Local Government Energy Audit:
Energy Audit Report

Warren E. Sooy Elementary School

601 North 4th Street
Hammonton, New Jersey 08037
Hammonton Board of Education

December 17, 2018

Final Report by:

TRC Energy Services

Disclaimer

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

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

Estimated installation costs are based on TRC's experience at similar facilities, pricing from local contractors and vendors, and/or cost estimates from *RS Means*. The owner of the facility is encouraged to independently confirm these cost estimates and to obtain multiple estimates when considering measure installations. Since actual installed costs can vary widely for certain measures and conditions, TRC and NJBPU do not guarantee installed cost estimates and shall in no event be held liable should actual installed costs vary from estimates.

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

Table of Contents

Table of Figures

1 EXECUTIVE SUMMARY

The New Jersey Board of Public Utilities (NJBPU) has sponsored this Local Government Energy Audit (LGEA) Report for Warren E. Sooy Elementary 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 (TRC), as part of a comprehensive effort to assist New Jersey school districts in controlling energy costs and protecting our environment by offering a wide range of energy management options and advice.

1.1 Facility Summary

Warren E. Sooy Elementary School is a two story, 97,240 square foot facility comprised of various spaces such as classrooms, restrooms, offices, cafeteria, kitchen, gymnasium, hallways and a mechanical space. During the weekdays, the school is occupied from 7:00 AM to 6:00 PM and remains closed during the weekends. Space heating and cooling are provided using water source heat pumps supported by two flat plate heat exchangers, boilers and a cooling tower. Each of the heat exchangers serve the heating and the cooling side respectively. Lighting at the facility mostly consists of linear T8 fixtures that are evaluated for replacement.

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

1.2 Your Cost Reduction Opportunities

Energy Conservation Measures

TRC evaluated eight measures and recommended seven of them which together represent an opportunity for Warren E. Sooy Elementary School to reduce annual energy costs by roughly $32,120 and annual greenhouse gas emissions by 220,083 lbs CO_2e. We estimate that if all measures were implemented as recommended, the project would pay for itself in 3.8 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 Warren E. Sooy Elementary School's annual energy use by 15%.

Figure 1 – Previous 12 Month Utility Costs

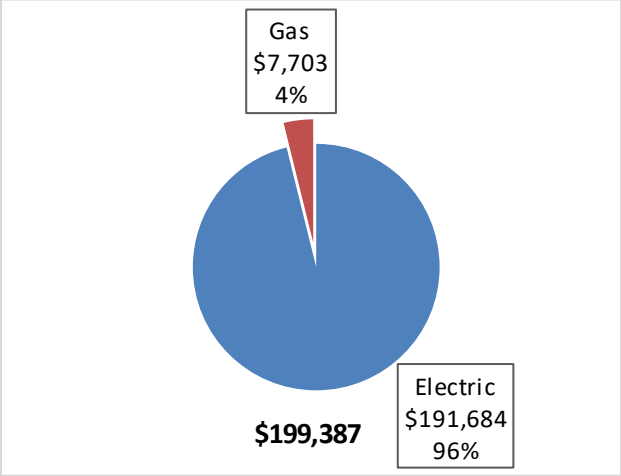
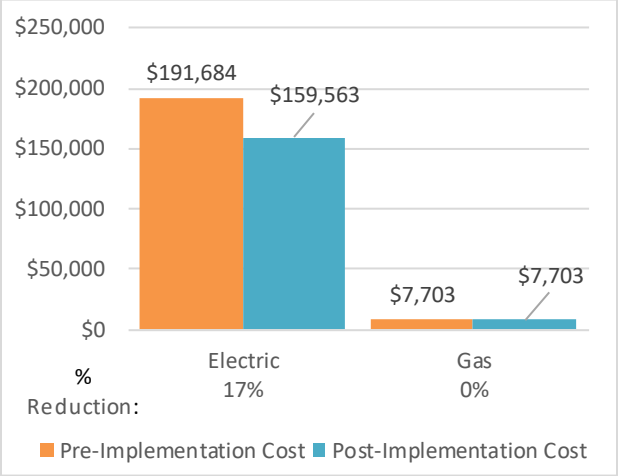


Figure 2 – Potential Post-Implementation Costs



A detailed description of Warren E. Sooy Elementary School's existing energy use can be found in Section 3.

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

Figure 3 – Summary of Energy Reduction Opportunities

Energy Conservation Measure		Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades			**148,751**	**37.2**	**0.0**	**$21,861.44**	**$94,805.45**	**$19,990.00**	**$74,815.45**	**3.4**	**149,791**
ECM 1	Install LED Fixtures	Yes	10,578	1.4	0.0	$1,554.57	$31,876.86	$3,300.00	$28,576.86	18.4	10,652
ECM 2	Retrofit Fixtures with LED Lamps	Yes	138,173	35.9	0.0	$20,306.87	$62,928.58	$16,690.00	$46,238.58	2.3	139,139
Lighting Control Measures			**13,987**	**3.0**	**0.0**	**$2,055.58**	**$12,480.00**	**$1,205.00**	**$11,275.00**	**5.5**	**14,084**
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	10,785	2.3	0.0	$1,585.07	$8,880.00	$1,205.00	$7,675.00	4.8	10,861
ECM 4	Install High/Low Lighitng Controls	Yes	3,201	0.7	0.0	$470.51	$3,600.00	$0.00	$3,600.00	7.7	3,224
Motor Upgrades			**105**	**0.1**	**0.0**	**$15.42**	**$3,201.48**	**$0.00**	**$3,201.48**	**207.7**	**106**
	Premium Efficiency Motors	No	105	0.1	0.0	$15.42	$3,201.48	$0.00	$3,201.48	207.7	106
Variable Frequency Drive (VFD) Measures			**54,206**	**15.7**	**0.0**	**$7,966.45**	**$41,875.80**	**$4,560.00**	**$37,315.80**	**4.7**	**54,585**
ECM 5	Install VFDs on Constant Volume (CV) HVAC	Yes	46,229	13.2	0.0	$6,794.13	$28,772.40	$4,560.00	$24,212.40	3.6	46,552
ECM 6	Install VFDs on Hot Water Pumps	Yes	7,977	2.5	0.0	$1,172.32	$13,103.40	$0.00	$13,103.40	11.2	8,033
Plug Load Equipment Control - Vending Machine			**1,612**	**0.0**	**0.0**	**$236.89**	**$230.00**	**$0.00**	**$230.00**	**1.0**	**1,623**
ECM 7	Vending Machine Control	Yes	1,612	0.0	0.0	$236.89	$230.00	$0.00	$230.00	1.0	1,623
TOTALS FOR HIGH PRIORITY MEASURES			**218,555**	**56.0**	**0.0**	**$32,120.36**	**$149,391.25**	**$25,755.00**	**$123,636.25**	**3.8**	**220,083**
TOTALS FOR ALL EVALUATED MEASURES			**218,660**	**56.0**	**0.0**	**$32,135.78**	**$152,592.73**	**$25,755.00**	**$126,837.73**	**3.9**	**220,189**

* - 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 measures 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.

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

Energy Efficient Practices

TRC also identified seven 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 Warren E. Sooy Elementary School include:

- Practice Proper Use of Thermostat Schedules and Temperature Resets
- Clean Evaporator/Condenser Coils on AC Systems
- Clean and/or Replace HVAC Filters
- Perform Proper Boiler Maintenance
- Perform Proper Water Heater Maintenance
- Install Plug Load Controls
- Water Conservation

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

On-Site Generation Measures

TRC evaluated the potential for installing on-site generation for Warren E. Sooy Elementary 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	156	kW DC STC
Electric Generation	185,854	kWh/yr
Displaced Cost	$16,170	/yr
Installed Cost	$405,600	

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
- SREC (Solar Renewable Energy Certificate) Registration Program (SRP)
- Energy Savings Improvement Program (ESIP)

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

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			
Barbara Prettyman	Business Administrator	bprettyman@hammontonps.org	609-567-7053
TRC Energy Services			
Alex Klieverik	Auditor	Aklieverik@trcsolutions.com	(732) 855-0033

2.2 General Site Information

On June 20, 2018, TRC performed an energy audit at Warren E. Sooy Elementary School located in Hammonton, New Jersey. TRC's team met with Dave Campanella to review the facility operations and help focus our investigation on specific energy-using systems.

Warren E. Sooy Elementary School is a two story 97,240 square foot facility comprised of various spaces such as classrooms, restrooms, offices, cafeteria, kitchen, gymnasium, hallways and a mechanical space. During the weekdays the school is occupied from 7:00 AM to 6:00 PM and remains closed during the weekends. The building was constructed in 1973. Space heating and cooling in the building are provided using water source heat pumps supported by two flat plate heat exchangers, boilers and a cooling tower. Each of the heat exchangers serve the heating and the cooling side respectively. Lighting at the facility mostly consists of linear T8 fixtures that are evaluated for replacement.

2.3 Building Occupancy

The typical schedule is presented in the table below. During a typical day, the facility is occupied by approximately 113 staff and 974 students.

Figure 6 - Building Schedule

Building Occupancy Schedule		
Building Name	**Weekday/Weekend**	**Operating Schedule**
Warren E Sooy Elementary School	Weekday	8AM - 6PM
Warren E Sooy Elementary School	Weekend	No Operation

2.4 Building Envelope

The building is constructed of concrete clock and structural steel with a brick façade. The building has a flat roof covered with TPO membrane. The roof is in good condition. The building has double pane windows which are in good condition and show little sign of excessive infiltration. The exterior doors are constructed of aluminum framed glass and in good condition.

Image 1 Building Envelope

2.5 On-Site Generation

Warren E. Sooy Elementary School does not have any on-site electric generation capacity.

2.6 Energy-Using Systems

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

Lighting System

Lighting at the facility is provided mostly by 32-Watt linear fluorescent T8 lamps with electronic ballasts. Most of the fixtures have between 1 and 4-lamps, using either 4-foot linear or 2-foot U-bend lamp types. Most fixtures are either ceiling mounted or recessed troffers.

Lighting control in most spaces is provided by occupancy sensors and wall switches. The occupancy sensors are either wall or ceiling mounted depending on the space layout.

The building's exterior lighting consists of 50-Watt and 70-Watt metal halide fixtures, wall-mounted LED fixtures and 70-Watt high pressure sodium fixtures. There were also recessed fixtures with 7-Watt LED-screw-in lamps. The exterior lights are controlled using time clocks.

The exit lights in the facility are 2-Watt LED fixtures operating round the year.

Image 2 Lighting Systems

Heating and Cooling System

The heating and cooling in the facility is provided by water source heat pumps with two flat plate heat exchangers, air handlers, boilers and a cooling tower. The hot water system consists of two condensing AERCO hot water boilers with an output capacity of 2790 MBh and an efficiency of 93%. The hot water is circulated by four 5 hp constant speed pumps to roof mounted Greencheck air handlers and Trane water source heat pump located in classrooms and hallways. The cooling system consists of a McQuay air-cooled constant speed scroll chiller with a cooling capacity of 90 tons. The chilled water is circulated to the air handlers on the roof using two 7.5 hp variable speed pumps. The heat pump units in the classrooms have a cooling capacity of 2.5 tons and the hallway units are 1.5 tons.

There are two flat plate heat exchangers (HX1 and HX2). HX1 serves the cooling side and HX2 serves the heating side. In the HX1 system, the loop heating setpoint is 70°F and the loop cooling setpoint is 75°F. In the HX2 system, the loop water supply temperature is 81.8°F and loop water return temperature 85.2°F.

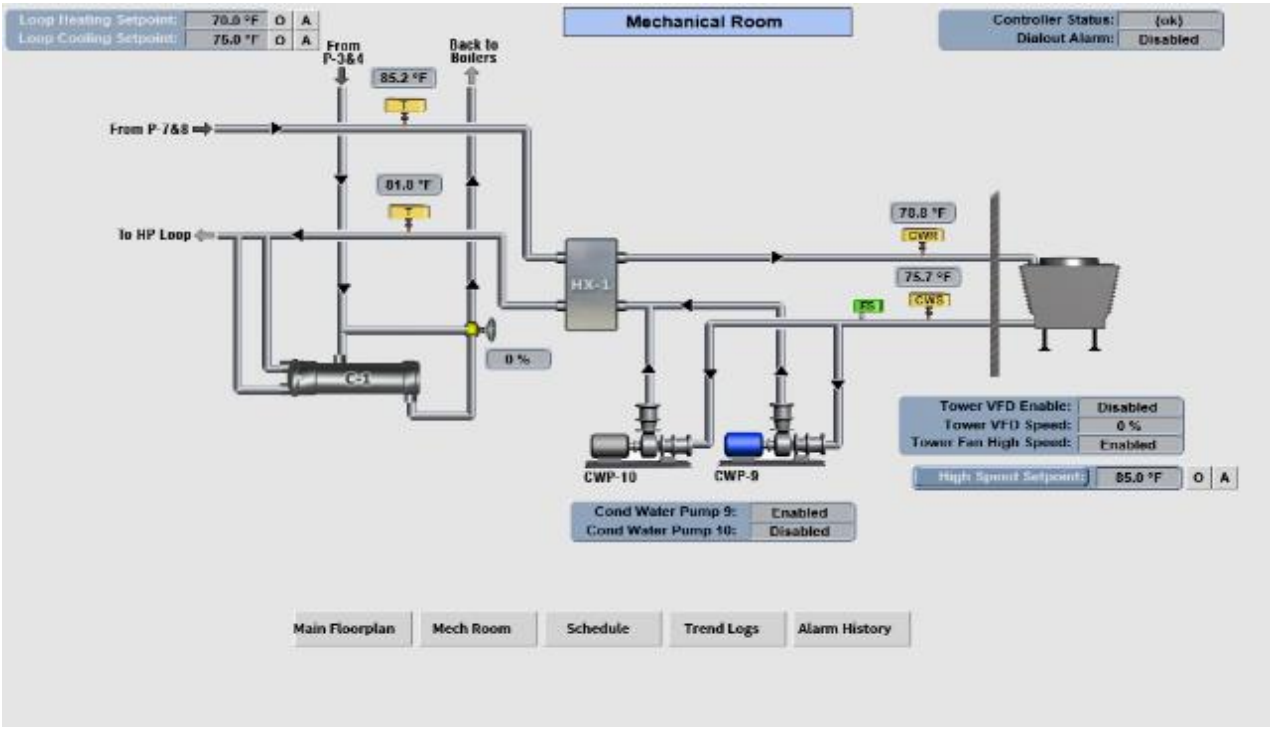
The space and the loop temperatures are controlled using Aerco BMS II boiler controller. Individual classrooms and offices also have thermostats to provide occupants with a small measure of local temperature control. The unoccupied heating setpoint is 72°F and unoccupied cooling setpoint is 80°F.

The boilers and the chiller were installed in 2009; they are well maintained and in good condition.






Image 3 Heating and Cooling Systems



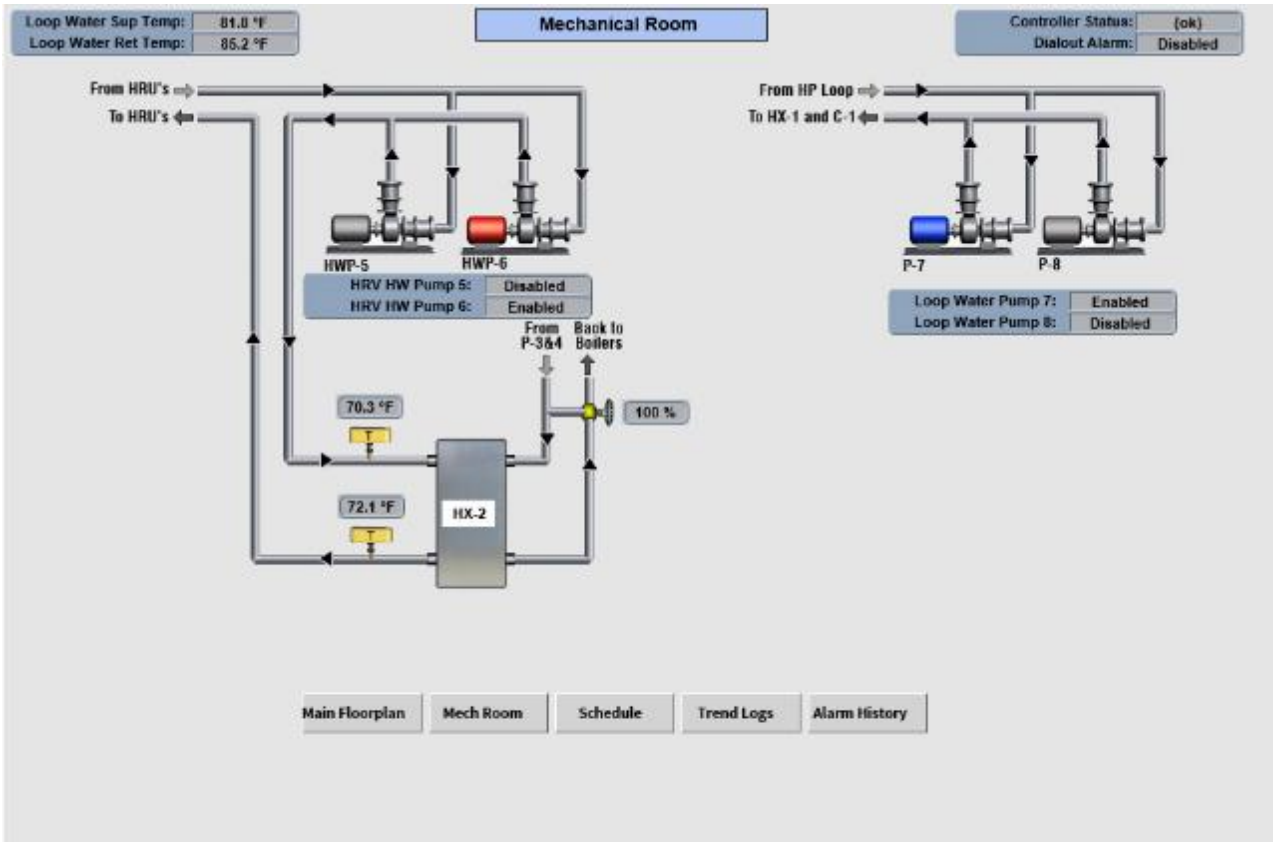


Image 4 Control System

Domestic Hot Water Heating System

The domestic hot water heating system for the facility consists of one gas-fired water heater system with an input capacity of 1000 MBh and a system efficiency of 93%. The water heater has a 23-gallon storage capacity. Hot water from the system is circulated to the restrooms and kitchen using fractional horse power pumps. The unit was installed in 2009 and is in good condition and well maintained.

Image 5 Domestic Hot Water Heating System

2.7 Water-Using Systems

The restrooms faucets are rated for 2.2 gallons per minute (gpm) or lower, the toilets are rated at 1.6 gallons per flush (gpf) and the urinals are rated at 1 gpf.

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 several 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

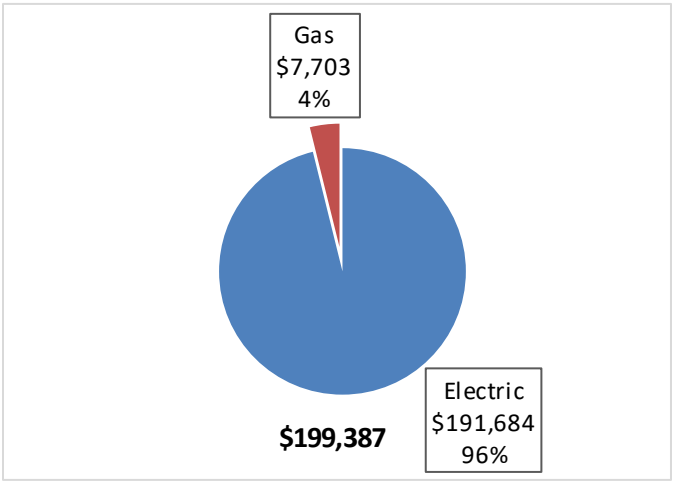
The following energy consumption and cost data is based on the last 12-month period of utility billing data that was provided for each utility. A profile of the annual energy consumption and energy cost of the facility was developed from this information.

Figure 7 - Utility Summary

Utility Summary for Warren E. Sooy Elementary School		
Fuel	**Usage**	**Cost**
Electricity	1,304,267 kWh	$191,684
Natural Gas	6,299 Therms	$7,703
Total		**$199,387**

The current annual energy cost for this facility is $199,387 as shown in the chart below.

Figure 8 - Energy Cost Breakdown



3.2 Electricity Usage

Electricity is provided by Atlantic City Electric. The average electric cost over the past 12 months was $0.147/kWh, which is the blended rate that includes energy supply, distribution, and other charges. This rate is used throughout the analyses in this report to assess energy costs and savings. The third party electric supply in the school is provided by Constellation Energy. The monthly electricity consumption and peak demand are shown in the chart below.

Figure 9 - Electric Usage & Demand

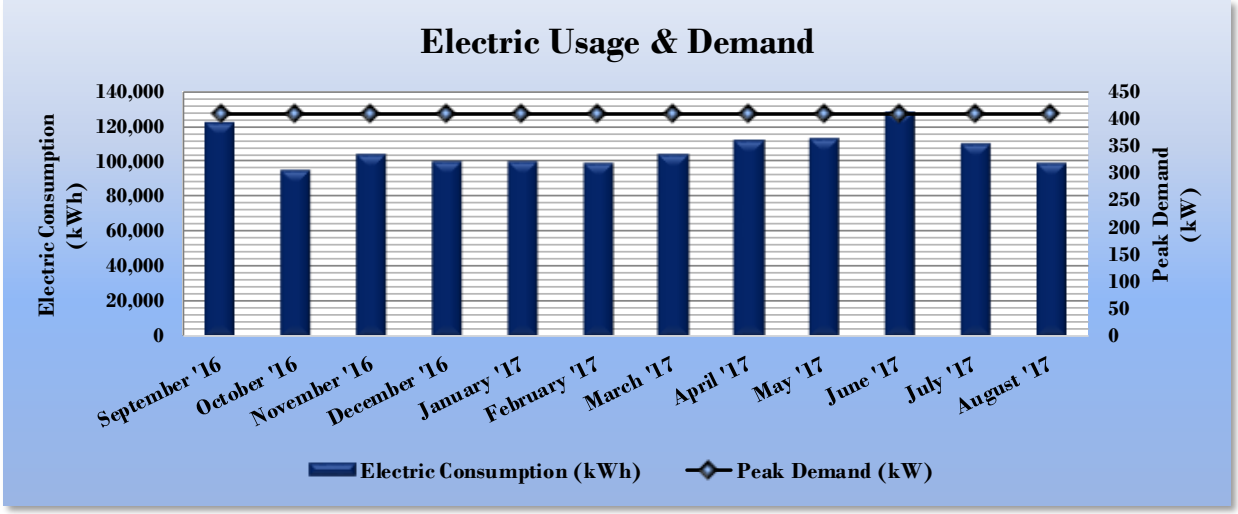


Figure 10 - Electric Usage & Demand

Electric Billing Data for Warren E. Sooy Elementary School					
Period Ending	Days in Period	Electric Usage (kWh)	Demand (kW)	Demand Cost	Total Electric Cost
9/21/16	30	122,560	408		$18,787
10/18/16	27	94,640	408		$14,497
11/18/16	31	103,840	408		$15,998
12/19/16	31	100,240	408		$15,591
1/19/17	31	99,520	408		$15,288
2/16/17	28	98,800	408		$14,984
3/19/17	31	104,160	408		$17,131
4/19/17	31	111,760	408		$16,889
5/19/17	30	113,280	408		$16,525
6/21/17	33	127,920	408		$16,525
7/19/17	28	110,400	408		$13,910
8/17/17	29	99,280	408		$12,933
Totals	**360**	**1,286,400**	**408**	**$0**	**$189,058**
Annual	**365**	**1,304,267**	**408**	**$0**	**$191,684**

3.3 Natural Gas Usage

Natural gas is provided by South Jersey Gas. The average gas cost for the past 12 months is $1.223/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 - Natural Gas Usage

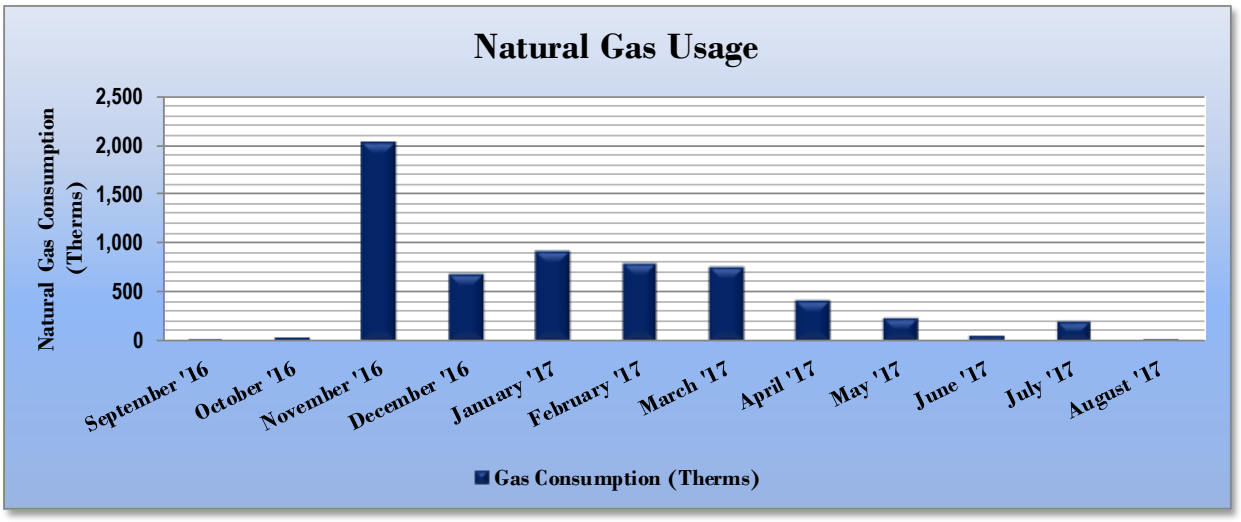


Figure 12 - Natural Gas Usage

Gas Billing Data for Warren E. Sooy Elementary School			
Period Ending	Days in Period	Natural Gas Usage (Therms)	Natural Gas Cost
9/21/16	30	21	$55
10/18/16	27	40	$66
11/18/16	31	2,043	$2,101
12/19/16	31	688	$736
1/19/17	31	923	$1,312
2/16/17	28	796	$1,131
3/19/17	31	760	$1,082
4/19/17	31	420	$458
5/19/17	30	230	$265
6/21/17	33	60	$92
7/19/17	28	206	$245
8/17/17	29	26	$56
Totals	**360**	**6,213**	**$7,598**
Annual	**365**	**6,299**	**$7,703**

3.4 Benchmarking

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

EUI is a measure of a facility's energy consumption per square foot, and it is the standard metric for comparing buildings' energy performance. Comparing the EUI of a building with the national median EUI for that building type illustrates whether that building uses more or less energy than similar buildings of its type on a square foot basis. EUI is presented in terms of "site energy" and "source energy." Site energy is the amount of fuel and electricity consumed by a building as reflected in utility bills. Source energy includes fuel consumed to generate electricity consumed at the site, factoring in electric production and distribution losses for the region.

Figure 13 - Energy Use Intensity Comparison – Existing Conditions

Energy Use Intensity Comparison - Existing Conditions		
	Warren E. Sooy Elementary School	National Median Building Type: School (K-12)
Source Energy Use Intensity (kBtu/ft^2)	150.5	141.4
Site Energy Use Intensity (kBtu/ft^2)	52.2	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		
	Warren E. Sooy Elementary School	National Median Building Type: School (K-12)
Source Energy Use Intensity (kBtu/ft^2)	126.4	141.4
Site Energy Use Intensity (kBtu/ft^2)	44.6	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 35.

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

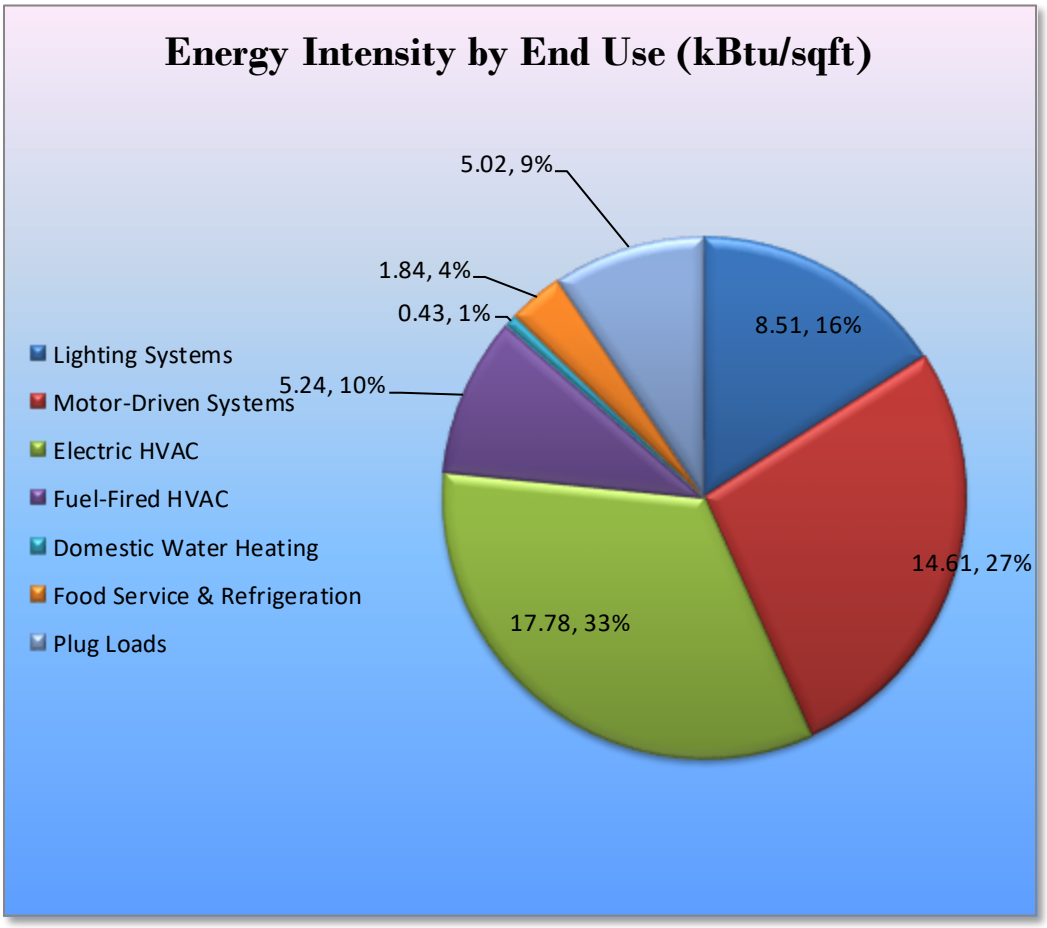
For more information on ENERGY STAR® certification go to: https://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/earn-recognition/energy-star-certification/how-app-1.

A Portfolio Manager® account has been created online for your facility and you will be provided with the login information for the account. We encourage you to update your utility information in Portfolio Manager® regularly, so that you can keep track of your building's performance. Free online training is available to help you use ENERGY STAR® Portfolio Manager® to track your building's performance at: https://www.energystar.gov/buildings/training.

3.5 Energy End-Use Breakdown

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

Figure 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 Warren E. Sooy Elementary 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		**148,751**	**37.2**	**0.0**	**$21,861.44**	**$94,805.45**	**$19,990.00**	**$74,815.45**	**3.4**	**149,791**
ECM 1	Install LED Fixtures	10,578	1.4	0.0	$1,554.57	$31,876.86	$3,300.00	$28,576.86	18.4	10,652
ECM 2	Retrofit Fixtures with LED Lamps	138,173	35.9	0.0	$20,306.87	$62,928.58	$16,690.00	$46,238.58	2.3	139,139
Lighting Control Measures		**13,987**	**3.0**	**0.0**	**$2,055.58**	**$12,480.00**	**$1,205.00**	**$11,275.00**	**5.5**	**14,084**
ECM 3	Install Occupancy Sensor Lighting Controls	10,785	2.3	0.0	$1,585.07	$8,880.00	$1,205.00	$7,675.00	4.8	10,861
ECM 4	Install High/Low Lighitng Controls	3,201	0.7	0.0	$470.51	$3,600.00	$0.00	$3,600.00	7.7	3,224
Variable Frequency Drive (VFD) Measures		**54,206**	**15.7**	**0.0**	**$7,966.45**	**$41,875.80**	**$4,560.00**	**$37,315.80**	**4.7**	**54,585**
ECM 5	Install VFDs on Constant Volume (CV) HVAC	46,229	13.2	0.0	$6,794.13	$28,772.40	$4,560.00	$24,212.40	3.6	46,552
ECM 6	Install VFDs on Hot Water Pumps	7,977	2.5	0.0	$1,172.32	$13,103.40	$0.00	$13,103.40	11.2	8,033
Plug Load Equipment Control - Vending Machine		**1,612**	**0.0**	**0.0**	**$236.89**	**$230.00**	**$0.00**	**$230.00**	**1.0**	**1,623**
ECM 7	Vending Machine Control	1,612	0.0	0.0	$236.89	$230.00	$0.00	$230.00	1.0	1,623
TOTALS		**218,555**	**56.0**	**0.0**	**$32,120.36**	**$149,391.25**	**$25,755.00**	**$123,636.25**	**3.8**	**220,083**

* - 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

Our recommendations for 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		**148,751**	**37.2**	**0.0**	**$21,861.44**	**$94,805.45**	**$19,990.00**	**$74,815.45**	**3.4**	**149,791**
ECM 1	Install LED Fixtures	10,578	1.4	0.0	$1,554.57	$31,876.86	$3,300.00	$28,576.86	18.4	10,652
ECM 2	Retrofit Fixtures with LED Lamps	138,173	35.9	0.0	$20,306.87	$62,928.58	$16,690.00	$46,238.58	2.3	139,139

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

ECM 1: Install LED Fixtures

Summary of Measure Economics

Interior/ Exterior	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Interior	0	0.0	0.0	$0.00	$0.00	$0.00	$0.00	0.0	0
Exterior	10,578	1.4	0.0	$1,554.57	$31,876.86	$3,300.00	$28,576.86	18.4	10,652

Measure Description

We recommend replacing existing exterior fixtures containing HID lamps (metal halide and high-pressure sodium fixtures) 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 the HID sources which are recommended for replacement.

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	138,173	35.9	0.0	$20,306.87	$62,928.58	$16,690.00	$46,238.58	2.3	139,139
Exterior	0	0.0	0.0	$0.00	$0.00	$0.00	$0.00	0.0	0

Measure Description

We recommend retrofitting existing linear T8 tubes 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.

4.1.2 Lighting Control Measures

Our recommendations for lighting control measures are summarized in Figure 18 below.

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		**13,987**	**3.0**	**0.0**	**$2,055.58**	**$12,480.00**	**$1,205.00**	**$11,275.00**	**5.5**	**14,084**
ECM 3	Install Occupancy Sensor Lighting Controls	10,785	2.3	0.0	$1,585.07	$8,880.00	$1,205.00	$7,675.00	4.8	10,861
ECM 4	Install High/Low Lighitng Controls	3,201	0.7	0.0	$470.51	$3,600.00	$0.00	$3,600.00	7.7	3,224

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

ECM 3: Install Occupancy Sensor Lighting Controls

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
10,785	2.3	0.0	$1,585.07	$8,880.00	$1,205.00	$7,675.00	4.8	10,861

Measure Description

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

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

ECM 4: Install High/Low Lighting Controls

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
3,201	0.7	0.0	$470.51	$3,600.00	$0.00	$3,600.00	7.7	3,224

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 stairwells, interior corridors, parking lots, and parking garages. At this site, we have recommended high/low controls for many hallway areas.

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

Additional savings from reduced lighting maintenance may also result from this measure, due to reduced lamp operation.

4.1.3 Variable Frequency Drive Measures

Our recommendations for variable frequency drive (VFD) measures are summarized in Figure 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		**54,206**	**15.7**	**0.0**	**$7,966.45**	**$41,875.80**	**$4,560.00**	**$37,315.80**	**4.7**	**54,585**
ECM 5	Install VFDs on Constant Volume (CV) HVAC	46,229	13.2	0.0	$6,794.13	$28,772.40	$4,560.00	$24,212.40	3.6	46,552
ECM 6	Install VFDs on Hot Water Pumps	7,977	2.5	0.0	$1,172.32	$13,103.40	$0.00	$13,103.40	11.2	8,033

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

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
46,229	13.2	0.0	$6,794.13	$28,772.40	$4,560.00	$24,212.40	3.6	46,552

Measure Description

We recommend installing variable frequency drives (VFDs) to control supply fan motor speeds in the supply fans serving the 200 wing, 400/500 wing, 300/600 wing, and cafeteria/hallway areas to convert constant-volume, single-zone air handling systems into variable-air-volume (VAV) systems. A separate VFD is usually required to control the return fan motor or dedicated exhaust fan motor, if the air handler has one. Zone thermostats will cause the VFD to modulate fan speed to maintain the appropriate temperature in the zone, while maintaining a constant supply air temperature. Energy savings results from reducing fan speed (and power) when there is a reduced load required for the zone. The magnitude of energy savings is based on the estimated amount of time that fan motors operate at partial load.

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

ECM 6: Install VFDs on Hot Water Pumps

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
7,977	2.5	0.0	$1,172.32	$13,103.40	$0.00	$13,103.40	11.2	8,033

Measure Description

We recommend installing variable frequency drives (VFD) to control the four 5 hp hot water pumps. This measure requires that most of the hot water coils be served by 2-way valves and that a differential pressure sensor is installed in the hot water loop. As the hot water valves close, the differential pressure increases. The VFD modulates pump speed to maintain a differential pressure setpoint. Energy savings results from reducing pump motor speed (and power) as hot water valves close. The magnitude of energy savings is based on the estimated amount of time that the system will operate at reduced load.

4.1.4 Plug Load Equipment Control - Vending Machines

Our recommendations for plug load equipment control measures are summarized in Figure 20 below.

Figure 20 - Summary of Plug Load Equipment Control ECMs

Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	*Annual Natural Gas Savings (MMBtu)*	*Annual N/A Savings (MMBtu)*	*Annual N/A 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)
Plug Load Equipment Control - Vending Machine	**1,612**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**$236.89**	**$230.00**	**$0.00**	**$230.00**	**1.0**	**1,623**
ECM 7 Vending Machine Control	1,612	0.0	0.0	0.0	0.0	0.0	$236.89	$230.00	$0.00	$230.00	1.0	1,623

ECM 7: 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)
1,612	0.0	0.0	$236.89	$230.00	$0.00	$230.00	1.0	1,623

Measure Description

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

4.2 ECM Evaluated But Not Recommended

The measure below has been evaluated by the auditor but are not recommended for implementation at the facility. Reasons for exclusion can be found in the 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)
Motor Upgrades	**105**	**0.1**	**0.0**	**$15.42**	**$3,201.48**	**$0.00**	**$3,201.48**	**207.7**	**106**
Premium Efficiency Motors	105	0.1	0.0	$15.42	$3,201.48	$0.00	$3,201.48	207.7	106
TOTALS	**105**	**0.1**	**0.0**	**$15.42**	**$3,201.48**	**$0.00**	**$3,201.48**	**207.7**	**106**

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

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

Premium Efficiency Motors

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
105	0.1	0.0	$15.42	$3,201.48	$0.00	$3,201.48	207.7	106

Measure Description

This measure is not recommended based on energy savings. If ECM 5 or ECM 6 are implemented (VFD projects), part of the design scope will be to determine whether existing motors are inverter ready and thus capable of functioning properly at variable speed.

Our evaluation assumes that the four existing pump motors will be replaced with motors of equivalent size and type. Although occasionally additional savings can be achieved by downsizing motors to better meet the motor's current load requirements. The base case motor efficiencies are estimated from nameplate information and our best estimates of motor run hours. Efficiencies of proposed motor upgrades are obtained from the *New Jersey's Clean Energy Program Protocols to Measure Resource Savings (2016)*. Savings are based on the difference between baseline and proposed efficiencies and the assumed annual operating hours.

Reasons for not Recommending

This is not a cost-efficient measure based on energy savings as the pay-back period is higher than the useful life of the replacement equipment.

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.

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.

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.

Plug Load Controls

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

Water Conservation

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

Installing dual flush or low-flow toilets and low-flow or waterless urinals are additional ways to reduce the sites water use, however, these devices do not provide energy savings at the site level. Any reduction in water use does however ultimately reduce grid level electricity use since a significant amount of electricity is used to deliver water from reservoirs to end users. The EPA WaterSense™ ratings for urinals is 0.5 gpf and toilets that use as little as 1.28 gpf (this is lower than the current 1.6 gpf federal standard).

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.

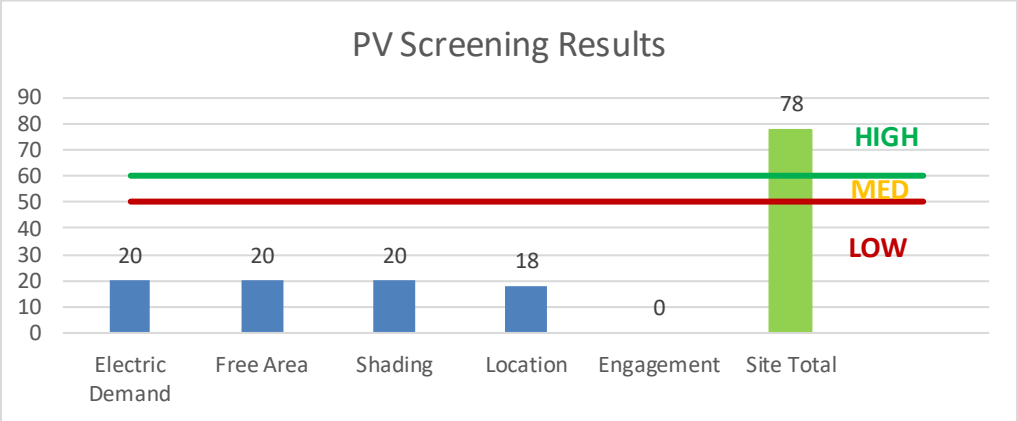
6.1 Photovoltaic

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 main building/ground next to the building/over the main parking lot may be feasible. If Warren E. Sooy Elementary School is interested in pursuing the installation of PV, we recommended a full feasibility study be conducted.

Figure 22 - Photovoltaic Screening



Potential	High	
System Potential	156	kW DC STC
Electric Generation	185,854	kWh/yr
Displaced Cost	$16,170	/yr
Installed Cost	$405,600	

Solar projects must register their projects in the SREC (Solar Renewable Energy Certificate) Registration Program (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 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.

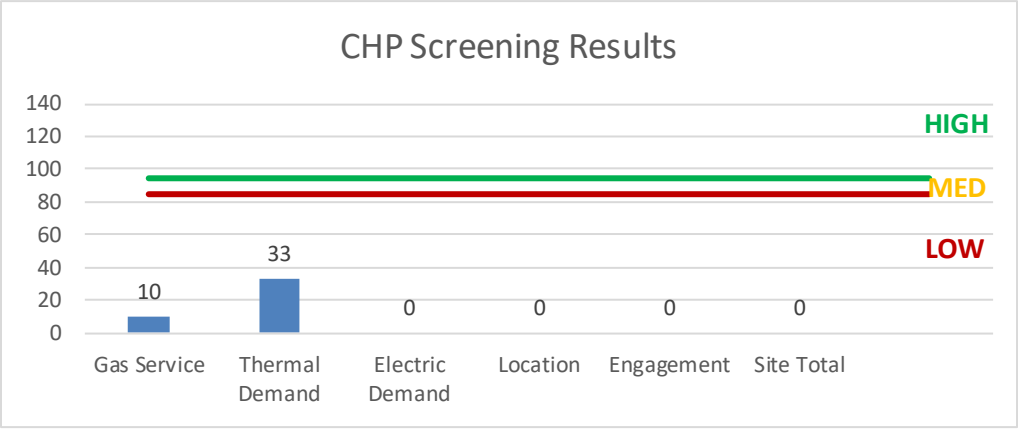
CHP systems are typically used to produce a portion of the electric power used onsite by a facility, with the balance of electric power needs supplied by grid purchases. The heat is used to supplement (or supplant) existing boilers for the purpose of space heating and/or domestic hot water heating. Waste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

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 (http://www.pjm.com/training/training%20material.aspx), along with a variety of other DR program information.

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

In our opinion, DR is not a viable option for this facility.

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 Occupancy Sensor Lighting Controls	x					
ECM 4	Install High/Low Lighitng Controls						
ECM 5	Install VFDs on Constant Volume (CV) HVAC						
ECM 6	Install VFDs on Hot Water Pumps	x					
ECM 7	Vending Machine Control						

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

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

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

8.1 SmartStart

Overview

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

Equipment with Prescriptive Incentives Currently Available:

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

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

Incentives

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

Since your facility is an existing building, only the retrofit incentives have been applied in this report. Custom measure incentives are calculated at $0.16/kWh and $1.60/therm based on estimated annual savings, capped at 50% of the total installed incremental project cost, or a project cost buy down to a one year payback (whichever is less). Program incentives are capped at $500,000 per electric account and $500,000 per natural gas account, per fiscal year.

How to Participate

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

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

8.2 SREC Registration Program

The SREC (Solar Renewable Energy Certificate) Registration Program (SRP) is used to register the intent to install solar projects in New Jersey. Rebates are not available for solar projects, but owners of solar projects MUST register their projects 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	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,640	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,640	0.04	200	0.0	$29.45	$73.03	$20.00	1.80
Boiler room	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Exterior	26	Metal Halide: (1) 70W Lamp	Daylight Dimming	95	4,380	Fixture Replacement	No	26	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Daylight Dimming	29	4,380	1.13	8,709	0.0	$1,279.93	$25,115.10	$2,600.00	17.59
Exterior	3	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Daylight Dimming	18	4,380	None	No	3	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Daylight Dimming	18	4,380	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Exterior	5	Metal Halide: (1) 50W Lamp	Daylight Dimming	72	4,380	Fixture Replacement	No	5	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Daylight Dimming	22	4,380	0.17	1,269	0.0	$186.55	$4,829.83	$500.00	23.21
Exterior	1	High-Pressure Sodium: (1) 70W Lamp	Daylight Dimming	75	4,380	Fixture Replacement	No	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Daylight Dimming	23	4,380	0.03	264	0.0	$38.86	$965.97	$100.00	22.28
Exterior	1	Metal Halide: (1) 70W Lamp	Daylight Dimming	95	4,380	Fixture Replacement	No	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Daylight Dimming	29	4,380	0.04	335	0.0	$49.23	$965.97	$100.00	17.59
Exterior	3	LED Screw-In Lamps: Recessed can	Daylight Dimming	7	4,380	None	No	3	LED Screw-In Lamps: Recessed can	Daylight Dimming	7	4,380	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Exterior	1	LED Screw-In Lamps: Recessed can	Daylight Dimming	7	4,380	None	No	1	LED Screw-In Lamps: Recessed can	Daylight Dimming	7	4,380	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Bank Electrical Room	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,640	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,640	0.13	601	0.0	$88.35	$219.09	$60.00	1.80
Gym office	2	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	2,640	Relamp	Yes	2	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	1,848	0.05	213	0.0	$31.37	$213.55	$50.00	5.21
Restroom - Boys	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	2,640	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	2,640	0.02	88	0.0	$12.94	$72.46	$0.00	5.60
Restroom - Boys	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,640	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	2,640	0.06	301	0.0	$44.17	$109.55	$30.00	1.80
Gym office	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,640	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	2,640	0.03	150	0.0	$22.09	$54.77	$15.00	1.80
Office restroom	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	2,640	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	2,640	0.02	88	0.0	$12.94	$72.46	$0.00	5.60
Gym	24	Linear Fluorescent - T5: 4' T5 (28W) - 4L	Wall Switch	120	2,640	Relamp	Yes	24	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,848	1.25	5,785	0.0	$850.26	$2,292.72	$550.00	2.05
Gym	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Gym storage 1	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,640	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,848	0.08	380	0.0	$55.82	$225.55	$50.00	3.14
Gym storage 2	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,640	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,848	0.08	380	0.0	$55.82	$225.55	$50.00	3.14
Gym restroom girls	3	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	2,640	Relamp	Yes	3	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	1,848	0.07	320	0.0	$47.05	$416.32	$80.00	7.15
Gym restroom girls	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,640	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.08	380	0.0	$55.82	$109.55	$65.00	0.80
Office	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,640	Relamp	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,640	0.01	53	0.0	$7.81	$18.26	$5.00	1.70
Gym office restroom	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	2,640	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	2,640	0.02	88	0.0	$12.94	$72.46	$0.00	5.60
Music room	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.39	1,262	0.0	$185.53	$657.27	$180.00	2.57
Server room	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,640	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	2,640	0.03	150	0.0	$22.09	$54.77	$15.00	1.80

	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
Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,640	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	2,640	0.06	301	0.0	$44.17	$109.55	$30.00	1.80
Practice room	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	2,640	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	2,640	0.02	83	0.0	$12.27	$48.77	$15.00	2.75
Corridor	2	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	2,640	Relamp	No	2	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	2,640	0.04	167	0.0	$24.54	$97.55	$30.00	2.75
Cafeteria	56	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,640	Relamp	Yes	56	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	2.30	10,635	0.0	$1,562.92	$4,417.26	$1,015.00	2.18
Cafeteria	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Cafeteria	22	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	2,640	Relamp	Yes	22	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	1,848	0.51	2,348	0.0	$345.04	$1,613.00	$400.00	3.52
Stage	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,640	Relamp	No	4	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	2,640	0.13	601	0.0	$88.35	$219.09	$60.00	1.80
Stage	4	Incandescent: Screw-in - 1 Lamp	Wall Switch	60	2,640	Relamp	No	4	LED Screw-In Lamps: Screw-in 1 Lamp	Wall Switch	9	2,640	0.13	619	0.0	$91.02	$68.90	$20.00	0.54
Stage	4	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	2,640	Relamp	No	4	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	2,640	0.07	334	0.0	$49.08	$195.09	$60.00	2.75
Instrumental	6	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,640	Relamp	Yes	6	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,848	0.29	1,337	0.0	$196.50	$708.18	$155.00	2.82
Kitchen storage	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,640	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.16	760	0.0	$111.64	$335.09	$60.00	2.46
Kitchen Area	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,640	Relamp	No	5	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,640	0.11	501	0.0	$73.62	$182.58	$50.00	1.80
Kitchen Area	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,640	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	2,640	0.10	451	0.0	$66.26	$164.32	$45.00	1.80
Kitchen Area	2	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	2,640	Relamp	No	2	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	2,640	0.04	176	0.0	$25.88	$144.92	$0.00	5.60
Wash area	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,640	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	2,640	0.10	451	0.0	$66.26	$164.32	$45.00	1.80
Kitchen back	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,640	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	2,640	0.06	301	0.0	$44.17	$109.55	$30.00	1.80
Faculty lounge	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,640	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.25	1,139	0.0	$167.46	$598.64	$125.00	2.83
Men's restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Occupancy Sensor	53	1,848	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	1,848	0.02	58	0.0	$8.59	$48.77	$15.00	3.93
Women's restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Occupancy Sensor	53	1,848	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	1,848	0.02	58	0.0	$8.59	$48.77	$15.00	3.93
Faculty lounge	2	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	2,640	Relamp	Yes	2	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	1,848	0.05	213	0.0	$31.37	$97.55	$65.00	1.04
Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,640	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.08	380	0.0	$55.82	$225.55	$50.00	3.14
Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,640	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.08	380	0.0	$55.82	$225.55	$50.00	3.14
CR 408	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.39	1,262	0.0	$185.53	$657.27	$180.00	2.57
CR 407	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.39	1,262	0.0	$185.53	$657.27	$180.00	2.57
CR 406	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.39	1,262	0.0	$185.53	$657.27	$180.00	2.57

	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
CR 405	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.39	1,262	0.0	$185.53	$657.27	$180.00	2.57
Storage	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,640	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,848	0.08	380	0.0	$55.82	$225.55	$30.00	3.50
CR 404	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.39	1,262	0.0	$185.53	$657.27	$180.00	2.57
CR 403	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.39	1,262	0.0	$185.53	$657.27	$180.00	2.57
CR 402	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.39	1,262	0.0	$185.53	$657.27	$180.00	2.57
CR 401	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.70	2,279	0.0	$334.98	$54.77	$15.00	0.12
Girls' restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	8,064	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	8,064	0.02	255	0.0	$37.48	$48.77	$15.00	0.90
Girls' restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.03	105	0.0	$15.46	$54.77	$15.00	2.57
Janitor closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,640	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,640	0.02	100	0.0	$14.72	$36.52	$10.00	1.80
Boys' restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	8,064	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	8,064	0.02	255	0.0	$37.48	$48.77	$15.00	0.90
Boys' restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.03	105	0.0	$15.46	$54.77	$15.00	2.57
Boys' restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Occupancy Sensor	53	1,848	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	1,848	0.02	58	0.0	$8.59	$48.77	$15.00	3.93
110 Learning Reserve Center	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	14	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.09	287	0.0	$42.17	$766.82	$210.00	13.21
110 Learning Reserve Center	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	32	1,848	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,848	0.03	112	0.0	$16.40	$54.77	$15.00	2.43
Room 109	14	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.51	1,658	0.0	$243.62	$657.27	$180.00	1.96
Office 1	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,640	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,848	0.10	446	0.0	$65.50	$262.06	$60.00	3.08
Room 109 restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Occupancy Sensor	53	1,848	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	1,848	0.02	58	0.0	$8.59	$48.77	$15.00	3.93
Office 2	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,640	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,848	0.10	446	0.0	$65.50	$262.06	$60.00	3.08
Security Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,640	Relamp	No	2	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,640	0.07	340	0.0	$49.97	$146.06	$40.00	2.12
Girls' restroom	2	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Occupancy Sensor	53	1,848	Relamp	No	2	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	1,848	0.04	117	0.0	$17.18	$97.55	$30.00	3.93
Janitor closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,640	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,640	0.02	100	0.0	$14.72	$36.52	$10.00	1.80
Boys' restroom	2	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Occupancy Sensor	53	1,848	Relamp	No	2	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	1,848	0.04	117	0.0	$17.18	$97.55	$30.00	3.93
Tech office	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,640	Relamp	Yes	3	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,848	0.14	669	0.0	$98.25	$335.09	$80.00	2.60
CR 108	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.39	1,262	0.0	$185.53	$657.27	$180.00	2.57
CR 108	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,640	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,640	0.03	159	0.0	$23.43	$54.77	$15.00	1.70

	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
CR 107	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.39	1,262	0.0	$185.53	$657.27	$180.00	2.57
CR 107	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,640	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,640	0.03	159	0.0	$23.43	$54.77	$15.00	1.70
CR 106	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.39	1,262	0.0	$185.53	$657.27	$180.00	2.57
CR 106	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,640	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,640	0.03	159	0.0	$23.43	$54.77	$15.00	1.70
CR 105	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.39	1,262	0.0	$185.53	$657.27	$180.00	2.57
CR 105	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,640	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,640	0.03	159	0.0	$23.43	$54.77	$15.00	1.70
CR 104	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.39	1,262	0.0	$185.53	$657.27	$180.00	2.57
CR 104	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,640	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,640	0.03	159	0.0	$23.43	$54.77	$15.00	1.70
CR 103	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.39	1,262	0.0	$185.53	$657.27	$180.00	2.57
CR 103	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,640	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,640	0.03	159	0.0	$23.43	$54.77	$15.00	1.70
CR 102	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.39	1,262	0.0	$185.53	$657.27	$180.00	2.57
CR 102	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,640	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,640	0.03	159	0.0	$23.43	$54.77	$15.00	1.70
CR 101	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.39	1,262	0.0	$185.53	$657.27	$180.00	2.57
CR 101	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,640	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,640	0.03	159	0.0	$23.43	$54.77	$15.00	1.70
Electrical room	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,640	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,640	0.04	170	0.0	$24.99	$73.03	$20.00	2.12
Computer lab 2	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.39	1,262	0.0	$185.53	$657.27	$180.00	2.57
Computer lab 2	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,640	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,640	0.03	159	0.0	$23.43	$54.77	$15.00	1.70
Computer lab 2	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
Computer lab 2 restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Occupancy Sensor	53	1,848	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	1,848	0.02	58	0.0	$8.59	$48.77	$15.00	3.93
CR 203	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.39	1,262	0.0	$185.53	$657.27	$180.00	2.57
CR 203	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,640	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,640	0.03	159	0.0	$23.43	$54.77	$15.00	1.70
CR 203	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
CR 203 restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Occupancy Sensor	53	1,848	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	1,848	0.02	58	0.0	$8.59	$48.77	$15.00	3.93
CR 205 computer lab 1	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.39	1,262	0.0	$185.53	$657.27	$180.00	2.57
CR 205 computer lab 1	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,640	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,640	0.03	159	0.0	$23.43	$54.77	$15.00	1.70

	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
CR 205 computer lab 1	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
CR 205 restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Occupancy Sensor	53	1,848	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	1,848	0.02	58	0.0	$8.59	$48.77	$15.00	3.93
CR 204	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.39	1,262	0.0	$185.53	$657.27	$180.00	2.57
CR 204	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,640	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,640	0.03	159	0.0	$23.43	$54.77	$15.00	1.70
CR 204	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
CR 204 restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Occupancy Sensor	53	1,848	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	1,848	0.02	58	0.0	$8.59	$48.77	$15.00	3.93
CR 205	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.39	1,262	0.0	$185.53	$657.27	$180.00	2.57
CR 205	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,640	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,640	0.03	159	0.0	$23.43	$54.77	$15.00	1.70
CR 205	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
CR 205 restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Occupancy Sensor	53	1,848	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	1,848	0.02	58	0.0	$8.59	$48.77	$15.00	3.93
CR 205	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	2,640	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	2,640	0.02	83	0.0	$12.27	$48.77	$15.00	2.75
Guidance offices entrance	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,640	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,848	0.08	380	0.0	$55.82	$225.55	$50.00	3.14
Guidance office 2	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,640	Relamp	Yes	3	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,848	0.14	669	0.0	$98.25	$335.09	$80.00	2.60
Guindance office 3	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,640	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,848	0.05	253	0.0	$37.21	$189.03	$40.00	4.00
Guidance conference room	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,640	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,848	0.19	891	0.0	$131.00	$408.12	$100.00	2.35
Guidance restroom	2	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Occupancy Sensor	53	1,848	Relamp	No	2	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	1,848	0.04	117	0.0	$17.18	$97.55	$30.00	3.93
Front electrical room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,640	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,640	0.02	100	0.0	$14.72	$36.52	$10.00	1.80
Main office	6	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,640	Relamp	Yes	6	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,848	0.29	1,337	0.0	$196.50	$708.18	$155.00	2.82
Mail room	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,640	Relamp	No	2	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,640	0.07	340	0.0	$49.97	$146.06	$40.00	2.12
Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,640	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,848	0.10	446	0.0	$65.50	$262.06	$60.00	3.08
Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,640	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,848	0.10	446	0.0	$65.50	$262.06	$60.00	3.08
Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,640	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,848	0.10	446	0.0	$65.50	$262.06	$60.00	3.08
Safe	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,640	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	2,640	0.03	150	0.0	$22.09	$54.77	$15.00	1.80
Conference room	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,640	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.12	570	0.0	$83.73	$280.32	$65.00	2.57
Nurse's office	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,640	Relamp	No	4	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,640	0.15	680	0.0	$99.95	$292.12	$80.00	2.12

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Nurse's office	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	2,640	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	2,640	0.02	83	0.0	$12.27	$48.77	$15.00	2.75
Office	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,640	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	2,640	0.03	150	0.0	$22.09	$54.77	$15.00	1.80
Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,640	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,640	0.02	100	0.0	$14.72	$36.52	$10.00	1.80
Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.03	105	0.0	$15.46	$54.77	$15.00	2.57
CST suite	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,640	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,848	0.19	891	0.0	$131.00	$562.12	$115.00	3.41
CST suite conference room	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,640	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,848	0.10	446	0.0	$65.50	$262.06	$60.00	3.08
CST suite	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	2,640	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	2,640	0.02	83	0.0	$12.27	$48.77	$15.00	2.75
Large conference room	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,640	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.16	760	0.0	$111.64	$489.09	$95.00	3.53
Tech closet	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,640	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,848	0.10	446	0.0	$65.50	$262.06	$60.00	3.08
Special services supervisor	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,640	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,848	0.10	446	0.0	$65.50	$262.06	$60.00	3.08
Social worker	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,640	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,848	0.10	446	0.0	$65.50	$262.06	$60.00	3.08
Learning consultant	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,640	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,848	0.10	446	0.0	$65.50	$262.06	$60.00	3.08
School Psychologist	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,640	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,848	0.10	446	0.0	$65.50	$262.06	$60.00	3.08
Storage space	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,640	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,640	0.04	170	0.0	$24.99	$73.03	$20.00	2.12
Library	28	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,640	Relamp	Yes	28	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	1.15	5,317	0.0	$781.46	$2,073.63	$490.00	2.03
Library	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
Library office	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,640	Relamp	Yes	8	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.33	1,519	0.0	$223.27	$708.18	$155.00	2.48
Hallway office 1	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,640	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,848	0.10	446	0.0	$65.50	$262.06	$60.00	3.08
Hallway office 2	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,640	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,848	0.10	446	0.0	$65.50	$262.06	$60.00	3.08
CR 206	14	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	14	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.45	1,473	0.0	$216.45	$766.82	$210.00	2.57
CR 206	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
CR 206	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,640	Relamp	Yes	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,848	0.04	199	0.0	$29.25	$54.77	$50.00	0.16
CR 206 restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	2,640	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	2,640	0.02	83	0.0	$12.27	$48.77	$15.00	2.75
Art room	14	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	14	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.45	1,473	0.0	$216.45	$766.82	$210.00	2.57
Art room	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,640	Relamp	Yes	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,848	0.04	199	0.0	$29.25	$54.77	$50.00	0.16

	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
Storage room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,640	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,848	0.05	253	0.0	$37.21	$189.03	$20.00	4.54
Boys' restroom	2	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Occupancy Sensor	53	1,848	Relamp	No	2	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	1,848	0.04	117	0.0	$17.18	$97.55	$30.00	3.93
Boys' restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.03	105	0.0	$15.46	$54.77	$15.00	2.57
Janitor closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,640	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,640	0.02	100	0.0	$14.72	$36.52	$10.00	1.80
Girls' restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.03	105	0.0	$15.46	$54.77	$15.00	2.57
Girls' restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Occupancy Sensor	53	1,848	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	1,848	0.02	58	0.0	$8.59	$48.77	$15.00	3.93
CR 301	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.39	1,262	0.0	$185.53	$657.27	$180.00	2.57
CR 301	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,640	Relamp	Yes	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,848	0.04	199	0.0	$29.25	$54.77	$50.00	0.16
Maintenance storage	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,640	Relamp	Yes	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,848	0.27	1,266	0.0	$186.06	$635.15	$100.00	2.88
Women's restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.03	105	0.0	$15.46	$54.77	$15.00	2.57
Men's restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.03	105	0.0	$15.46	$54.77	$15.00	2.57
Office B	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	1,848	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,848	0.04	140	0.0	$20.61	$73.03	$20.00	2.57
Electrical closet	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	32	1,848	Relamp	No	2	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,848	0.02	74	0.0	$10.93	$36.52	$10.00	2.43
CR 308	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.39	1,262	0.0	$185.53	$657.27	$180.00	2.57
CR 308	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,640	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,640	0.03	159	0.0	$23.43	$54.77	$15.00	1.70
CR 307	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.39	1,262	0.0	$185.53	$657.27	$180.00	2.57
CR 307	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,640	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,640	0.03	159	0.0	$23.43	$54.77	$15.00	1.70
CR 302	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.39	1,262	0.0	$185.53	$657.27	$180.00	2.57
CR 302	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,640	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,640	0.03	159	0.0	$23.43	$54.77	$15.00	1.70
CR 303	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.39	1,262	0.0	$185.53	$657.27	$180.00	2.57
CR303	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,640	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,640	0.03	159	0.0	$23.43	$54.77	$15.00	1.70
CR 306	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.39	1,262	0.0	$185.53	$657.27	$180.00	2.57
CR 306	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,640	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,640	0.03	159	0.0	$23.43	$54.77	$15.00	1.70
CR 305	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.39	1,262	0.0	$185.53	$657.27	$180.00	2.57
CR 305	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,640	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,640	0.03	159	0.0	$23.43	$54.77	$15.00	1.70

	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
CR 304	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.39	1,262	0.0	$185.53	$657.27	$180.00	2.57
CR 304	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,640	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,640	0.03	159	0.0	$23.43	$54.77	$15.00	1.70
Electrical room	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,640	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,640	0.06	301	0.0	$44.17	$109.55	$30.00	1.80
2nd floor - Storage room	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,640	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,848	0.08	380	0.0	$55.82	$225.55	$50.00	3.14
CR 604	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.39	1,262	0.0	$185.53	$657.27	$180.00	2.57
CR 604	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,640	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,640	0.03	159	0.0	$23.43	$54.77	$15.00	1.70
CR 605	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.39	1,262	0.0	$185.53	$657.27	$180.00	2.57
CR 605	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,640	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,640	0.03	159	0.0	$23.43	$54.77	$15.00	1.70
CR 606	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.39	1,262	0.0	$185.53	$657.27	$180.00	2.57
CR 606	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,640	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,640	0.03	159	0.0	$23.43	$54.77	$15.00	1.70
CR 603	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.39	1,262	0.0	$185.53	$657.27	$180.00	2.57
CR 603	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,640	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,640	0.03	159	0.0	$23.43	$54.77	$15.00	1.70
CR 602	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.39	1,262	0.0	$185.53	$657.27	$180.00	2.57
CR 602	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,640	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,640	0.03	159	0.0	$23.43	$54.77	$15.00	1.70
CR 607	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.39	1,262	0.0	$185.53	$657.27	$180.00	2.57
CR 607	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,640	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,640	0.03	159	0.0	$23.43	$54.77	$15.00	1.70
CR 608	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.39	1,262	0.0	$185.53	$657.27	$180.00	2.57
CR 608	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,640	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,640	0.03	159	0.0	$23.43	$54.77	$15.00	1.70
CR 601	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.39	1,262	0.0	$185.53	$657.27	$180.00	2.57
CR 601	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,640	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,640	0.03	159	0.0	$23.43	$54.77	$15.00	1.70
2nd floor - office	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,640	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,640	0.04	170	0.0	$24.99	$73.03	$20.00	2.12
IDF room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,640	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,640	0.02	100	0.0	$14.72	$36.52	$10.00	1.80
SGI	10	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,640	Relamp	Yes	10	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.41	1,899	0.0	$279.09	$817.73	$185.00	2.27
SGI storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	114	1,848	Relamp	No	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,848	0.07	238	0.0	$34.98	$146.06	$40.00	3.03
Boys' restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,640	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,640	0.04	170	0.0	$24.99	$73.03	$20.00	2.12

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Boys' restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	8,064	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	8,064	0.02	255	0.0	$37.48	$48.77	$15.00	0.90
Girls' restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,640	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,640	0.04	170	0.0	$24.99	$73.03	$20.00	2.12
Girls' restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Occupancy Sensor	53	1,848	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	1,848	0.02	58	0.0	$8.59	$48.77	$15.00	3.93
Boys' restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Occupancy Sensor	53	1,848	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	1,848	0.02	58	0.0	$8.59	$48.77	$15.00	3.93
Boys' restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	8,064	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	8,064	0.03	459	0.0	$67.46	$54.77	$15.00	0.59
Boys' restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Occupancy Sensor	53	1,848	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	1,848	0.02	58	0.0	$8.59	$48.77	$15.00	3.93
Janitor closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	8,064	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	8,064	0.02	306	0.0	$44.98	$36.52	$10.00	0.59
Girls' restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	8,064	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	8,064	0.02	255	0.0	$37.48	$48.77	$15.00	0.90
Girls' restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	114	1,848	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,848	0.04	119	0.0	$17.49	$73.03	$20.00	3.03
CR 509	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.39	1,262	0.0	$185.53	$657.27	$180.00	2.57
CR 509	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,640	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,640	0.03	159	0.0	$23.43	$54.77	$15.00	1.70
CR 501	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.39	1,262	0.0	$185.53	$657.27	$180.00	2.57
CR 501	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,640	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,640	0.03	159	0.0	$23.43	$54.77	$15.00	1.70
CR 508	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.39	1,262	0.0	$185.53	$657.27	$180.00	2.57
CR 508	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,640	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,640	0.03	159	0.0	$23.43	$54.77	$15.00	1.70
CR 507	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.39	1,262	0.0	$185.53	$657.27	$180.00	2.57
CR 507	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,640	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,640	0.03	159	0.0	$23.43	$54.77	$15.00	1.70
CR 502	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.39	1,262	0.0	$185.53	$657.27	$180.00	2.57
CR 502	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,640	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,640	0.03	159	0.0	$23.43	$54.77	$15.00	1.70
CR 503	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.39	1,262	0.0	$185.53	$657.27	$180.00	2.57
CR 503	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,640	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,640	0.03	159	0.0	$23.43	$54.77	$15.00	1.70
CR 506	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.39	1,262	0.0	$185.53	$657.27	$180.00	2.57
CR 506	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,640	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,640	0.03	159	0.0	$23.43	$54.77	$15.00	1.70
CR 505	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.39	1,262	0.0	$185.53	$657.27	$180.00	2.57
CR 505	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,640	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,640	0.03	159	0.0	$23.43	$54.77	$15.00	1.70

	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
CR 504	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,848	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,848	0.39	1,262	0.0	$185.53	$657.27	$180.00	2.57
CR 504	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,640	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,640	0.03	159	0.0	$23.43	$54.77	$15.00	1.70
Storage room	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,640	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,848	0.08	380	0.0	$55.82	$225.55	$50.00	3.14
2nd floor 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
2nd floor hallway	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,640	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,848	0.33	1,519	0.0	$223.27	$838.18	$120.00	3.22
2nd floor 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
2nd floor hallway	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,640	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,848	0.22	1,013	0.0	$148.85	$492.12	$80.00	2.77
2nd floor 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
3rd floor hallway	11	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,640	Relamp	Yes	11	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,848	0.30	1,393	0.0	$204.67	$801.67	$110.00	3.38
Stairwell	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,640	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	2,640	0.10	451	0.0	$66.26	$164.32	$45.00	1.80
Stairwell	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
Stairwell	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,640	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	2,640	0.10	451	0.0	$66.26	$164.32	$45.00	1.80
Stairwell	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	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,640	Relamp	Yes	10	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,848	0.27	1,266	0.0	$186.06	$765.15	$100.00	3.57
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
Boiler oom to Music room	6	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	6	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Boiler oom to Music room	16	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	2,640	Relamp	Yes	16	LED - Linear Tubes: (2) U-Lamp	High/Low Control	33	1,848	0.41	1,890	0.0	$277.71	$1,559.36	$0.00	5.62
Boiler oom to Music room	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,640	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	2,640	0.03	150	0.0	$22.09	$54.77	$15.00	1.80
Boiler oom to Music room	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,640	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,848	0.11	506	0.0	$74.42	$346.06	$40.00	4.11
Right side hallway	13	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,640	Relamp	Yes	13	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,848	0.36	1,646	0.0	$241.88	$874.70	$130.00	3.08
Right side hallway	3	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	3	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Main entrance lobby	2	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	2,640	Relamp	No	2	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	2,640	0.04	167	0.0	$24.54	$97.55	$30.00	2.75
Main entrance lobby	6	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	2,640	Relamp	No	6	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	2,640	0.11	528	0.0	$77.64	$434.76	$0.00	5.60
Main entrance lobby	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	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,640	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,848	0.22	1,013	0.0	$148.85	$492.12	$80.00	2.77

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Hallway	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
Main office hall	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,640	Relamp	Yes	7	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,848	0.19	886	0.0	$130.24	$455.61	$70.00	2.96
Main office hall	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
CST lobby	6	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	2,640	Relamp	Yes	6	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,848	0.15	709	0.0	$104.14	$550.76	$20.00	5.10
CST lobby	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
Hallway	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,640	Relamp	Yes	9	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,848	0.25	1,139	0.0	$167.46	$528.64	$90.00	2.62
Hallway	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Left hall	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,640	Relamp	Yes	7	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,848	0.19	886	0.0	$130.24	$455.61	$70.00	2.96
Left hall	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
Left hall	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,640	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	1,848	0.08	380	0.0	$55.82	$109.55	$30.00	1.43
Hallway	11	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,640	Relamp	Yes	11	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,848	0.30	1,393	0.0	$204.67	$801.67	$110.00	3.38
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
Stairwell	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,640	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	2,640	0.10	451	0.0	$66.26	$164.32	$45.00	1.80
Stairwell	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
Stairwell	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,640	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	2,640	0.10	451	0.0	$66.26	$164.32	$45.00	1.80
Stairwell	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

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
Roof	100 wing HRV 1	1	Supply Fan	5.0	89.5%	No	2,745	No	89.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	100 wing HRV 1	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
Roof	Office area and Library HRV 2	1	Supply 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
Roof	Office area and Library HRV 2	1	Exhaust Fan	0.8	60.0%	No	2,745	No	60.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	200 wing HRV 3	1	Supply Fan	5.0	89.5%	No	2,745	No	89.5%	Yes	1	0.68	2,059	0.0	$302.64	$3,275.85	$400.00	9.50
Roof	200 wing HRV 3	1	Exhaust Fan	2.0	86.5%	No	2,745	No	86.5%	Yes	1	0.28	852	0.0	$125.25	$2,728.85	$160.00	20.51
Roof	400 and 500 wing HRV 4	1	Supply Fan	7.5	91.7%	No	3,391	No	91.7%	Yes	1	2.05	7,371	0.0	$1,083.26	$3,606.80	$600.00	2.78
Roof	400 and 500 wing HRV 4	1	Exhaust Fan	5.0	89.5%	No	2,745	No	89.5%	Yes	1	0.68	2,059	0.0	$302.64	$3,275.85	$400.00	9.50
Roof	300 and 600 wing HRV 5	1	Supply Fan	7.5	91.7%	No	3,391	No	91.7%	Yes	1	2.05	7,371	0.0	$1,083.26	$3,606.80	$600.00	2.78
Roof	300 and 600 wing HRV 5	1	Exhaust Fan	5.0	89.5%	No	2,745	No	89.5%	Yes	1	0.68	2,059	0.0	$302.64	$3,275.85	$400.00	9.50
Roof	Cafeteria and Hallways HRV 7	1	Supply Fan	15.0	92.4%	No	3,391	No	92.4%	Yes	1	4.07	14,630	0.0	$2,150.11	$5,194.45	$1,200.00	1.86
Roof	Cafeteria and Hallways HRV 7	1	Exhaust Fan	10.0	91.7%	No	3,391	No	91.7%	Yes	1	2.73	9,828	0.0	$1,444.35	$3,807.95	$800.00	2.08
Roof	Gym HRV 6 and 8	2	Supply 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
Roof	Gym HRV 6 and 8	2	Exhaust Fan	1.0	85.5%	No	2,745	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Grounds	Chiller	1	Cooling Tower 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
Boiler room	P1	1	Chilled Water Pump	7.5	91.0%	Yes	1,100	No	91.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Boiler room	P2	1	Chilled Water Pump	7.5	91.0%	Yes	1,100	No	91.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Boiler room	P3	1	Heating Hot Water Pump	5.0	88.5%	No	1,100	Yes	89.5%	Yes	1	0.65	2,029	0.0	$298.22	$4,076.22	$0.00	13.67
Boiler room	P4	1	Heating Hot Water Pump	5.0	89.5%	No	1,100	Yes	89.5%	Yes	1	0.63	1,994	0.0	$293.08	$4,076.22	$0.00	13.91
Boiler room	P5	1	Heating Hot Water Pump	5.0	88.5%	No	1,100	Yes	89.5%	Yes	1	0.65	2,029	0.0	$298.22	$4,076.22	$0.00	13.67

		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	P6	1	Heating Hot Water Pump	5.0	88.5%	No	1,100	Yes	89.5%	Yes	1	0.65	2,029	0.0	$298.22	$4,076.22	$0.00	13.67
Boiler room	P7	1	Water Supply Pump	15.0	93.0%	No	3,391	No	93.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Boiler room	P8	1	Water Supply Pump	15.0	93.0%	No	3,391	No	93.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Boiler room	P9	1	Condenser Water Pump	15.0	93.0%	No	3,391	No	93.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Boiler room	P10	1	Condenser Water Pump	15.0	93.0%	No	3,391	No	93.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Classrooms and hallways	Classrooms and hallways	128	Supply Fan	0.3	60.0%	No	2,745	No	60.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00

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
Classrooms	Classroom	90	Water Source HP	2.50	33.10	No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Hallways	Hallways	38	Water Source HP	0.75	10.90	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
Grounds	All buildings	1	Air-Cooled Scroll Chiller	90.00	No							0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Fuel Heating Inventory & Recommendations

		Existing Conditions			Proposed Conditions						Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Output Capacity per Unit (MBh)	Install High Efficiency System?	System Quantity	System Type	Output Capacity per Unit (MBh)	Heating Efficiency	Heating Efficiency Units	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Boiler room	All building	2	Condensing Hot Water Boiler	2,790.00	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00

DHW Inventory & Recommendations

		Existing Conditions		Proposed Conditions						Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Replace?	System Quantity	System Type	Fuel Type	System Efficiency	Efficiency Units	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Boiler room	Whole building	1	Storage Tank Water Heater (> 50 Gal)	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	3	Refrigerator Chest	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	3	Freezer Chest	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	2	Stand-Up Freezer, Solid Door (31 - 50 cu. ft.)	Yes	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.)	Yes	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.)	Yes	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	Self-Contained Unit (<175 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	Insulated Food Holding Cabinet (1/2 Size)	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	2	Gas Convection Oven (Half Size)	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Dishwasher Inventory & Recommendations

	Existing Conditions					Proposed Conditions	Energy Impact & Financial Analysis						
Location	Quantity	Dishwasher Type	Water Heater Fuel Type	Booster Heater Fuel Type	ENERGY STAR Qualified?	Install ENERGY STAR Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Payback w/ Incentives in Years
Kitchen	1	Single Tank Conveyor (High Temp)	Natural Gas	Electric	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?
Warren E Sooy ES	306	Desktop	145.0	Yes
Warren E Sooy ES	36	Desk printers	60.0	Yes
Warren E Sooy ES	2	Laptops	45.0	Yes
Warren E Sooy ES	52	Projectors	200.0	Yes
Warren E Sooy ES	53	Mini fridge	60.0	Yes
Warren E Sooy ES	5	LED Tv 50"	120.0	Yes
Warren E Sooy ES	46	LCD TV smal	100.0	Yes
Warren E Sooy ES	3	Photocopier	200.0	Yes
Warren E Sooy ES	6	Microwave	1,000.0	Yes
Warren E Sooy ES	2	Refrigerator	260.0	Yes
Warren E Sooy ES	3	Luminators	50.0	Yes
Warren E Sooy ES	3	Shredders	200.0	Yes
Warren E Sooy ES	25	Tablet cart	1,440.0	Yes
Warren E Sooy ES	1	Kiln	11,520.0	Yes

Vending Machine Inventory & Recommendations

	Existing Conditions		Proposed Conditions	Energy Impact & Financial Analysis						
Location	Quantity	Vending Machine Type	Install Controls?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Faculty Lounge	1	Refrigerated	Yes	0.00	1,612	0.0	$236.89	$230.00	$0.00	0.97

Appendix B: ENERGY STAR® Statement of Energy Performance

ENERGY STAR® Statement of Energy Performance

35

ENERGY STAR® Score[1]

Warren E. Sooy Elementary School

Primary Property Type: K-12 School
Gross Floor Area (ft²): 97,240
Built: 1973

For Year Ending: July 31, 2017
Date Generated: September 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
Warren E. Sooy Elementary School 601 N. 4th Street Hammonton, New Jersey 08037	Hammonton Board of Education 566 Old Forks Road Hammonton, NJ 08037 (609) 567-7053	Barbara Prettyman 566 Old Forks Road Hammonton, NJ 08037 (609) 567-7053 bprettyman@hammontonps.org

Property ID: 6398315

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
51.7 kBtu/ft²

Source EUI
133.5 kBtu/ft²

Annual Energy by Fuel	
Natural Gas (kBtu)	621,653 (12%)
Electric - Grid (kBtu)	4,404,679 (88%)

National Median Comparison	
National Median Site EUI (kBtu/ft²)	44.9
National Median Source EUI (kBtu/ft²)	116
% Diff from National Median Source EUI	15%
Annual Emissions	
Greenhouse Gas Emissions (Metric Tons CO2e/year)	479

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)