5,559.00	$154,867.71	15.3	67,590

Measure Description

We recommend replacing standard efficiency packaged air conditioning units with high efficiency packaged air conditioning units. Units CU-21, CU-18, CU-16, CU-14, CU-12, CU-13, CU-10, CU-1, CU-2, CU-27, CU-32, CU-8, and split ACs serving classroom 322, 324 are all over 20 years old and are recommended for replacement. There have been significant improvements in both compressor and fan motor efficiencies over the past several years. Therefore, electricity savings can be achieved by replacing older units with new high efficiency units. A higher EER or SEER rating indicates a more efficient cooling system. 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.

4.1.5 Gas-Fired Heating System Replacements

Our recommendations for gas-fired heating system replacements are summarized in Figure 20 below.

Figure 20 - Summary of Gas-Fired Heating Replacement 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)
Gas Heating (HVAC/Process) Replacement		**0**	**0.0**	**890.8**	**$8,469.03**	**$206,973.54**	**$22,928.00**	**$184,045.54**	**21.7**	**104,298**
ECM 8	Install High Efficiency Hot Water Boilers	0	0.0	890.8	$8,469.03	$206,973.54	$22,928.00	$184,045.54	21.7	104,298

ECM 8: Install High Efficiency Hot Water Boilers

Summary of Measure Economics

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)
0	0.0	890.8	$8,469.03	$206,973.54	$22,928.00	$184,045.54	21.7	104,298

Measure Description

We recommend replacing older inefficient hot water boilers in the older section and the Bailey wing with high efficiency hot water boilers. The boilers in this wing are 36 years and 25 years old respectively. Significant improvements have been made in combustion technology resulting in increased overall boiler efficiency. Energy savings results from improved combustion efficiency and reduced standby losses at low loads.

The most notable efficiency improvement is condensing hydronic boilers that can achieve over 90% efficiency under the proper conditions. Condensing hydronic boilers typically operate at efficiencies between 85% and 87% (comparable to other high efficiency boilers) when the return water temperature is above 130°F. The boiler efficiency increases as the return water temperature drops below 130°F. Therefore, condensing hydronic boilers were only evaluated when the return water temperature is less than 130°F during most of the operating hours.

4.1.6 HVAC System Upgrades

Our recommendation for HVAC system improvement are summarized in Figure 21 below.

Figure 21 - Summary of HVAC System Improvement 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)
HVAC System Improvements		**30,149**	**6.8**	**0.0**	**$4,543.49**	**$6,900.00**	**$1,500.00**	**$5,400.00**	**1.2**	**30,360**
ECM 9	Install Dual Enthalpy Outside Economizer Control	30,149	6.8	0.0	$4,543.49	$6,900.00	$1,500.00	$5,400.00	1.2	30,360

ECM 9: Install Dual-Enthalpy Economizers

Summary of Measure Economics

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)
30,149	6.8	0.0	$4,543.49	$6,900.00	$1,500.00	$5,400.00	1.2	30,360

Measure Description

Dual enthalpy economizers are used to control a ventilation system's outside air intake in order to reduce a facility's total cooling load. A dual-enthalpy economizer monitors the air temperature and humidity of both the outside and return air. The control supplies the lowest energy (temperature and humidity) air to the air handling system. When outside air conditions allow, outside air can be used for cooling instead of running the air handling system's compressor. This reduces the demand on the cooling system, lowering its usage hours and saving energy.

We recommend installing these dual-enthalpy economizers on units CU-16, CU-13, CU-10, CU-1, CU-2 and CU-8 serving the respective areas of the facility. Savings result from using outside air instead of mechanical cooling when outside air conditions permit.

4.1.7 Domestic Hot Water Heating System Upgrades

Our recommendations for domestic water heating system improvements are summarized in Figure 22 below.

Figure 22 - Summary of Domestic Water Heating 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)
Domestic Water Heating Upgrade		**7,000**	**10.8**	**-82.3**	**$1,607.31**	**$47,766.53**	**$1,640.00**	**$46,126.53**	**28.7**	**-2,587**
ECM 10	Install Low-Flow Domestic Hot Water Devices	0	0.0	56.2	$534.19	$743.73	$0.00	$743.73	1.4	6,579

ECM 10: Install Low-Flow DHW Devices

Summary of Measure Economics

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)
0	0.0	56.2	$534.19	$743.73	$0.00	$743.73	1.4	6,579

Measure Description

We recommend installing low-flow domestic hot water devices to reduce overall hot water demand. Energy demand from domestic hot water heating systems can be reduced by reducing water usage in general. Faucet aerators and low-flow showerheads can reduce hot water usage, relative to standard showerheads and aerators, which saves energy. Pre-rinse spray valves (PRSVs)—often used in commercial and institutional kitchens—are designed to remove food waste from dishes prior to dishwashing. Replacing standard pre-rinse spray valves with low flow PRSVs will reduce hot water usage and save energy.

Low-flow devices reduce the overall water flow from the fixture, while still adequate pressure for washing. This reduces the amount of water used per day resulting in energy and water savings.

4.1.8 Plug Load Equipment Control - Vending Machines

Our recommendations for vending machine control improvements are summarized in Figure 23 below.

Figure 24 Summary of Plug Load Equipment - Vending Machines 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)
Plug Load Equipment Control - Vending Machine		**3,224**	**0.0**	**0.0**	**$485.81**	**$460.00**	**$0.00**	**$460.00**	**0.9**	**3,246**
ECM 11	Vending Machine Control	3,224	0.0	0.0	$485.81	$460.00	$0.00	$460.00	0.9	3,246

ECM 11: Vending Machine Control

Summary of Measure Economics

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)
3,224	0.0	0.0	$485.81	$460.00	$0.00	$460.00	0.9	3,246

Measure Description

Vending machines operate continuously, even during non-business hours. It is recommended to install occupancy sensor controls to reduce the energy use. These controls power down vending machines when the vending machine area has been vacant for some time, then power up at regular intervals, as needed, to turn machine lights on or keep the product cool. Energy savings are a dependent on vending machine and activity level in the area surrounding the machines.

4.2 ECMs Evaluated But Not Recommended

The measures below have been evaluated by the auditor but are not recommended for implementation at the facility. Reasons for exclusion can be found in each measure description section.

Figure 25 – Summary of Measures Evaluated, But Not Recommended

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	**1,293**	**0.3**	**0.0**	**$194.80**	**$5,778.59**	**$0.00**	**$5,778.59**	**29.7**	**1,302**
Premium Efficiency Motors	1,293	0.3	0.0	$194.80	$5,778.59	$0.00	$5,778.59	29.7	1,302
Domestic Water Heating Upgrade	**7,000**	**10.8**	**-82.3**	**$1,607.31**	**$47,766.53**	**$1,640.00**	**$46,126.53**	**28.7**	**-2,587**
Install High Efficiency Gas Water Heater	7,000	10.8	-138.5	$1,073.12	$47,022.80	$1,640.00	$45,382.80	42.3	-9,166
Food Service Equipment & Refrigeration Measures	**5,716**	**2.0**	**86.7**	**$1,685.35**	**$40,025.49**	**$3,000.00**	**$37,025.49**	**22.0**	**15,903**
Food Service Equipment Replacement	5,716	2.0	86.7	$1,685.35	$40,025.49	$3,000.00	$37,025.49	22.0	15,903
TOTAL OF ALL EVALUATED ECMS	**574,775**	**154.4**	**895.1**	**$96,464.17**	**$767,647.58**	**$78,672.00**	**$688,975.58**	**7.1**	**683,602**
TOTAL OF ALL NON-RECOMMENDED ECMS	**14,009**	**13**	**-52**	**$ 2,953.27**	**$ 92,826.88**	**$ 4,640.00**	**$ 88,186.88**	**29.9**	**8,039**

* - All incentives presented in this table are based on NJ Smart Start Building 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).

Premium Efficiency Motors

Summary of Measure Economics

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)
1,293	0.3	0.0	$194.80	$5,778.59	$0.00	$5,778.59	29.7	1,302

Measure Description

We recommend replacing standard efficiency water supply motor (1 hp) that is serving the domestic hot water heater with *NEMA Premium™* efficiency motors. Our evaluation assumes that existing motors will be replaced with motors of equivalent size and type. Although occasionally additional savings can be achieved by downsizing motors to better meet the motor's current load requirements. The base case motor efficiencies are estimated from nameplate information and our best estimates of motor run hours. Efficiencies of proposed motor upgrades are obtained from the *New Jersey's Clean Energy Program Protocols to Measure Resource Savings (2016)*. Savings are based on the difference between baseline and proposed efficiencies and the assumed annual operating hours.

Install High Efficiency Gas Water Heater

Summary of Measure Economics

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)
7,000	10.8	-138.5	$1,073.12	$47,022.80	$1,640.00	$45,382.80	42.3	-9,166

Measure Description

We evaluated replacing the existing tank water heater with a high efficiency tank water heater. Improvements in combustion efficiency and reductions in heat losses have improved the overall efficiency of storage water heaters. Energy savings results from using less gas to heat water, due to higher unit efficiency, and fewer run hours to maintain the tank water temperature.

The Bailey Wing has a gas fired hot water heater while the Bailey wing has an electric unit. Our evaluation was to replace both of these units with new efficient gas-fired hot water heaters.

Food Service Equipment Replacement

Summary of Measure Economics

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)
5,716	2.0	86.7	$1,685.35	$40,025.49	$3,000.00	$37,025.49	22.0	15,903

Measure Description

We evaluated replacement of various existing food service equipment with new high efficiency equipment. Buildings that use a lot of food service equipment are often among the most energy intensive commercial buildings. Energy usage in commercial kitchens is primarily used for cooking and refrigeration. There have been many energy efficiency improvements for cooking, dishwashing, and refrigerated food storage. For more information on improved energy efficiency for food service and storage see the Food Service Technology Center website at: www.fishnick.com.

Reasons for not Recommending

The payback period on replacing these units are greater than the useful life of the equipment itself. When the equipment reached the end of its useful life we recommend replacing it with a more energy efficient (or ENERGY STAR® rated) units.

5 ENERGY EFFICIENT PRACTICES

In addition to the quantifiable savings estimated in Section 4, a facility's energy performance can also be improved through application of many low cost or no-cost energy efficiency strategies. By employing certain behavioral and operational changes and performing routine maintenance on building systems, equipment lifetime can be extended; occupant comfort, health and safety can be improved; and energy and O&M costs can be reduced. The recommendations below are provided as a framework for developing a whole building maintenance plan that is customized to your facility. Consult with qualified equipment specialists for details on proper maintenance and system operation.

Reduce Air Leakage

Air leakage, or infiltration, occurs when outside air enters a building uncontrollably through cracks and openings. Properly sealing such cracks and openings can significantly reduce heating and cooling costs, improve building durability, and create a healthier indoor environment. This includes caulking or installing weather stripping around leaky doors and windows allowing for better control of indoor air quality through controlled ventilation.

Close Doors and Windows

Ensure doors and windows are closed in conditioned spaces. Leaving doors and windows open leads to a significant increase in heat transfer between conditioned spaces and the outside air. Reducing a facility's air changes per hour (ACH) can lead to increased occupant comfort as well as significant heating and cooling savings, especially when combined with proper HVAC controls and adequate ventilation.

Use Window Treatments/Coverings

A substantial amount of heat gain can occur through uncovered or untreated windows, especially older single pane windows and east or west-facing windows. Treatments such as high-reflectivity films or covering windows with shades or shutters can reduce solar heat gain and, consequently, cooling load and can reduce internal heat loss and the associated heating load.

Ensure Lighting Controls Are Operating Properly

Lighting controls are very cost effective energy efficient devices, when installed and operating correctly. As part of a lighting maintenance schedule, lighting controls should be tested annually to ensure proper functioning. For occupancy sensors, this requires triggering the sensor and verifying that the sensor's timer settings are correct. For daylight sensors, maintenance involves cleaning of sensor lenses and confirming setpoints and sensitivity are appropriately configured.

Practice Proper Use of Thermostat Schedules and Temperature Resets

Ensure thermostats are correctly set back. By employing proper set back temperatures and schedules, facility heating and cooling costs can be reduced dramatically during periods of low or no occupancy. As such, 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 further 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.

Perform Proper Boiler Maintenance

Many boiler problems develop slowly over time, so regular inspection and maintenance is essential to retain proper functionality and efficiency of the heating system. Fuel burning equipment should undergo yearly tune-ups to ensure they are operating as safely and efficiently as possible from a combustion standpoint. A tune-up should include a combustion analysis to analyze the exhaust from the boilers and to ensure the boiler is operating safely. Buildup of dirt, dust, or deposits on the internal surfaces of a boiler can greatly affect its heat transfer efficiency. These deposits can accumulate on the water side or fire side of the boiler. Boilers should be cleaned regularly according to the manufacturer's instructions to remove this build up in order to sustain efficiency and equipment life.

Perform Proper Water Heater Maintenance

At least once a year, 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. Once a year check for any leaks or heavy corrosion on the pipes and valves. For gas water heaters, check the draft hood and make sure it is placed properly, with a few inches of air space between the tank and where it connects to the vent. Look for any 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 any 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 over three to four years old have a technician inspect the sacrificial anode annually.

Plug Load Controls

There are a variety of ways to limit the energy use of plug loads including increasing occupant awareness, removing under-utilized equipment, installing hardware controls, and using software controls. Some control steps to take are to enable the most aggressive power settings on existing devices or install load sensing or occupancy sensing (advanced) power strips. For additional information refer to "Plug Load Best Practices Guide" http://www.advancedbuildings.net/plug-load-best-practices-guide-offices.

Water Conservation

Installing low-flow faucets or faucet aerators, low-flow showerheads, and kitchen sink pre-rinse spray valves saves both energy and water. These devices save energy by reducing the overall amount of hot water used hence reducing the energy used to heat the water. The flow ratings for EPA WaterSense™ (http://www3.epa.gov/watersense/products) labeled devices are 1.5 gpm for bathroom faucets, 2.0 gpm for showerheads, and 1.28 gpm for pre-rinse spray valves.

Installing dual flush or low-flow toilets and low-flow or waterless urinals are additional ways to reduce the sites water use, however, these devices do not provide energy savings at the site level. 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. The EPA WaterSense™ ratings for urinals is 0.5 gpf and toilets that use as little as 1.28 gpf (this is lower than the current 1.6 gpf federal standard).

Refer to Section 4.1.7 for any low-flow ECM recommendations.

6 On-Site Generation Measures

On-site generation measure options include both renewable (e.g., solar, wind) and non-renewable (e.g., fuel cells) on-site technologies that generate power to meet all or a portion of the electric energy needs of a facility, often repurposing any waste heat where applicable. Also referred to as distributed generation, these systems contribute to Greenhouse Gas (GHG) emission reductions, demand reductions and reduced customer electricity purchases, resulting in the electric system reliability through improved transmission and distribution system utilization.

The State of New Jersey's Energy Master Plan (EMP) encourages new distributed generation of all forms and specifically focuses on expanding use of combined heat and power (CHP) by reducing financial, regulatory and technical barriers and identifying opportunities for new entries. The EMP also outlines a goal of 70% of the State's electrical needs to be met by renewable sources by 2050.

Preliminary screenings were performed to determine the potential that a generation project could provide a cost-effective solution for your facility. Before making a decision to implement, a feasibility study should be conducted that would take a detailed look at 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.

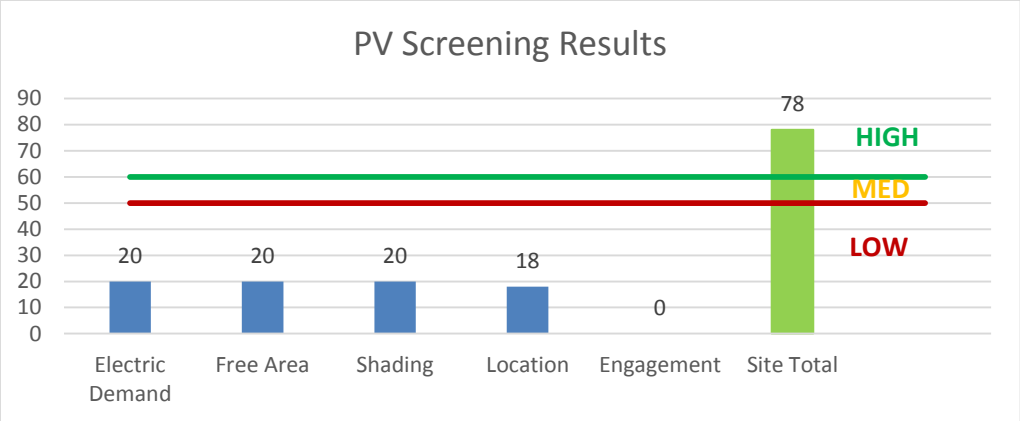
6.1 Photovoltaic

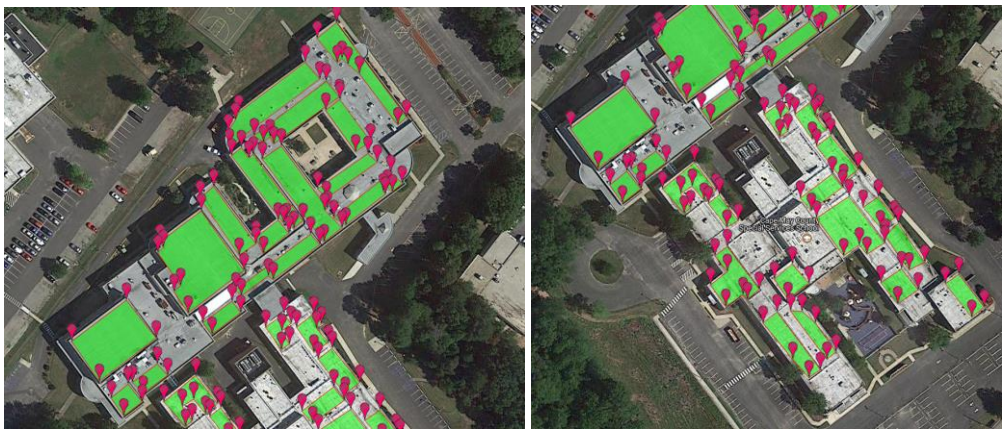
Sunlight can be converted into electricity using photovoltaics (PV) modules. Modules are racked together into an array that produces direct current (DC) electricity. The DC current is converted to alternating current (AC) through an inverter. The inverter is interconnected to the facility's electrical distribution system. The amount of unobstructed area available determines how large of a solar array can be installed. The size of the array combined with the orientation, tilt, and shading elements determines the energy produced.

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

The amount of free area, ease of installation (location), and the lack of shading elements contribute to the high potential for PV at the site. A PV array located on the roof of the building may be feasible. If Cape May County Special Services District is interested in pursuing the installation of PV, we recommended a full feasibility study be conducted.

Figure 26 - Photovoltaic Screening





Potential	High	
System Potential	500	kW DC STC
Electric Generation	595,685	kWh/yr
Displaced Cost	$51,820	/yr
Installed Cost	$1,300,000	

Solar projects must register their projects in the SREC Registration Program prior to the start of construction in order 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 developed new solar projects and insight into future SREC pricing. Refer to Section 8.3 for additional information.

For more information on solar PV technology and commercial solar markets in New Jersey, or to find a qualified solar installer, who can provide a more detailed assessment of the specific costs and benefits of solar develop of the site, please visit the following links below:

- **Basic Info on Solar PV in NJ**: http://www.njcleanenergy.com/whysolar
- **NJ Solar Market FAQs**: http://www.njcleanenergy.com/renewable-energy/program-updates-and-background-information/solar-transition/solar-market-faqs
- **Approved Solar Installers in the NJ Market**: http://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) is the on-site generation of electricity along with the recovery of heat energy, which is put to beneficial use. Common technologies for CHP include reciprocating engines, microturbines, fuel cells, backpressure steam turbines, and (at large facilities) gas turbines. Electric generation from a CHP system is typically interconnected to local power distribution systems. Heat is recovered from exhaust and ancillary cooling systems and interconnected to the existing hot water (or steam) distribution systems.

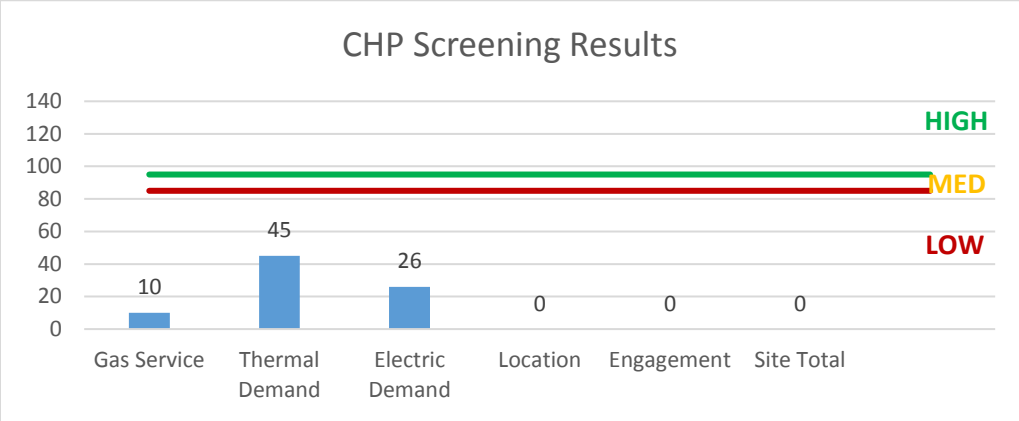
CHP systems are typically used to produce a portion of the electric power used onsite by a facility, with the balance of electric power needs supplied by grid purchases. The heat is used to supplement (or supplant) existing boilers for the purpose of space heating and/or domestic hot water heating. Waste heat can also be routed through absorption chillers for the purpose of space cooling. The key criteria used for screening, however, is the amount of time the system operates at full load and the facility's ability to use the recovered heat. Facilities with continuous use for large quantities of waste heat are the best candidates for CHP.

A preliminary screening based on heating and electrical demand, siting, and interconnection shows that the facility has a Low potential for installing a cost-effective CHP system.

Low or infrequent thermal load, and lack of space near the existing boilers are the most significant factors contributing to the potential for CHP at the site. In our opinion, the facility does not appear to meet the minimum requirements for a cost-effective CHP installation.

For a list of qualified firms in New Jersey specializing in commercial CHP cost assessment and installation, go to: http://www.njcleanenergy.com/commercial-industrial/programs/nj-smartstart-buildings/tools-and-resources/tradeally/approved_vendorsearch/.

Figure 27 - CHP Screening



7 DEMAND RESPONSE

Demand Response (DR) is a program designed to reduce the electric load of commercial facilities when electric wholesale prices are high or when the reliability of the electric grid is threatened due to peak demand. Demand Response service providers (a.k.a. Curtailment Service Providers) are registered with PJM, the independent system operator (ISO) for mid-Atlantic state region that is charged with maintaining electric grid reliability.

By enabling grid operators to call upon Curtailment Service Providers and commercial facilities to reduce electric usage 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 DR programs. Program participation is voluntary and participants receive payments whether or not their facility is called upon to curtail their electric usage.

Typically an electric customer needs to be capable of reducing their electric demand, within minutes, by at least 100 kW or more in order to participate in a DR program. Customers with a greater capability to quickly curtail their demand during peak hours will receive higher payments. Customers with back-up generators onsite may also receive additional DR payments for their generating capacity if they agree to run the generators for grid support when called upon. Eligible customers who have chosen to participate in a DR programs often find it to be a valuable source of revenue for their facility because the payments can significantly offset annual electric costs.

Participating customers can often quickly reduce their peak load through simple measures, such as temporarily raising temperature set points on thermostats, so that air conditioning units run less frequently, or agreeing to dim or shut off less critical lighting. This usually requires some level of building automation and controls capability to ensure rapid load reduction during a DR curtailment event. DR program participants may need to install smart meters or may need to also sub-meter larger energy-using equipment, such as chillers, in order to demonstrate compliance with DR program requirements.

DR does not include the reduction of electricity consumption based on normal operating practice or behavior. For example, if a company's normal schedule is to close for a holiday, the reduction of electricity due to this closure or scaled-back operation is not considered a demand response activity in most situations.

The first step toward participation in a DR program is to contact a Curtailment Service Provider. A list of these providers is available on PJM's website and it includes contact information for each company, as well as the states where they have active business (http://www.pjm.com/markets-and-operations/demand-response/csps.aspx). PJM also posts training materials that are developed for program members interested in specific rules and requirements regarding DR activity (http://www.pjm.com/training/training%20material.aspx), along with a variety of other DR program information.

Curtailment Service Providers typically offer free assessments to determine a facility's eligibility to participate in a DR program. They will provide details regarding program rules and requirements for metering and controls, assess a facility's ability to temporarily reduce electric load, and provide details on payments to be expected for participation in the program. Providers usually offer multiple options for DR to larger facilities and may also install controls or remote monitoring equipment of their own to help ensure compliance with all terms and conditions of a DR contract.

In our opinion this facility is not a good candidate for demand response program.

8 PROJECT FUNDING / INCENTIVES

The NJCEP is able to provide the incentive programs described below, and other benefits to ratepayers, because of the Societal Benefits Charge (SBC) Fund. The SBC was created by the State of New Jersey's Electricity Restructuring Law (1999), which requires all customers of investor-owned electric and gas utilities to pay a surcharge on their monthly energy bills. As a customer of a state-regulated electric or gas utility and therefore a contributor to the fund your organization is eligible to participate in the LGEA program and also eligible to receive incentive payment for qualifying energy efficiency measures. Also available through the NJBPU are some alternative financing programs described later in this section. Please refer to Figure 28 for a list of the eligible programs identified for each recommended ECM.

Figure 28 - ECM Incentive Program Eligibility

Energy Conservation Measure		SmartStart Prescriptive	SmartStart Custom	Pay For Performance Existing Buildings
ECM 1	Install LED Fixtures	x		x
ECM 2	Retrofit Fixtures with LED Lamps	x		x
ECM 3	Install Occupancy Sensor Lighting Controls	x		x
ECM 4	Install High/Low Lighitng Controls	x		x
ECM 5	Install VFDs on Constant Volume (CV) HVAC	x		x
ECM 6	Install VFDs on Hot Water Pumps		x	x
ECM 7	Install High Efficiency Electric AC	x		x
ECM 8	Install High Efficiency Hot Water Boilers	x		x
ECM 9	Install Dual Enthalpy Outside Economizer Control	x		x
ECM 10	Install Low-Flow Domestic Hot Water Devices			x
ECM 11	Vending Machine Control			x

SmartStart is generally well-suited for implementation of individual measures or small group of measures. It provides flexibility to install measures at your own pace using in-house staff or a preferred contractor. Direct Install caters to small to mid-size facilities that can bundle multiple ECMs together. This can greatly simplify participation and may lead to higher incentive amounts, but requires the use of pre-approved contractors. The Pay for Performance (P4P) program is a "whole-building" energy improvement program designed for larger facilities. It requires implementation of multiple measures meeting minimum savings thresholds, as well as use of pre-approved consultants. The Large Energy Users Program (LEUP) is available to New Jersey's largest energy users giving them flexibility to install as little or as many measures, in a single facility or several facilities, with incentives capped based on the entity's annual energy consumption. LEUP applicants can use in-house staff or a preferred contractor.

Generally, the incentive values provided throughout the report assume the SmartStart program is utilized because it provides a consistent basis for comparison of available incentives for various measures, though in many cases incentive amounts may be higher through participation in other programs.

Brief descriptions of all relevant financing and incentive programs are located in the sections below. Further information, including most current program availability, requirements, and incentive levels can be found at: www.njcleanenergy.com/ci.

8.1 SmartStart

Overview

The SmartStart program offers incentives for installing prescriptive and custom energy efficiency measures at your facility. Routinely the program adds, removes or modifies incentives from year to year for various energy efficiency equipment based on market trends and new technologies.

Equipment with Prescriptive Incentives Currently Available:

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

Most equipment sizes and types are served by this program. This program provides an effective mechanism for securing incentives for energy efficiency measures installed individually or as part of a package of energy upgrades.

Incentives

The SmartStart prescriptive incentive program provides fixed incentives for specific energy efficiency measures, whereas the custom SmartStart program provides incentives for more unique or specialized technologies or systems that are not addressed through prescriptive incentive offerings for specific devices.

Since your facility is an existing building, only the retrofit incentives have been applied in this report. Custom Measure incentives are calculated at $0.16/kWh and $1.60/therm based on estimated annual savings, 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

To participate in the SmartStart program you will need to submit an application for the specific equipment to be installed. Many applications are designed as rebates, although others require application approval prior to installation. Applicants may work with a contractor of their choosing and can also utilize internal personnel, which provides added flexibility to the program. Using internal personnel also helps improve the economics of the ECM by reducing the labor cost that is included in the tables in this report.

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

8.2 Pay for Performance - Existing Buildings

Overview

The Pay for Performance – Existing Buildings (P4P EB) program is designed for larger customers with a peak demand over 200 kW in any of the preceding 12 months. Under this program 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. 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 in order to achieve deep energy savings. This program has an added benefit of evaluating a broad spectrum of measures that may not otherwise qualify under other programs. Many facilities pursuing an Energy Savings Improvement Program (ESIP) loan also utilize the P4P program.

Incentives

Incentives are calculated 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

To participate in the P4B EB program you will need to contact one of the pre-approved consultants and contractors ("Partners"). Under direct contract to you, the Partner will help further evaluate the measures identified in this report through development of the Energy Reduction Plan (ERP), assist you in implementing selected measures, and verify actual savings one year after the installation. At each of these three milestones your Partner will also facilitate securing program incentives.

Approval of the final scope of work is required by the program prior to installation completion. Although installation can be accomplished by a contractor of your choice (some P4P Partners are also contractors) or by internal personnel, the Partner must remain involved to ensure compliance with the program guidelines and requirements.

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

8.3 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 in the SRP prior to the start of construction in order 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 RPS. One way they can meet the RPS requirements is by purchasing SRECs. As SRECs are traded in a competitive market, the price may vary significantly. The actual price of an SREC during a trading period can and will fluctuate depending on supply and demand.

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

8.4 Energy Savings Improvement Program

The Energy Savings Improvement Program (ESIP) is an alternate method for New Jersey's government agencies to finance the implementation of energy conservation measures. 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. This is done in a manner that ensures that annual payments are lower than the savings projected from the ECMs, ensuring that ESIP projects are cash flow positive in year one, and every year thereafter. 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 can be leveraged to help further reduce the total project cost of eligible measures.

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 utilized 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. Entities should carefully consider all alternatives to develop an approach that best meets their needs. A detailed program descriptions and application can be found at: www.njcleanenergy.com/ESIP.

Please note that ESIP is a program delivered directly by the NJBPU and is not an NJCEP incentive program. As mentioned above, you may utilize NJCEP incentive programs to help further reduce costs when developing the ESP. You should refer to the ESIP guidelines at the link above for further information and guidance on next steps.

9 ENERGY PURCHASING AND PROCUREMENT STRATEGIES

9.1 Retail Electric Supply Options

In 1999, New Jersey State Legislature passed the Electric Discount & Energy Competition Act (EDECA) to restructure the electric power industry in New Jersey. This law deregulated the retail electric markets, allowing all consumers to shop for service from competitive electric suppliers. The intent was to create a more competitive market for electric power supply in New Jersey. As a result, utilities were allowed to charge Cost of Service and customers were given the ability to choose a third party (i.e. non-utility) energy supplier.

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 is purchasing electricity from a third party supplier, review and compare prices at the end of the current contract or every couple years.

A list of third party electric suppliers, who are licensed by the state to provide service in New Jersey, can be found online at: www.state.nj.us/bpu/commercial/shopping.html.

9.2 Retail Natural Gas Supply Options

The natural gas market in New Jersey has also been deregulated. Most customers that remain with the utility for natural gas service pay rates that are market-based and that fluctuate on a monthly basis. 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 is typically dependent upon whether a customer seeks 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 is not purchasing natural gas from a third party supplier, consider shopping for a reduced rate from third party natural gas suppliers. If your facility is purchasing natural gas from a third party supplier, review and compare prices at the end of the current contract or every couple years.

A list of third party natural gas suppliers, who are licensed by the state to provide service in New Jersey, can be found online at: 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	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Receiving	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.04	221	0.0	$33.31	$117.00	$20.00	2.91
Receiving	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,912	Relamp	No	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,912	0.02	107	0.0	$16.15	$96.40	$20.00	4.73
Receiving	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	9	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.19	995	0.0	$149.89	$526.50	$90.00	2.91
Switchgear room	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.06	332	0.0	$49.96	$175.50	$30.00	2.91
Boiler room	13	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	13	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.28	1,437	0.0	$216.50	$760.50	$130.00	2.91
Outside boiler room	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.06	332	0.0	$49.96	$175.50	$30.00	2.91
ABC gym	36	Linear Fluorescent - T5: 4' T5 (28W) - 4L	Occupancy Sensor	120	2,038	Relamp	No	36	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,038	1.46	5,232	0.0	$788.49	$3,424.80	$720.00	3.43
AHU room	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.41	2,095	0.0	$315.67	$1,147.50	$185.00	3.05
Girls' locker room	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.41	2,095	0.0	$315.67	$1,147.50	$185.00	3.05
Boys' locker room	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.33	1,676	0.0	$252.53	$972.00	$155.00	3.24
Old boiler room	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	10	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.22	1,105	0.0	$166.54	$585.00	$100.00	2.91
Hallway Old building	30	Linear Fluorescent - T8: 2' T8 (17W) - 4L	Wall Switch	63	2,912	Relamp	Yes	30	LED - Linear Tubes: (4) 4' Lamps	High/Low Control	58	2,038	0.44	2,250	0.0	$339.14	$7,854.00	$600.00	21.39
Autoshop	40	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	40	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.87	4,420	0.0	$666.16	$2,340.00	$400.00	2.91
CR 305	26	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	26	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.71	3,631	0.0	$547.16	$1,791.00	$295.00	2.73
CR 305	2	Linear Fluorescent - T8: 8' T8 (59W) - 1L	Wall Switch	58	2,912	Relamp	No	2	LED - Linear Tubes: (1) 8' Lamp	Wall Switch	36	2,912	0.03	147	0.0	$22.21	$133.60	$0.00	6.02
CR 303	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.41	2,095	0.0	$315.67	$1,147.50	$185.00	3.05
CR 304	2	Linear Fluorescent - T8: 8' T8 (59W) - 1L	Wall Switch	58	2,912	Relamp	No	2	LED - Linear Tubes: (1) 8' Lamp	Wall Switch	36	2,912	0.03	147	0.0	$22.21	$133.60	$0.00	6.02
304-wood shop	36	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	36	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.78	3,978	0.0	$599.54	$2,106.00	$360.00	2.91
304-wood shop	1	Linear Fluorescent - T8: 8' T8 (59W) - 1L	Wall Switch	58	2,912	Relamp	No	1	LED - Linear Tubes: (1) 8' Lamp	Wall Switch	36	2,912	0.01	74	0.0	$11.10	$66.80	$0.00	6.02
Room 308 - Horticulture	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	15	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.32	1,658	0.0	$249.81	$877.50	$150.00	2.91
Room 302,301	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.41	2,095	0.0	$315.67	$1,417.50	$220.00	3.79
Room 302,302	2	Linear Fluorescent - T8: 8' T8 (59W) - 1L	Wall Switch	58	2,912	Relamp	No	2	LED - Linear Tubes: (1) 8' Lamp	Wall Switch	36	2,912	0.03	147	0.0	$22.21	$133.60	$0.00	6.02
Transport Office suite	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	7	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.15	774	0.0	$116.58	$409.50	$70.00	2.91
Conference room	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.22	1,117	0.0	$168.36	$584.00	$100.00	2.87
Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.05	279	0.0	$42.09	$233.00	$40.00	4.59

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Office	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.08	419	0.0	$63.13	$291.50	$50.00	3.83
Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.05	279	0.0	$42.09	$233.00	$40.00	4.59
Women's restroom	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	2,912	0.02	97	0.0	$14.64	$63.20	$0.00	4.32
Women's restroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.04	221	0.0	$33.31	$117.00	$20.00	2.91
Men's restroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.04	221	0.0	$33.31	$117.00	$20.00	2.91
Case Manager room	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.11	559	0.0	$84.18	$350.00	$60.00	3.45
Therpay Pool	16	Metal Halide: (1) 175W Lamp	Wall Switch	215	2,912	Fixture Replacement	No	16	LED - Fixtures: Downlight Recessed	Wall Switch	98	2,912	1.23	6,269	0.0	$944.73	$4,337.87	$80.00	4.51
Lap Pool	18	Metal Halide: (1) 400W Lamp	Wall Switch	458	3,600	Fixture Replacement	No	18	LED - Fixtures: Downlight Recessed	Wall Switch	98	3,600	4.25	26,827	0.0	$4,042.87	$4,880.11	$90.00	1.18
Emergency	2	Incandescent: Ceiling mount fixture - 1 lamp	Wall Switch	40	2,912	Relamp	No	2	LED Screw-In Lamps: Ceiling mount fixture - 1 lamp	Wall Switch	14	2,912	0.03	174	0.0	$26.24	$107.51	$10.00	3.72
Closet	1	Compact Fluorescent: Ceiling mount fixture - 1 lamp	Wall Switch	42	104	Relamp	No	1	LED Screw-In Lamps: Ceiling mount fixture - 1 lamp	Wall Switch	29	104	0.01	2	0.0	$0.23	$53.75	$0.00	236.69
Closet	1	Compact Fluorescent: Ceiling mount fixture - 1 lamp	Wall Switch	42	104	Relamp	No	1	LED Screw-In Lamps: Ceiling mount fixture - 1 lamp	Wall Switch	29	104	0.01	2	0.0	$0.23	$53.75	$0.00	236.69
Closet	1	Compact Fluorescent: Ceiling mount fixture - 1 lamp	Wall Switch	42	104	Relamp	No	1	LED Screw-In Lamps: Ceiling mount fixture - 1 lamp	Wall Switch	29	104	0.01	2	0.0	$0.23	$53.75	$0.00	236.69
Therpay Pool	3	Compact Fluorescent: Recessed fixture - 2 lamps	Wall Switch	36	2,912	Relamp	No	3	LED Screw-In Lamps: Recessed fixture - 2 lamps	Wall Switch	25	2,912	0.02	109	0.0	$16.35	$322.52	$0.00	19.72
Lap Pool	18	Compact Fluorescent: Ceiling mount fixture - 2 lamps	Wall Switch	52	2,912	Relamp	No	18	LED Screw-In Lamps: Ceiling mount fixture - 2 lamps	Wall Switch	36	2,912	0.18	940	0.0	$141.71	$1,935.11	$0.00	13.66
Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.11	559	0.0	$84.18	$350.00	$60.00	3.45
Back porch café	43	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	43	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.93	4,752	0.0	$716.12	$2,515.50	$430.00	2.91
Room 321	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.33	1,676	0.0	$252.53	$972.00	$155.00	3.24
Room 323	14	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	14	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.38	1,955	0.0	$294.62	$1,089.00	$175.00	3.10
Room 323	2	Linear Fluorescent - T8: 8' T8 (59W) - 1L	Wall Switch	58	2,912	Relamp	No	2	LED - Linear Tubes: (1) 8' Lamp	Wall Switch	36	2,912	0.03	147	0.0	$22.21	$133.60	$0.00	6.02
Room 325	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.41	2,095	0.0	$315.67	$1,147.50	$185.00	3.05
Room 325	2	Linear Fluorescent - T8: 8' T8 (59W) - 1L	Wall Switch	58	2,912	Relamp	No	2	LED - Linear Tubes: (1) 8' Lamp	Wall Switch	36	2,912	0.03	147	0.0	$22.21	$133.60	$0.00	6.02
Girls' restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.02	111	0.0	$16.65	$58.50	$10.00	2.91
Girls' restroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,912	Relamp	No	2	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,912	0.02	117	0.0	$17.66	$71.80	$10.00	3.50
Thrift shop	4	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,912	Relamp	No	4	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,912	0.04	214	0.0	$32.30	$192.80	$40.00	4.73
Room 326, 328	30	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	30	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.82	4,189	0.0	$631.34	$2,295.00	$370.00	3.05

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Room 326, 328	4	Linear Fluorescent - T8: 8' T8 (59W) - 1L	Wall Switch	58	2,912	Relamp	No	4	LED - Linear Tubes: (1) 8' Lamp	Wall Switch	36	2,912	0.06	295	0.0	$44.41	$267.20	$0.00	6.02
Office near 326	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.08	419	0.0	$63.13	$291.50	$50.00	3.83
Office near 326	1	Linear Fluorescent - T8: 2' T8 (17W) - 1L	Wall Switch	22	2,912	Relamp	No	1	LED - Linear Tubes: (1) 2' Lamp	Wall Switch	9	2,912	0.01	45	0.0	$6.81	$31.90	$5.00	3.95
Driver's education room	10	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,912	Relamp	Yes	10	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,038	0.48	2,458	0.0	$370.42	$1,221.33	$235.00	2.66
Room 327	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.55	2,793	0.0	$420.89	$1,440.00	$235.00	2.86
Room 327	6	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,912	Relamp	No	6	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,912	0.07	352	0.0	$52.99	$215.40	$30.00	3.50
Room 327	2	Linear Fluorescent - T8: 8' T8 (59W) - 1L	Wall Switch	58	2,912	Relamp	No	2	LED - Linear Tubes: (1) 8' Lamp	Wall Switch	36	2,912	0.03	147	0.0	$22.21	$133.60	$0.00	6.02
Room 329	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.49	2,514	0.0	$378.80	$1,323.00	$215.00	2.93
Staff dining	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	12	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.26	1,326	0.0	$199.85	$702.00	$120.00	2.91
Staff dining	8	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,912	Relamp	No	8	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,912	0.08	429	0.0	$64.60	$385.60	$80.00	4.73
Kitchen	30	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	30	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.65	3,315	0.0	$499.62	$1,755.00	$300.00	2.91
Storage - kitchen	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	104	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	104	0.01	2	0.0	$0.29	$48.20	$10.00	132.46
Storage - kitchen	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	104	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	104	0.02	4	0.0	$0.59	$58.50	$10.00	81.54
Kitchen hallway	4	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,912	Relamp	No	4	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,912	0.04	214	0.0	$32.30	$192.80	$40.00	4.73
2 bathrooms	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.04	221	0.0	$33.31	$117.00	$20.00	2.91
Dining	18	Linear Fluorescent - T8: 2' T8 (17W) - 4L	Wall Switch	63	2,912	Relamp	No	18	LED - Linear Tubes: (4) 2' Lamps	Wall Switch	34	2,912	0.34	1,748	0.0	$263.44	$1,377.60	$360.00	3.86
Media center	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	9	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.19	995	0.0	$149.89	$526.50	$90.00	2.91
Media center	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,912	Relamp	Yes	3	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,038	0.04	212	0.0	$31.95	$260.60	$50.00	6.59
Media center office	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,912	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,038	0.19	983	0.0	$148.17	$496.53	$100.00	2.68
Media center - tech specialist	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,912	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,038	0.19	983	0.0	$148.17	$496.53	$100.00	2.68
Media center main area	65	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,912	Relamp	No	65	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,912	2.39	12,190	0.0	$1,836.98	$6,183.67	$1,300.00	2.66
Media center main area	8	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,912	Relamp	No	8	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,912	0.08	429	0.0	$64.60	$385.60	$80.00	4.73
Media special center	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,912	Relamp	No	2	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,912	0.07	375	0.0	$56.52	$190.27	$40.00	2.66
Hallway	10	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,912	Relamp	Yes	10	LED - Linear Tubes: (2) 2' Lamps	High/Low Control	17	2,038	0.14	707	0.0	$106.48	$882.00	$100.00	7.34
Hallway	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.13	663	0.0	$99.92	$351.00	$60.00	2.91

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	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
Mezzanine	17	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	17	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.37	1,879	0.0	$283.12	$994.50	$170.00	2.91
Kids cafeteria	18	Linear Fluorescent - T8: 2' T8 (17W) - 4L	Wall Switch	63	2,912	Relamp	No	18	LED - Linear Tubes: (4) 2' Lamps	Wall Switch	34	2,912	0.34	1,748	0.0	$263.44	$1,377.60	$360.00	3.86
Mechanical closet	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,912	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,038	0.10	492	0.0	$74.08	$306.27	$40.00	3.59
Hallway	10	Linear Fluorescent - T8: 2' T8 (17W) - 4L	Wall Switch	63	2,912	Relamp	Yes	10	LED - Linear Tubes: (4) 2' Lamps	High/Low Control	34	2,038	0.26	1,313	0.0	$197.83	$1,565.33	$200.00	6.90
Mechanical closet	1	Compact Fluorescent: Recessed fixture - 1 lamp	Wall Switch	42	104	Relamp	Yes	1	LED Screw-In Lamps: Recessed fixture - 1 lamp	Occupancy Sensor	29	73	0.01	3	0.0	$0.39	$169.75	$0.00	439.70
House keeping	1	Compact Fluorescent: Recessed fixture - 1 lamp	Wall Switch	42	2,912	Relamp	Yes	1	LED Screw-In Lamps: Recessed fixture - 1 lamp	Occupancy Sensor	29	2,038	0.01	72	0.0	$10.81	$169.75	$20.00	13.85
Closet	1	Compact Fluorescent: Recessed fixture - 1 lamp	Wall Switch	42	104	Relamp	Yes	1	LED Screw-In Lamps: Recessed fixture - 1 lamp	Occupancy Sensor	29	73	0.01	3	0.0	$0.39	$169.75	$0.00	439.70
Main office - Principal Room	11	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	11	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.30	1,536	0.0	$231.49	$913.50	$145.00	3.32
Main office - Principal Room	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,912	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,912	0.01	54	0.0	$8.07	$48.20	$10.00	4.73
Conference room - main office	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.16	838	0.0	$126.27	$467.00	$80.00	3.06
Copy room	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.11	559	0.0	$84.18	$350.00	$60.00	3.45
Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.05	279	0.0	$42.09	$233.00	$40.00	4.59
Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.11	559	0.0	$84.18	$350.00	$60.00	3.45
Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.05	279	0.0	$42.09	$233.00	$40.00	4.59
Hallway	14	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,912	Relamp	Yes	14	LED - Linear Tubes: (2) 2' Lamps	High/Low Control	17	2,038	0.19	989	0.0	$149.08	$1,474.80	$140.00	8.95
Speech	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	18	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.39	1,989	0.0	$299.77	$1,053.00	$180.00	2.91
Speech	4	Linear Fluorescent - T8: 8' T8 (59W) - 1L	Wall Switch	58	2,912	Relamp	No	4	LED - Linear Tubes: (1) 8' Lamp	Wall Switch	36	2,912	0.06	295	0.0	$44.41	$267.20	$0.00	6.02
Staff restroom - Women	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.14	698	0.0	$105.22	$562.50	$85.00	4.54
2 time out rooms	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.09	442	0.0	$66.62	$234.00	$40.00	2.91
Gymnasium	16	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,912	Relamp	No	16	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,912	0.17	857	0.0	$129.19	$771.20	$160.00	4.73
Closet bathroom	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	104	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	104	0.06	12	0.0	$1.78	$175.50	$30.00	81.54
Closet bathroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	104	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	104	0.01	2	0.0	$0.29	$48.20	$10.00	132.46
Closet bathroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	104	Relamp	No	12	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	104	0.26	47	0.0	$7.14	$702.00	$120.00	81.54
Room 101	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.05	279	0.0	$42.09	$233.00	$40.00	4.59
Nurse's office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.09	442	0.0	$66.62	$234.00	$40.00	2.91

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	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
Nurse's office	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,912	Relamp	No	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,912	0.02	107	0.0	$16.15	$96.40	$20.00	4.73
Room 103	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.33	1,676	0.0	$252.53	$818.00	$140.00	2.68
Room 103	2	Linear Fluorescent - T8: 8' T8 (59W) - 1L	Wall Switch	58	2,912	Relamp	No	2	LED - Linear Tubes: (1) 8' Lamp	Wall Switch	36	2,912	0.03	147	0.0	$22.21	$133.60	$0.00	6.02
Hallway	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,912	Relamp	No	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,912	0.02	107	0.0	$16.15	$96.40	$20.00	4.73
Room 104	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.41	2,095	0.0	$315.67	$1,147.50	$185.00	3.05
Room 104	2	Linear Fluorescent - T8: 8' T8 (59W) - 1L	Wall Switch	58	2,912	Relamp	No	2	LED - Linear Tubes: (1) 8' Lamp	Wall Switch	36	2,912	0.03	147	0.0	$22.21	$133.60	$0.00	6.02
Room 105	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.41	2,095	0.0	$315.67	$1,147.50	$185.00	3.05
Room 105	2	Linear Fluorescent - T8: 8' T8 (59W) - 1L	Wall Switch	58	2,912	Relamp	No	2	LED - Linear Tubes: (1) 8' Lamp	Wall Switch	36	2,912	0.03	147	0.0	$22.21	$133.60	$0.00	6.02
Room 107,106	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.41	2,095	0.0	$315.67	$1,417.50	$220.00	3.79
Room 107,106	2	Linear Fluorescent - T8: 8' T8 (59W) - 1L	Wall Switch	58	2,912	Relamp	No	2	LED - Linear Tubes: (1) 8' Lamp	Wall Switch	36	2,912	0.03	147	0.0	$22.21	$133.60	$0.00	6.02
Room 108,110 Room 109,111	56	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	56	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	1.53	7,820	0.0	$1,178.50	$4,356.00	$700.00	3.10
Room 108,110 Room 109,111	16	Linear Fluorescent - T8: 8' T8 (59W) - 1L	Wall Switch	58	2,912	Relamp	No	16	LED - Linear Tubes: (1) 8' Lamp	Wall Switch	36	2,912	0.23	1,179	0.0	$177.64	$1,068.80	$0.00	6.02
Room 120	11	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	11	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.30	1,536	0.0	$231.49	$913.50	$145.00	3.32
Room 120	1	Linear Fluorescent - T8: 8' T8 (59W) - 1L	Wall Switch	58	2,912	Relamp	No	1	LED - Linear Tubes: (1) 8' Lamp	Wall Switch	36	2,912	0.01	74	0.0	$11.10	$66.80	$0.00	6.02
Recovery	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.13	663	0.0	$99.92	$351.00	$60.00	2.91
Recovery	1	Linear Fluorescent - T8: 2' T8 (17W) - 1L	Wall Switch	22	2,912	Relamp	No	1	LED - Linear Tubes: (1) 2' Lamp	Wall Switch	9	2,912	0.01	45	0.0	$6.81	$31.90	$5.00	3.95
Ocean Academy	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.14	698	0.0	$105.22	$562.50	$85.00	4.54
Ocean Academy	4	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,912	Relamp	No	4	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,912	0.04	214	0.0	$32.30	$192.80	$40.00	4.73
Men's room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.05	279	0.0	$42.09	$387.00	$20.00	8.72
Men's room	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,912	Relamp	No	2	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,912	0.07	375	0.0	$56.52	$190.27	$40.00	2.66
Men's room	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	2,912	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	2,912	0.02	92	0.0	$13.88	$61.70	$15.00	3.36
Storage	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	104	Relamp	Yes	1	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	73	0.05	9	0.0	$1.32	$211.13	$20.00	144.48
Storage	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	104	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	73	0.19	35	0.0	$5.29	$496.53	$100.00	74.93
Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,912	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,038	0.19	983	0.0	$148.17	$496.53	$100.00	2.68
Girls' restroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.04	221	0.0	$33.31	$117.00	$20.00	2.91

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	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
Behaviour support	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.25	1,257	0.0	$189.40	$796.50	$125.00	3.55
Boys' restroom	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.08	419	0.0	$63.13	$445.50	$65.00	6.03
Calming room	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	15	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.32	1,658	0.0	$249.81	$877.50	$150.00	2.91
Bathroom	1	Incandescent: 2 Lamps	Wall Switch	120	2,912	Relamp	No	1	LED Screw-In Lamps: 2 lamps	Wall Switch	18	2,912	0.07	342	0.0	$51.48	$107.51	$10.00	1.89
2 closets	2	Compact Fluorescent: 1 Lamp	Wall Switch	42	104	Relamp	No	2	LED Screw-In Lamps: 1 lamp	Wall Switch	29	104	0.02	3	0.0	$0.45	$107.51	$0.00	236.69
Nurse's office	1	Compact Fluorescent: 1 Lamp	Wall Switch	42	2,912	Relamp	No	1	LED Screw-In Lamps: 1 lamp	Wall Switch	29	2,912	0.01	42	0.0	$6.36	$53.75	$0.00	8.45
Room 120	1	Compact Fluorescent: 1 Lamp	Wall Switch	42	2,912	Relamp	No	1	LED Screw-In Lamps: 1 lamp	Wall Switch	29	2,912	0.01	42	0.0	$6.36	$53.75	$0.00	8.45
Closet near Girls' restroom	1	Compact Fluorescent: 1 Lamp	Wall Switch	42	2,912	Relamp	No	1	LED Screw-In Lamps: 1 lamp	Wall Switch	29	2,912	0.01	42	0.0	$6.36	$53.75	$0.00	8.45
Office	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.27	1,396	0.0	$210.45	$855.00	$135.00	3.42
Hallway	11	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,912	Relamp	Yes	11	LED - Linear Tubes: (2) 2' Lamps	High/Low Control	17	2,038	0.15	777	0.0	$117.13	$1,330.20	$110.00	10.42
Room 124, 125	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.41	2,095	0.0	$315.67	$1,417.50	$220.00	3.79
Room 126,128, 127,129	60	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	60	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	1.64	8,379	0.0	$1,262.67	$4,590.00	$740.00	3.05
Room 126,128, 127,129	8	Linear Fluorescent - T8: 8' T8 (59W) - 1L	Wall Switch	58	2,912	Relamp	No	8	LED - Linear Tubes: (1) 8' Lamp	Wall Switch	36	2,912	0.12	589	0.0	$88.82	$534.40	$0.00	6.02
Conmeter hallway	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	10	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,038	0.27	1,396	0.0	$210.45	$1,385.00	$100.00	6.11
OT/PT suite	23	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	23	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.50	2,542	0.0	$383.04	$1,345.50	$230.00	2.91
OT/PT closet	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	520	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	520	0.04	39	0.0	$5.95	$117.00	$20.00	16.31
OT/PT restroom	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.08	419	0.0	$63.13	$445.50	$65.00	6.03
Hallway	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,038	0.55	2,793	0.0	$420.89	$3,170.00	$200.00	7.06
Related services	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.02	111	0.0	$16.65	$58.50	$10.00	2.91
Related services 17,18,19,21,22,23,26,27	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.22	1,117	0.0	$168.36	$1,396.00	$240.00	6.87
Related Services 25,24,20,28	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.22	1,117	0.0	$168.36	$932.00	$160.00	4.59
Related Services hallway	13	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,912	Relamp	No	13	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,912	0.14	697	0.0	$104.97	$626.60	$130.00	4.73
Related Services conference room	9	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,912	Relamp	Yes	9	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,038	0.12	636	0.0	$95.84	$549.80	$110.00	4.59
Hallway	17	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	17	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,038	0.46	2,374	0.0	$357.76	$1,194.50	$170.00	2.86
Room 401,402,403	45	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	45	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	1.23	6,284	0.0	$947.01	$3,442.50	$555.00	3.05

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Room 401,402,403	6	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,912	Relamp	No	6	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,912	0.07	352	0.0	$52.99	$215.40	$30.00	3.50
Hallway	36	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	36	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,038	0.98	5,027	0.0	$757.60	$3,906.00	$360.00	4.68
Hallway receiving	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,038	0.33	1,676	0.0	$252.53	$902.00	$120.00	3.10
Hallway	39	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	39	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,038	1.07	5,446	0.0	$820.74	$4,081.50	$390.00	4.50
Music 404	22	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	22	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.60	3,072	0.0	$462.98	$1,557.00	$255.00	2.81
Art 405	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.49	2,514	0.0	$378.80	$1,323.00	$215.00	2.93
OXE 406	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.55	2,793	0.0	$420.89	$1,440.00	$235.00	2.86
OXE closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	520	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	520	0.02	20	0.0	$2.97	$58.50	$10.00	16.31
OXE office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.04	221	0.0	$33.31	$233.00	$40.00	5.79
Satellite kitchen	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	7	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.15	774	0.0	$116.58	$409.50	$70.00	2.91
Cafeteria	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	15	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.32	1,658	0.0	$249.81	$877.50	$150.00	2.91
Pool front	7	Compact Fluorescent: 1 Lamp - recessed fixture	Wall Switch	18	2,912	Relamp	No	7	LED Screw-In Lamps: Recessed fixture - 1 lamp	Wall Switch	13	2,912	0.02	127	0.0	$19.08	$376.27	$0.00	19.72
RS hallway	3	Compact Fluorescent: 1 Lamp - recessed fixture	Wall Switch	18	2,912	Relamp	No	3	LED Screw-In Lamps: Recessed fixture - 1 lamp	Wall Switch	13	2,912	0.01	54	0.0	$8.18	$161.26	$0.00	19.72
Hallway - BOE office entrance	3	Compact Fluorescent: 1 Lamp - recessed fixture	Wall Switch	18	2,912	Relamp	No	3	LED Screw-In Lamps: Recessed fixture - 1 lamp	Wall Switch	13	2,912	0.01	54	0.0	$8.18	$161.26	$0.00	19.72
Side entrance	3	Compact Fluorescent: 1 Lamp - recessed fixture	Wall Switch	18	2,912	Relamp	No	3	LED Screw-In Lamps: Recessed fixture - 1 lamp	Wall Switch	13	2,912	0.01	54	0.0	$8.18	$161.26	$0.00	19.72
Hallway	6	Compact Fluorescent: 1 Lamp - recessed fixture	Wall Switch	18	2,912	Relamp	No	6	LED Screw-In Lamps: Recessed fixture - 1 lamp	Wall Switch	13	2,912	0.02	109	0.0	$16.35	$322.52	$0.00	19.72
Room 231	24	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	24	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.66	3,351	0.0	$505.07	$1,674.00	$275.00	2.77
Room 231	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,912	Relamp	No	2	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,912	0.07	375	0.0	$56.52	$190.27	$40.00	2.66
Room 231 restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.02	111	0.0	$16.65	$58.50	$10.00	2.91
Nurse's office suite	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	16	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.35	1,768	0.0	$266.46	$936.00	$160.00	2.91
Nurse's office bathroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.04	221	0.0	$33.31	$117.00	$20.00	2.91
Staff louge	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	7	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.19	978	0.0	$147.31	$525.50	$90.00	2.96
Staff lounge restroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.05	279	0.0	$42.09	$233.00	$20.00	5.06
Time out	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,912	Relamp	No	3	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,912	0.11	563	0.0	$84.78	$285.40	$60.00	2.66
Hallway	51	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	51	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	1.10	5,636	0.0	$849.35	$2,983.50	$510.00	2.91

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Boys' restroom	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.14	698	0.0	$105.22	$562.50	$85.00	4.54
Staff restroom - Men	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.04	221	0.0	$33.31	$117.00	$20.00	2.91
Room 224,222,221,223,207	110	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	110	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	3.01	15,361	0.0	$2,314.90	$7,785.00	$1,275.00	2.81
Room 223,207 - restroom	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.22	1,117	0.0	$168.36	$1,008.00	$150.00	5.10
Room 223, 207 - Closet	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	520	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	364	0.11	100	0.0	$15.03	$698.00	$40.00	43.77
Room 220- closets	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	520	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	364	0.05	50	0.0	$7.52	$233.00	$20.00	28.34
Closet	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	520	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	364	0.05	50	0.0	$7.52	$581.00	$20.00	74.64
Hallway	13	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	13	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,038	0.36	1,815	0.0	$273.58	$960.50	$130.00	3.04
Storage	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	520	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	520	0.09	79	0.0	$11.90	$234.00	$40.00	16.31
Timeout 1	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,912	Relamp	No	3	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,912	0.11	563	0.0	$84.78	$285.40	$60.00	2.66
Room 216,215	44	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	44	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	1.20	6,144	0.0	$925.96	$3,114.00	$510.00	2.81
Room 214	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.25	1,257	0.0	$189.40	$796.50	$125.00	3.55
Room 213,210	38	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	38	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	1.04	5,307	0.0	$799.69	$2,763.00	$450.00	2.89
Hallway	13	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	13	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.28	1,437	0.0	$216.50	$760.50	$130.00	2.91
Room 212	22	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	22	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.60	3,072	0.0	$462.98	$1,557.00	$255.00	2.81
Girls' restroom	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.14	698	0.0	$105.22	$562.50	$85.00	4.54
Staff restroom - Women	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.04	221	0.0	$33.31	$117.00	$20.00	2.91
Hallway	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	5	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.11	553	0.0	$83.27	$292.50	$50.00	2.91
Day care center	17	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	17	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.37	1,879	0.0	$283.12	$994.50	$170.00	2.91
Day care center - restroom	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.13	663	0.0	$99.92	$351.00	$60.00	2.91
Hallway	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.13	663	0.0	$99.92	$351.00	$60.00	2.91
Bath area	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.04	221	0.0	$33.31	$117.00	$20.00	2.91
Day break	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.06	332	0.0	$49.96	$175.50	$30.00	2.91
office	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.22	1,117	0.0	$168.36	$584.00	$100.00	2.87
Day break hall	21	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	21	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.45	2,321	0.0	$349.73	$1,228.50	$210.00	2.91

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	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
Hallway	3	Compact Fluorescent: 1 Lamp - recessed fixture	Wall Switch	18	2,912	Relamp	No	3	LED Screw-In Lamps: Recessed fixture - 1 lamp	Wall Switch	13	2,912	0.01	54	0.0	$8.18	$161.26	$0.00	19.72
Side entrance	9	Compact Fluorescent: 1 Lamp - recessed fixture	Wall Switch	18	2,912	Relamp	No	9	LED Screw-In Lamps: Recessed fixture - 1 lamp	Wall Switch	13	2,912	0.03	163	0.0	$24.53	$483.78	$0.00	19.72
Hallway	3	Compact Fluorescent: 1 Lamp - recessed fixture	Wall Switch	18	2,912	Relamp	No	3	LED Screw-In Lamps: Recessed fixture - 1 lamp	Wall Switch	13	2,912	0.01	54	0.0	$8.18	$161.26	$0.00	19.72
Room 220 - General shop	9	Metal Halide: (1) 250W Lamp	Wall Switch	295	2,912	Fixture Replacement	No	9	LED - Fixtures: Downlight Recessed	Wall Switch	98	2,912	1.16	5,937	0.0	$894.77	$2,440.05	$45.00	2.68
Staff restroom - Men	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.04	221	0.0	$33.31	$117.00	$20.00	2.91
Boys' restroom	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.11	559	0.0	$84.18	$504.00	$75.00	5.10
Hallway	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,038	0.41	2,095	0.0	$315.67	$1,077.50	$150.00	2.94
Room 205	19	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	19	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.52	2,653	0.0	$399.85	$1,381.50	$225.00	2.89
Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	520	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	520	0.04	39	0.0	$5.95	$117.00	$20.00	16.31
Board office	11	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	11	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.24	1,216	0.0	$183.19	$643.50	$110.00	2.91
Hallway	13	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	13	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,038	0.36	1,815	0.0	$273.58	$960.50	$130.00	3.04
Electrical storage	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.02	111	0.0	$16.65	$58.50	$10.00	2.91
Sensory room	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	7	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.15	774	0.0	$116.58	$409.50	$70.00	2.91
Room 202,203,201	57	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	57	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	1.56	7,960	0.0	$1,199.54	$4,144.50	$675.00	2.89
Main office suite	8	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,912	Relamp	No	8	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,912	0.29	1,500	0.0	$226.09	$761.07	$160.00	2.66
Main office suite	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,912	Relamp	No	6	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	2,912	0.19	995	0.0	$149.89	$451.20	$90.00	2.41
Main office suite	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.04	221	0.0	$33.31	$117.00	$20.00	2.91
Office	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.06	332	0.0	$49.96	$175.50	$30.00	2.91
Copy room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.05	279	0.0	$42.09	$233.00	$40.00	4.59
Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.05	279	0.0	$42.09	$233.00	$40.00	4.59
Kitchenette	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.02	111	0.0	$16.65	$58.50	$10.00	2.91
Conference room	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.25	1,257	0.0	$189.40	$796.50	$125.00	3.55
Bathroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.02	111	0.0	$16.65	$58.50	$10.00	2.91
Staff restroom - Women	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.04	221	0.0	$33.31	$117.00	$20.00	2.91
Girls' restroom	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.14	698	0.0	$105.22	$562.50	$85.00	4.54

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	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
Board office suite	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,912	Relamp	No	4	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,912	0.15	750	0.0	$113.05	$380.53	$80.00	2.66
Office	6	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,912	Relamp	Yes	6	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,038	0.29	1,475	0.0	$222.25	$686.80	$140.00	2.46
Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.05	279	0.0	$42.09	$233.00	$40.00	4.59
Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.05	279	0.0	$42.09	$233.00	$40.00	4.59
Office	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,038	0.16	838	0.0	$126.27	$467.00	$80.00	3.06
Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,912	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,038	0.01	73	0.0	$11.03	$151.90	$5.00	13.32
Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.02	111	0.0	$16.65	$58.50	$10.00	2.91
Copy room	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,912	Relamp	No	4	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,912	0.15	750	0.0	$113.05	$380.53	$80.00	2.66
Office	6	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,912	Relamp	Yes	6	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,038	0.29	1,475	0.0	$222.25	$686.80	$140.00	2.46
Office	6	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,912	Relamp	Yes	6	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,038	0.29	1,475	0.0	$222.25	$686.80	$140.00	2.46
Restroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,912	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.04	221	0.0	$33.31	$117.00	$20.00	2.91
Board office	14	Compact Fluorescent: 1 Lamp - recessed fixture	Wall Switch	18	2,912	Relamp	No	14	LED Screw-In Lamps: Recessed fixture - 1 lamp	Wall Switch	13	2,912	0.05	253	0.0	$38.15	$752.54	$0.00	19.72
Hallway	4	Compact Fluorescent: 1 Lamp - recessed fixture	Wall Switch	18	2,912	Relamp	No	4	LED Screw-In Lamps: Recessed fixture - 1 lamp	Wall Switch	13	2,912	0.01	72	0.0	$10.90	$215.01	$0.00	19.72
Exterior - double pole	6	Metal Halide: (1) 250W Lamp	Wall Switch	500	4,380	Fixture Replacement	No	6	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	196	4,380	1.20	9,187	0.0	$1,384.56	$2,344.06	$600.00	1.26
Exterior - single pole	25	Metal Halide: (1) 250W Lamp	Wall Switch	295	4,380	Fixture Replacement	No	25	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	98	4,380	3.23	24,807	0.0	$3,738.46	$9,766.93	$2,500.00	1.94
Exterior wall packs	20	High-Pressure Sodium: (1) 70W Lamp	Wall Switch	75	4,380	Fixture Replacement	No	20	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	30	4,380	0.59	4,533	0.0	$683.17	$7,813.54	$2,000.00	8.51
Exterior wall packs	21	High-Pressure Sodium: (1) 150W Lamp	Wall Switch	188	4,380	Fixture Replacement	No	21	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	50	4,380	1.90	14,597	0.0	$2,199.81	$8,204.22	$2,100.00	2.77
Canopy lights	62	High-Pressure Sodium: (1) 50W Lamp	Wall Switch	66	4,380	Fixture Replacement	No	62	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	30	4,380	1.46	11,243	0.0	$1,694.26	$24,221.97	$6,200.00	10.64
Maintenance shop	6	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,912	Relamp	No	6	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,912	0.22	1,125	0.0	$169.57	$570.80	$120.00	2.66
All school	53	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	53	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Motor Inventory & Recommendations

Existing Conditions						Proposed Conditions				Energy Impact & Financial Analysis						
Motor Quantity	Motor Application	HP Per Motor	Full Load Efficiency	VFD Control?	Annual Operating Hours	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
2	Heating Hot Water Pump	20.0	91.7%	No	3,391	Yes	93.0%	Yes	2	5.06	48,371	0.0	$7,289.50	$17,700.46	$0.00	2.43
2	Air Compressor	2.0	78.8%	No	4,957	No	78.8%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
2	Other	1.0	85.5%	No	2,745	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
1	Water Supply Pump	1.0	75.0%	No	2,745	Yes	85.5%	No		0.07	251	0.0	$37.90	$746.73	$0.00	19.70
3	Supply Fan	5.0	89.5%	No	2,745	No	89.5%	Yes	3	2.03	6,178	0.0	$930.97	$9,827.55	$1,200.00	9.27
1	Supply Fan	5.0	89.5%	No	2,745	No	89.5%	Yes	1	0.68	2,059	0.0	$310.32	$3,275.85	$400.00	9.27
1	Water Supply Pump	1.0	85.5%	No	2,745	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
1	Water Supply Pump	5.0	84.0%	No	2,745	No	84.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
1	Water Supply Pump	7.5	84.0%	No	3,391	No	84.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
1	Heating Hot Water Pump	5.0	89.5%	No	2,745	No	89.5%	Yes	1	0.63	4,976	0.0	$749.95	$3,275.85	$0.00	4.37
1	Heating Hot Water Pump	5.0	89.5%	No	2,745	No	89.5%	Yes	1	0.63	4,976	0.0	$749.95	$3,275.85	$0.00	4.37
2	Other	1.0	85.5%	No	2,745	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
3	Chilled Water Pump	20.0	93.0%	Yes	3,391	No	93.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
1	Supply Fan	1.0	85.5%	No	2,745	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
1	Supply Fan	7.5	91.7%	No	3,391	No	91.7%	Yes	1	0.99	3,724	0.0	$561.24	$3,606.80	$600.00	5.36
2	Kitchen Hood Exhaust Fan	1.0	85.5%	No	5,250	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
1	Supply Fan	1.5	85.5%	No	2,745	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
1	Supply Fan	0.3	60.0%	No	2,745	No	60.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
1	Supply Fan	0.3	60.0%	No	2,745	No	60.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
1	Supply Fan	0.5	60.0%	No	2,745	No	60.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00

		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?	Annual Operating Hours	Install High Efficiency Motors?	Full Load Efficiency	Install VFDs?	Number of VFDs	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Mechanical Room	AHU 31 - Resource Media Interior	1	Supply Fan	1.5	85.0%	No	2,745	No	85.0%	Yes	1	0.21	650	0.0	$98.03	$2,632.46	$120.00	25.63
Mechanical Room	AHU 30 - Resource Media Low Bay	1	Supply Fan	2.0	85.0%	No	2,745	No	85.0%	Yes	1	0.28	867	0.0	$130.70	$2,728.85	$160.00	19.65
Mechanical Room	AHU 28 - Faculty Dining	1	Supply Fan	1.5	85.0%	No	2,745	No	85.0%	Yes	1	0.21	650	0.0	$98.03	$2,632.46	$120.00	25.63
Mechanical Room	AHU 29 - Resource Media High Bay	1	Supply Fan	3.0	89.5%	No	2,745	No	89.5%	Yes	1	0.41	1,236	0.0	$186.19	$3,007.65	$240.00	14.86
Mechanical Room	AHU 42	1	Supply Fan	2.0	86.5%	No	2,745	No	86.5%	Yes	1	0.28	852	0.0	$128.43	$2,728.85	$160.00	20.00
Mechanical Room	AHU 41	1	Supply Fan	2.0	86.5%	No	2,745	No	86.5%	Yes	1	0.28	852	0.0	$128.43	$2,728.85	$160.00	20.00
Unit vents	All classrooms	26	Supply Fan	0.2	60.0%	No	2,745	No	60.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof top	All school	46	Exhaust Fan	0.3	60.0%	No	2,745	No	60.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00

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 (kBtu/hr)	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)	Install Dual Enthalpy Economizer?	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	AC2 - Board room	1	Packaged AC	7.50		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	CU 21 - AHU-21, Room 155, 158,161,162,166	1	Split-System AC	4.00		Yes	1	Split-System AC	4.00		16.00		No	2.01	3,393	0.0	$511.33	$5,984.88	$368.00	10.98
Roof	Supt Off 160,167	1	Packaged AC	4.10		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	CU-23 - Over 21 offices	1	Split-System AC	5.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	AC4	1	Packaged AC	4.10		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	AC1	1	Packaged AC	7.50		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	CU-25	1	Split-System AC	7.50		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	CU 18 - In-school Suspension	1	Split-System AC	2.00		Yes	1	Split-System AC	2.00		16.00		No	1.01	1,697	0.0	$255.66	$2,992.44	$184.00	10.98
Roof	CU 17 - Shiping & Receiving	1	Split-System AC	3.50		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	CU 16 - Principal's office	1	Split-System AC	7.50		Yes	1	Split-System AC	7.50		13.00		Yes	3.33	5,341	0.0	$804.91	$9,478.28	$797.50	10.78
Roof	CU 26 - Principal office	1	Split-System AC	10.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	CU-14 - Faculty Lounge	1	Split-System AC	4.00		Yes	1	Split-System AC	4.00		16.00		No	2.01	2,376	0.0	$358.06	$5,984.88	$368.00	15.69
Roof	CU 15 - Nurse's office	1	Split-System AC	5.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	CU 12 - Corridor	1	Split-System AC	3.00		Yes	1	Split-System AC	3.00		16.00		No	1.51	2,545	0.0	$383.50	$4,488.66	$276.00	10.98
Roof	CU 13 - Cafeteria	1	Split-System AC	15.00		Yes	1	Split-System AC	15.00		13.00		Yes	6.66	10,682	0.0	$1,609.83	$18,297.73	$1,435.00	10.47
Roof	CU 11 - Corridor	1	Split-System AC	15.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	CU 10 - Child Study Speech Interior	1	Split-System AC	15.00		Yes	1	Split-System AC	15.00		13.00		Yes	6.66	13,616	0.0	$2,051.93	$18,297.73	$1,435.00	8.22
Roof	CU 9 - Child Study Speech Exterior	1	Split-System AC	5.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	CU 1 - Pool	1	Split-System AC	37.50		Yes	1	Split-System AC	37.50		12.00		Yes	14.90	25,219	0.0	$3,800.48	$43,755.63	$250.00	11.45
Roof	CU 2 - Lockers	1	Split-System AC	30.00		Yes	1	Split-System AC	30.00		12.00		Yes	11.92	20,175	0.0	$3,040.38	$34,104.50	$250.00	11.13

		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)	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)	Install Dual Enthalpy Economizer?	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	CU-3,4 - A,B Gym	2	Split-System AC	17.50		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	CU 5 - C Gym	1	Split-System AC	15.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	CU27 - Weight	1	Split-System AC	3.00		Yes	1	Split-System AC	3.00		16.00		No	1.51	1,782	0.0	$268.55	$4,488.66	$276.00	15.69
Roof	CU 32 - Connecting link	1	Split-System AC	2.00		Yes	1	Split-System AC	2.00		16.00		No	1.01	1,188	0.0	$179.03	$2,992.44	$184.00	15.69
Roof	CU 8 - Corridor	1	Split-System AC	7.50		Yes	1	Split-System AC	7.50		13.00		Yes	3.33	5,341	0.0	$804.91	$9,478.28	$797.50	10.78
Roof	CU 7 - Occupational Therapy	1	Split-System AC	5.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Mech office Dss1	1	Split-System AC	1.50		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Cougar Deli	Cougar Deli	1	Split-System AC	0.50		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Mechanical Room	Classroom 322,324 - Speech testing	1	Packaged AC	6.00		Yes	1	Split-System AC	6.00		13.00		No	2.32	3,915	0.0	$589.99	$6,982.62	$438.00	11.09
Office 13 Across from pool	Office 13	1	Split-System AC	0.75		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
All classrooms chasis	All classrooms	26	Split-System AC	4.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Electric Chiller Inventory & Recommendations

		Existing Conditions			Proposed Conditions							Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	Chiller Quantity	System Type	Cooling Capacity per Unit (Tons)	Install High Efficiency Chillers?	Chiller Quantity	System Type	Constant/ Variable Speed	Cooling Capacity (Tons)	Full Load Efficiency (kW/Ton)	IPLV Efficiency (kW/Ton)	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Roof	Old building	2	Air-Cooled Scroll Chiller	90.00	No							0.00	0	0.0	$0.00	$0.00	$0.00	0.00

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)	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	Bailey Wing	2	Non-Condensing Hot Water Boiler	3,180.00	Yes	2	Condensing Hot Water Boiler	3,180.00	93.00%	Ec	0.00	0	630.2	$5,991.64	$118,352.68	$12,720.00	17.63
Pool pump room	Old building	2	Non-Condensing Hot Water Boiler	2,320.00	Yes	2	Condensing Hot Water Boiler	2,320.00	91.00%	Et	0.00	0	260.6	$2,477.39	$88,620.86	$10,208.00	31.65
Pool pump room	Lap pool	1	Condensing Hot Water Boiler	650.00	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00

DHW Inventory & Recommendations

		Existing Conditions		Proposed Conditions						Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	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 - new building	New building restrooms	1	Storage Tank Water Heater (> 50 Gal)	Yes	1	Storage Tank Water Heater (> 50 Gal)	Natural Gas	95.00%	Et	0.00	0	17.5	$166.53	$40,088.00	$1,400.00	232.32
Boiler room - old building	Kitchen	1	Storage Tank Water Heater (> 50 Gal)	Yes	1	Storage Tank Water Heater (> 50 Gal)	Natural Gas	95.00%	Et	10.80	7,000	-156.0	$906.59	$6,934.80	$240.00	7.38

Low-Flow Device Recommendations

	Recommedation Inputs				Energy Impact & Financial Analysis						
Location	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
Girls + Boys locker room	6	Showerhead	2.50	2.00	0.00	0	4.9	$46.33	$535.80	$0.00	11.56
Rooms 305, 108,110,109,111,231,BOE office	8	Faucet Aerator (Lavatory)	2.50	1.00	0.00	0	17.5	$166.79	$57.36	$0.00	0.34
Women's restrooms, Men's restrooms (staff and students)	14	Faucet Aerator (Lavatory)	2.50	1.00	0.00	0	30.7	$291.88	$100.38	$0.00	0.34
Room 302, 323, Day care center, media center	7	Faucet Aerator (Kitchen)	2.50	2.20	0.00	0	3.1	$29.19	$50.19	$0.00	1.72

Walk-In Cooler/Freezer Inventory & Recommendations

	Existing Conditions		Proposed Conditions			Energy Impact & Financial Analysis						
Location	Cooler/ Freezer Quantity	Case Type/Temperature	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	2	Medium Temp Freezer (0F to 30F)	No	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	1	Low Temp Freezer (-35F to -5F)	No	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Commercial Refrigerator/Freezer Inventory & Recommendations

	Existing Conditions			Proposed Condi	Energy Impact & Financial Analysis						
Location	Quantity	Refrigerator/ Freezer Type	ENERGY STAR Qualified?	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	Stand-Up Refrigerator, Solid Door (16 - 30 cu. ft.)	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	1	Stand-Up Freezer, Solid Door (16 - 30 cu. ft.)	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Satellite kitchen	1	Stand-Up Refrigerator, Solid Door (31 - 50 cu. ft.)	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Commercial Ice Maker Inventory & Recommendations

	Existing Conditions			Proposed Condi	Energy Impact & Financial Analysis						
Location	Quantity	Ice Maker Type	ENERGY STAR Qualified?	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	Self-Contained Unit (<175 lbs/day), Batch	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Cooking Equipment Inventory & Recommendations

	Existing Conditions			Proposed Conditions	Energy Impact & Financial Analysis						
Location	Quantity	Equipment Type	High Efficiency Equipement?	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	4	Gas Convection Oven (Half Size)	No	Yes	0.00	0	86.7	$823.93	$28,475.26	$2,000.00	32.13
Kitchen	1	Electric Griddle (≥6 Feet Width)	No	Yes	1.11	3,220	0.0	$485.25	$3,527.50	$300.00	6.65
Kitchen	2	Electric Combination Oven/Steam Cooker (<15 Pans)	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Satellite Kitchen	1	Insulated Food Holding Cabinet (1/2 Size)	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Satellite Kitchen	2	Electric Convection Oven (Half Size)	No	Yes	0.86	2,496	0.0	$376.18	$8,022.74	$700.00	19.47

Dishwasher Inventory & Recommendations

	Existing Conditions					Proposed Conditions	Energy Impact & Financial Analysis						
Location	Quantity	Dishwasher Type	Water Heater Fuel Type	Booster Heater Fuel Type	ENERGY STAR Qualified?	Install ENERGY STAR Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Payback w/ Incentives in Years
Kitchen	1	Multi-Tank Conveyor (High Temp)	Electric	N/A	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Plug Load Inventory

	Existing Conditions			
Location	Quantity	Equipment Description	Energy Rate (W)	ENERGY STAR Qualified?
Cape May County Special Services District	61	Computer	145.0	Yes
Cape May County Special Services District	50	Laptop	75.0	Yes
Cape May County Special Services District	6	Printer - Small	20.0	Yes
Cape May County Special Services District	12	Printer - Medium	40.0	Yes
Cape May County Special Services District	12	Printer - Big	600.0	Yes
Cape May County Special Services District	3	Paper Shredder	150.0	Yes
Cape May County Special Services District	135	Projector	200.0	Yes
Cape May County Special Services District	324	Microwave	1,000.0	No
Cape May County Special Services District	2	Refrigerator - Small	30.0	No
Cape May County Special Services District	3	Refrigerator - Medium	60.0	No
Cape May County Special Services District	16	Refrigerator - Large	218.0	No
Cape May County Special Services District	8	Coffee Machine	400.0	Yes
Cape May County Special Services District	4	Toaster Oven	1,200.0	No
Cape May County Special Services District	3	Clothes Washer	900.0	Yes
Cape May County Special Services District	3	Clothes Dryer	5,000.0	Yes
Cape May County Special Services District	2	Dishwasher	1,200.0	No
Cape May County Special Services District	9	Television LCD	100.0	Yes
Cape May County Special Services District	30	Smart Board	5.0	Yes
Cape May County Special Services District	6	Driving Simulator	500.0	Yes
Cape May County Special Services District	9	Burner induction	3,000.0	Yes
Cape May County Special Services District	1	Table Saw	1,800.0	No
Cape May County Special Services District	2	Band Saw	1,100.0	No
Cape May County Special Services District	1	Power Planer	850.0	No
Cape May County Special Services District	1	Drill Press	800.0	No
Cape May County Special Services District	1	Disc Sander	1,200.0	No
Cape May County Special Services District	8	Washer	500.0	Yes
Cape May County Special Services District	8	Dryer	1,500.0	Yes

Vending Machine Inventory & Recommendations

	Existing Conditions		Proposed Conditions	Energy Impact & Financial Analysis						
Location	Quantity	Vending Machine Type	Install Controls?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Staff Lounge	2	Refrigerated	Yes	0.00	3,224	0.0	$485.81	$460.00	$0.00	0.95

Appendix B: ENERGY STAR® Statement of Energy Performance

ENERGY STAR® Statement of Energy Performance

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ENERGY STAR® Score[1]

Cape May County Special Services School

Primary Property Type: K-12 School
Gross Floor Area (ft²): 176,000
Built: 1981

For Year Ending: December 31, 2016
Date Generated: November 10, 2017

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
Cape May County Special Services School 148 Crest Haven Road Cape May Court House, New Jersey 08210	Cape May County Special Services 148 Crest Haven Road Cape May Court House, NJ 08210 (609) 465-2720	Kathleen Allen 148 Crest Haven Road Cape May Court House, NJ 08210 (609) 465-2720 x7760 kallen@cmcspecialservices.org

Property ID: 2365684

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
86.1 kBtu/ft²

Source EUI
159.7 kBtu/ft²

Annual Energy by Fuel	
Natural Gas (kBtu)	9,321,766 (62%)
Electric - Grid (kBtu)	5,833,105 (38%)

National Median Comparison	
National Median Site EUI (kBtu/ft²)	98.4
National Median Source EUI (kBtu/ft²)	182.5
% Diff from National Median Source EUI	-12%
Annual Emissions	
Greenhouse Gas Emissions (Metric Tons CO2e/year)	1,142

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)