Local Government Energy Audit:
Energy Audit Report

Thomas Grover Middle School

10 Southfield Road

West Windsor, New Jersey 08550

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 Thomas Grover Middle 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

Thomas Grover Middle School is a 176,453 square foot facility comprised of various space types within a single building. The building is mostly one floor but has a second floor over a portion of the facility. Spaces in the school include classrooms, offices, kitchen, gym, cafeteria, auditorium, media center, and mechanical and electrical spaces.

Interior lighting at Thomas Grover Middle School primarily consists of linear T8 fluorescent fixtures as well as a variety of other lighting technologies including incandescent, halogen, LED, and compact fluorescent lamps (CFL). Exterior lighting is mostly high-pressure sodium and metal halide fixtures, but also includes some LEDs and CFLs. Most of the heating and cooling is provided by a geothermal water-source heat pump system. Supplementary heating and cooling is provided by package air-conditioning units with gas furnaces. 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 14 measures and recommends 12 measures which together represent an opportunity to reduce annual energy costs by $71,788 and annual greenhouse gas emissions by 588,888 lbs CO_2e. We estimate that if all measures were implemented as recommended, the project would pay for itself in 3.4 years. The breakdown of existing and potential utility costs after project implementation are illustrated in Figure 1 and Figure 2, respectively. Together these measures represent an opportunity to reduce Thomas Grover Middle School's annual energy use by 23%.

Figure 1 – Previous 12 Month Utility Costs

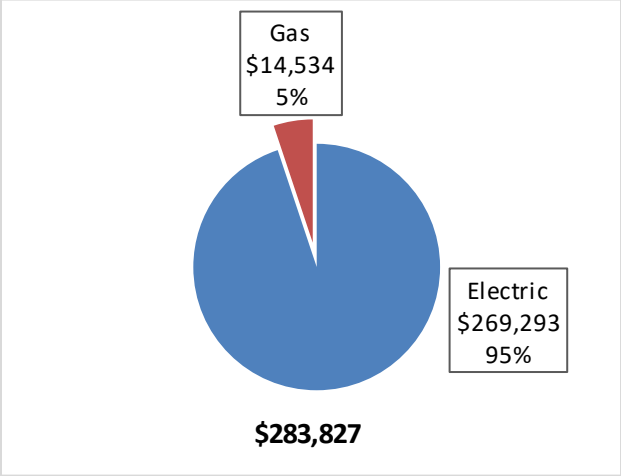
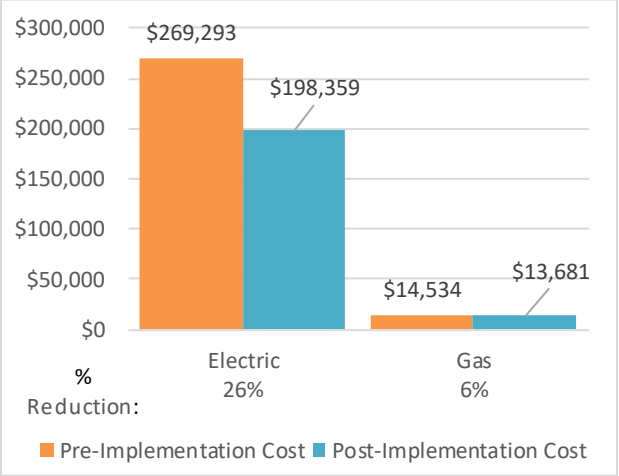


Figure 2 – Potential Post-Implementation Costs



A detailed description of Thomas Grover Middle School's existing energy use can be found in Section 3.

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

Figure 3 – Summary of Energy Reduction Opportunities

	Energy Conservation Measure	Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades			**440,454**	**79.1**	**0.0**	**$54,382.37**	**$183,236.43**	**$30,535.00**	**$152,701.43**	**2.8**	**443,533**
ECM 1	Install LED Fixtures	Yes	56,630	7.5	0.0	$6,992.06	$72,541.81	$3,800.00	$68,741.81	9.8	57,026
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	328	0.0	0.0	$40.45	$209.44	$0.00	$209.44	5.2	330
ECM 3	Retrofit Fixtures with LED Lamps	Yes	374,666	71.0	0.0	$46,259.62	$102,374.65	$26,735.00	$75,639.65	1.6	377,286
ECM 4	Install LED Exit Signs	Yes	8,830	0.6	0.0	$1,090.24	$8,110.54	$0.00	$8,110.54	7.4	8,892
Lighting Control Measures			**93,928**	**13.8**	**0.0**	**$11,597.22**	**$64,700.00**	**$7,315.00**	**$57,385.00**	**4.9**	**94,585**
ECM 5	Install Occupancy Sensor Lighting Controls	Yes	84,619	12.5	0.0	$10,447.79	$56,700.00	$7,315.00	$49,385.00	4.7	85,210
ECM 6	Install High/Low Lighitng Controls	Yes	9,310	1.3	0.0	$1,149.44	$8,000.00	$0.00	$8,000.00	7.0	9,375
Motor Upgrades			**1,364**	**0.3**	**0.0**	**$168.37**	**$5,842.06**	**$0.00**	**$5,842.06**	**34.7**	**1,373**
ECM 7	Premium Efficiency Motors	Yes	1,364	0.3	0.0	$168.37	$5,842.06	$0.00	$5,842.06	34.7	1,373
Variable Frequency Drive (VFD) Measures			**17,362**	**4.6**	**0.0**	**$2,143.62**	**$13,547.90**	**$2,800.00**	**$10,747.90**	**5.0**	**17,483**
ECM 8	Install VFDs on Constant Volume (CV) HVAC	Yes	17,362	4.6	0.0	$2,143.62	$13,547.90	$2,800.00	$10,747.90	5.0	17,483
Electric Unitary HVAC Measures			**22,075**	**19.7**	**0.0**	**$2,725.54**	**$223,990.99**	**$5,530.00**	**$218,460.99**	**80.2**	**22,229**
	Install High Efficiency Electric AC	No	22,075	19.7	0.0	$2,725.54	$223,990.99	$5,530.00	$218,460.99	80.2	22,229
Gas Heating (HVAC/Process) Replacement			**0**	**0.0**	**152.1**	**$1,466.83**	**$67,575.04**	**$3,600.00**	**$63,975.04**	**43.6**	**17,804**
	Install High Efficiency Furnaces	No	0	0.0	152.1	$1,466.83	$67,575.04	$3,600.00	$63,975.04	43.6	17,804
HVAC System Improvements			**6,334**	**0.0**	**43.4**	**$1,201.19**	**$13,594.20**	**$0.00**	**$13,594.20**	**11.3**	**11,466**
ECM 9	Implement Demand Control Ventilation	Yes	6,334	0.0	43.4	$1,201.19	$13,594.20	$0.00	$13,594.20	11.3	11,466
Domestic Water Heating Upgrade			**0**	**0.0**	**45.0**	**$434.20**	**$772.41**	**$0.00**	**$772.41**	**1.8**	**5,270**
ECM 10	Install Low-Flow Domestic Hot Water Devices	Yes	0	0.0	45.0	$434.20	$772.41	$0.00	$772.41	1.8	5,270
Food Service Equipment & Refrigeration Measures			**9,894**	**0.8**	**0.0**	**$1,221.59**	**$1,819.80**	**$0.00**	**$1,819.80**	**1.5**	**9,963**
ECM 11	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	9,894	0.8	0.0	$1,221.59	$1,819.80	$0.00	$1,819.80	1.5	9,963
Plug Load Equipment Control - Vending Machine			**5,178**	**0.0**	**0.0**	**$639.33**	**$920.00**	**$0.00**	**$920.00**	**1.4**	**5,214**
ECM 12	Vending Machine Control	Yes	5,178	0.0	0.0	$639.33	$920.00	$0.00	$920.00	1.4	5,214
TOTALS FOR HIGH PRIORITY MEASURES			**574,514**	**98.6**	**88.5**	**$71,787.89**	**$284,432.80**	**$40,650.00**	**$243,782.80**	**3.4**	**588,888**
TOTALS FOR ALL EVALUATED MEASURES			**596,588**	**118.3**	**240.5**	**$75,980.26**	**$575,998.84**	**$49,780.00**	**$526,218.84**	**6.9**	**628,921**

* - 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.

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

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

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

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

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

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

Energy Efficient Practices

TRC also identified five 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 Thomas Grover Middle School include:

- Perform Lighting Maintenance
- Develop a Lighting Maintenance Schedule
- Clean Evaporator/Condenser Coils on AC Systems
- Perform Water Heater Maintenance
- Water Conservation

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

On-Site Generation Measures

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

Figure 4 – Photovoltaic Potential

Potential	High	
System Potential	560	kW DC STC
Electric Generation	667,167	kWh/yr
Displaced Cost	$58,040	/yr
Installed Cost	$1,456,000	

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 EB)
- 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-p.org	609-716-5000, extension 5020
TRC Energy Services			
Alex Klieverik	Auditor	AKlieverik@trcsolutions.com	(732) 855-0033

2.2 General Site Information

On June 5, 2018, TRC performed an energy audit at Thomas Grover Middle School located in West Windsor, New Jersey. TRC's team met with Dr. Christopher Russo to review the facility operations and help focus our investigation on specific energy-using systems. The building was constructed in 1999.

Thomas Grover Middle School is a 176,453 square foot facility comprised of various space types within a single building. The building is mostly one floor but has a second floor over a portion of the facility. Spaces in the school include classrooms, offices, kitchen, gym, cafeteria, auditorium, media center, and mechanical and electrical spaces.

Interior lighting at Thomas Grover Middle School primarily consists of linear T8 fluorescent fixtures as well as a variety of other lighting technologies including incandescent, halogen, LED, and compact fluorescent lamps (CFL). Exterior lighting is mostly high-pressure sodium and metal halide fixtures, but also includes some LEDs and CFLs. Most of the heating and cooling is provided by a geothermal water-source heat pump system. Supplementary heating and cooling is provided by package air-conditioning units with gas furnaces.

2.3 Building Occupancy

The school is open Monday through Friday during the school year. The typical schedule is presented in the table below. During a typical day, the facility is occupied by approximately 215 staff and 1,263 students.

Figure 6 - Building Schedule

Building Name	Weekday/Weekend	Operating Schedule
Thomas Grover Middle School	Weekday	5:00 AM - 9:00 PM
Thomas Grover Middle School	Weekend	7:00 AM - 9:00 PM

2.4 Building Envelope

The building is constructed of brick and structural steel. The building has a flat roof previously covered with black membrane. At the time of the audit the roof was receiving a white reflective coating. The buildings have double pane windows which are in good condition and show little sign of excessive infiltration. The exterior doors are constructed of aluminum and in good condition.

Figure 7 – Roof with New Reflective Surface

2.5 Energy-Using Systems

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

Lighting System

Interior lighting is provided mostly by 32-Watt linear fluorescent T8 lamps with electronic ballasts as well as a variety of other technologies such as incandescent, halogen, LED and compact fluorescent lamps (CFL). There are also a couple T12 fixtures in the school. Most of the T8 fixtures are 2-lamp or 3-lamp, 4-foot long troffers with diffusers. Exit signs in the facility have fluorescent lights. Lighting control is provided by wall switches.

Exterior lighting consists primarily of high pressure sodium (HPS) and metal halide fixtures as well as some CFLs and LED lamps. Most exterior fixtures are controlled by photocells.

Figure 8 – Interior Lighting Technologies



Heat Pump Water Loop

The facility's heating and cooling is provided primarily by a water-source heat pump system. Water is pumped up from a ground loop to various heat pumps which heat or cool the classrooms and office spaces in the school. Two pumps distribute water, each with a Baldor Super E 100 hp motor. The water distribution loop is configured for variable flow to meet the facility's heating and cooling demands.

Figure 9 – Heat Pump Water Loop Equipment



Heating, Ventilation, and Air-Conditioning (HVAC)

The facility is primarily heated and cooled by Premier two water-source heat pumps. Heat pumps are in classrooms and office spaces. Each unit has about a 3-ton cooling capacity and 42 kBtu/hr heating capacity. Supply fans in the heat pumps each have a constant speed 0.5 hp motor.

A Carrier 50-ton package air-conditioner with a 955 kBtu/hr gas furnace provides heating and cooling to the cafeteria. Four 240 kBtu/hr Reznor units provide ventilation and heating to the kitchen area and supplemental heating to the cafeteria. The gym has four Carrier package AC units with gas furnaces providing for its HVAC needs. Two of the gym units have a cooling capacity of 20 tons and a heating capacity of 291 kBtu/hr. The other two have a cooling capacity of 15 tons and a heating capacity of 243 kBtu/hr.

The school also has a Sanyo 1.5 ton ductless mini-split air-conditioning unit for supplementary cooling and 14 energy recovery ventilators which pre-condition outdoor air and ensure the facility receives an adequate amount of outdoor air during occupancy.

Heat pump and package units are controlled by individual thermostats located in zones.

Figure 10 – HVAC Equipment


Domestic Hot Water Heating System

The domestic hot water heating system for the facility consists of an A.O. Smith gas-fired hot water heater with an input rating of 365 kBtu/hr, a nominal efficiency of 80%, and an 85-gallon storage tank. There is also a RBI gas-fired hot water heater with an input rating of 301 kBtu/hr, a nominal efficiency of 80%, and a 100-gallon storage tank. A fractional horsepower recirculation pump distributes water to the entire site. The recirculation pump operates continuously.

Figure 11 – Domestic Hot Water Equipment

Food Service & Laundry Equipment

The school has an all-electric kitchen that is used to prepare lunches for the students and staff daily. Most of the cooking by convection ovens. There are also steam trays and insulated cabinets which hold prepared food for serving.

Refrigeration

The facility has two different storage cold storage areas: a walk-in cooler area and a walk-in freezer area. The cooler area is maintained at a constant temperature of about 35°F and freezer area is maintained at about a constant 0°F. Both walk-ins have permanent split capacitor motors which are sources of potential energy savings. The kitchen also has a free standing commercial size freezers and refrigerators.

Building Plug Load

There are roughly 220 computer work stations throughout the facility. There is no centralized PC power management software installed. There are also a variety of other plug load appliances, such as large copiers, printers, LCD TVs, coffee makers, microwaves, paper shredders, clothes washer and dryer, electric range and ovens, wood working equipment, and space heaters.

There are three refrigerated beverage vending machines and one non-refrigerated vending machine.

Figure 12 - Building Plug Load Appliances

2.6 Water-Using Systems

There are roughly 33 lavatory faucets and six showerheads at this facility. A sampling found that faucets are rated for about 1.5 gallons per minute (gpm) or higher and showerheads are rated for about 4 gpm or higher.

Figure 13 – Water Fixtures

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

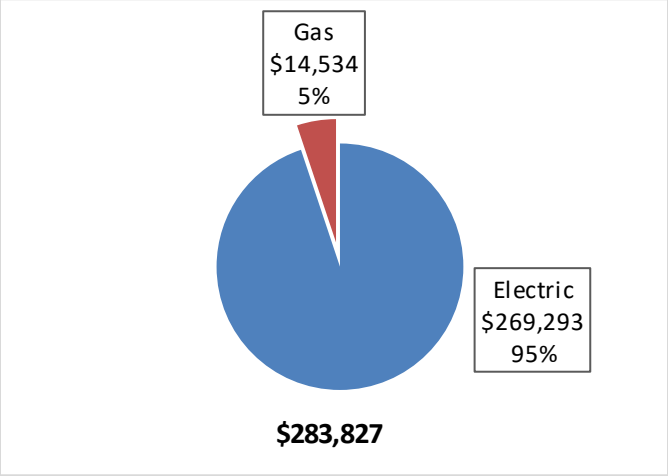
The following energy consumption and cost data is based on the last 12-month period of utility billing data that was provided for each utility. A profile of the annual energy consumption and energy cost of the facility was developed from this information.

Figure 14 - Utility Summary

Utility Summary for Thomas Grover Middle School		
Fuel	**Usage**	**Cost**
Electricity	2,181,060 kWh	$269,293
Natural Gas	15,066 Therms	$14,534
Total		**$283,827**

The current annual energy cost for this facility is $283,827 as shown in the chart below.

Figure 15 - Energy Cost Breakdown



3.2 Electricity Usage

Electricity is provided by JCP&L. The average electric cost over the past 12 months was $0.123/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. Because the heat pump system provides heating and cooling to the facility, electricity consumption and demand are relatively consistent most of the year. Electricity use does increase in summer months from supplementary cooling from electric air-conditioning equipment. The monthly electricity consumption and peak demand are shown in the chart below.

Figure 16 - Electric Usage & Demand

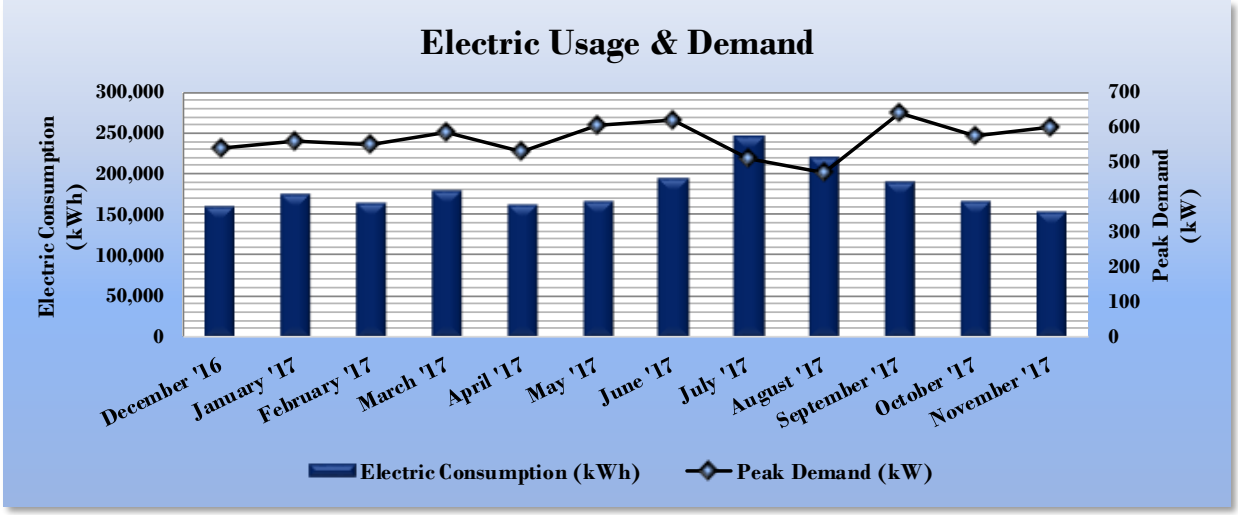


Figure 17 - Electric Usage & Demand

Electric Billing Data for Thomas Grover Middle School					
Period Ending	Days in Period	Electric Usage (kWh)	Demand (kW)	Demand Cost	Total Electric Cost
12/30/16	29	161,040	540		$19,506
1/31/17	32	175,005	559		$21,671
3/1/17	29	163,668	552		$20,686
3/30/17	29	180,247	584		$22,568
5/1/17	32	161,954	528		$20,329
5/21/17	20	167,552	603		$21,722
6/30/17	40	194,746	620		$24,473
8/1/17	32	247,662	510		$29,197
8/31/17	30	219,640	470		$25,672
10/2/17	32	189,675	641		$23,654
11/1/17	30	166,058	574		$20,722
12/1/17	30	153,813	599		$19,094
Totals	**365**	**2,181,060**	**641.4**	**$0**	**$269,293**
Annual	**365**	**2,181,060**	**641.4**	**$0**	**$269,293**

3.3 Natural Gas Usage

Natural gas is provided by PSE&G. The average gas cost for the past 12 months is $0.965/therm, which is the blended rate used throughout the analyses in this report. The monthly gas consumption is shown in the chart below.

Figure 18 - Natural Gas Usage

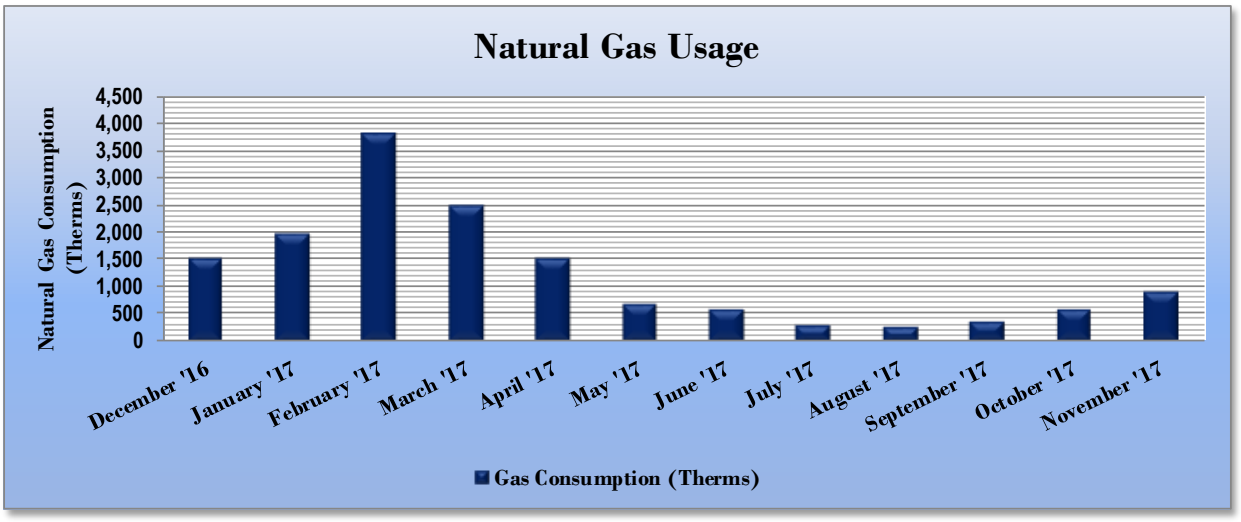


Figure 19 - Natural Gas Usage

Gas Billing Data for Thomas Grover Middle School			
Period Ending	Days in Period	Natural Gas Usage (Therms)	Natural Gas Cost
12/13/16	29	1,530	$1,796
1/18/17	36	1,993	$2,141
2/16/17	29	3,816	$3,510
3/20/17	32	2,505	$2,250
4/27/17	38	1,544	$1,076
5/18/17	21	700	$548
6/19/17	32	590	$481
7/19/17	30	287	$290
8/17/17	29	254	$266
9/17/17	31	361	$424
10/17/17	30	600	$704
11/15/17	29	927	$1,088
Totals	**366**	**15,108**	**$14,574**
Annual	**365**	**15,066**	**$14,534**

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 20 - Energy Use Intensity Comparison – Existing Conditions

Energy Use Intensity Comparison - Existing Conditions		
	Thomas Grover Middle School	National Median Building Type: School (K-12)
Source Energy Use Intensity (kBtu/ft^2)	141.4	141.4
Site Energy Use Intensity (kBtu/ft^2)	50.7	58.2

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

Figure 21 - Energy Use Intensity Comparison – Following Installation of Recommended Measures

Energy Use Intensity Comparison - Following Installation of Recommended Measures		
	Thomas Grover Middle School	National Median Building Type: School (K-12)
Source Energy Use Intensity (kBtu/ft^2)	106.0	141.4
Site Energy Use Intensity (kBtu/ft^2)	39.1	58.2

Many types of commercial buildings are also eligible to receive an ENERGY STAR® score. This score is a percentile ranking from 1 to 100. It compares your building's energy performance to similar buildings nationwide. A score of 50 represents median energy performance, while a score of 75 means your building performs better than 75 percent of all similar buildings nationwide and may be eligible for ENERGY STAR® certification. This facility has a current score of 54.

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

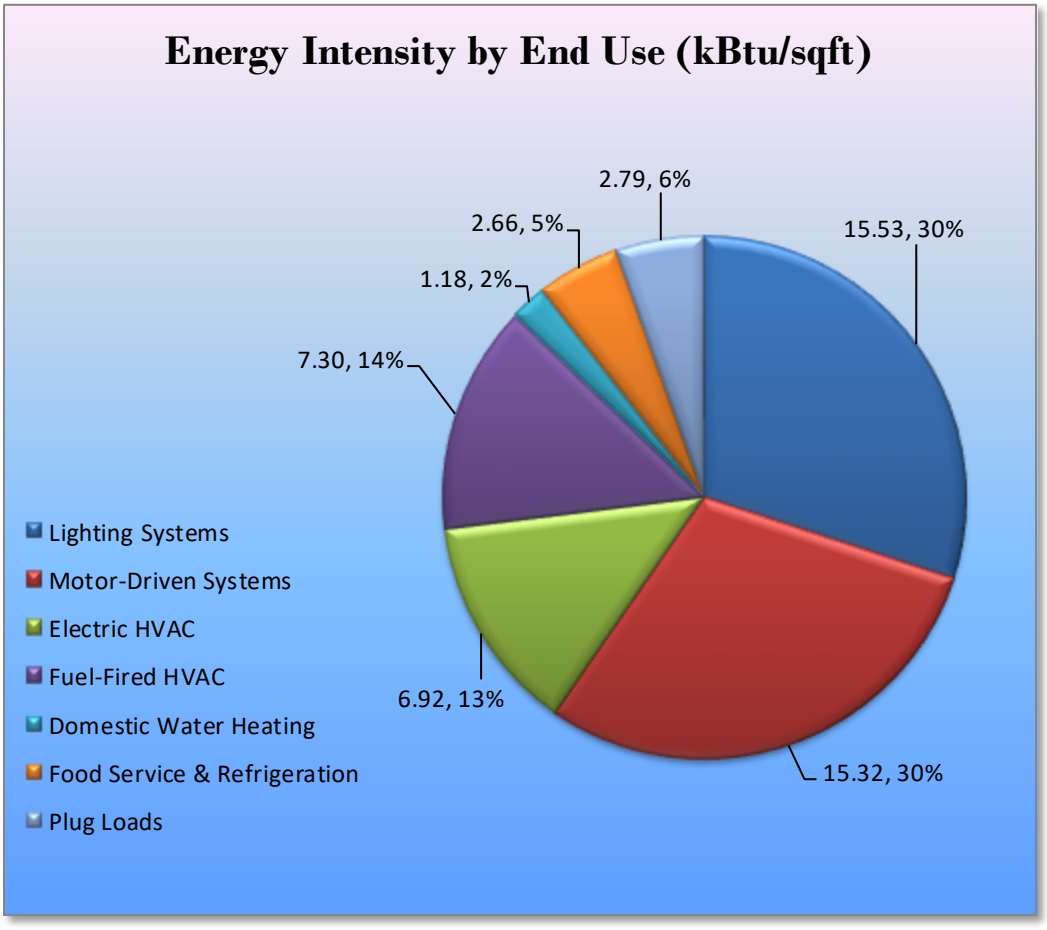
For more information on ENERGY STAR® certification go to: https://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/earn-recognition/energy-star-certification/how-app-1.

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 22 - 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 Thomas Grover Middle School regarding financial incentives for which they may qualify to implement the recommended measures. For this audit report, most measures have received only a preliminary analysis of feasibility which identifies expected ranges of savings and costs. This level of analysis is usually considered sufficient to demonstrate project cost-effectiveness and help prioritize energy measures. Savings are based on the New Jersey Clean Energy Program *Protocols to Measure Resource Savings*, 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.

4.1 Recommended ECMs

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

Figure 23 – 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		**440,454**	**79.1**	**0.0**	**$54,382.37**	**$183,236.43**	**$30,535.00**	**$152,701.43**	**2.8**	**443,533**
ECM 1	Install LED Fixtures	56,630	7.5	0.0	$6,992.06	$72,541.81	$3,800.00	$68,741.81	9.8	57,026
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	328	0.0	0.0	$40.45	$209.44	$0.00	$209.44	5.2	330
ECM 3	Retrofit Fixtures with LED Lamps	374,666	71.0	0.0	$46,259.62	$102,374.65	$26,735.00	$75,639.65	1.6	377,286
ECM 4	Install LED Exit Signs	8,830	0.6	0.0	$1,090.24	$8,110.54	$0.00	$8,110.54	7.4	8,892
Lighting Control Measures		**93,928**	**13.8**	**0.0**	**$11,597.22**	**$64,700.00**	**$7,315.00**	**$57,385.00**	**4.9**	**94,585**
ECM 5	Install Occupancy Sensor Lighting Controls	84,619	12.5	0.0	$10,447.79	$56,700.00	$7,315.00	$49,385.00	4.7	85,210
ECM 6	Install High/Low Lighitng Controls	9,310	1.3	0.0	$1,149.44	$8,000.00	$0.00	$8,000.00	7.0	9,375
Motor Upgrades		**1,364**	**0.3**	**0.0**	**$168.37**	**$5,842.06**	**$0.00**	**$5,842.06**	**34.7**	**1,373**
ECM 7	Premium Efficiency Motors	1,364	0.3	0.0	$168.37	$5,842.06	$0.00	$5,842.06	34.7	1,373
Variable Frequency Drive (VFD) Measures		**17,362**	**4.6**	**0.0**	**$2,143.62**	**$13,547.90**	**$2,800.00**	**$10,747.90**	**5.0**	**17,483**
ECM 8	Install VFDs on Constant Volume (CV) HVAC	17,362	4.6	0.0	$2,143.62	$13,547.90	$2,800.00	$10,747.90	5.0	17,483
HVAC System Improvements		**6,334**	**0.0**	**43.4**	**$1,201.19**	**$13,594.20**	**$0.00**	**$13,594.20**	**11.3**	**11,466**
ECM 9	Implement Demand Control Ventilation	6,334	0.0	43.4	$1,201.19	$13,594.20	$0.00	$13,594.20	11.3	11,466
Domestic Water Heating Upgrade		**0**	**0.0**	**45.0**	**$434.20**	**$772.41**	**$0.00**	**$772.41**	**1.8**	**5,270**
ECM 10	Install Low-Flow Domestic Hot Water Devices	0	0.0	45.0	$434.20	$772.41	$0.00	$772.41	1.8	5,270
Food Service Equipment & Refrigeration Measures		**9,894**	**0.8**	**0.0**	**$1,221.59**	**$1,819.80**	**$0.00**	**$1,819.80**	**1.5**	**9,963**
ECM 11	Refrigerator/Freezer Case Electrically Commutated Motors	9,894	0.8	0.0	$1,221.59	$1,819.80	$0.00	$1,819.80	1.5	9,963
Plug Load Equipment Control - Vending Machine		**5,178**	**0.0**	**0.0**	**$639.33**	**$920.00**	**$0.00**	**$920.00**	**1.4**	**5,214**
ECM 12	Vending Machine Control	5,178	0.0	0.0	$639.33	$920.00	$0.00	$920.00	1.4	5,214
TOTALS		**574,514**	**98.6**	**88.5**	**$71,787.89**	**$284,432.80**	**$40,650.00**	**$243,782.80**	**3.4**	**588,888**

* - 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 24 below.

Figure 24 – 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		**440,454**	**79.1**	**0.0**	**$54,382.37**	**$183,236.43**	**$30,535.00**	**$152,701.43**	**2.8**	**443,533**
ECM 1	Install LED Fixtures	56,630	7.5	0.0	$6,992.06	$72,541.81	$3,800.00	$68,741.81	9.8	57,026
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	328	0.0	0.0	$40.45	$209.44	$0.00	$209.44	5.2	330
ECM 3	Retrofit Fixtures with LED Lamps	374,666	71.0	0.0	$46,259.62	$102,374.65	$26,735.00	$75,639.65	1.6	377,286
ECM 4	Install LED Exit Signs	8,830	0.6	0.0	$1,090.24	$8,110.54	$0.00	$8,110.54	7.4	8,892

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	56,630	7.5	0.0	$6,992.06	$72,541.81	$3,800.00	$68,741.81	9.8	57,026

Measure Description

We recommend replacing exterior fixtures containing high pressure sodium and metal halide lamps with new high-performance LED light fixtures. This measure saves energy by installing LEDs which use less power than other technologies with a comparable light output.

Additional savings from lighting maintenance can be anticipated since LEDs have lifetimes nearly twice those of the fixtures recommended for replacement.

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	328	0.0	0.0	$40.45	$209.44	$0.00	$209.44	5.2	330
Exterior	0	0.0	0.0	$0.00	$0.00	$0.00	$0.00	0.0	0

Measure Description

We recommend retrofitting interior T12 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	374,214	70.9	0.0	$46,203.87	$101,891.65	$26,735.00	$75,156.65	1.6	376,831
Exterior	452	0.1	0.0	$55.75	$483.00	$0.00	$483.00	8.7	455

Measure Description

We recommend retrofitting interior and exterior incandescent, halogen, CFL, and linear fluorescent T8 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 fluorescent tubes and more than 10 times longer than many incandescent lamps.

ECM 4: Install LED Exit Signs

Summary of Measure Economics

Interior/ Exterior	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Interior	8,830	0.6	0.0	$1,090.24	$8,110.54	$0.00	$8,110.54	7.4	8,892
Exterior	0	0.0	0.0	$0.00	$0.00	$0.00	$0.00	0.0	0

Measure Description

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

4.1.2 Lighting Control Measures

Our recommendations for lighting control measures are summarized in Figure 25 below.

Figure 25 – 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		**93,928**	**13.8**	**0.0**	**$11,597.22**	**$64,700.00**	**$7,315.00**	**$57,385.00**	**4.9**	**94,585**
ECM 5	Install Occupancy Sensor Lighting Controls	84,619	12.5	0.0	$10,447.79	$56,700.00	$7,315.00	$49,385.00	4.7	85,210
ECM 6	Install High/Low Lighitng Controls	9,310	1.3	0.0	$1,149.44	$8,000.00	$0.00	$8,000.00	7.0	9,375

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 5: 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)
84,619	12.5	0.0	$10,447.79	$56,700.00	$7,315.00	$49,385.00	4.7	85,210

Measure Description

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

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

ECM 6: Install High/Low Lighting Controls

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
9,310	1.3	0.0	$1,149.44	$8,000.00	$0.00	$8,000.00	7.0	9,375

Measure Description

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

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

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

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

4.1.3 Motor Upgrades

Our recommendations for motor upgrades measures are summarized in Figure 26 below.

Figure 26 - Summary of Motor Upgrade ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Motor Upgrades		**1,364**	**0.3**	**0.0**	**$168.37**	**$5,842.06**	**$0.00**	**$5,842.06**	**34.7**	**1,373**
ECM 7	Premium Efficiency Motors	1,364	0.3	0.0	$168.37	$5,842.06	$0.00	$5,842.06	34.7	1,373

ECM 7: Premium Efficiency Motors

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
1,364	0.3	0.0	$168.37	$5,842.06	$0.00	$5,842.06	34.7	1,373

Measure Description

The replacement of standard efficiency motors with NEMA Premium® efficiency motors has been proposed to account for costs associated with the requirement for upgrading to inverter duty rated motors when installing variable frequency drives (see ECM 8, below). Due to the marginal payback of this measure, motor replacement should be reconsidered if variable frequency drives are not going to be installed. 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*. Savings are based on the difference between baseline and proposed efficiencies and the assumed annual operating hours.

4.1.4 Variable Frequency Drive Measures

Our recommendations for variable frequency drive (VFD) measures are summarized in Figure 27 below.

Figure 27 – 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		**17,362**	**4.6**	**0.0**	**$2,143.62**	**$13,547.90**	**$2,800.00**	**$10,747.90**	**5.0**	**17,483**
ECM 8	Install VFDs on Constant Volume (CV) HVAC	17,362	4.6	0.0	$2,143.62	$13,547.90	$2,800.00	$10,747.90	5.0	17,483

ECM 8: Install VFDs on Constant Volume (CV) HVAC

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
17,362	4.6	0.0	$2,143.62	$13,547.90	$2,800.00	$10,747.90	5.0	17,483

Measure Description

We recommend installing variable frequency drives (VFDs) to control supply fan motor speeds to convert 50 ton and 20-ton Carrier constant-volume, single-zone air handling systems into variable-air-volume (VAV) systems. A separate VFD is usually required to control the return fan motor or dedicated exhaust fan motor, if the air handler has one. Zone thermostats will cause the VFD to modulate fan speed to maintain the appropriate temperature in the zone, while maintaining a constant supply air temperature. Energy savings results from reducing fan speed (and power) when there is a reduced load required for the zone. The magnitude of energy savings is based on the estimated amount of time that fan motors operate at partial load.

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

4.1.5 HVAC System Upgrades

Our recommendation for HVAC system improvements are summarized in Figure 28 below.

Figure 28 - Summary of HVAC System Improvement ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
HVAC System Improvements		**6,334**	**0.0**	**43.4**	**$1,201.19**	**$13,594.20**	**$0.00**	**$13,594.20**	**11.3**	**11,466**
ECM 9	Implement Demand Control Ventilation	6,334	0.0	43.4	$1,201.19	$13,594.20	$0.00	$13,594.20	11.3	11,466

ECM 9: Implement Demand Control Ventilation (DCV)

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
6,334	0.0	43.4	$1,201.19	$13,594.20	$0.00	$13,594.20	11.3	11,466

Measure Description

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

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

4.1.6 Domestic Hot Water Heating System Upgrades

Our recommendations for domestic water heating system improvements are summarized in Figure 29 below.

Figure 29 - Summary of Domestic Water Heating ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Domestic Water Heating Upgrade		**0**	**0.0**	**45.0**	**$434.20**	**$772.41**	**$0.00**	**$772.41**	**1.8**	**5,270**
ECM 10	Install Low-Flow Domestic Hot Water Devices	0	0.0	45.0	$434.20	$772.41	$0.00	$772.41	1.8	5,270

ECM 10: Install Low-Flow DHW Devices

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
0	0.0	45.0	$434.20	$772.41	$0.00	$772.41	1.8	5,270

Measure Description

We recommend installing low-flow domestic hot water devices to reduce overall hot water demand. Energy demand from domestic hot water heating systems can be reduced by reducing water usage in general. Faucet aerators and low-flow showerheads can reduce hot water usage, relative to standard showerheads and aerators, which saves energy.

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

4.1.7 Food Service Equipment & Refrigeration Measures

Our recommendations for food service and refrigeration measures are summarized in Figure 30 below.

Figure 30 - Summary of Food Service Equipment & Refrigeration 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)
Food Service Equipment & Refrigeration Measures		**9,894**	**0.8**	**0.0**	**$1,221.59**	**$1,819.80**	**$0.00**	**$1,819.80**	**1.5**	**9,963**
ECM 11	Refrigerator/Freezer Case Electrically Commutated Motors	9,894	0.8	0.0	$1,221.59	$1,819.80	$0.00	$1,819.80	1.5	9,963

ECM 11: Refrigerator/Freezer Case Electrically Commutated 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)
9,894	0.8	0.0	$1,221.59	$1,819.80	$0.00	$1,819.80	1.5	9,963

Measure Description

We recommend replacing shaded pole or permanent split capacitor (PSC) motors with electronically commutated (EC) motors in existing walk-in coolers and freezers. These fractional horsepower EC motors are significantly more efficient than mechanically commutated, brushed motors, particularly at low speeds or partial load. By employing variable-speed technology, EC motors are able to optimize fan usage. Because these motors are brushless and utilize DC power, losses due to friction and phase shifting are eliminated. Savings for this measure take into account both the increased efficiency of the motor as well as the reduction in refrigeration load due to motor heat loss.

4.1.8 Plug Load Equipment Control - Vending Machines

Our recommendations for plug load equipment measures are summarized in Figure 31 below.

Figure 31 - 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		**5,178**	**0.0**	**0.0**	**$639.33**	**$920.00**	**$0.00**	**$920.00**	**1.4**	**5,214**
ECM 12	Vending Machine Control	5,178	0.0	0.0	$639.33	$920.00	$0.00	$920.00	1.4	5,214

ECM 12: 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)
5,178	0.0	0.0	$639.33	$920.00	$0.00	$920.00	1.4	5,214

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 32 – Summary of Measures Evaluated, But Not Recommended

Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Electric Unitary HVAC Measures	**22,075**	**19.7**	**0.0**	**$2,725.54**	**$223,990.99**	**$5,530.00**	**$218,460.99**	**80.2**	**22,229**
Install High Efficiency Electric AC	22,075	19.7	0.0	$2,725.54	$223,990.99	$5,530.00	$218,460.99	80.2	22,229
Gas Heating (HVAC/Process) Replacement	**0**	**0.0**	**152.1**	**$1,466.83**	**$67,575.04**	**$3,600.00**	**$63,975.04**	**43.6**	**17,804**
Install High Efficiency Furnaces	0	0.0	152.1	$1,466.83	$67,575.04	$3,600.00	$63,975.04	43.6	17,804
TOTALS	**22,075**	**19.7**	**152.1**	**$4,192.37**	**$291,566.04**	**$9,130.00**	**$282,436.04**	**67.4**	**40,033**

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

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

Install High Efficiency Air Conditioning Units

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
22,075	19.7	0.0	$2,725.54	$223,990.99	$5,530.00	$218,460.99	80.2	22,229

Measure Description

We evaluated replacing standard efficiency packaged air conditioning units with high efficiency packaged air conditioning units. Electricity savings can be achieved by replacing older units with new high efficiency units. A higher EER or SEER rating indicates a more efficient cooling system. The magnitude of energy savings for this measure depends on the relative efficiency of the older unit versus the new high efficiency unit, the average cooling load, and the estimated annual operating hours.

Reasons for not Recommending

The payback for replacing these units is longer than the effective useful life of the replacement equipment.

Install High Efficiency Furnaces

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	152.1	$1,466.83	$67,575.04	$3,600.00	$63,975.04	43.6	17,804

Measure Description

We evaluated replacing existing standard efficiency furnaces with condensing furnaces. Improved combustion technology and heat exchanger design optimize heat recovery from the combustion gases which can significantly improve furnace efficiency. Savings result from improved system efficiency.

Reasons for not Recommending

The payback for replacing these units is longer than the effective useful life of the replacement equipment.

5 ENERGY EFFICIENT PRACTICES

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

Perform Lighting Maintenance

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

Develop a Lighting Maintenance Schedule

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

Clean Evaporator/Condenser Coils on AC Systems

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

Perform Water Heater Maintenance

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

Water Conservation

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

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

Refer to Section 4.1.6 for any low-flow ECM recommendations.

6 On-Site Generation Measures

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

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

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

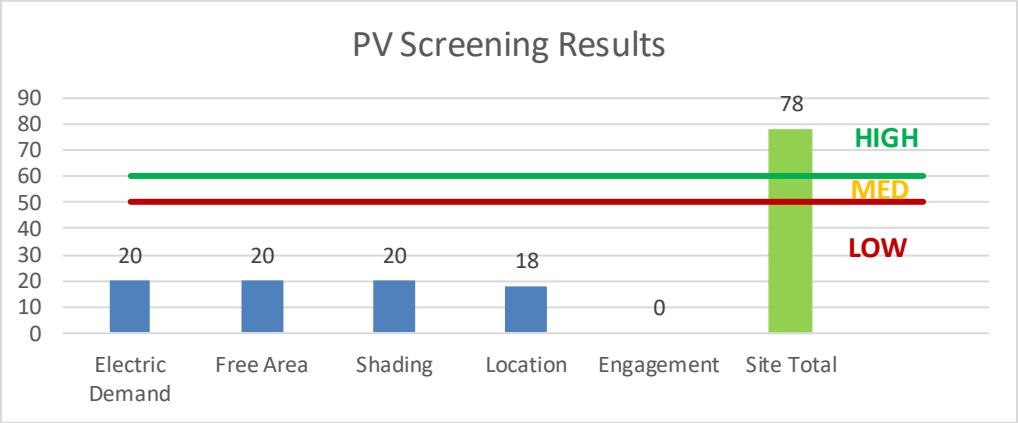
6.1 Photovoltaic

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

Figure 33 - 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 a **low** potential for installing a cost-effective CHP system.

Low and infrequent thermal load and lack of 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/.

7 DEMAND RESPONSE

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

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

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

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

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

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

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

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

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

Figure 34 - 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		
ECM 3	Retrofit Fixtures with LED Lamps	X			X		
ECM 4	Install LED Exit Signs				X		
ECM 5	Install Occupancy Sensor Lighting Controls	X			X		
ECM 6	Install High/Low Lighitng Controls				X		
ECM 7	Premium Efficiency Motors				X		
ECM 8	Install VFDs on Constant Volume (CV) HVAC	X			X		
ECM 9	Implement Demand Control Ventilation				X		
ECM 10	Install Low-Flow Domestic Hot Water Devices				X		
ECM 11	Refrigerator/Freezer Case Electrically Commutated Motors				X		
ECM 12	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

SmartStart 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
Mechanical Room	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,000	Relamp	No	8	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,000	0.15	528	0.0	$65.19	$292.12	$80.00	3.25
Mechanical Room	1	Exit Signs: Fluorescent	None	15	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	91	0.0	$11.19	$72.42	$0.00	6.47
Electric Room 166	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,000	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,000	0.09	304	0.0	$37.49	$146.06	$40.00	2.83
Electric Room 166	1	Exit Signs: Fluorescent	None	15	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	91	0.0	$11.19	$72.42	$0.00	6.47
Nurse's Suite	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.08	604	0.0	$74.60	$379.55	$65.00	4.22
Nurse's Suite desk lamp	1	Incandescent: Incandescent Task Light (1 lamp)	Wall Switch	40	2,500	Relamp	No	1	LED Screw-In Lamps: LED Task Light (1 lamp)	Wall Switch	6	2,500	0.02	98	0.0	$12.07	$17.23	$5.00	1.01
Nurse's Suite	1	Exit Signs: Fluorescent	None	15	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	91	0.0	$11.19	$72.42	$0.00	6.47
Nurse's Office	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	8	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.33	2,417	0.0	$298.42	$708.18	$155.00	1.85
Nurse's Office 2	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.16	1,208	0.0	$149.21	$489.09	$95.00	2.64
Exam Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.08	604	0.0	$74.60	$379.55	$65.00	4.22
Nurse's Office 3	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.08	604	0.0	$74.60	$379.55	$65.00	4.22
Nurse's Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,200	0.02	159	0.0	$19.68	$36.52	$10.00	1.35
Nurse's Storage	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	4,200	0.03	239	0.0	$29.52	$54.77	$15.00	1.35
Girls Locker Area Corridor	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,940	0.11	806	0.0	$99.47	$416.06	$75.00	3.43
Girls Locker Area Corridor	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.08	604	0.0	$74.60	$379.55	$65.00	4.22
Gym Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.08	604	0.0	$74.60	$379.55	$65.00	4.22
Health CR	11	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	11	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.45	3,323	0.0	$410.32	$1,142.50	$235.00	2.21
C-151 Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.08	604	0.0	$74.60	$379.55	$65.00	4.22
C151 Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,200	0.02	159	0.0	$19.68	$36.52	$10.00	1.35
Girls Locker Room	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,940	0.33	2,417	0.0	$298.42	$978.18	$190.00	2.64
Girls Locker Room	2	Exit Signs: Fluorescent	None	15	8,760	Fixture Replacement	No	2	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	181	0.0	$22.39	$144.83	$0.00	6.47
Girls Locker Restroom area	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,200	0.04	319	0.0	$39.36	$73.03	$20.00	1.35
Girls Locker Shower Area	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,200	0.04	319	0.0	$39.36	$73.03	$20.00	1.35
Gym Custodial Closet	1	Compact Fluorescent: CFL fixture (1 lamp)	Wall Switch	9	2,000	Relamp	No	1	LED Screw-In Lamps: LED Fixture (1 lamp)	Wall Switch	6	2,000	0.00	6	0.0	$0.77	$22.16	$0.00	28.90
Gym Boys Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	4,200	0.03	239	0.0	$29.52	$54.77	$15.00	1.35

	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
Gym Boys Restroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.08	604	0.0	$74.60	$379.55	$65.00	4.22
Main Office	11	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	11	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.45	3,323	0.0	$410.32	$1,142.50	$235.00	2.21
Main Office	1	Exit Signs: Fluorescent	None	15	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	91	0.0	$11.19	$72.42	$0.00	6.47
Asst. Principal	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.12	906	0.0	$111.91	$434.32	$80.00	3.17
Conference Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.08	604	0.0	$74.60	$379.55	$65.00	4.22
Break/Copy Room	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.16	1,208	0.0	$149.21	$489.09	$95.00	2.64
Principals Office	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.12	906	0.0	$111.91	$434.32	$80.00	3.17
Office D113	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.12	906	0.0	$111.91	$434.32	$80.00	3.17
Office D113 Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	4,200	0.03	239	0.0	$29.52	$54.77	$15.00	1.35
Office D114	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.12	906	0.0	$111.91	$434.32	$80.00	3.17
Office D114 Back Area	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.16	1,208	0.0	$149.21	$489.09	$95.00	2.64
Office D114 Back Area	1	Exit Signs: Fluorescent	None	15	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	91	0.0	$11.19	$72.42	$0.00	6.47
Office Zupkus	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.08	604	0.0	$74.60	$379.55	$65.00	4.22
Conference Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.12	906	0.0	$111.91	$434.32	$80.00	3.17
Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.08	604	0.0	$74.60	$379.55	$65.00	4.22
Back Office Area Office	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	4,200	0.03	239	0.0	$29.52	$54.77	$15.00	1.35
Back Office Area Office	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	4,200	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	4,200	0.02	133	0.0	$16.40	$48.77	$15.00	2.06
Back Office Area Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.08	604	0.0	$74.60	$379.55	$65.00	4.22
CR D119	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.08	604	0.0	$74.60	$379.55	$65.00	4.22
Womens Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,200	0.02	159	0.0	$19.68	$36.52	$10.00	1.35
Mens Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,200	0.02	159	0.0	$19.68	$36.52	$10.00	1.35
Electrical Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,000	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,000	0.02	76	0.0	$9.37	$36.52	$10.00	2.83

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
CR D133	20	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	20	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.82	6,042	0.0	$746.04	$1,635.45	$370.00	1.70
CR D134	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.49	3,625	0.0	$447.62	$1,197.27	$250.00	2.12
CR D135	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.49	3,625	0.0	$447.62	$1,197.27	$250.00	2.12
D136	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.49	3,625	0.0	$447.62	$1,197.27	$250.00	2.12
D137	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.25	1,813	0.0	$223.81	$598.64	$125.00	2.12
Girls Restroom	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,940	0.11	806	0.0	$99.47	$416.06	$75.00	3.43
MDF Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	4,200	0.03	239	0.0	$29.52	$54.77	$15.00	1.35
IT Supply Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	4,200	0.03	239	0.0	$29.52	$54.77	$15.00	1.35
IT Supply Room	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,200	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,200	0.01	77	0.0	$9.54	$32.52	$10.00	2.36
Custodial Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,000	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,000	0.02	76	0.0	$9.37	$36.52	$10.00	2.83
Boys Restroom	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,940	0.11	806	0.0	$99.47	$416.06	$75.00	3.43
Storage Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,200	0.02	159	0.0	$19.68	$36.52	$10.00	1.35
Electric Room E106	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,000	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,000	0.02	76	0.0	$9.37	$36.52	$10.00	2.83
CR E103	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.37	2,719	0.0	$335.72	$762.95	$170.00	1.77
CR E102	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.37	2,719	0.0	$335.72	$762.95	$170.00	1.77
CR E102	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,200	Relamp	No	3	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,200	0.03	232	0.0	$28.63	$97.55	$30.00	2.36
CR E101	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.37	2,719	0.0	$335.72	$762.95	$170.00	1.77
CR E101	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,200	Relamp	No	3	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,200	0.03	232	0.0	$28.63	$97.55	$30.00	2.36
CR E151	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.37	2,719	0.0	$335.72	$762.95	$170.00	1.77
CR E151	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,200	Relamp	No	3	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,200	0.03	232	0.0	$28.63	$97.55	$30.00	2.36
CR E150	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.37	2,719	0.0	$335.72	$762.95	$170.00	1.77
CR E150	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,200	Relamp	No	3	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,200	0.03	232	0.0	$28.63	$97.55	$30.00	2.36
Storage Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,200	0.02	159	0.0	$19.68	$36.52	$10.00	1.35
CR E145	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	None	Yes	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,940	0.02	135	0.0	$16.64	$270.00	$35.00	14.12
CR E143	14	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	14	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.57	4,230	0.0	$522.23	$1,306.82	$280.00	1.97

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CR E143	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,200	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,200	0.01	77	0.0	$9.54	$32.52	$10.00	2.36
CR E144	11	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	11	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.45	3,323	0.0	$410.32	$1,142.50	$235.00	2.21
CR E144	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,200	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,200	0.01	77	0.0	$9.54	$32.52	$10.00	2.36
CR E144	2	Exit Signs: Fluorescent	None	15	8,760	Fixture Replacement	No	2	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	181	0.0	$22.39	$144.83	$0.00	6.47
CR E142	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.49	3,625	0.0	$447.62	$1,197.27	$250.00	2.12
CR E142 Prep Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.12	906	0.0	$111.91	$434.32	$80.00	3.17
Storage Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,200	0.04	319	0.0	$39.36	$73.03	$20.00	1.35
CR E140	11	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	11	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.45	3,323	0.0	$410.32	$1,142.50	$235.00	2.21
CR E140	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,200	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,200	0.01	77	0.0	$9.54	$32.52	$10.00	2.36
CR E139	14	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	14	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.57	4,230	0.0	$522.23	$1,306.82	$280.00	1.97
CR E139	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,200	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,200	0.01	77	0.0	$9.54	$32.52	$10.00	2.36
Storage Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,200	0.02	159	0.0	$19.68	$36.52	$10.00	1.35
CR E133	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.37	2,719	0.0	$335.72	$762.95	$170.00	1.77
CR E133	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,200	Relamp	No	3	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,200	0.03	232	0.0	$28.63	$97.55	$30.00	2.36
CR E132	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.37	2,719	0.0	$335.72	$762.95	$170.00	1.77
CR E132	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,200	Relamp	No	3	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,200	0.03	232	0.0	$28.63	$97.55	$30.00	2.36
CR E130	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.37	2,719	0.0	$335.72	$762.95	$170.00	1.77
CR E130	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,200	Relamp	No	3	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,200	0.03	232	0.0	$28.63	$97.55	$30.00	2.36
CR E129	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.37	2,719	0.0	$335.72	$762.95	$170.00	1.77
CR E129	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,200	Relamp	No	3	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,200	0.03	232	0.0	$28.63	$97.55	$30.00	2.36
CR E128	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.37	2,719	0.0	$335.72	$762.95	$170.00	1.77
Storage Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,000	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,000	0.02	76	0.0	$9.37	$36.52	$10.00	2.83
Mens Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,200	0.02	159	0.0	$19.68	$36.52	$10.00	1.35

	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
Womens Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,200	0.02	159	0.0	$19.68	$36.52	$10.00	1.35
CR E124	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	8	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.33	2,417	0.0	$298.42	$708.18	$155.00	1.85
E116 Computer Room	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.66	4,834	0.0	$596.83	$1,416.36	$310.00	1.85
Teacher's Work Room	14	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	14	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.57	4,230	0.0	$522.23	$1,306.82	$280.00	1.97
Teacher's Work Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.08	604	0.0	$74.60	$379.55	$65.00	4.22
Teacher Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.08	604	0.0	$74.60	$379.55	$65.00	4.22
E118	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.12	906	0.0	$111.91	$434.32	$80.00	3.17
Conference Room E121	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.12	906	0.0	$111.91	$434.32	$80.00	3.17
E121 Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.08	604	0.0	$74.60	$379.55	$65.00	4.22
E121 Floor Lamp	1	Incandescent: Incandescent Floor Lamp (1 lamp)	Wall Switch	60	4,200	Relamp	No	1	LED Screw-In Lamps: LED Floor Lamp (1 lamp)	Wall Switch	9	4,200	0.03	246	0.0	$30.41	$17.23	$5.00	0.40
CR B118	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.25	1,813	0.0	$223.81	$598.64	$125.00	2.12
CR D146	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	8	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.33	2,417	0.0	$298.42	$708.18	$155.00	1.85
CR D146	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,200	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,200	0.01	77	0.0	$9.54	$32.52	$10.00	2.36
CR D146	2	Exit Signs: Fluorescent	None	15	8,760	Fixture Replacement	No	2	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	181	0.0	$22.39	$144.83	$0.00	6.47
D148	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.16	1,208	0.0	$149.21	$489.09	$95.00	2.64
Control Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.08	604	0.0	$74.60	$379.55	$65.00	4.22
D145	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.37	2,719	0.0	$335.72	$762.95	$170.00	1.77
D145	8	Halogen Incandescent: Altman 1000S	Wall Switch	500	500	Relamp	Yes	8	LED Screw-In Lamps: LED Altman 1000S	Occupancy Sensor	75	350	2.35	2,059	0.0	$254.16	$510.00	$35.00	1.87
D145 Office	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,200	0.02	159	0.0	$19.68	$36.52	$10.00	1.35
D145 Office	1	Exit Signs: Fluorescent	None	15	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	91	0.0	$11.19	$72.42	$0.00	6.47
D145 Restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,200	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,200	0.01	77	0.0	$9.54	$32.52	$10.00	2.36
Music CR D149	22	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	22	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.90	6,647	0.0	$820.64	$1,745.00	$400.00	1.64
Music CR D149	2	Exit Signs: Fluorescent	None	15	8,760	Fixture Replacement	No	2	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	181	0.0	$22.39	$144.83	$0.00	6.47
Music Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.16	1,208	0.0	$149.21	$489.09	$95.00	2.64
CR D156	14	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	14	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.57	4,230	0.0	$522.23	$1,306.82	$280.00	1.97

	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 D156	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,200	Relamp	No	3	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,200	0.03	232	0.0	$28.63	$97.55	$30.00	2.36
CR D156	2	Exit Signs: Fluorescent	None	15	8,760	Fixture Replacement	No	2	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	181	0.0	$22.39	$144.83	$0.00	6.47
Music/Chorus Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	4,200	0.03	239	0.0	$29.52	$54.77	$15.00	1.35
CR D152	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	13	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.53	3,928	0.0	$484.93	$1,252.04	$265.00	2.04
CR D152	2	U-Bend Fluorescent - T12: U T12 (34W) - 2L	Wall Switch	72	4,200	Relamp & Reballast	No	2	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	4,200	0.05	377	0.0	$46.52	$209.44	$0.00	4.50
CR D152	1	Exit Signs: Fluorescent	None	15	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	91	0.0	$11.19	$72.42	$0.00	6.47
CR D141	20	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	20	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.82	6,042	0.0	$746.04	$1,635.45	$370.00	1.70
CR D141	8	Incandescent: Stage Lighting	Wall Switch	100	4,200	Relamp	Yes	8	LED Screw-In Lamps: Stage Lighting	Occupancy Sensor	15	2,940	0.47	3,458	0.0	$426.99	$510.00	$35.00	1.11
CR D141	2	Exit Signs: Fluorescent	None	15	8,760	Fixture Replacement	No	2	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	181	0.0	$22.39	$144.83	$0.00	6.47
Media Center	9	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,200	Relamp	Yes	9	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,940	0.12	917	0.0	$113.25	$562.64	$125.00	3.86
Media Center	3	Exit Signs: Fluorescent	None	15	8,760	Fixture Replacement	No	3	LED Exit Signs: 2 W Lamp	None	6	8,760	0.02	272	0.0	$33.58	$217.25	$0.00	6.47
Media Center	3	Linear Fluorescent - T8: 3' T8 (25W) - 2L	Wall Switch	48	4,200	Relamp	No	3	LED - Linear Tubes: (2) 3' Lamps	Wall Switch	21	4,200	0.05	391	0.0	$48.30	$109.55	$0.00	2.27
Media Center	94	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	Yes	94	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,940	2.57	18,933	0.0	$2,337.59	$5,052.41	$1,150.00	1.67
Media Center	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.25	1,813	0.0	$223.81	$598.64	$125.00	2.12
Media Center	54	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	Yes	54	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,940	1.48	10,876	0.0	$1,342.87	$2,781.81	$645.00	1.59
Media Center	24	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	Yes	24	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,940	0.66	4,834	0.0	$596.83	$1,416.36	$310.00	1.85
CR B114	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.49	3,625	0.0	$447.62	$1,197.27	$250.00	2.12
CR B114 Work Room	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.16	1,208	0.0	$149.21	$489.09	$95.00	2.64
CR B114 Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.08	604	0.0	$74.60	$379.55	$65.00	4.22
CR B115	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.08	604	0.0	$74.60	$379.55	$65.00	4.22
CR B102	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.66	4,834	0.0	$596.83	$1,416.36	$310.00	1.85
CR B102	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	4,200	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	4,200	0.04	270	0.0	$33.40	$73.03	$20.00	1.59
CR B102 Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,000	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,400	0.08	288	0.0	$35.53	$379.55	$65.00	8.85
B104	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.25	1,813	0.0	$223.81	$598.64	$125.00	2.12
B103 Shop Room	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.25	1,813	0.0	$223.81	$598.64	$125.00	2.12

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
CR B105	15	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	15	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.62	4,532	0.0	$559.53	$1,361.59	$295.00	1.91
CR B105 Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,000	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,400	0.08	288	0.0	$35.53	$379.55	$65.00	8.85
CR A141	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	8	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.33	2,417	0.0	$298.42	$708.18	$155.00	1.85
CR A140	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.66	4,834	0.0	$596.83	$1,146.36	$275.00	1.46
MDF Room	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.16	1,208	0.0	$149.21	$489.09	$95.00	2.64
Womens Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,200	0.02	159	0.0	$19.68	$36.52	$10.00	1.35
Mens Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,200	0.02	159	0.0	$19.68	$36.52	$10.00	1.35
CR A125	21	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	21	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.86	6,344	0.0	$783.34	$1,690.22	$385.00	1.67
CR A125 Prep Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.12	906	0.0	$111.91	$434.32	$80.00	3.17
CR A125	1	Exit Signs: Fluorescent	None	15	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	91	0.0	$11.19	$72.42	$0.00	6.47
Electric Room A136	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,000	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,000	0.02	76	0.0	$9.37	$36.52	$10.00	2.83
CR A135	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.37	2,719	0.0	$335.72	$762.95	$170.00	1.77
CR A134	10	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	10	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.41	3,021	0.0	$373.02	$817.73	$185.00	1.70
CR A134	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,200	Relamp	No	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,200	0.02	155	0.0	$19.08	$65.03	$20.00	2.36
CR A134	1	Exit Signs: Fluorescent	None	15	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	91	0.0	$11.19	$72.42	$0.00	6.47
CR A133	11	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	11	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.45	3,323	0.0	$410.32	$872.50	$200.00	1.64
CR A133	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,200	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,200	0.01	77	0.0	$9.54	$32.52	$10.00	2.36
CR A133	1	Exit Signs: Fluorescent	None	15	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	91	0.0	$11.19	$72.42	$0.00	6.47
CR A131	10	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	10	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.41	3,021	0.0	$373.02	$817.73	$185.00	1.70
CR A131	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,200	Relamp	No	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,200	0.02	155	0.0	$19.08	$65.03	$20.00	2.36
CR A130	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.37	2,719	0.0	$335.72	$762.95	$170.00	1.77
CR A130	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,200	Relamp	No	3	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,200	0.03	232	0.0	$28.63	$97.55	$30.00	2.36
Storage Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,200	0.02	159	0.0	$19.68	$36.52	$10.00	1.35
CR A124	14	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	14	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.57	4,230	0.0	$522.23	$1,036.82	$245.00	1.52
CR A124	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,200	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,200	0.01	77	0.0	$9.54	$32.52	$10.00	2.36

	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 A123	11	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	11	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.45	3,323	0.0	$410.32	$872.50	$200.00	1.64
CR A123	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,200	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,200	0.01	77	0.0	$9.54	$32.52	$10.00	2.36
CR A122	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.49	3,625	0.0	$447.62	$927.27	$215.00	1.59
CR A122 Prep Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,200	0.04	319	0.0	$39.36	$73.03	$20.00	1.35
CR A120	11	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	11	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.45	3,323	0.0	$410.32	$872.50	$200.00	1.64
CR A120	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,200	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,200	0.01	77	0.0	$9.54	$32.52	$10.00	2.36
CR A119	14	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	14	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.57	4,230	0.0	$522.23	$1,036.82	$245.00	1.52
CR A119	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,200	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,200	0.01	77	0.0	$9.54	$32.52	$10.00	2.36
CR A118	21	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	21	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.86	6,344	0.0	$783.34	$1,690.22	$385.00	1.67
CR A118 Prep Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.12	906	0.0	$111.91	$434.32	$80.00	3.17
CR A118	1	Exit Signs: Fluorescent	None	15	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	91	0.0	$11.19	$72.42	$0.00	6.47
Storage Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,200	0.02	159	0.0	$19.68	$36.52	$10.00	1.35
CR A113	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.37	2,719	0.0	$335.72	$762.95	$170.00	1.77
CR A113	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,200	Relamp	No	3	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,200	0.03	232	0.0	$28.63	$97.55	$30.00	2.36
CR A112	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.37	2,719	0.0	$335.72	$762.95	$170.00	1.77
CR A112	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,200	Relamp	No	3	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,200	0.03	232	0.0	$28.63	$97.55	$30.00	2.36
CR A110	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.37	2,719	0.0	$335.72	$762.95	$170.00	1.77
CR A110	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,200	Relamp	No	3	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,200	0.03	232	0.0	$28.63	$97.55	$30.00	2.36
CR A110	1	Exit Signs: Fluorescent	None	15	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	91	0.0	$11.19	$72.42	$0.00	6.47
CR A109	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.37	2,719	0.0	$335.72	$762.95	$170.00	1.77
CR A109	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,200	Relamp	No	3	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,200	0.03	232	0.0	$28.63	$97.55	$30.00	2.36
CR A109	1	Exit Signs: Fluorescent	None	15	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	91	0.0	$11.19	$72.42	$0.00	6.47
CR A108	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.37	2,719	0.0	$335.72	$762.95	$170.00	1.77
Electric Room A107	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	750	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	750	0.02	28	0.0	$3.51	$36.52	$10.00	7.55
Conference Room A150	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.12	906	0.0	$111.91	$434.32	$80.00	3.17

	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
Elevator Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	750	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	750	0.02	28	0.0	$3.51	$36.52	$10.00	7.55
A 149 Kitchen	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.12	906	0.0	$111.91	$434.32	$80.00	3.17
A149 Work Area	15	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	15	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.62	4,532	0.0	$559.53	$1,091.59	$260.00	1.49
Confernce Room A145	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.12	906	0.0	$111.91	$434.32	$80.00	3.17
A144 Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.08	604	0.0	$74.60	$379.55	$65.00	4.22
A144 Floor Lamp	1	Compact Fluorescent: CFL Floor Lamp (1 lamp)	Wall Switch	65	4,200	Relamp	No	1	LED Screw-In Lamps: LED Floor Lamp (1 lamp)	Wall Switch	46	4,200	0.01	94	0.0	$11.63	$17.23	$5.00	1.05
CR A154	24	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	24	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.98	7,251	0.0	$895.25	$1,854.54	$430.00	1.59
A154/A157 Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.16	1,208	0.0	$149.21	$489.09	$95.00	2.64
CR A157	21	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	21	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.86	6,344	0.0	$783.34	$1,690.22	$385.00	1.67
A157 Storage	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	750	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	525	0.16	216	0.0	$26.64	$489.09	$95.00	14.79
Boys Restroom	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,940	0.11	806	0.0	$99.47	$416.06	$75.00	3.43
Custodial Closet	1	Compact Fluorescent: CFL fixture (1 lamp)	Wall Switch	9	750	Relamp	No	1	LED Screw-In Lamps: LED Fixture (1 lamp)	Wall Switch	6	750	0.00	2	0.0	$0.29	$22.16	$0.00	77.07
Girls Restroom	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,940	0.11	806	0.0	$99.47	$416.06	$75.00	3.43
A251	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.66	4,834	0.0	$596.83	$1,146.36	$275.00	1.46
Girls Restroom	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,940	0.11	806	0.0	$99.47	$416.06	$75.00	3.43
Custodial Closet	1	Compact Fluorescent: CFL fixture (1 lamp)	Wall Switch	9	750	Relamp	No	1	LED Screw-In Lamps: LED Fixture (1 lamp)	Wall Switch	6	750	0.00	2	0.0	$0.29	$22.16	$0.00	77.07
Boys Restroom	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,940	0.11	806	0.0	$99.47	$416.06	$75.00	3.43
Teachers Work Area A247	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.66	4,834	0.0	$596.83	$1,146.36	$275.00	1.46
Conference Room A242	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.12	906	0.0	$111.91	$434.32	$80.00	3.17
Electric Room A205	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	750	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	750	0.02	28	0.0	$3.51	$36.52	$10.00	7.55
CR A207	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.37	2,719	0.0	$335.72	$762.95	$170.00	1.77
CR A208	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.37	2,719	0.0	$335.72	$762.95	$170.00	1.77
CR A208	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,200	Relamp	No	3	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,200	0.03	232	0.0	$28.63	$97.55	$30.00	2.36
CR A208	1	Exit Signs: Fluorescent	None	15	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	91	0.0	$11.19	$72.42	$0.00	6.47
CR A209	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.37	2,719	0.0	$335.72	$762.95	$170.00	1.77

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
CR A209	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,200	Relamp	No	3	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,200	0.03	232	0.0	$28.63	$97.55	$30.00	2.36
CR A209	1	Exit Signs: Fluorescent	None	15	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	91	0.0	$11.19	$72.42	$0.00	6.47
CR A211	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.37	2,719	0.0	$335.72	$762.95	$170.00	1.77
CR A211	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,200	Relamp	No	3	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,200	0.03	232	0.0	$28.63	$97.55	$30.00	2.36
CR A212	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.37	2,719	0.0	$335.72	$762.95	$170.00	1.77
CR A212	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,200	Relamp	No	3	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,200	0.03	232	0.0	$28.63	$97.55	$30.00	2.36
Storage Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	750	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	750	0.02	28	0.0	$3.51	$36.52	$10.00	7.55
CR A217	21	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	21	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.86	6,344	0.0	$783.34	$1,690.22	$385.00	1.67
CR A217	1	Exit Signs: Fluorescent	None	15	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	91	0.0	$11.19	$72.42	$0.00	6.47
CR A217 Prep Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.12	906	0.0	$111.91	$434.32	$80.00	3.17
CR A218	14	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	14	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.57	4,230	0.0	$522.23	$1,036.82	$245.00	1.52
CR A218	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,200	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,200	0.01	77	0.0	$9.54	$32.52	$10.00	2.36
CR A230	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.37	2,719	0.0	$335.72	$762.95	$170.00	1.77
CR A230	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,200	Relamp	No	3	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,200	0.03	232	0.0	$28.63	$97.55	$30.00	2.36
CR A232	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.37	2,719	0.0	$335.72	$762.95	$170.00	1.77
CR A232	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,200	Relamp	No	3	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,200	0.03	232	0.0	$28.63	$97.55	$30.00	2.36
CR A232	1	Exit Signs: Fluorescent	None	15	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	91	0.0	$11.19	$72.42	$0.00	6.47
CR A229	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.37	2,719	0.0	$335.72	$762.95	$170.00	1.77
CR A229	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,200	Relamp	No	3	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,200	0.03	232	0.0	$28.63	$97.55	$30.00	2.36
CR A234	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.37	2,719	0.0	$335.72	$762.95	$170.00	1.77
Storage Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	750	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	750	0.02	28	0.0	$3.51	$36.52	$10.00	7.55
A 224	21	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	21	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.86	6,344	0.0	$783.34	$1,690.22	$385.00	1.67
A224	1	Exit Signs: Fluorescent	None	15	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	91	0.0	$11.19	$72.42	$0.00	6.47
A224 Prep Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.12	906	0.0	$111.91	$434.32	$80.00	3.17
Mens Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,200	0.02	159	0.0	$19.68	$36.52	$10.00	1.35

	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
Womens Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,200	0.02	159	0.0	$19.68	$36.52	$10.00	1.35
CR A237	11	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	11	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.45	3,323	0.0	$410.32	$872.50	$200.00	1.64
CR A237	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,200	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,200	0.01	77	0.0	$9.54	$32.52	$10.00	2.36
Storage Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	750	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	525	0.08	108	0.0	$13.32	$379.55	$65.00	23.61
CR A223	14	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	14	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.57	4,230	0.0	$522.23	$1,036.82	$245.00	1.52
CR A223	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,200	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,200	0.01	77	0.0	$9.54	$32.52	$10.00	2.36
CR A222	11	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	11	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.45	3,323	0.0	$410.32	$872.50	$200.00	1.64
CR A222	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,200	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,200	0.01	77	0.0	$9.54	$32.52	$10.00	2.36
CR A221	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.49	3,625	0.0	$447.62	$927.27	$215.00	1.59
CR A221 Prep Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.12	906	0.0	$111.91	$434.32	$80.00	3.17
CR A119	11	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	11	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.45	3,323	0.0	$410.32	$872.50	$200.00	1.64
CR A119	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,200	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,200	0.01	77	0.0	$9.54	$32.52	$10.00	2.36
Work Room A248	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.12	906	0.0	$111.91	$434.32	$80.00	3.17
2nd Flr Halway	35	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	Yes	35	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,940	0.96	7,049	0.0	$870.38	$2,078.03	$350.00	1.99
2nd Flr Halway	9	Exit Signs: Fluorescent	None	15	8,760	Fixture Replacement	No	9	LED Exit Signs: 2 W Lamp	None	6	8,760	0.05	816	0.0	$100.75	$651.74	$0.00	6.47
2nd Flr Halway	2	Compact Fluorescent: CFL PL Fixture (1 lamp)	Wall Switch	26	4,200	Relamp	No	2	LED Screw-In Lamps: LED PL Fixture (1 lamp)	Wall Switch	18	4,200	0.01	75	0.0	$9.30	$46.00	$0.00	4.94
2nd Flr Halway	17	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	4,200	Relamp	Yes	17	LED - Linear Tubes: (1) 4' Lamp	High/Low Control	15	2,940	0.24	1,794	0.0	$221.52	$710.38	$85.00	2.82
2nd Flr Halway	10	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,200	Relamp	Yes	10	LED - Linear Tubes: (2) 2' Lamps	High/Low Control	17	2,940	0.14	1,019	0.0	$125.83	$725.15	$100.00	4.97
2nd Flr Halway	2	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	27	4,200	Relamp	No	2	LED - Linear Tubes: (1) 3' Lamp	Wall Switch	11	4,200	0.02	159	0.0	$19.68	$36.52	$0.00	1.86
Boys Locker Room	19	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	Yes	19	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,940	0.52	3,827	0.0	$472.49	$1,233.79	$260.00	2.06
Boys Locker Room	3	Exit Signs: Fluorescent	None	15	8,760	Fixture Replacement	No	3	LED Exit Signs: 2 W Lamp	None	6	8,760	0.02	272	0.0	$33.58	$217.25	$0.00	6.47
Boys Locker Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.08	604	0.0	$74.60	$379.55	$65.00	4.22
Boys Locker Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,200	0.02	159	0.0	$19.68	$36.52	$10.00	1.35
CR 128	11	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	11	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.45	3,323	0.0	$410.32	$872.50	$200.00	1.64
CR 126	13	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	Yes	13	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,940	0.36	2,618	0.0	$323.28	$744.70	$165.00	1.79

	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 126	1	Exit Signs: Fluorescent	None	15	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	91	0.0	$11.19	$72.42	$0.00	6.47
Aux Gym Hall	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,940	0.22	1,611	0.0	$198.94	$492.12	$80.00	2.07
Aux Gym Hall	2	Exit Signs: Fluorescent	None	15	8,760	Fixture Replacement	No	2	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	181	0.0	$22.39	$144.83	$0.00	6.47
Storage Room	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	750	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	525	0.14	180	0.0	$22.20	$452.58	$50.00	18.13
Kitchen Lounge	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.16	1,208	0.0	$149.21	$489.09	$95.00	2.64
Kitchen Office	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,940	0.12	906	0.0	$111.91	$434.32	$80.00	3.17
Kitchen	11	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	Yes	11	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,940	0.30	2,216	0.0	$273.55	$671.67	$145.00	1.93
Kitchen	1	Exit Signs: Fluorescent	None	15	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	91	0.0	$11.19	$72.42	$0.00	6.47
Kitchen	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,200	0.02	159	0.0	$19.68	$36.52	$10.00	1.35
Kitchen stroage	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,940	0.08	604	0.0	$74.60	$379.55	$65.00	4.22
Serving Area	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,940	0.22	1,611	0.0	$198.94	$562.12	$115.00	2.25
Faculty Dining	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	Yes	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,940	0.25	1,813	0.0	$223.81	$598.64	$125.00	2.12
Faculty Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,200	0.02	159	0.0	$19.68	$36.52	$10.00	1.35
Serving Area Supplies	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,200	0.04	319	0.0	$39.36	$73.03	$20.00	1.35
Cafeteria	53	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	4,200	Relamp	Yes	53	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	2,940	1.22	8,998	0.0	$1,110.98	$3,394.94	$900.00	2.25
Cafeteria	5	Exit Signs: Fluorescent	None	15	8,760	Fixture Replacement	No	5	LED Exit Signs: 2 W Lamp	None	6	8,760	0.03	453	0.0	$55.97	$362.08	$0.00	6.47
Cafeteria	32	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	Yes	32	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,940	0.87	6,445	0.0	$795.78	$1,708.48	$390.00	1.66
Cafeteria	2	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	27	4,200	Relamp	No	2	LED - Linear Tubes: (1) 3' Lamp	Wall Switch	11	4,200	0.02	159	0.0	$19.68	$36.52	$0.00	1.86
Cafeteria	12	LED Screw-In Lamps: PAR38 Flood Light	Wall Switch	250	4,200	None	Yes	12	LED Screw-In Lamps: PAR38 Flood Light	Occupancy Sensor	250	2,940	0.59	4,347	0.0	$536.72	$270.00	$35.00	0.44
Cafeteria	19	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	Yes	19	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,940	0.52	3,827	0.0	$472.49	$963.79	$225.00	1.56
Cafeteria	20	Compact Fluorescent: CFL PL Fixture (2 lamp)	Wall Switch	36	4,200	Relamp	Yes	20	LED Screw-In Lamps: LED PL Fixture (2 lamp)	Occupancy Sensor	25	2,940	0.24	1,774	0.0	$218.98	$1,070.00	$35.00	4.73
Cafeteria	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,940	0.11	806	0.0	$99.47	$416.06	$75.00	3.43
Cafeteria Girls Restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,200	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,200	0.01	77	0.0	$9.54	$32.52	$10.00	2.36
Cafeteria Girls Restroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,200	0.04	319	0.0	$39.36	$73.03	$20.00	1.35
IDF Room	1	Incandescent: Incandescent Fixture (1 lamp)	Wall Switch	60	4,200	Relamp	No	1	LED Screw-In Lamps: LED Fixture (1 lamp)	Wall Switch	9	4,200	0.03	246	0.0	$30.41	$17.23	$5.00	0.40

	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
Custodian	1	Incandescent: Incandescent Fixture (1 lamp)	Wall Switch	60	2,000	Relamp	No	1	LED Screw-In Lamps: LED Fixture (1 lamp)	Wall Switch	9	2,000	0.03	117	0.0	$14.48	$17.23	$5.00	0.84
Elec Room	1	Incandescent: Incandescent Fixture (1 lamp)	Wall Switch	60	750	Relamp	No	1	LED Screw-In Lamps: LED Fixture (1 lamp)	Wall Switch	9	750	0.03	44	0.0	$5.43	$17.23	$5.00	2.25
Storage Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	750	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	750	0.04	57	0.0	$7.03	$73.03	$20.00	7.55
Electric Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	750	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	750	0.02	28	0.0	$3.51	$36.52	$10.00	7.55
Main Gym	29	Linear Fluorescent - T8: 4' T8 (32W) - 6L	Wall Switch	176	4,200	Relamp	Yes	29	LED - Linear Tubes: (6) 4' Lamps	Occupancy Sensor	87	2,940	2.19	16,122	0.0	$1,990.57	$3,716.81	$940.00	1.39
Main Gym	4	Exit Signs: Fluorescent	None	15	8,760	Fixture Replacement	No	4	LED Exit Signs: 2 W Lamp	None	6	8,760	0.02	363	0.0	$44.78	$289.66	$0.00	6.47
Aux Gym	18	Linear Fluorescent - T8: 4' T8 (32W) - 6L	Wall Switch	176	4,200	Relamp	Yes	18	LED - Linear Tubes: (6) 4' Lamps	Occupancy Sensor	87	2,940	1.36	10,007	0.0	$1,235.53	$2,241.81	$575.00	1.35
Aux Gym	3	Exit Signs: Fluorescent	None	15	8,760	Fixture Replacement	No	3	LED Exit Signs: 2 W Lamp	None	6	8,760	0.02	272	0.0	$33.58	$217.25	$0.00	6.47
Auditorium	46	Halogen Incandescent: Quartz-halogen Fixture (1 lamp)	Wall Switch	300	500	Relamp	Yes	46	LED Screw-In Lamps: Stage Lighting	Occupancy Sensor	45	350	8.10	7,102	0.0	$876.85	$2,190.00	$105.00	2.38
Auditorium	7	Exit Signs: Fluorescent	None	15	8,760	Fixture Replacement	No	7	LED Exit Signs: 2 W Lamp	None	6	8,760	0.04	635	0.0	$78.36	$506.91	$0.00	6.47
Auditorium	2	Halogen Incandescent: ENX Fixture (1 lamp)	Wall Switch	360	500	Relamp	Yes	2	LED Screw-In Lamps: LED ENX Fixture (1 lamp)	Occupancy Sensor	54	350	0.42	371	0.0	$45.75	$330.00	$35.00	6.45
Auditorium	47	Halogen Incandescent: Ellipsoidal Fixture (1 lamp)	Wall Switch	500	500	Relamp	Yes	47	LED Screw-In Lamps: LED Ellipsoidal (1 lamp)	Occupancy Sensor	75	350	13.79	12,094	0.0	$1,493.20	$2,220.00	$105.00	1.42
Stage	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	No	8	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,200	0.17	1,275	0.0	$157.44	$292.12	$80.00	1.35
Stage	2	Exit Signs: Fluorescent	None	15	8,760	Fixture Replacement	No	2	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	181	0.0	$22.39	$144.83	$0.00	6.47
Stage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,200	0.04	319	0.0	$39.36	$73.03	$20.00	1.35
Stage	12	Halogen Incandescent: Quartz-halogen Fixture (1 lamp)	Wall Switch	300	500	Relamp	No	12	LED Screw-In Lamps: Stage Lighting	Wall Switch	45	500	2.01	1,760	0.0	$217.24	$360.00	$0.00	1.66
Stage storage	2	Incandescent: Incandescent Fixture (1 lamp)	Wall Switch	60	750	Relamp	No	2	LED Screw-In Lamps: LED Fixture (1 lamp)	Wall Switch	9	750	0.07	88	0.0	$10.86	$34.45	$10.00	2.25
Main Entrance	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,200	Relamp	No	3	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,200	0.03	232	0.0	$28.63	$97.55	$30.00	2.36
Main Entrance	1	Compact Fluorescent: CFL PL Fixture (2 lamp)	Wall Switch	18	4,200	Relamp	No	1	LED Screw-In Lamps: LED PL Fixture (2 lamp)	Wall Switch	13	4,200	0.00	26	0.0	$3.22	$40.00	$0.00	12.42
Lobby	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,940	0.33	2,417	0.0	$298.42	$838.18	$120.00	2.41
Lobby	4	Compact Fluorescent: CFL PL Fixture (2 lamp)	Wall Switch	18	4,200	Relamp	No	4	LED Screw-In Lamps: LED PL Fixture (2 lamp)	Wall Switch	13	4,200	0.01	104	0.0	$12.88	$160.00	$0.00	12.42
Gym Theater Lobby	5	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	Yes	5	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	2,940	0.21	1,511	0.0	$186.51	$473.86	$75.00	2.14
Gym Theater Lobby	10	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,200	Relamp	Yes	10	LED - Linear Tubes: (2) 2' Lamps	High/Low Control	17	2,940	0.14	1,019	0.0	$125.83	$725.15	$100.00	4.97
Gym Theater Lobby	3	Exit Signs: Fluorescent	None	15	8,760	Fixture Replacement	No	3	LED Exit Signs: 2 W Lamp	None	6	8,760	0.02	272	0.0	$33.58	$217.25	$0.00	6.47
D-wing Hall	14	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	Yes	14	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,940	0.38	2,820	0.0	$348.15	$911.21	$140.00	2.22

	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
D-wing Hall	6	Exit Signs: Fluorescent	None	15	8,760	Fixture Replacement	No	6	LED Exit Signs: 2 W Lamp	None	6	8,760	0.04	544	0.0	$67.17	$434.49	$0.00	6.47
D-wing Hall	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	4,200	0.03	239	0.0	$29.52	$54.77	$15.00	1.35
Backstage Hall	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,940	0.16	1,208	0.0	$149.21	$419.09	$60.00	2.41
Backstage Hall	2	Exit Signs: Fluorescent	None	15	8,760	Fixture Replacement	No	2	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	181	0.0	$22.39	$144.83	$0.00	6.47
E-wing Hall	38	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	Yes	38	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,940	1.04	7,654	0.0	$944.98	$2,387.57	$380.00	2.12
E-wing Hall	9	Exit Signs: Fluorescent	None	15	8,760	Fixture Replacement	No	9	LED Exit Signs: 2 W Lamp	None	6	8,760	0.05	816	0.0	$100.75	$651.74	$0.00	6.47
E-wing Hall	19	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	4,200	Relamp	Yes	19	LED - Linear Tubes: (1) 4' Lamp	High/Low Control	15	2,940	0.27	2,005	0.0	$247.58	$946.89	$95.00	3.44
E-wing Hall	9	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,200	Relamp	Yes	9	LED - Linear Tubes: (2) 2' Lamps	High/Low Control	17	2,940	0.12	917	0.0	$113.25	$492.64	$90.00	3.56
E-wing Hall	2	Compact Fluorescent: CFL PL Fixture (2 lamp)	Wall Switch	18	4,200	Relamp	No	2	LED Screw-In Lamps: LED PL Fixture (2 lamp)	Wall Switch	13	4,200	0.01	52	0.0	$6.44	$80.00	$0.00	12.42
B-wing Hall	33	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	Yes	33	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,940	0.90	6,647	0.0	$820.64	$2,005.00	$330.00	2.04
B-wing Hall	8	Exit Signs: Fluorescent	None	15	8,760	Fixture Replacement	No	8	LED Exit Signs: 2 W Lamp	None	6	8,760	0.05	725	0.0	$89.56	$579.32	$0.00	6.47
B-wing Hall	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,200	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	4,200	0.03	239	0.0	$29.52	$54.77	$15.00	1.35
B-wing Hall	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,200	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,200	0.01	77	0.0	$9.54	$32.52	$10.00	2.36
A-wing Hall	49	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	Yes	49	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,940	1.34	9,869	0.0	$1,218.53	$2,989.24	$490.00	2.05
A-wing Hall	11	Exit Signs: Fluorescent	None	15	8,760	Fixture Replacement	No	11	LED Exit Signs: 2 W Lamp	None	6	8,760	0.06	997	0.0	$123.14	$796.57	$0.00	6.47
Stairwell 4	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	No	5	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,200	0.11	797	0.0	$98.40	$182.58	$50.00	1.35
Stairwell 4	1	Exit Signs: Fluorescent	None	15	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	91	0.0	$11.19	$72.42	$0.00	6.47
A-wing Hall	2	Compact Fluorescent: CFL PL Fixture (2 lamp)	Wall Switch	18	4,200	Relamp	No	2	LED Screw-In Lamps: LED PL Fixture (2 lamp)	Wall Switch	13	4,200	0.01	52	0.0	$6.44	$80.00	$0.00	12.42
A-wing Hall	24	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	4,200	Relamp	Yes	24	LED - Linear Tubes: (1) 4' Lamp	High/Low Control	15	2,940	0.34	2,533	0.0	$312.73	$1,038.18	$120.00	2.94
A-wing Hall	9	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	4,200	Relamp	Yes	9	LED - Linear Tubes: (2) 2' Lamps	High/Low Control	17	2,940	0.12	917	0.0	$113.25	$492.64	$90.00	3.56
Stairwell 3	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	No	5	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,200	0.11	797	0.0	$98.40	$182.58	$50.00	1.35
Stairwell 3	1	Exit Signs: Fluorescent	None	15	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	91	0.0	$11.19	$72.42	$0.00	6.47
Stairwell 2	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,200	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,200	0.09	638	0.0	$78.72	$146.06	$40.00	1.35
Stairwell 2	1	Exit Signs: Fluorescent	None	15	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	91	0.0	$11.19	$72.42	$0.00	6.47
Front	2	LED Screw-In Lamps: LED Screw-in Fixture (1 lamp)	None	20	4,300	None	No	2	LED Screw-In Lamps: LED Screw-in Fixture (1 lamp)	None	20	4,300	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

	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
Wallpacks	18	Metal Halide: (1) 100W Lamp	None	128	4,300	Fixture Replacement	No	18	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	None	38	4,300	1.06	7,975	0.0	$984.70	$17,387.38	$1,800.00	15.83
Perimeter	21	Compact Fluorescent: CFL PL Fixture (1 lamp)	None	18	4,300	Relamp	No	21	LED Screw-In Lamps: LED PL Fixture (1 lamp)	None	13	4,300	0.07	519	0.0	$64.11	$483.00	$0.00	7.53
Wallpacks	20	Metal Halide: (1) 100W Lamp	None	128	4,300	Fixture Replacement	No	20	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	None	38	4,300	1.17	8,861	0.0	$1,094.11	$19,319.31	$2,000.00	15.83
Parking Lot	30	High-Pressure Sodium: (1) 400W Lamp	None	465	4,300	Fixture Replacement	No	30	LED - Fixtures: Large Pole/Arm-Mounted Area/Roadway Fixture	None	140	4,300	6.40	48,288	0.0	$5,962.06	$35,835.12	$0.00	6.01

Motor Inventory & Recommendations

		Existing Conditions						Proposed Conditions				Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	Motor Quantity	Motor Application	HP Per Motor	Full Load Efficiency	VFD Control?	Annual Operating Hours	Install High Efficiency Motors?	Full Load Efficiency	Install VFDs?	Number of VFDs	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Mechanical Room	Entire Facility	2	Water-Source Heat Pump Circulation Pump	100.0	95.4%	Yes	4,500	No	95.4%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Mechanical Room	DHW Circulation	1	Heating Hot Water Pump	0.3	72.4%	No	2,745	No	72.4%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Cafeteria	1	Supply Fan	20.0	91.0%	No	3,391	Yes	92.4%	Yes	1	2.74	10,425	0.0	$1,287.11	$9,913.48	$1,600.00	6.46
Roof	Cafeteria	6	Exhaust Fan	1.0	82.5%	No	2,745	No	82.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Gym	2	Supply Fan	7.5	88.5%	No	3,391	Yes	91.0%	Yes	2	2.17	8,301	0.0	$1,024.89	$9,476.48	$1,200.00	8.08
Roof	Gym	2	Supply Fan	3.7	87.0%	No	2,745	No	87.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Building	4	Supply Fan	1.5	84.0%	No	2,745	No	84.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Building	4	Exhaust Fan	0.8	82.6%	No	2,745	No	82.6%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Building	2	Supply Fan	2.0	84.0%	No	2,745	No	84.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Building	2	Exhaust Fan	2.0	84.0%	No	2,745	No	84.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Building	7	Supply Fan	3.0	86.5%	No	2,745	No	86.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Building	7	Exhaust Fan	3.0	86.5%	No	2,745	No	86.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Building	1	Supply Fan	1.0	82.5%	No	2,745	No	82.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Building	1	Exhaust Fan	0.8	82.6%	No	2,745	No	82.6%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Building	4	Supply Fan	5.0	87.5%	No	2,745	No	87.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Storage Room	Compressed Air System	1	Air Compressor	7.5	85.5%	No	3,000	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Exhaust System	10	Exhaust Fan	0.3	68.5%	No	2,745	No	68.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Elevator Room	Elevator	1	Other	25.0	75.0%	No	500	No	75.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Multiple Locations	Heat Pumps	95	Supply Fan	0.5	76.2%	No	2,745	No	76.2%	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	Cafeteria	1	Packaged AC	50.00		Yes	1	Packaged AC	50.00		9.50		No	4.98	5,573	0.0	$688.06	$110,798.58	$0.00	161.03
Roof	Gym	2	Packaged AC	20.00		Yes	2	Packaged AC	20.00		10.50		No	7.21	8,067	0.0	$996.05	$67,495.96	$3,160.00	64.59
Roof	Gym	2	Packaged AC	15.00		Yes	2	Packaged AC	15.00		11.50		No	7.07	7,917	0.0	$977.51	$41,815.50	$2,370.00	40.35
Roof	Office Area	1	Ductless Mini-Split AC	1.42		Yes	1	Ductless Mini-Split AC	1.42		18.00		No	0.46	518	0.0	$63.91	$3,880.95	$0.00	60.72
Multiple Locations	Groundwater source heat pump system	95	Water Source HP	2.83	42.00	No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Fuel Heating Inventory & Recommendations

		Existing Conditions			Proposed Conditions						Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Output Capacity per Unit (MBh)	Install High Efficiency System?	System Quantity	System Type	Output Capacity per Unit (MBh)	Heating Efficiency	Heating Efficiency Units	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Roof	Cafeteria	1	Furnace	954.48	Yes	1	Furnace	954.48	95.00%	AFUE	0.00	0	44.6	$430.23	$21,625.97	$400.00	49.34
Roof	Gym	2	Furnace	291.00	Yes	2	Furnace	291.00	95.00%	AFUE	0.00	0	29.6	$286.00	$13,186.57	$800.00	43.31
Roof	Gym	2	Furnace	243.00	Yes	2	Furnace	243.00	95.00%	AFUE	0.00	0	24.8	$238.83	$11,011.46	$800.00	42.76
Roof	Cafeteria, Kitchen	4	Furnace	240.00	Yes	4	Furnace	240.00	95.00%	AFUE	0.00	0	53.1	$511.77	$21,751.04	$1,600.00	39.38

Demand Control Ventilation Recommendations

		Recommendation Inputs				Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Affected	Number of Zones	Cooling Capacity of Controlled System (Tons)	Electric Heating Capacity of Controlled System (kBtu/hr)	Output Heating Capacity of Controlled System (MBh)	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Cafeteria	48EJE054	2	50.00		954.48	0.00	2,647	20.4	$523.33	$2,718.84	$0.00	5.20
Gym	48TJF024	4	40.00		582.00	0.00	2,118	12.6	$382.76	$5,437.68	$0.00	14.21
Gym	48TJF016	4	30.00		486.00	0.00	1,570	10.5	$295.11	$5,437.68	$0.00	18.43

DHW Inventory & Recommendations

		Existing Conditions		Proposed Conditions						Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Replace?	System Quantity	System Type	Fuel Type	System Efficiency	Efficiency Units	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Mechanical Room	Entire Facility	1	Storage Tank Water Heater (> 50 Gal)	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Mechanical Room	Entire Facility	1	Storage Tank Water Heater (> 50 Gal)	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Low-Flow Device Recommendations

	Recommedation Inputs				Energy Impact & Financial Analysis						
Location	Device Quantity	Device Type	Existing Flow Rate (gpm)	Proposed Flow Rate (gpm)	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Multiple Locations	33	Faucet Aerator (Lavatory)	1.50	1.00	0.00	0	24.9	$240.15	$236.61	$0.00	0.99
Locker Rooms	6	Showerhead	4.00	2.00	0.00	0	20.1	$194.06	$535.80	$0.00	2.76

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	Medium Temp Freezer (0F to 30F)	Yes	No	No	0.39	4,947	0.0	$610.79	$606.60	$0.00	0.99
Kitchen	1	Cooler (35F to 55F)	Yes	No	No	0.39	4,947	0.0	$610.79	$1,213.20	$0.00	1.99

Commercial Refrigerator/Freezer Inventory & Recommendations

	Existing Conditions			Proposed Condi	Energy Impact & Financial Analysis						
Location	Quantity	Refrigerator/ Freezer Type	ENERGY STAR Qualified?	Install ENERGY STAR Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen	2	Stand-Up Freezer, Solid Door (>50 cu. ft.)	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	4	Stand-Up Refrigerator, Solid Door (>50 cu. ft.)	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Cooking Equipment Inventory & Recommendations

	Existing Conditions			Proposed Conditions	Energy Impact & Financial Analysis						
Location	Quantity	Equipment Type	High Efficiency Equipement?	Install High Efficiency Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen	2	Electric Steamer	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	4	Electric Convection Oven (Full Size)	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	2	Insulated Food Holding Cabinet (Full Size)	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Plug Load Inventory

	Existing Conditions			
Location	Quantity	Equipment Description	Energy Rate (W)	ENERGY STAR Qualified?
Multiple Locations	220	Desktops	75.0	
Multiple Locations	8	Photocopier	515.0	
Multiple Locations	36	Desk Printer	25.0	
Multiple Locations	91	Projector	200.0	
Multiple Locations	4	LCD TV	120.0	
Multiple Locations	3	Water Cooler	500.0	
Multiple Locations	11	Refrigerator	600.0	
Multiple Locations	28	Microwave	1,000.0	
Multiple Locations	15	Minifridge	50.0	
Multiple Locations	4	CRT TV	120.0	
Multiple Locations	7	Coffee Maker	400.0	
Multiple Locations	2	Space Heater	1,500.0	
Multiple Locations	3	Laminator	360.0	
Multiple Locations	2	Paper Shredder	360.0	
Multiple Locations	2	3D Printer	360.0	
Home Ec	1	Clothes Washer	900.0	
Home Ec	1	Clothes Dryer	1,600.0	
Home Ec	6	Range/Oven	1,500.0	
Office area	1	Dehumidifier	1,500.0	
Multiple Locations	4	Chromebook Cart	400.0	
Multiple Locations	2	Floor Fan	100.0	
Multiple Locations	4	Dishwasher	1,500.0	
Office area	1	Aquarium	20.0	
Wood shop	7	Handheld Drills	400.0	
Wood shop	8	Scroll saws	600.0	
Wood shop	2	Drill press	500.0	
Wood shop	1	Belt Sander	500.0	
Wood shop	1	Band Saw	600.0	
Wood shop	1	Shop Vac	1,000.0	

Vending Machine Inventory & Recommendations

	Existing Conditions		Proposed Conditions	Energy Impact & Financial Analysis						
Location	Quantity	Vending Machine Type	Install Controls?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Faculty Dining	1	Refrigerated	Yes	0.00	1,612	0.0	$199.01	$230.00	$0.00	1.16
Commons	1	Refrigerated	Yes	0.00	1,612	0.0	$199.01	$230.00	$0.00	1.16
Commons	1	Non-Refrigerated	Yes	0.00	343	0.0	$42.29	$230.00	$0.00	5.44
Commons	1	Refrigerated	Yes	0.00	1,612	0.0	$199.01	$230.00	$0.00	1.16

Appendix B: ENERGY STAR® Statement of Energy Performance

ENERGY STAR® Statement of Energy Performance

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ENERGY STAR® Score[1]

Thomas Grover MS

Primary Property Type: K-12 School
Gross Floor Area (ft²): 176,453
Built: 1999

For Year Ending: November 30, 2017
Date Generated: October 12, 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
Thomas Grover MS 10 Southfield Road West Windsor, New Jersey 08550	_____ , (___)___-_____	___ _____ , (___)___-_____ _____

Property ID: 6389195

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
50.6 kBtu/ft²

Source EUI
126.7 kBtu/ft²

Annual Energy by Fuel	
Natural Gas (kBtu)	1,497,870 (17%)
Electric - Grid (kBtu)	7,424,284 (83%)

National Median Comparison	
National Median Site EUI (kBtu/ft²)	53
National Median Source EUI (kBtu/ft²)	132.8
% Diff from National Median Source EUI	-5%
Annual Emissions	
Greenhouse Gas Emissions (Metric Tons CO2e/year)	832

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)