Local Government Energy Audit:
Energy Audit Report

Millstone River Elementary School

75 Grovers Mill Road

Plainsboro, New Jersey 08536

West Windsor - Plainsboro Regional School District

March 22, 2019

Final Report by:

TRC Energy Services

Disclaimer

The goal of this audit report is to identify potential energy efficiency opportunities, help prioritize specific measures for implementation, and provide information about financial incentives that may be available. Most energy conservation measures have received preliminary analysis of feasibility that identifies expected ranges of savings and costs. This level of analysis is usually considered sufficient to establish a basis for further discussion and to help prioritize energy measures.

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

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

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

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

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1 EXECUTIVE SUMMARY

The New Jersey Board of Public Utilities (NJBPU) has sponsored this Local Government Energy Audit (LGEA) Report for Millstone River Elementary School.

The goal of a 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

Millstone River Elementary School is a 142,300 square foot facility comprised of various space types such as classrooms, offices, conference, hallways, stairwell, kitchen, cafeteria, gym, restrooms and mechanical space. This is a two-story building. The school operates during the weekdays from 7:00 AM to 4:00 PM and remains closed during the weekends. Space heating in the building is provided using two gas-fired non-condensing hot water boilers and several air handling units. Space cooling in the building is provided using three air-cooled scroll chillers each with a 140-ton capacity. There are also a few split air conditioning (AC) units and window AC units in the facility. Lighting in the building consists of fluorescent linear T8 and some T12 fixtures. Smaller spaces also have compact fluorescent lamp fixtures and incandescent lamp fixtures. Some of the facility lighting is inefficient and in need of replacement. A thorough description of the facility and our observations are located in Section 2.

1.2 Your Cost Reduction Opportunities

Energy Conservation Measures

TRC evaluated 11 measures and recommended eight measures which together represent an opportunity for Millstone River Elementary School to reduce annual energy costs by roughly $82,793 and annual greenhouse gas emissions by 636,001 lbs CO_2e. We estimate that if all measures were implemented as recommended, the project would pay for itself in 2.9 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 Millstone River Elementary School's annual energy use by 17%.

Figure 1 – Previous 12 Month Utility Costs

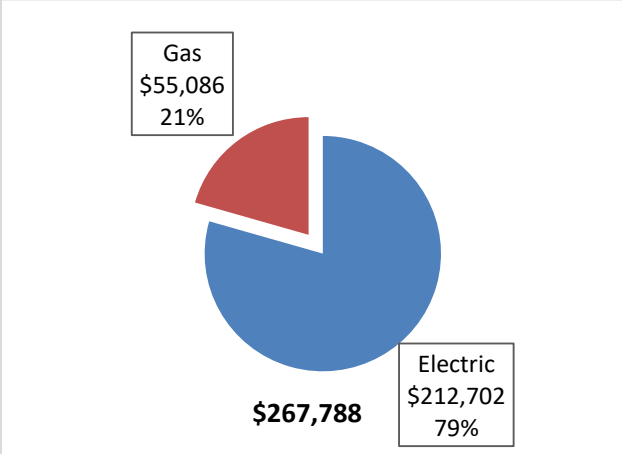
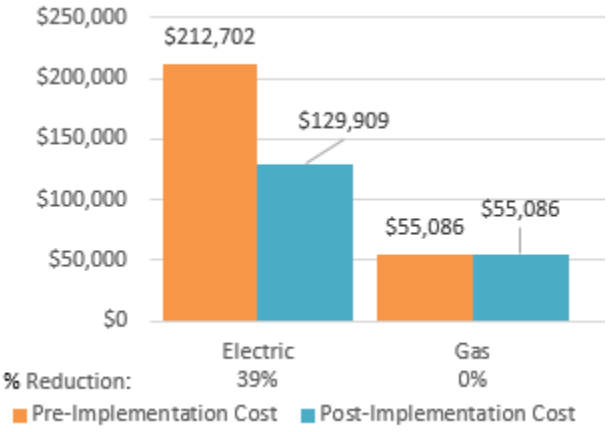


Figure 2 – Potential Post-Implementation Costs



A detailed description of Millstone River Elementary School's existing energy use can be found in Section 3.

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

Figure 3 – Summary of Energy Reduction Opportunities

Energy Conservation Measure		Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades			**453,374**	**78.7**	**0.0**	**$59,431.45**	**$192,231.40**	**$30,151.00**	**$162,080.40**	**2.7**	**456,544**
ECM 1	Install LED Fixtures	Yes	50,988	6.6	0.0	$6,683.82	$68,583.55	$7,100.00	$61,483.55	9.2	51,344
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	221,262	29.3	0.0	$29,004.62	$37,855.82	$80.00	$37,775.82	1.3	222,809
ECM 3	Retrofit Fixtures with LED Lamps	Yes	181,124	42.7	0.0	$23,743.02	$85,792.03	$22,971.00	$62,821.03	2.6	182,390
Lighting Control Measures			**33,482**	**8.7**	**0.0**	**$4,389.09**	**$45,480.00**	**$5,970.00**	**$39,510.00**	**9.0**	**33,716**
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	33,482	8.7	0.0	$4,389.09	$45,480.00	$5,970.00	$39,510.00	9.0	33,716
Motor Upgrades			**5,896**	**1.6**	**0.0**	**$772.90**	**$28,828.33**	**$0.00**	**$28,828.33**	**37.3**	**5,937**
	Premium Efficiency Motors	No	5,896	1.6	0.0	$772.90	$28,828.33	$0.00	$28,828.33	37.3	5,937
Variable Frequency Drive (VFD) Measures			**143,117**	**15.1**	**0.0**	**$18,760.84**	**$43,444.05**	**$4,240.00**	**$39,204.05**	**2.1**	**144,118**
ECM 5	Install VFDs on Constant Volume (CV) HVAC	Yes	6,521	2.2	0.0	$854.80	$6,283.50	$640.00	$5,643.50	6.6	6,566
ECM 6	Install VFDs on Chilled Water Pumps	Yes	99,081	9.1	0.0	$12,988.27	$26,771.65	$3,600.00	$23,171.65	1.8	99,774
ECM 7	Install VFDs on Hot Water Pumps	Yes	37,515	3.8	0.0	$4,917.77	$10,388.90	$0.00	$10,388.90	2.1	37,778
Gas Heating (HVAC/Process) Replacement			**0**	**0.0**	**324.9**	**$2,536.04**	**$143,388.37**	**$0.00**	**$143,388.37**	**56.5**	**38,039**
	Install High Efficiency Hot Water Boilers	No	0	0.0	324.9	$2,536.04	$143,388.37	$0.00	$143,388.37	56.5	38,039
Domestic Water Heating Upgrade			**0**	**0.0**	**33.5**	**$261.89**	**$50,611.10**	**$1,767.50**	**$48,843.60**	**186.5**	**3,928**
	Install High Efficiency Gas Water Heater	No	0	0.0	33.5	$261.89	$50,611.10	$1,767.50	$48,843.60	186.5	3,928
Plug Load Equipment Control - Vending Machine			**1,612**	**0.0**	**0.0**	**$211.29**	**$230.00**	**$0.00**	**$230.00**	**1.1**	**1,623**
ECM 8	Vending Machine Control	Yes	1,612	0.0	0.0	$211.29	$230.00	$0.00	$230.00	1.1	1,623
TOTALS FOR HIGH PRIORITY MEASURES			**631,585**	**102.5**	**0.0**	**$82,792.68**	**$281,385.45**	**$40,361.00**	**$241,024.45**	**2.9**	**636,001**
TOTALS FOR ALL EVALUATED MEASURES			**637,481**	**104.1**	**358.4**	**$86,363.50**	**$504,213.25**	**$42,128.50**	**$462,084.75**	**5.4**	**683,905**

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

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

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

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

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

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

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 outlet when not in use.

Energy Efficient Practices

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

- Perform Routine Motor Maintenance
- Practice Proper Use of Thermostat Schedules and Temperature Resets
- Clean and/or Replace HVAC Filters
- Perform Proper Boiler Maintenance
- Perform Proper Water Heater Maintenance
- Install Plug Load Controls
- Water Conservation

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

On-Site Generation Measures

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

Figure 4 – Photovoltaic Potential

Potential	High	
System Potential	315	kW DC STC
Electric Generation	375,281	kWh/yr
Displaced Cost	$32,650	/yr
Installed Cost	$819,000	

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

1.3 Implementation Planning

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

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

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

- SmartStart
- 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.

The Demand Response Energy Aggregator is a (non-NJCEP) program designed to reduce electric loads at commercial facilities, when wholesale electricity prices are high or when the reliability of the electric grid is threatened due to peak power demand. Demand Response (DR) service providers (a.k.a. Curtailment Service Providers) are registered with PJM, the independent system operator (ISO) for mid-Atlantic state region that is charged with maintaining electric grid reliability. By enabling grid operators to call upon commercial facilities to reduce their electric usage during times of peak demand, the grid is made more reliable and overall transmission costs are reduced for all ratepayers. Curtailment Service Providers provide regular payments to medium and large consumers of electric power for their participation in DR programs. Program participation is voluntary and facilities receive payments whether or not they are called upon to curtail their load during times of peak demand. Refer to Section 7 for additional information on this program.

Additional information on relevant incentive programs is located in Section 8 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			
Dr. Christopher Russo	Business Administrator	christopher.russo@ww.o.org	609-716-5000 Extn 5020
TRC Energy Services			
Alex Klieverik	Auditor	aklieverik@trcsolutions.com	(732) 855-0033

2.2 General Site Information

On June 6, 2018, TRC performed an energy audit at Millstone River Elementary School located in Plainsboro, New Jersey. TRC's team met with Daniel Riggle to review the facility operations and help focus our investigation on specific energy-using systems.

Millstone River Elementary School is a 142,300 square foot facility comprised of various space types such as classrooms, offices, conference, hallways, stairwell, kitchen, cafeteria, gym, restrooms and mechanical space. This is a two-story building. The school operates during the weekdays from 7:00 AM to 4:00 PM and remains closed during the weekends. Space heating in the building is provided using two gas-fired non-condensing hot water boilers and several air handling units. Space cooling in the building is provided using three air-cooled scroll chillers each with a 140-ton capacity. There are also a few split AC units and window AC units in the facility. Lighting in the building consists of fluorescent linear T8 and some T12 fixtures. Smaller spaces also have compact fluorescent lamp fixtures and incandescent lamp fixtures. Some of the facility lighting is inefficient and in need of replacement. A thorough description of the facility and our observations are located in Section 2.

2.3 Building Occupancy

The typical schedule is presented in the table below. During a typical day, the facility is occupied by approximately 76 staff and 1035 students.

Figure 6 - Building Schedule

Building Name	Weekday/Weekend	Operating Schedule
Millstone River ES	Weekday	7AM - 4PM
Millstone River ES	Weekend	No operation

2.4 Building Envelope

The building is constructed of concrete block, and structural steel with a brick facade. The buildings have pitched roof in most spaces and flat roof sections in the interior spaces. The pitched roof has asphalt shingle layers that were observed to be in good condition. The windows are double pane and doors are aluminum framed glass. These were in good condition and show no signs excessive infiltration.

Image 1 Building Envelope

2.5 On-Site Generation

Millstone River Elementary School does not have any on-site electric generation capacity.

2.6 Energy-Using Systems

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

Lighting System

Lighting is provided mostly by T8 linear fluorescent lamps with electronic ballasts as well as some T12 fluorescent lamps, incandescent lamps and compact fluorescent lamps (CFL). Most of the fixtures are 2-lamp or 4-lamp, 4-foot long troffers. A small area of the building and the majority of the office spaces are primarily lit with 18-Watt CFL lamps and 60-watt incandescent lamps in recessed can ceiling fixtures. A few spaces also have some LED lamps.

Lighting control in most spaces is provided by a wall switch. The building's exterior lighting is minimal and consists primarily of 200-Watt high pressure sodium (HPS), 175-Watt metal halide fixtures and some LED wall packs that are controlled by timers. The exit lights throughout the facility are 2-Watt LED fixtures.

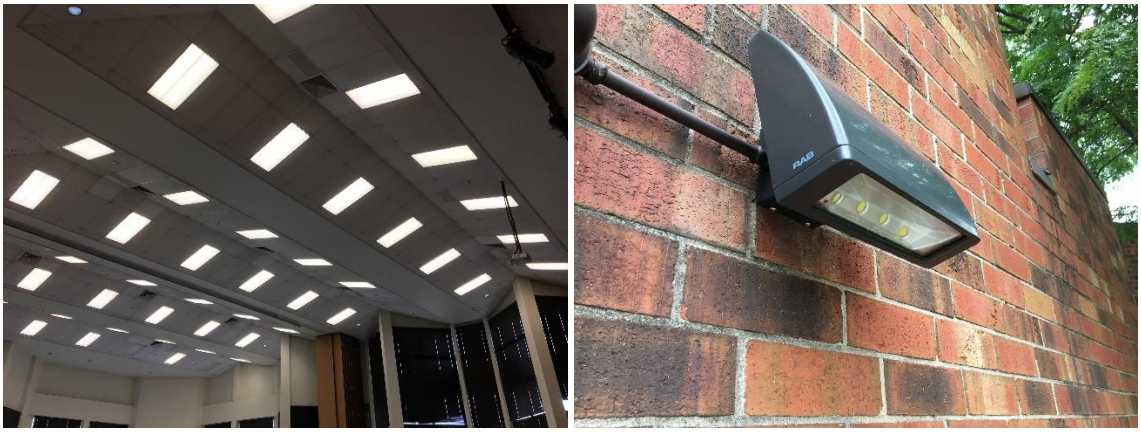


Image 2 Lighting System

Hot Water Heating System

The hot water system consists of two gas-fired non-condensing hot water boilers (Cleaver Brooks). The boilers have an output capacity of 4184 MBh and a combustion efficiency of 80%. The hot water from the boilers are circulated throughout the facility using two 15 hp constant speed pumps. We have evaluated the prospect of installing VFDs for these pumps to control the flow and save energy.

The conditioned air is distributed in the spaces using air handling units in spaces such as the main office, main hallway, gym etc., Hot water is supplied at 180°F when the outside air temperature is below 50°F and the setpoint is reset to 155°F when the outside air is above 65°F. The space temperatures are controlled using programmable thermostats.

The boilers are 29 years old and have been evaluated for replacement.

Image 3 Hot Water Heating System

Chilled Water Air Conditioning System (CHW)

The building has three constant speed air-cooled Daikin scroll chillers, each with a cooling capacity of 140 tons. The chilled water is circulated using two 30 hp pumps and three 5 hp chilled water pumps. The conditioned air is distributed through the air handling units to the respective spaces.

The chillers are four years old and appeared to be in good condition.

Image 4 Chilled Water Air Conditioning System

Direct Expansion Air Conditioning System (DX)

Two classrooms (A105, B101) have 1-ton window AC units, and another space is cooled by a 3-ton split AC unit. The split AC unit is 10 years old and the two window AC units are estimated to be approximately five years old.

Image 5 Direct Expansion AC System

Domestic Hot Water Heating System

The domestic hot water heating system for the facility is provided by one Teledyne Laars gas fired condensing hot water heater with an input rating of 1,010 MBh and a nominal efficiency of 81%. The water heater has a 299-gallon storage tank. It is 29 years old and has been evaluated for replacement.

Food Service & Refrigeration

The school has a fully equipped kitchen that is used to prepare lunches for the students and staff. The cooking equipment in the kitchen includes a gas-fired burner/stove, griddle, and two gas convection ovens. Three electric food holding cabinets are used to store the heated foods. The refrigeration equipment includes reach-in refrigerators and freezers, milk coolers and one walk-in refrigerator and freezer.

Image 6 Food Service & Refrigeration

Building Plug Load

Office plug-loads in the facility includes laptops, printers, televisions, projectors, smartboards and copy machines. The kitchen plug loads include microwave oven, toaster oven, coffee maker, shredder, electric stove and refrigerators. There is no centralized PC power management software installed. There is one non-refrigerated vending machine in the school.

2.7 Water-Using Systems

The restrooms have faucets that are rated for 2.2 gallons per minute (gpm) or lower, the toilets are rated at 2.5 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 gas was evaluated to determine the annual energy performance metrics for the building in energy cost per square foot and energy usage per square foot. These metrics are an estimate of the relative energy efficiency of this building. There are a number of factors that could cause the energy use of this building to vary from the "typical" energy usage profile for facilities with similar characteristics. Local weather conditions, building age and insulation levels, equipment efficiency, daily occupancy hours, changes in occupancy throughout the year, equipment operating hours, and energy efficient behavior of occupants all contribute to benchmarking scores. Please refer to the Benchmarking section within Section 3.4 for additional information.

3.1 Total Cost of Energy

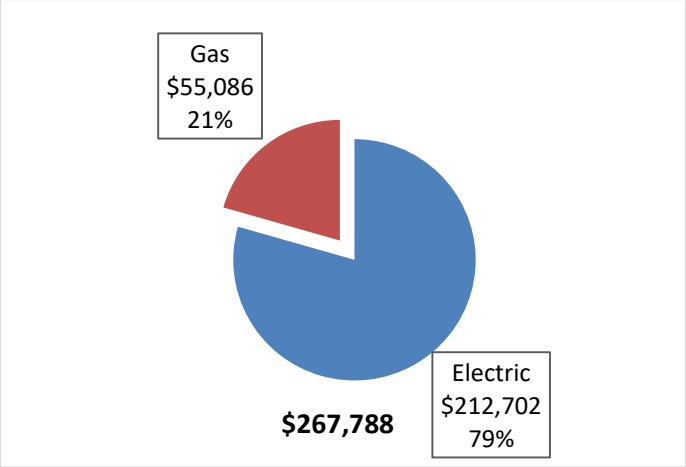
The following energy consumption and cost data is based on the last 12-month period of utility billing data that was provided for each utility. A profile of the annual energy consumption and energy cost of the facility was developed from this information.

Figure 7 - Utility Summary

Utility Summary for Millstone River ES		
Fuel	**Usage**	**Cost**
Electricity	1,622,599 kWh	$212,702
Natural Gas	70,567 Therms	$55,086
Total		**$267,788**

The current annual energy cost for this facility is $267,788 as shown in the chart below.

Figure 8 - Energy Cost Breakdown



3.2 Electricity Usage

Electricity is provided by PSE&G. The average electric cost over the past 12 months was $0.131/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 Direct Energy Business. The monthly electricity consumption and peak demand are shown in the chart below.

Figure 9 - Electric Usage & Demand

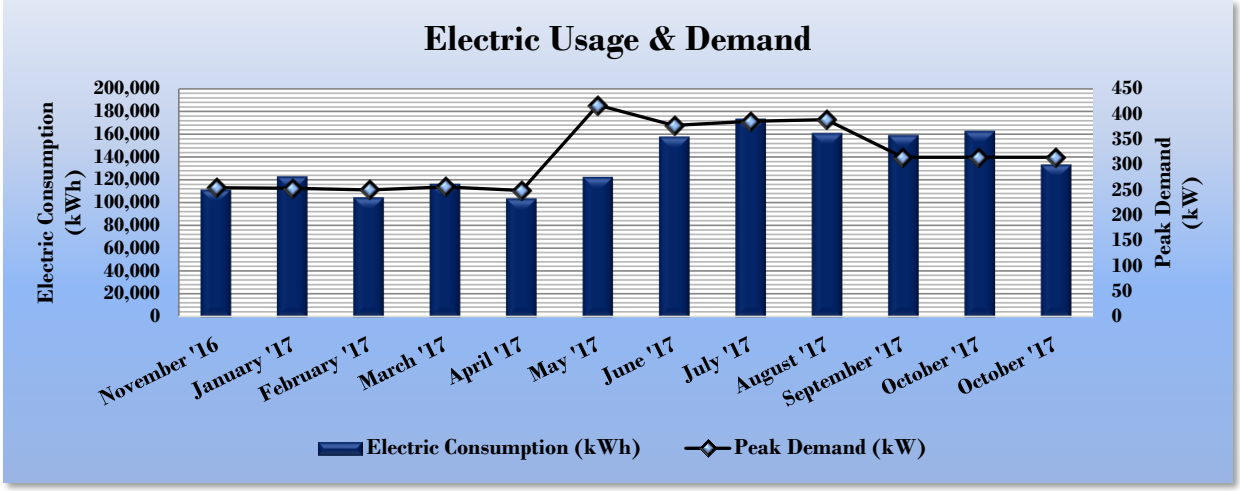


Figure 10 - Electric Usage & Demand

Electric Billing Data for Millstone River ES					
Period Ending	Days in Period	Electric Usage (kWh)	Demand (kW)	Demand Cost	Total Electric Cost
12/13/16	30	111,600	255		$13,093
1/18/17	36	123,158	253		$14,386
2/16/17	29	104,947	250		$12,441
3/20/17	32	116,662	256		$13,714
4/27/17	38	103,776	249		$12,330
5/18/17	21	122,735	418		$15,927
6/19/17	32	157,805	378		$22,267
7/19/17	30	173,708	386		$24,090
8/17/17	29	161,123	389		$22,594
9/17/17	31	159,350	315		$11,333
10/17/17	30	163,035	315		$35,306
11/15/17	29	133,591	315		$16,386
Totals	**367**	**1,631,490**	**417.6**	**$0**	**$213,867**
Annual	**365**	**1,622,599**	**417.6**	**$0**	**$212,702**

3.3 Natural Gas Usage

Natural gas is provided by PSE&G. The average gas cost for the past 12 months is $0.781/therm, which is the blended rate used throughout the analyses in this report. The monthly gas consumption is shown in the chart below.

Figure 11 - Natural Gas Usage

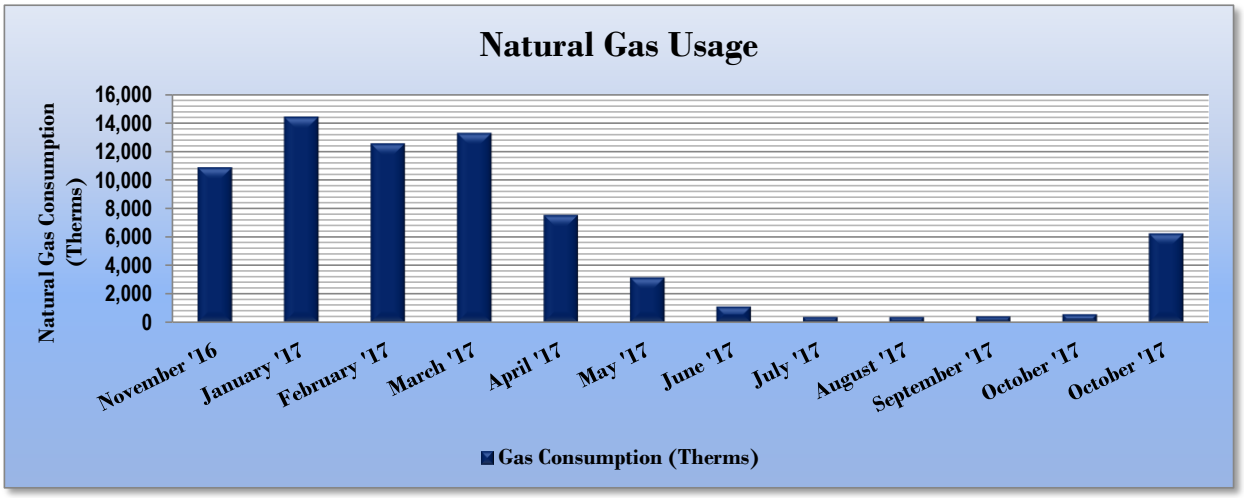


Figure 12 - Natural Gas Usage

Gas Billing Data for Millstone River ES			
Period Ending	Days in Period	Natural Gas Usage (Therms)	Natural Gas Cost
12/13/16	30	10,877	$8,067
1/18/17	36	14,429	$11,431
2/16/17	29	12,549	$10,237
3/20/17	32	13,298	$11,589
4/27/17	38	7,545	$4,825
5/18/17	21	3,165	$2,089
6/19/17	32	1,109	$810
7/19/17	30	385	$353
8/17/17	29	384	$349
9/17/17	31	412	$322
10/17/17	30	563	$440
11/15/17	29	6,239	$4,877
Totals	**367**	**70,954**	**$55,388**
Annual	**365**	**70,567**	**$55,086**

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		
	Millstone River ES	National Median Building Type: School (K-12)
Source Energy Use Intensity (kBtu/ft^2)	174.2	141.4
Site Energy Use Intensity (kBtu/ft^2)	88.5	58.2

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

Figure 14 - Energy Use Intensity Comparison – Following Installation of Recommended Measures

Energy Use Intensity Comparison - Following Installation of Recommended Measures		
	Millstone River ES	National Median Building Type: School (K-12)
Source Energy Use Intensity (kBtu/ft^2)	105.2	141.4
Site Energy Use Intensity (kBtu/ft^2)	52.8	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 building has a score of 19.

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

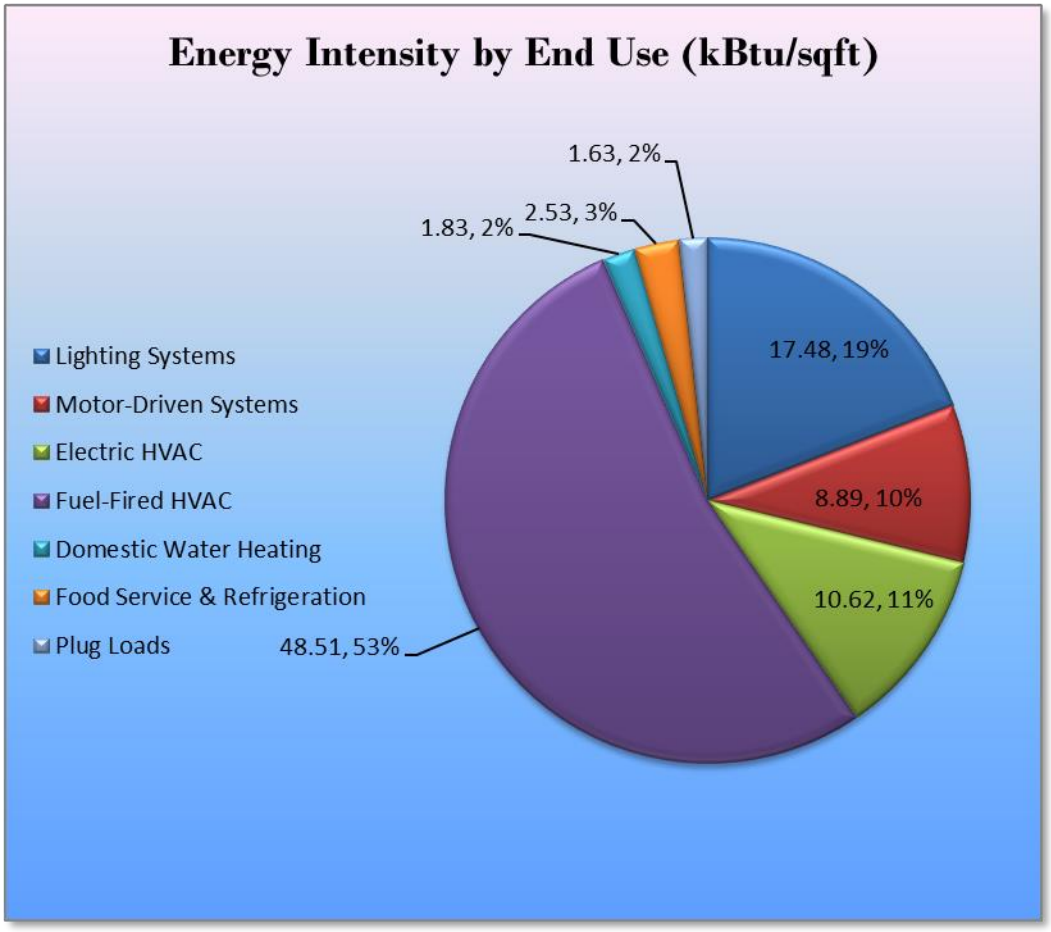
For more information on ENERGY STAR® certification go to: https://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/earn-recognition/energy-star-certification/how-app-1.

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 Millstone River Elementary School regarding financial incentives for which they may qualify to implement the recommended measures. For this audit report, most measures have received only a preliminary analysis of feasibility which identifies expected ranges of savings and costs. This level of analysis is usually considered sufficient to demonstrate project cost-effectiveness and help prioritize energy measures. Savings are based on the New Jersey Clean Energy Program Protocols to Measure Resource Savings dated June 29, 2016, approved by the New Jersey Board of Public Utilities. Further analysis or investigation may be required to calculate more precise savings based on specific circumstances. A higher level of investigation may be necessary to support any custom SmartStart or Pay for Performance, or Direct Install incentive applications. Financial incentives for the ECMs identified in this report have been calculated based the NJCEP prescriptive SmartStart program. Some measures and proposed upgrade projects may be eligible for higher incentives than those shown below through other NJCEP programs as described in Section 8.

The following sections describe the evaluated measures.

4.1 Recommended ECMs

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

Figure 16 – Summary of Recommended ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		**453,374**	**78.7**	**0.0**	**$59,431.45**	**$192,231.40**	**$30,151.00**	**$162,080.40**	**2.7**	**456,544**
ECM 1	Install LED Fixtures	50,988	6.6	0.0	$6,683.82	$68,583.55	$7,100.00	$61,483.55	9.2	51,344
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	221,262	29.3	0.0	$29,004.62	$37,855.82	$80.00	$37,775.82	1.3	222,809
ECM 3	Retrofit Fixtures with LED Lamps	181,124	42.7	0.0	$23,743.02	$85,792.03	$22,971.00	$62,821.03	2.6	182,390
Lighting Control Measures		**33,482**	**8.7**	**0.0**	**$4,389.09**	**$45,480.00**	**$5,970.00**	**$39,510.00**	**9.0**	**33,716**
ECM 4	Install Occupancy Sensor Lighting Controls	33,482	8.7	0.0	$4,389.09	$45,480.00	$5,970.00	$39,510.00	9.0	33,716
Variable Frequency Drive (VFD) Measures		**143,117**	**15.1**	**0.0**	**$18,760.84**	**$43,444.05**	**$4,240.00**	**$39,204.05**	**2.1**	**144,118**
ECM 5	Install VFDs on Constant Volume (CV) HVAC	6,521	2.2	0.0	$854.80	$6,283.50	$640.00	$5,643.50	6.6	6,566
ECM 6	Install VFDs on Chilled Water Pumps	99,081	9.1	0.0	$12,988.27	$26,771.65	$3,600.00	$23,171.65	1.8	99,774
ECM 7	Install VFDs on Hot Water Pumps	37,515	3.8	0.0	$4,917.77	$10,388.90	$0.00	$10,388.90	2.1	37,778
Plug Load Equipment Control - Vending Machine		**1,612**	**0.0**	**0.0**	**$211.29**	**$230.00**	**$0.00**	**$230.00**	**1.1**	**1,623**
ECM 8	Vending Machine Control	1,612	0.0	0.0	$211.29	$230.00	$0.00	$230.00	1.1	1,623
TOTALS FOR HIGH PRIORITY MEASURES		**631,585**	**102.5**	**0.0**	**$82,792.68**	**$281,385.45**	**$40,361.00**	**$241,024.45**	**2.9**	**636,001**
TOTALS FOR ALL EVALUATED MEASURES		**637,481**	**104.1**	**358.4**	**$86,363.50**	**$504,213.25**	**$42,128.50**	**$462,084.75**	**5.4**	**683,905**

* - 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		**453,374**	**78.7**	**0.0**	**$59,431.45**	**$192,231.40**	**$30,151.00**	**$162,080.40**	**2.7**	**456,544**
ECM 1	Install LED Fixtures	50,988	6.6	0.0	$6,683.82	$68,583.55	$7,100.00	$61,483.55	9.2	51,344
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	221,262	29.3	0.0	$29,004.62	$37,855.82	$80.00	$37,775.82	1.3	222,809
ECM 3	Retrofit Fixtures with LED Lamps	181,124	42.7	0.0	$23,743.02	$85,792.03	$22,971.00	$62,821.03	2.6	182,390

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

ECM 1: Install LED Fixtures

Summary of Measure Economics

Interior/ Exterior	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Interior	0	0.0	0.0	$0.00	$0.00	$0.00	$0.00	0.0	0
Exterior	50,988	6.6	0.0	$6,683.82	$68,583.55	$7,100.00	$61,483.55	9.2	51,344

Measure Description

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

Additional savings from lighting maintenance can be anticipated since LEDs have lifetimes which are more than twice that of HID sources such as metal halide and high pressure sodium.

ECM 2: Retrofit Fluorescent Fixtures with LED Lamps and Drivers

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	221,262	29.3	0.0	$29,004.62	$37,855.82	$80.00	$37,775.82	1.3	222,809
Exterior	0	0.0	0.0	$0.00	$0.00	$0.00	$0.00	0.0	0

Measure Description

We recommend retrofitting existing fluorescent fixtures by removing fluorescent tubes and ballasts and replacing them with LEDs and LED drivers (if necessary), which are designed to be used retrofitted fluorescent fixtures. The measure uses the existing fixture housing but replaces the rest of the components with more efficient lighting technology. 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 fluorescent tubes.

ECM 3: 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	181,124	42.7	0.0	$23,743.02	$85,792.03	$22,971.00	$62,821.03	2.6	182,390
Exterior	0	0.0	0.0	$0.00	$0.00	$0.00	$0.00	0.0	0

Measure Description

We recommend retrofitting existing incandescent, CFLs and linear T8 lamps or 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 tube 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		**33,482**	**8.7**	**0.0**	**$4,389.09**	**$45,480.00**	**$5,970.00**	**$39,510.00**	**9.0**	**33,716**
ECM 4	Install Occupancy Sensor Lighting Controls	33,482	8.7	0.0	$4,389.09	$45,480.00	$5,970.00	$39,510.00	9.0	33,716

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 4: Install Occupancy Sensor Lighting Controls

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
33,482	8.7	0.0	$4,389.09	$45,480.00	$5,970.00	$39,510.00	9.0	33,716

Measure Description

We recommend installing occupancy sensors to control lighting fixtures that are currently controlled by manual switches in classrooms, storage rooms, restrooms 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.

4.1.3 Variable Frequency Drive Measures

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

Figure 19 – Summary of Variable Frequency Drive ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Variable Frequency Drive (VFD) Measures		**143,117**	**15.1**	**0.0**	**$18,760.84**	**$43,444.05**	**$4,240.00**	**$39,204.05**	**2.1**	**144,118**
ECM 5	Install VFDs on Constant Volume (CV) HVAC	6,521	2.2	0.0	$854.80	$6,283.50	$640.00	$5,643.50	6.6	6,566
ECM 6	Install VFDs on Chilled Water Pumps	99,081	9.1	0.0	$12,988.27	$26,771.65	$3,600.00	$23,171.65	1.8	99,774
ECM 7	Install VFDs on Hot Water Pumps	37,515	3.8	0.0	$4,917.77	$10,388.90	$0.00	$10,388.90	2.1	37,778

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

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
6,521	2.2	0.0	$854.80	$6,283.50	$640.00	$5,643.50	6.6	6,566

Measure Description

We recommend installing variable frequency drives (VFDs) to control supply fan and return fan motor speeds of the air handler unit serving the gym, 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.

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

ECM 6: Install VFDs on Chilled 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)
99,081	9.1	0.0	$12,988.27	$26,771.65	$3,600.00	$23,171.65	1.8	99,774

Measure Description

We recommend installing a variable frequency drives (VFD) to control the two 30 hp and three 5 hp chilled water pumps. This measure requires that chilled water coils be served by 2-way valves and that a differential pressure sensor be installed in the chilled water loop. As the chilled 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 chilled water valves close. The magnitude of energy savings is based on the estimated amount of time that the system operates at reduced loads.

For systems with variable chilled water flow through the chiller, the minimum flow to prevent the chiller from tripping off will have to be determined during the final project design. The control system should be programmed to maintain the minimum flow through the chiller and to prevent pump cavitation.

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)
37,515	3.8	0.0	$4,917.77	$10,388.90	$0.00	$10,388.90	2.1	37,778

Measure Description

We recommend installing a variable frequency drives (VFD) to control the two 15 hp hot water pumps. This measure requires that a majority of the hot water coils be served by 2-way valves and that a differential pressure sensor is installed in the hot water loop. As the hot water valves close, the differential pressure increases. The VFD modulates pump speed to maintain a differential pressure setpoint. Energy savings results from reducing pump motor speed (and power) as hot water valves close. The magnitude of energy savings is based on the estimated amount of time that the system will operate at reduced load.

4.1.4 Plug Load Equipment Control - Vending Machines

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

Figure 20 - Summary of Plug Load Equipment Control ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Plug Load Equipment Control - Vending Machine		**1,612**	**0.0**	**0.0**	**$211.29**	**$230.00**	**$0.00**	**$230.00**	**1.1**	**1,623**
ECM 8	Vending Machine Control	1,612	0.0	0.0	$211.29	$230.00	$0.00	$230.00	1.1	1,623

ECM 8: Vending Machine Control

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
1,612	0.0	0.0	$211.29	$230.00	$0.00	$230.00	1.1	1,623

Measure Description

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

4.2 ECMs Evaluated But Not Recommended

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

Figure 21 – Summary of Measures Evaluated, But Not Recommended

Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Motor Upgrades	**5,896**	**1.6**	**0.0**	**$772.90**	**$28,828.33**	**$0.00**	**$28,828.33**	**37.3**	**5,937**
Premium Efficiency Motors	5,896	1.6	0.0	$772.90	$28,828.33	$0.00	$28,828.33	37.3	5,937
Gas Heating (HVAC/Process) Replacement	**0**	**0.0**	**324.9**	**$2,536.04**	**$143,388.37**	**$0.00**	**$143,388.37**	**56.5**	**38,039**
Install High Efficiency Hot Water Boilers	0	0.0	324.9	$2,536.04	$143,388.37	$0.00	$143,388.37	56.5	38,039
Domestic Water Heating Upgrade	**0**	**0.0**	**33.5**	**$261.89**	**$50,611.10**	**$1,767.50**	**$48,843.60**	**186.5**	**3,928**
Install High Efficiency Gas Water Heater	0	0.0	33.5	$261.89	$50,611.10	$1,767.50	$48,843.60	186.5	3,928
TOTAL OF ALL NON-RECOMMENDED ECMS	**5,896**	**2**	**358**	**$ 3,570.82**	**$ 222,827.80**	**$ 1,767.50**	**$ 221,060.30**	**61.9**	**47,904**

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

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

Premium Efficiency Motors

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
5,896	1.6	0.0	$772.90	$28,828.33	$0.00	$28,828.33	37.3	5,937

Measure Description

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

Install High Efficiency Gas Water Heater

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
0	0.0	33.5	$261.89	$50,611.10	$1,767.50	$48,843.60	186.5	3,928

Measure Description

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

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	324.9	$2,536.04	$143,388.37	$0.00	$143,388.37	56.5	38,039

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 of approximately 85% and 87% (comparable to other high efficiency boilers) when the return water temperature is above 130°F. If the return water temperature drops below 130°F, the unit will enter "condensing mode" providing more efficient operation. Condensing hydronic boilers were only recommended when it could be confirmed that the return water temperature is less than 130°F during most of the operating hours. Please be aware that condensing boilers are typically 10% - 15% more expensive than standard high efficiency boilers and should only be selected if the design conditions support "condensing mode" operation. Based on the information available, condensing hydronic boilers are not recommended for this site.

In addition to determining the appropriate type of new high efficiency boiler, we recommend consideration be made regarding the new unit size(s) and where appropriate, implementation of multiple (modular) boilers versus larger capacity units. We recommend that the site staff work with the design team to evaluate the heating load for the facility prior to replacing the boilers. The new boilers should be sized to meet the current heating requirements rather than simply installing boilers with the same capacity as the existing boilers. The capital cost of the project can generally be reduced if the overall boiler plant capacity can be reduced. In addition, we recommend that the design team consider designing the plant using several lower capacity modular boilers. Configuring a boiler plant with several modular boilers, rather than one or two high capacity boilers, results in a plant that can more efficiently match and serve the load, provides a high level of redundancy, reduces standby losses, and is more flexible to expand if the heating load increases in the future. Finally, we recommend working with the design team to determine if the updated boiler plant can be operated such that the return water temperature is generally lower than 130°F so that condensing boilers could be used.

Reasons for not Recommending

The cost effectiveness of investing in these measures is not justified by the estimated payback period (37 years for the motors and 187 years for the water heater and 56.5 years for the hot water boilers). In all cases the project payback period exceeds the useful life of the equipment. When this equipment is due for replacement, we suggest replacement with high efficiency equipment to optimize cost savings.

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.

Perform Routine Motor Maintenance

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

Practice Proper Use of Thermostat Schedules and Temperature Resets

Ensure thermostats are correctly set back. By employing proper set back temperatures and schedules, facility heating and cooling costs can be reduced dramatically during periods of low or no occupancy. As such, thermostats should be programmed for a setback of 5-10 °F during low occupancy hours (reduce heating setpoints and increase cooling setpoints). Cooling load can be reduced further by increasing the facility's occupied setpoint temperature. In general, during the cooling season, thermostats should be set as high as possible without sacrificing occupant comfort.

Clean and/or Replace HVAC Filters

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

Perform Proper Boiler Maintenance

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

Perform Proper Water Heater Maintenance

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

Plug Load Controls

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

Water Conservation

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

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

6 On-Site Generation Measures

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

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

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

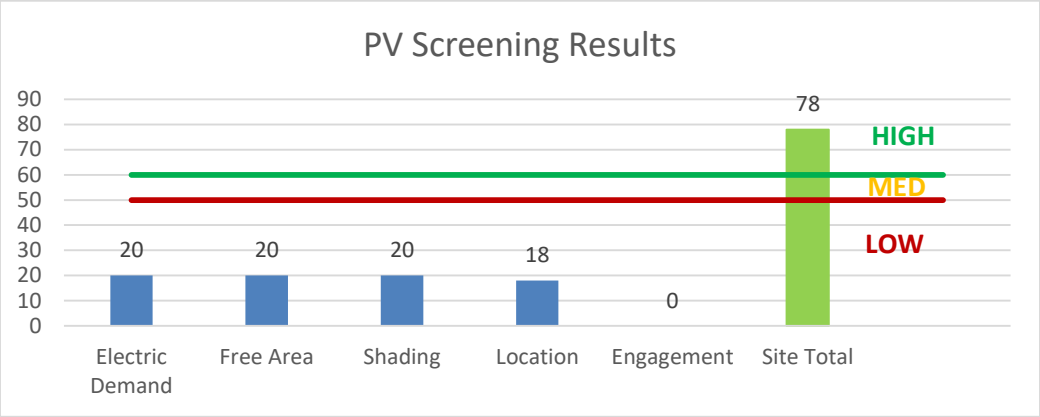
6.1 Photovoltaic

Sunlight can be converted into electricity using photovoltaics (PV) modules. Modules are racked together into an array that produces direct current (DC) electricity. The DC 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 Millstone River ES is interested in pursuing the installation of PV, we recommended a full feasibility study be conducted.

Figure 22 - Photovoltaic Screening



Solar projects must register their projects in the SREC (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 8.3 for additional information.

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

- **Basic Info on Solar PV in NJ**: http://www.njcleanenergy.com/whysolar
- **NJ Solar Market FAQs**: http://www.njcleanenergy.com/renewable-energy/program-updates-and-background-information/solar-transition/solar-market-faqs
- **Approved Solar Installers in the NJ Market**: http://www.njcleanenergy.com/commercial-industrial/programs/nj-smartstart-buildings/tools-and-resources/tradeally/approved_vendorsearch/?id=60&start=1

6.2 Combined Heat and Power

Combined heat and power (CHP) is the on-site generation of electricity along with the recovery of heat energy, which is put to beneficial use. Common technologies for CHP include reciprocating engines, microturbines, fuel cells, backpressure steam turbines, and (at large facilities) gas turbines. Electric generation from a CHP system is typically interconnected to local power distribution systems. Heat is recovered from exhaust and ancillary cooling systems and interconnected to the existing hot water (or steam) distribution systems.

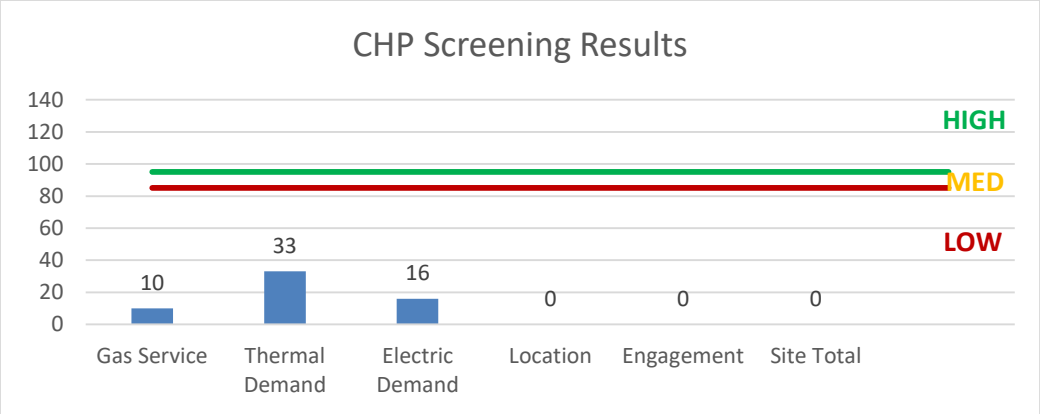
CHP systems are typically used to produce a portion of the electric power used onsite by a facility, with the balance of electric power needs supplied by grid purchases. The heat is used to supplement (or supplant) existing boilers for the purpose of space heating and/or domestic hot water heating. Waste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

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

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

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

Figure 23 - Combined Heat and Power Screening



7 DEMAND RESPONSE

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

By enabling grid operators to call upon Curtailment Service Providers and commercial facilities to reduce electric usage during times of peak demand, the grid is made more reliable and overall transmission costs are reduced for all ratepayers. Curtailment Service Providers provide regular payments to medium and large consumers of electric power for their participation in DR programs. Program participation is voluntary and participants receive payments whether or not their facility is called upon to curtail their electric usage.

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

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

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

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

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

In our opinion, this building is not a good candidate for a 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 24 for a list of the eligible programs identified for each recommended ECM.

Figure 24 - ECM Incentive Program Eligibility

Energy Conservation Measure		SmartStart Prescriptive	SmartStart Custom	Direct Install	Pay For Performance Existing Buildings	Large Energy Users Program	Combined Heat & Power and Fuel Cell
ECM 1	Install LED Fixtures	x			x		
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	x			x		
ECM 3	Retrofit Fixtures with LED Lamps	x			x		
ECM 4	Install Occupancy Sensor Lighting Controls	x			x		
ECM 5	Install VFDs on Constant Volume (CV) HVAC	x			x		
ECM 6	Install VFDs on Chilled Water Pumps	x			x		
ECM 7	Install VFDs on Hot Water Pumps				x		
ECM 8	Install High Efficiency Hot Water Boilers	x			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. Direct Install caters to small to mid-size facilities that can bundle multiple ECMs together. This can greatly simplify participation and may lead to higher incentive amounts, but requires the use of pre-approved contractors. The Pay for Performance (P4P) program is a "whole-building" energy improvement program designed for larger facilities. It requires implementation of multiple measures meeting minimum savings thresholds, as well as use of pre-approved consultants. The Large Energy Users Program (LEUP) is available to New Jersey's largest energy users giving them flexibility to install as little or as many measures, in a single facility or several facilities, with incentives capped based on the entity's annual energy consumption. LEUP applicants can use in-house staff or a preferred contractor.

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

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

8.1 SmartStart

Overview

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

Equipment with Prescriptive Incentives Currently Available:

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

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

Incentives

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

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

How to Participate

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

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

8.2 Pay for Performance - Existing Buildings

Overview

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

Incentives

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

How to Participate

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

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

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

8.3 SREC Registration Program

The SREC (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
Boiler Room	14	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	No	14	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,200	0.26	1,016	0.0	$133.24	$511.21	$140.00	2.79
Boiler Room	1	Exit Signs: LED - 2 W Lamp	Wall Switch	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	Wall Switch	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Receiving Room	2	Exit Signs: LED - 2 W Lamp	Wall Switch	6	8,760	None	No	2	Exit Signs: LED - 2 W Lamp	Wall Switch	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Receiving Room	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,540	0.49	1,899	0.0	$248.94	$1,197.27	$250.00	3.81
Gen Mechanic Room	22	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	No	22	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,200	0.81	3,117	0.0	$408.59	$1,606.66	$440.00	2.86
D149 (Misc)	21	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	Yes	21	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,540	1.01	3,900	0.0	$511.21	$2,073.63	$490.00	3.10
Music Dept	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	No	2	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,200	0.07	283	0.0	$37.14	$146.06	$40.00	2.86
D151 Multi-office	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	No	4	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,200	0.15	567	0.0	$74.29	$292.12	$80.00	2.86
Instrumentation Room	25	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	Yes	25	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,540	1.20	4,643	0.0	$608.58	$2,365.75	$570.00	2.95
Instrumentation Room	2	Exit Signs: LED - 2 W Lamp	Wall Switch	6	8,760	None	No	2	Exit Signs: LED - 2 W Lamp	Wall Switch	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Storage D153	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,200	Relamp	No	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,200	0.02	81	0.0	$10.61	$65.03	$20.00	4.24
Storage D154	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,200	Relamp	No	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,200	0.02	81	0.0	$10.61	$65.03	$20.00	4.24
Storage D155	7	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	No	7	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,200	0.26	992	0.0	$130.01	$511.21	$140.00	2.86
Storage D156	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	No	4	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,200	0.15	567	0.0	$74.29	$292.12	$80.00	2.86
Entry Area	2	Compact Fluorescent: 2-lamp fixture	Wall Switch	36	2,200	Relamp	No	2	LED Screw-In Lamps: 2 lamps	Wall Switch	25	2,200	0.01	55	0.0	$7.16	$68.90	$0.00	9.62
D143	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,200	0.04	142	0.0	$18.57	$73.03	$20.00	2.86
D143	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	2,200	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	2,200	0.02	70	0.0	$9.12	$48.77	$15.00	3.70
D146 Aux Gym storage	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,200	0.09	334	0.0	$43.78	$146.06	$40.00	2.42
Main Room	4	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,200	Relamp	No	4	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,200	0.04	162	0.0	$21.23	$130.06	$40.00	4.24
Main Office	13	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	No	13	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,200	0.28	1,085	0.0	$142.28	$474.70	$130.00	2.42
Main Office	6	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,200	Relamp	No	6	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,200	0.06	243	0.0	$31.84	$195.09	$60.00	4.24
Main Office	6	Incandescent: Screw-in lamps	Wall Switch	180	2,200	Relamp	No	6	LED Screw-In Lamps: Screw in lamps	Wall Switch	27	2,200	0.60	2,323	0.0	$304.46	$279.05	$81.00	0.65
Main Office	2	Exit Signs: LED - 2 W Lamp	Wall Switch	6	8,760	None	No	2	Exit Signs: LED - 2 W Lamp	Wall Switch	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Main Office	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	2,200	0.02	73	0.0	$9.62	$72.46	$0.00	7.53
C147	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,200	0.04	167	0.0	$21.89	$73.03	$20.00	2.42

	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
C146	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,200	0.04	167	0.0	$21.89	$73.03	$20.00	2.42
C137 toilet	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,200	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,200	0.01	40	0.0	$5.31	$32.52	$10.00	4.24
C138 toilet	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,200	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,200	0.01	40	0.0	$5.31	$32.52	$10.00	4.24
C132	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,200	0.09	334	0.0	$43.78	$146.06	$40.00	2.42
C145	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,200	0.04	167	0.0	$21.89	$73.03	$20.00	2.42
Principal Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,540	0.11	422	0.0	$55.32	$262.06	$60.00	3.65
Principal Office	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,200	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,200	0.01	40	0.0	$5.31	$32.52	$10.00	4.24
Principal Office RR	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	2,200	0.02	73	0.0	$9.62	$72.46	$0.00	7.53
C144 Elec Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,200	0.02	83	0.0	$10.94	$36.52	$10.00	2.42
Back hallway	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,200	0.13	501	0.0	$65.67	$219.09	$60.00	2.42
Back hallway	3	Exit Signs: LED - 2 W Lamp	Wall Switch	6	8,760	None	No	3	Exit Signs: LED - 2 W Lamp	Wall Switch	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Back hallway	8	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,200	Relamp	No	8	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,200	0.08	324	0.0	$42.45	$260.12	$80.00	4.24
C121 Conf room	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,200	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,540	0.16	633	0.0	$82.98	$489.09	$95.00	4.75
C121 Conf room	8	Incandescent: Screw-in lamps	Wall Switch	100	2,200	Relamp	Yes	8	LED Screw-In Lamps: Screw in lamps	Occupancy Sensor	15	1,540	0.47	1,811	0.0	$237.46	$137.80	$75.00	0.26
C119 Conference room	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,200	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,540	0.16	633	0.0	$82.98	$489.09	$95.00	4.75
C119 Conference room	8	Incandescent: Screw-in lamps	Wall Switch	100	2,200	Relamp	Yes	8	LED Screw-In Lamps: Screw in lamps	Occupancy Sensor	15	1,540	0.47	1,811	0.0	$237.46	$137.80	$75.00	0.26
C122 office	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	No	2	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,200	0.07	283	0.0	$37.14	$146.06	$40.00	2.86
C123 office	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	No	3	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,200	0.11	425	0.0	$55.72	$219.09	$60.00	2.86
C124 office	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	No	2	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,200	0.07	283	0.0	$37.14	$146.06	$40.00	2.86
Guidance area corridor	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	No	2	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,200	0.07	283	0.0	$37.14	$146.06	$40.00	2.86
C130 toilet	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,200	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,200	0.01	40	0.0	$5.31	$32.52	$10.00	4.24
C131 closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,200	0.02	83	0.0	$10.94	$36.52	$10.00	2.42
C116 CST	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	No	5	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,200	0.11	417	0.0	$54.72	$182.58	$50.00	2.42
C120 office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,200	0.04	167	0.0	$21.89	$73.03	$20.00	2.42
C118 office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,200	0.04	167	0.0	$21.89	$73.03	$20.00	2.42

	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
C117 office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,200	0.04	167	0.0	$21.89	$73.03	$20.00	2.42
C115 office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,540	0.11	422	0.0	$55.32	$262.06	$60.00	3.65
C114 office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,540	0.11	422	0.0	$55.32	$262.06	$60.00	3.65
C133 storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,200	0.04	167	0.0	$21.89	$73.03	$20.00	2.42
A125 CR	5	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	Yes	5	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,540	0.24	929	0.0	$121.72	$635.15	$135.00	4.11
A125 CR	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,200	Relamp	Yes	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,540	0.01	53	0.0	$7.00	$270.00	$45.00	32.15
CR A100	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,540	0.43	1,671	0.0	$219.09	$927.27	$215.00	3.25
CR A100	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.01	55	0.0	$7.25	$270.00	$40.00	31.74
CR A101	15	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,200	Relamp	Yes	15	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,540	0.21	801	0.0	$104.97	$757.73	$185.00	5.46
CR A102	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.01	55	0.0	$7.25	$270.00	$40.00	31.74
CR A102	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,540	0.41	1,583	0.0	$207.45	$817.73	$185.00	3.05
CR A103	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.01	55	0.0	$7.25	$270.00	$40.00	31.74
CR A103	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,540	0.41	1,583	0.0	$207.45	$817.73	$185.00	3.05
CR A104	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.01	55	0.0	$7.25	$270.00	$40.00	31.74
CR A104	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,540	0.41	1,583	0.0	$207.45	$817.73	$185.00	3.05
CR A105	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.01	55	0.0	$7.25	$270.00	$40.00	31.74
CR A105	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,540	0.43	1,671	0.0	$219.09	$927.27	$215.00	3.25
CR A108	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.01	55	0.0	$7.25	$270.00	$40.00	31.74
CR A108	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,540	0.33	1,266	0.0	$165.96	$708.18	$155.00	3.33
CR A111	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.01	55	0.0	$7.25	$270.00	$40.00	31.74
CR A111	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,540	0.43	1,671	0.0	$219.09	$927.27	$215.00	3.25
CR A112	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.01	55	0.0	$7.25	$270.00	$40.00	31.74
CR A112	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,540	0.25	950	0.0	$124.47	$598.64	$125.00	3.81
CR A109	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.01	55	0.0	$7.25	$270.00	$40.00	31.74
CR A109	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,540	0.33	1,266	0.0	$165.96	$708.18	$155.00	3.33

	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
CR A110	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.01	55	0.0	$7.25	$270.00	$40.00	31.74
CR A110	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,540	0.33	1,266	0.0	$165.96	$708.18	$155.00	3.33
CRA116	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,540	0.43	1,671	0.0	$219.09	$270.00	$215.00	0.25
CRA116	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.01	55	0.0	$7.25	$288.26	$40.00	34.26
CRA117	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,540	0.41	1,583	0.0	$207.45	$270.00	$185.00	0.41
CRA117	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.01	55	0.0	$7.25	$288.26	$40.00	34.26
CRA118	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,540	0.41	1,583	0.0	$207.45	$270.00	$185.00	0.41
CRA118	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.01	55	0.0	$7.25	$288.26	$40.00	34.26
CRA119 storage	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,200	0.06	250	0.0	$32.83	$109.55	$30.00	2.42
A138 Elec room	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,200	0.06	250	0.0	$32.83	$109.55	$30.00	2.42
A135 Computer lab	15	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,200	Relamp	Yes	15	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,540	0.62	2,374	0.0	$311.17	$1,091.59	$260.00	2.67
CR A133	6	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	Yes	6	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,540	0.29	1,114	0.0	$146.06	$554.18	$140.00	2.84
CR A132	6	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	Yes	6	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,540	0.29	1,114	0.0	$146.06	$554.18	$140.00	2.84
CR A132	1	Compact Fluorescent: Screw-in lamps	Wall Switch	18	2,200	Relamp	Yes	1	LED Screw-In Lamps: LED lamps	Occupancy Sensor	13	1,540	0.01	23	0.0	$3.04	$17.23	$20.00	-0.91
CR A122	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,540	0.25	950	0.0	$124.47	$598.64	$125.00	3.81
CR A122	4	Linear Fluorescent - T12: 8' T12 (75W) - 2L	Wall Switch	158	2,200	Relamp & Reballast	Yes	4	LED - Linear Tubes: (2) 8' Lamps	Occupancy Sensor	72	1,540	0.28	1,089	0.0	$142.74	$514.77	$35.00	3.36
CR A122	4	Linear Fluorescent - T12: 4' T12 (40W) - 4L	Wall Switch	176	2,200	Relamp & Reballast	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,540	0.36	1,370	0.0	$179.62	$473.45	$115.00	2.00
CR A122	3	Compact Fluorescent: Screw-in lamps	Wall Switch	18	2,200	Relamp	Yes	3	LED Screw-In Lamps: LED lamps	Occupancy Sensor	13	1,540	0.02	70	0.0	$9.13	$51.68	$35.00	1.83
CRA123 storage	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,200	0.06	250	0.0	$32.83	$109.55	$30.00	2.42
CRA123 display lab	1	Compact Fluorescent: Screw-in lamps	Wall Switch	18	2,200	Relamp	No	1	LED Screw-In Lamps: LED lamps	Wall Switch	13	2,200	0.00	14	0.0	$1.79	$17.23	$0.00	9.62
A121 work room	5	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	No	5	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,200	0.18	708	0.0	$92.86	$365.15	$100.00	2.86
A121 work room	1	Compact Fluorescent: Screw-in lamps	Wall Switch	18	2,200	Relamp	No	1	LED Screw-In Lamps: LED lamps	Wall Switch	13	2,200	0.00	14	0.0	$1.79	$17.23	$0.00	9.62
A121 work room	1	Compact Fluorescent: Screw-in lamps	Wall Switch	18	2,200	Relamp	No	1	LED Screw-In Lamps: LED lamps	Wall Switch	13	2,200	0.00	14	0.0	$1.79	$17.23	$0.00	9.62
A120 phone room	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,200	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,200	0.01	40	0.0	$5.31	$32.52	$10.00	4.24
CR A139	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,540	0.41	1,583	0.0	$207.45	$817.73	$185.00	3.05

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
CR A139	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.01	55	0.0	$7.25	$270.00	$40.00	31.74
CR A110	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,540	0.41	1,583	0.0	$207.45	$817.73	$185.00	3.05
CR A110	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.01	55	0.0	$7.25	$270.00	$40.00	31.74
CR A141	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,540	0.43	1,671	0.0	$219.09	$927.27	$215.00	3.25
CR A141	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.01	55	0.0	$7.25	$270.00	$40.00	31.74
CR A147	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,540	0.33	1,266	0.0	$165.96	$708.18	$155.00	3.33
CR A147	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.01	55	0.0	$7.25	$270.00	$40.00	31.74
CRA145	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,540	0.43	1,671	0.0	$219.09	$927.27	$215.00	3.25
CRA145	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.01	55	0.0	$7.25	$270.00	$40.00	31.74
CRA148	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,540	0.33	1,266	0.0	$165.96	$708.18	$155.00	3.33
CRA148	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,200	Relamp	Yes	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,540	0.01	53	0.0	$7.00	$270.00	$45.00	32.15
CRA146	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,540	0.43	1,671	0.0	$219.09	$927.27	$215.00	3.25
CRA146	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.01	55	0.0	$7.25	$270.00	$40.00	31.74
CRA149	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,540	0.33	1,266	0.0	$165.96	$708.18	$155.00	3.33
CRA149	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.01	55	0.0	$7.25	$270.00	$40.00	31.74
CRA52	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,540	0.43	1,671	0.0	$219.09	$927.27	$215.00	3.25
CRA152	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.01	55	0.0	$7.25	$270.00	$40.00	31.74
CRA153	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,540	0.41	1,583	0.0	$207.45	$817.73	$185.00	3.05
CRA153	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.01	55	0.0	$7.25	$270.00	$40.00	31.74
CRA154	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,540	0.41	1,583	0.0	$207.45	$817.73	$185.00	3.05
CRA154	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.01	55	0.0	$7.25	$270.00	$40.00	31.74
CRA155	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,540	0.41	1,583	0.0	$207.45	$817.73	$185.00	3.05
CRA155	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.01	55	0.0	$7.25	$270.00	$40.00	31.74
CRA156	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,540	0.41	1,583	0.0	$207.45	$817.73	$185.00	3.05
CRA156	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.01	55	0.0	$7.25	$270.00	$40.00	31.74

	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
A131 Faculty Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,540	0.08	317	0.0	$41.49	$225.55	$50.00	4.23
A131 Faculty Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	2	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.03	111	0.0	$14.49	$36.52	$30.00	0.45
A128 Faculty Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,200	0.02	83	0.0	$10.94	$36.52	$10.00	2.42
A128 Faculty Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,200	0.04	142	0.0	$18.57	$73.03	$20.00	2.86
A129 Janitor	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,200	0.01	44	0.0	$5.80	$18.26	$5.00	2.28
CR A157	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,540	0.43	1,671	0.0	$219.09	$927.27	$215.00	3.25
CR A157	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.01	55	0.0	$7.25	$18.26	$40.00	-3.00
A127 Resource room	5	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	Yes	5	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,540	0.24	929	0.0	$121.72	$481.15	$120.00	2.97
A127 Resource room	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,200	Relamp	Yes	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,540	0.01	53	0.0	$7.00	$32.52	$30.00	0.36
Library	30	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	Yes	30	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,540	1.44	5,571	0.0	$730.29	$2,730.90	$670.00	2.82
Library	2	Exit Signs: LED - 2 W Lamp	Wall Switch	6	8,760	None	No	2	Exit Signs: LED - 2 W Lamp	Wall Switch	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Library	4	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,200	Relamp	No	4	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,200	0.04	162	0.0	$21.23	$130.06	$40.00	4.24
Library	70	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	70	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	1.00	3,870	0.0	$507.26	$2,628.03	$525.00	4.15
Library C109	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,200	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,200	0.01	40	0.0	$5.31	$32.52	$10.00	4.24
Library C108	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,540	0.11	422	0.0	$55.32	$262.06	$60.00	3.65
Library C107	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,540	0.11	422	0.0	$55.32	$262.06	$60.00	3.65
Library C104	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,540	0.25	950	0.0	$124.47	$444.64	$110.00	2.69
Library C105	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	Yes	3	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,540	0.14	557	0.0	$73.03	$335.09	$80.00	3.49
Library C103	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,540	0.58	2,228	0.0	$292.12	$992.36	$260.00	2.51
CR B125	5	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	Yes	5	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,540	0.24	929	0.0	$121.72	$635.15	$135.00	4.11
CR 125	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,200	Relamp	Yes	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,540	0.01	53	0.0	$7.00	$270.00	$45.00	32.15
CR 100	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,540	0.43	1,671	0.0	$219.09	$927.27	$215.00	3.25
CR 100	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	Yes	1	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,540	0.05	186	0.0	$24.34	$270.00	$55.00	8.83
CR B101	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,540	0.41	1,583	0.0	$207.45	$817.73	$185.00	3.05
CR B101	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	Yes	1	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,540	0.05	186	0.0	$24.34	$270.00	$55.00	8.83

	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
CR B102	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,540	0.41	1,583	0.0	$207.45	$817.73	$185.00	3.05
CR B102	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	Yes	1	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,540	0.05	186	0.0	$24.34	$270.00	$55.00	8.83
CR B103	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,540	0.41	1,583	0.0	$207.45	$817.73	$185.00	3.05
CR B103	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	Yes	1	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,540	0.05	186	0.0	$24.34	$270.00	$55.00	8.83
CR B104	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,540	0.41	1,583	0.0	$207.45	$817.73	$185.00	3.05
CR B104	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.01	55	0.0	$7.25	$270.00	$40.00	31.74
CR B105	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,540	0.43	1,671	0.0	$219.09	$927.27	$215.00	3.25
CR B105	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.01	55	0.0	$7.25	$270.00	$40.00	31.74
CR B108	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,540	0.33	1,266	0.0	$165.96	$708.18	$155.00	3.33
CR B108	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.01	55	0.0	$7.25	$270.00	$40.00	31.74
CR B111	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,540	0.43	1,671	0.0	$219.09	$927.27	$215.00	3.25
CR B111	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.01	55	0.0	$7.25	$270.00	$40.00	31.74
CR B109	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,540	0.33	1,266	0.0	$165.96	$708.18	$155.00	3.33
CR B109	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,200	Relamp	Yes	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,540	0.01	53	0.0	$7.00	$270.00	$45.00	32.15
CR B112	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,540	0.43	1,671	0.0	$219.09	$927.27	$215.00	3.25
CR B112	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.01	55	0.0	$7.25	$270.00	$40.00	31.74
CR B110	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,540	0.33	1,266	0.0	$165.96	$708.18	$155.00	3.33
CR B110	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.01	55	0.0	$7.25	$270.00	$40.00	31.74
CR B116	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,540	0.43	1,671	0.0	$219.09	$927.27	$215.00	3.25
CR B116	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.01	55	0.0	$7.25	$270.00	$40.00	31.74
CR B117	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,540	0.41	1,583	0.0	$207.45	$817.73	$185.00	3.05
CR B117	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.01	55	0.0	$7.25	$270.00	$40.00	31.74
CR B118	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,540	0.41	1,583	0.0	$207.45	$817.73	$185.00	3.05
CR B118	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.01	55	0.0	$7.25	$270.00	$40.00	31.74
B119 storage	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,200	0.06	250	0.0	$32.83	$109.55	$30.00	2.42

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B138 Elec room	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,200	0.06	250	0.0	$32.83	$109.55	$30.00	2.42
B135 Computer lab	15	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	No	15	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,200	0.55	2,125	0.0	$278.59	$1,095.45	$300.00	2.86
B135 Computer lab	3	Compact Fluorescent: Screw-in lamps	Wall Switch	18	2,200	Relamp	No	3	LED Screw-In Lamps: LED lamps	Wall Switch	13	2,200	0.01	41	0.0	$5.37	$51.68	$0.00	9.62
CR B133	6	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	Yes	6	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,540	0.29	1,114	0.0	$146.06	$708.18	$155.00	3.79
CR B133	1	Compact Fluorescent: Screw-in lamps	Wall Switch	18	2,200	Relamp	Yes	1	LED Screw-In Lamps: LED lamps	Occupancy Sensor	13	1,540	0.01	23	0.0	$3.04	$270.00	$35.00	77.19
CR B132	6	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	Yes	6	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,540	0.29	1,114	0.0	$146.06	$708.18	$155.00	3.79
CR B132	1	Compact Fluorescent: Screw-in lamps	Wall Switch	18	2,200	Relamp	Yes	1	LED Screw-In Lamps: LED lamps	Occupancy Sensor	13	1,540	0.01	23	0.0	$3.04	$270.00	$35.00	77.19
CR B122	9	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	9	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.13	498	0.0	$65.22	$434.32	$80.00	5.43
CR B122	4	Linear Fluorescent - T12HO: 8' T12HO (110W) - 2L	Wall Switch	252	2,200	Relamp & Reballast	Yes	4	LED - Linear Tubes: (2) 8' Lamps	Occupancy Sensor	72	1,540	0.53	2,040	0.0	$267.44	$270.00	$35.00	0.88
CR B122	4	Linear Fluorescent - T12HO: 8' T12HO (110W) - 1L	Wall Switch	140	2,200	Relamp & Reballast	Yes	4	LED - Linear Tubes: (1) 8' Lamp	Occupancy Sensor	36	1,540	0.30	1,162	0.0	$152.29	$270.00	$35.00	1.54
B123 storage	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,200	0.06	250	0.0	$32.83	$109.55	$30.00	2.42
B121 workroom	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	No	5	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,200	0.11	417	0.0	$54.72	$182.58	$50.00	2.42
B121 workroom	2	Compact Fluorescent: Screw-in lamps	Wall Switch	18	2,200	Relamp	No	2	LED Screw-In Lamps: LED lamps	Wall Switch	13	2,200	0.01	27	0.0	$3.58	$34.45	$0.00	9.62
B120 RR	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,200	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,200	0.01	40	0.0	$5.31	$32.52	$10.00	4.24
CR 139	15	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	Yes	15	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,540	0.72	2,786	0.0	$365.15	$1,365.45	$335.00	2.82
CR 139	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.01	55	0.0	$7.25	$270.00	$40.00	31.74
CR B140	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,540	0.41	1,583	0.0	$207.45	$817.73	$185.00	3.05
CR B140	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.01	55	0.0	$7.25	$270.00	$40.00	31.74
CR B141	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,540	0.43	1,671	0.0	$219.09	$927.27	$215.00	3.25
CR B141	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.01	55	0.0	$7.25	$270.00	$40.00	31.74
CR B147	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,540	0.33	1,266	0.0	$165.96	$708.18	$155.00	3.33
CR B147	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.01	55	0.0	$7.25	$270.00	$40.00	31.74
CR B145	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,540	0.43	1,671	0.0	$219.09	$927.27	$215.00	3.25
CR B145	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.01	55	0.0	$7.25	$270.00	$40.00	31.74
CR B148	12	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	12	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.17	663	0.0	$86.96	$489.09	$95.00	4.53

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
CR B148	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.01	55	0.0	$7.25	$270.00	$40.00	31.74
CR B146	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,540	0.43	1,671	0.0	$219.09	$927.27	$215.00	3.25
CR B146	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.01	55	0.0	$7.25	$270.00	$40.00	31.74
CR B149	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,540	0.33	1,266	0.0	$165.96	$708.18	$155.00	3.33
CR B149	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.01	55	0.0	$7.25	$270.00	$40.00	31.74
CR B152	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,540	0.43	1,671	0.0	$219.09	$927.27	$215.00	3.25
CR B152	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.01	55	0.0	$7.25	$270.00	$40.00	31.74
CR B153	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,540	0.41	1,583	0.0	$207.45	$817.73	$185.00	3.05
CR B153	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.01	55	0.0	$7.25	$270.00	$40.00	31.74
CR B154	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,540	0.41	1,583	0.0	$207.45	$817.73	$185.00	3.05
CR B154	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.01	55	0.0	$7.25	$270.00	$40.00	31.74
CR B155	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,540	0.41	1,583	0.0	$207.45	$817.73	$185.00	3.05
CR B155	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.01	55	0.0	$7.25	$270.00	$40.00	31.74
CR B156	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,540	0.41	1,583	0.0	$207.45	$817.73	$185.00	3.05
CR B156	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.01	55	0.0	$7.25	$270.00	$40.00	31.74
Boys RR	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,200	0.06	250	0.0	$32.83	$109.55	$30.00	2.42
Faculty RR	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,200	0.04	142	0.0	$18.57	$73.03	$20.00	2.86
Janitor B139	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,200	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,200	0.01	40	0.0	$5.31	$32.52	$10.00	4.24
B157 resurce room	11	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	11	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,540	0.28	1,083	0.0	$141.91	$1,067.06	$35.00	7.27
B157 RR	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,200	0.04	142	0.0	$18.57	$73.03	$20.00	2.86
B 127	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	No	2	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,200	0.07	283	0.0	$37.14	$146.06	$40.00	2.86
B127	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,200	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,200	0.01	40	0.0	$5.31	$32.52	$10.00	4.24
Girls RR	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,200	Relamp	Yes	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,540	0.03	107	0.0	$14.00	$65.03	$55.00	0.72
Girls RR	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,540	0.08	317	0.0	$41.49	$379.55	$65.00	7.58
D155	7	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	Yes	7	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,540	0.34	1,300	0.0	$170.40	$627.21	$160.00	2.74

	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
D156	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,540	0.19	743	0.0	$97.37	$408.12	$100.00	3.16
Main room	25	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	Yes	25	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,540	1.20	4,643	0.0	$608.58	$2,365.75	$570.00	2.95
D150 storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	No	2	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,200	0.07	283	0.0	$37.14	$146.06	$40.00	2.86
D151	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,540	0.19	743	0.0	$97.37	$408.12	$100.00	3.16
Practice room1	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,200	Relamp	No	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,200	0.02	81	0.0	$10.61	$65.03	$20.00	4.24
Practice room2	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,200	Relamp	No	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,200	0.02	81	0.0	$10.61	$65.03	$20.00	4.24
D149	21	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	Yes	21	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,540	1.01	3,900	0.0	$511.21	$2,073.63	$490.00	3.10
D148	11	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	Yes	11	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,540	0.53	2,043	0.0	$267.77	$1,073.33	$255.00	3.06
Small gym	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	No	12	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,200	0.44	1,700	0.0	$222.87	$876.36	$240.00	2.86
Small gym	2	Exit Signs: LED - 2 W Lamp	Wall Switch	6	8,760	None	No	2	Exit Signs: LED - 2 W Lamp	Wall Switch	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
D146 storage	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,200	0.09	334	0.0	$43.78	$146.06	$40.00	2.42
Main gym	24	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	Yes	24	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,540	1.15	4,457	0.0	$584.24	$2,292.72	$550.00	2.98
Main gym	4	Exit Signs: LED - 2 W Lamp	Wall Switch	6	8,760	None	No	4	Exit Signs: LED - 2 W Lamp	Wall Switch	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Gym office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,200	0.04	167	0.0	$21.89	$73.03	$20.00	2.42
Gym office	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	No	9	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,200	0.19	751	0.0	$98.50	$328.64	$90.00	2.42
Girl's lockeroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,200	0.04	167	0.0	$21.89	$73.03	$20.00	2.42
Boys lockeroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,200	0.04	167	0.0	$21.89	$73.03	$20.00	2.42
Boys lockeroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,200	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,200	0.01	40	0.0	$5.31	$32.52	$10.00	4.24
Boys lockeroom	7	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	No	7	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,200	0.08	310	0.0	$40.63	$127.80	$35.00	2.28
Main gym storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,200	0.04	167	0.0	$21.89	$73.03	$20.00	2.42
Main gym storage	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,200	0.09	334	0.0	$43.78	$146.06	$40.00	2.42
Boys RR	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,200	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,200	0.01	40	0.0	$5.31	$32.52	$10.00	4.24
Boys RR	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,200	0.02	83	0.0	$10.94	$36.52	$10.00	2.42
Boys RR	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,200	0.03	133	0.0	$17.41	$54.77	$15.00	2.28
D129 Faculty RR	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	2,200	0.02	73	0.0	$9.62	$72.46	$0.00	7.53

	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
D128 Faculty RR	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	2,200	0.02	73	0.0	$9.62	$72.46	$0.00	7.53
C127 Elec room	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,200	0.01	44	0.0	$5.80	$18.26	$5.00	2.28
Maintenace Room	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	No	16	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,200	0.35	1,336	0.0	$175.11	$584.24	$160.00	2.42
Maintenace Room	2	Exit Signs: LED - 2 W Lamp	Wall Switch	6	8,760	None	No	2	Exit Signs: LED - 2 W Lamp	Wall Switch	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Cafeteria/MPR	11	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	11	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,540	0.30	1,161	0.0	$152.13	$401.67	$145.00	1.69
Cafeteria/MPR	5	Exit Signs: LED - 2 W Lamp	Wall Switch	6	8,760	None	No	5	Exit Signs: LED - 2 W Lamp	Wall Switch	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Cafeteria/MPR	52	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	Yes	52	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,540	2.50	9,657	0.0	$1,265.84	$4,877.56	$1,180.00	2.92
Cafeteria/MPR	37	Compact Fluorescent: Screw-in lamps	Wall Switch	18	2,200	Relamp	Yes	37	LED Screw-In Lamps: LED lamps	Occupancy Sensor	13	1,540	0.22	859	0.0	$112.65	$637.33	$105.00	4.73
Kitchen	19	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	19	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,540	0.52	2,005	0.0	$262.77	$1,233.79	$260.00	3.71
Kitchen	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,200	Relamp	No	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,200	0.02	81	0.0	$10.61	$65.03	$20.00	4.24
Kitchen	3	Exit Signs: LED - 2 W Lamp	Wall Switch	6	8,760	None	No	3	Exit Signs: LED - 2 W Lamp	Wall Switch	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Walkin cooler	1	LED Screw-In Lamps: LED	Wall Switch	7	2,200	None	No	1	LED Screw-In Lamps: LED	Wall Switch	7	2,200	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Walkin freezer	1	LED Screw-In Lamps: LED	Wall Switch	7	2,200	None	No	1	LED Screw-In Lamps: LED	Wall Switch	7	2,200	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
D121 storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,200	0.04	167	0.0	$21.89	$73.03	$20.00	2.42
storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,200	0.04	167	0.0	$21.89	$73.03	$20.00	2.42
Lockerroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,200	0.04	167	0.0	$21.89	$73.03	$20.00	2.42
D123 facullty dining	11	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	11	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,540	0.30	1,161	0.0	$152.13	$671.67	$145.00	3.46
D123 facullty dining	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,540	0.05	211	0.0	$27.66	$73.03	$55.00	0.65
D123 facullty dining	1	Exit Signs: LED - 2 W Lamp	Wall Switch	6	8,760	None	Yes	1	Exit Signs: LED - 2 W Lamp	Occupancy Sensor	6	6,132	0.00	18	0.0	$2.38	$0.00	$35.00	-14.72
D142 womans RR	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,540	0.08	317	0.0	$41.49	$379.55	$65.00	7.58
D142 womans RR	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,200	Relamp	Yes	2	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,540	0.03	111	0.0	$14.49	$36.52	$45.00	-0.59
D142 womans RR	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	1	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,540	0.03	98	0.0	$12.90	$72.46	$35.00	2.90
D143	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	2,200	0.02	73	0.0	$9.62	$72.46	$0.00	7.53
D143	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,200	0.04	142	0.0	$18.57	$73.03	$20.00	2.86
Stage	24	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	24	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,540	0.66	2,532	0.0	$331.92	$1,416.36	$310.00	3.33

	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
Stage	2	Exit Signs: LED - 2 W Lamp	Wall Switch	6	8,760	None	No	2	Exit Signs: LED - 2 W Lamp	Wall Switch	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Stage	8	Exit Signs: LED - 2 W Lamp	Wall Switch	6	8,760	None	No	8	Exit Signs: LED - 2 W Lamp	Wall Switch	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Stage	70	Incandescent: colored light	Wall Switch	60	2,200	Relamp	Yes	70	LED Screw-In Lamps: 1 Lamp	Occupancy Sensor	9	1,540	2.46	9,510	0.0	$1,246.67	$2,555.75	$525.00	1.63
D103 CR	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	Yes	7	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,540	0.19	739	0.0	$96.81	$525.61	$105.00	4.34
D103 CR	11	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,200	Relamp	Yes	11	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,540	0.15	587	0.0	$76.98	$627.67	$145.00	6.27
D111 nurse's office	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,200	0.13	501	0.0	$65.67	$219.09	$60.00	2.42
D111 nurse's office	7	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,200	Relamp	No	7	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,200	0.07	283	0.0	$37.14	$227.61	$70.00	4.24
D111 nurse's office	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,200	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,200	0.04	142	0.0	$18.57	$73.03	$20.00	2.86
D106 toiler	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,200	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,200	0.01	40	0.0	$5.31	$32.52	$10.00	4.24
D109 toiler	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	2,200	0.02	73	0.0	$9.62	$72.46	$0.00	7.53
D112 storage	2	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	2,200	Relamp	No	2	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	2,200	0.04	147	0.0	$19.24	$144.92	$0.00	7.53
D108 exam room	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,200	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,200	0.01	40	0.0	$5.31	$32.52	$10.00	4.24
Door 1 entry	2	LED - Fixtures: Outdoor Porch Wall Mount	Wall Switch	7	4,380	None	No	2	LED - Fixtures: Outdoor Porch Wall Mount	Wall Switch	7	4,380	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Ground lights	10	Metal Halide: (1) 175W Lamp	Wall Switch	215	4,380	Fixture Replacement	No	10	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	65	4,380	0.99	7,581	0.0	$993.73	$9,659.66	$1,000.00	8.71
Door 2	1	High-Pressure Sodium: (1) 200W Lamp	Wall Switch	250	4,380	Fixture Replacement	No	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	75	4,380	0.11	881	0.0	$115.55	$965.97	$100.00	7.49
Door 3	4	Metal Halide: (1) 175W Lamp	Wall Switch	215	4,380	Fixture Replacement	No	4	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	65	4,380	0.39	3,032	0.0	$397.49	$3,863.86	$400.00	8.71
Door 4	4	Metal Halide: (1) 175W Lamp	Wall Switch	215	4,380	Fixture Replacement	No	4	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	65	4,380	0.39	3,032	0.0	$397.49	$3,863.86	$400.00	8.71
Door 5	6	Metal Halide: (1) 175W Lamp	Wall Switch	215	4,380	Fixture Replacement	No	6	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	65	4,380	0.59	4,548	0.0	$596.24	$5,795.79	$600.00	8.71
Door 6	4	Metal Halide: (1) 175W Lamp	Wall Switch	215	4,380	Fixture Replacement	No	4	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	65	4,380	0.39	3,032	0.0	$397.49	$3,863.86	$400.00	8.71
Door 7	4	Metal Halide: (1) 175W Lamp	Wall Switch	215	4,380	Fixture Replacement	No	4	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	65	4,380	0.39	3,032	0.0	$397.49	$3,863.86	$400.00	8.71
Wall packs	3	High-Pressure Sodium: (1) 200W Lamp	Wall Switch	250	4,380	Fixture Replacement	No	3	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	75	4,380	0.34	2,644	0.0	$346.65	$2,897.90	$300.00	7.49
Door 9	1	LED - Fixtures: Outdoor Porch Wall Mount	Wall Switch	7	4,380	None	No	1	LED - Fixtures: Outdoor Porch Wall Mount	Wall Switch	7	4,380	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Door 11+12	1	High-Pressure Sodium: (1) 200W Lamp	Wall Switch	250	4,380	Fixture Replacement	No	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	75	4,380	0.11	881	0.0	$115.55	$965.97	$100.00	7.49
Door 13+14	1	High-Pressure Sodium: (1) 200W Lamp	Wall Switch	250	4,380	Fixture Replacement	No	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	75	4,380	0.11	881	0.0	$115.55	$965.97	$100.00	7.49
Reeceivng dock	1	High-Pressure Sodium: (1) 200W Lamp	Wall Switch	250	4,380	Fixture Replacement	No	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	75	4,380	0.11	881	0.0	$115.55	$965.97	$100.00	7.49

	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
Door 16	2	High-Pressure Sodium: (1) 200W Lamp	Wall Switch	250	4,380	Fixture Replacement	No	2	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	75	4,380	0.23	1,763	0.0	$231.10	$1,931.93	$200.00	7.49
Door 18	3	High-Pressure Sodium: (1) 200W Lamp	Wall Switch	250	4,380	Fixture Replacement	No	3	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	75	4,380	0.34	2,644	0.0	$346.65	$2,897.90	$300.00	7.49
Door 19	1	High-Pressure Sodium: (1) 200W Lamp	Wall Switch	250	4,380	Fixture Replacement	No	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	75	4,380	0.11	881	0.0	$115.55	$965.97	$100.00	7.49
Door 19	3	High-Pressure Sodium: (1) 200W Lamp	Wall Switch	250	4,380	Fixture Replacement	No	3	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	75	4,380	0.34	2,644	0.0	$346.65	$2,897.90	$300.00	7.49
Door 20	1	High-Pressure Sodium: (1) 200W Lamp	Wall Switch	250	4,380	Fixture Replacement	No	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	75	4,380	0.11	881	0.0	$115.55	$965.97	$100.00	7.49
Door 21	4	High-Pressure Sodium: (1) 200W Lamp	Wall Switch	250	4,380	Fixture Replacement	No	4	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	75	4,380	0.46	3,526	0.0	$462.20	$3,863.86	$400.00	7.49
Door 25	4	High-Pressure Sodium: (1) 200W Lamp	Wall Switch	250	4,380	Fixture Replacement	No	4	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	75	4,380	0.46	3,526	0.0	$462.20	$3,863.86	$400.00	7.49
Door 22	4	High-Pressure Sodium: (1) 200W Lamp	Wall Switch	250	4,380	Fixture Replacement	No	4	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	75	4,380	0.46	3,526	0.0	$462.20	$3,863.86	$400.00	7.49
Door 23	6	High-Pressure Sodium: (1) 200W Lamp	Wall Switch	250	4,380	Fixture Replacement	No	6	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	75	4,380	0.69	5,289	0.0	$693.30	$5,795.79	$600.00	7.49
Door 24	4	High-Pressure Sodium: (1) 200W Lamp	Wall Switch	250	4,380	Fixture Replacement	No	4	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	75	4,380	0.46	3,526	0.0	$462.20	$3,863.86	$400.00	7.49
Main entry	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,380	Relamp	No	7	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,380	0.15	1,164	0.0	$152.53	$255.61	$70.00	1.22
Entry hall	2	Compact Fluorescent: Recessed cans	Wall Switch	36	4,380	Relamp	No	2	LED Screw-In Lamps: 2 lamps	Wall Switch	25	4,380	0.01	109	0.0	$14.26	$68.90	$0.00	4.83
Entry hall	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,380	Relamp	No	10	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,380	0.22	1,662	0.0	$217.89	$365.15	$100.00	1.22
Main 5th entry	1	Compact Fluorescent: 18 W lamp	Wall Switch	36	4,380	Relamp	No	1	LED Screw-In Lamps: 2 lamps	Wall Switch	25	4,380	0.01	54	0.0	$7.13	$34.45	$0.00	4.83
Library entry	1	Compact Fluorescent: 18 W lamp	Wall Switch	36	4,380	Relamp	No	1	LED Screw-In Lamps: 2 lamps	Wall Switch	25	4,380	0.01	54	0.0	$7.13	$34.45	$0.00	4.83
Library entry	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,380	Relamp	No	10	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,380	0.22	1,662	0.0	$217.89	$365.15	$100.00	1.22
Library entry	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,380	Relamp	No	8	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,380	0.17	1,330	0.0	$174.32	$292.12	$80.00	1.22
A wing hall	28	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,380	Relamp	No	28	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,380	0.61	4,654	0.0	$610.10	$1,022.42	$280.00	1.22
A wing hall	13	Exit Signs: LED - 2 W Lamp	None	6	4,380	None	No	13	Exit Signs: LED - 2 W Lamp	None	6	4,380	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
A wing hall	52	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,380	Relamp	No	52	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,380	0.55	4,191	0.0	$549.36	$1,690.78	$520.00	2.13
entry 3 foyer	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
entry 3 foyer	16	Linear Fluorescent - T12HO: 8' T12HO (110W) - 2L	Wall Switch	252	4,380	Relamp & Reballast	No	16	LED - Linear Tubes: (2) 8' Lamps	Wall Switch	72	4,380	1.89	14,507	0.0	$1,901.62	$2,059.08	$0.00	1.08
entry 3 foyer	16	Linear Fluorescent - T12HO: 8' T12HO (110W) - 1L	Wall Switch	140	4,380	Relamp & Reballast	No	16	LED - Linear Tubes: (1) 8' Lamp	Wall Switch	36	4,380	1.09	8,382	0.0	$1,098.72	$1,350.96	$0.00	1.23
entry 4 foyer	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
entry 4 foyer	16	Linear Fluorescent - T12HO: 8' T12HO (110W) - 2L	Wall Switch	252	4,380	Relamp & Reballast	No	16	LED - Linear Tubes: (2) 8' Lamps	Wall Switch	72	4,380	1.89	14,507	0.0	$1,901.62	$2,059.08	$0.00	1.08

	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
entry 4 foyer	16	Linear Fluorescent - T12HO: 8' T12HO (110W) - 1L	Wall Switch	140	4,380	Relamp & Reballast	No	16	LED - Linear Tubes: (1) 8' Lamp	Wall Switch	36	4,380	1.09	8,382	0.0	$1,098.72	$1,350.96	$0.00	1.23
entry 5 foyer	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
entry 5 foyer	16	Linear Fluorescent - T12HO: 8' T12HO (110W) - 2L	Wall Switch	252	4,380	Relamp & Reballast	No	16	LED - Linear Tubes: (2) 8' Lamps	Wall Switch	72	4,380	1.89	14,507	0.0	$1,901.62	$2,059.08	$0.00	1.08
entry 5 foyer	16	Linear Fluorescent - T12HO: 8' T12HO (110W) - 1L	Wall Switch	140	4,380	Relamp & Reballast	No	16	LED - Linear Tubes: (1) 8' Lamp	Wall Switch	36	4,380	1.09	8,382	0.0	$1,098.72	$1,350.96	$0.00	1.23
entry 6 foyer	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
entry 6 foyer	16	Linear Fluorescent - T12HO: 8' T12HO (110W) - 2L	Wall Switch	252	4,380	Relamp & Reballast	No	16	LED - Linear Tubes: (2) 8' Lamps	Wall Switch	72	4,380	1.89	14,507	0.0	$1,901.62	$2,059.08	$0.00	1.08
entry 6 foyer	16	Linear Fluorescent - T12HO: 8' T12HO (110W) - 1L	Wall Switch	140	4,380	Relamp & Reballast	No	16	LED - Linear Tubes: (1) 8' Lamp	Wall Switch	36	4,380	1.09	8,382	0.0	$1,098.72	$1,350.96	$0.00	1.23
entry 7 foyer	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
entry 7 foyer	16	Linear Fluorescent - T12HO: 8' T12HO (110W) - 2L	Wall Switch	252	4,380	Relamp & Reballast	No	16	LED - Linear Tubes: (2) 8' Lamps	Wall Switch	72	4,380	1.89	14,507	0.0	$1,901.62	$2,059.08	$0.00	1.08
entry 7 foyer	16	Linear Fluorescent - T12HO: 8' T12HO (110W) - 1L	Wall Switch	140	4,380	Relamp & Reballast	No	16	LED - Linear Tubes: (1) 8' Lamp	Wall Switch	36	4,380	1.09	8,382	0.0	$1,098.72	$1,350.96	$0.00	1.23
Bwing hall	40	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,380	Relamp	No	40	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,380	0.87	6,649	0.0	$871.58	$1,460.60	$400.00	1.22
Bwing hall	14	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	14	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Bwing hall	52	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,380	Relamp	No	52	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,380	0.55	4,191	0.0	$549.36	$1,690.78	$520.00	2.13
Bwing hall	32	Linear Fluorescent - T12HO: 8' T12HO (110W) - 2L	Wall Switch	252	4,380	Relamp & Reballast	No	32	LED - Linear Tubes: (2) 8' Lamps	Wall Switch	72	4,380	3.78	29,013	0.0	$3,803.25	$4,118.16	$0.00	1.08
Entry 25	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Entry 25	16	Linear Fluorescent - T12HO: 8' T12HO (110W) - 2L	Wall Switch	252	4,380	Relamp & Reballast	No	16	LED - Linear Tubes: (2) 8' Lamps	Wall Switch	72	4,380	1.89	14,507	0.0	$1,901.62	$2,059.08	$0.00	1.08
Entry 25	16	Linear Fluorescent - T12HO: 8' T12HO (110W) - 1L	Wall Switch	140	4,380	Relamp & Reballast	No	16	LED - Linear Tubes: (1) 8' Lamp	Wall Switch	36	4,380	1.09	8,382	0.0	$1,098.72	$1,350.96	$0.00	1.23
Entry 24	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Entry 24	16	Linear Fluorescent - T12HO: 8' T12HO (110W) - 2L	Wall Switch	252	4,380	Relamp & Reballast	No	16	LED - Linear Tubes: (2) 8' Lamps	Wall Switch	72	4,380	1.89	14,507	0.0	$1,901.62	$2,059.08	$0.00	1.08
Entry 24	16	Linear Fluorescent - T12HO: 8' T12HO (110W) - 1L	Wall Switch	140	4,380	Relamp & Reballast	No	16	LED - Linear Tubes: (1) 8' Lamp	Wall Switch	36	4,380	1.09	8,382	0.0	$1,098.72	$1,350.96	$0.00	1.23
Entry 23	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Entry 23	16	Linear Fluorescent - T12HO: 8' T12HO (110W) - 2L	Wall Switch	252	4,380	Relamp & Reballast	No	16	LED - Linear Tubes: (2) 8' Lamps	Wall Switch	72	4,380	1.89	14,507	0.0	$1,901.62	$2,059.08	$0.00	1.08
Entry 23	16	Linear Fluorescent - T12HO: 8' T12HO (110W) - 1L	Wall Switch	140	4,380	Relamp & Reballast	No	16	LED - Linear Tubes: (1) 8' Lamp	Wall Switch	36	4,380	1.09	8,382	0.0	$1,098.72	$1,350.96	$0.00	1.23
Entry 22	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Entry 22	16	Linear Fluorescent - T12HO: 8' T12HO (110W) - 2L	Wall Switch	252	4,380	Relamp & Reballast	No	16	LED - Linear Tubes: (2) 8' Lamps	Wall Switch	72	4,380	1.89	14,507	0.0	$1,901.62	$2,059.08	$0.00	1.08

	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
Entry 22	16	Linear Fluorescent - T12HO: 8' T12HO (110W) - 1L	Wall Switch	140	4,380	Relamp & Reballast	No	16	LED - Linear Tubes: (1) 8' Lamp	Wall Switch	36	4,380	1.09	8,382	0.0	$1,098.72	$1,350.96	$0.00	1.23
Center Hall	16	Linear Fluorescent - T12HO: 8' T12HO (110W) - 2L	Wall Switch	252	4,380	Relamp & Reballast	No	16	LED - Linear Tubes: (2) 8' Lamps	Wall Switch	72	4,380	1.89	14,507	0.0	$1,901.62	$2,059.08	$0.00	1.08
Center Hall	5	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,380	Relamp	No	5	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,380	0.05	403	0.0	$52.82	$162.58	$50.00	2.13
Center Hall	6	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,380	Relamp	No	6	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,380	0.06	484	0.0	$63.39	$195.09	$60.00	2.13
Center Hall	30	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,380	Relamp	No	30	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,380	0.65	4,987	0.0	$653.68	$1,095.45	$300.00	1.22
Instrumental Entry	1	Compact Fluorescent: Recessed cans	Wall Switch	26	4,380	Relamp	No	1	LED Screw-In Lamps: 1 Lamp	Wall Switch	18	4,380	0.01	39	0.0	$5.15	$17.23	$0.00	3.34
Chosal entry	3	Compact Fluorescent: Recessed cans	Wall Switch	26	4,380	Relamp	No	3	LED Screw-In Lamps: 1 Lamp	Wall Switch	18	4,380	0.02	118	0.0	$15.45	$51.68	$0.00	3.34
Stage/Nurse hall	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,380	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,380	0.13	997	0.0	$130.74	$219.09	$60.00	1.22
Stage/Nurse hall	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Area/gym hall	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,380	Relamp	No	20	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,380	0.43	3,324	0.0	$435.79	$730.30	$200.00	1.22
Area/gym hall	5	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	5	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Area/gym hall	7	Compact Fluorescent: Plug in	Wall Switch	18	4,380	Relamp	No	7	LED Screw-In Lamps: 1 Lamp	Wall Switch	13	4,380	0.02	190	0.0	$24.96	$120.58	$0.00	4.83
Area/gym hall	1	Incandescent: 60 W	Wall Switch	60	4,380	Relamp	No	1	LED Screw-In Lamps: 1 Lamp	Wall Switch	9	4,380	0.03	257	0.0	$33.67	$17.23	$5.00	0.36
Area/gym hall	1	Compact Fluorescent: Screw-in lamps	Wall Switch	18	4,380	Relamp	No	1	LED Screw-In Lamps: 1 Lamp	Wall Switch	13	4,380	0.00	27	0.0	$3.57	$17.23	$0.00	4.83
Door 16+17	6	Compact Fluorescent: PL7	Wall Switch	18	4,380	Relamp	No	6	LED Screw-In Lamps: 1 Lamp	Wall Switch	13	4,380	0.02	163	0.0	$21.39	$103.35	$0.00	4.83
Door 16+17	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,380	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,380	0.09	665	0.0	$87.16	$146.06	$40.00	1.22

Motor Inventory & Recommendations

		Existing Conditions						Proposed Conditions				Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	Motor Quantity	Motor Application	HP Per Motor	Full Load Efficiency	VFD Control?	Annual Operating Hours	Install High Efficiency Motors?	Full Load Efficiency	Install VFDs?	Number of VFDs	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Roof	Main Office	1	Supply Fan	5.0	89.5%	No	2,745	No	89.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Main Office	1	Supply Fan	5.0	89.5%	No	2,745	No	89.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Receiving room	Gym	1	Supply Fan	5.0	89.5%	No	2,745	No	89.5%	Yes	1	1.40	4,076	0.0	$534.25	$3,275.85	$400.00	5.38
Unknown	Main Hallway	1	Supply Fan	5.0	89.5%	No	2,745	No	89.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Main Office	1	Return Fan	3.0	89.5%	No	2,745	No	89.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Main Office	1	Return Fan	3.0	89.5%	No	2,745	No	89.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Receiving room	Gym	1	Return Fan	3.0	89.5%	No	2,745	No	89.5%	Yes	1	0.84	2,445	0.0	$320.55	$3,007.65	$240.00	8.63
Unknown	Main Hallway	1	Return Fan	3.0	89.5%	No	2,745	No	89.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Boiler room	Boiler	1	Heating Hot Water Pump	15.0	87.5%	No	3,391	No	87.5%	Yes	1	1.93	18,864	0.0	$2,472.86	$5,194.45	$0.00	2.10
Boiler room	Boiler	1	Heating Hot Water Pump	15.0	88.5%	No	3,391	No	88.5%	Yes	1	1.91	18,651	0.0	$2,444.92	$5,194.45	$0.00	2.12
Boiler room	Chilled water supply	1	Chilled Water Pump	30.0	94.1%	No	4,067	No	94.1%	Yes	1	3.59	42,076	0.0	$5,515.62	$8,472.05	$1,800.00	1.21
Boiler room	Chilled water supply	1	Chilled Water Pump	30.0	94.1%	No	4,067	No	94.1%	Yes	1	3.59	42,076	0.0	$5,515.62	$8,472.05	$1,800.00	1.21
Boiler room	Chilled water primary loop	3	Chilled Water Pump	5.0	89.5%	No	2,745	No	89.5%	Yes	3	1.88	14,929	0.0	$1,957.04	$9,827.55	$0.00	5.02
Boiler room	DHW	1	Water Supply Pump	2.0	86.5%	No	2,745	No	86.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Boiler room	DHW	1	Water Supply Pump	0.5	60.0%	No	2,745	Yes	78.2%	No		0.08	298	0.0	$39.05	$505.13	$0.00	12.94
Classrooms	Unit ventilators	64	Supply Fan	0.3	60.0%	No	2,745	Yes	69.5%	No		1.51	5,598	0.0	$733.85	$28,323.20	$0.00	38.60
Roof	Exhaust fans	27	Exhaust Fan	0.5	60.0%	No	2,745	No	60.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00

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	Unknown	1	Split-System AC	3.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
CR B101	CR B101	1	Window AC	1.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
CR A105	CR B101	1	Window AC	1.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Electric Chiller Inventory & Recommendations

		Existing Conditions			Proposed Conditions							Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	Chiller Quantity	System Type	Cooling Capacity per Unit (Tons)	Install High Efficiency Chillers?	Chiller Quantity	System Type	Constant/ Variable Speed	Cooling Capacity (Tons)	Full Load Efficiency (kW/Ton)	IPLV Efficiency (kW/Ton)	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Outside grounds	All building	3	Air-Cooled Scroll Chiller	140.00	No							0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Fuel Heating Inventory & Recommendations

		Existing Conditions			Proposed Conditions						Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Output Capacity per Unit (MBh)	Install High Efficiency System?	System Quantity	System Type	Output Capacity per Unit (MBh)	Heating Efficiency	Heating Efficiency Units	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Boiler room	Whole building heat	2	Non-Condensing Hot Water Boiler	4,184.00	Yes	2	Non-Condensing Hot Water Boiler	4,184.00	85.00%	Ec	0.00	0	324.9	$2,536.04	$143,388.37	$0.00	56.54

DHW Inventory & Recommendations

		Existing Conditions		Proposed Conditions						Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Replace?	System Quantity	System Type	Fuel Type	System Efficiency	Efficiency Units	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Boiler room	DHW	1	Storage Tank Water Heater (> 50 Gal)	Yes	1	Storage Tank Water Heater (> 50 Gal)	Natural Gas	93.00%	Et	0.00	0	33.5	$261.89	$50,611.10	$1,767.50	186.51

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	3	Stand-Up Refrigerator, Solid Door (16 - 30 cu. ft.)	Yes	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.)	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	3	Refrigerator Chest	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Cooking Equipment Inventory & Recommendations

	Existing Conditions			Proposed Conditions	Energy Impact & Financial Analysis						
Location	Quantity	Equipment Type	High Efficiency Equipement?	Install High Efficiency Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen	3	Insulated Food Holding Cabinet (3/4 Size)	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	2	Gas Convection Oven (Half Size)	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	1	Gas Combination Oven/Steam Cooker (<15 Pans)	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	1	Gas Griddle (≤2 Feet Width)	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	1	Gas Steamer	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Plug Load Inventory

	Existing Conditions			
Location	Quantity	Equipment Description	Energy Rate (W)	ENERGY STAR Qualified?
Millstone River ES	3	Laptop	45.0	Yes
Millstone River ES	71	Projector	400.0	Yes
Millstone River ES	20	Smartboard	5.0	Yes
Millstone River ES	1	CRT TV	120.0	Yes
Millstone River ES	10	Mini Fridge	60.0	Yes
Millstone River ES	11	Refrigerator	200.0	Yes
Millstone River ES	22	Desk Printer	60.0	Yes
Millstone River ES	12	Microwave	1,000.0	Yes
Millstone River ES	7	LCD TV	100.0	Yes
Millstone River ES	8	Photo copies	200.0	Yes
Millstone River ES	1	Water cooler	400.0	Yes
Millstone River ES	1	Toaster oven	1,200.0	Yes
Millstone River ES	1	Coffee maker	400.0	Yes
Millstone River ES	3	Shredder	200.0	Yes
Millstone River ES	1	Electric stove	300.0	Yes

Vending Machine Inventory & Recommendations

	Existing Conditions		Proposed Conditions	Energy Impact & Financial Analysis						
Location	Quantity	Vending Machine Type	Install Controls?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Faculty Dining	1	Refrigerated	Yes	0.00	1,612	0.0	$211.29	$230.00	$0.00	1.09

Appendix B: ENERGY STAR® Statement of Energy Performance

ENERGY STAR® Statement of Energy Performance

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ENERGY STAR® Score[1]

Millstone River Elementary School

Primary Property Type: K-12 School
Gross Floor Area (ft²): 142,300
Built: 1990

For Year Ending: November 30, 2017
Date Generated: August 27, 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
Millstone River Elementary School 75 Grovers Mill Road Plainsboro, New Jersey 08536	_____ , (___)___-_____	____ _____ , (___)___-_____ _____

Property ID: 6389343

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
88.1 kBtu/ft²

Source EUI
160.6 kBtu/ft²

Annual Energy by Fuel	
Electric - Grid (kBtu)	5,534,539 (44%)
Natural Gas (kBtu)	7,003,693 (56%)

National Median Comparison	
National Median Site EUI (kBtu/ft²)	64.2
National Median Source EUI (kBtu/ft²)	117
% Diff from National Median Source EUI	37%
Annual Emissions	
Greenhouse Gas Emissions (Metric Tons CO2e/year)	933

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)