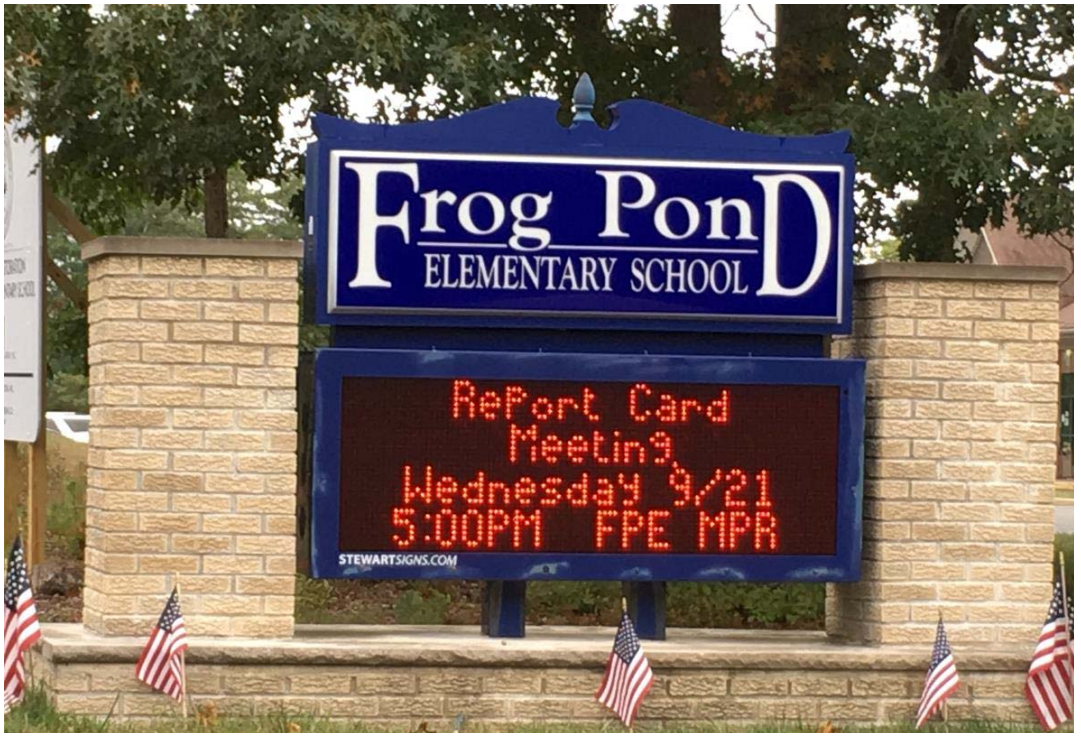
Local Government Energy Audit:
Energy Audit Report



Frog Pond Elementary School

Little Egg Harbor School District
305 Frog Pond Road
Little Egg Harbor, NJ 08087

December 8, 2017

Report by:
TRC Energy Services

Disclaimer

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

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

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

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

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1 EXECUTIVE SUMMARY

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

The goal of an LGEA report is to provide you with information on how your facility uses energy, identify energy conservation measures (ECMs) that can reduce your energy use, and provide information and assistance to help facilities implement ECMs. The LGEA report also contains valuable information on financial incentives from New Jersey's Clean Energy Program (NJCEP) for implementing ECMs.

This study was conducted by TRC, as part of a comprehensive effort to assist New Jersey public schools and other local government facilities in controlling energy costs and protecting our environment by offering a full spectrum of energy management options.

1.1 Facility Summary

Frog Pond Elementary School is a single story 105,000 square foot public school. It is comprised of various space types including: classrooms, a gymnasium, a cafeteria, administrative offices, bathrooms, storage and mechanical rooms. Classes are held weekdays from 7:30 AM to 2:30 PM, September through June. Approximately 685 students attend the school and there are 107 full-time staff. The facility is closed on weekends. The building is open for only limited hours in the summertime for various programs, events, and building maintenance. Typically, only about 10 full-time staff occupy the building throughout the summer.

The building was constructed in 1989 with renovations in 1997 and 2007. Exterior walls are constructed of concrete masonry block. The walls have minimal insulation. All windows throughout the building are double-paned aluminum frame. They are in good condition and well-maintained. The building's front façade and the area over the gym have a sloped shingled roof. However, most of the roof area is flat with a black rubber membrane covered by coated white gravel.

The rooftop contains fifteen (17) rooftop units (RTUs), ranging in size from three (3) to twenty (20) tons each. These supply most of the building's heating and cooling. There is also a Daikin VRV mini-split system, with fourteen (14) condenser units, which provides supplemental heating a cooling to some areas.

The rooftop also contains a 43.2-kW solar PV array. However, there appears to be ample unused rooftop space available, which might be used to expand the school's current solar electric generating system.

The school is heated primarily by two (2) high-efficiency AERCO BMK 1500 boilers.

Most of the building's HVAC equipment is relatively new (i.e. less than 10 years old) and in good condition. Most are high-efficiency units. Frog Pond Elementary School has made great strides in recent years to reduce its energy usage. In addition to installing a rooftop solar array in 2009, the school has recently been delamping fluorescent fixtures in many areas to reduce unnecessary lighting. They have also recently replaced the lighting fixtures in the multi-purpose room and gym with high-efficiency LEDs. However, significant opportunities still remain for additional cost-effective lighting upgrades throughout the school.

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

1.2 Your Cost Reduction Opportunities

Energy Conservation Measures

TRC recommends five (5) energy efficiency measures which together represent an opportunity for Frog Pond Elementary School to reduce annual energy costs by roughly $21,345 and annual greenhouse gas emissions by 138,204 lbs CO_2e. We estimate that if all measures were implemented as recommended, the project would pay for itself in roughly 7.1 years. The breakdown of existing and potential utility costs, after project implementation, is illustrated in Figure 1 and Figure 2, respectively. These measures represent an opportunity to reduce Frog Pond Elementary School's annual energy usage by 7.6%.

Figure 1 – Previous 12 Month Utility Costs

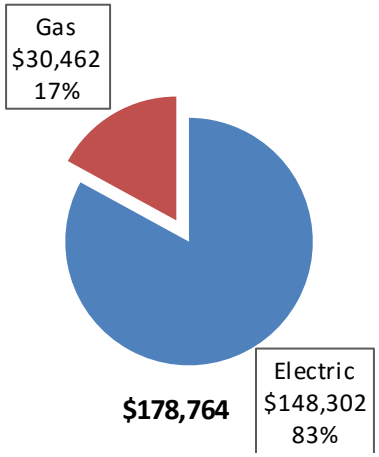
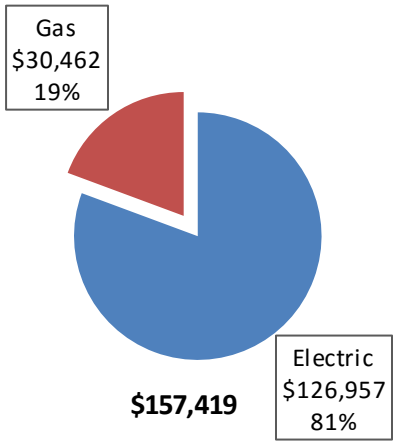


Figure 2 – Potential Post-Implementation Costs



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

Estimates of the total cost, energy savings, and financial incentives for the proposed lighting upgrades are summarized below in Figure 3. A brief description of the category is below and a description of the savings opportunity 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 Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades			109,329	39.1	$17,003.48	$140,552.84	$19,565.00	$120,987.84	7.12	110,093
ECM 1	Install LED Fixtures	Yes	938	0.2	$145.84	$966.40	$0.00	$966.40	6.63	944
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	102,422	37.1	$15,929.33	$139,116.19	$19,395.00	$119,721.19	7.52	103,139
ECM 3	Retrofit Fixtures with LED Lamps	Yes	5,969	1.8	$928.31	$470.25	$170.00	$300.25	0.32	6,011
Lighting Control Measures			24,691	9.1	$3,840.15	$34,148.00	$4,640.00	$29,508.00	7.68	24,864
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	24,691	9.1	$3,840.15	$34,148.00	$4,640.00	$29,508.00	7.68	24,864
Plug Load Equipment Control - Vending Machine			3,224	0.0	$501.37	$742.24	$0.00	$742.24	1.48	3,246
ECM 5	Vending Machine Control	Yes	3,224	0.0	$501.37	$742.24	$0.00	$742.24	1.48	3,246
TOTALS			137,244	48.2	$21,345.00	$175,443.08	$24,205.00	$151,238.08	7.09	138,204

Lighting Upgrades 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 involve the installation of automated controls to turn off lights or reduce light output when conditions allow. Automated control reduces reliance on occupant behavior for adjusting lights. These measures save energy by reducing the amount of time lights are on.

Plug Load Equipment control measures generally involve installing automation that limits the power use or operation of equipment plugged into an electrical receptacle based on occupancy.

Energy Efficient Practices

TRC also identified nine (9) low (or no) cost energy efficient practices. A facility's energy performance can be significantly improved by employing certain behavioral and operational adjustments as well as performing routine maintenance on building systems. Through these practices equipment lifetime can be extended; occupant comfort, health, and safety can be improved; and annual energy, operation, and maintenance costs can be reduced. Opportunities identified at Frog Pond Elementary School include:

- Reduce Air Leakage
- Close Doors and Windows
- Ensure Lighting Controls Are Operating Properly
- Practice Proper Use of Thermostat Schedules and Temperature Resets
- Clean Evaporator/Condenser Coils on AC Systems
- Clean and/or Replace HVAC Filters
- Perform Proper Boiler Maintenance
- Perform Proper Water Heater Maintenance
- Replace Computer Monitors

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

On-Site Generation Measures

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

Figure 4 – Photovoltaic Potential

Potential	High	
System Potential	332	kW DC STC
Electric Generation	395,535	kWh/yr
Displaced Cost	$34,410	/yr
Installed Cost	$949,500	

The building already has a 43.2 kW solar array, which was installed in 2009, but there appears to be sufficient roof space for significant expansion of the existing array to increase its current size and electric output by about eight (8) times. Maximizing solar electric generation at the site could yield significant additional savings. We estimate that the school could generate over 40% of its annual electric needs onsite. The current solar array provides less than 5% of the school's electric needs. Since the PV array was installed efficiency of PV technology has continued to increase and cost of PV panels have continued to decrease, making new solar arrays even more cost-effective than they were a few years ago.

For details on our evaluation and the self-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 measures, 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)
- 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, after receiving pre-approval should you proceed with ECM installation. The incentive estimates listed above in Figure 3 are based on the SmartStart program. More details on this program and others are available in Section 8.

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

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

Additional descriptions of all relevant incentive programs are located in Section 8. You may also check the following website for further information on available rebates and incentives: www.njcleanenergy.com/ci.

2 FACILITY INFORMATION AND EXISTING CONDITIONS

2.1 Project Contacts

Figure 5 – Project Contacts

Name	Role	E-Mail	Phone #
Customer			
Katrina M. Reigelman	Energy Manager	treigelman@lehsd.k12.nj.us	(609) 709-8316
TRC Energy Services			
Tom Page	Auditor	TPage@TRCsolutions.com	(732) 855-0033

2.2 General Site Information

On September 27, 2016, TRC performed an energy audit at Frog Pond Elementary School, located in Little Egg Harbor, New Jersey. TRC's team met with Trina Reigelman, Steve Hillman, and Seth Cole to review the facility operations and focus the investigation on specific energy-using systems.

Frog Pond Elementary School is a single story 105,000 square foot public school. It is comprised of various space types including: classrooms, a gymnasium, a cafeteria, administrative offices, bathrooms, storage and mechanical rooms.

The building was constructed in 1989 with renovations in 1997 and 2007. Exterior walls are constructed of concrete masonry block. The roof is most flat, covered by a black rubber membrane and coated white gravel.

The rooftop contains fifteen (17) rooftop units (RTUs), ranging in size from three (3) to twenty (20) tons each. These supply most of the building's heating and cooling. There is also a Daikin VRV mini-split system, with fourteen (14) condenser units, which provides supplemental heating a cooling to some areas.

The rooftop also contains a 43.2-kW solar PV array. However, there appears to be ample unused rooftop space available, which might be used to expand the school's current solar electric generating system.

The school is heated primarily by two (2) high-efficiency AERCO BMK 1500 boilers.

Frog Pond Elementary School has made great strides in recent years to reduce its energy usage. In addition to installing a rooftop solar array in 2009, the school has recently been delamping fluorescent fixtures in many areas to reduce unnecessary lighting. They have also recently replaced the lighting fixtures in the multi-purpose room and gym with high-efficiency LEDs.

2.3 Building Occupancy

Classes are held weekdays from 7:30 AM to 2:30 PM, September through June. Approximately 685 students attend the school and there are 107 full-time staff. The facility is closed on weekends. The building is open for only limited hours in the summertime, for various programs, events, and building maintenance. Typically, only about 10 full-time staff occupy the building throughout the summer.

Figure 6 - Building Schedule

Building Name	Weekday/Weekend	Operating Schedule
Frog Pond Elementary School	Weekday	7:30AM - 2:30PM
Frog Pond Elementary School	Weekend	NONE

2.4 Building Envelope

Exterior walls are constructed of concrete masonry block. The walls minimal insulation. All windows throughout the building are double-paned aluminum frame. They are in good condition and well-maintained. The building's front façade and the area over the gym have a sloped shingled roof. However, most of the roof area is flat with a black rubber membrane covered by coated white gravel.

Door and window seals appeared tight throughout the building. No excessive air infiltration was noted and no significant comfort issues were reported by any of the building occupants that we interviewed.

Frog Pond Elementary - Front Façade

2.5 On-site Generation

Frog Pond Elementary School installed a 43.2 kW solar energy project in 2009. It is comprised of approximately 200 Sharp 216-watt PV panels mounted on a large sloped racking system. The rooftop photovoltaic (PV) array provides about 4.3% of the building's annual electric needs. It has a *SatCon* inverter and control system.

Solar output can be monitored online at: http://live.deckmonitoring.com/?id=little_egg_harbor .

In Section 6, we have provided a simple analysis of the costs and benefits of expanding the school's current rooftop array to provide about 45% of the school's electric needs from onsite solar electric generation.

Rooftop Solar Array

2.6 Energy-Using Systems

Please refer to Appendix A: Equipment Inventory & Recommendations for an inventory of your equipment.

Lighting System

Lighting at the facility is provided predominately by linear 32-Watt fluorescent T8 lamps with electronic ballasts; most are 4-tube fixtures. However, the school has been conducting a campaign to reduce energy usage by reducing the number of tubes in fixtures in areas that had more lighting than was necessary for the space. They reported to us that they had removed 292 tubes, mostly from hallway areas that were over-lit.

Parking lot lighting is supplied by 400-watt metal halide pole-mounted spot lights.

High bay metal halide lighting fixtures in the multi-purpose room and the gym have recently been retrofitted with high-efficiency LEDs. They have also replaced some exterior wall-mounted spot lights with LEDs.

In most classroom and office areas, lighting is controlled by manual switches. However, the new high bay LED lighting fixtures in the gym all have individual occupancy sensors. Control of exterior lighting in parking areas could not be verified, but is believed to be controlled by timers and/or photocells.

Parking Lot Lighting

Lighting Fixtures

Recent LED Upgrades

Hot Water Boiler System

Most classrooms are heated by baseboard radiant heat. Heat is supplied by two (2) 1,500 MBH Aerco BMK 1.5 Low NOx condensing boilers. These units are relatively new and have a very high heating efficiency (>93%).

Hot water supply pumps are powered by two (2) 7.5-HP motors, which are on *Danfoss* variable frequency drives (VFDs).

The boiler system is in good condition and well maintained.

Hot Water Boilers

Hot Water Pumps on VFDs

RTU and Split System HVAC

The school is heated and cooled by about 17 rooftop units. Plus, there are multiple mini-split heat pump and AC units to provide supplemental heating and cooling to some areas.

The art and music rooms are cooled by two (2) 3-ton *Trane* rooftop units (model: THC033). They are contant volume units with economizer controls and CO2 sensors to control outside air dampers. They are believed to be about nine (9) years old and in good condition.

Three (3) packaged RTUs serve the classrooms in the 100, 300, and 400 wings. They are gas/electric *Aaon* model RM-018 units, approximately 18 tons each. They provide both heating and cooling. They are variable air volume (VAV) units with unit-mounted VFDs controlling the supply fans. They are nine (9) years old and in good condition.

Two (2) *Trane* gas/electric packaged units (a 20-ton and 15-ton unit) supply heating and cooling to the cafeteria and adjacent areas. They are constant volume units with economizers. These units are believed to be about nine (9) years old.

Three (3) 7.7-ton *Trane* gas/electric units supply heating and cooling to the corridors and exterior offices. One (1) 10-ton Trane packaged system supplies heating and cooling to the interior offices. These units are believed to be about nine (9) years old.

One (1) 3-ton *York* packaged AC unit supplies heating and cooling to the guidance area. This unit appears to be the oldest of the RTUs. It is 21 years old and in fair condition.

We did not recommend replacement of the *York* AC unit as an ECM, though its age is beyond the ASHRAE rated useful lifetime for such units (i.e. 15 years), because the upgrade was not deemed to be sufficiently cost-effective on the basis of energy savings alone (SPP = 22 yrs). Nevertheless, the school may want to consider replacing this unit in the near future.

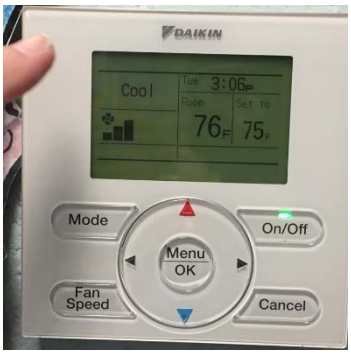
One (1) Aaon gas/electric unit with a cooling capacity of 10 tons, supplies heating and cooling and make-up to the kitchen area.

The remainder of the building is served by a high-efficiency Daikin VRV ductless mini-split system. The system consists of fouteen condenser units (with cooling capacities of six (6) to eight (8) tons each) and multiple indoor units which supply supplemental heating cooling to classrooms and other areas. These units are believed to be about nine (9) years old.

One dedicated 3-ton *Sanyo* split system AC cools the server room. It is believed to be six (6) years old.

Rooftop Units

Daikin VRV Mini-Split System Units



Because the boiler system is an inherently more efficient heating system than RTUs, preference should be given to operating the boilers rather than the RTUs for heat, where possible. The school might benefit from additional study of its control system to ensure that the heating and cooling system is optimized for energy efficiency across the multiple units used throughout the building for heating and cooling.

The building has a CM3 building automation control system to control the RTUs and separate panels controlling the split systems. They all utilize night time setback (except for the mini-split system in the server room). It is not known the degree to which the various units are coordinated in their scheduling as the building heats up or cools down each day.

An analysis of options to improve efficiency through re-programming the scheduling of different systems is beyond the scope of this study. However, we believe that significant additional savings can often be achieved through addition of more precise system-wide controls in buildings with multiple HVAC systems such as this one.

Domestic Hot Water

The domestic hot water system for the facility is supplied by two (2) A.O. Smith domestic hot water heaters. The units are high efficiency and in good condition. No domestic hot water upgrades are recommended.

Domestic Hot Water Heaters

Food Service Equipment

The school has a cafeteria and a commercial kitchen. Lunch is served to students each day. The kitchen has four (4) gas-fired Vulcan convection ovens and a gas-fired steam table to keep food hot while serving. The equipment is fairly new and in good condition. No upgrades are recommended.

Energy-Using Kitchen Equipment

Refrigeration

The kitchen area has two (2) walk-in coolers and one (1) walk-in freezer. The equipment appeared to be in fair working condition.

Staff Refrigerators

Savings for these types of units can often be achieved through adding specialized control systems to optimize power usage. Walk-in cooler and freezer digital control systems (by brands such as *CoolTrol™* or *FreeAire™*) can often be cost-effectively added to reduce power demands for evaporator fans and compressors. Such control systems usually save hundreds of dollars in electric costs per year and generally have a payback period of less than five (5) years for most units of similar size.

Unfortunately, sufficient data on the cooling capacity of each refrigeration unit was not available to enable us to make a recommendation for specific control systems that would work for each of the walk-in units.

We recommend having these units assessed by a qualified refrigeration controls technician to investigate control options and ensure proper sizing of new control equipment.

There are also two (2) medium-sized standard reach-in refrigerators in teacher's lounge. This equipment appears to be in good condition.

No refrigeration measures are recommended.

Walk-In Coolers and Freezers

Plug load & Vending Machines

There are an estimated 345 computers in the building, which are used in classrooms and offices. There are also many printers, copiers, and other office equipment. No upgrades are recommended for any plug load office equipment.

Vending machines typically run 24 hours per day. Adding controls to them to power them down when the building is less occupied is often a very cost-effective way to save on their energy usage.

Plug Load Equipment




2.7 Water-Using Systems

All restrooms were found to contain water fixtures that meet commercial water conservation standards. All faucets, toilets, and urinals are believed to be low-flow systems.

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 in Section 3.4 for additional information.

3.1 Total Cost of Energy

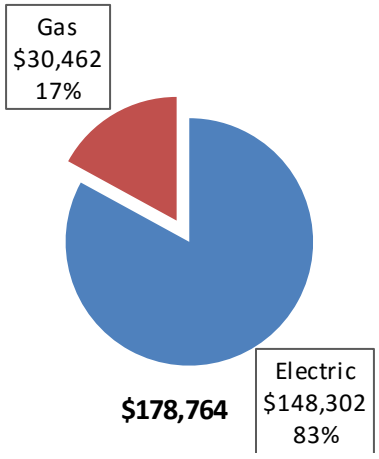
The following energy consumption and cost data are based on the last 12 month period of utility usage data that was provided for each utility. The annual consumption and cost were developed from this information.

Figure 7 - Utility Summary

Utility Summary for Frog Pond		
Fuel	Usage	Cost
Electricity	953,550 kWh	$148,302
Natural Gas	29,289 Therms	$30,462
Total		$178,764

The current utility cost for this site is $178,764 as shown in the chart below.

Figure 8 - Energy Cost Breakdown



3.2 Electricity Usage

Electricity is provided by Atlantic City Electric. The average electric cost over the past 12 months was $0.156/kWh, which is the blended rate that includes energy supply, distribution, and other charges. This rate used throughout the analyses in this report. The monthly electricity consumption and peak demand is shown in the chart and table below.

Figure 9 - Electric Usage & Demand

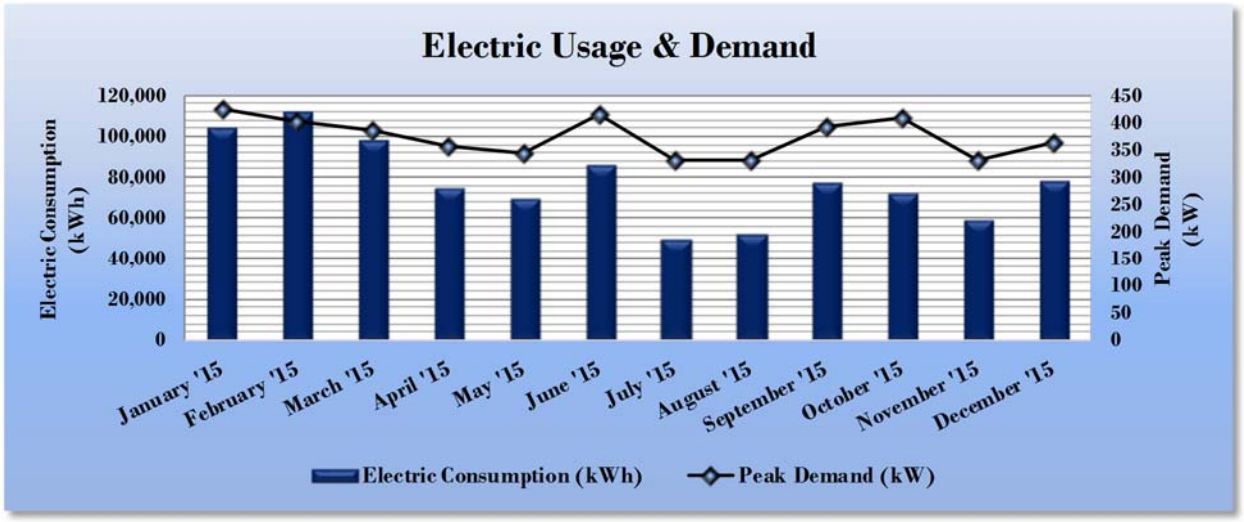


Figure 10 - Electric Usage & Demand

Electric Billing Data for Frog Pond Elementary School					
Period Ending	Days in Period	Electric Usage (kWh)	Demand (kW)	Total Electric Cost	TRC Estimated Usage?
1/22/15	37	104,765	425	$16,188	Yes
2/23/15	31	112,190	401	$15,870	Yes
3/23/15	27	98,223	387	$13,756	Yes
4/22/15	29	74,971	357	$11,271	Yes
5/20/15	27	69,894	346	$10,389	Yes
6/22/15	32	86,393	414	$13,752	Yes
7/24/15	31	50,159	332	$8,869	Yes
8/24/15	30	53,106	332	$9,196	Yes
9/23/15	29	77,513	392	$12,442	Yes
10/22/15	28	72,401	410	$11,815	Yes
11/19/15	27	59,708	332	$9,804	Yes
12/21/15	31	78,552	364	$12,513	Yes
Totals	359	937,875	425.1	$145,864	12
Annual	365	953,550	425.1	$148,302	

3.3 Natural Gas Usage

Natural gas is provided by New Jersey Natural Gas. The average gas cost for the past 12 months is $1.040/therm, which is the blended rate used throughout the analyses in this report. The monthly gas consumption is shown in the chart and table below.

Figure 11 - Natural Gas Usage

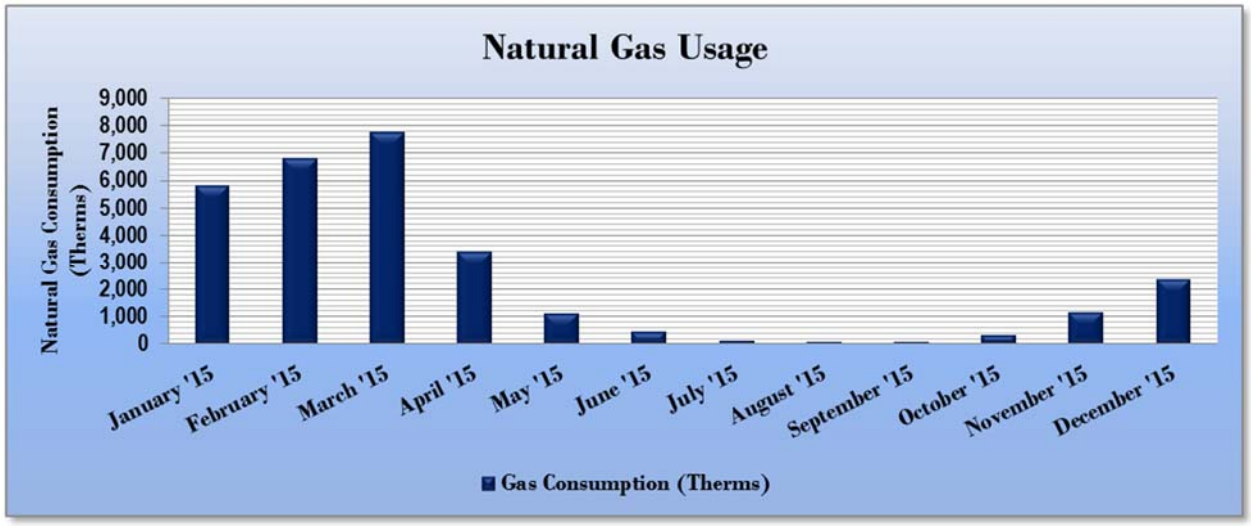


Figure 12 - Natural Gas Usage

Gas Billing Data for Frog Pond			
Period Ending	Days in Period	Natural Gas Usage (Therms)	Natural Gas Cost
1/14/15	33	5,805	$5,853
2/11/15	28	6,803	$6,297
3/16/15	33	7,761	$7,258
4/14/15	29	3,374	$3,266
5/13/15	29	1,111	$1,332
6/13/15	31	460	$815
7/14/15	31	105	$539
8/11/15	28	73	$516
9/10/15	30	99	$533
10/13/15	33	332	$701
11/12/15	30	1,157	$1,297
12/14/15	32	2,368	$2,223
Totals	367	29,450	$30,629
Annual	365	29,289	$30,462

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.

Figure 13 - Energy Use Intensity Comparison – Existing Conditions

Energy Use Intensity Comparison - Existing Conditions		
	Frog Pond	National Median Building Type: School (K-12)
Source Energy Use Intensity (kBtu/ft^2)	126.6	141.4
Site Energy Use Intensity (kBtu/ft^2)	58.9	58.2

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

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

Energy Use Intensity Comparison - Following Installation of Recommended Measures		
	Frog Pond	National Median Building Type: School (K-12)
Source Energy Use Intensity (kBtu/ft^2)	112.6	141.4
Site Energy Use Intensity (kBtu/ft^2)	54.4	58.2

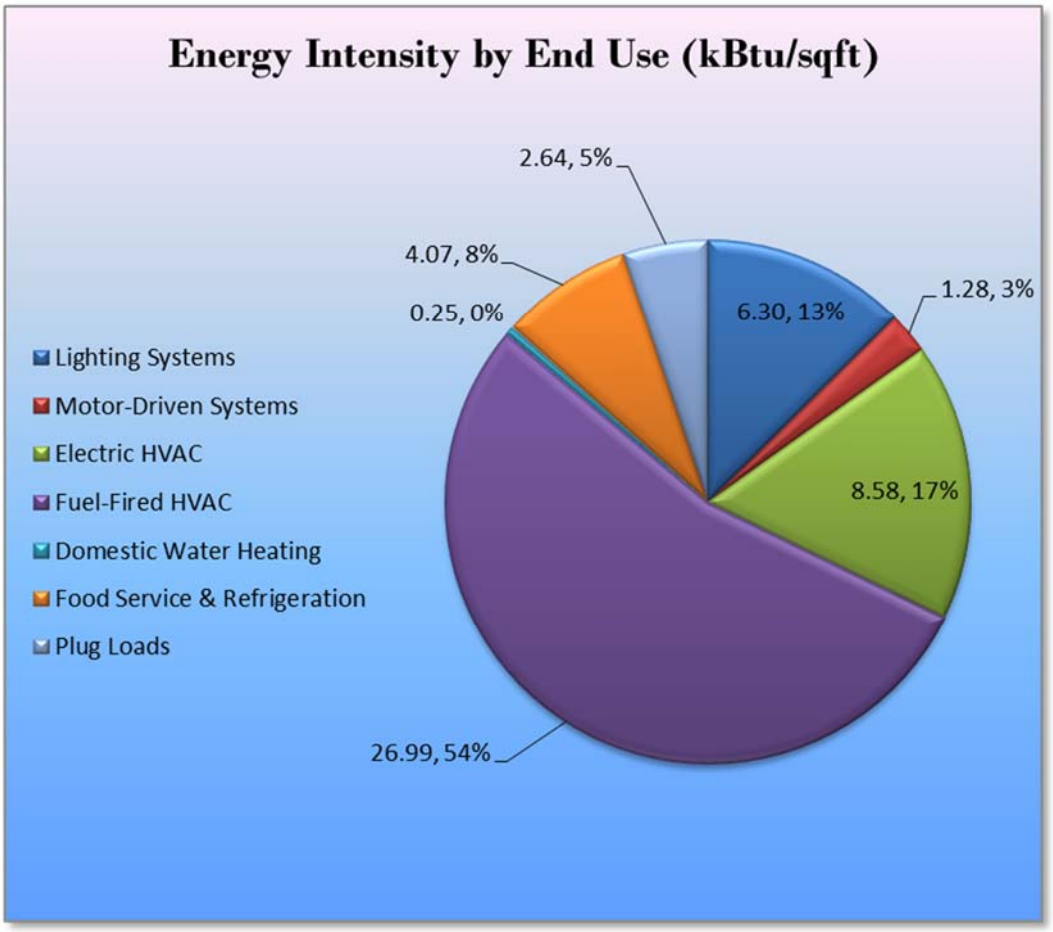
Many types of commercial buildings are also eligible to receive an ENERGY STAR® score. This score is a percentile ranking from 1 to 100. It compares your building's energy performance to similar buildings nationwide. A score of 50 represents median energy performance, while a score of 75 means your building performs better than 75 percent of all similar buildings nationwide and may be eligible for ENERGY STAR® certification. Your building is not is one of the building categories that are eligible to receive a score.

Based on our analysis, the school has a Portfolio Manager Energy Star score of 78. Following installation of the energy efficiency measures described in this report, the school may choose to apply to the EPA for ENERGY STAR® certification. A Portfolio Manager Statement of Energy Performance was generated for this facility, see: Appendix B: ENERGY STAR® Statement of Energy Performance.

3.5 Energy End-Use Breakdown

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

Figure 15 - Energy Balance (kBtu/SqFt and % of Total Usage)



4 ENERGY CONSERVATION MEASURES

Level of Analysis

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

The following sections describe the evaluated measures.

4.1 Recommended ECMs

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

Figure 16 – Summary of Recommended ECMs

Energy Conservation Measure		Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades			109,329	39.1	$17,003.48	$140,552.84	$19,565.00	$120,987.84	7.12	110,093
ECM 1	Install LED Fixtures	Yes	938	0.2	$145.84	$966.40	$0.00	$966.40	6.63	944
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	102,422	37.1	$15,929.33	$139,116.19	$19,395.00	$119,721.19	7.52	103,139
ECM 3	Retrofit Fixtures with LED Lamps	Yes	5,969	1.8	$928.31	$470.25	$170.00	$300.25	0.32	6,011
Lighting Control Measures			24,691	9.1	$3,840.15	$34,148.00	$4,640.00	$29,508.00	7.68	24,864
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	24,691	9.1	$3,840.15	$34,148.00	$4,640.00	$29,508.00	7.68	24,864
Plug Load Equipment Control - Vending Machine			3,224	0.0	$501.37	$742.24	$0.00	$742.24	1.48	3,246
ECM 5	Vending Machine Control	Yes	3,224	0.0	$501.37	$742.24	$0.00	$742.24	1.48	3,246
TOTALS			137,244	48.2	$21,345.00	$175,443.08	$24,205.00	$151,238.08	7.09	138,204

4.1.1 Lighting Fixture Upgrades

Recommended upgrades to existing lighting fixtures are summarized in Figure 17 below.

Figure 17 – Summary of Lighting Upgrade ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		109,329	39.1	0.0	$17,003.48	$140,552.84	$19,565.00	$120,987.84	7.12	110,093
ECM 1	Install LED Fixtures	938	0.2	0.0	$145.84	$966.40	$0.00	$966.40	6.63	944
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	102,422	37.1	0.0	$15,929.33	$139,116.19	$19,395.00	$119,721.19	7.52	103,139
ECM 3	Retrofit Fixtures with LED Lamps	5,969	1.8	0.0	$928.31	$470.25	$170.00	$300.25	0.32	6,011

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	182	0.1	0.0	$28.33	$632.61	$0.00	$632.61	22.33	183
Exterior	756	0.1	0.0	$117.51	$333.79	$0.00	$333.79	2.84	761

Measure Description

We recommend replacing existing fluorescent and HID with new high performance LED light fixtures. This measure saves energy by installing LED fixtures which use less than half as much power as other most other lighting technologies with a comparable light output.

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

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	102,422	37.1	0.0	$15,929.33	$139,116.19	$19,395.00	$119,721.19	7.52	103,139
Exterior	0	0.0	0.0	$0.00	$0.00	$0.00	$0.00	0.00	0

Measure Description

We recommend retrofitting existing fluorescent fixtures by removing fluorescent tubes and ballasts and replacing them with LEDs and LED drivers, 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. Most of the lighting fixtures at the school can be retrofitted with LED components rather than replaced. Where possible, this is the preferred option, rather than fixture replacement, because material and labor costs are significantly reduced.

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 ten (10) times longer than many incandescent lamps.

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	815	0.4	0.0	$126.79	$201.50	$130.00	$71.50	0.56	821
Exterior	5,154	1.4	0.0	$801.52	$268.75	$40.00	$228.75	0.29	5,190

Measure Description

We recommend retrofitting existing fluorescent, incandescent, HID or other lighting technologies with LED lamps. Many LED tube lamps are direct replacements for existing fluorescent lamps and can be installed while leaving the fluorescent fixture ballast in place. LED bulbs can be used in existing fixtures as a direct replacement for most other lighting technologies. This measure saves energy by installing LED sources which use less power than other technologies with a comparable light output.

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

4.1.2 Lighting Control Measures

Recommended lighting control measures are summarized in Figure 18 below. 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.

Figure 18 – Summary of Lighting Control ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Lighting Control Measures		24,691	9.1	0.0	$3,840.15	$34,148.00	$4,640.00	$29,508.00	7.68	24,864
ECM 4	Install Occupancy Sensor Lighting Controls	24,691	9.1	0.0	$3,840.15	$34,148.00	$4,640.00	$29,508.00	7.68	24,864

ECM 4: Install Occupancy Sensor Lighting Controls

Measure Description

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

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

4.1.3 Plug Load Equipment Control - Vending Machine

ECM 5: 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)
3,224	0.0	0.0	$501.37	$742.24	$0.00	$742.24	1.48	3,246

Measure Description

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

5 Energy Efficient Practices

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

Reduce Air Leakage

Air leakage, or infiltration, occurs when outside air enters a building uncontrollably through cracks and openings. Properly sealing such cracks and openings can significantly reduce heating and cooling costs, improve building durability, and create a healthier indoor environment. This includes caulking or installing weather stripping around leaky doors and windows allowing for better control of indoor air quality through controlled ventilation.

Close Doors and Windows

Ensure doors and windows are closed in conditioned spaces. Leaving doors and windows open leads to a significant increase in heat transfer between conditioned spaces and the outside air. Reducing a facility's air changes per hour (ACH) can lead to increased occupant comfort as well as significant heating and cooling savings, especially when combined with proper HVAC controls and adequate ventilation.

Ensure Lighting Controls Are Operating Properly

Lighting controls are very cost effective energy efficient devices when installed and operating correctly. As part of a lighting maintenance schedule, lighting controls should be tested annually to ensure proper functioning. For occupancy sensors, this requires triggering the sensor and verifying that the sensor's timer settings are correct. For daylight sensors, maintenance involves cleaning of sensor lenses and confirming setpoints and sensitivity are appropriately configured.

Practice Proper Use of Thermostat Schedules and Temperature Resets

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

Clean Evaporator/Condenser Coils on AC Systems

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

Clean and/or Replace HVAC Filters

Air filters work to reduce the amount of indoor air pollution and increase occupant comfort. Over time, filters become less and less effective as particulate buildup increases. In addition to health concerns

related to clogged filters, filters that have reached saturation also restrict air flow through the facility's air conditioning or heat pump system, increasing the load on the distribution fans and decreasing occupant comfort levels. Filters should be checked monthly and cleaned or replaced when appropriate.

Perform Proper Boiler Maintenance

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

Perform Proper Water Heater Maintenance

At least once a year, drain a few gallons out of the water heater using the drain valve. If there is a lot of sediment or debris, then a full flush is recommended. Turn the temperature down and then completely drain the tank. Once a year check for any leaks or heavy corrosion on the pipes and valves. For gas water heaters, check the draft hood and make sure it is placed properly, with a few inches of air space between the tank and where it connects to the vent. Look for any corrosion or wear on the gas line and on the piping. If you noticed any black residue, soot or charred metal, this is a sign you may be having combustion issues and you should have the unit serviced by a professional. For electric water heaters, look for any signs of leaking such as rust streaks or residue around the upper and lower panels covering the electrical components on the tank. For water heaters over three (3) to four (4) years old have a technician inspect the sacrificial anode annually.

Replace Computer Monitors

Replacing old computer monitors or displays with efficient monitors will reduce energy use. ENERGY STAR® rated monitors have specific requirements for on mode power consumption as well as idle and sleep mode power. According to the ENERGY STAR® website monitors that have earned the ENERGY STAR® label are 25% more efficient than standard monitors.

6 On-Site Generation Measures

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

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

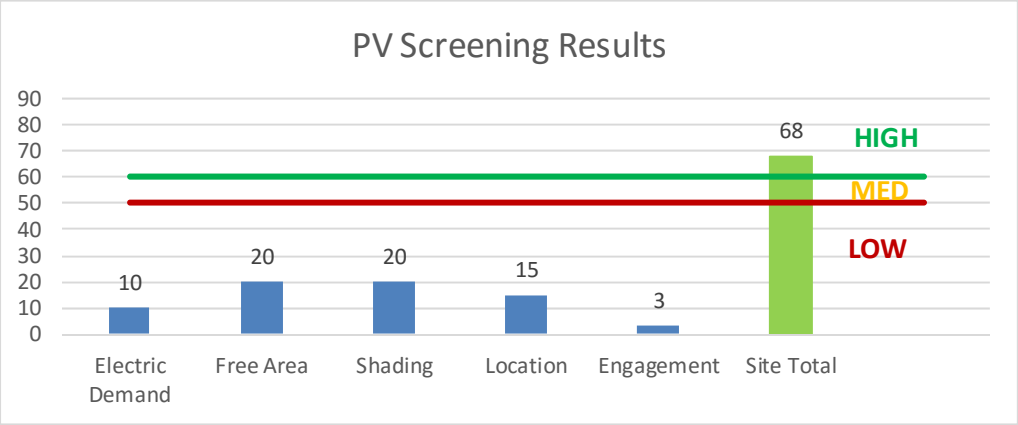
Preliminary screenings were performed to determine the potential that a generation project could provide a cost-effective solution for your facility. Before making a decision to implement, a feasibility study should be conducted that would take a detailed look at existing energy profiles, siting, interconnection,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

6.1 Photovoltaic

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

A preliminary screening based on the facility's electric demand, size and location of available area, and shading elements shows that the facility has a high potential for cost-effective installation of additional solar PV generation.

Figure 19 - Photovoltaic Screening



Potential	High	
System Potential	332	kW DC STC
Electric Generation	395,535	kWh/yr
Displaced Cost	$61,520	/yr
Installed Cost	$949,500	

Aerial View of Frog Pond Elementary School

The image above shows the roof of Frog Pond Elementary School. The current PV solar array is in the center of the roof. The current PV array takes up only about 4,000 square feet of roof space. There is eight (8) to ten (10) times that amount of remaining unshaded roof space that could potentially be developed for solar electric generation.

For this analysis, we estimated the cost and savings from adding 332 KW of additional PV generating capacity. The estimated cost and savings are shown above. Such an array would increase the percentage of electric power generated on site from about 4% currently to about 45%. This would reduce the school's annual electric bill by about $61,520 per year.

Rebates are not available for solar projects, but owners of solar projects should register their projects in the SREC Registration Program prior to the start of construction in order to establish the project's eligibility to earn SRECs. Registration of the intent to participate in New Jersey's solar marketplace provides market participants with information about the pipeline of anticipated new solar capacity and insight into future SREC pricing. Refer to Section 8.3 for additional information.

An expanded solar array could earn an annual income from the sale of SRECs of about $98,750 per year, in addition to displacing electric purchases from the grid. This SREC income would be available for the first 15 years of project's life which would great offset the cost of installation.

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 development at 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 show that the facility has a low potential for installing a cost-effective CHP system.

In our opinion, the facility does not appear to meet the minimum requirements for a cost-effective CHP installation. The hot water demand is not large enough and is not continuous year round.

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 backup 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 program often find it to be a valuable source of revenue for their facility because the payments can significantly offset annual electric costs.

Based on our analysis of the facility's electric bills, the electric usage does not seem to vary by more than 100 kW, so it would be unlikely to meet the requirements for DR program participation.

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 an 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 20 for a list of the eligible programs identified for each recommended ECM.

Figure 20 - ECM Incentive Program Eligibility

Energy Conservation Measure		SmartStart Prescriptive	SmartStart Custom	Direct Install	Pay For Performance Existing Buildings
ECM 1	Install LED Fixtures	X			X
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	X			X
ECM 3	Retrofit Fixtures with LED Lamps	X			X
ECM 4	Install Occupancy Sensor Lighting Controls	X			X
ECM 5	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 the use of pre-approved consultants. The Large Energy Users Program (LEUP) is available to New Jersey's largest energy users giving them the 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 or www.njcleanenergy.com/ci.

8.1 SmartStart

Overview

The SmartStart program is comprised of new construction and retrofit components that offer incentives for installing prescriptive and custom energy efficiency measures at your facility. Routinely the program adds, removes or modifies incentives for various energy efficiency equipment based on national/market trends, new technologies or changes in efficiency baselines.

Prescriptive Equipment Incentives 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

All customer sizes and types may be served by this program. This program provides an effective mechanism for securing incentives for individual projects that may be completed at once or over several years.

Incentives

The prescriptive path provides fixed incentives for specific energy efficiency measures whereas the custom measure path provides incentives for unique or specialized technologies that are not addressed through prescriptive offerings.

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 the lesser of 50% of the total installed incremental project cost, or a buy down to a one (1) year payback. Program incentives are capped at $500,000 per electric account and $500,000 per natural gas account, per fiscal year.

How to Participate

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

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

8.2 Pay for Performance - Existing Buildings

Overview

The Pay for Performance – Existing Buildings (P4P EB) program is designed for larger customers with a peak demand over 200 kW in the preceding 12 months. Under this program, the minimum installed scope of work must include at least two (2) 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 $0.10/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 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 into 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 description 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 the incentive programs to help further reduce costs when compiling 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 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 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
Trailer - Back Office	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,600	LED Retrofit	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,120	0.08	230	0.0	$35.80	$366.29	$50.00	8.84
Trailer - Front Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,600	LED Retrofit	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,120	0.11	307	0.0	$47.73	$449.72	$60.00	8.16
Trailer - 2nd Office	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,600	LED Retrofit	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,120	0.08	230	0.0	$35.80	$366.29	$50.00	8.84
Back Door	1	Metal Halide: (1) 150W Lamp	None	190	4,380	Fixture Replacement	No	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	None	40	4,380	0.10	756	0.0	$117.51	$333.79	$0.00	2.84
Back Door Foyer	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,380	LED Retrofit	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,380	0.02	166	0.0	$25.85	$83.43	$10.00	2.84
Multi-Purpose Hall	11	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,600	LED Retrofit	No	11	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,600	0.24	668	0.0	$103.88	$917.73	$110.00	7.78
Multi-Purpose Hall	3	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	3	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	21	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,200	LED Retrofit	No	21	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,200	0.45	956	0.0	$148.74	$1,752.03	$210.00	10.37
Kitchen	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen Foyer	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,200	LED Retrofit	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,200	0.04	91	0.0	$14.17	$166.86	$20.00	10.37
All Purpose Room	36	LED - Linear Tubes: (3) 4' Lamps	None	44	1,600	None	No	36	LED - Linear Tubes: (3) 4' Lamps	None	44	1,600	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Foyer	1	LED - Linear Tubes: (3) 4' Lamps	None	44	2,100	None	No	1	LED - Linear Tubes: (3) 4' Lamps	None	44	2,100	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Foyer	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Back Storage	2	Linear Fluorescent - T12: 8' T12 (75W) - 2L	Wall Switch	158	200	LED Retrofit	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	200	0.17	59	0.0	$9.23	$166.86	$20.00	15.91
Rt. Side Stage Exit	3	LED - Linear Tubes: (3) 4' Lamps	None	44	1,600	None	No	3	LED - Linear Tubes: (3) 4' Lamps	None	44	1,600	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Back Stage	2	Linear Fluorescent - T12: 8' T12 (75W) - 2L	Wall Switch	158	600	LED Retrofit	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	600	0.17	178	0.0	$27.69	$166.86	$20.00	5.30
Back Stage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	600	LED Retrofit	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	600	0.04	46	0.0	$7.08	$166.86	$20.00	20.74
Left Stage Exit	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,600	LED Retrofit	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,600	0.04	121	0.0	$18.89	$166.86	$20.00	7.78
Back All-Purpose Storage	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	200	LED Retrofit	No	3	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	200	0.10	34	0.0	$5.31	$313.05	$45.00	50.46
Boys Rm	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	600	LED Retrofit	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	420	0.19	203	0.0	$31.51	$823.04	$115.00	22.47
Girls Rm	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	600	LED Retrofit	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	420	0.19	203	0.0	$31.51	$823.04	$115.00	22.47
Custodial Closet	1	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	200	LED Retrofit	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	200	0.04	14	0.0	$2.11	$83.43	$10.00	34.79
Electrical Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	100	LED Retrofit	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	100	0.04	6	0.0	$1.00	$138.26	$20.00	118.07
Back Hallway	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,100	LED Retrofit	No	6	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,100	0.13	478	0.0	$74.37	$500.58	$60.00	5.92
Back Hallway	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

	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
Side Hallway	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,100	LED Retrofit	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,100	0.09	319	0.0	$49.58	$333.72	$40.00	5.92
Side Hallway	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Back Hallway	13	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,100	LED Retrofit	No	13	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,100	0.28	1,036	0.0	$161.13	$1,084.59	$130.00	5.92
Back Hallway	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Back Door	3	Incandescent: 2 x 150W Incadescent	None	300	2,100	LED Retrofit	No	3	LED Screw-In Lamps: 17W Screw-in LED Bulbs	None	17	2,100	0.56	2,050	0.0	$318.88	$95.25	$0.00	0.30
Main Office	8	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	No	8	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	1,600	0.29	824	0.0	$128.20	$1,106.08	$160.00	7.38
Rm 323	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	3	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.14	405	0.0	$63.01	$530.78	$80.00	7.15
Principal Office Rm 325	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	3	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.14	405	0.0	$63.01	$530.78	$80.00	7.15
Office	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	3	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.14	405	0.0	$63.01	$530.78	$80.00	7.15
Mens Rm	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	600	LED Retrofit	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	600	0.04	39	0.0	$6.01	$138.26	$20.00	19.68
Elec Rm 212	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	200	LED Retrofit	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	200	0.04	13	0.0	$2.00	$138.26	$20.00	59.04
Rm 213	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.58	1,621	0.0	$252.06	$1,929.12	$275.00	6.56
Rm 214	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.58	1,621	0.0	$252.06	$1,929.12	$275.00	6.56
Courtyard	3	Incandescent: 60 W Incadescent	None	60	2,100	LED Retrofit	No	3	LED Screw-In Lamps: 9W Screw-in LED Bulb	None	9	2,100	0.10	369	0.0	$57.47	$46.50	$0.00	0.81
Girls Rm	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	600	LED Retrofit	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	420	0.03	29	0.0	$4.47	$199.43	$30.00	37.86
Boys Rm	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	600	LED Retrofit	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	420	0.03	29	0.0	$4.47	$199.43	$30.00	37.86
Corridor (117 - 308)	28	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,100	LED Retrofit	No	28	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,100	0.61	2,231	0.0	$347.05	$2,336.04	$280.00	5.92
Corridor (117 - 308)	10	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	10	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rm 211 Storage	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	200	LED Retrofit	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	200	0.02	8	0.0	$1.18	$83.43	$10.00	62.21
Rm 110	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,600	LED Retrofit	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,120	0.16	460	0.0	$71.60	$770.58	$95.00	9.44
Rm 110 Restrm	1	Incandescent: 60 W Incadescent	Wall Switch	60	300	Relamp	No	1	LED Screw-In Lamps: 9W Screw-in LED Bulb	Wall Switch	9	300	0.03	18	0.0	$2.74	$15.50	$10.00	2.01
Rm 114	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	200	LED Retrofit	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	140	0.11	38	0.0	$5.97	$603.72	$75.00	88.61
Storage Rm 109	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	200	LED Retrofit	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	200	0.04	15	0.0	$2.36	$166.86	$20.00	62.21
Custodial Area	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	100	LED Retrofit	No	10	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	100	0.22	38	0.0	$5.90	$834.30	$100.00	124.41
Boiler Rm	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	600	LED Retrofit	No	8	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	600	0.17	182	0.0	$28.33	$667.44	$80.00	20.74

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Child Study Rm 401	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.19	540	0.0	$84.02	$669.04	$100.00	6.77
Child Study Rm 401A	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	3	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.14	405	0.0	$63.01	$530.78	$80.00	7.15
Child Study Rm 401B	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.10	270	0.0	$42.01	$392.52	$60.00	7.92
Child Study Rm 401C	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.10	270	0.0	$42.01	$392.52	$60.00	7.92
Child Study Rm 401D	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.10	270	0.0	$42.01	$392.52	$60.00	7.92
Child Study Rm 401E	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.10	270	0.0	$42.01	$392.52	$60.00	7.92
Conf Rm 401F	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	3	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.14	405	0.0	$63.01	$530.78	$80.00	7.15
Rm 402	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.58	1,621	0.0	$252.06	$1,929.12	$275.00	6.56
Rm 403	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.58	1,621	0.0	$252.06	$1,929.12	$275.00	6.56
Rm 404	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.58	1,621	0.0	$252.06	$1,929.12	$275.00	6.56
Rm 405	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.58	1,621	0.0	$252.06	$1,929.12	$275.00	6.56
Rm 406	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.58	1,621	0.0	$252.06	$1,929.12	$275.00	6.56
Rm 407	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.58	1,621	0.0	$252.06	$1,929.12	$275.00	6.56
Rm 408	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.58	1,621	0.0	$252.06	$1,929.12	$275.00	6.56
Rm 405A	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	1	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.05	135	0.0	$21.00	$254.26	$40.00	10.20
Rm 405B	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	200	LED Retrofit	Yes	1	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	140	0.05	17	0.0	$2.63	$254.26	$40.00	81.60
Elec Rm 412	6	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	No	6	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	1,600	0.22	618	0.0	$96.15	$829.56	$120.00	7.38
Rm 414	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.58	1,621	0.0	$252.06	$2,199.12	$310.00	7.49
Rm 414 restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	300	LED Retrofit	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	300	0.02	11	0.0	$1.77	$83.43	$10.00	41.47
Rm 415	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.58	1,621	0.0	$252.06	$2,199.12	$310.00	7.49
Rm 415 restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	300	LED Retrofit	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	300	0.02	11	0.0	$1.77	$83.43	$10.00	41.47
Men's Rm	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	600	LED Retrofit	Yes	3	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	420	0.14	152	0.0	$23.63	$684.78	$95.00	24.96
Women's Rm	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	600	LED Retrofit	Yes	3	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	420	0.14	152	0.0	$23.63	$684.78	$95.00	24.96
Custodial Closet	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	100	LED Retrofit	No	2	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	100	0.07	13	0.0	$2.00	$276.52	$40.00	118.07
Corridor (near Rm 415)	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,860	LED Retrofit	No	6	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,860	0.13	1,107	0.0	$172.11	$500.58	$60.00	2.56

	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
Courtyard	3	Incandescent: 60 W Incadescent	Wall Switch	60	600	Relamp	No	3	LED Screw-In Lamps: 9W Screw-in LED Bulb	Wall Switch	9	600	0.10	106	0.0	$16.42	$46.50	$30.00	1.00
Men's Rm	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,100	LED Retrofit	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,470	0.06	226	0.0	$35.19	$199.43	$30.00	4.81
Center Hallway	17	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,100	LED Retrofit	No	17	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,100	0.37	1,355	0.0	$210.71	$1,418.31	$170.00	5.92
Center Hallway	4	Exit Signs: LED - 2 W Lamp	Wall Switch	6	8,760	None	No	4	Exit Signs: LED - 2 W Lamp	Wall Switch	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
400 Wing Corridor	13	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,100	LED Retrofit	No	13	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,100	0.28	1,036	0.0	$161.13	$1,084.59	$130.00	5.92
400 Wing Corridor	2	Exit Signs: LED - 2 W Lamp	Wall Switch	6	8,760	None	No	2	Exit Signs: LED - 2 W Lamp	Wall Switch	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rm 332	10	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	10	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.48	1,351	0.0	$210.05	$1,652.60	$235.00	6.75
Rm 331	10	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	10	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.48	1,351	0.0	$210.05	$1,652.60	$235.00	6.75
Rm 330	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.10	270	0.0	$42.01	$392.52	$60.00	7.92
Rm 329	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	3	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.14	405	0.0	$63.01	$530.78	$80.00	7.15
Rm 328	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.58	1,621	0.0	$252.06	$1,929.12	$275.00	6.56
Rm 326	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	3	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.14	405	0.0	$63.01	$530.78	$80.00	7.15
Faculty Lounge	20	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	20	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.96	2,701	0.0	$420.09	$3,035.20	$435.00	6.19
Library / Media Center	46	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	46	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	2.21	6,213	0.0	$966.22	$7,439.96	$1,060.00	6.60
Library / Media Center	11	Compact Fluorescent: 2 x 13 W Recessed Cans	Wall Switch	26	1,600	LED Retrofit	No	11	LED - Fixtures: Downlight Recessed	Wall Switch	17	1,600	0.06	182	0.0	$28.33	$632.61	$0.00	22.33
Rm 322	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.10	270	0.0	$42.01	$392.52	$60.00	7.92
Rm 321	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.10	270	0.0	$42.01	$392.52	$60.00	7.92
Nurse Rm 319	10	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	10	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.48	1,351	0.0	$210.05	$1,922.60	$270.00	7.87
Nurse Rm 319	2	Incandescent: 60 W Incadescent	Wall Switch	60	1,600	Relamp	Yes	2	LED Screw-In Lamps: 9W Screw-in LED Bulb	Occupancy Sensor	9	1,120	0.07	198	0.0	$30.73	$147.00	$40.00	3.48
Office Rm 317	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.10	270	0.0	$42.01	$392.52	$60.00	7.92
Office Rm 317	1	Exit Signs: LED - 2 W Lamp	Wall Switch	6	1,600	None	No	1	Exit Signs: LED - 2 W Lamp	Wall Switch	6	1,600	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Office Rm 317	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	1,600	LED Retrofit	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,120	0.16	460	0.0	$71.60	$533.40	$80.00	6.33
Office Rm 317	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	1,600	LED Retrofit	Yes	1	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,120	0.03	72	0.0	$11.13	$229.46	$20.00	18.82
Comp Sci Rm 315	11	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	11	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.53	1,486	0.0	$231.05	$2,060.86	$290.00	7.66
Comp Sci Rm 315	1	Exit Signs: LED - 2 W Lamp	None	6	1,600	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	1,600	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
Copy Rm 314	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.10	270	0.0	$42.01	$392.52	$60.00	7.92
Sm Kitchen	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	1,600	LED Retrofit	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,120	0.08	230	0.0	$35.80	$324.70	$50.00	7.67
Men's Rm	1	Incandescent: 60 W Incadescent	Wall Switch	60	1,600	Relamp	Yes	1	LED Screw-In Lamps: 9W Screw-in LED Bulb	Occupancy Sensor	9	1,120	0.04	99	0.0	$15.37	$131.50	$30.00	6.60
Women's Rm	1	Incandescent: 60 W Incadescent	Wall Switch	60	1,600	Relamp	Yes	1	LED Screw-In Lamps: 9W Screw-in LED Bulb	Occupancy Sensor	9	1,120	0.04	99	0.0	$15.37	$131.50	$30.00	6.60
Storage Rm	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,600	LED Retrofit	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,600	0.02	61	0.0	$9.44	$83.43	$10.00	7.78
Front Foyer	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,100	LED Retrofit	No	7	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,100	0.15	558	0.0	$86.76	$584.01	$70.00	5.92
Front Foyer	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rm 308	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	3	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.14	405	0.0	$63.01	$530.78	$80.00	7.15
300 Wing Corridor	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,100	LED Retrofit	No	16	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,100	0.35	1,275	0.0	$198.31	$1,334.88	$160.00	5.92
300 Wing Corridor	5	Exit Signs: LED - 2 W Lamp	Wall Switch	6	8,760	None	No	5	Exit Signs: LED - 2 W Lamp	Wall Switch	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rm 306	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.58	1,621	0.0	$252.06	$2,199.12	$310.00	7.49
Rm 305	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.19	540	0.0	$84.02	$669.04	$100.00	6.77
Rm 304	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.58	1,621	0.0	$252.06	$2,199.12	$310.00	7.49
Rm 303	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.58	1,621	0.0	$252.06	$2,199.12	$310.00	7.49
Rm 302	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.58	1,621	0.0	$252.06	$2,199.12	$310.00	7.49
Rm 301	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.58	1,621	0.0	$252.06	$2,199.12	$310.00	7.49
500 Wing Hallway	7	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,100	LED Retrofit	No	7	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,100	0.26	947	0.0	$147.23	$967.82	$140.00	5.62
Side Hallway	11	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,100	LED Retrofit	No	11	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,100	0.40	1,488	0.0	$231.37	$1,520.86	$220.00	5.62
Side Hallway	5	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	5	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Side Door	4	Incandescent: 2 x 150W Incadescent	None	300	2,100	Relamp	No	4	LED Screw-In Lamps: 17W Screw-in LED Bulbs	None	17	2,100	0.74	2,734	0.0	$425.17	$127.00	$40.00	0.20
Rm 608 / D1 / D2	38	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	38	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	1.83	5,132	0.0	$798.18	$6,603.88	$935.00	7.10
IDF - 3	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,600	LED Retrofit	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,120	0.05	153	0.0	$23.87	$282.86	$40.00	10.18
Art Rm 606	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,600	LED Retrofit	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,120	0.49	1,381	0.0	$214.80	$2,311.74	$285.00	9.44
Science Rm 605	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,600	LED Retrofit	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,120	0.49	1,381	0.0	$214.80	$2,311.74	$285.00	9.44
Gym	24	LED - Fixtures: High-Bay	Occupancy Sensor	86	1,470	None	No	24	LED - Fixtures: High-Bay	Occupancy Sensor	86	1,470	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
Gym Equip Rm	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	600	LED Retrofit	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	420	0.22	230	0.0	$35.80	$937.44	$115.00	22.97
Gym Office	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,400	LED Retrofit	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	980	0.14	336	0.0	$52.21	$533.15	$70.00	8.87
Gym Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	300	LED Retrofit	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	210	0.05	29	0.0	$4.47	$282.86	$40.00	54.27
Classes D-6	8	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,100	LED Retrofit	Yes	8	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,470	0.38	1,418	0.0	$220.55	$1,376.08	$195.00	5.36
Classes D-5	8	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,100	LED Retrofit	Yes	8	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,470	0.38	1,418	0.0	$220.55	$1,376.08	$195.00	5.36
Boys Rm	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	600	LED Retrofit	Yes	3	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	420	0.14	152	0.0	$23.63	$684.78	$95.00	24.96
Girls Rm	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	600	LED Retrofit	Yes	3	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	420	0.14	152	0.0	$23.63	$684.78	$95.00	24.96
Custodial Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	100	LED Retrofit	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	100	0.04	6	0.0	$1.00	$138.26	$20.00	118.07
File Storage	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	300	LED Retrofit	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	210	0.22	115	0.0	$17.90	$783.44	$100.00	38.18
Rm 517	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.58	1,621	0.0	$252.06	$2,199.12	$310.00	7.49
Rm 517 restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	300	LED Retrofit	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	300	0.02	11	0.0	$1.77	$83.43	$10.00	41.47
Rm 516	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.58	1,621	0.0	$252.06	$2,199.12	$310.00	7.49
Rm 516 restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	300	LED Retrofit	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	300	0.02	11	0.0	$1.77	$83.43	$10.00	41.47
Rm 515	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.58	1,621	0.0	$252.06	$2,199.12	$310.00	7.49
Rm 510	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.19	540	0.0	$84.02	$669.04	$100.00	6.77
Rm 510 restroom	1	Incandescent: 60 W Incadescent	Wall Switch	60	300	Relamp	No	1	LED Screw-In Lamps: 9W Screw-in LED Bulb	Wall Switch	9	300	0.03	18	0.0	$2.74	$15.50	$10.00	2.01
Rm 508	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.58	1,621	0.0	$252.06	$2,199.12	$310.00	7.49
Rm 506	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.58	1,621	0.0	$252.06	$2,199.12	$310.00	7.49
Rm 505	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.58	1,621	0.0	$252.06	$2,199.12	$310.00	7.49
Rm 504	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.58	1,621	0.0	$252.06	$2,199.12	$310.00	7.49
500 Wing Front Hall	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,100	LED Retrofit	No	12	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,100	0.26	956	0.0	$148.74	$1,001.16	$120.00	5.92
500 Wing Front Hall	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
500 Wing Back Hall	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,100	LED Retrofit	No	6	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,100	0.13	478	0.0	$74.37	$500.58	$60.00	5.92
500 Wing Back Hall	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
500 Wing Middle Hall	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,100	LED Retrofit	No	8	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,100	0.17	638	0.0	$99.16	$667.44	$80.00	5.92

	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
Custodial Closet	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	100	LED Retrofit	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	100	0.04	8	0.0	$1.18	$166.86	$20.00	124.41
Boys Rm	5	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	600	LED Retrofit	Yes	5	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	420	0.24	253	0.0	$39.38	$961.30	$135.00	20.98
Girls Rm	5	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	600	LED Retrofit	Yes	5	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	420	0.24	253	0.0	$39.38	$961.30	$135.00	20.98
A-16	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	3	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.14	405	0.0	$63.01	$684.78	$95.00	9.36
A-16 restroom	1	Incandescent: 60 W Incadescent	Wall Switch	60	300	Relamp	No	1	LED Screw-In Lamps: 9W Screw-in LED Bulb	Wall Switch	9	300	0.03	18	0.0	$2.74	$15.50	$10.00	2.01
A-15	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.58	1,621	0.0	$252.06	$2,199.12	$310.00	7.49
A-14	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.58	1,621	0.0	$252.06	$2,199.12	$310.00	7.49
A-13	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.58	1,621	0.0	$252.06	$2,199.12	$310.00	7.49
Rm 202	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.58	1,621	0.0	$252.06	$2,199.12	$310.00	7.49
Rm 203	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.58	1,621	0.0	$252.06	$2,199.12	$310.00	7.49
Rm 204	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.58	1,621	0.0	$252.06	$2,199.12	$310.00	7.49
Rm 205	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.58	1,621	0.0	$252.06	$2,199.12	$310.00	7.49
Rm 206	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.58	1,621	0.0	$252.06	$2,199.12	$310.00	7.49
Rm 207	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.58	1,621	0.0	$252.06	$2,199.12	$310.00	7.49
Rm 208	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.58	1,621	0.0	$252.06	$2,199.12	$310.00	7.49
Rm 205A	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	1	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.05	135	0.0	$21.00	$254.26	$40.00	10.20
Rm 205B	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	1	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.05	135	0.0	$21.00	$254.26	$40.00	10.20
Men's Rm	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	600	LED Retrofit	Yes	3	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	420	0.14	152	0.0	$23.63	$530.78	$80.00	19.08
Women's Rm	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	600	LED Retrofit	Yes	3	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	420	0.14	152	0.0	$23.63	$530.78	$80.00	19.08
Custodial Closet	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	No	2	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	1,600	0.07	206	0.0	$32.05	$276.52	$40.00	7.38
Corridor (near Rm 215)	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,600	LED Retrofit	No	6	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,600	0.13	364	0.0	$56.66	$500.58	$60.00	7.78
Courtyard	3	Incandescent: 60 W Incadescent	Wall Switch	60	1,600	Relamp	No	3	LED Screw-In Lamps: 9W Screw-in LED Bulb	Wall Switch	9	1,600	0.10	282	0.0	$43.78	$46.50	$30.00	0.38
Men's Rm	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	1	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.05	135	0.0	$21.00	$254.26	$40.00	10.20
Center Hallway	17	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,100	LED Retrofit	No	17	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,100	0.37	1,355	0.0	$210.71	$1,418.31	$170.00	5.92
Center Hallway	4	Exit Signs: LED - 2 W Lamp	Wall Switch	6	8,760	None	No	4	Exit Signs: LED - 2 W Lamp	Wall Switch	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

	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
200 Wing Corridor	13	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,100	LED Retrofit	No	13	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,100	0.28	1,036	0.0	$161.13	$1,084.59	$130.00	5.92
200 Wing Corridor	2	Exit Signs: LED - 2 W Lamp	Wall Switch	6	8,760	None	No	2	Exit Signs: LED - 2 W Lamp	Wall Switch	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rm 117	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.58	1,621	0.0	$252.06	$2,199.12	$310.00	7.49
Rm 117 restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	300	LED Retrofit	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	300	0.02	11	0.0	$1.77	$83.43	$10.00	41.47
Rm 116	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.58	1,621	0.0	$252.06	$2,199.12	$310.00	7.49
Rm 116 restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	300	LED Retrofit	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	300	0.02	11	0.0	$1.77	$83.43	$10.00	41.47
Rm 115	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.58	1,621	0.0	$252.06	$2,199.12	$310.00	7.49
Rm 108	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.58	1,621	0.0	$252.06	$2,199.12	$310.00	7.49
Rm 106	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.58	1,621	0.0	$252.06	$2,199.12	$310.00	7.49
Rm 105	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.58	1,621	0.0	$252.06	$2,199.12	$310.00	7.49
Rm 104	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,600	LED Retrofit	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,120	0.58	1,621	0.0	$252.06	$2,199.12	$310.00	7.49
100 Wing Back Hall	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,100	LED Retrofit	No	6	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,100	0.13	478	0.0	$74.37	$500.58	$60.00	5.92
100 Wing Back Hall	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
100 Wing Middle Hall	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,100	LED Retrofit	No	8	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,100	0.17	638	0.0	$99.16	$667.44	$80.00	5.92

Motor Inventory & Recommendations

		Existing Conditions						Proposed Conditions				Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	Motor Quantity	Motor Application	HP Per Motor	Full Load Efficiency	VFD Control?	Annual Operating Hours	Install High Efficiency Motors?	Full Load Efficiency	Install VFDs?	Number of VFDs	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Boiler Rm	Hot Water Heating System	2	Boiler Feed Water Pump	7.5	91.7%	Yes	3,391	No	91.7%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	Kitchen Range Hood	1	Kitchen Hood Exhaust Fan	2.0	84.0%	No	5,250	No	84.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Electric HVAC Inventory & Recommendations

		Existing Conditions				Proposed Conditions								Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (kBtu/hr)	Install High Efficiency System?	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (kBtu/hr)	Cooling Mode Efficiency (SEER/EER)	Heating Mode Efficiency (COP)	Install Dual Enthalpy Economizer?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Rooftop	Multiple	3	Packaged AC	18.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Multiple	2	Packaged AC	20.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Multiple	Multiple	8	Ductless Mini-Split HP	8.00	108.00	No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Server Rm	Multiple	1	Ductless Mini-Split AC	2.75		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Multiple	3	Packaged AC	7.67		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Multiple	1	Packaged AC	10.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Multiple	2	Packaged AC	3.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Multiple	1	Packaged AC	15.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Multiple	1	Packaged AC	10.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Multiple	1	Packaged AC	3.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Multiple	Multiple	6	Ductless Mini-Split HP	6.00	81.00	No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Multiple	1	Packaged Air-Source HP	3.00	37.00	No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Multiple	2	Packaged AC	3.00		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
Boiler Room	Baseboard Radiators	2	Condensing Hot Water Boiler	1,500.00	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Half of Cafeteria + IMC Area	2	Furnace	324.00	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	100, 300, 400 Wings	3	Furnace	218.70	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Half of Cafeteria	1	Furnace	243.00	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Interior Office	1	Furnace	162.00	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Kitchen Make-up Air	1	Furnace	121.50	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Hallways + Outer Office	3	Furnace	121.50	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00

DHW Inventory & Recommendations

		Existing Conditions		Proposed Conditions						Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Replace?	System Quantity	System Type	Fuel Type	System Efficiency	Efficiency Units	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Boiler Room	All	2	Storage Tank Water Heater (≤ 50 Gal)	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Walk-In Cooler/Freezer Inventory & Recommendations

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

Commercial Refrigerator/Freezer Inventory & Recommendations

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

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	4	Gas Convection Oven (Half Size)	Yes	No	0.00	0	0.0	$0.00	$28,475.26	$2,000.00	0.00
Kitchen	1	Gas Steamer	No	No	0.00	0	0.0	$0.00	$7,422.50	$2,000.00	0.00

Plug Load Inventory

	Existing Conditions			
Location	Quantity	Equipment Description	Energy Rate (W)	ENERGY STAR Qualified?
Multiple	31	Med. Sized Television	150.0	No
Multiple	5	Microwaves	800.0	No
Multiple	19	Video projectors	28.0	No
Multiple	3	Toaster Ovens	800.0	No
Multiple	4	Coffee Makers	900.0	No
Multiple	350	Computers	109.0	Yes
Multiple	350	LED Monitors	41.0	Yes
Multiple	5	Med. Printers	80.0	Yes
Multiple	3	Sm. Printers	13.0	Yes
Server Rm	1	Server	450.0	Yes
Main Office	1	Lg Color Copier	240.0	Yes
Main Office	1	Lg B&W Copier	165.0	Yes

Vending Machine Inventory & Recommendations

	Existing Conditions		Proposed Conditions	Energy Impact & Financial Analysis						
Location	Quantity	Vending Machine Type	Install Controls?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Faculty Lounge	2	Refrigerated	Yes	0.00	3,224	0.0	$501.37	$742.24	$0.00	1.48
Faculty Lounge	1	Non-Refrigerated	No	0.00	0	0.0	$0.00	$718.80	$0.00	0.00

Appendix B: ENERGY STAR® Statement of Energy Performance

ENERGY STAR® Statement of Energy Performance

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ENERGY STAR® Score[1]

Frog Pond Elementary School

Primary Property Type: K-12 School
Gross Floor Area (ft²): 105,000
Built: 1989

For Year Ending: December 31, 2015
Date Generated: January 19, 2017

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
Frog Pond Elementary School 305 Frog Pond Road Little Egg Harbor, New Jersey 08087	Little Egg Harbor School District 305 Frog Pond Rd Little Egg Harbor, NJ 08087 (____)____-_____	Katrina Reigelman 305 Frog Pond Rd Little Egg Harbor, NJ 08087 609-296-1719 ext.1010 treigelman@lehsd.k12.nj.us

Property ID: 5729295

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
59 kBtu/ft²

Source EUI
123.9 kBtu/ft²

Annual Energy by Fuel	
Electric - Solar (kBtu)	139,182 (2%)
Electric - Grid (kBtu)	3,114,327 (50%)
Natural Gas (kBtu)	2,944,990 (48%)

National Median Comparison	
National Median Site EUI (kBtu/ft²)	78.3
National Median Source EUI (kBtu/ft²)	164.3
% Diff from National Median Source EUI	-25%
Annual Emissions	
Greenhouse Gas Emissions (Metric Tons CO2e/year)	514

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)