Local Government Energy Audit:
Energy Audit Report

Buena Regional

High School

125 Weymouth Road

Buena, NJ 08650

Buena Regional School District

June 29, 2018

Draft 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 saving 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 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 Buena Regional High School.

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, as part of a comprehensive effort to assist New Jersey public schools in controlling energy costs and protecting our environment by offering a wide range of energy management options and advice.

1.1 Facility Summary

Buena Regional High School is a 166,090 square foot facility and constructed in 1973. It is comprised of classrooms, administrative offices, locker rooms, a cafeteria, kitchen, library, gymnasium and an auditorium. In 2000, there was a renovation and the new "B" wing (known as New Wing) was added.

The building's interior lighting consists of a combination of T8 linear fluorescent fixtures and compact fluorescent lamps. Lighting is mainly controlled by manual wall switches. Occupancy based lighting controls were found in only a few areas. The exterior lighting system consists of high intensity discharge (HID) lamps and compact fluorescent lamps. They are controlled with timers and photocells.

The building's HVAC consists of split DX unit ventilators with heating coils (UVs) in the classrooms in the older wings, and a ducted variable air volume air handler unit (AHU) in the newer wing. The library has a 30 ton DX package unit on the roof. The auditorium has two AHUs with both chilled and hot water coils. There are also two heating ventilation units (HV) serving the gym.

There are two chillers and four natural gas boilers providing chilled water (CHW) and space heating hot water (HHW) to designated coils located throughout the building.

The facility has an older BMS (Siebel) controlling the AHU, VAVs and the chiller and boiler in the new wing and also the unit ventilators (UVs) in the B wing. The school has expressed interest in a newer BMS that can control systems that serve the other areas of the school.

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

1.2 Your Cost Reduction Opportunities

Energy Conservation Measures

TRC Energy Services evaluated 12 measures and recommended 10 measures which together represent an opportunity for Buena Regional High School to reduce annual energy costs by roughly $62,224 and annual greenhouse gas emissions by 403,498 lbs CO_2e. We estimate that if all measures were implemented as recommended, the project would pay for itself in 4.5 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 Buena Regional High School's annual energy use by 11%.

Figure 1 – Previous 12 Month Utility Costs

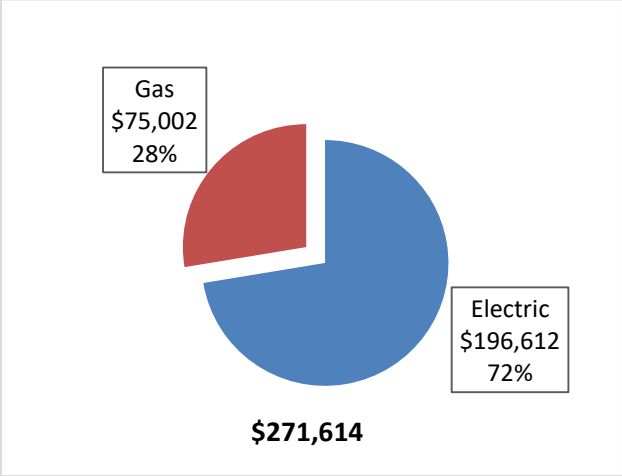
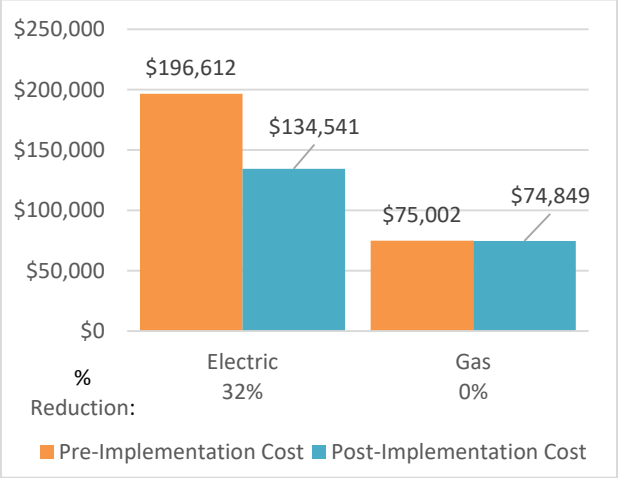


Figure 2 – Potential Post-Implementation Costs



A detailed description of Buena Regional High School's existing energy use can be found in Section 3 "Site Energy Use and Costs".

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, "Energy Conservation Measures".

Figure 3 – Summary of Energy Reduction Opportunities

	Energy Conservation Measure	Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Natural Gas Savings (MMBtu)	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			**263,632**	**49.1**	**0.0**	**0.0**	**$41,034.44**	**$194,971.18**	**$30,675.00**	**$164,296.18**	**4.0**	**265,475**
ECM 1	Install LED Fixtures	Yes	64,713	10.8	0.0	0.0	$10,072.68	$81,968.52	$9,540.00	$72,428.52	7.2	65,166
ECM 2	Retrofit Fixtures with LED Lamps	Yes	196,422	38.1	0.0	0.0	$30,573.17	$111,389.33	$21,135.00	$90,254.33	3.0	197,795
ECM 3	Install LED Exit Signs	Yes	2,497	0.2	0.0	0.0	$388.60	$1,613.33	$0.00	$1,613.33	4.2	2,514
Lighting Control Measures			**46,107**	**8.8**	**0.0**	**0.0**	**$7,176.61**	**$38,610.00**	**$3,955.00**	**$34,655.00**	**4.8**	**46,430**
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	41,637	8.0	0.0	0.0	$6,480.81	$30,510.00	$3,955.00	$26,555.00	4.1	41,928
ECM 5	Install High/Low Lighitng Controls	Yes	4,470	0.8	0.0	0.0	$695.80	$8,100.00	$0.00	$8,100.00	11.6	4,502
Motor Upgrades			**2,161**	**0.5**	**0.0**	**0.0**	**$336.38**	**$5,310.98**	**$0.00**	**$5,310.98**	**15.8**	**2,176**
ECM 6	Premium Efficiency Motors	Yes	2,161	0.5	0.0	0.0	$336.38	$5,310.98	$0.00	$5,310.98	15.8	2,176
Variable Frequency Drive (VFD) Measures			**20,011**	**5.7**	**0.0**	**0.0**	**$3,114.65**	**$9,610.15**	**$2,075.00**	**$7,535.15**	**2.4**	**20,150**
ECM 7	Install VFD on Variable Air Volume (VAV) HVAC	Yes	20,011	5.7	0.0	0.0	$3,114.65	$9,610.15	$2,075.00	$7,535.15	2.4	20,150
Electric Unitary HVAC Measures			**1,895**	**1.4**	**0.0**	**0.0**	**$294.92**	**$66,479.15**	**$0.00**	**$66,479.15**	**225.4**	**1,908**
	Install High Efficiency Electric AC	No	1,895	1.4	0.0	0.0	$294.92	$66,479.15	$0.00	$66,479.15	225.4	1,908
Electric Chiller Replacement			**56,669**	**38.0**	**0.0**	**0.0**	**$8,820.52**	**$73,854.40**	**$6,750.00**	**$67,104.40**	**7.6**	**57,065**
ECM 8	Install High Efficiency Chillers	Yes	56,669	38.0	0.0	0.0	$8,820.52	$73,854.40	$6,750.00	$67,104.40	7.6	57,065
HVAC System Improvements			**2,143**	**0.0**	**16.5**	**16.5**	**$486.63**	**$2,718.84**	**$0.00**	**$2,718.84**	**5.6**	**4,086**
ECM 9	Implement Demand Control Ventilation	Yes	2,143	0.0	16.5	16.5	$486.63	$2,718.84	$0.00	$2,718.84	5.6	4,086
Domestic Water Heating Upgrade			**0**	**0.0**	**73.3**	**73.3**	**$681.10**	**$26,145.52**	**$200.00**	**$25,945.52**	**38.1**	**8,578**
	Install High Efficiency Gas Water Heater	No	0	0.0	73.3	73.3	$681.10	$26,145.52	$200.00	$25,945.52	38.1	8,578
Plug Load Equipment Control - Vending Machine			**8,059**	**0.0**	**0.0**	**0.0**	**$1,254.42**	**$1,000.00**	**$0.00**	**$1,000.00**	**0.8**	**8,116**
ECM 10	Vending Machine Control	Yes	8,059	0.0	0.0	0.0	$1,254.42	$1,000.00	$0.00	$1,000.00	0.8	8,116
TOTALS FOR HIGH PRIORITY MEASURES			**398,782**	**102.0**	**16.5**	**16.5**	**$62,223.66**	**$326,075.55**	**$43,455.00**	**$282,620.55**	**4.5**	**403,498**
TOTALS FOR ALL EVALUATED MEASURES			**400,677**	**103.5**	**163.0**	**163.0**	**$63,880.77**	**$444,845.74**	**$47,655.00**	**$397,190.74**	**6.2**	**422,562**

* - 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.

Electric Chiller measures generally involve replacing older inefficient hydronic chillers with modern energy efficient systems. New chillers can provide equivalent cooling compared to older chillers at a reduced energy cost. These measures save energy by reducing chiller energy usage, due to improved electrical and heat transfer 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.

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 Energy Services also identified 15 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 Buena Regional High School include:

- Reduce Air Leakage
- Close Doors and Windows
- Perform Proper Lighting Maintenance
- Develop a Lighting Maintenance Schedule
- Ensure Lighting Controls Are Operating Properly
- Perform Routine Motor Maintenance
- Install Destratification Fans
- Practice Proper Use of Thermostat Schedules and Temperature Resets
- Ensure Economizers are Functioning Properly
- Assess Chillers & Request Tune-Ups
- Clean Evaporator/Condenser Coils on AC Systems
- Clean and/or Replace HVAC Filters
- Perform Proper Boiler Maintenance
- Perform Proper Water Heater Maintenance
- Water Conservation

For details on these Energy Efficient Practices, please refer to Section 5.

On-Site Generation Measures

TRC Energy Services evaluated the potential for installing on-site generation for Buena Regional High School. Based on the configuration of the site and its loads there is a high potential for installing a photovoltaic (PV) array.

Figure 4 – Photovoltaic Potential

Potential	High	
System Potential	400	kW DC STC
Electric Generation	476,549	kWh/yr
Displaced Cost	$41,460	/yr
Installed Cost	$1,040,000	

For details on our evaluation and on-site generation potential, please refer to Section 6.

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 (SS)

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 SS 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 SS program. More details on this program and others are available in Section 8.

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 8.3 for additional information on the ESIP Program.

The Demand Response Energy Aggregator is a (non-NJCEP) program designed to reduce electric loads at commercial facilities, when wholesale electricity prices are high or when the reliability of the electric grid is threatened due to peak power demand. Demand Response (DR) 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 commercial facilities to reduce their 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 facilities receive payments whether or not they are called upon to curtail their load during times of peak demand. Refer to Section 7 for additional information on this program.

Additional information on relevant incentive programs is located in Section 8. You may also check the following website for more details: www.njcleanenergy.com/ci

2 FACILITY INFORMATION AND EXISTING CONDITIONS

2.1 Project Contacts

Figure 5 – Project Contacts

Name	Role	E-Mail	Phone #
Customer			
Joe Biluck	Interim Building and Grounds Supervisor	jbiluck@buena.k12.nj.us	856-697-0800
TRC Energy Services			
Vish Nimbalkar	Auditor	VNaikNimbalkar@trcsolutions.com	(732) 855-0033

2.2 General Site Information

On May 02, 2018, TRC Energy Services performed an energy audit at Buena Regional High School located in Buena, NJ. TRC Energy Services' team met with John Baylis to review the facility operations and help focus our investigation on specific energy-using systems.

Buena Regional High School is a 166,090 square foot facility and constructed in 1973. It is comprised of classrooms, administrative offices, locker rooms cafeteria, kitchen, library, gymnasium and an auditorium. In 2000, there was a renovation, and the new "B" wing (known as New Wing) was added.

The building's interior lighting consists of a combination of T8 linear fluorescent fixtures and compact fluorescent lamps. Lighting is mainly manually controlled by wall switches. Occupancy lighting control were found in only a few areas. The exterior lighting system consists of high intensity discharge (HID) lamps and compact fluorescent lamps. They are controlled with timers and photocells.

The buildings HVAC consists of split DX unit ventilators in the classrooms in the older wings and ducted variable air volume air handler unit (AHU) on the newer wing. The library has a 30 ton DX package unit on the roof. The auditorium has two AHUs (chilled and hot water coils). There are also two heating ventilation units (HV) located serving the gym.

There are two chillers and four natural gas boilers providing chilled water (CHW) and space heating hot water (HHW) to the various coils throughout the building.

The facility has an older BMS (Siebel) controlling the AHU, VAVs, chiller and boiler in the new wing and also the unit ventilators (UVs) in the B wing. The school has expressed interest in a newer BMS that can control the other areas of the school.

2.3 Building Occupancy

The school building is open Monday through Friday. The gymnasium and auditorium are used after hours and on weekends for sports and other events. The school is used in the summer for various classes and events. The typical schedule for classes and offices are presented in the table below. During a typical day, there are approximately 800 occupants (staff and students).

Figure 6 - Building Schedule

Building Name	Weekday/Weekend	Operating Schedule
Buena Regional High School	Weekday	6:30 am - 10:00 pm
Buena Regional High School	Weekend	events

2.4 Building Envelope

The building is constructed of concrete block and structural steel with a brick facade. The building has flat roof sections covered with black membrane and gravel that are in good condition. The building has operable double pane windows which are in good condition and show little sign of excessive infiltration. The exterior doors are constructed of aluminum and in good condition.

Image 1 – Side of Building

Image 2 – Roof

2.5 On-Site Generation

Buena Regional High School does not have any on-site electric generation capacity.

2.6 Energy-Using Systems

Lighting System

Lighting at the building is provided mostly by linear 32 Watt fluorescent T8 lamps with electronic ballasts as well as some compact fluorescent lamps (CFL). Several configurations of fluorescent fixtures are used, including lensed and louvered direct lighting and suspended semi-direct lighting systems.

Image 3 – Classroom T8 Fixtures

Image 4 – Classroom T8 Troffers

The auditorium contains a mixture of metal halide, compact fluorescents (CFLs), incandescent and T8 fixtures.

Lighting control in most spaces is controlled by manual wall switches. Stairwells, corridors, and main lobby areas do not contain any occupancy sensors.

The building's exterior lighting is consists primarily of metal halide that are controlled by photocells or timers.

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

Chilled Water (CHW) System

Chilled water for the building is provided by two chillers. The chillers provide dedicated chilled water (CHW) for space cooling through fan coils in the "New B Wing" and the "Auditorium". The "New B Wing" CHW system is a 40 ton Trane air-cooled scroll compressor with split condenser and remote evaporator. This system provides CHW to cooling coils located in an air handler (AHU) located on the roof of the New Wing. The Auditorium CHW system consists of a 75 ton air cooled chiller that provides CHW to two AHUs located in the upper storage room adjacent to the auditorium. This system appears to be more than 20 years old. There are no BMS controls for the Auditorium CHW system.

New "B" Wing Chilled Water Distribution

The CHW system for the New "B" Wing is configured in a constant speed primary only loop. The CHW is circulated in the loop via a 3 hp pump located in the Mechanical Room. The chiller is controlled by a Siebel BMS system. The system controls the CHW temperature setpoint and commands the chiller and pumps on or off.

Image 5 – New Wing Chiller

Auditorium Chiller

The CHW system for Auditorium consists of a 75 ton chiller and a CHW pump that supplies chilled water to the dedicated Auditorium AHU.

Image 6 –Auditorium Chiller

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

Heating Hot Water (HHW) System

The hot water heating system consists of four boilers. The Gymnasium has a dedicated 634 MBh Weil McLain non-condensing natural gas boiler which serves the hot water fan coils for the Gymnasium's two Heating and Ventilation (HV) units. The New "B" Wing also has a dedicated 453 MBh Weil McLain non-condensing natural gas boiler providing hot water to the heating coils in the dedicated AHU. The "B" Wing system is controlled by the Siebel BMS system. The rest of the building areas are heated by two 6,522 MBh HB Smith non-condensing natural gas boilers. These boilers provide hot water to unit ventilators located throughout the rest of the building. The HHW from these boilers is circulated by two 20 hp pump motors. The boilers operate in a lead/lag configuration. Both boilers may be required during cold weather. The boilers are original to the building and at the end of their useful life.

Image 7 – Old Boilers

Image 8 – New Wing Boiler

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

Air Distribution System

Ventilation for the gymnasium is provided by heating ventilating (HV) units that are fed from dedicated boiler.

The system serving the Library is a packaged AC unit with DX cooling as described in a follow on section. That system has a 10 hp supply fan and a 2 hp exhaust fan with library heating provided by the building heating loop. Three main air handling units condition the facility using CHW and HHW coils for conditioning the supply air: One AHU serves the New B Wing and two AHUs serve the Auditorium.

The New B Wing AHU is located on the roof of the New B Wing. The AHU is a single duct unit providing variable-air volume (VAV) flow with terminal reheat. The AHU has a CHW and HHW preheat coil that fractionally modulate with valves to maintain the desired supply temperature. The CHW comes from a dedicated chiller and the HHW comes from a dedicated boiler. The AHU also has an outside air economizer to utilize free cooling when the outside air temperature is lower than the return air temperature. The AHU has a 20 hp supply fan with inlet guide vanes and a 5 hp return fan. The supply fan motor runs at constant speed and the inlet guide vanes are used to modulate the air volume. The inlet vanes and the system flow is controlled by varying the pitch of the vanes. The VAV terminal boxes have dampers that modulate between two ducts (supply and space return air) depending on the supply temperature. The damper modulates the terminal VAV box between a minimum and maximum supply flow.

Image 9 – AHU-1 (New Wing)

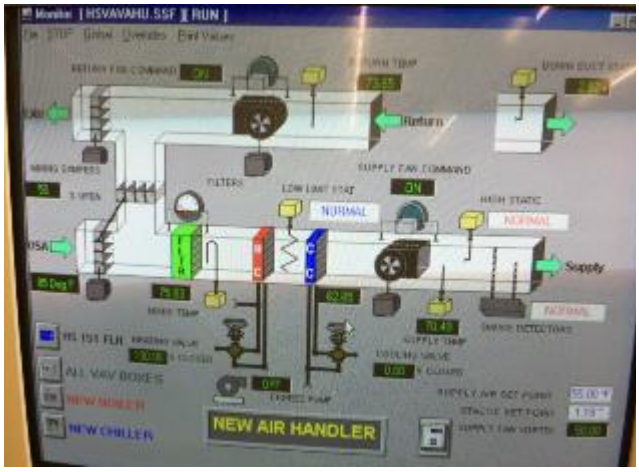


Image 10 – AHU-1 (BMS)

The Auditorium has two single zone AHUs. Each AHU has a 7.5 HP fan motor. The AHUs have both CHW and HHW preheat coils that fractionally modulate with valves to maintain the desired supply temperature. The CHW comes from a dedicated chiller and the HHW comes from the building's main HHW loop.

Image 11 – AHU (Auditorium)

Image 12 – AHU (Auditorium)

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

Direct Expansion Air Conditioning System (DX)

There are approximately 50 split-system air conditioners (ACs) used to condition the classrooms. Most of the condenser units for the systems are located on the roof although a few are located on the sides of the building. Most the systems are configured with the evaporators located inside unit ventilators (UVs) (Nesbitaire). The cooling capacity for these units vary from 2 to 4 tons. The UVs have HHW coils served from the building's main HHW loop.

There is a 30 ton Octagon Air Systems packaged AC unit serving the library. The unit is located on the roof of the library. Cooling for the system is provided by a two scroll compressors and a DX coil. The system has a 10 hp supply fan and a 2 hp exhaust fan. Heating to the heat coils is provided by the building HHW loop.

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

Building Energy Management System (BEMS)

The HVAC equipment (chiller, AHU, boiler, VAVs) for the New Wing and some of the B Wing unit ventilators (Rooms 130, 129, 128, 127, 231, 230, 228, 227 and 226) are controlled by a Siebel building management system (BMS). The Siebel BMS has DDC control points that control valves, dampers, motors and monitor duct static pressure, temperature and status of equipment. The other areas in the buildings have pneumatic controls which are not tied into the BMS.

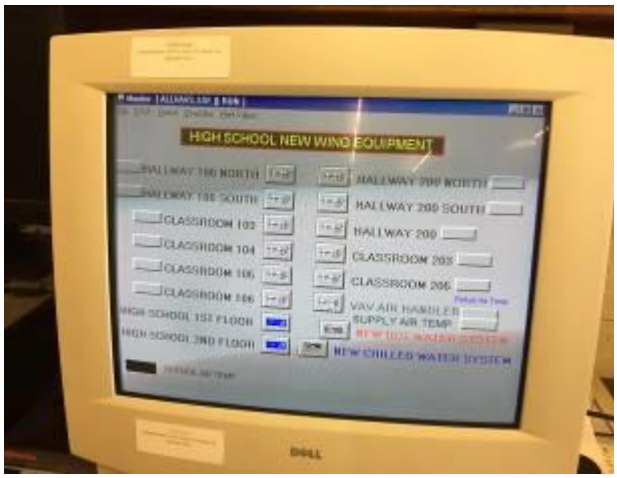


Image 13 – AHU (Auditorium)

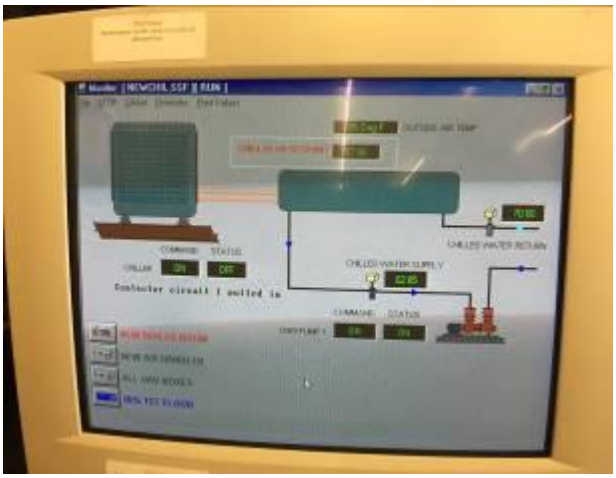


Image 14 – AHU (Auditorium)

Domestic Hot Water Heating System

The domestic hot water heating system for the facility consists of four non-condensing natural gas boilers with an input rating of 167 MBh and a nominal efficiency of 82.2%. The boilers heat a large storage tank.

The system is controlled by a Barber-Colman controller.

Image 15 - Modular Boilers (DHW)

Image 16 – DHW Storage Tank

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

Food Service & Refrigeration

The school has a kitchen that is used to prepare approximately 900 lunches per day for the students and staff. Most of the cooking is done using the gas ovens, steamers and a large stove.

The kitchen has several refrigerators and coolers as well as one walk-in freezer and a walk-in cooler. These appliances appear to be new. Please see **Appendix A: Equipment Inventory & Recommendations** for an inventory of the facility's food service and laundry equipment.

Building Plug Load

There are roughly 303 desktop computers throughout the facility. There is no centralized PC power management software installed. There are roughly 33 projectors and in the classrooms and about 43 printers throughout the building.

The facility has five vending machines with vending machine energy misers.

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

2.7 Water-Using Systems

A sampling of restrooms found that the faucets are rated for 2.2 gpm.

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

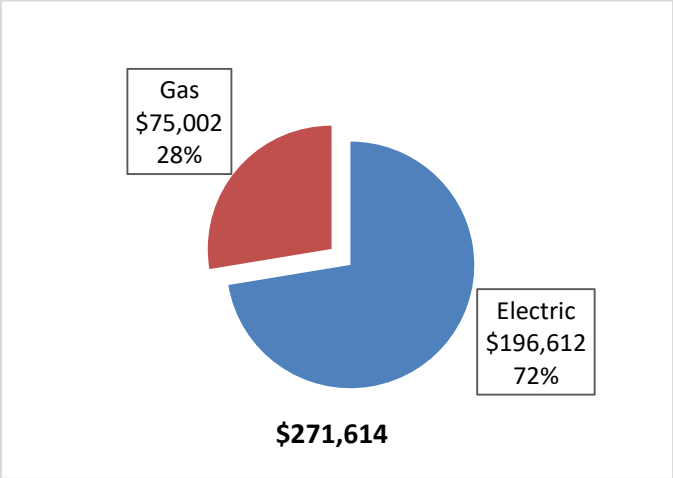
The following energy consumption and cost data is based on the last 12-month period of utility billing data that was provided for each utility. A profile of the annual energy consumption and energy cost of the facility was developed from this information.

Figure 7 - Utility Summary

Utility Summary for Buena Regional High School		
Fuel	**Usage**	**Cost**
Electricity	1,263,161 kWh	$196,612
Natural Gas	80,679 Therms	$75,002
Total		**$271,614**

The current annual energy cost for this facility is $271,614 as shown in the chart below.

Figure 8 - Energy Cost Breakdown



3.2 Electricity Usage

Electricity is delivered by Atlantic City Electric and supplied by Constellation. The average electric cost over the past 12 months was $0.156/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 peak demand varies between 405 and 506 kW with demand charges ranging from $3,097 to $4,919. Electric usage is higher in the summer when there is more AC usage and lower in the winter. The monthly electricity consumption and peak demand are shown in the chart below.

Figure 9 - Graph of 12 Months Electric Usage & Demand

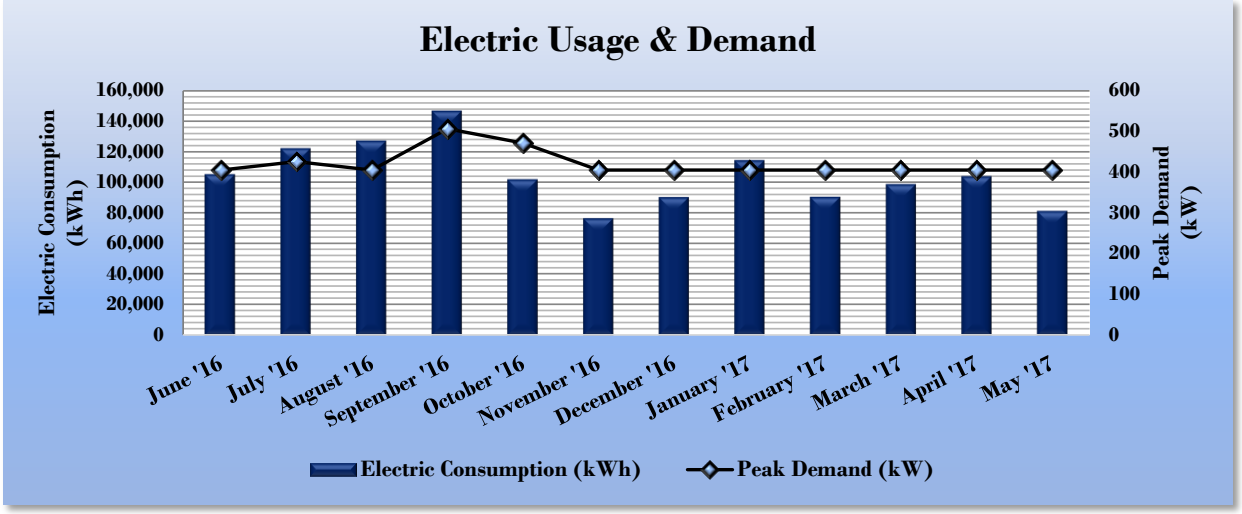


Figure 10 - Table of 12 Months Electric Usage & Demand

Electric Billing Data for Buena Regional High School					
Period Ending	Days in Period	Electric Usage (kWh)	Demand (kW)	Demand Cost	Total Electric Cost
6/24/16	30	105,000	405	$3,207	$15,955
7/25/16	31	121,960	426	$3,369	$18,533
8/24/16	30	126,960	405	$3,119	$18,529
9/26/16	33	146,400	506	$4,919	$22,648
10/25/16	29	101,680	471	$4,022	$16,230
11/21/16	27	76,240	405	$3,219	$12,452
12/21/16	30	90,160	405	$3,577	$14,460
1/26/17	36	114,240	405	$4,289	$17,980
2/22/17	27	90,240	405	$3,216	$14,005
3/23/17	29	98,560	405	$3,454	$15,225
4/27/17	35	103,760	405	$4,169	$16,672
5/23/17	26	81,040	405	$3,097	$12,845
Totals	**363**	**1,256,240**	**506.4**	**$43,656**	**$195,534**
Annual	**365**	**1,263,161**	**506.4**	**$43,897**	**$196,612**

3.3 Natural Gas Usage

Natural gas is provided by South Jersey Gas. The average gas cost for the past 12 months is $0.930/therm, which is the blended rate used throughout the analyses in this report. The monthly gas consumption is shown in the chart below.

Figure 11 - Graph of 12 Months Natural Gas Usage

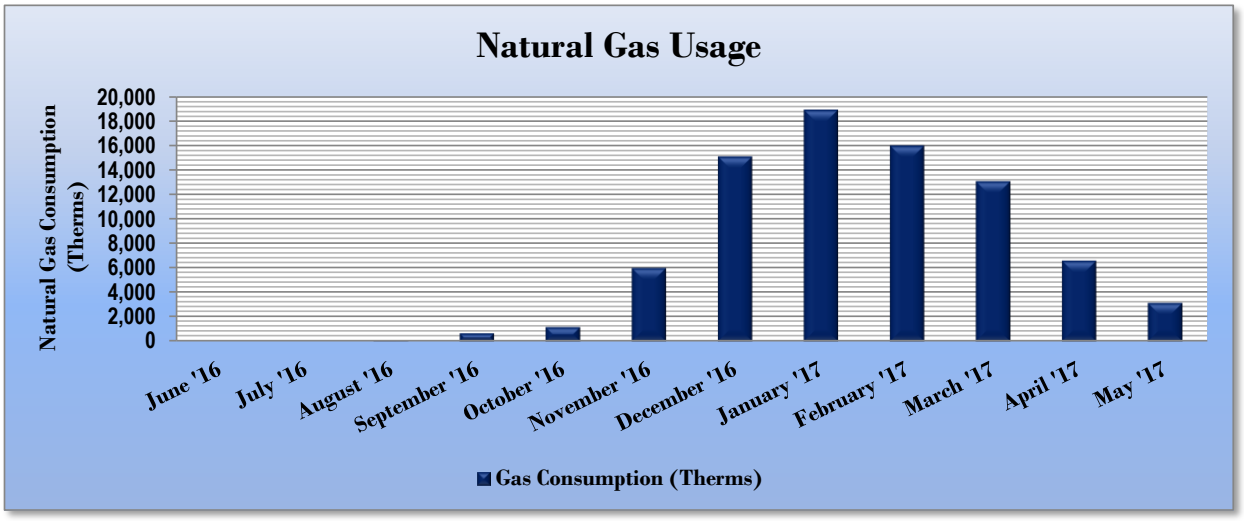


Figure 12 - Table of 12 Months Natural Gas Usage

Gas Billing Data for Buena Regional High School			
Period Ending	Days in Period	Natural Gas Usage (Therms)	Natural Gas Cost
6/23/16	31	0	$29
7/25/16	32	0	$31
8/24/16	30	11	$41
9/30/16	37	654	$643
10/25/16	25	1,173	$1,224
11/21/16	27	5,989	$6,153
12/20/16	29	15,113	$16,873
1/24/17	35	18,920	$17,428
2/22/17	29	16,006	$14,022
3/23/17	29	13,077	$10,631
4/24/17	32	6,596	$5,328
5/23/17	29	3,140	$2,598
Totals	**365**	**80,679**	**$75,002**
Annual	**365**	**80,679**	**$75,002**

3.4 Benchmarking

This facility was benchmarked using *Portfolio Manager*, an online tool created and managed by the U.S. 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.

Energy Use Intensity 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 13 - Energy Use Intensity Comparison – Existing Conditions

Energy Use Intensity Comparison - Existing Conditions		
	Buena Regional High School	National Median Building Type: School (K-12)
Source Energy Use Intensity (kBtu/ft^2)	132.5	141.4
Site Energy Use Intensity (kBtu/ft^2)	74.5	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 14 - Energy Use Intensity Comparison – Following Installation of Recommended Measures

Energy Use Intensity Comparison - Following Installation of Recommended Measures		
	Buena Regional High School	National Median Building Type: School (K-12)
Source Energy Use Intensity (kBtu/ft^2)	106.7	141.4
Site Energy Use Intensity (kBtu/ft^2)	66.2	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 **57**.

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

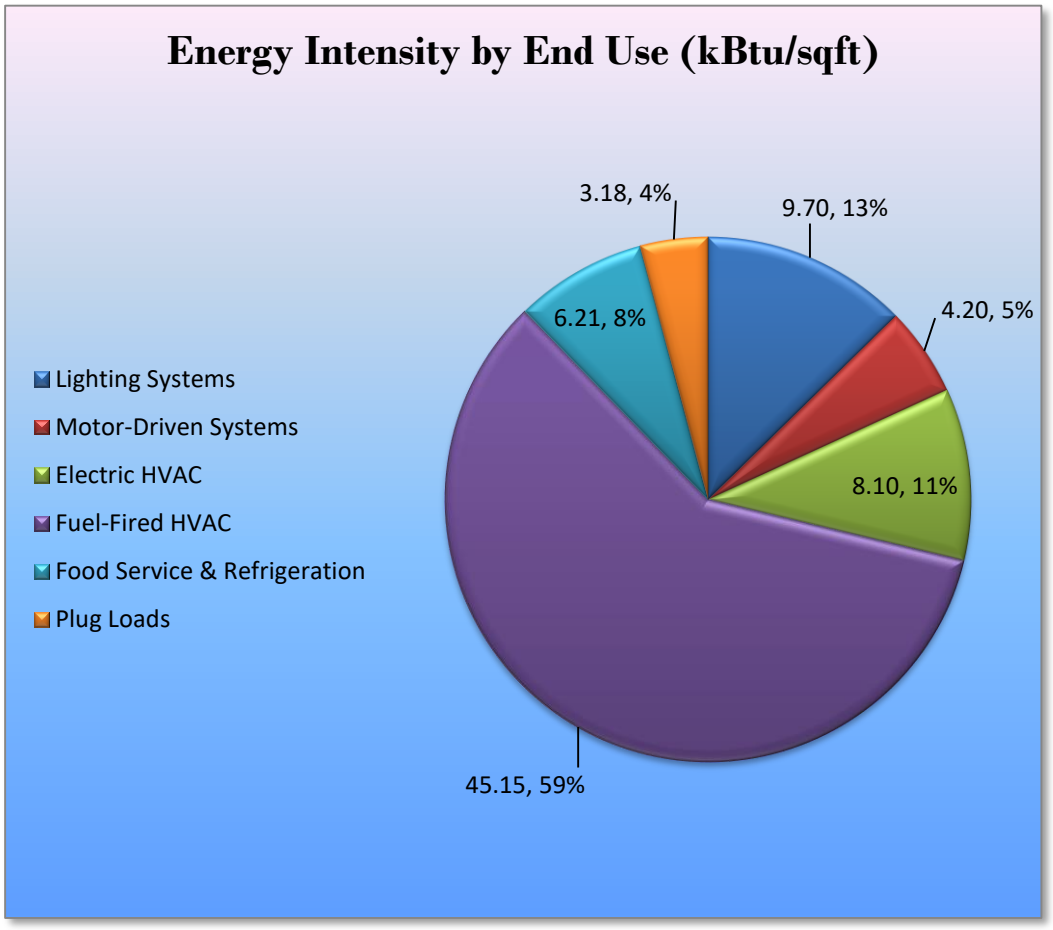
For more information on Energy Star certification go to: https://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/earn-recognition/energy-star-certification/how-app-1

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 15 - 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 Buena Regional High School 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 16 – 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		**263,632**	**49.1**	**0.0**	**$41,034.44**	**$194,971.18**	**$30,675.00**	**$164,296.18**	**4.0**	**265,475**
ECM 1	Install LED Fixtures	64,713	10.8	0.0	$10,072.68	$81,968.52	$9,540.00	$72,428.52	7.2	65,166
ECM 2	Retrofit Fixtures with LED Lamps	196,422	38.1	0.0	$30,573.17	$111,389.33	$21,135.00	$90,254.33	3.0	197,795
ECM 3	Install LED Exit Signs	2,497	0.2	0.0	$388.60	$1,613.33	$0.00	$1,613.33	4.2	2,514
Lighting Control Measures		**46,107**	**8.8**	**0.0**	**$7,176.61**	**$38,610.00**	**$3,955.00**	**$34,655.00**	**4.8**	**46,430**
ECM 4	Install Occupancy Sensor Lighting Controls	41,637	8.0	0.0	$6,480.81	$30,510.00	$3,955.00	$26,555.00	4.1	41,928
ECM 5	Install High/Low Lighitng Controls	4,470	0.8	0.0	$695.80	$8,100.00	$0.00	$8,100.00	11.6	4,502
Motor Upgrades		**2,161**	**0.5**	**0.0**	**$336.38**	**$5,310.98**	**$0.00**	**$5,310.98**	**15.8**	**2,176**
ECM 6	Premium Efficiency Motors	2,161	0.5	0.0	$336.38	$5,310.98	$0.00	$5,310.98	15.8	2,176
Variable Frequency Drive (VFD) Measures		**20,011**	**5.7**	**0.0**	**$3,114.65**	**$9,610.15**	**$2,075.00**	**$7,535.15**	**2.4**	**20,150**
ECM 7	Install VFD on Variable Air Volume (VAV) HVAC	20,011	5.7	0.0	$3,114.65	$9,610.15	$2,075.00	$7,535.15	2.4	20,150
Electric Chiller Replacement		**56,669**	**38.0**	**0.0**	**$8,820.52**	**$73,854.40**	**$6,750.00**	**$67,104.40**	**7.6**	**57,065**
ECM 8	Install High Efficiency Chillers	56,669	38.0	0.0	$8,820.52	$73,854.40	$6,750.00	$67,104.40	7.6	57,065
HVAC System Improvements		**2,143**	**0.0**	**16.5**	**$486.63**	**$2,718.84**	**$0.00**	**$2,718.84**	**5.6**	**4,086**
ECM 9	Implement Demand Control Ventilation	2,143	0.0	16.5	$486.63	$2,718.84	$0.00	$2,718.84	5.6	4,086
Plug Load Equipment Control - Vending Machine		**8,059**	**0.0**	**0.0**	**$1,254.42**	**$1,000.00**	**$0.00**	**$1,000.00**	**0.8**	**8,116**
ECM 10	Vending Machine Control	8,059	0.0	0.0	$1,254.42	$1,000.00	$0.00	$1,000.00	0.8	8,116
TOTALS		**398,782**	**102.0**	**16.5**	**$62,223.66**	**$326,075.55**	**$43,455.00**	**$282,620.55**	**4.5**	**403,498**

* - 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 17 below.

Figure 17 – 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		**263,632**	**49.1**	**0.0**	**$41,034.44**	**$194,971.18**	**$30,675.00**	**$164,296.18**	**4.0**	**265,475**
ECM 1	Install LED Fixtures	64,713	10.8	0.0	$10,072.68	$81,968.52	$9,540.00	$72,428.52	7.2	65,166
ECM 2	Retrofit Fixtures with LED Lamps	196,422	38.1	0.0	$30,573.17	$111,389.33	$21,135.00	$90,254.33	3.0	197,795
ECM 3	Install LED Exit Signs	2,497	0.2	0.0	$388.60	$1,613.33	$0.00	$1,613.33	4.2	2,514

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. Please see **Appendix A: Equipment Inventory & Recommendations** for a detailed list of the locations and recommended upgrades for each lighting measure.

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	41,373	7.8	0.0	$6,439.81	$65,802.05	$6,290.00	$59,512.05	9.2	41,663
Exterior	23,340	3.0	0.0	$3,632.87	$16,166.47	$3,250.00	$12,916.47	3.6	23,503

Measure Description

We recommend replacing the auditorium and gymnasium fixtures containing metal halide (MH) 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 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	196,422	38.1	0.0	$30,573.17	$111,389.33	$21,135.00	$90,254.33	3.0	197,795
Exterior	0	0.0	0.0	$0.00	$0.00	$0.00	$0.00	0.0	0

Measure Description

We recommend retrofitting existing incandescent and linear fluorescent lamps 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 10 times longer than many incandescent lamps.

ECM 3: Install LED EXIT Signs

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	2,497	0.2	0.0	$388.60	$1,613.33	$0.00	$1,613.33	4.2	2,514
Exterior	0	0.0	0.0	$0.00	$0.00	$0.00	$0.00	0.0	0

Measure Description

We recommend replacing all incandescent or compact fluorescent EXIT signs with LED EXIT signs. LED EXIT signs require virtually no maintenance and have a life expectancy of at least 20 years. This measure saves energy by installing LED fixtures, which use less power than other technologies with an equivalent lighting output.

4.1.2 Lighting Control Measures

Figure 18 – 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		**46,107**	**8.8**	**0.0**	**$7,176.61**	**$38,610.00**	**$3,955.00**	**$34,655.00**	**4.8**	**46,430**
ECM 4	Install Occupancy Sensor Lighting Controls	41,637	8.0	0.0	$6,480.81	$30,510.00	$3,955.00	$26,555.00	4.1	41,928
ECM 5	Install High/Low Lighitng Controls	4,470	0.8	0.0	$695.80	$8,100.00	$0.00	$8,100.00	11.6	4,502

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. Please see **Appendix A: Equipment Inventory & Recommendations** for a detailed list of the locations and recommended lighting controls upgrades for each lighting measure.

ECM 4: 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)
41,637	8.0	0.0	$6,480.81	$30,510.00	$3,955.00	$26,555.00	4.1	41,928

Measure Description

We recommend installing occupancy sensors to control lighting fixtures that are currently controlled by manual switches in many restrooms, storage rooms, classrooms, offices, and other 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 5: 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)
4,470	0.8	0.0	$695.80	$8,100.00	$0.00	$8,100.00	11.6	4,502

Measure Description

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

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. In parking lots and parking garages with significant ambient lighting this control can sometimes be combined with photocell controls to turn the lights off when there is sufficient daylighting. 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 Motor Upgrades

ECM 6: 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)
2,161	0.5	0.0	$336.38	$5,310.98	$0.00	$5,310.98	15.8	2,176

Measure Description

We recommend replacing standard efficiency motors 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 (2012)*. Savings are based on the difference between baseline and proposed efficiencies and the assumed annual operating hours.

Please see **Appendix A: Equipment Inventory & Recommendations** for more information on existing and proposed motor upgrades.

4.1.4 Variable Frequency Drive Measures

Our recommendations for variable frequency drive (VFD) measures are summarized in Figure 19 below.

Figure 19 – 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		**20,011**	**5.7**	**0.0**	**$3,114.65**	**$9,610.15**	**$2,075.00**	**$7,535.15**	**2.4**	**20,150**
ECM 7	Install VFD on Variable Air Volume (VAV) HVAC	20,011	5.7	0.0	$3,114.65	$9,610.15	$2,075.00	$7,535.15	2.4	20,150

Please see **Appendix A: Equipment Inventory & Recommendations** for more information about current motors systems and VFD recommendations.

ECM 7: Install VFD on Variable Air Volume (VAV) 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)
20,011	5.7	0.0	$3,114.65	$9,610.15	$2,075.00	$7,535.15	2.4	20,150

Measure Description

We recommend replacing existing air volume control devices on air handling units (AHUs), such as inlet vanes and variable pitch fan blades, with variable frequency drives (VFDs). Inlet guide vanes and variable pitch fan blades are an inefficient means of controlling the air volume compared to VFDs.

The existing volume control device on the "New Wing" AHU would be removed, or permanently disabled, and the control signal would be redirected to the VFD to determine proper fan motor speed. Energy savings results from more efficient control of motor energy usage when fan motors are operated at partial load. The magnitude of energy savings is based on the estimated amount of time that fan motors would be operated at partial load.

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

4.1.5 Electric Chiller Replacement

ECM 8: Install High Efficiency Chillers

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)
56,669	38.0	0.0	$8,820.52	$73,854.40	$6,750.00	$67,104.40	7.6	57,065

Measure Description

We typically recommend replacing older inefficient electric chillers with new high efficiency chillers. The type of chiller to be installed depends on the magnitude of the cooling load and variability of the cooling load profile. Positive displacement chillers are usually under 600 tons of cooling capacity and centrifugal chillers generally start at 150 tons of cooling capacity. Constant speed chillers should be used to meet cooling loads with little or no variation while variable speed chillers are more efficient for variable cooling load profiles. Water cooled chillers are more efficient than air cooled chillers but require cooling towers and additional pumps to circulate the cooling water. In any given size range variable speed chillers tend to have better partial load efficiency, but worse full load efficiency, than constant speed chillers.

The savings result from the improvement in chiller efficiency and matching the right type of chiller to the cooling load. The energy savings associated with this measure is based on the cooling capacity of the new chiller, the improvement in efficiency compared with the base case equipment, the cooling load profile, and the estimated annual operating hours of the chiller before and after the upgrade. Energy savings are maximized by proper selection of new equipment based on the cooling load profile.

We recommend replacement of the dedicated chiller that serves the Auditorium.

Please see **Appendix A: Equipment Inventory & Recommendations** for more details on existing equipment and proposed measure upgrades.

4.1.6 HVAC System Upgrades

Our recommendation for HVAC system improvement are summarized in Figure 20 below.

Figure 20 - 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		**2,143**	**0.0**	**16.5**	**$486.63**	**$2,718.84**	**$0.00**	**$2,718.84**	**5.6**	**4,086**
ECM 9	Implement Demand Control Ventilation	2,143	0.0	16.5	$486.63	$2,718.84	$0.00	$2,718.84	5.6	4,086

ECM 9: Implement Demand Control Ventilation (DCV)

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)
2,143	0.0	16.5	$486.63	$2,718.84	$0.00	$2,718.84	5.6	4,086

Measure Description

Demand control ventilation (DCV) monitors indoor air CO_2 content to measure room occupancy. This data is used to regulate the amount of outdoor provided to the space for ventilation. In order to ensure adequate air quality, standard ventilation systems often provide outside air based on a space's estimated maximum occupancy. However, during low occupancy periods, the space may be over ventilated. This wastes energy through excessive fan more usage and additional cost to heat and cool the excessive air flow. DCV reduces unnecessary outdoor air intake by regulating ventilation based on actual occupancy levels, saving significant amounts of energy. DCV is most suited for facilities where occupancy levels vary significantly hour to hour and day to day.

Energy savings associated with DCV are based on hours of operation, space occupancy, system air flow, outside air reduction, and other factors. Energy savings results from eliminating unnecessary ventilation and space conditioning.

The DCV measure is recommended for the auditorium where there is significant variance in occupancy.

4.1.7 Plug Load Equipment Control - Vending Machines

ECM 10: 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)
8,059	0.0	0.0	$1,254.42	$1,000.00	$0.00	$1,000.00	0.8	8,116

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.

Please see **Appendix A: Equipment Inventory & Recommendations** for more details on existing equipment and proposed measures.

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 21 – 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)
Electric Unitary HVAC Measures	**1,895**	**1.4**	**0.0**	**$294.92**	**$66,479.15**	**$0.00**	**$66,479.15**	**225.4**	**1,908**
Install High Efficiency Electric AC	1,895	1.4	0.0	$294.92	$66,479.15	$0.00	$66,479.15	225.4	1,908
Domestic Water Heating Upgrade	**0**	**0.0**	**73.3**	**$681.10**	**$26,145.52**	**$200.00**	**$25,945.52**	**38.1**	**8,578**
Install High Efficiency Gas Water Heater	0	0.0	73.3	$681.10	$26,145.52	$200.00	$25,945.52	38.1	8,578
TOTALS	**1,895**	**1.4**	**73.3**	**$976.01**	**$92,624.67**	**$200.00**	**$92,424.67**	**94.7**	**10,486**

* - 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).

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)
1,895	1.4	0.0	$294.92	$66,479.15	$0.00	$66,479.15	225.4	1,908

Measure Description

We evaluated replacing standard efficiency packaged air conditioning units with high efficiency packaged air conditioning units. 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.

Please see **Appendix A: Equipment Inventory & Recommendations** for more details on existing equipment and proposed measures.

Reasons for not Recommending

The simple payback for replacing the Octagon Air Systems unit that serves the library exceeds the useful life of the proposed replacement equipment and therefore is not recommended.

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)
0	0.0	73.3	$681.10	$26,145.52	$200.00	$25,945.52	38.1	8,578

Measure Description

We evaluated replacing the existing modular boilers and storage tank 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.

Please see **Appendix A: Equipment Inventory & Recommendations** for more details on existing equipment and proposed measures.

Reasons for not Recommending

We evaluated this measure for replacing the boilers assuming the heat capacity of the existing boilers. The payback did not make economic sense, however, it may be possible to downsize the boilers or reconfigure for two instead of four boilers as the DHW heat load may currently be less than initially designed. In order to determine the adequate DHW capacity, a study of the DHW use would need to be completed.

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.

Perform Proper Lighting Maintenance

In order to sustain optimal lighting levels, lighting fixtures should undergo routine maintenance. Light levels decrease over time due to lamp aging, lamp and ballast failure, and buildup of dirt and dust on lamps, fixtures and reflective surfaces. Together, these factors can reduce total illumination by 20% - 60% or more, while operating fixtures continue drawing full power. To limit this reduction, lamps, reflectors and diffusers should be thoroughly cleaned of dirt, dust, oil, and smoke film buildup approximately every 6 – 12 months.

Develop a Lighting Maintenance Schedule

In addition to routine fixture cleaning, development of a maintenance schedule can both ensure maintenance is performed regularly and can reduce the overall cost of fixture re-lamping and re-ballasting. By re-lamping and re-ballasting fixtures in groups, lighting levels are better maintained and the number of site visits by a lighting technician or contractor can be minimized, decreasing the overall cost of maintenance.

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.

Perform Routine Motor Maintenance

Motors consist of many moving parts whose collective degradation can contribute to a significant loss of motor efficiency. In order to prevent damage to motor components, routine maintenance should be performed. This maintenance consists of cleaning surfaces and ventilation openings on motors to prevent overheating, lubricating moving parts to reduce friction, inspecting belts and pulleys for wear and to ensure they are at proper alignment and tension, and cleaning and lubricating bearings. Consult a licensed technician to assess these and other motor maintenance strategies.

Install Destratification Fans

Allowing air to thermally stratify in spaces with high ceilings results in additional energy consumption by requiring the heating system to heat a volume of space much larger than the actual occupied space. Additional inefficiencies also occur because there are higher temperatures at the ceiling level than at the floor level. Higher temperatures at the ceiling accelerate heat loss through the roof, requiring additional energy consumption by the heating equipment in order to compensate for the accelerated heat transfer.

Destratification fans are specially designed to deliver a columnar, laminar flow of air balancing the air temperature from floor to ceiling. In addition to fuel savings, the use of destratification fans will reduce the recovery time necessary to warm the space after nightly temperature setbacks and will increase the comfort level of the occupants.

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.

Ensure Economizers are Functioning Properly

Economizers, when properly configured, can be used to significantly reduce mechanical cooling. However, if the outdoor thermostat or enthalpy control is malfunctioning or the damper is stuck or improperly adjusted, benefits from the economizer may not be fully realized. As such, periodic inspection and maintenance is required to ensure proper operation. This maintenance should be scheduled with maintenance of the facility's air conditioning system and should include proper setting of the outdoor thermostat/enthalpy control, inspection of control and damper operation, lubrication of damper connections, and adjustment of minimum damper position. A malfunctioning economizer can significantly increase the amount of heating and mechanical cooling required by introducing excess amounts of cold or hot outside air.

Assess Chillers & Request Tune-Ups

Chillers are responsible for a substantial portion of a commercial building's overall energy usage. When components of a chiller are not optimized, this can quickly result in a noticeable increase in energy bills. Chiller diagnostics can produce a 5% to 10% cost avoidance potential from discovery and implementation of low/no cost optimization strategies.

Clean Evaporator/Condenser Coils on AC Systems

Dirty evaporators and condensers coils cause a restriction to air flow and restrict heat transfer. This results in increased evaporator and condenser fan load and a decrease in cooling system performance. Keeping the coils clean allows the fans and cooling system to operate more efficiently.

Clean and/or Replace HVAC Filters

Air filters work to reduce the amount of indoor air pollution and increase occupant comfort. Over time, filters become less and less effective as particulate buildup increases. In addition to health concerns related to clogged filters, filters that have reached saturation also restrict air flow through the facility's air conditioning or heat pump system, increasing the load on the distribution fans and decreasing occupant comfort levels. Filters should be checked monthly and cleaned or replaced when appropriate.

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.

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 gallons per flush (gpf) and toilets that use as little as 1.28 gpf (this is lower than the current 1.6 gpf federal standard).

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.

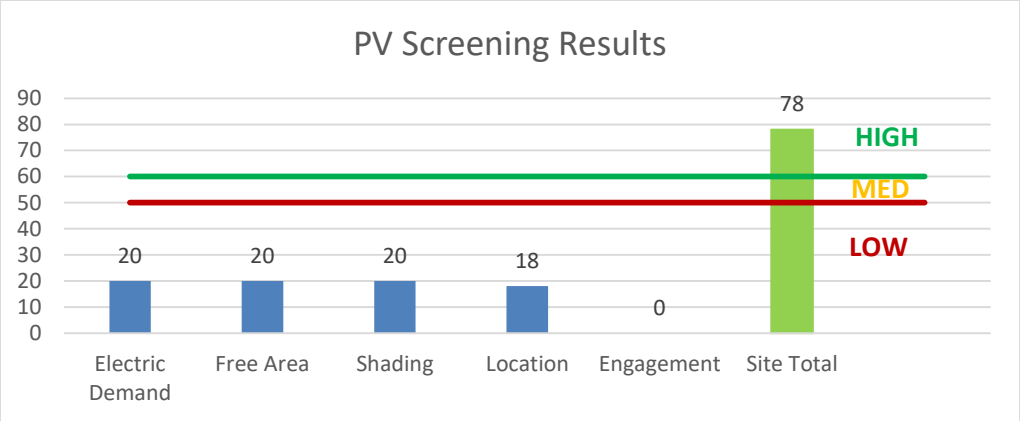
6.1 Photovoltaic

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 buildings may be feasible. If Buena Regional High School is interested in pursuing the installation of PV, we recommended a full feasibility study be conducted.

Figure 22 - Photovoltaic Screening



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 8.2 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.

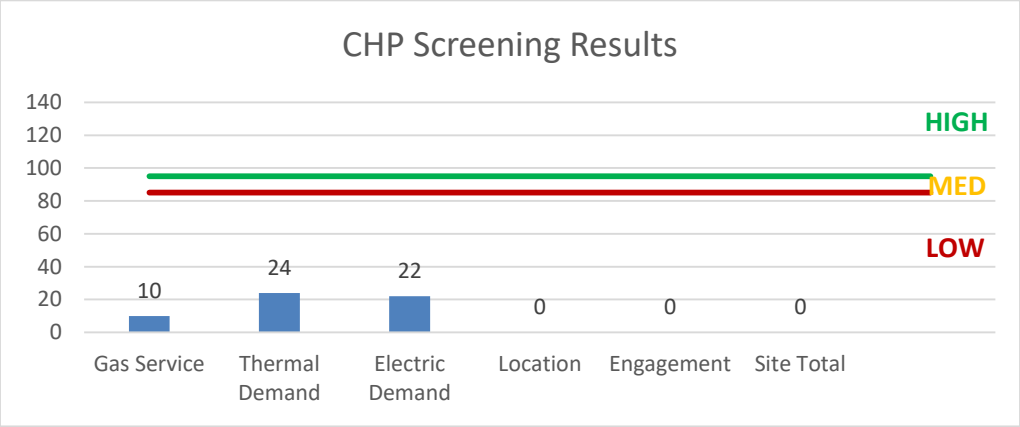
CHP systems are typically used to produce a portion of the electric power used onsite by a facility, with the balance of electric power needs supplied by grid purchases. The heat is used to supplement (or supplant) existing boilers for the purpose of space heating and/or domestic hot water heating. Waste 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.

Lack of gas service, 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 23 - Combined Heat and Power 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 (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 (www.pjm.com/training/trainingmaterial.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 building is not a good candidate for DR.

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 24 for a list of the eligible programs identified for each recommended ECM.

Figure 24 - ECM Incentive Program Eligibility

Energy Conservation Measure		SmartStart Prescriptive	SmartStart Custom	Direct Install	Pay For Performance Existing Buildings	Large Energy Users Program	Combined Heat & Power and Fuel Cell
ECM 1	Install LED Fixtures	x					
ECM 2	Retrofit Fixtures with LED Lamps	x					
ECM 3	Install LED Exit Signs						
ECM 4	Install Occupancy Sensor Lighting Controls	x					
ECM 5	Install High/Low Lighitng Controls						
ECM 6	Premium Efficiency Motors						
ECM 7	Install VFD on Variable Air Volume (VAV) HVAC	x					
ECM 8	Install High Efficiency Chillers	x					
ECM 9	Implement Demand Control Ventilation	x					
ECM 10	Vending Machine Control						

SmartStart (SS) 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 (DI) 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 SS 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 (SS) 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 SS prescriptive incentive program provides fixed incentives for specific energy efficiency measures, whereas the custom SS 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 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

8.3 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
Boiler room	25	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	3,023	Relamp	No	25	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	3,023	0.25	1,322	0.0	$205.82	$897.50	$125.00	3.75
Boiler room	1	Linear Fluorescent - T8: 2' T8 (17W) - 1L	Wall Switch	22	3,023	Relamp	No	1	LED - Linear Tubes: (1) 2' Lamp	Wall Switch	9	3,023	0.01	47	0.0	$7.30	$31.90	$5.00	3.68
New wing: closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.02	115	0.0	$17.85	$58.50	$10.00	2.72
Common room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.02	115	0.0	$17.85	$58.50	$10.00	2.72
B103	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,023	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,116	0.49	2,609	0.0	$406.09	$1,442.40	$250.00	2.94
B103	6	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	3,023	Relamp	No	6	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	3,023	0.07	365	0.0	$56.81	$215.40	$30.00	3.26
B104	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,023	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,116	0.49	2,609	0.0	$406.09	$1,442.40	$250.00	2.94
B104	6	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	3,023	Relamp	No	6	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	3,023	0.07	365	0.0	$56.81	$215.40	$30.00	3.26
Hallway	11	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	Yes	11	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,116	0.30	1,594	0.0	$248.17	$1,183.50	$110.00	4.33
Mechanical room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.04	229	0.0	$35.71	$117.00	$20.00	2.72
Boiler room	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.04	195	0.0	$30.30	$95.13	$20.00	2.48
B105	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,023	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,116	0.49	2,609	0.0	$406.09	$1,442.40	$250.00	2.94
B105	6	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	3,023	Relamp	No	6	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	3,023	0.07	365	0.0	$56.81	$215.40	$30.00	3.26
B106	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,023	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,116	0.49	2,609	0.0	$406.09	$1,442.40	$250.00	2.94
B106	6	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	3,023	Relamp	No	6	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	3,023	0.07	365	0.0	$56.81	$215.40	$30.00	3.26
B106	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
B106	1	Exit Signs: Incandescent	None	25	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	191	0.0	$29.79	$107.56	$0.00	3.61
Stairwell	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	High/Low Control	58	2,116	0.19	1,021	0.0	$158.84	$920.53	$80.00	5.29
2nd floor	2	Exit Signs: Incandescent	None	25	8,760	Fixture Replacement	No	2	LED Exit Signs: 2 W Lamp	None	6	8,760	0.02	383	0.0	$59.58	$215.11	$0.00	3.61
2nd floor hallway	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	Yes	9	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,116	0.25	1,304	0.0	$203.05	$1,066.50	$90.00	4.81
B205	15	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,023	Relamp	Yes	15	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,116	0.62	3,261	0.0	$507.61	$1,668.00	$295.00	2.70
B204 office	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,023	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	3,023	0.10	516	0.0	$80.34	$225.60	$45.00	2.25
B204 office	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.02	115	0.0	$17.85	$58.50	$10.00	2.72
B203	24	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,023	Relamp	Yes	24	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,116	0.98	5,218	0.0	$812.18	$2,614.80	$465.00	2.65
Closet	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.06	344	0.0	$53.56	$175.50	$30.00	2.72

	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
2nd floor hallway	2	Compact Fluorescent: 13 W	Wall Switch	13	3,023	Relamp	No	2	LED Screw-In Lamps: LED screw-in	Wall Switch	9	3,023	0.01	27	0.0	$4.22	$107.51	$0.00	25.48
Stairwell	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.04	229	0.0	$35.71	$117.00	$20.00	2.72
Stairwell	4	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	3,023	Relamp	No	4	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,023	0.04	222	0.0	$34.63	$192.80	$40.00	4.41
Hallway	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,116	0.44	2,319	0.0	$360.97	$1,476.00	$160.00	3.65
Hallway	3	Exit Signs: Incandescent	None	25	8,760	Fixture Replacement	No	3	LED Exit Signs: 2 W Lamp	None	6	8,760	0.04	574	0.0	$89.38	$322.67	$0.00	3.61
Hallway	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,116	0.49	2,609	0.0	$406.09	$1,593.00	$180.00	3.48
B212	18	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	18	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.87	4,592	0.0	$714.80	$2,252.40	$430.00	2.55
B211 office	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.06	344	0.0	$53.56	$175.50	$30.00	2.72
B210	17	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	17	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.82	4,337	0.0	$675.09	$2,157.27	$410.00	2.59
B220	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.43	2,296	0.0	$357.40	$1,126.20	$215.00	2.55
office	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	3	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.11	584	0.0	$90.89	$285.40	$60.00	2.48
B48	17	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	17	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.82	4,337	0.0	$675.09	$2,157.27	$410.00	2.59
B209	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.43	2,296	0.0	$357.40	$1,126.20	$215.00	2.55
office B208	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	3	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.11	584	0.0	$90.89	$285.40	$60.00	2.48
B207	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.43	2,296	0.0	$357.40	$1,126.20	$215.00	2.55
B47	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.43	2,296	0.0	$357.40	$1,126.20	$215.00	2.55
RR boys x 2	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	4	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.15	779	0.0	$121.19	$380.53	$80.00	2.48
Faculty x 2	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.04	229	0.0	$35.71	$117.00	$20.00	2.72
closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.02	115	0.0	$17.85	$58.50	$10.00	2.72
B216	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.43	2,296	0.0	$357.40	$1,126.20	$215.00	2.55
B215a	8	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	8	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.29	1,557	0.0	$242.38	$761.07	$160.00	2.48
B215b	7	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	7	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.26	1,363	0.0	$212.08	$665.93	$140.00	2.48
B214	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	2	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.07	389	0.0	$60.59	$190.27	$40.00	2.48
Stduent council	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	2	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.07	389	0.0	$60.59	$190.27	$40.00	2.48
stairwell	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.04	229	0.0	$35.71	$117.00	$20.00	2.72

	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
stairwell	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	3,023	Relamp	No	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,023	0.02	111	0.0	$17.31	$96.40	$20.00	4.41
stairwell	1	Exit Signs: Incandescent	None	25	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	191	0.0	$29.79	$107.56	$0.00	3.61
B225 office	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	2	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.07	389	0.0	$60.59	$190.27	$40.00	2.48
B225 office	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.02	115	0.0	$17.85	$58.50	$10.00	2.72
B226	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.43	2,296	0.0	$357.40	$1,126.20	$215.00	2.55
B227	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.43	2,296	0.0	$357.40	$1,126.20	$215.00	2.55
B228	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.43	2,296	0.0	$357.40	$1,126.20	$215.00	2.55
B229	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	3	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.11	584	0.0	$90.89	$285.40	$60.00	2.48
B230	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.43	2,296	0.0	$357.40	$1,126.20	$215.00	2.55
storage	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	300	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	300	0.06	34	0.0	$5.32	$175.50	$30.00	27.37
B231	30	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	3,023	Relamp	Yes	30	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,116	0.41	2,200	0.0	$342.47	$2,256.00	$405.00	5.40
B232 storage	28	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	300	Relamp	No	28	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	300	0.32	169	0.0	$26.31	$1,005.20	$140.00	32.88
proejction room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.02	115	0.0	$17.85	$58.50	$10.00	2.72
stairwell	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.04	229	0.0	$35.71	$117.00	$20.00	2.72
stairwell	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	3,023	Relamp	No	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,023	0.02	111	0.0	$17.31	$96.40	$20.00	4.41
industry room C131	26	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	3,023	Relamp	Yes	26	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,116	0.37	1,975	0.0	$307.35	$1,743.40	$235.00	4.91
kitchen RR	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	3,023	Relamp	No	2	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	3,023	0.02	122	0.0	$18.94	$71.80	$10.00	3.26
kitchen RR	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	3,023	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,023	0.01	56	0.0	$8.66	$48.20	$10.00	4.41
kitchen RR	1	Exit Signs: Incandescent	None	25	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	191	0.0	$29.79	$107.56	$0.00	3.61
kitchen RR	32	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	32	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	1.54	8,164	0.0	$1,270.75	$4,124.27	$780.00	2.63
kitchen storage	8	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	300	Relamp	No	8	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	300	0.09	48	0.0	$7.52	$287.20	$40.00	32.88
kitchen hood	5	Incandescent: 60 W	Wall Switch	60	3,023	Relamp	No	5	LED Screw-In Lamps: LED Screw-In Lamps	Wall Switch	9	3,023	0.17	886	0.0	$137.96	$268.77	$25.00	1.77
office	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.04	195	0.0	$30.30	$95.13	$20.00	2.48
office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.09	459	0.0	$71.41	$234.00	$40.00	2.72
cafeteria	64	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	64	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	3.08	16,328	0.0	$2,541.50	$7,978.53	$1,525.00	2.54

	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
cafeteria	3	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	3	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
C102 comp lab	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.43	2,296	0.0	$357.40	$1,126.20	$215.00	2.55
hallway	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,116	0.55	2,899	0.0	$451.21	$1,710.00	$200.00	3.35
C103 comp lab	8	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	8	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.29	1,557	0.0	$242.38	$761.07	$160.00	2.48
C103 comp lab	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.06	344	0.0	$53.56	$175.50	$30.00	2.72
C104 comp lab	16	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	16	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.77	4,082	0.0	$635.38	$2,062.13	$390.00	2.63
C104 comp lab	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.09	459	0.0	$71.41	$234.00	$40.00	2.72
C113	15	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	15	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.72	3,827	0.0	$595.67	$1,967.00	$370.00	2.68
C112 B	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	3	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.11	584	0.0	$90.89	$285.40	$60.00	2.48
C112 B	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.06	344	0.0	$53.56	$175.50	$30.00	2.72
C105	16	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	16	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.77	4,082	0.0	$635.38	$2,062.13	$390.00	2.63
B112a	6	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	6	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.22	1,168	0.0	$181.78	$570.80	$120.00	2.48
C111	20	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	20	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.96	5,103	0.0	$794.22	$2,442.67	$470.00	2.48
C111 storage	14	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	300	Relamp	Yes	14	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	210	0.20	106	0.0	$16.43	$1,042.60	$140.00	54.95
C106	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.43	2,296	0.0	$357.40	$1,126.20	$215.00	2.55
restroom x 2	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	5	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.11	574	0.0	$89.27	$292.50	$50.00	2.72
closet	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	3,023	Relamp	No	2	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	3,023	0.02	122	0.0	$18.94	$71.80	$10.00	3.26
hallway	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,116	0.14	725	0.0	$112.80	$832.50	$50.00	6.94
restroom x 2	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.02	115	0.0	$17.85	$58.50	$10.00	2.72
C132	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.04	229	0.0	$35.71	$117.00	$20.00	2.72
exit	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
gym	20	Metal Halide: (1) 250W Lamp	Wall Switch	295	3,023	Fixture Replacement	Yes	20	LED - Fixtures: Low-Bay	Occupancy Sensor	89	2,116	3.06	16,201	0.0	$2,521.70	$28,935.50	$3,070.00	10.26
gym	21	Metal Halide: (1) 250W Lamp	Wall Switch	295	3,023	Fixture Replacement	Yes	21	LED - Fixtures: Low-Bay	Occupancy Sensor	89	2,116	3.21	17,011	0.0	$2,647.79	$30,625.28	$3,255.00	10.34
gym	15	Incandescent: 130 W	Wall Switch	130	3,023	Relamp	Yes	15	LED Screw-In Lamps: LED Screw-In Lamps	Occupancy Sensor	20	2,116	1.14	6,066	0.0	$944.22	$1,346.30	$145.00	1.27
girl's lockeroom	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,116	0.55	2,899	0.0	$451.21	$1,710.00	$270.00	3.19

	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
coach office	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	3	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.11	584	0.0	$90.89	$285.40	$60.00	2.48
girl's lockeroom	4	Incandescent: 130 W	Wall Switch	130	3,023	Relamp	No	4	LED Screw-In Lamps: LED Screw-In Lamps	Wall Switch	20	3,023	0.29	1,536	0.0	$239.13	$215.01	$20.00	0.82
girl's lockeroom	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,023	Relamp	No	6	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	3,023	0.19	1,032	0.0	$160.68	$451.20	$90.00	2.25
restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,023	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	3,023	0.03	172	0.0	$26.78	$75.20	$15.00	2.25
restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	3,023	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,023	0.01	56	0.0	$8.66	$48.20	$10.00	4.41
bathroom	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.06	344	0.0	$53.56	$175.50	$30.00	2.72
bathroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.02	115	0.0	$17.85	$58.50	$10.00	2.72
bathroom	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.09	459	0.0	$71.41	$234.00	$40.00	2.72
storage	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	300	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	300	0.09	46	0.0	$7.09	$234.00	$40.00	27.37
lockeroom	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.13	688	0.0	$107.12	$351.00	$60.00	2.72
lockeroom	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	3,023	Relamp	No	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,023	0.02	111	0.0	$17.31	$96.40	$20.00	4.41
lockeroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,023	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	3,023	0.06	344	0.0	$53.56	$150.40	$30.00	2.25
lockeroom	1	Exit Signs: Incandescent	None	25	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	191	0.0	$29.79	$107.56	$0.00	3.61
Auxiliary B	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	9	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.33	1,752	0.0	$272.68	$856.20	$180.00	2.48
Auxiliary A	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	9	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.33	1,752	0.0	$272.68	$856.20	$180.00	2.48
Auxiliary A	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Athletic training	6	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	6	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.22	1,168	0.0	$181.78	$570.80	$120.00	2.48
Janitor	4	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	3,023	Relamp	No	4	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	3,023	0.05	243	0.0	$37.87	$143.60	$20.00	3.26
Boys lockeroom	23	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	Yes	23	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,116	0.63	3,334	0.0	$518.89	$2,155.50	$335.00	3.51
Boys lockeroom	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,023	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	3,023	0.10	516	0.0	$80.34	$225.60	$45.00	2.25
Restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	3,023	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,023	0.01	56	0.0	$8.66	$48.20	$10.00	4.41
Coach	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,023	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	3,023	0.10	516	0.0	$80.34	$225.60	$45.00	2.25
Restroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.04	229	0.0	$35.71	$117.00	$20.00	2.72
Restroom	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Shower	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,023	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	3,023	0.10	516	0.0	$80.34	$225.60	$45.00	2.25

	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
Shower	10	Compact Fluorescent: 13 W	Wall Switch	13	3,023	Relamp	No	10	LED Screw-In Lamps: LED screw-in	Wall Switch	9	3,023	0.03	136	0.0	$21.10	$537.53	$0.00	25.48
hallway	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,116	0.41	2,174	0.0	$338.41	$1,417.50	$150.00	3.75
hallway	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
greenhouse	9	Incandescent: 60 W	Wall Switch	60	3,023	Relamp	No	9	LED Screw-In Lamps: LED Screw-In Lamps	Wall Switch	9	3,023	0.30	1,595	0.0	$248.33	$483.78	$45.00	1.77
Restroom x 2	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.09	459	0.0	$71.41	$234.00	$40.00	2.72
Faculty	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.58	3,062	0.0	$476.53	$1,681.60	$310.00	2.88
B113	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.58	3,062	0.0	$476.53	$1,681.60	$310.00	2.88
Hallway	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,116	0.49	2,609	0.0	$406.09	$1,593.00	$180.00	3.48
Hallway	1	Exit Signs: Incandescent	None	25	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	191	0.0	$29.79	$107.56	$0.00	3.61
B115	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.43	2,296	0.0	$357.40	$1,126.20	$215.00	2.55
B114 storage	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	300	Relamp	No	3	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	300	0.11	58	0.0	$9.02	$285.40	$60.00	24.98
B107	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	114	2,116	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,481	0.43	1,607	0.0	$250.18	$1,126.20	$215.00	3.64
B116	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	114	2,116	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,481	0.43	1,607	0.0	$250.18	$1,126.20	$215.00	3.64
B108	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	114	2,116	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,481	0.58	2,143	0.0	$333.57	$1,681.60	$310.00	4.11
B117	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.43	2,296	0.0	$357.40	$1,126.20	$215.00	2.55
B109	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.43	2,296	0.0	$357.40	$1,126.20	$215.00	2.55
B110	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	114	2,116	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,481	0.43	1,607	0.0	$250.18	$1,126.20	$215.00	3.64
B112	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	4	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.15	779	0.0	$121.19	$380.53	$80.00	2.48
B112	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,023	Relamp	No	4	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	3,023	0.13	688	0.0	$107.12	$300.80	$60.00	2.25
Library	48	Linear Fluorescent - T8: 4' T8 (32W) - 6L	Wall Switch	176	3,023	Relamp	Yes	48	LED - Linear Tubes: (6) 4' Lamps	Occupancy Sensor	87	2,116	3.62	19,204	0.0	$2,989.04	$7,792.72	$1,615.00	2.07
B119	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	8	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.17	918	0.0	$142.83	$468.00	$80.00	2.72
B120	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	8	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.17	918	0.0	$142.83	$468.00	$80.00	2.72
B120	11	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	Yes	11	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,116	0.30	1,594	0.0	$248.17	$1,183.50	$180.00	4.04
B221	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	2	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.07	389	0.0	$60.59	$190.27	$40.00	2.48
B222	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	2	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.07	389	0.0	$60.59	$190.27	$40.00	2.48

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B223a	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	2	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.07	389	0.0	$60.59	$190.27	$40.00	2.48
B224	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.09	459	0.0	$71.41	$234.00	$40.00	2.72
B223b	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	2	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.07	389	0.0	$60.59	$190.27	$40.00	2.48
B223b	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Lobby	9	Linear Fluorescent - T8: 4' T8 (32W) - 6L	Wall Switch	176	3,023	Relamp	No	9	LED - Linear Tubes: (6) 4' Lamps	Wall Switch	87	3,023	0.53	2,784	0.0	$433.36	$1,208.01	$270.00	2.16
Entrance lobby	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.04	229	0.0	$35.71	$117.00	$20.00	2.72
Stairwell	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,116	0.16	870	0.0	$135.36	$891.00	$60.00	6.14
Auditorium	56	Compact Fluorescent: 19 W	Wall Switch	19	3,023	Relamp	Yes	56	LED Screw-In Lamps: LED screw-in	Occupancy Sensor	13	2,116	0.36	1,886	0.0	$293.58	$4,630.17	$210.00	15.06
Auditorium	18	Metal Halide: (1) 250W Lamp	Wall Switch	295	3,023	Fixture Replacement	Yes	18	LED - Fixtures: Downlight Recessed	Occupancy Sensor	89	2,116	2.75	14,581	0.0	$2,269.53	$5,420.11	$160.00	2.32
Auditorium	10	Metal Halide: (1) 175W Lamp	Wall Switch	215	3,023	Fixture Replacement	Yes	10	LED - Fixtures: Downlight Recessed	Occupancy Sensor	65	2,116	1.11	5,904	0.0	$918.93	$3,251.17	$120.00	3.41
Auditorium	12	Incandescent: Incandescent	Wall Switch	100	3,023	Relamp	Yes	12	LED Screw-In Lamps: LED Screw-In Lamps	Occupancy Sensor	12	2,116	0.72	3,821	0.0	$594.69	$1,185.04	$130.00	1.77
Auditorium	9	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	9	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Auditorium	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	3	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.11	584	0.0	$90.89	$285.40	$60.00	2.48
Stage	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	4	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.15	779	0.0	$121.19	$380.53	$80.00	2.48
Stage	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	5	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.11	574	0.0	$89.27	$292.50	$50.00	2.72
Stage	1	Compact Fluorescent: 13 W	Wall Switch	26	3,023	Relamp	No	1	LED Screw-In Lamps: LED screw-in	Wall Switch	18	3,023	0.01	27	0.0	$4.22	$53.75	$0.00	12.74
A139	4	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	3,023	Relamp	No	4	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	3,023	0.05	243	0.0	$37.87	$143.60	$20.00	3.26
A wing hall	2	Linear Fluorescent - T8: 4' T8 (32W) - 6L	Wall Switch	176	3,023	Relamp	Yes	2	LED - Linear Tubes: (6) 4' Lamps	High/Low Control	87	2,116	0.15	800	0.0	$124.54	$808.45	$60.00	6.01
Main offfice	5	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	5	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.18	973	0.0	$151.49	$475.67	$100.00	2.48
Main offfice	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,023	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	3,023	0.03	172	0.0	$26.78	$75.20	$15.00	2.25
Hallway	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	Yes	7	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,116	0.19	1,015	0.0	$157.92	$949.50	$70.00	5.57
Copy room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.04	229	0.0	$35.71	$117.00	$20.00	2.72
Office	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.04	195	0.0	$30.30	$95.13	$20.00	2.48
Server	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.04	195	0.0	$30.30	$95.13	$20.00	2.48
Vice Principal	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	2	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.07	389	0.0	$60.59	$190.27	$40.00	2.48

	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	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.04	195	0.0	$30.30	$95.13	$20.00	2.48
Office	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.04	195	0.0	$30.30	$95.13	$20.00	2.48
Office	5	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	5	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.18	973	0.0	$151.49	$475.67	$100.00	2.48
Open office	10	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	10	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.48	2,551	0.0	$397.11	$1,491.33	$270.00	3.08
Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	2	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.07	389	0.0	$60.59	$190.27	$40.00	2.48
Office	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.02	115	0.0	$17.85	$58.50	$10.00	2.72
Office	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.04	195	0.0	$30.30	$95.13	$20.00	2.48
Office	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.04	195	0.0	$30.30	$95.13	$20.00	2.48
Conference room	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	3	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.11	584	0.0	$90.89	$285.40	$60.00	2.48
Conference room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.04	229	0.0	$35.71	$117.00	$20.00	2.72
Nurse office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.09	459	0.0	$71.41	$234.00	$40.00	2.72
Nurse office	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	4	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.15	779	0.0	$121.19	$380.53	$80.00	2.48
Restroom x 2	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	3,023	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,023	0.01	56	0.0	$8.66	$48.20	$10.00	4.41
Cellar	13	Incandescent: 135 W	Wall Switch	135	3,023	Relamp	No	13	LED Screw-In Lamps: LED Screw-In Lamps	Wall Switch	20	3,023	0.98	5,185	0.0	$807.07	$698.79	$65.00	0.79
Hallway	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,116	0.44	2,319	0.0	$360.97	$1,476.00	$160.00	3.65
Exit	4	Exit Signs: Incandescent	None	25	8,760	Fixture Replacement	No	4	LED Exit Signs: 2 W Lamp	None	6	8,760	0.05	766	0.0	$119.17	$430.22	$0.00	3.61
Restroom x 2	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.02	115	0.0	$17.85	$58.50	$10.00	2.72
Custodian	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.02	115	0.0	$17.85	$58.50	$10.00	2.72
Hallway	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,116	0.22	1,160	0.0	$180.48	$1,008.00	$80.00	5.14
Restroom x 2	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.04	195	0.0	$30.30	$95.13	$20.00	2.48
Restroom x 2	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.02	115	0.0	$17.85	$58.50	$10.00	2.72
Attendent booth	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.04	195	0.0	$30.30	$95.13	$20.00	2.48
Custodian	1	Compact Fluorescent: 13 W	Wall Switch	13	3,023	Relamp	No	1	LED Screw-In Lamps: LED screw-in	Wall Switch	9	3,023	0.00	14	0.0	$2.11	$53.75	$0.00	25.48
A149	20	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	20	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.96	5,103	0.0	$794.22	$2,442.67	$470.00	2.48
Store	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	300	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	300	0.04	19	0.0	$3.01	$95.13	$20.00	24.98

	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
Store film	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	300	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	300	0.02	11	0.0	$1.77	$58.50	$10.00	27.37
A145	16	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	16	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.77	4,082	0.0	$635.38	$2,062.13	$390.00	2.63
A143	24	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	24	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	1.15	6,123	0.0	$953.06	$3,093.20	$585.00	2.63
Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	2	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.07	389	0.0	$60.59	$190.27	$40.00	2.48
Office	8	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	3,023	Relamp	No	8	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	3,023	0.09	487	0.0	$75.74	$287.20	$40.00	3.26
Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	3,023	Relamp	No	4	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	3,023	0.05	243	0.0	$37.87	$143.60	$20.00	3.26
Office	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Hallway	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	Yes	7	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,116	0.19	1,015	0.0	$157.92	$949.50	$70.00	5.57
Hallway	1	Exit Signs: Incandescent	None	25	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	191	0.0	$29.79	$107.56	$0.00	3.61
A142 band	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.58	3,062	0.0	$476.53	$1,681.60	$310.00	2.88
A142 band	4	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	3,023	Relamp	No	4	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	3,023	0.05	243	0.0	$37.87	$143.60	$20.00	3.26
A142 band	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	3	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.11	584	0.0	$90.89	$285.40	$60.00	2.48
A208 office	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	2	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.07	389	0.0	$60.59	$190.27	$40.00	2.48
A208 office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.04	229	0.0	$35.71	$117.00	$20.00	2.72
A208 office	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	2	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.07	389	0.0	$60.59	$190.27	$40.00	2.48
A208 office	16	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	16	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.77	4,082	0.0	$635.38	$2,062.13	$390.00	2.63
Exterior Wallpacks	16	Metal Halide: (1) 70W Lamp	Daylight Dimming	95	4,380	Fixture Replacement	No	16	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Daylight Dimming	24	4,380	0.75	5,742	0.0	$893.77	$6,250.83	$1,600.00	5.20
Exterior Shoebox (1L)	17	Metal Halide: (1) 175W Lamp	Daylight Dimming	215	4,380	Fixture Replacement	No	17	LED - Fixtures: Outdoor Pole/Arm-Mounted Decorative Fixture	Daylight Dimming	54	4,380	1.80	13,808	0.0	$2,149.17	$5,885.15	$850.00	2.34
Exterior Shoebox (2L-1)	3	Metal Halide: (1) 175W Lamp	Daylight Dimming	215	4,380	Fixture Replacement	No	3	LED - Fixtures: Outdoor Pole/Arm-Mounted Decorative Fixture	Daylight Dimming	54	4,380	0.32	2,437	0.0	$379.27	$1,038.56	$150.00	2.34
Exterior Shoebox (2L-2)	3	Metal Halide: (1) 175W Lamp	Daylight Dimming	215	4,380	Fixture Replacement	No	3	LED - Fixtures: Outdoor Pole/Arm-Mounted Decorative Fixture	Daylight Dimming	54	4,380	0.32	2,437	0.0	$379.27	$1,038.56	$150.00	2.34
Wall mounted	5	Metal Halide: (1) 100W Lamp	Daylight Dimming	128	4,380	Fixture Replacement	No	5	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Daylight Dimming	32	4,380	0.31	2,418	0.0	$376.33	$1,953.39	$500.00	3.86

Motor Inventory & Recommendations

		Existing Conditions						Proposed Conditions				Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	Motor Quantity	Motor Application	HP Per Motor	Full Load Efficiency	VFD Control?	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
Boiler Room	Boiler	2	Combustion Air Fan	5.0	89.5%	No	1,289	No	89.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Boiler Room	Bldg	1	Air Compressor	1.0	85.5%	No	1,460	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	AC-1 (Rm C111)	1	Supply Fan	0.2	85.5%	No	2,745	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	AC-2 (Rm C111)	1	Supply Fan	0.2	85.5%	No	2,745	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	AC-2 (Rm C111)	1	Supply Fan	0.2	85.5%	No	2,745	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	AC-2 (Rm C112)	1	Supply Fan	0.2	85.5%	No	2,745	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	AC-1 (Rm C113)	1	Supply Fan	0.2	85.5%	No	2,745	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	AC-1 (Rm C103)	1	Supply Fan	0.2	85.5%	No	2,745	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	unknown	1	Supply Fan	0.2	85.5%	No	2,745	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Condenser Unit 24	1	Supply Fan	0.2	85.5%	No	2,745	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	AC-2 (Rm C103)	1	Supply Fan	0.2	85.5%	No	2,745	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	AC-2 (Rm C103)	1	Supply Fan	0.2	85.5%	No	2,745	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	AC-1 (Rm C104)	1	Supply Fan	0.2	85.5%	No	2,745	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	C105	1	Supply Fan	0.2	85.5%	No	2,745	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	AC-2 (Rm C105)	1	Supply Fan	0.2	85.5%	No	2,745	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	AC-1 (Rm C106)	1	Supply Fan	0.2	85.5%	No	2,745	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	General Office (by Auditorium)	1	Supply Fan	0.2	85.5%	No	2,745	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Nurses Office by Auditorium	1	Supply Fan	0.2	85.5%	No	2,745	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof above SW B-Wing	SW B-Wing Classrooms	9	Supply Fan	0.2	85.5%	No	2,745	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof above SE B-Wing	SE B-Wing Classrooms	23	Supply Fan	0.2	85.5%	No	2,745	No	85.5%	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
Roof above Library	Library	1	Supply Fan	10.0	91.7%	No	3,391	No	91.7%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof above Library	Library	1	Exhaust Fan	2.0	86.5%	No	2,745	No	86.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Gym Ceiling	Gym	2	Ventilation Fan	7.5	91.7%	No	3,391	No	91.7%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
New Wing - MechRoom	P-1	1	Chilled Water Pump	3.0	89.5%	No	1,360	No	89.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
New Wing - MechRoom	P-2	1	Heating Hot Water Pump	1.0	85.5%	No	1,289	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
New Wing - MechRoom	P-3	1	Heating Hot Water Pump	1.0	85.5%	No	1,289	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
New Wing - MechRoom	P-4	1	Heating Hot Water Pump	0.3	85.5%	No	1,289	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
New Wing - MechRoom	Weil McLain Boiler	1	Combustion Air Fan	0.3	85.5%	No	1,289	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Various	Various areas	21	Exhaust Fan	0.5	85.5%	No	2,745	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	Kitchen	1	Kitchen Hood Exhaust Fan	0.8	85.5%	No	4,000	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Gym Boiler Room	Gym HV Units	1	Combustion Air Fan	0.3	85.5%	No	1,289	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Gym Boiler Room	Gym HV Units	1	Heating Hot Water Pump	0.5	85.5%	No	1,289	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Audtorium (2nd Flr Storage)	Auditorium	2	Supply Fan	7.5	84.0%	No	3,391	Yes	91.0%	No		0.53	2,432	0.0	$378.60	$2,262.88	$0.00	5.98
Roof of New Wing	AHU1	1	Supply Fan	20.0	93.0%	No	3,391	Yes	93.0%	Yes	1	5.03	18,089	0.0	$2,815.50	$8,582.03	$1,300.00	2.59
Boiler Room	Bldg Space HHW	2	Heating Hot Water Pump	20.0	93.0%	No	1,289	No	93.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof of New Wing	AHU1	1	Return Fan	5.0	93.0%	No	2,745	Yes	89.5%	Yes	1	0.56	1,651	0.0	$256.93	$4,076.22	$775.00	12.85

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	AC-1 (Rm C111)	1	Split-System AC	4.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	AC-2 (Rm C111)	1	Split-System AC	4.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	AC-2 (Rm C111)	1	Split-System AC	3.50		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	AC-2 (Rm C112)	1	Split-System AC	2.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	AC-1 (Rm C113)	1	Split-System AC	4.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	AC-1 (Rm C103)	1	Split-System AC	4.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	unknown	1	Split-System AC	0.75		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Condenser Unit 24	1	Split-System AC	3.50		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	AC-2 (Rm C103)	1	Split-System AC	4.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	AC-2 (Rm C103)	1	Split-System AC	3.50		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	AC-1 (Rm C104)	1	Split-System AC	4.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	C105	1	Split-System AC	2.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	AC-2 (Rm C105)	1	Split-System AC	4.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	AC-1 (Rm C106)	1	Split-System AC	4.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	General Office (by Auditorium)	1	Split-System AC	5.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Nurses Office by Auditorium	1	Split-System AC	5.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof above SW B-Wing	SW B-Wing Classrooms	9	Split-System AC	3.50		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof above SE B-Wing	SE B-Wing Classrooms	23	Split-System AC	3.50		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof above Library	Library	1	Packaged AC	30.00		Yes	1	Packaged AC	30.00		9.50		No	1.41	1,895	0.0	$294.92	$66,479.15	$0.00	225.42
Side of Bldg	unknown	1	Split-System AC	2.67		No							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	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
unknown	unknown	1	Window AC	0.50		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
back of building near wood shop	unknown	5	Split-System AC	3.00		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
SW side of auditorium	Auditorium AHUs	1	Air-Cooled Reciprocating Chiller	75.00	Yes	1	Air-Cooled Screw Chiller	Variable	75.00	1.24	0.74	37.97	56,669	0.0	$8,820.52	$73,854.40	$6,750.00	7.61
NE side of New Wing	Coils for AHU on New Wing	1	Air-Cooled Reciprocating Chiller	40.00	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	Bldg	2	Non-Condensing Hot Water Boiler	6,522.00	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
New Wing Mechanical Room	New Wing	1	Non-Condensing Hot Water Boiler	453.00	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Gym Boiler Room	Gym HV Units	1	Non-Condensing Hot Water Boiler	634.00	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Boiler Room	Domestic Hot Water	4	Non-Condensing Hot Water Boiler	167.00	Yes	4	Condensing Hot Water Boiler	167.00	93.00%	AFUE	0.00	0	73.3	$681.10	$26,145.52	$4,000.00	32.51

Demand Control Ventilation Recommendations

		Recommendation Inputs				Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Affected	Number of Zones	Cooling Capacity of Controlled System (Tons)	Electric Heating Capacity of Controlled System (kBtu/hr)	Output Heating Capacity of Controlled System (MBh)	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Auditorium	Auditorium AHUs	2	75.00		300.00	0.00	2,143	16.5	$486.63	$2,718.84	$0.00	5.59

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 Rm	Bldg	4	Storage Tank Water Heater (≤ 50 Gal)	Yes	4	Storage Tank Water Heater (≤ 50 Gal)	Natural Gas	80.00%	0	0.00	0	0.0	$0.00	$44,141.44	$200.00	0.00

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	1	Low Temp Freezer (-35F to -5F)	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	2	Refrigerator Chest	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	1	Stand-Up Freezer, Solid Door (31 - 50 cu. ft.)	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
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	1	Ice Making Head (≥450 lbs/day), Batch	Yes	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	2	Gas Combination Oven/Steam Cooker (<15 Pans)	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	2	Insulated Food Holding Cabinet (3/4 Size)	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	1	Gas Rack Oven (Double)	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	2	Gas Combination Oven/Steam Cooker (<15 Pans)	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?
Various	303	Desktop Computer	270.0	
Various	19	TV/Monitor (32")	200.0	
Various	21	Small Printer	60.0	
Various	16	Medium Printer	120.0	
Various	6	Large Printer	180.0	
Various	33	Projectors	400.0	
Various	12	Microwaves	1,500.0	
Various	3	Sm.Refrigerators	200.0	
Various	10	Lg.Refrigerators	700.0	
Various	3	Toaster Oven	1,500.0	
Various	7	Ceiling Fans	100.0	
Art	1	Kiln	10,000.0	
Art	1	Kiln	10,000.0	

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
VendingArea	5	Refrigerated	Yes	0.00	8,059	0.0	$1,254.42	$1,000.00	$0.00	0.80

Appendix B: EPA Statement of Energy Performance

ENERGY STAR® Statement of Energy Performance

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ENERGY STAR® Score[1]

Buena Regional High School

Primary Property Type: K-12 School
Gross Floor Area (ft²): 166,090
Built: 1973

For Year Ending: April 30, 2017
Date Generated: June 11, 2018

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
Buena Regional High School 125 Weymouth Road Buena, New Jersey 08650	Buena Regional School District 914 Main Avenue Richland, NJ 08350 (856) 697-0800	Joe Biluck, Jr. 914 Main Avenue Richland, NJ 08350 (856) 697-0800 jbiluck@buena.k12.nj.us

Property ID: 6358232

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
72.8 kBtu/ft²

Source EUI
130.2 kBtu/ft²

Annual Energy by Fuel	
Natural Gas (kBtu)	7,818,825 (65%)
Electric - Grid (kBtu)	4,272,202 (35%)

National Median Comparison	
National Median Site EUI (kBtu/ft²)	77.8
National Median Source EUI (kBtu/ft²)	139.1
% Diff from National Median Source EUI	-6%
Annual Emissions	
Greenhouse Gas Emissions (Metric Tons CO2e/year)	889

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)