Local Government Energy Audit:
Energy Audit Report

Christa McAuliffe Middle School

35 South Hope Chapel Road

Jackson, NJ 08527

Jackson Township BOE

June 26, 2018

Final Report by:

TRC Energy Services

Disclaimer

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

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

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

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

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1 EXECUTIVE SUMMARY

The New Jersey Board of Public Utilities (NJBPU) has sponsored this Local Government Energy Audit (LGEA) Report for Christa McAuliffe Middle 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

Christa McAuliffe Middle School is a 130,000 square-foot facility comprised of various space types such as classrooms, offices, hallways, gymnasium, kitchen, storage closets, a mechanical space and five trailers. Four of them are utilized as classrooms and one of this is used as storage space. This is a two story facility. During the weekdays the school operates from 8:00 AM to 4:30 PM including after school sports activities. The gym is rented out for basketball activities on Saturdays in the winters and open from 7:00 AM to 12:00 PM for church activities on Sundays.

Space heating in the building is provided by two gas-fired hot water boilers and several gas-fired packaged units. The space cooling in the facility is provided by packaged units with DX coils and split-system AC units. Each of the trailers have packaged units with DX cooling coils and electric heaters. Lighting at the schools consists of linear T8 tubes and metal halide fixtures.

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

1.2 Your Cost Reduction Opportunities

Energy Conservation Measures

TRC evaluated 12 measures and recommends nine measures for implementation which together represent an opportunity for Christa McAuliffe Middle School to reduce annual energy costs by roughly $43,908 and annual greenhouse gas emissions by 369,310 lbs. CO_2e. We estimate that if all measures were implemented as recommended, the project would pay for itself in 4.5 years. The breakdown of existing and potential utility costs after project implementation are illustrated in Figure 1 and Figure 2, respectively. Together these measures represent an opportunity to reduce Christa McAuliffe Middle School's annual energy use by 15%.

Figure 1 – Previous 12 Month Utility Costs

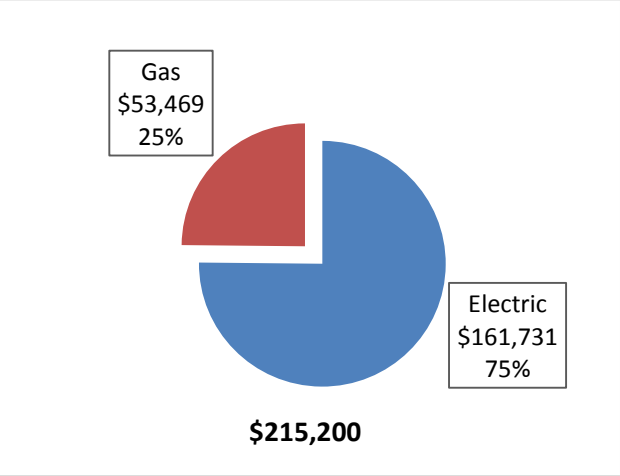
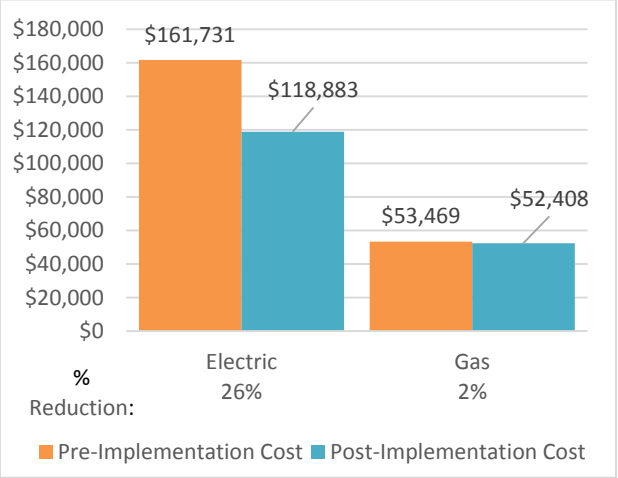


Figure 2 – Potential Post-Implementation Costs



A detailed description of Christa McAuliffe Middle 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			**262,579**	**52.4**	**0.0**	**$31,454.89**	**$161,087.62**	**$25,860.00**	**$135,227.62**	**4.3**	**264,415**
ECM 1	Install LED Fixtures	Yes	91,996	12.6	0.0	$11,020.41	$52,088.18	$3,970.00	$48,118.18	4.4	92,639
ECM 2	Retrofit Fixtures with LED Lamps	Yes	170,583	39.8	0.0	$20,434.48	$108,999.45	$21,890.00	$87,109.45	4.3	171,775
Lighting Control Measures			**48,063**	**10.9**	**0.0**	**$5,757.58**	**$34,928.67**	**$4,565.00**	**$30,363.67**	**5.3**	**48,399**
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	45,083	10.3	0.0	$5,400.63	$31,146.00	$3,765.00	$27,381.00	5.1	45,399
ECM 4	Install High/Low Lighitng Controls	Yes	2,980	0.7	0.0	$356.95	$3,782.67	$800.00	$2,982.67	8.4	3,001
Motor Upgrades			**3,011**	**0.7**	**0.0**	**$360.66**	**$4,813.23**	**$0.00**	**$4,813.23**	**13.3**	**3,032**
ECM 5	Premium Efficiency Motors	Yes	3,011	0.7	0.0	$360.66	$4,813.23	$0.00	$4,813.23	13.3	3,032
Variable Frequency Drive (VFD) Measures			**34,361**	**6.1**	**0.0**	**$4,116.17**	**$26,507.72**	**$2,320.00**	**$24,187.72**	**5.9**	**34,601**
ECM 6	Install VFDs on Constant Volume (CV) HVAC	Yes	13,271	3.9	0.0	$1,589.80	$14,029.20	$2,320.00	$11,709.20	7.4	13,364
ECM 7	Install VFDs on Hot Water Pumps	Yes	21,090	2.2	0.0	$2,526.37	$12,478.52	$0.00	$12,478.52	4.9	21,237
Electric Unitary HVAC Measures			**82,772**	**47.0**	**0.0**	**$9,915.48**	**$590,109.18**	**$32,176.50**	**$557,932.68**	**56.3**	**83,351**
	Install High Efficiency Electric AC	No	82,018	46.6	0.0	$9,825.16	$586,279.56	$32,046.50	$554,233.06	56.4	82,592
	Install High Efficiency Packaged Terminal AC/HP	No	754	0.4	0.0	$90.32	$3,829.62	$130.00	$3,699.62	41.0	759
Gas Heating (HVAC/Process) Replacement			**0**	**0.0**	**141.1**	**$1,920.32**	**$77,547.03**	**$6,516.00**	**$71,031.03**	**37.0**	**16,522**
	Install High Efficiency Hot Water Boilers	No	0	0.0	141.1	$1,920.32	$77,547.03	$6,516.00	$71,031.03	37.0	16,522
Domestic Water Heating Upgrade			**0**	**0.0**	**77.9**	**$1,060.53**	**$236.61**	**$0.00**	**$236.61**	**0.2**	**9,125**
ECM 8	Install Low-Flow Domestic Hot Water Devices	Yes	0	0.0	77.9	$1,060.53	$236.61	$0.00	$236.61	0.2	9,125
Plug Load Equipment Control - Vending Machine			**9,671**	**0.0**	**0.0**	**$1,158.51**	**$1,380.00**	**$0.00**	**$1,380.00**	**1.2**	**9,739**
ECM 9	Vending Machine Control	Yes	9,671	0.0	0.0	$1,158.51	$1,380.00	$0.00	$1,380.00	1.2	9,739
TOTAL OF EVALUATED MEASURES			**440,457**	**117.1**	**219.0**	**$55,744.14**	**$896,610.06**	**$71,437.50**	**$825,172.56**	**14.8**	**469,184**
TOTAL OF ALL RECOMMENDED MEASURES			**357,685**	**70**	**78**	**$ 43,908.34**	**$ 228,953.84**	**$ 32,745.00**	**$ 196,208.84**	**4.5**	**369,310**
TOTAL OF ALL NON_RECOMMENDED MEASURES			**82,772**	**47**	**141**	**11,836**	**667,656**	**38,693**	**628,964**	**53.1**	**99,873**

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

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

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

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

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

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

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

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

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

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

Energy Efficient Practices

TRC also identified four 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 Christa McAuliffe Middle School include:

- Clean Evaporator/Condenser Coils on AC Systems
- Perform Proper Boiler Maintenance
- Perform Proper Water Heater Maintenance
- Water Conservation

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

On-Site Generation Measures

TRC evaluated the potential for installing on-site generation for Christa McAuliffe Middle 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	233	kW DC STC
Electric Generation	277,589	kWh/yr
Displaced Cost	$24,150	/yr
Installed Cost	$605,800	

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
- Pay for Performance - Existing Building (P4P)
- 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.

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

For larger facilities with limited capital availability to implement ECMs, project financing may be available through the Energy Savings Improvement Program (ESIP). Supported directly by the NJBPU, ESIP provides government agencies with project development, design, and implementation support services, as well as, attractive financing for implementing ECMs. An LGEA report (or other approved energy audit) is required for participation in ESIP. Please refer to Section 8.4 for additional information on the ESIP Program.

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 in Section 8 or: www.njcleanenergy.com/ci.

2 FACILITY INFORMATION AND EXISTING CONDITIONS

2.1 Project Contacts

Figure 5 – Project Contacts

Name	Role	E-Mail	Phone #
Customer			
Michelle Richardson	Business Administrator	mrichardson@jacksonsd.org	(732) 833-4600
John Blair	Energy Education Specialist	jblair@jacksonsd.org	(732)-833-4600 Ext: 4380
TRC Energy Services			
Smruti Srinivasan	Auditor	ssrinivasan@trcsolutions.com	(732) 855-0033

2.2 General Site Information

On October 31, 2017, TRC performed an energy audit at Christa McAuliffe Middle School located in Jackson, New Jersey. TRC's team met with John Blair to review the facility operations and help focus our investigation on specific energy-using systems.

Christa McAuliffe Middle School is a 130,000 square-foot facility comprised of various space types such as classrooms, offices, hallways, gymnasium, kitchen, storage closets, a mechanical space and five trailers. Four of them are utilized as classrooms and one of this is used as storage space. This is a two story facility. During the weekdays the school operates from 8:00 AM to 4:30 PM including after school sports activities. The gym is rented out for basketball activities on Saturdays in the winters and open from 7:00 AM to 12:00 PM for church activities on Sundays.

Space heating in the building is provided by two gas-fired gas boilers hot water boilers and several packaged units with gas fired furnaces on them for specific areas. The space cooling in the facility is provided by packaged units with DX (direct expansion) coils and split AC units. Each of the trailers have packaged units with DX cooling coils and electric heaters. Lighting at the schools consists of linear T8 tubes and metal halide fixtures.

2.3 Building Occupancy

The typical schedule is presented in the table below. During a typical day, the facility is occupied by approximately 95 staff and 879 students.

Figure 6 - Building Schedule

Building Name	Weekday/Weekend	Operating Schedule
McAuliffe Middle School	Weekday	8:00 AM - 4:30 PM
McAuliffe Middle School	Weekend	Saturdays: 9 AM - 1 PM (rented out for Basketball during winter) Sunday: 7 AM - 12 PM (Church activities)

2.4 Building Envelope

The original building was built in 1993. The buildings are constructed using concrete block and brick façade. The windows throughout the facility are double pane and are in good condition. The building has majority flat roof with EPDM rubber membrane and some pitched roof that has a metal panel. The doors are aluminum or aluminum framed doors. The exterior doors are constructed of aluminum and in good condition.



2.5 On-Site Generation

Christa McAuliffe Middle School does not have any on-site electric generation systems currently installed.

2.6 Energy-Using Systems

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

Lighting System

Lighting at the facility is primarily provided by 32-Watt linear fluorescent T8 lamps with electronic ballasts as well as some compact fluorescent lamps (CFL). Most 4-foot fixtures are 2-lamp or 4-lamp and all 2-foot fixtures are 2-lamp troffers. The entrance and the media center have 100-Watt and 70-Watt metal halide fixtures. The gym has 39-Watt 4-foot LED fixtures. The trailers also have 4-foot 2-lamp T8 linear fixtures. Lighting control in most interior spaces is provided by wall switches

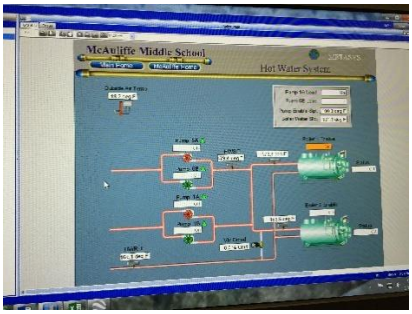
The building's exterior lighting consists of pole fixtures with 250-Watt and 400-Watt high pressure sodium lamps, wall pack fixtures with 250-watt high pressure sodium fixtures and garden poles with 70-watt high pressure sodium lamps. The fixtures are controlled using photocells and timers. All exit signs in the school are 2-watt LED fixtures.



Hot Water Heating System

The hot water system consists of two gas-fired 2172 kBtuh HB Smith hot water boilers with efficiencies of 78%. The hot water from the boilers are circulated to the unit ventilators and the air handlers using two 7.5HP and two 1.5HP constant speed pumps. The pumps and boilers are all original to the building and have been evaluated for replacement.

The science rooms, media center, guidance office, nurse's office, music room, band room, cafeteria and kitchen, gym and main office areas are heated using gas-fired packaged rooftop units. The output capacities of these range from 96 kBtuh to 437 kBtuh with 81% efficiencies. All rooftop packaged units were installed in 2006. The space temperatures are controlled using building automation system from Johnson Control Metasys. Occupied heating temperature in the school is 74°F.



Direct Expansion Air Conditioning System (DX)

The gym and the cafeteria are cooled using 26-ton and 25-ton AAON rooftop units with DX coils. The units also have energy recovery systems. The science rooms, media center, guidance office, nurse's office, music room, band room and main offices are cooled using rooftop package units with DX coils.

The classrooms are cooled via DX coils in the unit ventilators with condensing units on the roof or ground. The cooling capacities range from 1 to 4 tons. All packaged units are constant volume systems. Occupied cooling temperature is 70°F. All of the HVAC units are over 10 years old and have been evaluated for replacement.

The kitchen offices and a private office has packaged terminal unit for heating and cooling the spaces.

The trailers have packaged heating and cooling units (from Bard Manufacturing) attached on the sides of each of the trailers providing cooling (3-ton) and electric resistance heating. The trailers and the HVAC units are approximately 20 years old and have been evaluated for replacement.



Domestic Hot Water Heating System

The domestic hot water heating system for the facility consists of one 250-gallon Aquaplex gas-fired water heater serving the kitchen and the restrooms. This 399 kBtuh unit is 83% efficient. Installed in 2013, this equipment is in good condition and well maintained.

Food Service & Refrigeration

The kitchen functions from 8:00 AM to 2:00 PM everyday weekday from September through June. The equipment includes ice-cream chests, milk coolers, food warmers, two gas fired convection heaters, commercial refrigerators, one cooking range with six burners, two cash registers, one walk-in freezer and a walk-in refrigerator. The food warmers, coolers and two small merchandise refrigerators are brand new. All other equipment are original to the building.

Building Plug Load

There are 153 computer work stations, Chromebooks for students and approximately 30 Chromebook carts throughout the facility. The office plug loads at the facility include printers, paper shredders, projectors and smart boards. A few offices and the teacher's lounge have kitchenette plug loads such as the refrigerators, coffee machines and microwave ovens. The school has six refrigerated and three non-refrigerated vending machine without controls. There is no centralized PC power management software installed.

2.7 Water-Using Systems

The restroom faucets rated for 2.2 gallons per minute (gpm) or higher, the toilets are rated at 1.6 gallons per flush (gpf) and the urinals are rated at 2 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 as was evaluated to determine the annual energy performance metrics for the building in energy cost per square foot and energy usage per square foot. These metrics are an estimate of the relative energy efficiency of this building. There are a number of factors that could cause the energy use of this building to vary from the "typical" energy usage profile for facilities with similar characteristics. Local weather conditions, building age and insulation levels, equipment efficiency, daily occupancy hours, changes in occupancy throughout the year, equipment operating hours, and energy efficient behavior of occupants all contribute to benchmarking scores. Please refer to the Benchmarking section within Section 3.4 for additional information.

3.1 Total Cost of Energy

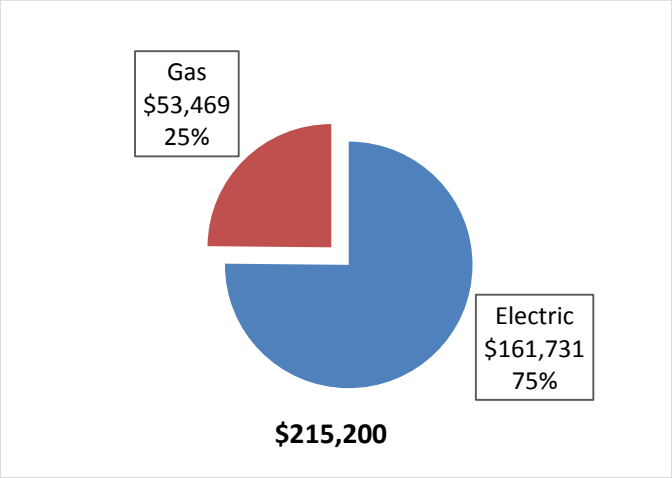
The following energy consumption and cost data is based on the last 12-month period of utility billing data that was provided for each utility. A profile of the annual energy consumption and energy cost of the facility was developed from this information.

Figure 7 - Utility Summary

Utility Summary for Christa McAuliffe Middle School		
Fuel	**Usage**	**Cost**
Electricity	1,350,099 kWh	$161,731
Natural Gas	39,291 Therms	$53,469
Total		**$215,200**

The current annual energy cost for this facility is $215,200 as shown in the chart below.

Figure 8 - Energy Cost Breakdown



3.2 Electricity Usage

Electricity is provided by JCP&L. The average electric cost over the past 12 months was $0.120/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 is provided by New Constellation Energy. The monthly electricity consumption and peak demand are shown in the chart below. The energy-use profile (overall trend) appears normal for a school with air conditioning in a temperate climate zone

Figure 9 - Electric Usage & Demand

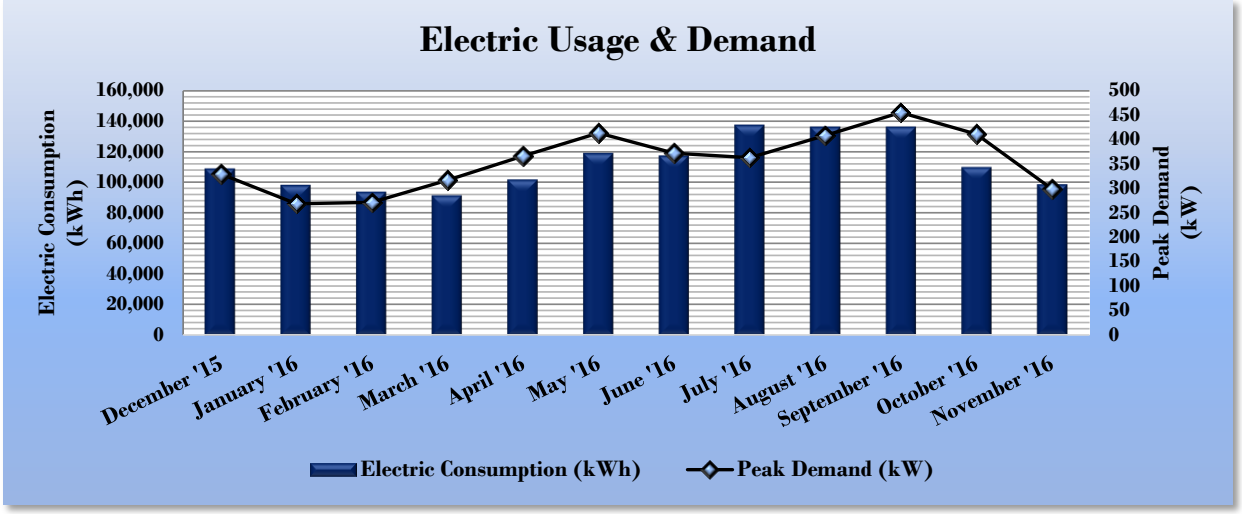


Figure 10 - Electric Usage & Demand

Electric Billing Data for Christa McAuliffe Middle School					
Period Ending	Days in Period	Electric Usage (kWh)	Demand (kW)	Demand Cost	Total Electric Cost
1/8/16	30	108,800	330		$12,559
2/8/16	31	98,000	268		$11,174
3/8/16	29	93,600	271		$10,762
4/8/16	31	91,200	317		$10,827
5/9/16	31	101,600	366		$11,910
6/8/16	30	118,800	413		$14,317
7/7/16	29	117,200	372		$14,233
8/8/16	32	137,200	363		$16,184
9/7/16	30	136,000	408		$16,430
10/7/16	30	136,000	456		$16,777
11/4/16	28	109,600	411		$13,979
12/7/16	33	98,400	299		$12,137
Totals	**364**	**1,346,400**	**455.6**	**$0**	**$161,288**
Annual	**365**	**1,350,099**	**455.6**	**$0**	**$161,731**

3.3 Natural Gas Usage

Natural Gas is provided by NJ Natural Gas. The average gas cost for the past 12 months is $1.361/therm, which is the blended rate used throughout the analyses in this report. The monthly gas consumption is shown in the chart below. The natural gas usage appears normal for a building in a heating climate.

Figure 11 - Natural Gas Usage

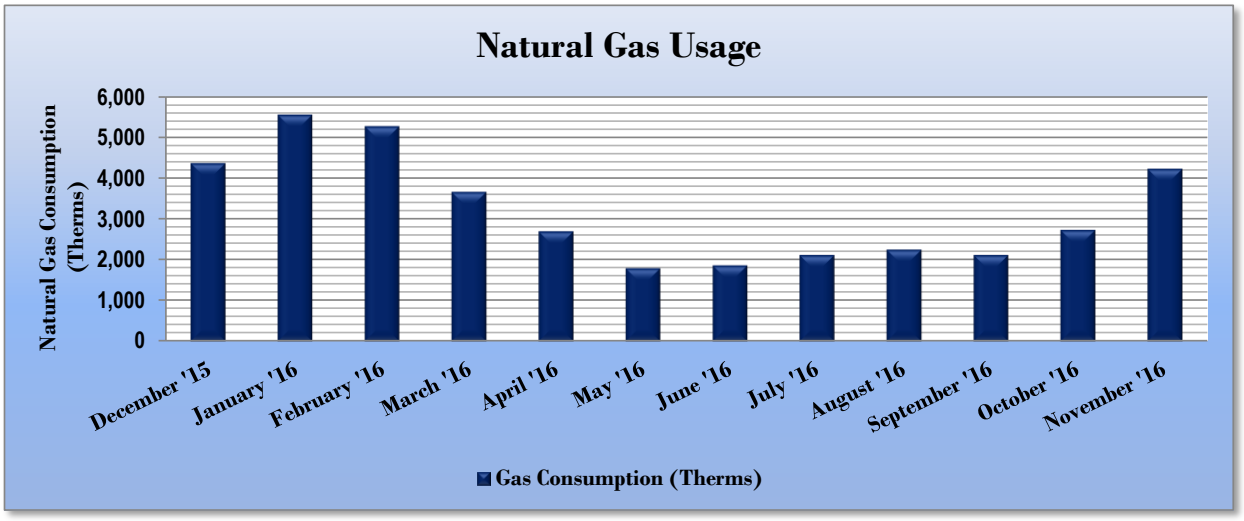


Figure 12 - Natural Gas Usage

Gas Billing Data for Christa McAuliffe Middle School			
Period Ending	Days in Period	Natural Gas Usage (Therms)	Natural Gas Cost
1/8/16	30	4,366	$5,623
2/4/16	27	5,555	$6,859
3/4/16	29	5,271	$6,563
4/6/16	33	3,664	$4,894
5/4/16	28	2,693	$3,885
6/8/16	35	1,789	$2,944
7/8/16	30	1,862	$3,020
8/8/16	31	2,116	$3,268
9/1/16	24	2,250	$3,406
10/3/16	32	2,119	$3,318
11/4/16	32	2,729	$3,552
12/2/16	28	4,231	$5,258
Totals	**359**	**38,645**	**$52,590**
Annual	**365**	**39,291**	**$53,469**

3.4 Benchmarking

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

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

Figure 13 - Energy Use Intensity Comparison – Existing Conditions

Energy Use Intensity Comparison - Existing Conditions		
	Christa McAuliffe Middle School	National Median Building Type: School (K-12)
Source Energy Use Intensity (kBtu/ft^2)	143.0	141.4
Site Energy Use Intensity (kBtu/ft^2)	65.7	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		
	Christa McAuliffe Middle School	National Median Building Type: School (K-12)
Source Energy Use Intensity (kBtu/ft^2)	112.9	141.4
Site Energy Use Intensity (kBtu/ft^2)	55.7	58.2

Many types of commercial buildings are also eligible to receive an ENERGY STAR® score. This score is a percentile ranking from 1 to 100. It compares your building's energy performance to similar buildings nationwide. A score of 50 represents median energy performance, while a score of 75 means your building performs better than 75 percent of all similar buildings nationwide and may be eligible for ENERGY STAR® certification. This facility has a current score of 43.

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

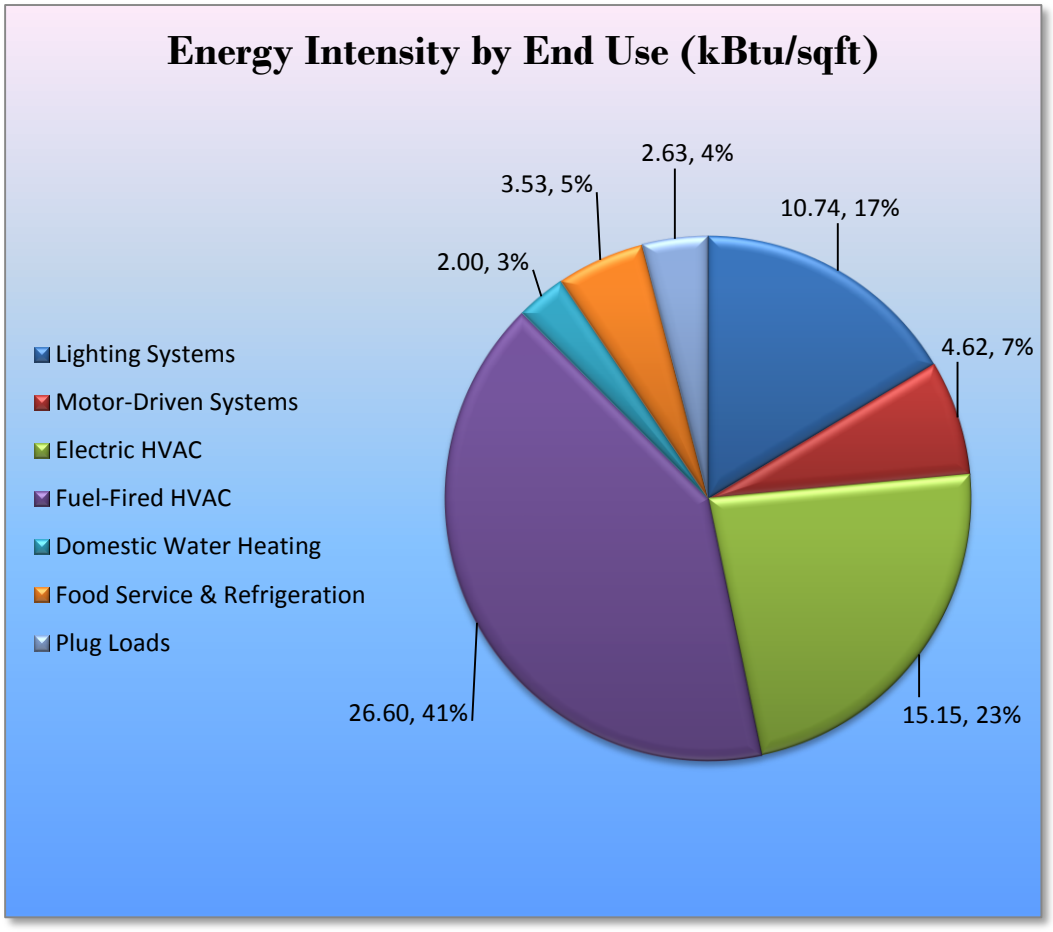
For more information on ENERGY STAR® certification go to: https://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/earn-recognition/energy-star-certification/how-app-1.

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 Christa McAuliffe Middle 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		**262,579**	**52.4**	**0.0**	**$31,454.89**	**$161,087.62**	**$25,860.00**	**$135,227.62**	**4.3**	**264,415**
ECM 1	Install LED Fixtures	91,996	12.6	0.0	$11,020.41	$52,088.18	$3,970.00	$48,118.18	4.4	92,639
ECM 2	Retrofit Fixtures with LED Lamps	170,583	39.8	0.0	$20,434.48	$108,999.45	$21,890.00	$87,109.45	4.3	171,775
Lighting Control Measures		**48,063**	**10.9**	**0.0**	**$5,757.58**	**$34,928.67**	**$4,565.00**	**$30,363.67**	**5.3**	**48,399**
ECM 3	Install Occupancy Sensor Lighting Controls	45,083	10.3	0.0	$5,400.63	$31,146.00	$3,765.00	$27,381.00	5.1	45,399
ECM 4	Install High/Low Lighitng Controls	2,980	0.7	0.0	$356.95	$3,782.67	$800.00	$2,982.67	8.4	3,001
Motor Upgrades		**3,011**	**0.7**	**0.0**	**$360.66**	**$4,813.23**	**$0.00**	**$4,813.23**	**13.3**	**3,032**
ECM 5	Premium Efficiency Motors	3,011	0.7	0.0	$360.66	$4,813.23	$0.00	$4,813.23	13.3	3,032
Variable Frequency Drive (VFD) Measures		**34,361**	**6.1**	**0.0**	**$4,116.17**	**$26,507.72**	**$2,320.00**	**$24,187.72**	**5.9**	**34,601**
ECM 6	Install VFDs on Constant Volume (CV) HVAC	13,271	3.9	0.0	$1,589.80	$14,029.20	$2,320.00	$11,709.20	7.4	13,364
ECM 7	Install VFDs on Hot Water Pumps	21,090	2.2	0.0	$2,526.37	$12,478.52	$0.00	$12,478.52	4.9	21,237
Domestic Water Heating Upgrade		**0**	**0.0**	**77.9**	**$1,060.53**	**$236.61**	**$0.00**	**$236.61**	**0.2**	**9,125**
ECM 8	Install Low-Flow Domestic Hot Water Devices	0	0.0	77.9	$1,060.53	$236.61	$0.00	$236.61	0.2	9,125
Plug Load Equipment Control - Vending Machine		**9,671**	**0.0**	**0.0**	**$1,158.51**	**$1,380.00**	**$0.00**	**$1,380.00**	**1.2**	**9,739**
ECM 9	Vending Machine Control	9,671	0.0	0.0	$1,158.51	$1,380.00	$0.00	$1,380.00	1.2	9,739
TOTALS		**357,685**	**70.1**	**77.9**	**$43,908.34**	**$228,953.84**	**$32,745.00**	**$196,208.84**	**4.5**	**369,310**

* - 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		**262,579**	**52.4**	**0.0**	**$31,454.89**	**$161,087.62**	**$25,860.00**	**$135,227.62**	**4.3**	**264,415**
ECM 1	Install LED Fixtures	91,996	12.6	0.0	$11,020.41	$52,088.18	$3,970.00	$48,118.18	4.4	92,639
ECM 2	Retrofit Fixtures with LED Lamps	170,583	39.8	0.0	$20,434.48	$108,999.45	$21,890.00	$87,109.45	4.3	171,775

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	7,636	1.6	0.0	$914.78	$6,311.20	$280.00	$6,031.20	6.6	7,690
Exterior	84,360	11.0	0.0	$10,105.63	$45,776.98	$3,690.00	$42,086.98	4.2	84,950

Measure Description

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

Additional savings from lighting maintenance can be anticipated since LEDs have longer lifetimes than other lighting technologies.

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	169,752	39.7	0.0	$20,334.92	$108,872.14	$21,890.00	$86,982.14	4.3	170,939
Exterior	831	0.1	0.0	$99.56	$127.30	$0.00	$127.30	1.3	837

Measure Description

We recommend retrofitting existing linear T8 tubes other lighting technologies with LED lamps. Many LED tube lamps are direct replacements for existing fluorescent lamps and can be installed while leaving the fluorescent fixture ballast in place. LED bulbs can be used in existing fixtures as a direct replacement for most other lighting technologies. This measure saves energy by installing LEDs which use less power than other lighting technologies yet provide equivalent lighting output for the space.

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

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		**48,063**	**10.9**	**0.0**	**$5,757.58**	**$34,928.67**	**$4,565.00**	**$30,363.67**	**5.3**	**48,399**
ECM 3	Install Occupancy Sensor Lighting Controls	45,083	10.3	0.0	$5,400.63	$31,146.00	$3,765.00	$27,381.00	5.1	45,399
ECM 4	Install High/Low Lighitng Controls	2,980	0.7	0.0	$356.95	$3,782.67	$800.00	$2,982.67	8.4	3,001

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)
45,083	10.3	0.0	$5,400.63	$31,146.00	$3,765.00	$27,381.00	5.1	45,399

Measure Description

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

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

ECM 4: Install High/Low Lighting Controls

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
2,980	0.7	0.0	$356.95	$3,782.67	$800.00	$2,982.67	8.4	3,001

Measure Description

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

Lighting fixtures with these controls operate at default low levels when the area is not occupied to provide minimal lighting to meet security or safety requirements. Sensors detect occupancy using ultrasonic and/or infrared sensors. The lighting systems are switched to full lighting levels whenever an occupant is detected. Fixtures are automatically switched back to low level after an area has been vacant for a preset period of time.

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

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

4.1.3 Motor Upgrades

Our recommendations for motor upgrades are summarized in Figure 19 below.

Figure 19 – Summary of Motor 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)
Motor Upgrades		**3,011**	**0.7**	**0.0**	**$360.66**	**$4,813.23**	**$0.00**	**$4,813.23**	**13.3**	**3,032**
ECM 5	Premium Efficiency Motors	3,011	0.7	0.0	$360.66	$4,813.23	$0.00	$4,813.23	13.3	3,032

ECM 5: 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)
3,011	0.7	0.0	$360.66	$4,813.23	$0.00	$4,813.23	13.3	3,032

Measure Description

We recommend replacing two 7.5 HP motors, two 1.5 HP motors and one motor serving the DHW distribution system) with standard efficiency motors with *NEMA Premium™* efficiency motors. Our evaluation assumes that existing motors will be replaced with motors of equivalent size and type. 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.

4.1.4 Variable Frequency Drive Measures

Our recommendations for variable frequency drive (VFD) measures are summarized in Figure 20 below.

Figure 20 – 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		**34,361**	**6.1**	**0.0**	**$4,116.17**	**$26,507.72**	**$2,320.00**	**$24,187.72**	**5.9**	**34,601**
ECM 6	Install VFDs on Constant Volume (CV) HVAC	13,271	3.9	0.0	$1,589.80	$14,029.20	$2,320.00	$11,709.20	7.4	13,364
ECM 7	Install VFDs on Hot Water Pumps	21,090	2.2	0.0	$2,526.37	$12,478.52	$0.00	$12,478.52	4.9	21,237

ECM 6: 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)
13,271	3.9	0.0	$1,589.80	$14,029.20	$2,320.00	$11,709.20	7.4	13,364

Measure Description

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

For air handlers with direct expansion (DX) cooling systems, the minimum air flow across the cooling coil required to prevent the coil from freezing will have to be determined during the final project design. The control system should be programmed to maintain the minimum air flow whenever the compressor is operating.

ECM 7: 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)
21,090	2.2	0.0	$2,526.37	$12,478.52	$0.00	$12,478.52	4.9	21,237

Measure Description

We recommend installing a variable frequency drives (VFD) to control the two 7.5 HP and two 1.5 HP hot water pumps circulating heating hot water from the boiler. This measure requires that a majority of the hot water coils be served by 2-way valves and that a differential pressure sensor is installed in the hot water loop. As the hot water valves close, the differential pressure increases. The VFD modulates pump speed to maintain a differential pressure setpoint. Energy savings results from reducing pump motor speed (and power) as hot water valves close. The magnitude of energy savings is based on the estimated amount of time that the system will operate at reduced load.

4.1.5 Domestic Hot Water Heating System Upgrades

Our recommendations for domestic water heating system improvements are summarized in Figure 21 below.

Figure 21 - Summary of Domestic Water Heating ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Domestic Water Heating Upgrade		**0**	**0.0**	**77.9**	**$1,060.53**	**$236.61**	**$0.00**	**$236.61**	**0.2**	**9,125**
ECM 8	Install Low-Flow Domestic Hot Water Devices	0	0.0	77.9	$1,060.53	$236.61	$0.00	$236.61	0.2	9,125

ECM 8: Install Low-Flow DHW Devices

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
0	0.0	77.9	$1,060.53	$236.61	$0.00	$236.61	0.2	9,125

Measure Description

We recommend installing low-flow domestic hot water devices to reduce overall hot water demand. Energy demand from domestic hot water heating systems can be reduced by reducing water usage in general.

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

4.1.6 Plug Load Equipment Control - Vending Machines

Our recommendations for plug load equipment control measures are summarized in Figure 22 below.

Figure 22 - Summary of Plug Load Equipment 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)
Plug Load Equipment Control - Vending Machine		**9,671**	**0.0**	**0.0**	**$1,158.51**	**$1,380.00**	**$0.00**	**$1,380.00**	**1.2**	**9,739**
ECM 9	Vending Machine Control	9,671	0.0	0.0	$1,158.51	$1,380.00	$0.00	$1,380.00	1.2	9,739

ECM 9: 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)
9,671	0.0	0.0	$1,158.51	$1,380.00	$0.00	$1,380.00	1.2	9,739

Measure Description

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

4.2 ECMs Evaluated But Not Recommended

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

Figure 23 – Summary of Measures Evaluated, But Not Recommended

Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Electric Unitary HVAC Measures	**82,772**	**47.0**	**0.0**	**$9,915.48**	**$590,109.18**	**$32,176.50**	**$557,932.68**	**56.3**	**83,351**
Install High Efficiency Electric AC	82,018	46.6	0.0	$9,825.16	$586,279.56	$32,046.50	$554,233.06	56.4	82,592
Install High Efficiency Packaged Terminal AC/HP	754	0.4	0.0	$90.32	$3,829.62	$130.00	$3,699.62	41.0	759
Gas Heating (HVAC/Process) Replacement	**0**	**0.0**	**141.1**	**$1,920.32**	**$77,547.03**	**$6,516.00**	**$71,031.03**	**37.0**	**16,522**
Install High Efficiency Hot Water Boilers	0	0.0	141.1	$1,920.32	$77,547.03	$6,516.00	$71,031.03	37.0	16,522
TOTALS	**82,772**	**47.0**	**141.1**	**$11,835.80**	**$667,656.21**	**$38,692.50**	**$628,963.71**	**53.1**	**99,873**

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

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

Install High Efficiency Air Conditioning Units

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
82,018	46.6	0.0	$9,825.16	$586,279.56	$32,046.50	$554,233.06	56.4	82,592

Measure Description

We evaluated replacing standard efficiency packaged air conditioning units with high efficiency packaged air conditioning units. There have been significant improvements in both compressor and fan motor efficiencies over the past several years. Therefore, electricity savings can be achieved by replacing older units with new high efficiency units. A higher EER or SEER rating indicates a more efficient cooling system. The magnitude of energy savings for this measure depends on the relative efficiency of the older unit versus the new high efficiency unit, the average cooling load, and the estimated annual operating hours.

Install High Efficiency PTAC/PTHP

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)
754	0.4	0.0	$90.32	$3,829.62	$130.00	$3,699.62	41.0	759

Measure Description

We evaluated replacing packaged terminal air conditioners and heat pumps (PTAC and PTHP) in the kitchen offices and private office with high efficiency PTAC and PTHP. There have been significant improvements in both compressor and fan motor efficiencies over the past several years. Therefore, electricity savings can be achieved by replacing older units with new high efficiency units. A higher EER or SEER rating indicates a more efficient cooling system and a higher HPSF rating indicates more efficient heating mode for heat pumps. The magnitude of energy savings for this measure depends on the relative efficiency of the older unit versus the new high efficiency unit, the average heating and cooling loads, and the estimated annual operating hours.

Install High Efficiency Hot Water Boilers

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
0	0.0	141.1	$1,920.32	$77,547.03	$6,516.00	$71,031.03	37.0	16,522

Measure Description

We evaluated replacing older inefficient hot water boilers with high efficiency hot water boilers. Significant improvements have been made in combustion technology resulting in increased overall boiler efficiency. Energy savings results from improved combustion efficiency and reduced standby losses at low loads.

The most notable efficiency improvement is condensing hydronic boilers that can achieve over 90% efficiency under the proper conditions. Condensing hydronic boilers typically operate at efficiencies between 85% and 87% when the return water temperature is above 130°F. The boiler efficiency increases as the return water temperature drops below 130 °F. Therefore, condensing hydronic boilers were only evaluated when the return water temperature is less than 130°F during most of the operating hours. As a result condensing hydronic boilers are not recommended for this site.

Reasons for not Recommending

Although all of the above equipment are old enough to be evaluated for replacement the payback on these investments are higher than the useful life of the equipment itself. When these are due for replacement, we suggest that they be replaced with a high efficiency equipment at the time.

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.

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.

Perform Proper Boiler Maintenance

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

Perform Proper Water Heater Maintenance

At least once a year, drain a few gallons out of the water heater using the drain valve. If there is a lot of sediment or debris, then a full flush is recommended. Turn the temperature down and then completely drain the tank. Once a year check for any leaks or heavy corrosion on the pipes and valves. For gas water heaters, check the draft hood and make sure it is placed properly, with a few inches of air space between the tank and where it connects to the vent. Look for any corrosion or wear on the gas line and on the piping. If you noticed any black residue, soot or charred metal, this is a sign you may be having combustion issues and you should have the unit serviced by a professional. For electric water heaters, look for any signs of leaking such as rust streaks or residue around the upper and lower panels covering the electrical components on the tank. For water heaters over three to four years old have a technician inspect the sacrificial anode annually.

Water Conservation

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

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

Refer to Section 4.1.5 for any low-flow ECM recommendations.

6 On-Site Generation Measures

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

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

Preliminary screenings were performed to determine the potential that a generation project could provide a cost-effective solution for your facility. Before making a decision to implement, a feasibility study should be conducted that would take a detailed look at existing energy profiles, siting, interconnection, and the costs associated with the generation project including interconnection costs, departing load charges, and any additional special facilities charges.

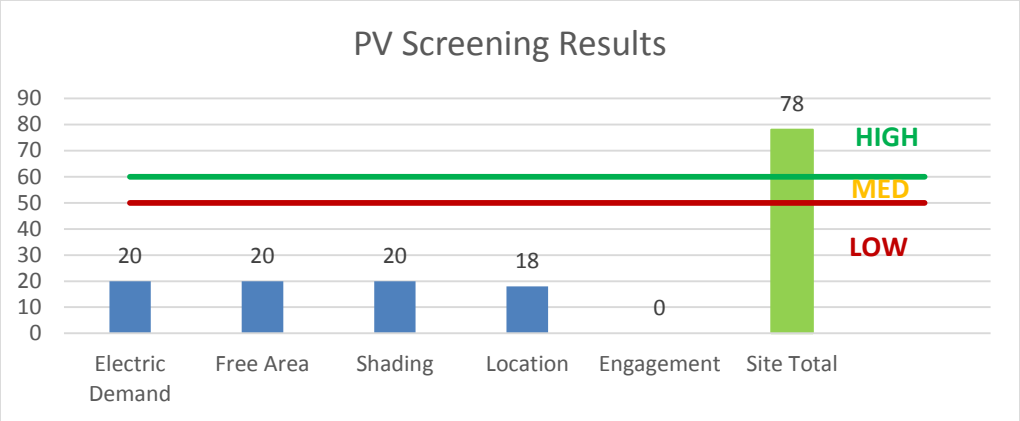
6.1 Photovoltaic

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

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

The amount of free area, ease of installation (location), and the lack of shading elements contribute to the high potential for PV at the site. A PV array located on the roof of the main building/ground next to the building/over the main parking lot may be feasible. If Christa McAuliffe Middle School is interested in pursuing the installation of PV, we recommended a full feasibility study be conducted.

Figure 24 - Photovoltaic Screening



Potential	High	
System Potential	233	kW DC STC
Electric Generation	277,589	kWh/yr
Displaced Cost	$24,150	/yr
Installed Cost	$605,800	

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.

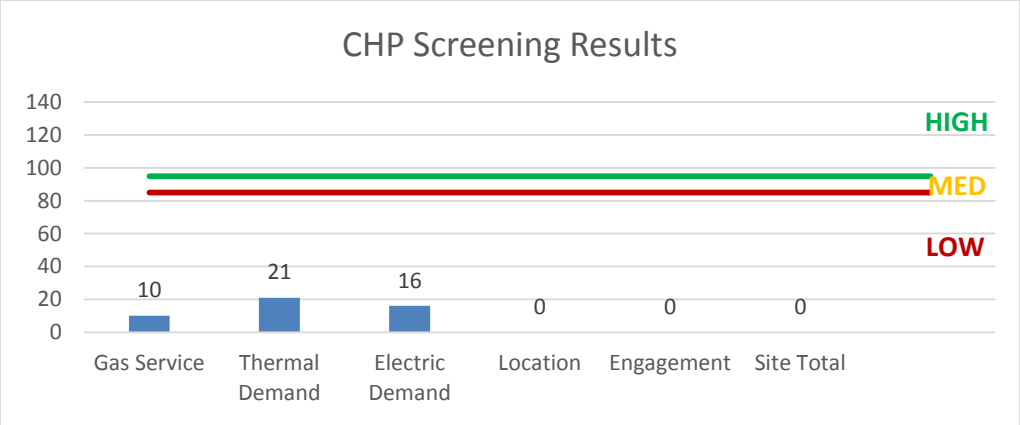
CHP systems are typically used to produce a portion of the electric power used onsite by a facility, with the balance of electric power needs supplied by grid purchases. The heat is used to supplement (or supplant) existing boilers for the purpose of space heating and/or domestic hot water heating. Waste 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 25 - 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 (http://www.pjm.com/markets-and-operations/demand-response/csps.aspx). PJM also posts training materials that are developed for program members interested in specific rules and requirements regarding DR activity (http://www.pjm.com/training/training%20material.aspx), along with a variety of other DR program information.

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

This building is already participating in the district wide demand response program.

8 PROJECT FUNDING / INCENTIVES

The NJCEP is able to provide the incentive programs described below, and other benefits to ratepayers, because of the Societal Benefits Charge (SBC) Fund. The SBC was created by the State of New Jersey's Electricity Restructuring Law (1999), which requires all customers of investor-owned electric and gas utilities to pay a surcharge on their monthly energy bills. As a customer of a state-regulated electric or gas utility and therefore a contributor to the fund your organization is eligible to participate in the LGEA program and also eligible to receive incentive payment for qualifying energy efficiency measures. Also available through the NJBPU are some alternative financing programs described later in this section. Please refer to Figure 26 for a list of the eligible programs identified for each recommended ECM.

Figure 26 - ECM Incentive Program Eligibility

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

SmartStart is generally well-suited for implementation of individual measures or small group of measures. It provides flexibility to install measures at your own pace using in-house staff or a preferred contractor. 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.

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

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

8.1 SmartStart

Overview

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

Equipment with Prescriptive Incentives Currently Available:

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

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

Incentives

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

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

How to Participate

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

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

8.2 Pay for Performance - Existing Buildings

Overview

The Pay for Performance – Existing Buildings (P4P EB) program is designed for larger customers with a peak demand over 200 kW in the preceding 12 months. Under this program the minimum installed scope of work must include at least two unique measures resulting in at least 15% energy savings, where lighting cannot make up the majority of the savings. P4P is a generally a good option for medium to large sized facilities looking to implement as many measures as possible under a single project in order to achieve deep energy savings. This program has an added benefit of evaluating a broad spectrum of measures that may not otherwise qualify under other programs. Many facilities pursuing an Energy Savings Improvement Program (ESIP) loan also utilize the P4P program.

Incentives

Incentives are calculated based on estimated and achieved energy savings ranging from $0.18-$0.22/kWh and $1.80-$2.50/therm, capped at the lesser of 50% total project cost, or $1 million per electric account and $1 million per natural gas account, per fiscal year, not to exceed $2 million per project. An incentive of $0.15/square foot is also available to offset the cost of developing the Energy Reduction Plan (see below) contingent on the project moving forward with measure installation.

How to Participate

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

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

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

8.3 SREC Registration Program

The SREC (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.

8.4 Energy Savings Improvement Program

The Energy Savings Improvement Program (ESIP) is an alternate method for New Jersey's government agencies to finance the implementation of energy conservation measures. An ESIP is a type of "performance contract," whereby school districts, counties, municipalities, housing authorities and other public and state entities enter in to contracts to help finance building energy upgrades. This is done in a manner that ensures that annual payments are lower than the savings projected from the ECMs, ensuring that ESIP projects are cash flow positive in year one, and every year thereafter. ESIP provides government agencies in New Jersey with a flexible tool to improve and reduce energy usage with minimal expenditure of new financial resources. NJCEP incentive programs can be leveraged to help further reduce the total project cost of eligible measures.

This LGEA report is the first step to participating in ESIP. Next, you will need to select an approach for implementing the desired ECMs:

(1) Use an Energy Services Company or "ESCO."
(2) Use independent engineers and other specialists, or your own qualified staff, to provide and manage the requirements of the program through bonds or lease obligations.
(3) Use a hybrid approach of the two options described above where the ESCO is utilized for some services and independent engineers, or other specialists or qualified staff, are used to deliver other requirements of the program.

After adopting a resolution with a chosen implementation approach, the development of the Energy Savings Plan (ESP) can begin. The ESP demonstrates that the total project costs of the ECMs are offset by the energy savings over the financing term, not to exceed 15 years. The verified savings will then be used to pay for the financing.

The ESIP approach may not be appropriate for all energy conservation and energy efficiency improvements. Entities should carefully consider all alternatives to develop an approach that best meets their needs. A detailed program descriptions and application can be found at: www.njcleanenergy.com/ESIP.

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

9 ENERGY PURCHASING AND PROCUREMENT STRATEGIES

9.1 Retail Electric Supply Options

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

Energy deregulation in New Jersey has increased energy buyers' options by separating the function of electricity distribution from that of electricity supply. So, though you may choose a different company from which to buy your electric power, responsibility for your facility's interconnection to the grid and repair to local power distribution will still reside with the traditional utility company serving your region.

If your facility is not purchasing electricity from a third party supplier, consider shopping for a reduced rate from third party electric suppliers. If your facility is purchasing electricity from a third party supplier, review and compare prices at the end of the current contract or every couple years.

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

9.2 Retail Natural Gas Supply Options

The natural gas market in New Jersey has also been deregulated. Most customers that remain with the utility for natural gas service pay rates that are market-based and that fluctuate on a monthly basis. The utility provides basic gas supply service (BGSS) to customers who choose not to buy from a third party supplier for natural gas commodity.

A customer's decision about whether to buy natural gas from a retail supplier is typically dependent upon whether a customer seeks budget certainty and/or longer-term rate stability. Customers can secure longer-term fixed prices by signing up for service through a third party retail natural gas supplier. Many larger natural gas customers may seek the assistance of a professional consultant to assist in their procurement process.

If your facility is not purchasing natural gas from a third party supplier, consider shopping for a reduced rate from third party natural gas suppliers. If your facility is purchasing natural gas from a third party supplier, review and compare prices at the end of the current contract or every couple years.

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

Appendix A: Equipment Inventory & Recommendations

Lighting Inventory & Recommendations

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Corridor	39	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	No	39	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,544	0.41	1,826	0.0	$218.69	$1,879.80	$390.00	6.81
Display lights	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	No	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,544	0.02	94	0.0	$11.21	$96.40	$20.00	6.81
Stairwell	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,544	0.13	579	0.0	$69.39	$351.00	$60.00	4.19
Stairwell	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,544	0.13	579	0.0	$69.39	$351.00	$60.00	4.19
Stairwell	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,544	0.13	579	0.0	$69.39	$351.00	$60.00	4.19
Stairwell	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,544	0.13	579	0.0	$69.39	$351.00	$60.00	4.19
Mechanical room	25	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	200	Relamp	No	25	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	200	0.54	190	0.0	$22.73	$1,462.50	$250.00	53.34
Receiving	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,544	0.04	193	0.0	$23.13	$117.00	$20.00	4.19
Receiving	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,544	0.01	47	0.0	$5.61	$48.20	$10.00	6.81
Cafeteria	24	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	24	LED - Linear Tubes: (4) 4' Lamps	High/Low Control	58	1,781	1.15	5,154	0.0	$617.38	$3,083.20	$1,320.00	2.86
Cafeteria	6	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	No	6	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,544	0.06	281	0.0	$33.64	$289.20	$60.00	6.81
Near roof hatch	5	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	No	5	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,544	0.18	819	0.0	$98.13	$475.67	$100.00	3.83
Near roof hatch	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,544	0.01	47	0.0	$5.61	$48.20	$10.00	6.81
Near roof hatch restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.01	62	0.0	$7.39	$164.20	$10.00	20.85
Kitchen office	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.19	859	0.0	$102.90	$496.53	$100.00	3.85
Storage kitchen	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	200	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	140	0.19	68	0.0	$8.09	$496.53	$80.00	51.49
Kitchen	21	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	No	21	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,544	0.77	3,441	0.0	$412.15	$1,997.80	$420.00	3.83
Stage	10	Halogen Incandescent: PAR - 1 Lamp	Wall Switch	90	200	Relamp	No	10	LED Screw-In Lamps: 1 Lamp - Focus	Wall Switch	13	200	0.51	178	0.0	$21.35	$636.51	$50.00	27.47
Kitchen Hallway	12	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	No	12	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,544	0.13	562	0.0	$67.29	$578.40	$120.00	6.81
Music room 230	21	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	21	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	1.01	4,510	0.0	$540.21	$2,267.80	$455.00	3.36
Music room office	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.10	429	0.0	$51.45	$306.27	$60.00	4.79
Music room 231	22	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	22	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	1.06	4,724	0.0	$565.93	$2,362.93	$475.00	3.34
Music room 229	22	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	22	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	1.06	4,724	0.0	$565.93	$2,362.93	$475.00	3.34
Girls restroom	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,781	0.22	976	0.0	$116.91	$738.00	$115.00	5.33
Boys restroom	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,781	0.22	976	0.0	$116.91	$738.00	$115.00	5.33

	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
Girls restroom	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,781	0.22	976	0.0	$116.91	$738.00	$115.00	5.33
Boys restroom	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,781	0.22	976	0.0	$116.91	$738.00	$115.00	5.33
Display cases	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,544	0.06	290	0.0	$34.70	$175.50	$30.00	4.19
Conference room hall	10	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	10	LED - Linear Tubes: (2) 2' Lamps	High/Low Control	17	1,781	0.14	617	0.0	$73.95	$1,282.00	$100.00	15.98
Classroom 201	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.43	1,933	0.0	$231.52	$1,126.20	$215.00	3.94
Classroom 201	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.03	123	0.0	$14.79	$96.40	$55.00	2.80
Classroom 203	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.43	1,933	0.0	$231.52	$1,126.20	$215.00	3.94
Classroom 203	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.03	123	0.0	$14.79	$96.40	$55.00	2.80
Classroom 202	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.43	1,933	0.0	$231.52	$1,126.20	$215.00	3.94
Classroom 202	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.03	123	0.0	$14.79	$96.40	$55.00	2.80
Classroom 204	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.43	1,933	0.0	$231.52	$1,126.20	$215.00	3.94
Classroom 204	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.03	123	0.0	$14.79	$96.40	$55.00	2.80
Classroom 205	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.43	1,933	0.0	$231.52	$1,126.20	$215.00	3.94
Classroom 205	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.03	123	0.0	$14.79	$96.40	$55.00	2.80
Teachers lounge	7	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	7	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.34	1,503	0.0	$180.07	$935.93	$175.00	4.23
Teachers lounge	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.03	123	0.0	$14.79	$96.40	$55.00	2.80
Men's restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.01	62	0.0	$7.39	$164.20	$10.00	20.85
Women's restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.01	62	0.0	$7.39	$164.20	$10.00	20.85
Entrance	3	Metal Halide: (1) 100W Lamp	Wall Switch	128	4,380	Fixture Replacement	No	3	LED - Fixtures: Ceiling Mount	Wall Switch	36	4,380	0.18	1,390	0.0	$166.54	$676.20	$30.00	3.88
Entrance	9	Metal Halide: (1) 100W Lamp	Wall Switch	128	4,380	Fixture Replacement	No	9	LED - Fixtures: Ceiling Mount	Wall Switch	36	4,380	0.54	4,171	0.0	$499.61	$2,028.60	$90.00	3.88
Gym entrance	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	No	5	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,544	0.11	483	0.0	$57.83	$292.50	$50.00	4.19
Gym entrance	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	No	3	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,544	0.03	140	0.0	$16.82	$144.60	$30.00	6.81
Gym storage	6	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	200	Relamp	Yes	6	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	140	0.29	101	0.0	$12.13	$686.80	$120.00	46.71
Gym storage	6	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	200	Relamp	Yes	6	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	140	0.29	101	0.0	$12.13	$686.80	$120.00	46.71
Gym	24	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	39	2,544	None	Yes	24	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	39	1,781	0.18	822	0.0	$98.41	$1,080.00	$140.00	9.55

	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
Girls locker room	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	Yes	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,781	0.27	1,220	0.0	$146.14	$855.00	$135.00	4.93
Girls locker room office	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.10	429	0.0	$51.45	$306.27	$60.00	4.79
Girls locker room office restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.01	62	0.0	$7.39	$164.20	$10.00	20.85
Girls locker room restroom	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,781	0.11	488	0.0	$58.46	$504.00	$75.00	7.34
Boys locker room	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	Yes	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,781	0.27	1,220	0.0	$146.14	$855.00	$135.00	4.93
Boys locker room office	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.10	429	0.0	$51.45	$306.27	$60.00	4.79
Boys locker room office restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.01	62	0.0	$7.39	$164.20	$10.00	20.85
Boys locker room restroom	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,781	0.11	488	0.0	$58.46	$504.00	$75.00	7.34
Gym hall entrance	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	No	3	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,544	0.03	140	0.0	$16.82	$144.60	$30.00	6.81
Gym entrance display	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	No	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,544	0.02	94	0.0	$11.21	$96.40	$20.00	6.81
Gym entrance display	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,544	0.06	290	0.0	$34.70	$175.50	$30.00	4.19
Weight rooms	15	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	15	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.72	3,221	0.0	$385.86	$1,697.00	$335.00	3.53
Tech lab	20	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	20	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.96	4,295	0.0	$514.48	$2,172.67	$435.00	3.38
Tech lab	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	No	3	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,544	0.03	140	0.0	$16.82	$144.60	$30.00	6.81
Tech lab office and TV room	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,781	0.16	732	0.0	$87.69	$467.00	$80.00	4.41
Nurse's office	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.58	2,577	0.0	$308.69	$1,257.60	$260.00	3.23
Nurse's office	4	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	No	4	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,544	0.04	187	0.0	$22.43	$192.80	$40.00	6.81
Nurse's office restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.01	62	0.0	$7.39	$164.20	$10.00	20.85
Classroom 223	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.43	1,933	0.0	$231.52	$1,126.20	$215.00	3.94
Classroom 223	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.03	123	0.0	$14.79	$96.40	$55.00	2.80
Classroom 226	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.43	1,933	0.0	$231.52	$1,126.20	$215.00	3.94
Classroom 226	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.03	123	0.0	$14.79	$96.40	$55.00	2.80
Classroom 224	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.43	1,933	0.0	$231.52	$1,126.20	$215.00	3.94
Classroom 224	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.03	123	0.0	$14.79	$96.40	$55.00	2.80
Classroom 225	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.43	1,933	0.0	$231.52	$1,126.20	$215.00	3.94

	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
Classroom 225	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.03	123	0.0	$14.79	$96.40	$55.00	2.80
Classroom 221	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.43	1,933	0.0	$231.52	$1,126.20	$215.00	3.94
Classroom 221	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.03	123	0.0	$14.79	$96.40	$55.00	2.80
Classroom 220	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.43	1,933	0.0	$231.52	$1,126.20	$215.00	3.94
Classroom 220	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.03	123	0.0	$14.79	$96.40	$55.00	2.80
Classroom 222	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.43	1,933	0.0	$231.52	$1,126.20	$215.00	3.94
Classroom 222	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.03	123	0.0	$14.79	$96.40	$55.00	2.80
Girls restroom	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,781	0.14	610	0.0	$73.07	$562.50	$85.00	6.53
Boys restroom	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,781	0.14	610	0.0	$73.07	$562.50	$85.00	6.53
219 office	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.19	859	0.0	$102.90	$496.53	$100.00	3.85
VP office	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.19	859	0.0	$102.90	$496.53	$100.00	3.85
Classroom 217	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.43	1,933	0.0	$231.52	$1,126.20	$215.00	3.94
Classroom 206	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.43	1,933	0.0	$231.52	$1,126.20	$215.00	3.94
Classroom 216	7	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	7	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.10	432	0.0	$51.76	$607.40	$105.00	9.71
Classroom 216	10	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,544	Relamp	Yes	10	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,781	0.41	1,830	0.0	$219.22	$752.00	$185.00	2.59
Classroom closet	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,781	0.05	244	0.0	$29.23	$233.00	$20.00	7.29
Classroom 207	7	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	7	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.10	432	0.0	$51.76	$607.40	$105.00	9.71
Classroom 207	10	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,544	Relamp	Yes	10	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,781	0.41	1,830	0.0	$219.22	$752.00	$185.00	2.59
Classroom closet	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,781	0.05	244	0.0	$29.23	$233.00	$20.00	7.29
Hallway	4	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	4	LED - Linear Tubes: (2) 2' Lamps	High/Low Control	17	1,781	0.06	247	0.0	$29.58	$308.80	$40.00	9.09
Science lab 209	15	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	15	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.72	3,221	0.0	$385.86	$1,427.00	$335.00	2.83
Science lab 209	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.01	62	0.0	$7.39	$318.20	$45.00	36.94
Science lab 208	15	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	15	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.72	3,221	0.0	$385.86	$1,427.00	$335.00	2.83
Science lab 208	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.01	62	0.0	$7.39	$318.20	$45.00	36.94
Science lab 214	15	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	15	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.72	3,221	0.0	$385.86	$1,427.00	$335.00	2.83

	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
Science lab 214	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.01	62	0.0	$7.39	$318.20	$45.00	36.94
Science lab 215	15	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	15	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.72	3,221	0.0	$385.86	$1,427.00	$335.00	2.83
Science lab 215	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.01	62	0.0	$7.39	$318.20	$45.00	36.94
Science lab 209	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,781	0.08	366	0.0	$43.84	$445.50	$65.00	8.68
Science lab 208	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,781	0.08	366	0.0	$43.84	$445.50	$65.00	8.68
Science lab 214	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,781	0.08	366	0.0	$43.84	$445.50	$65.00	8.68
Science lab 215	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,781	0.08	366	0.0	$43.84	$445.50	$65.00	8.68
Enrichment	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,781	0.22	976	0.0	$116.91	$738.00	$115.00	5.33
Enrichment	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	No	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,544	0.02	94	0.0	$11.21	$96.40	$20.00	6.81
Classroom 214A	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,781	0.22	976	0.0	$116.91	$738.00	$115.00	5.33
Classroom 214A	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.03	123	0.0	$14.79	$96.40	$55.00	2.80
Restroom - Enrichment	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.03	123	0.0	$14.79	$212.40	$20.00	13.01
Restroom - CR 214A	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.03	123	0.0	$14.79	$212.40	$20.00	13.01
Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,781	0.05	244	0.0	$29.23	$233.00	$40.00	6.60
Classroom 213	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.43	1,933	0.0	$231.52	$1,126.20	$215.00	3.94
Classroom 213	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.03	123	0.0	$14.79	$96.40	$55.00	2.80
Classroom 212	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.43	1,933	0.0	$231.52	$1,126.20	$215.00	3.94
Classroom 212	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.03	123	0.0	$14.79	$96.40	$55.00	2.80
Classroom 211	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.43	1,933	0.0	$231.52	$1,126.20	$215.00	3.94
Classroom 211	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.03	123	0.0	$14.79	$96.40	$55.00	2.80
Classroom 210	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.43	1,933	0.0	$231.52	$1,126.20	$215.00	3.94
Classroom 210	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.03	123	0.0	$14.79	$96.40	$55.00	2.80
2B	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,781	0.05	244	0.0	$29.23	$233.00	$40.00	6.60
Hallway	15	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	15	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.21	926	0.0	$110.92	$955.00	$150.00	7.26
Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,781	0.05	244	0.0	$29.23	$233.00	$20.00	7.29

	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) - 2L	Wall Switch	62	2,544	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,781	0.05	244	0.0	$29.23	$233.00	$20.00	7.29
Storage electrical room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	200	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	200	0.04	15	0.0	$1.82	$117.00	$20.00	53.34
Storage electrical room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	200	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	200	0.04	15	0.0	$1.82	$117.00	$20.00	53.34
Main office suite	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	No	12	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,544	0.44	1,966	0.0	$235.51	$1,141.60	$240.00	3.83
Main office suite - Copy room	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.10	429	0.0	$51.45	$306.27	$60.00	4.79
Main office suite - Tech closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	200	Relamp	Yes	1	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	140	0.05	17	0.0	$2.02	$211.13	$20.00	94.51
Main office suite - Hallway	10	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	10	LED - Linear Tubes: (2) 2' Lamps	High/Low Control	17	1,781	0.14	617	0.0	$73.95	$1,148.67	$100.00	14.18
Main office suite - Guidance	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	3	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.14	644	0.0	$77.17	$401.40	$80.00	4.16
Men's restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.01	62	0.0	$7.39	$164.20	$10.00	20.85
Women's restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.01	62	0.0	$7.39	$164.20	$10.00	20.85
Main office suite - CST 2	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	3	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.04	185	0.0	$22.18	$260.60	$50.00	9.49
Main office suite - CST 1	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	3	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.04	185	0.0	$22.18	$260.60	$50.00	9.49
Main office suite - office	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	3	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.04	185	0.0	$22.18	$260.60	$50.00	9.49
Main office suite - Councellors	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	3	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.04	185	0.0	$22.18	$260.60	$50.00	9.49
Main office suite - Councellors	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	3	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.04	185	0.0	$22.18	$260.60	$50.00	9.49
Main office suite - Councellors	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	3	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.04	185	0.0	$22.18	$260.60	$50.00	9.49
Main office suite - Councellors	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	3	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.04	185	0.0	$22.18	$260.60	$50.00	9.49
Main office suite - closet	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	200	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	200	0.01	4	0.0	$0.44	$48.20	$10.00	86.65
Main office suite - conference room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,544	0.04	193	0.0	$23.13	$117.00	$20.00	4.19
Main office room - conference room	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.03	123	0.0	$14.79	$212.40	$40.00	11.66
Main office room - conference room	5	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	5	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.24	1,074	0.0	$128.62	$591.67	$120.00	3.67
Main office suite restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.01	62	0.0	$7.39	$164.20	$10.00	20.85
Principal's office	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.19	859	0.0	$102.90	$496.53	$100.00	3.85
Electrical machine - Ground floor	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	200	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	200	0.02	8	0.0	$0.91	$58.50	$10.00	53.34
Hallway - Ground floor	13	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	13	LED - Linear Tubes: (2) 2' Lamps	High/Low Control	17	1,781	0.18	802	0.0	$96.13	$826.60	$130.00	7.25

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Coutyard access	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	3	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.04	185	0.0	$22.18	$260.60	$30.00	10.39
Classroom 101	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.43	1,933	0.0	$231.52	$1,126.20	$215.00	3.94
Classroom 101	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.03	123	0.0	$14.79	$96.40	$55.00	2.80
Classroom 103	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.43	1,933	0.0	$231.52	$1,126.20	$215.00	3.94
Classroom 103	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.03	123	0.0	$14.79	$96.40	$55.00	2.80
Classroom 102	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.43	1,933	0.0	$231.52	$1,126.20	$215.00	3.94
Classroom 102	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.03	123	0.0	$14.79	$96.40	$55.00	2.80
Classroom 104	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.43	1,933	0.0	$231.52	$1,126.20	$215.00	3.94
Classroom 104	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.03	123	0.0	$14.79	$96.40	$55.00	2.80
Classroom 106	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.43	1,933	0.0	$231.52	$1,126.20	$215.00	3.94
Classroom 106	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.03	123	0.0	$14.79	$96.40	$55.00	2.80
Classroom 105	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.43	1,933	0.0	$231.52	$1,126.20	$215.00	3.94
Classroom 105	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.03	123	0.0	$14.79	$96.40	$55.00	2.80
Classroom 110	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.43	1,933	0.0	$231.52	$1,126.20	$215.00	3.94
Classroom 110	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.03	123	0.0	$14.79	$96.40	$55.00	2.80
Girls restroom	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,781	0.14	610	0.0	$73.07	$562.50	$85.00	6.53
Boys restroom	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,781	0.14	610	0.0	$73.07	$562.50	$85.00	6.53
Classroom 108	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,781	0.22	976	0.0	$116.91	$738.00	$115.00	5.33
Classroom 117	8	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	No	8	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,544	0.08	374	0.0	$44.86	$385.60	$80.00	6.81
Restroom 108	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	No	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,544	0.02	94	0.0	$11.21	$96.40	$20.00	6.81
Restroom 117	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	No	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,544	0.02	94	0.0	$11.21	$96.40	$20.00	6.81
CR Corner - 118	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.43	1,933	0.0	$231.52	$1,126.20	$215.00	3.94
Office 1A	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,781	0.05	244	0.0	$29.23	$387.00	$55.00	11.36
Science labs 110	15	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	15	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.72	3,221	0.0	$385.86	$1,697.00	$335.00	3.53
Science labs 110	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.01	62	0.0	$7.39	$48.20	$45.00	0.43

	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
Science lab prep 110	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,781	0.08	366	0.0	$43.84	$291.50	$50.00	5.51
Science labs 111	15	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	15	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.72	3,221	0.0	$385.86	$1,697.00	$335.00	3.53
Science labs 111	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.01	62	0.0	$7.39	$48.20	$45.00	0.43
Science lab prep 111	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,781	0.08	366	0.0	$43.84	$291.50	$50.00	5.51
Science labs 115	15	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	15	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.72	3,221	0.0	$385.86	$1,697.00	$335.00	3.53
Science labs 115	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.01	62	0.0	$7.39	$48.20	$45.00	0.43
Science lab prep 115	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,781	0.08	366	0.0	$43.84	$291.50	$50.00	5.51
Science labs 116	15	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	15	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.72	3,221	0.0	$385.86	$1,697.00	$335.00	3.53
Science labs 116	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.01	62	0.0	$7.39	$48.20	$45.00	0.43
Science lab prep 116	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,781	0.08	366	0.0	$43.84	$291.50	$50.00	5.51
Hallway	19	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	19	LED - Linear Tubes: (4) 4' Lamps	High/Low Control	58	1,781	0.91	4,080	0.0	$488.76	$2,207.53	$380.00	3.74
Offices	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,781	0.05	244	0.0	$29.23	$233.00	$40.00	6.60
Offices	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,781	0.05	244	0.0	$29.23	$233.00	$40.00	6.60
Display	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,544	0.09	386	0.0	$46.26	$234.00	$40.00	4.19
Media center	20	Metal Halide: (1) 100W Lamp	Wall Switch	128	2,544	Fixture Replacement	Yes	20	LED - Fixtures: Ceiling Mount	Occupancy Sensor	36	1,781	1.35	6,015	0.0	$720.55	$4,508.00	$235.00	5.93
Media center	5	Metal Halide: (1) 70W Lamp	Wall Switch	95	2,544	Fixture Replacement	Yes	5	LED - Fixtures: Ceiling Mount	Occupancy Sensor	36	1,781	0.23	1,021	0.0	$122.31	$1,127.00	$85.00	8.52
Media center	21	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	Yes	21	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,781	0.57	2,562	0.0	$306.90	$2,308.50	$350.00	6.38
Media center	5	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	5	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.07	309	0.0	$36.97	$241.00	$85.00	4.22
Media center AV room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,544	0.04	193	0.0	$23.13	$117.00	$20.00	4.19
Media center office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,781	0.11	488	0.0	$58.46	$350.00	$60.00	4.96
Computer room	15	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,544	Relamp	Yes	15	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,781	0.62	2,745	0.0	$328.82	$1,398.00	$260.00	3.46
Enrichment room	8	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	8	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.38	1,718	0.0	$205.79	$877.07	$180.00	3.39
Computer room 114	15	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,544	Relamp	Yes	15	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,781	0.62	2,745	0.0	$328.82	$1,398.00	$260.00	3.46
Office IC	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,781	0.05	244	0.0	$29.23	$233.00	$40.00	6.60
VP office and secretary	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,781	0.22	976	0.0	$116.91	$584.00	$100.00	4.14

	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
Girls restroom	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,781	0.14	610	0.0	$73.07	$408.50	$70.00	4.63
Boys restroom	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,781	0.14	610	0.0	$73.07	$408.50	$70.00	4.63
Classroom 121	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.43	1,933	0.0	$231.52	$1,126.20	$215.00	3.94
Classroom 121	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.03	123	0.0	$14.79	$96.40	$55.00	2.80
Classroom 122	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.43	1,933	0.0	$231.52	$1,126.20	$215.00	3.94
Classroom 122	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.03	123	0.0	$14.79	$96.40	$55.00	2.80
Classroom 123	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.43	1,933	0.0	$231.52	$1,126.20	$215.00	3.94
Classroom 123	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.03	123	0.0	$14.79	$96.40	$55.00	2.80
Classroom 124	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.43	1,933	0.0	$231.52	$1,126.20	$215.00	3.94
Classroom 124	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.03	123	0.0	$14.79	$96.40	$55.00	2.80
Classroom 126	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.43	1,933	0.0	$231.52	$1,126.20	$215.00	3.94
Classroom 126	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.03	123	0.0	$14.79	$96.40	$55.00	2.80
Classroom 125	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.43	1,933	0.0	$231.52	$1,126.20	$215.00	3.94
Classroom 125	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.03	123	0.0	$14.79	$96.40	$55.00	2.80
Teachers lounge	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,781	0.22	976	0.0	$116.91	$584.00	$100.00	4.14
Men's restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.01	62	0.0	$7.39	$164.20	$10.00	20.85
Women's restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.01	62	0.0	$7.39	$164.20	$10.00	20.85
Courtyard entrance	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	3	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.04	185	0.0	$22.18	$260.60	$30.00	10.39
Hallway	16	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	16	LED - Linear Tubes: (2) 2' Lamps	High/Low Control	17	1,781	0.22	988	0.0	$118.32	$1,571.20	$160.00	11.93
Classroom 127	15	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	15	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.72	3,221	0.0	$385.86	$1,697.00	$335.00	3.53
Classroom 127	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	3	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.04	185	0.0	$22.18	$144.60	$65.00	3.59
Classroom 128 CAD	20	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	20	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.96	4,295	0.0	$514.48	$2,172.67	$435.00	3.38
Computer lab - 129	18	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	18	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.87	3,865	0.0	$463.03	$1,982.40	$395.00	3.43
Bookstore	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,781	0.08	366	0.0	$43.84	$291.50	$50.00	5.51
Classroom 130	6	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,544	Relamp	Yes	6	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,781	0.29	1,288	0.0	$154.34	$840.80	$155.00	4.44

	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
Classroom 130	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,544	Relamp	Yes	3	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,781	0.04	185	0.0	$22.18	$144.60	$65.00	3.59
Grounds - single fixture pole	6	High-Pressure Sodium: (1) 400W Lamp	Wall Switch	465	4,380	Fixture Replacement	No	6	LED - Fixtures: Outdoor Pole/Arm-Mounted Area/Roadway Fixture	Wall Switch	120	4,380	1.36	10,427	0.0	$1,249.02	$11,717.96	$600.00	8.90
Grounds - double fixture pole	7	High-Pressure Sodium: (1) 400W Lamp	Wall Switch	930	4,380	Fixture Replacement	No	7	LED - Fixtures: Outdoor Pole/Arm-Mounted Area/Roadway Fixture	Wall Switch	240	4,380	3.17	24,329	0.0	$2,914.39	$13,670.95	$700.00	4.45
Grounds - four fixture pole	6	High-Pressure Sodium: (1) 250W Lamp	Wall Switch	1,180	4,380	Fixture Replacement	No	6	LED - Fixtures: Outdoor Pole/Arm-Mounted Area/Roadway Fixture	Wall Switch	300	4,380	3.46	26,595	0.0	$3,185.92	$11,717.96	$600.00	3.49
Wall packs	17	High-Pressure Sodium: (1) 250W Lamp	Wall Switch	295	4,380	Fixture Replacement	No	17	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	75	4,380	2.45	18,838	0.0	$2,256.69	$6,641.51	$1,700.00	2.19
Garden poles	2	High-Pressure Sodium: (1) 70W Lamp	Wall Switch	95	4,380	Relamp	No	2	LED Screw-In Lamps: 1 Lamp	Wall Switch	13	4,380	0.11	831	0.0	$99.56	$127.30	$0.00	1.28
All school	37	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	37	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
5 Trailers	75	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	Yes	75	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,781	2.05	9,150	0.0	$1,096.08	$5,737.50	$925.00	4.39
All trailers	10	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	10	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Trailer - restroom	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,544	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,781	0.14	610	0.0	$73.07	$872.50	$50.00	11.26

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
Mechanical room	Boiler	2	Other	2.0	86.5%	No	2,745	No	86.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Mechanical room	DHW	2	Other	0.5	60.0%	No	2,745	Yes	78.2%	No		0.16	596	0.0	$71.36	$1,010.26	$0.00	14.16
Mechanical room	Boiler	2	Heating Hot Water Pump	1.5	80.0%	No	2,745	Yes	86.5%	Yes	2	0.50	3,479	0.0	$416.75	$6,760.31	$0.00	16.22
Mechanical room	Boiler	2	Heating Hot Water Pump	7.5	85.5%	No	3,391	Yes	91.7%	Yes	2	2.28	20,026	0.0	$2,398.92	$9,521.18	$0.00	3.97
Electrical machine room	Elevator	1	Other	15.0	92.4%	No	800	No	92.4%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	RTU 9 - Cafeteria	1	Supply Fan	7.5	91.7%	No	3,391	No	91.7%	Yes	1	0.99	3,724	0.0	$446.13	$3,606.80	$600.00	6.74
Roof	RTU 9 - Cafeteria	1	Exhaust Fan	7.5	91.7%	No	3,391	No	91.7%	Yes	1	0.99	3,724	0.0	$446.13	$3,606.80	$600.00	6.74
Roof	RTU 10,11 - Gym	2	Supply Fan	5.0	89.5%	No	2,745	No	89.5%	Yes	1	1.35	4,118	0.0	$493.35	$3,807.95	$800.00	6.10
Roof	RTU 10,11 - Gym	2	Exhaust Fan	2.0	86.5%	No	2,745	No	86.5%	Yes	1	0.56	1,705	0.0	$204.19	$3,007.65	$320.00	13.16
All school	Unit heater	77	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
Roof	Exhaust	18	Exhaust Fan	0.3	60.0%	No	2,745	No	60.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Electric HVAC Inventory & Recommendations

		Existing Conditions				Proposed Conditions								Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (kBtu/hr)	Install High Efficiency System?	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (kBtu/hr)	Cooling Mode Efficiency (SEER/EER)	Heating Mode Efficiency (COP)	Install Dual Enthalpy Economizer?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Roof	RTU 12, 13	2	Packaged AC	7.00		Yes	2	Packaged AC	7.00		11.50		No	0.44	751	0.0	$89.97	$24,949.48	$1,022.00	265.96
Roof	Science room, art room	9	Split-System AC	3.50		Yes	9	Split-System AC	3.50		14.00		No	6.00	10,752	0.0	$1,288.00	$47,130.93	$2,898.00	34.34
Roof	2 Art rooms	2	Split-System AC	4.00		Yes	2	Split-System AC	4.00		14.00		No	1.85	3,311	0.0	$396.65	$11,969.76	$736.00	28.32
Roof	Classrooms	15	Split-System AC	2.50		Yes	15	Split-System AC	2.50		14.00		No	4.33	7,750	0.0	$928.37	$56,108.25	$3,450.00	56.72
Roof	RTU - 20, Science classroom	1	Packaged AC	4.00		Yes	1	Packaged AC	4.00		14.00		No	0.18	298	0.0	$35.73	$9,075.84	$368.00	243.70
Roof	RTU - 21,22 Media center	2	Packaged AC	12.50		Yes	2	Packaged AC	12.50		11.50		No	3.46	5,839	0.0	$699.51	$34,846.25	$1,975.00	46.99
Roof	Computer lab	1	Split-System AC	4.00		Yes	1	Split-System AC	4.00		14.00		No	0.92	1,656	0.0	$198.32	$5,984.88	$368.00	28.32
Roof	Computer lab	1	Split-System AC	2.00		Yes	1	Split-System AC	2.00		14.00		No	0.11	195	0.0	$23.36	$2,992.44	$184.00	120.22
Roof	Classrooms	4	Split-System AC	3.50		Yes	4	Split-System AC	3.50		14.00		No	2.67	4,779	0.0	$572.44	$20,947.08	$1,288.00	34.34
Roof	Offices	2	Split-System AC	1.50		Yes	2	Split-System AC	1.50		14.00		No	0.47	842	0.0	$100.81	$4,488.66	$276.00	41.79
Roof	Hallway	1	Split-System AC	2.50		Yes	1	Split-System AC	2.50		14.00		No	0.29	517	0.0	$61.89	$3,740.55	$230.00	56.72
Roof	Hallway	1	Split-System AC	3.00		Yes	1	Split-System AC	3.00		14.00		No	0.13	237	0.0	$28.43	$4,488.66	$276.00	148.15
Roof	RTU 19 - Guidance	1	Packaged AC	3.00		Yes	1	Packaged AC	3.00		14.00		No	0.13	224	0.0	$26.80	$6,806.88	$276.00	243.70
Roof	RTU 18 - Nurse's office	1	Packaged AC	3.00		Yes	1	Packaged AC	3.00		14.00		No	0.13	224	0.0	$26.80	$6,806.88	$276.00	243.70
Roof	Locker room	1	Split-System AC	7.50		Yes	1	Split-System AC	7.50		11.50		No	1.47	2,636	0.0	$315.77	$8,728.28	$547.50	25.91
Roof	Tech room	1	Split-System AC	7.50		Yes	1	Split-System AC	7.50		11.50		No	1.47	2,636	0.0	$315.77	$8,728.28	$547.50	25.91
Courtyard	Classrooms	11	Split-System AC	2.50		Yes	11	Split-System AC	2.50		14.00		No	3.17	5,683	0.0	$680.81	$41,146.05	$2,530.00	56.72
Courtyard	Offices	1	Split-System AC	1.50		Yes	1	Split-System AC	1.50		14.00		No	0.14	257	0.0	$30.80	$2,244.33	$138.00	68.38
Courtyard	Offices	4	Split-System AC	2.00		Yes	4	Split-System AC	2.00		14.00		No	0.44	780	0.0	$93.45	$11,969.76	$736.00	120.22
Roof	Hallway	1	Split-System AC	3.50		Yes	1	Split-System AC	3.50		14.00		No	0.67	1,195	0.0	$143.11	$5,236.77	$322.00	34.34

		Existing Conditions				Proposed Conditions								Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (kBtu/hr)	Install High Efficiency System?	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (kBtu/hr)	Cooling Mode Efficiency (SEER/EER)	Heating Mode Efficiency (COP)	Install Dual Enthalpy Economizer?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Roof	Music room	1	Packaged AC	7.50		Yes	1	Packaged AC	7.50		11.50		No	0.55	936	0.0	$112.15	$13,365.79	$547.50	114.30
Roof	RTU 15 - Band room	1	Packaged AC	6.00		Yes	1	Packaged AC	6.00		11.50		No	0.53	902	0.0	$108.11	$10,692.63	$438.00	94.85
Roof	RTU 16	1	Packaged AC	4.00		Yes	1	Packaged AC	4.00		14.00		No	0.18	298	0.0	$35.73	$9,075.84	$368.00	243.70
Roof	RTU 9 - Cafeteria	1	Packaged AC	25.00		Yes	1	Packaged AC	25.00		11.00		No	1.83	3,085	0.0	$369.50	$42,184.98	$1,975.00	108.82
Roof	Kitchen	1	Packaged AC	7.00		Yes	1	Packaged AC	7.00		11.50		No	0.73	1,239	0.0	$148.44	$12,474.74	$511.00	80.59
Roof	RTU 10,11 - Gym	2	Packaged AC	25.00		Yes	2	Packaged AC	25.00		11.00		No	3.65	6,169	0.0	$739.01	$84,369.95	$3,950.00	108.82
Roof	Unknown	1	Split-System AC	7.50		Yes	1	Split-System AC	7.50		11.50		No	1.47	2,636	0.0	$315.77	$8,728.28	$547.50	25.91
Roof	Tech closet	1	Split-System AC	1.50		Yes	1	Split-System AC	1.50		14.00		No	0.14	257	0.0	$30.80	$2,244.33	$138.00	68.38
Roof	RTU 17 - Offices	1	Packaged AC	12.50		Yes	1	Packaged AC	12.50		11.50		No	1.73	2,920	0.0	$349.76	$17,423.13	$987.50	46.99
Roof	Classrooms	10	Split-System AC	2.50		Yes	10	Split-System AC	2.50		14.00		No	2.88	5,167	0.0	$618.92	$37,405.50	$2,300.00	56.72
Roof	Hallway	1	Split-System AC	2.50		Yes	1	Split-System AC	2.50		14.00		No	0.29	517	0.0	$61.89	$3,740.55	$230.00	56.72
Roof	Teachers room	1	Split-System AC	3.50		Yes	1	Split-System AC	2.50		14.00		No	1.24	2,223	0.0	$266.33	$3,740.55	$230.00	13.18
Roof	Principal's office	1	Split-System AC	2.00		Yes	1	Split-System AC	2.00		14.00		No	0.11	195	0.0	$23.36	$2,992.44	$184.00	120.22
Courtyard	Classrooms	1	Split-System AC	5.00		Yes	1	Split-System AC	5.00		14.00		No	0.89	1,602	0.0	$191.93	$7,481.10	$460.00	36.58
Courtyard	Classrooms	2	Split-System AC	4.00		Yes	2	Split-System AC	4.00		14.00		No	1.85	3,311	0.0	$396.65	$11,969.76	$736.00	28.32
Kitchen office	Kitchen office	2	Packaged Terminal AC	1.00		Yes	2	Packaged Terminal AC	1.00		12.00		No	0.45	754	0.0	$90.32	$3,829.62	$130.00	40.96
Trailers	Trailers	5	Electric Resistance Heat		38.40	No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Trailers	Trailers	5	Packaged AC	3.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Private office	Private office	1	Packaged Terminal AC	1.00		No							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
Mechanical room	All school	2	Non-Condensing Hot Water Boiler	2,172.00	Yes	2	Non-Condensing Hot Water Boiler	2,172.00	85.00%	Et	0.00	0	141.1	$1,920.32	$77,547.03	$6,516.00	36.99
Roof	RTU - 20, Science classroom	1	Furnace	96.00	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	RTU - 21,22 Media center	2	Furnace	203.00	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	RTU 19 - Guidance	1	Furnace	96.00	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	RTU 18 - Nurse's office	1	Furnace	96.00	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Music room	1	Furnace	162.00	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	RTU 15 - Band room	1	Furnace	121.00	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	RTU 16	1	Furnace	96.00	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	RTU 9 - Cafeteria	1	Furnace	316.00	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Kitchen	1	Furnace	162.00	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	RTU 10,11 - Gym	2	Furnace	437.00	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	RTU 17 - Offices	1	Furnace	203.00	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
Mechanical room	Restrooms and kitchen	1	Storage Tank Water Heater (> 50 Gal)	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Low-Flow Device Recommendations

	Recommedation Inputs				Energy Impact & Financial Analysis						
Location	Device Quantity	Device Type	Existing Flow Rate (gpm)	Proposed Flow Rate (gpm)	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Restroom near roof hatch	1	Faucet Aerator (Lavatory)	2.50	1.00	0.00	0	2.4	$32.14	$7.17	$0.00	0.22
Girls restroom and boyrs restroom near kitchen	8	Faucet Aerator (Lavatory)	2.50	1.00	0.00	0	18.9	$257.10	$57.36	$0.00	0.22
2 Mens restroom and 2 womens restroom - Techers lounge	4	Faucet Aerator (Lavatory)	2.50	1.00	0.00	0	9.4	$128.55	$28.68	$0.00	0.22
Girls locker room	2	Faucet Aerator (Lavatory)	2.50	1.00	0.00	0	4.7	$64.27	$14.34	$0.00	0.22
Girls restroom and boys restroom - rest of the school	18	Faucet Aerator (Lavatory)	2.50	1.00	0.00	0	42.5	$578.47	$129.06	$0.00	0.22

Walk-In Cooler/Freezer Inventory & Recommendations

	Existing Conditions		Proposed Conditions			Energy Impact & Financial Analysis						
Location	Cooler/ Freezer Quantity	Case Type/Temperature	Install EC Evaporator Fan Motors?	Install Electric Defrost Control?	Install Evaporator Fan Control?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen	1	Cooler (35F to 55F)	No	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	1	Medium Temp Freezer (0F to 30F)	No	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Commercial Refrigerator/Freezer Inventory & Recommendations

	Existing Conditions			Proposed Condi	Energy Impact & Financial Analysis						
Location	Quantity	Refrigerator/ Freezer Type	ENERGY STAR Qualified?	Install ENERGY STAR Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen	1	Stand-Up Refrigerator, Solid Door (31 - 50 cu. ft.)	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	2	Stand-Up Refrigerator, Solid Door (16 - 30 cu. ft.)	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	1	Refrigerator Chest	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	1	Freezer Chest	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	2	Refrigerator Chest	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Cooking Equipment Inventory & Recommendations

	Existing Conditions			Proposed Conditions	Energy Impact & Financial Analysis						
Location	Quantity	Equipment Type	High Efficiency Equipement?	Install High Efficiency Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen	3	Gas Steamer	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	2	Insulated Food Holding Cabinet (Full Size)	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	2	Gas Convection Oven (Half Size)	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	2	Insulated Food Holding Cabinet (1/2 Size)	No	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?
Christa McAuliffe MS	153	Computer	150.0	Yes
Christa McAuliffe MS	26	Laptop	45.0	Yes
Christa McAuliffe MS	10	Printer - Small	20.0	Yes
Christa McAuliffe MS	14	Printer - medium	60.0	Yes
Christa McAuliffe MS	6	Printer - large	200.0	Yes
Christa McAuliffe MS	3	Paper shredder	150.0	Yes
Christa McAuliffe MS	34	Projector	200.0	Yes
Christa McAuliffe MS	20	Microwave	1,000.0	No
Christa McAuliffe MS	2	Refrigerator - small	80.0	No
Christa McAuliffe MS	3	Refrigerator - medium	150.0	No
Christa McAuliffe MS	10	Refrigerator - Large	218.0	Yes
Christa McAuliffe MS	6	Coffee machine	400.0	Yes
Christa McAuliffe MS	1	Toaster	850.0	Yes
Christa McAuliffe MS	4	Toaster oven	1,200.0	Yes
Christa McAuliffe MS	2	Clothes washer	900.0	Yes
Christa McAuliffe MS	2	Clothes dryer	3,000.0	Yes
Christa McAuliffe MS	3	Dishwasher	1,500.0	Yes
Christa McAuliffe MS	1	Television - CRT	150.0	No
Christa McAuliffe MS	5	Television - LCD	120.0	Yes
Christa McAuliffe MS	32	Smart Board	5.0	Yes
Christa McAuliffe MS	6	Induction stove	3,000.0	No

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
Teachers' lounge	6	Refrigerated	Yes	0.00	9,671	0.0	$1,158.51	$1,380.00	$0.00	1.19

Appendix B: ENERGY STAR® Statement of Energy Performance

ENERGY STAR® Statement of Energy Performance

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ENERGY STAR® Score[1]

Christa McAuliffe Middle School

Primary Property Type: K-12 School
Gross Floor Area (ft²): 130,000
Built: 1993

For Year Ending: November 30, 2016
Date Generated: March 26, 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
Christa McAuliffe Middle School 35 South Hope Chapel Road Jackson, New Jersey 08527	Jackson Township BOE 151 Don Connor Boulevard Jackson, NJ 08527 (732) 833-4600	Michelle Richardson 151 Don Connor Boulevard Jackson, NJ 08527 (732) 833-4600 sstewart@trcsolutions.com

Property ID: 2552292

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
65.4 kBtu/ft²

Source EUI
142.8 kBtu/ft²

Annual Energy by Fuel	
Electric - Grid (kBtu)	4,608,226 (54%)
Natural Gas (kBtu)	3,897,963 (46%)

National Median Comparison	
National Median Site EUI (kBtu/ft²)	61.6
National Median Source EUI (kBtu/ft²)	134.5
% Diff from National Median Source EUI	6%
Annual Emissions	
Greenhouse Gas Emissions (Metric Tons CO2e/year)	718

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)