Local Government Energy Audit:
Energy Audit Report

Sharon Elementary School

234 Sharon Rd

Robbinsville, NJ 08691

Robbinsville Board of Education

September 5, 2018

Final Report by:

TRC Energy Services

Disclaimer

The intent of this energy analysis report is to identify energy savings opportunities and recommend upgrades to the facility's energy using equipment and systems. Approximate saving 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 the Sharon Elementary School.

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

This study was conducted by TRC Energy Services (TRC), as part of a comprehensive effort to assist New Jersey public schools in controlling energy costs and protecting our environment by offering a wide range of energy management options and advice.

1.1 Building Summary

The Sharon Elementary School is a 142,000 square foot building comprised of various space types including classrooms, offices, gymnasium, storage spaces, and mechanical spaces.

Lighting at the Sharon Elementary School consists of aging and inefficient fluorescent light fixtures. HVAC equipment is in good condition. Heating is supplied by four hot water boilers. Domestic hot water is produced by three separate tank water heaters. A thorough description of the building and our observations are in Section 2.

1.2 Your Cost Reduction Opportunities

Energy Conservation Measures

TRC evaluated seven measures, and recommends six, which together represent an opportunity for the Sharon Elementary School to reduce annual energy costs by $30,602 and annual greenhouse gas emissions by 263,742 lbs. CO_2e. We estimate that if all measures were implemented as recommended, the project would pay for itself in 5.2 years. The breakdown of existing and potential utility costs after project implementation are illustrated in Figure 1 and Figure 2, respectively. Together these measures represent an opportunity to reduce the Sharon Elementary School's annual energy use by 11%.

Figure 1 – Previous 12 Month Utility Costs

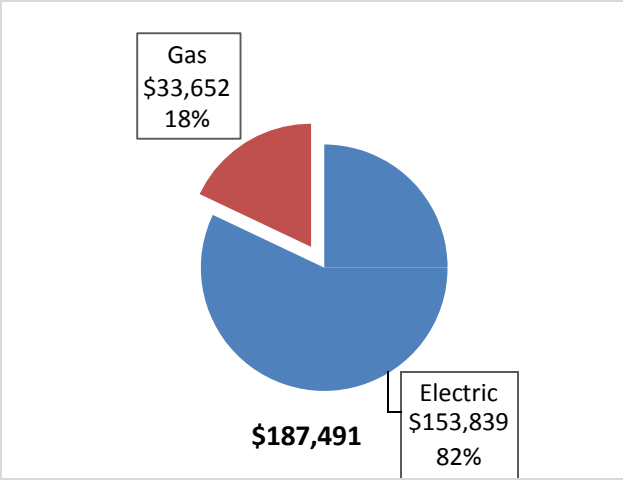
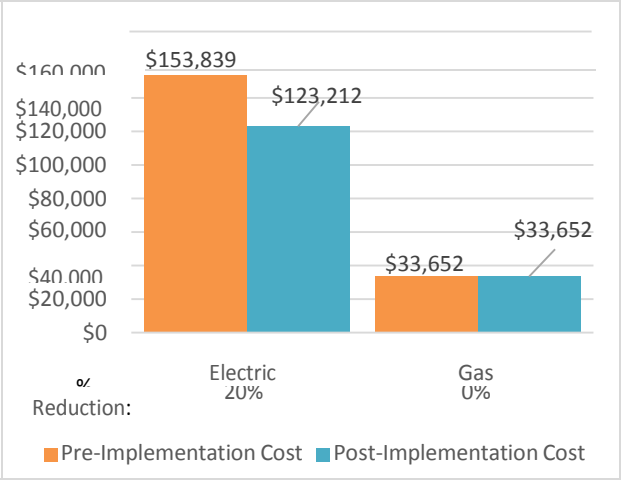


Figure 2 – Potential Post-Implementation Costs



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

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

Figure 3 – Summary of Energy Reduction Opportunities

Energy Conservation Measure		Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades			**230,736**	**39.4**	**0.0**	**$26,959.24**	**$152,238.29**	**$19,445.00**	**$132,793.29**	**4.9**	**232,349**
ECM 1	Install LED Fixtures	Yes	53,160	7.1	0.0	$6,211.17	$63,545.06	$4,685.00	$58,860.06	9.5	53,531
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	261	0.0	0.0	$30.51	$117.00	$10.00	$107.00	3.5	263
ECM 3	Retrofit Fixtures with LED Lamps	Yes	177,315	32.3	0.0	$20,717.56	$88,576.23	$14,750.00	$73,826.23	3.6	178,555
Lighting Control Measures			**19,608**	**2.9**	**0.0**	**$2,291.01**	**$18,318.00**	**$1,775.00**	**$16,543.00**	**7.2**	**19,745**
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	14,283	2.1	0.0	$1,668.86	$14,118.00	$1,775.00	$12,343.00	7.4	14,383
ECM 5	Install High/Low Lighting Controls	Yes	5,325	0.8	0.0	$622.16	$4,200.00	$0.00	$4,200.00	6.8	5,362
Motor Upgrades			**215**	**0.0**	**0.0**	**$25.10**	**$4,954.54**	**$0.00**	**$4,954.54**	**197.4**	**216**
	Premium Efficiency Motors	No	215	0.0	0.0	$25.10	$4,954.54	$0.00	$4,954.54	197.4	216
Variable Frequency Drive (VFD) Measures			**11,567**	**3.3**	**0.0**	**$1,351.47**	**$13,765.30**	**$3,875.00**	**$9,890.30**	**7.3**	**11,648**
ECM 6	Install VFD on Variable Air Volume (VAV) HVAC	Yes	11,567	3.3	0.0	$1,351.47	$13,765.30	$3,875.00	$9,890.30	7.3	11,648
TOTAL FOR ALL MEASURES			**262,125**	**45.7**	**0.0**	**$30,626.82**	**$189,276.13**	**$25,095.00**	**$164,181.13**	**5.4**	**263,958**
TOTAL FOR RECOMMENDED MEASURES			**261,911**	**45.7**	**0.0**	**$30,601.72**	**$184,321.59**	**$25,095.00**	**$159,226.59**	**5.2**	**263,742**

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

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

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

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

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

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

Energy Efficient Practices

TRC also identified 14 low cost (or no cost) energy efficient practices. A building's energy performance can be significantly improved by employing certain behavioral or operational adjustments and by performing better routine maintenance on building systems. These practices can extend equipment lifetime, improve occupant comfort, provide better health and safety, as well as reduce annual energy and O&M costs. Potential opportunities identified at the Sharon Elementary School include:

- Reduce Air Leakage
- Use Window Treatments/Coverings
- Perform Proper Lighting Maintenance
- Develop a Lighting Maintenance Schedule
- Ensure Lighting Controls Are Operating Properly
- Use Fans to Reduce Cooling Load
- Practice Proper Use of Thermostat Schedules and Temperature Resets
- Clean Evaporator/Condenser Coils on AC Systems
- Clean and/or Replace HVAC Filters
- Perform Proper Boiler Maintenance
- Perform Proper Water Heater Maintenance
- Install Plug Load Controls
- Replace Computer Monitors
- Water Conservation

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

On-Site Generation Measures

TRC evaluated the potential for installing on-site generation for the Sharon 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	107	kW DC STC
Electric Generation	127,477	kWh/yr
Displaced Cost	$11,090	/yr
Installed Cost	$278,200	

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

1.3 Implementation Planning

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

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

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

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

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

For larger facilities with limited capital availability to implement ECMs, project financing may be available through the Energy Savings Improvement Program (ESIP). Supported directly by the NJBPU, ESIP provides government agencies with project development, design, and implementation support services, as well as, attractive financing for implementing ECMs. An LGEA report (or other approved energy audit) is required for participation in ESIP. Please refer to Section 8.3 for additional information on the ESIP Program.

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

Additional information on relevant incentive programs is in Section 8. You may also check the following website for more details: www.njcleanenergy.com/ci.

2 BUILDING INFORMATION AND EXISTING CONDITIONS

2.1 Project Contacts

Figure 5 – Project Contacts

Name	Role	E-Mail	Phone #
Customer			
Kim Keener	Director of Facilities and Community Education	kkeener@robbinsville.k12.nj.us	609-632-0910
Designated Representative			
Kim Keener	Director of Facilities and Community Education	kkeener@robbinsville.k12.nj.us	609-632-0910
TRC Energy Services			
Alexander Klieverik	Auditor	aklieverik@trcsolutions.com	(732) 855-0033

2.2 General Site Information

On December 19, 2017, TRC performed an energy audit at the Sharon Elementary School located in Robbinsville, New Jersey. TRC's team met with Kim Keener, Director of Facilities and Community Education to review the building operations and help focus our investigation on specific energy-using systems.

The Sharon Elementary School is a 142,000 square foot building comprised of various space types including offices, classrooms, two gymnasiums, cafeteria, media center, kitchen, storage spaces, and mechanical spaces.

The building was originally constructed in 1958. In 2014, a new section was constructed on the east side of the building which added a media center, 13 classrooms, gymnasium, and various mechanical and storage spaces. The two sections are connected via a small corridor. Over the last five years the building has replaced all of its existing T12 fluorescent fixtures with T8 fluorescent fixtures.

2.3 Building Occupancy

The building is open Monday through Friday and as needed on weekends. The typical schedule is presented in the table below. The entire building is used year round by the community and camps are run throughout the summer. During a typical day, the building is occupied by 140 staff and 1,000 students.

Figure 6 - Building Schedule

Building Name	Weekday/Weekend	Operating Schedule
Sharon Elementary School	Weekday	6:00 AM to 4:00 PM
Sharon Elementary School	Weekend	As Needed

2.4 Building Envelope

The building is constructed of concrete block and structural steel with a brick facade. Most sections of the building have flat roofs covered with black membrane that is in fair condition. The two-story section with classrooms, cafeteria, media center, and gymnasium have pitched roofs with asphalt shingles. The building has double pane windows which are in good condition and show little sign of excessive infiltration. The exterior doors are constructed of aluminum and in good condition except that the door seals have worn out which increases the level of outside air infiltration.

2.5 On-Site Generation

The Sharon Elementary School installed a 60 kW solar energy project in 2013. The project included photovoltaic (PV) arrays on the roof of the building. There are approximately 250 PV panels in total. The system provides approximately 15% of the electricity required by the building.

2.6 Energy-Using Systems

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

Lighting System

Lighting at the building is provided mostly by 32-Watt linear fluorescent T8 lamps with electronic ballasts. Most of the fixtures are 2-lamp, 4-foot long troffers or ceiling-mounted fixtures with diffusers.

Some of the small restrooms and storage closets are lit with 18-Watt CFL lamps in recessed can ceiling fixtures.

Lighting control in most of the classrooms is provided by occupancy sensors. The occupancy sensors are either wall or ceiling mounted depending on the space layout. Stairwells, corridors, and main lobby areas, do not have any occupancy sensors and are on continuously while the building is open.

The building's exterior lighting is minimal and consists primarily of high pressure sodium (HPS) and metal halide (MH) fixtures that are controlled by photocells or timers. No lights were seen on during the day.

Hot Water Heating System

The hot water system consists of four AERCO Benchmark 2.0 condensing natural draft boilers with a nominal combustion efficiency of 93%. The boilers are located in two boiler rooms, the old boiler room and new boiler room, and configured on two distribution loops with two boilers on each loop. The boilers in the old boiler room service the old section of the building from the classrooms in the two-story F section to the classrooms in B corridor. The new boiler room boilers serve the 2014 addition of the building. Each distribution loop has two 7.5 HP pumps with variable frequency drives installed. Hot water is supplied at 180°F when the outside air temperature is below 50°F and the setpoint is reset to 155°F when the outside air is above 65°F. The boilers provide hot water to unit ventilators located in classrooms, rooftop air handler units serving large common areas, and individual unit heaters.

The boilers operate in a lead/lag configuration, with only one pump on each loop necessary for distribution. Both boilers on each loop may be required during cold weather. The lead boiler is rotated based on run hours.

The boilers are in good condition and well maintained.

Air Conditioning System

Cooling at this building is supplied by a mixture of packaged rooftop units, split system ACs, and ductless mini-split ACs and heat pumps. Packaged rooftop units (RTUs) are used to heat and cool certain spaces within the building. There are six Valiant RTUs serving the new section of the building, one AAON RTU for the yellow gym, and one AAON RTU for the kitchen. These units were installed in the last five years, and are in good condition.

The majority of cooling at this building is supplied by split-system ACs of varying capacities. The media center is cooled via a 15-ton Trane unit located on the roof of the gym. The blue gym and multi-purpose room are each served by 10-ton Trane units, two units for the blue gym, and one for the multi-purpose room. The old section of the building, including the computer room and classrooms in the E wing, are cooled by seventeen 5-ton United Cool Air units. There are also two 4-ton units serving the E wing corridor and two classrooms.

The units are controlled by individual thermostats located in the designated space.

There are also some mini-split ACs for various smaller spaces throughout the building. The main office, two server rooms, and the gym office are served by individual cooling-only heat pumps with a capacity of 3 tons or less.

Domestic Hot Water Heating System

The domestic hot water heating system for the building consists of three gas-fired water heaters. One of the units at the building is a Bradford White 300 MBH natural draft water heater with a storage capacity of 75 gallons and is located in the old boiler room. The unit located in the new boiler room is a gas-fired 120 MBH natural draft water heater with a storage capacity of 75 gallons. There is an additional water heater located in a mechanical room with a capacity of 100 gallons and rated at 199 MBH. Each water heater has a fractional HP recirculation pump to distribute 125°F water to the entire building. The recirculation pumps operate based on an aquastat.



Food Service Equipment

The building has a small commercial kitchen that is used to prepare lunches for the students. The major food items are prepared at the high school and delivered to the elementary school. There are two gas fired ovens, one electric oven, and three insulated food holding cabinets. There are two 24 cu. ft. refrigerator chests that are used to store milk cartons and various other items for student lunches. The kitchen also has a walk-in refrigerator and freezer. There is a conveyor dishwasher with an electric booster heater that provides 145°F rinse water.



Building Plug Load

There are 116 computer work stations throughout the building. Ninety percent of the computers are desktop units with LCD monitors. There is no centralized PC power management software installed.


The building has a large number of Chromebook laptops with charging carts, classroom projectors, and CRT televisions that contribute to the plug load of the building.

2.7 Water-Using Systems

There are six boy's restrooms, and six girl's restrooms with four to six stalls and multiple sinks throughout this building. There are eighteen single-occupant restrooms located in classrooms, the nurse's office, kitchen, and the main office. A sampling of restrooms found that the faucets are rated for 2.2 gallons per minute (gpm) or lower, the toilets are rated at 2.5 gallons per flush (gpf) and the urinals are rated at 2 gpf.


3 SITE ENERGY USE AND COSTS

Utility data for electricity and natural gas was analyzed to identify opportunities for savings. In addition, data for electricity and natural gas was evaluated to determine the annual energy performance metrics for the building in energy cost per square foot and energy usage per square foot. These metrics are an estimate of the relative energy efficiency of this building. There are a number of factors that could cause the energy use of this building to vary from the "typical" energy usage profile for facilities with similar characteristics. Local weather conditions, building age and insulation levels, equipment efficiency, daily occupancy hours, changes in occupancy throughout the year, equipment operating hours, and energy efficient behavior of occupants all contribute to benchmarking scores. Please refer to the Benchmarking section within Section 3.4 for additional information.

3.1 Total Cost of Energy

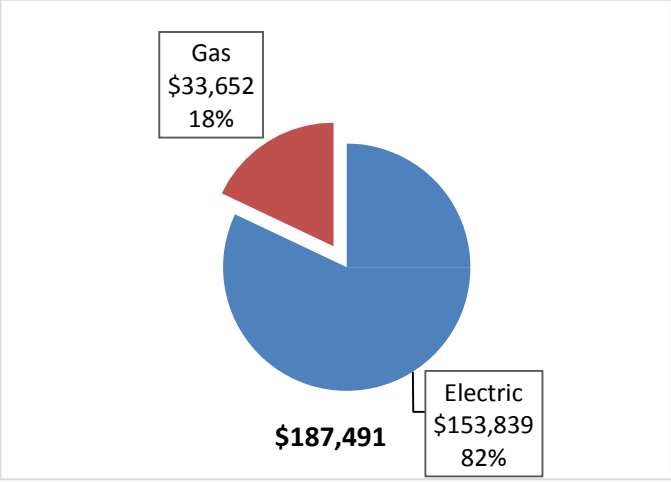
The following energy consumption and cost data is based on the last 12-month period of utility billing data that was provided for each utility. A profile of the annual energy consumption and energy cost of the building was developed from this information.

Figure 7 - Utility Summary

Utility Summary for Sharon Elementary School		
Fuel	**Usage**	**Cost**
Electricity	1,316,657 kWh	$153,839
Natural Gas	38,781 Therms	$33,652
Total		**$187,491**

The current annual energy cost for this building is $187,491 as shown in the chart below.

Figure 8 - Energy Cost Breakdown



3.2 Electricity Usage

Electricity is provided by JCP&L. The average electric cost over the past 12 months was $0.117/kWh, which is the blended rate that includes energy supply, distribution, and other charges. This rate is used throughout the analyses in this report to assess energy costs and savings. The monthly electricity consumption and peak demand are shown in the chart below.

Figure 9 - Electric Usage & Demand

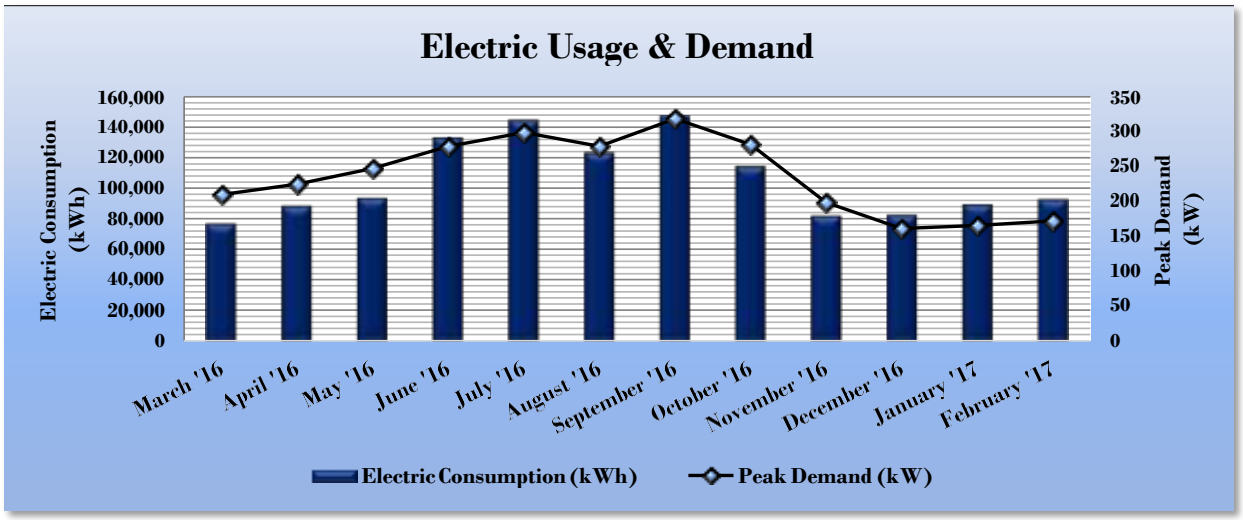


Figure 10 - Electric Usage & Demand

Electric Billing Data for Sharon Elementary School					
Period Ending	Days in Period	Electric Usage (kWh)	Demand (kW)	Demand Cost	Total Electric Cost
3/31/16	28	76,741	210	$578	$8,935
4/29/16	28	88,277	225	$668	$9,918
5/27/16	25	93,441	247	$666	$10,664
6/29/16	32	132,845	279	$883	$15,273
8/1/16	32	144,282	299	$883	$16,401
8/31/16	29	123,173	279	$874	$14,083
9/29/16	28	147,053	318	$811	$17,295
10/31/16	31	114,328	281	$686	$13,632
11/30/16	29	81,932	198	$488	$9,687
12/30/16	29	82,320	161	$563	$9,804
1/30/17	30	89,148	165	$702	$10,989
3/2/17	30	92,615	172	$706	$11,256
Totals	**351**	**1,266,155**	**318.3**	**$8,509**	**$147,938**
Annual	**365**	**1,316,657**	**318.3**	**$8,849**	**$153,839**

3.3 Natural Gas Usage

Natural gas is provided by PSE&G. The average gas cost for the past 12 months is $0.868/therm, which is the blended rate used throughout the analyses in this report. The monthly gas consumption is shown in the chart below.

Figure 11 - Natural Gas Usage

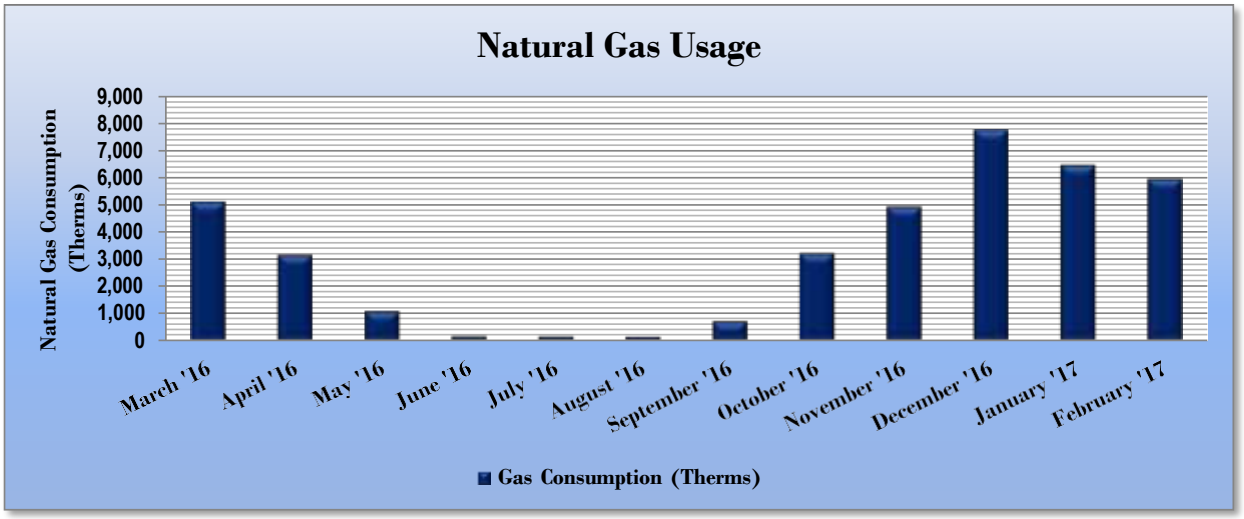


Figure 12 - Natural Gas Usage

Gas Billing Data for Sharon Elementary School			
Period Ending	Days in Period	Natural Gas Usage (Therms)	Natural Gas Cost
4/11/16	32	5,105	$2,616
5/10/16	29	3,144	$1,703
6/9/16	30	1,072	$659
7/11/16	31	147	$188
8/9/16	29	136	$190
9/8/16	30	126	$182
10/7/16	29	704	$540
11/7/16	31	3,196	$3,469
12/8/16	31	4,912	$4,722
1/10/17	33	7,740	$7,256
2/8/17	29	6,450	$6,476
3/10/17	30	5,941	$5,560
Totals	**364**	**38,674**	**$33,560**
Annual	**365**	**38,781**	**$33,652**

3.4 Benchmarking

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

Figure 13 - Energy Use Intensity Comparison – Existing Conditions

Energy Use Intensity Comparison - Existing Conditions		
	Sharon Elementary School	National Median Building Type: School (K-12)
Source Energy Use Intensity (kBtu/ft^2)	128.0	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		
	Sharon Elementary School	National Median Building Type: School (K-12)
Source Energy Use Intensity (kBtu/ft^2)	108.3	141.4
Site Energy Use Intensity (kBtu/ft^2)	52.7	58.2

Many types of commercial buildings are also eligible to receive an ENERGY STAR® score. This score is a percentile ranking from 1 to 100. It compares your building's energy performance to similar buildings nationwide. A score of 50 represents median energy performance, while a score of 75 means your building performs better than 75% of all similar buildings nationwide and may be eligible for ENERGY STAR® certification. Your building is one of the building categories that are eligible to receive a score. This building has a current score of 60.

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

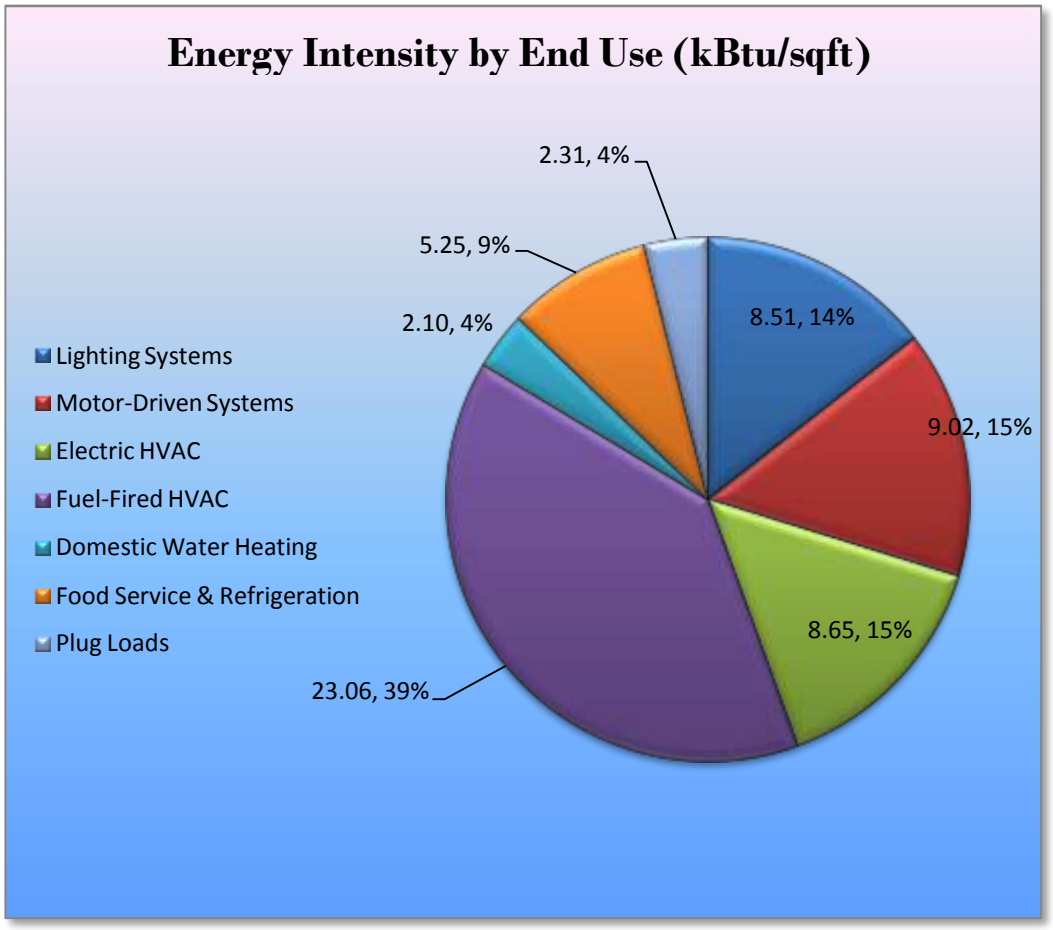
For more information on ENERGY STAR® certification go to: https://www.energystar.gov/buildings/building-owners-and-managers/existing-buildings/earn-recognition/energy-star-certification/how-app-1.

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

3.5 Energy End-use Breakdown

In order to provide a complete overview of energy consumption across building systems, an energy balance was performed at this building. 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/SF)



4 ENERGY CONSERVATION MEASURES

Level of Analysis

The goal of this audit report is to identify potential energy efficiency opportunities, help prioritize specific measures for implementation, and provide information to the Sharon 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 building.

Figure 16 – Summary of Recommended ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		**230,736**	**39.4**	**0.0**	**$26,959.24**	**$152,238.29**	**$19,445.00**	**$132,793.29**	**4.9**	**232,349**
ECM 1	Install LED Fixtures	53,160	7.1	0.0	$6,211.17	$63,545.06	$4,685.00	$58,860.06	9.5	53,531
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	261	0.0	0.0	$30.51	$117.00	$10.00	$107.00	3.5	263
ECM 3	Retrofit Fixtures with LED Lamps	177,315	32.3	0.0	$20,717.56	$88,576.23	$14,750.00	$73,826.23	3.6	178,555
Lighting Control Measures		**19,608**	**2.9**	**0.0**	**$2,291.01**	**$18,318.00**	**$1,775.00**	**$16,543.00**	**7.2**	**19,745**
ECM 4	Install Occupancy Sensor Lighting Controls	14,283	2.1	0.0	$1,668.86	$14,118.00	$1,775.00	$12,343.00	7.4	14,383
ECM 5	Install High/Low Lighting Controls	5,325	0.8	0.0	$622.16	$4,200.00	$0.00	$4,200.00	6.8	5,362
Variable Frequency Drive (VFD) Measures		**11,567**	**3.3**	**0.0**	**$1,351.47**	**$13,765.30**	**$3,875.00**	**$9,890.30**	**7.3**	**11,648**
ECM 6	Install VFD on Variable Air Volume (VAV) HVAC	11,567	3.3	0.0	$1,351.47	$13,765.30	$3,875.00	$9,890.30	7.3	11,648
TOTALS		**261,911**	**45.7**	**0.0**	**$30,601.72**	**$184,321.59**	**$25,095.00**	**$159,226.59**	**5.2**	**263,742**

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

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

4.1.1 Lighting Upgrades

Our recommendations for upgrades to existing lighting fixtures are summarized in Figure 17 below.

Figure 17 – Summary of Lighting Upgrade ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		**230,736**	**39.4**	**0.0**	**$26,959.24**	**$152,238.29**	**$19,445.00**	**$132,793.29**	**4.9**	**232,349**
ECM 1	Install LED Fixtures	53,160	7.1	0.0	$6,211.17	$63,545.06	$4,685.00	$58,860.06	9.5	53,531
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	261	0.0	0.0	$30.51	$117.00	$10.00	$107.00	3.5	263
ECM 3	Retrofit Fixtures with LED Lamps	177,315	32.3	0.0	$20,717.56	$88,576.23	$14,750.00	$73,826.23	3.6	178,555

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

ECM 1: Install LED Fixtures

Summary of Measure Economics

Interior/ Exterior	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Interior	8,350	1.2	0.0	$975.66	$10,031.33	$185.00	$9,846.33	10.1	8,409
Exterior	44,809	5.8	0.0	$5,235.52	$53,513.73	$4,500.00	$49,013.73	9.4	45,122

Measure Description

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

Additional savings from lighting maintenance can be anticipated since LEDs have lifetimes which are more than twice that of a fluorescent tubes and more than ten 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	261	0.0	0.0	$30.51	$117.00	$10.00	$107.00	3.5	263
Exterior	0	0.0	0.0	$0.00	$0.00	$0.00	$0.00	0.0	0

Measure Description

We recommend retrofitting existing fluorescent fixtures by removing fluorescent tubes and ballasts and replacing them with LEDs and LED drivers (if necessary), which are designed to be used for retrofitting fluorescent fixtures. The measure uses the existing fixture housing but replaces the rest of the components with more efficient lighting components. 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 last more than twice that of fluorescent tubes and more than ten 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	177,315	32.3	0.0	$20,717.56	$88,576.23	$14,750.00	$73,826.23	3.6	178,555
Exterior	0	0.0	0.0	$0.00	$0.00	$0.00	$0.00	0.0	0

Measure Description

We recommend retrofitting existing incandescent, halogen, 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 LEDs which use less power than other lighting technologies yet provide equivalent lighting output for the space.

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

4.1.2 Lighting Control Measures

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

Figure 18 – Summary of Lighting Control ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Lighting Control Measures		**19,608**	**2.9**	**0.0**	**$2,291.01**	**$18,318.00**	**$1,775.00**	**$16,543.00**	**7.2**	**19,745**
ECM 4	Install Occupancy Sensor Lighting Controls	14,283	2.1	0.0	$1,668.86	$14,118.00	$1,775.00	$12,343.00	7.4	14,383
ECM 5	Install High/Low Lighting Controls	5,325	0.8	0.0	$622.16	$4,200.00	$0.00	$4,200.00	6.8	5,362

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

ECM 4: Install Occupancy Sensor Lighting Controls

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
14,283	2.1	0.0	$1,668.86	$14,118.00	$1,775.00	$12,343.00	7.4	14,383

Measure Description

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

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

ECM 5: Install High/Low Lighting Controls

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
5,325	0.8	0.0	$622.16	$4,200.00	$0.00	$4,200.00	6.8	5,362

Measure Description

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

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

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

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

4.1.3 Variable Frequency Drive Measures

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

Figure 19 – Summary of Variable Frequency Drive ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Variable Frequency Drive (VFD) Measures		**11,567**	**3.3**	**0.0**	**$1,351.47**	**$13,765.30**	**$3,875.00**	**$9,890.30**	**7.3**	**11,648**
ECM 6	Install VFD on Variable Air Volume (VAV) HVAC	11,567	3.3	0.0	$1,351.47	$13,765.30	$3,875.00	$9,890.30	7.3	11,648

ECM 6: Install VFD on Variable Air Volume (VAV) HVAC

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
11,567	3.3	0.0	$1,351.47	$13,765.30	$3,875.00	$9,890.30	7.3	11,648

Measure Description

We recommend replacing existing air handling unit (AHU) air volume control devices on (such as inlet vanes and variable pitch fan blades) with variable frequency drives (VFDs). Inlet guide vanes and variable pitch fan blades are an inefficient means of controlling the air volume compared to VFDs. The existing volume control device would be removed, or permanently disabled, and direct the control signal to the VFD to determine appropriate fan motor speed. Energy savings results from more efficient control of motor energy usage when fan motors are operated at partial load. The magnitude of energy savings is based on the estimated amount of time that fan motors would be operated at partial load.

Additional maintenance savings may result from this measure as well, since VFDs are solid state electronic device, which generally requires less maintenance than mechanical air volume control devices.

4.2 ECMs Evaluated But Not Recommended

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

Figure 20 – Summary of Measures Evaluated, But Not Recommended

Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Motor Upgrades	**215**	**0.0**	**0.0**	**$25.10**	**$4,954.54**	**$0.00**	**$4,954.54**	**197.4**	**216**
Premium Efficiency Motors	215	0.0	0.0	$25.10	$4,954.54	$0.00	$4,954.54	197.4	216
TOTALS	**215**	**0.0**	**0.0**	**$25.10**	**$4,954.54**	**$0.00**	**$4,954.54**	**197.4**	**216**

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

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

Premium Efficiency Motors

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
215	0.0	0.0	$25.10	$4,954.54	$0.00	$4,954.54	197.4	216

Measure Description

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

Reasons for not Recommending

Due to the long payback period, we do not recommend replacing standard efficiency motors with high efficiency motors at this time.

5 ENERGY EFFICIENT PRACTICES

In addition to the quantifiable savings estimated in Section 4, a building'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 building. 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.

Use Window Treatments/Coverings

A substantial amount of heat gain can occur through uncovered or untreated windows, especially older single pane windows and east or west-facing windows. Treatments such as high-reflectivity films or covering windows with shades or shutters can reduce solar heat gain and, consequently, cooling load and can reduce internal heat loss and the associated heating load.

Perform Regular Lighting Maintenance

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

Develop a Lighting Maintenance Schedule

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

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.

Use Fans to Reduce Cooling Load

Utilizing ceiling fans to supplement cooling is a low cost strategy to reduce cooling load considerably. Thermostat settings can be increased by 4°F with no change in overall occupant comfort when the wind chill effect of moving air is employed for cooling.

Practice Use of Thermostat Schedules and Temperature Resets

Ensure thermostats are correctly set back. By employing proper set back temperatures and schedules, building 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°F-10°F during low occupancy hours (reduce heating setpoints and increase cooling setpoints). Cooling load can be reduced further by increasing the building'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 building'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 Regular 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 Water Heater Maintenance

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

Plug Load Controls

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

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.

Water Conservation

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

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

6 On-Site Generation Measures

On-site generation measure options include both renewable (e.g., solar, wind) and non-renewable (e.g., fuel cells) on-site technologies that generate power to meet all or a portion of the electric energy needs of a building, 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 building. 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.

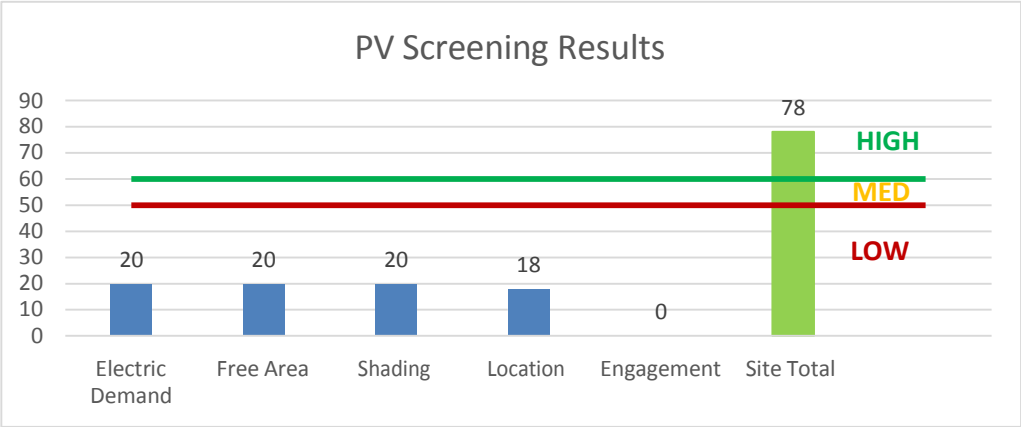
6.1 Photovoltaic

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 building'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 building's electric demand, size and location of free area, and shading elements shows that the building has a High potential for installing a PV array.

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

Figure 21 - Photovoltaic Screening



Potential	High	
System Potential	107	kW DC STC
Electric Generation	127,477	kWh/yr
Displaced Cost	$11,090	/yr
Installed Cost	$278,200	

Solar projects must register their projects in the SREC (Solar Renewable Energy Certificate) Registration Program (SRP) prior to the start of construction in order to establish the project's eligibility to earn SRECs. Registration of the intent to participate in New Jersey's solar marketplace provides market participants with information about developed new solar projects and insight into future SREC pricing. Refer to Section 8.2 for additional information.

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

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

6.2 Combined Heat and Power

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

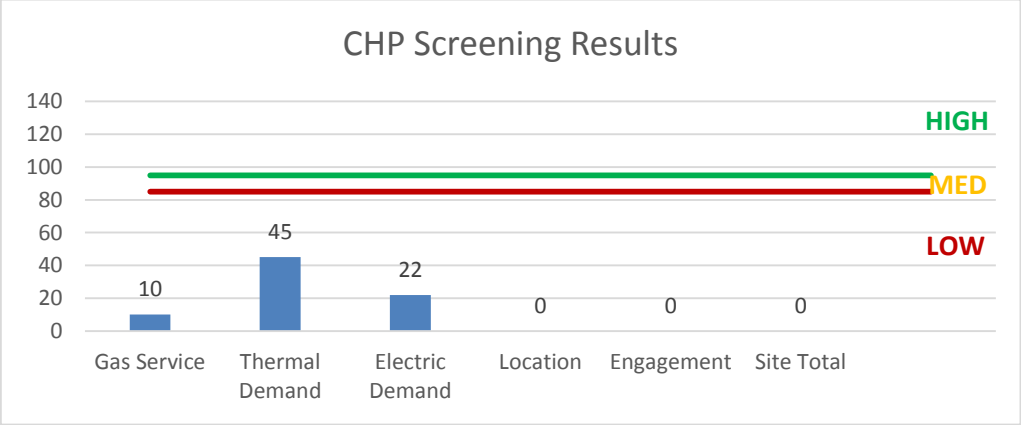
CHP systems are typically used to produce a portion of the electric power used onsite by a building, with the balance of electric power needs supplied by grid purchases. The heat is used to supplement (or supplant) existing boilers for the purpose of space heating and/or domestic hot water heating. Waste 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 building's ability to use the recovered heat. Facilities with continuous use for large quantities of waste heat are the best candidates for CHP.

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

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

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

Figure 22 - Combined Heat and Power Screening



7 DEMAND RESPONSE

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

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

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

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

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

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

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

8 PROJECT FUNDING / INCENTIVES

The NJCEP is able to provide the incentive programs described below, and other benefits to ratepayers, because of the Societal Benefits Charge (SBC) Fund. The SBC was created by the State of New Jersey's Electricity Restructuring Law (1999), which requires all customers of investor-owned electric and gas utilities to pay a surcharge on their monthly energy bills. As a customer of a state-regulated electric or gas utility and therefore a contributor to the fund your organization is eligible to participate in the LGEA program and also eligible to receive incentive payment for qualifying energy efficiency measures. Also available through the NJBPU are some alternative financing programs described later in this section. Please refer to Figure 23 for a list of the eligible programs identified for each recommended ECM.

Figure 23 - ECM Incentive Program Eligibility

Energy Conservation Measure		SmartStart Prescriptive	SmartStart Custom	Direct Install	Pay For Performance Existing Buildings	Large Energy Users Program	Combined Heat & Power and Fuel Cell
ECM 1	Install LED Fixtures	X					
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	X					
ECM 3	Retrofit Fixtures with LED Lamps	X					
ECM 4	Install Occupancy Sensor Lighting Controls	X					
ECM 5	Install High/Low Lighting Controls						
ECM 6	Install VFD on Variable Air Volume (VAV) HVAC						

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

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

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

8.1 SmartStart

Overview

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

Equipment with Prescriptive Incentives Currently Available:

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

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

Incentives

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

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

How to Participate

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

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

8.2 SREC Registration Program

The SREC (Solar Renewable Energy Certificate) Registration Program (SRP) is used to register the intent to install solar projects in New Jersey. Rebates are not available for solar projects, but owners of solar projects MUST register their projects in the SRP prior to the start of construction in order to establish the project's eligibility to earn SRECs. Registration of the intent to participate in New Jersey's solar marketplace provides market participants with information about the pipeline of anticipated new solar capacity and insight into future SREC pricing.

After the registration is accepted, construction is complete, and final paperwork has been submitted and is deemed complete, the project is issued a New Jersey certification number which enables it to generate New Jersey SRECs. SRECs 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 SRECs to be placed in the customer's electronic account. SRECs can then be sold on the SREC Tracking System, providing revenue for the first 15 years of the project's life.

Electricity suppliers, the primary purchasers of SRECs, are required to pay a Solar Alternative Compliance Payment (SACP) if they do not meet the requirements of New Jersey's Solar RPS. One way they can meet the RPS requirements is by purchasing SRECs. As SRECs are traded in a competitive market, the price may vary significantly. The actual price of an SREC during a trading period can and will fluctuate depending on supply and demand.

Information about the SRP can be found at: www.njcleanenergy.com/srec.

8.3 Energy Savings Improvement Program

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

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

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

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

The ESIP approach may not be appropriate for all energy conservation and energy efficiency improvements. Entities should carefully consider all alternatives to develop an approach that best meets their needs. A detailed program 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 NJCEP incentive programs to help further reduce costs when developing the ESP. You should refer to the ESIP guidelines at the link above for further information and guidance on next steps.

9 ENERGY PURCHASING AND PROCUREMENT STRATEGIES

9.1 Retail Electric Supply Options

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

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

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

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

9.2 Retail Natural Gas Supply Options

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

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

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

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

Appendix A: Equipment Inventory & Recommendations

Lighting Inventory & Recommendations

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Main Office	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.22	1,476	0.0	$172.49	$738.00	$115.00	3.61
Main Office RR	1	Compact Fluorescent: Screw-In: (18W) - 1L	Wall Switch	18	3,848	Relamp	No	1	LED Screw-In Lamps: LED: Screw-In (9.5W) - 1L	Wall Switch	10	3,848	0.01	38	0.0	$4.39	$53.75	$5.00	11.09
Principal's Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.11	738	0.0	$86.24	$504.00	$75.00	4.97
Principal's Office	4	Compact Fluorescent: Screw-In: (18W) - 1L	Wall Switch	18	3,848	Relamp	Yes	4	LED Screw-In Lamps: LED: Screw-In (9.5W) - 1L	Occupancy Sensor	10	2,694	0.03	201	0.0	$23.47	$331.01	$40.00	12.40
Main Office Conference Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.08	554	0.0	$64.68	$445.50	$65.00	5.88
Main Office RR 2	1	Compact Fluorescent: Screw-In: (18W) - 1L	Wall Switch	18	3,848	Relamp	No	1	LED Screw-In Lamps: LED: Screw-In (9.5W) - 1L	Wall Switch	10	3,848	0.01	38	0.0	$4.39	$53.75	$5.00	11.09
A5 CR	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.26	1,227	0.0	$143.35	$702.00	$120.00	4.06
A5 CR RR	2	Incandescent: Screw-In: (60W) - 1L	Wall Switch	60	3,848	Relamp	Yes	1	LED Screw-In Lamps: LED: Screw-In (9.5W) - 1L	Occupancy Sensor	10	2,694	0.07	502	0.0	$58.61	$323.75	$5.00	5.44
A3 CR	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.19	920	0.0	$107.51	$526.50	$90.00	4.06
A3 CR RR	1	Compact Fluorescent: Screw-In: (18W) - 1L	Wall Switch	18	3,848	Relamp	No	1	LED Screw-In Lamps: LED: Screw-In (9.5W) - 1L	Wall Switch	10	3,848	0.01	38	0.0	$4.39	$53.75	$5.00	11.09
A2 CR	13	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	13	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.28	1,329	0.0	$155.29	$760.50	$130.00	4.06
A2 CR RR	1	Compact Fluorescent: Screw-In: (18W) - 1L	Wall Switch	18	3,848	Relamp	No	1	LED Screw-In Lamps: LED: Screw-In (9.5W) - 1L	Wall Switch	10	3,848	0.01	38	0.0	$4.39	$53.75	$5.00	11.09
A1 Teacher's Lounge	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.33	2,214	0.0	$258.73	$972.00	$155.00	3.16
B2 CR	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.22	1,022	0.0	$119.45	$585.00	$100.00	4.06
B4 CR	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.19	920	0.0	$107.51	$526.50	$90.00	4.06
B4 CR	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Occupancy Sensor	33	2,694	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,694	0.01	50	0.0	$5.79	$48.20	$10.00	6.60
B5 CR	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.26	1,227	0.0	$143.35	$702.00	$120.00	4.06
B6 CR	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.22	1,022	0.0	$119.45	$585.00	$100.00	4.06
B7 CR	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.19	920	0.0	$107.51	$526.50	$90.00	4.06
B8 CR	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.22	1,022	0.0	$119.45	$585.00	$100.00	4.06
B-Wing Electrical Room	1	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	3,848	Relamp & Reballast	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,848	0.04	261	0.0	$30.51	$117.00	$10.00	3.51
B10 Small Group Instr.	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.33	2,214	0.0	$258.73	$972.00	$155.00	3.16
B-Wing Girl's RR	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.05	369	0.0	$43.12	$387.00	$55.00	7.70
B-Wing Boys RR	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.05	369	0.0	$43.12	$387.00	$55.00	7.70
B12 CR	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.22	1,022	0.0	$119.45	$585.00	$100.00	4.06

	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
C6 CR	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.22	1,022	0.0	$119.45	$585.00	$100.00	4.06
C1 CR	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.26	1,227	0.0	$143.35	$702.00	$120.00	4.06
C4 CR	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.22	1,022	0.0	$119.45	$585.00	$100.00	4.06
C2 CR	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.22	1,022	0.0	$119.45	$585.00	$100.00	4.06
D1 Music Room	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.41	2,768	0.0	$323.41	$1,147.50	$185.00	2.98
D1 Music Room	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
D1 Storage	1	Compact Fluorescent: Screw-In: (18W) - 1L	Wall Switch	18	3,848	Relamp	No	1	LED Screw-In Lamps: LED: Screw-In (9.5W) - 1L	Wall Switch	10	3,848	0.01	38	0.0	$4.39	$53.75	$5.00	11.09
D1 Practice Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,848	0.02	146	0.0	$17.06	$58.50	$10.00	2.84
D1 Office	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,848	0.02	146	0.0	$17.06	$58.50	$10.00	2.84
D3 CR	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.06	307	0.0	$35.84	$175.50	$30.00	4.06
D-Wing Boys RR	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.05	369	0.0	$43.12	$387.00	$55.00	7.70
D-Wing Girls RR	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.05	369	0.0	$43.12	$387.00	$55.00	7.70
Custodial Closet	1	Compact Fluorescent: Screw-In: (18W) - 1L	Wall Switch	18	3,848	Relamp	No	1	LED Screw-In Lamps: LED: Screw-In (9.5W) - 1L	Wall Switch	10	3,848	0.01	38	0.0	$4.39	$53.75	$5.00	11.09
Storage Closet	1	Compact Fluorescent: Screw-In: (18W) - 1L	Wall Switch	18	3,848	Relamp	No	1	LED Screw-In Lamps: LED: Screw-In (9.5W) - 1L	Wall Switch	10	3,848	0.01	38	0.0	$4.39	$53.75	$5.00	11.09
F201 CR	17	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	17	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.37	1,738	0.0	$203.07	$994.50	$170.00	4.06
F203 CR	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.17	818	0.0	$95.56	$468.00	$80.00	4.06
F200 Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,848	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,694	0.08	554	0.0	$64.68	$266.40	$50.00	3.35
F204 CR	17	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	17	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.37	1,738	0.0	$203.07	$994.50	$170.00	4.06
F205 CR	17	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	17	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.37	1,738	0.0	$203.07	$994.50	$170.00	4.06
F206 CR	17	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	17	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.37	1,738	0.0	$203.07	$994.50	$170.00	4.06
F207 CR	17	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	17	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.37	1,738	0.0	$203.07	$994.50	$170.00	4.06
F208 CR	17	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	17	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.37	1,738	0.0	$203.07	$994.50	$170.00	4.06
F209 CR	17	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	17	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.37	1,738	0.0	$203.07	$994.50	$170.00	4.06
F210 CR	17	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	17	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.37	1,738	0.0	$203.07	$994.50	$170.00	4.06
F211 CR	17	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	17	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.37	1,738	0.0	$203.07	$994.50	$170.00	4.06

	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
F212 CR	17	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	17	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.37	1,738	0.0	$203.07	$994.50	$170.00	4.06
F213 CR	17	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	17	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.37	1,738	0.0	$203.07	$994.50	$170.00	4.06
F214 CR	17	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	17	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.37	1,738	0.0	$203.07	$994.50	$170.00	4.06
2nd Floor Hallway	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,694	0.55	3,691	0.0	$431.21	$1,970.00	$200.00	4.10
2nd Floor 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
Boys RR	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.05	369	0.0	$43.12	$387.00	$55.00	7.70
Girls RR	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.05	369	0.0	$43.12	$387.00	$55.00	7.70
RR Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,848	0.02	146	0.0	$17.06	$58.50	$10.00	2.84
2nd Floor Hallway Classroom Entries	11	Halogen Incandescent: Halogen Incandescent: (35W) 1L	Wall Switch	35	3,848	Relamp	No	11	LED Screw-In Lamps: LED: Screw-In (9.5W) - 1L	Wall Switch	10	3,848	0.18	1,241	0.0	$145.03	$591.28	$55.00	3.70
Blue Stairwell	4	LED - Fixtures: Stairwell/Passageway Lighting	Wall Switch	10	3,848	None	No	4	LED - Fixtures: Stairwell/Passageway Lighting	Wall Switch	10	3,848	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Blue Stairwell	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
F101 CR	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	16	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.35	1,636	0.0	$191.13	$936.00	$160.00	4.06
F101 RR	1	Compact Fluorescent: Screw-In: (18W) - 1L	Wall Switch	18	3,848	Relamp	No	1	LED Screw-In Lamps: LED: Screw-In (9.5W) - 1L	Wall Switch	10	3,848	0.01	38	0.0	$4.39	$53.75	$5.00	11.09
F102 CR	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	18	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.39	1,840	0.0	$215.02	$1,053.00	$180.00	4.06
F102 RR	1	Compact Fluorescent: Screw-In: (18W) - 1L	Wall Switch	18	3,848	Relamp	No	1	LED Screw-In Lamps: LED: Screw-In (9.5W) - 1L	Wall Switch	10	3,848	0.01	38	0.0	$4.39	$53.75	$5.00	11.09
F103 CR	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	16	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.35	1,636	0.0	$191.13	$936.00	$160.00	4.06
F103 RR	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	3,848	Relamp	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	3,848	0.01	77	0.0	$9.05	$35.90	$5.00	3.42
F100A Office	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.08	554	0.0	$64.68	$445.50	$65.00	5.88
F100A Office	4	Incandescent: Screw-In: (72W) - 1L	Wall Switch	72	3,848	Relamp	Yes	4	LED Screw-In Lamps: LED: Screw-In (9.5W) - 1L	Occupancy Sensor	10	2,694	0.17	1,157	0.0	$135.15	$485.01	$55.00	3.18
F100B Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.05	369	0.0	$43.12	$387.00	$55.00	7.70
F100B Office	1	Incandescent: Screw-In: (34W) - 3L	Wall Switch	102	3,848	Relamp	No	1	LED Screw-In Lamps: LED: Screw-In (9.5W) - 1L	Wall Switch	10	3,848	0.06	409	0.0	$47.83	$53.75	$5.00	1.02
F104 CR	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.13	613	0.0	$71.67	$351.00	$60.00	4.06
F105 CR	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	18	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.39	1,840	0.0	$215.02	$1,053.00	$180.00	4.06
F105 RR	1	Compact Fluorescent: Screw-In: (18W) - 1L	Wall Switch	18	3,848	Relamp	No	1	LED Screw-In Lamps: LED: Screw-In (9.5W) - 1L	Wall Switch	10	3,848	0.01	38	0.0	$4.39	$53.75	$5.00	11.09
F106 CR	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	18	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.39	1,840	0.0	$215.02	$1,053.00	$180.00	4.06

	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
F106 RR	1	Compact Fluorescent: Screw-In: (18W) - 1L	Wall Switch	18	3,848	Relamp	No	1	LED Screw-In Lamps: LED: Screw-In (9.5W) - 1L	Wall Switch	10	3,848	0.01	38	0.0	$4.39	$53.75	$5.00	11.09
F107 CR	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	18	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.39	1,840	0.0	$215.02	$1,053.00	$180.00	4.06
F108 CR	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.49	3,322	0.0	$388.09	$1,323.00	$215.00	2.85
F108 RR	1	Compact Fluorescent: Screw-In: (18W) - 1L	Wall Switch	18	3,848	Relamp	No	1	LED Screw-In Lamps: LED: Screw-In (9.5W) - 1L	Wall Switch	10	3,848	0.01	38	0.0	$4.39	$53.75	$5.00	11.09
F109 CR	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	16	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.35	1,636	0.0	$191.13	$936.00	$160.00	4.06
F110 CR	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	16	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.35	1,636	0.0	$191.13	$936.00	$160.00	4.06
F111 CR	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.09	409	0.0	$47.78	$234.00	$40.00	4.06
F112 CR	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	16	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.35	1,636	0.0	$191.13	$936.00	$160.00	4.06
IT Server Room (MDF)	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	3,848	Relamp	Yes	2	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,694	0.03	193	0.0	$22.59	$341.80	$45.00	13.14
F113 CR	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	16	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.35	1,636	0.0	$191.13	$936.00	$160.00	4.06
F114 Faculty Room	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.22	1,476	0.0	$172.49	$738.00	$115.00	3.61
F114 RR	1	Compact Fluorescent: Screw-In: (18W) - 1L	Wall Switch	18	3,848	Relamp	No	1	LED Screw-In Lamps: LED: Screw-In (9.5W) - 1L	Wall Switch	10	3,848	0.01	38	0.0	$4.39	$53.75	$5.00	11.09
F-Wing Hallway	13	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	Yes	13	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,694	0.36	2,399	0.0	$280.29	$960.50	$130.00	2.96
F-Wing Hallway	14	Halogen Incandescent: Halogen Incandescent: (35W) 1L	Wall Switch	35	3,848	Relamp	No	14	LED Screw-In Lamps: LED: Screw-In (9.5W) - 1L	Wall Switch	10	3,848	0.23	1,580	0.0	$184.58	$752.54	$70.00	3.70
F-Wing Hallway	6	LED - Fixtures: Stairwell/Passageway Lighting	Wall Switch	10	3,848	None	No	6	LED - Fixtures: Stairwell/Passageway Lighting	Wall Switch	10	3,848	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
F-Wing Hallway	8	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	8	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Boys RR	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.05	369	0.0	$43.12	$387.00	$55.00	7.70
Girls RR	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.05	369	0.0	$43.12	$387.00	$55.00	7.70
Gym Yellow Hallway	12	LED - Fixtures: Stairwell/Passageway Lighting	Wall Switch	10	3,848	None	No	12	LED - Fixtures: Stairwell/Passageway Lighting	Wall Switch	10	3,848	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Gym Yellow	26	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	32	2,694	Relamp	No	26	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,694	0.30	1,410	0.0	$164.70	$933.40	$130.00	4.88
Gym Yellow	24	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	114	2,694	Relamp	No	24	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,694	0.88	4,164	0.0	$486.51	$2,283.20	$480.00	3.71
Gym Yellow	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
G103 Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.05	369	0.0	$43.12	$387.00	$55.00	7.70
G104 Storage	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.08	554	0.0	$64.68	$445.50	$65.00	5.88
G102 Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,848	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,694	0.08	554	0.0	$64.68	$266.40	$50.00	3.35

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
G102 Office	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,848	0.02	146	0.0	$17.06	$58.50	$10.00	2.84
Gym Hallway Vestibule	3	Halogen Incandescent: Halogen Incandescent: (35W) 1L	Wall Switch	35	3,848	Relamp	No	3	LED Screw-In Lamps: LED: Screw-In (9.5W) - 1L	Wall Switch	10	3,848	0.05	339	0.0	$39.55	$161.26	$15.00	3.70
Gym Hallway Vestibule	12	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	3,848	Relamp	Yes	12	LED - Linear Tubes: (1) 4' Lamp	High/Low Control	15	2,694	0.17	1,160	0.0	$135.57	$630.80	$60.00	4.21
A25 CR	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.26	1,227	0.0	$143.35	$702.00	$120.00	4.06
A24 Health Office	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.33	2,214	0.0	$258.73	$972.00	$155.00	3.16
Hallway (CR25 - CR22)	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,694	0.14	923	0.0	$107.80	$492.50	$50.00	4.10
Hallway (CR25 - CR22)	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
A23 CR	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.26	1,227	0.0	$143.35	$702.00	$120.00	4.06
A23 RR	1	Compact Fluorescent: Screw-In: (18W) - 1L	Wall Switch	18	3,848	Relamp	No	1	LED Screw-In Lamps: LED: Screw-In (9.5W) - 1L	Wall Switch	10	3,848	0.01	38	0.0	$4.39	$53.75	$5.00	11.09
A22 CR	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.26	1,227	0.0	$143.35	$702.00	$120.00	4.06
A22 RR	1	Compact Fluorescent: Screw-In: (18W) - 1L	Wall Switch	18	3,848	Relamp	No	1	LED Screw-In Lamps: LED: Screw-In (9.5W) - 1L	Wall Switch	10	3,848	0.01	38	0.0	$4.39	$53.75	$5.00	11.09
Landing Area	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,694	0.16	1,107	0.0	$129.36	$551.00	$60.00	3.80
New Landing Hallway	8	LED - Fixtures: Stairwell/Passageway Lighting	Wall Switch	10	3,848	None	No	8	LED - Fixtures: Stairwell/Passageway Lighting	Wall Switch	10	3,848	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
New Landing 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
New Landing Hallway	18	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	3,848	Relamp	Yes	18	LED - Linear Tubes: (1) 4' Lamp	High/Low Control	15	2,694	0.26	1,740	0.0	$203.35	$1,446.20	$90.00	6.67
A21 CR	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.13	613	0.0	$71.67	$351.00	$60.00	4.06
A20 CR	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.19	920	0.0	$107.51	$526.50	$90.00	4.06
Handicap RR	1	Compact Fluorescent: Screw-In: (18W) - 1L	Wall Switch	18	3,848	Relamp	No	1	LED Screw-In Lamps: LED: Screw-In (9.5W) - 1L	Wall Switch	10	3,848	0.01	38	0.0	$4.39	$53.75	$5.00	11.09
A19 CR	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.17	818	0.0	$95.56	$468.00	$80.00	4.06
A18 CR	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.19	920	0.0	$107.51	$526.50	$90.00	4.06
A17 CR	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.17	818	0.0	$95.56	$468.00	$80.00	4.06
A16 CR	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.19	920	0.0	$107.51	$526.50	$90.00	4.06
A14 CR	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.19	920	0.0	$107.51	$526.50	$90.00	4.06
A15 CR	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.26	1,227	0.0	$143.35	$702.00	$120.00	4.06
Copy Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,848	Relamp	Yes	3	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,694	0.14	974	0.0	$113.85	$555.40	$95.00	4.04

	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
A12 CR	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.19	920	0.0	$107.51	$526.50	$90.00	4.06
Girls RR	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,848	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,694	0.12	830	0.0	$97.02	$495.60	$80.00	4.28
Storage / Server Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,848	0.02	146	0.0	$17.06	$58.50	$10.00	2.84
Boys RR	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,848	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,694	0.12	830	0.0	$97.02	$495.60	$80.00	4.28
A10 CR	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.32	1,534	0.0	$179.18	$877.50	$150.00	4.06
A8 CR	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.19	920	0.0	$107.51	$526.50	$90.00	4.06
A6 CR	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.19	920	0.0	$107.51	$526.50	$90.00	4.06
Storage Area	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	Yes	7	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.19	1,292	0.0	$150.92	$679.50	$105.00	3.81
Storage Area	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
Elevator Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,848	0.02	146	0.0	$17.06	$58.50	$10.00	2.84
Elevator Box	6	Halogen Incandescent: Halogen Incandescent: (35W) 1L	Wall Switch	35	3,848	None	No	6	Halogen Incandescent: Halogen Incandescent: (35W) 1L	Wall Switch	35	3,848	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Old Boiler Room	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	Yes	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.25	1,661	0.0	$194.05	$796.50	$125.00	3.46
E-Wing Boiler Room (new)	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.14	923	0.0	$107.80	$562.50	$85.00	4.43
E-Wing Boiler Room (new)	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
Mechanical Room	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	Yes	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.25	1,661	0.0	$194.05	$796.50	$125.00	3.46
Mechanical Room	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
C-Wing Hallway	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,694	0.16	1,107	0.0	$129.36	$551.00	$60.00	3.80
B-Wing Hallway	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	Yes	9	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,694	0.25	1,661	0.0	$194.05	$726.50	$90.00	3.28
B-Wing Hallway	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Cafeteria	88	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	Yes	88	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	2.41	16,239	0.0	$1,897.34	$6,768.00	$1,090.00	2.99
Kitchen Dishwashing Area	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,848	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,848	0.04	248	0.0	$28.95	$95.13	$20.00	2.59
Kitchen Dishwashing Area	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,848	0.02	146	0.0	$17.06	$58.50	$10.00	2.84
Kitchen Main Area	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,848	Relamp	Yes	13	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,694	0.53	3,598	0.0	$420.43	$1,517.60	$265.00	2.98
Kitchen Main Area	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.08	554	0.0	$64.68	$445.50	$65.00	5.88
Kitchen Main Area	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

	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
Guidance Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.09	409	0.0	$47.78	$234.00	$40.00	4.06
R.E.D. Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.04	204	0.0	$23.89	$117.00	$20.00	4.06
A-Wing Hallway	14	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	Yes	14	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,694	0.38	2,583	0.0	$301.85	$1,019.00	$140.00	2.91
A-Wing Hallway	16	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	3,848	Relamp	Yes	16	LED - Linear Tubes: (2) 2' Lamps	High/Low Control	17	2,694	0.22	1,494	0.0	$174.55	$971.20	$160.00	4.65
A-Wing 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
D-Wing Hallway	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,694	0.14	923	0.0	$107.80	$492.50	$50.00	4.10
D-Wing Hallway	5	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	3,848	Relamp	Yes	5	LED - Linear Tubes: (2) 2' Lamps	High/Low Control	17	2,694	0.07	467	0.0	$54.55	$441.00	$50.00	7.17
D-Wing Hallway	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Parking lot	23	Metal Halide: (1) 400W Lamp	Wall Switch	458	4,380	Fixture Replacement	No	23	LED - Fixtures: Outdoor Pole/Arm-Mounted Area/Roadway Fixture	Wall Switch	120	4,380	5.10	39,158	0.0	$4,575.19	$44,918.84	$2,300.00	9.32
Building	22	High-Pressure Sodium: (1) 50W Lamp	Wall Switch	66	4,380	Fixture Replacement	No	22	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	15	4,380	0.74	5,652	0.0	$660.32	$8,594.89	$2,200.00	9.68
E1 CR	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.19	920	0.0	$107.51	$526.50	$90.00	4.06
E2 CR	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.19	920	0.0	$107.51	$526.50	$90.00	4.06
E4 CR	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.19	920	0.0	$107.51	$526.50	$90.00	4.06
E6 CR	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.19	920	0.0	$107.51	$526.50	$90.00	4.06
Media Center (E3)	6	Compact Fluorescent: Screw-In: (18W) - 1L	Wall Switch	18	3,848	Relamp	Yes	6	LED Screw-In Lamps: Screw-In: 9.5W - 1L	Occupancy Sensor	10	2,694	0.04	301	0.0	$35.21	$592.52	$35.00	15.83
Media Center (E3)	18	High-Pressure Sodium: (1) 50W Lamp	Wall Switch	66	3,848	Fixture Replacement	Yes	18	LED - Fixtures: Downlight Recessed	Occupancy Sensor	15	2,694	0.65	4,421	0.0	$516.52	$5,150.11	$125.00	9.73
Media Center Side Room (E3.1)	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.44	2,952	0.0	$344.97	$1,206.00	$195.00	2.93
Media Center Side Room (E3.2)	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.16	1,107	0.0	$129.36	$621.00	$95.00	4.07
Media Center (E3)	20	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	3,848	Relamp	Yes	20	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,694	0.29	1,934	0.0	$225.95	$1,258.00	$170.00	4.82
Media Center (E3)	10	Compact Fluorescent: Pin-Style: (18W) - 2L	Wall Switch	36	3,848	Relamp	Yes	10	LED Screw-In Lamps: Pin Style: 9.5W - 2L	Occupancy Sensor	10	2,694	0.19	1,299	0.0	$151.75	$1,151.02	$35.00	7.35
Media Center (E3)	36	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	Yes	36	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.98	6,643	0.0	$776.18	$2,646.00	$430.00	2.85
Media Center (E3)	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
E8 CR (small group instruction)	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.13	613	0.0	$71.67	$351.00	$60.00	4.06
E5 CR	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.19	920	0.0	$107.51	$526.50	$90.00	4.06
E Wing Girls RR	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,848	0.04	292	0.0	$34.12	$117.00	$20.00	2.84

	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
E Wing Girls RR	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	3,848	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,848	0.01	71	0.0	$8.27	$48.20	$10.00	4.62
Communication Room (storage)	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,848	0.02	146	0.0	$17.06	$58.50	$10.00	2.84
E Wing Boys RR	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,848	0.04	292	0.0	$34.12	$117.00	$20.00	2.84
E Wing Boys RR	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	3,848	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,848	0.01	71	0.0	$8.27	$48.20	$10.00	4.62
E7 CR	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.19	920	0.0	$107.51	$526.50	$90.00	4.06
E9 CR	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.19	920	0.0	$107.51	$526.50	$90.00	4.06
E11 CR	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.19	920	0.0	$107.51	$526.50	$90.00	4.06
E13 CR	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.13	613	0.0	$71.67	$351.00	$60.00	4.06
E10 CR	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.19	920	0.0	$107.51	$526.50	$90.00	4.06
Blue Gym	18	Linear Fluorescent - T8: 4' T8 (32W) - 6L	Occupancy Sensor	240	2,694	Relamp	No	18	LED - Linear Tubes: (6) 4' Lamps	Occupancy Sensor	116	2,694	1.46	6,915	0.0	$807.95	$3,221.28	$540.00	3.32
Blue Gym	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Blue Gym Storage	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.08	554	0.0	$64.68	$445.50	$30.00	6.42
Blue Gym Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.05	369	0.0	$43.12	$387.00	$55.00	7.70
Blue Gym Office RR	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,848	0.02	146	0.0	$17.06	$58.50	$10.00	2.84
E Hallway Storage	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,848	0.02	146	0.0	$17.06	$58.50	$10.00	2.84
E12 CR	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.19	920	0.0	$107.51	$526.50	$90.00	4.06
E14 CR	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.19	920	0.0	$107.51	$526.50	$90.00	4.06
E16 CR	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,694	Relamp	No	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,694	0.19	920	0.0	$107.51	$526.50	$90.00	4.06
E Section Hallways	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
E Section Hallways	19	High-Pressure Sodium: (1) 50W Lamp	Wall Switch	66	3,848	Fixture Replacement	No	19	LED - Fixtures: Downlight Recessed	Wall Switch	15	3,848	0.64	4,288	0.0	$501.01	$5,151.22	$95.00	10.09
E Section Hallways	33	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,848	Relamp	Yes	33	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,694	0.90	6,090	0.0	$711.50	$2,530.50	$330.00	3.09
Connector 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
Connector Hallway	6	Compact Fluorescent: Screw-In: (18W) - 1L	Wall Switch	18	3,848	Relamp	No	6	LED Screw-In Lamps: Screw-In: 9.5W - 1L	Wall Switch	10	3,848	0.03	226	0.0	$26.37	$322.52	$0.00	12.23

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
Old Boiler Room	Old Section	2	Heating Hot Water Pump	7.5	91.0%	Yes	3,391	No	91.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Old Boiler Room	City Water	2	Water Supply Pump	3.0	85.5%	Yes	2,745	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
New Boiler Room	New Section	2	Heating Hot Water Pump	7.5	88.5%	Yes	3,391	No	88.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Yellow Gym	2	Supply Fan	5.0	89.5%	Yes	2,745	No	89.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Yellow Gym	2	Exhaust Fan	1.5	86.5%	Yes	2,745	No	86.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Kitchen	1	Supply Fan	3.0	89.5%	No	2,745	Yes	89.5%	No		0.00	0	0.0	$0.00	$804.84	$0.00	0.00
Roof	Kitchen	1	Exhaust Fan	2.0	86.5%	No	2,745	No	86.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Cafeteria	1	Supply Fan	7.5	91.0%	No	3,391	Yes	91.7%	Yes	1	1.01	3,832	0.0	$447.69	$4,760.59	$1,162.50	8.04
Roof	Cafeteria	1	Exhaust Fan	5.0	89.5%	No	2,745	Yes	89.5%	Yes	1	0.68	2,059	0.0	$240.60	$4,196.91	$775.00	14.22
Roof	Kitchen	1	Makeup Air Fan	1.5	86.5%	No	2,745	No	86.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	2 Classrooms	1	Supply Fan	1.5	86.5%	No	2,745	No	86.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	New Section	1	Supply Fan	10.0	91.7%	Yes	3,391	No	91.7%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	New Section	4	Exhaust Fan	3.0	89.5%	Yes	2,745	No	89.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	New Section	3	Supply Fan	7.5	91.0%	Yes	3,391	No	91.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	New Section	3	Exhaust Fan	2.0	86.5%	Yes	2,745	No	86.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Old Section	Unit Ventilators	5	Supply Fan	0.3	70.0%	No	2,745	No	70.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Old Section	Exhaust Fans	8	Exhaust Fan	0.3	70.0%	No	2,745	No	70.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
New Section	Unit Ventilators	14	Supply Fan	2.0	86.5%	No	2,745	No	86.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	New Section	8	Ventilation Fan	0.1	65.0%	No	2,745	No	65.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Boiler Room	2/3rd of building	2	Process Pump	0.2	70.0%	No	2,745	No	70.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00

		Existing Conditions						Proposed Conditions				Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	Motor Quantity	Motor Application	HP Per Motor	Full Load Efficiency	VFD Control?	Annual Operating Hours	Install High Efficiency Motors?	Full Load Efficiency	Install VFDs?	Number of VFDs	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Roof	Multi Purpose Room	2	Supply Fan	3.0	89.5%	No	2,745	No	89.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Multi Purpose Room	2	Return Fan	1.5	86.5%	No	2,745	No	86.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Media Center	1	Supply Fan	7.5	91.0%	No	3,391	Yes	91.7%	Yes	1	1.01	3,832	0.0	$447.69	$4,760.59	$1,162.50	8.04
Roof	Media Center	1	Return Fan	5.0	89.5%	No	2,745	Yes	89.5%	Yes	1	0.68	2,059	0.0	$240.60	$4,196.91	$775.00	14.22
Roof	New Section Corridor	1	Supply Fan	3.0	86.5%	No	2,745	No	86.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	New Section Corridor	1	Return Fan	2.0	86.5%	No	2,745	No	86.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Computer Room	1	Supply Fan	0.8	75.0%	No	2,745	No	75.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Blue Gym	2	Other	1.0	82.5%	No	2,745	No	82.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Blue Gym	2	Supply Fan	3.0	87.5%	No	2,745	No	87.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Blue Gym	2	Exhaust Fan	0.8	75.0%	No	2,745	No	75.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	E Wing Classrooms	1	Supply Fan	1.0	87.5%	No	2,745	No	87.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	E Wing Classrooms	1	Exhaust Fan	0.8	75.0%	No	2,745	No	75.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	E Wing Classrooms	1	Supply Fan	1.0	87.5%	No	2,745	No	87.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	E Wing Classrooms	1	Exhaust Fan	0.8	75.0%	No	2,745	No	75.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Classrooms	B Wing Classrooms	10	Other	0.8	75.0%	No	1,373	No	75.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Electric HVAC Inventory & Recommendations

		Existing Conditions				Proposed Conditions								Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (kBtu/hr)	Install High Efficiency System?	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (kBtu/hr)	Cooling Mode Efficiency (SEER/EER)	Heating Mode Efficiency (COP)	Install Dual Enthalpy Economizer?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Roof	Yellow Gym	1	Packaged AC	16.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Kitchen	1	Packaged AC	7.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Old Section	15	Split-System AC	5.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Classrooms (2)	2	Split-System AC	4.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Main Office	4	Packaged Air-Source HP	3.00	36.00	No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Teacher's Lounge	1	Split-System AC	2.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Corridor Ceilings	Whole Building	10	Electric Resistance Heat	0.00	10.00	No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Multi Purpose Room	1	Split-System AC	10.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Media Center	1	Split-System AC	15.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Computer Room	1	Split-System AC	5.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Server/IT Rooms	2	Ductless Mini-Split AC	3.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Blue Gym	2	Split-System AC	10.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Gym Office	1	Ductless Mini-Split AC	1.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	E Wing Classrooms	1	Split-System AC	5.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	IT Server Closet (Media Center)	1	Split-System Air-Source HP	2.00	28.00	No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	E Wing	1	Split-System AC	4.00		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
Old Boiler Room	Old Section	2	Condensing Hot Water Boiler	1,860.00	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
[illegible]	[illegible]	[illegible]	Condensing Hot Water Boiler	[illegible]	[illegible]						[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Roof	Whole Building	3	Furnace	21.25	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Whole Building	1	Furnace	34.00	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Whole Building	2	Furnace	21.25	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Kitchen	1	Furnace	102.00	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Cafeteria	1	Furnace	186.15	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
Old Boiler Room	Old Section	1	Storage Tank Water Heater (> 50 Gal)	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
New Boiler room	New Section	1	Storage Tank Water Heater (> 50 Gal)	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Mechanical Room	Unknown	1	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
Roof	1	Cooler (35F to 55F)	No	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	1	Medium Temp Freezer (0F to 30F)	No	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Commercial Refrigerator/Freezer Inventory & Recommendations

	Existing Conditions			Proposed Condi	Energy Impact & Financial Analysis						
Location	Quantity	Refrigerator/ Freezer Type	ENERGY STAR Qualified?	Install ENERGY STAR Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen	2	Refrigerator Chest	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Novelty Cooler Inventory & Recommendations

	Existing Conditions		Proposed Conditions	Energy Impact & Financial Analysis						
Location	Quantity	Cooler Description	Install Automatic Shutoff 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	Ice Cream Chest	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Cooking Equipment Inventory & Recommendations

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

Dishwasher Inventory & Recommendations

	Existing Conditions					Proposed Conditions	Energy Impact & Financial Analysis						
Location	Quantity	Dishwasher Type	Water Heater Fuel Type	Booster Heater Fuel Type	ENERGY STAR Qualified?	Install ENERGY STAR Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Payback w/ Incentives in Years
Kitchen	1	Door Type (High Temp)	Electric	Electric	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Plug Load Inventory

	Existing Conditions			
Location	Quantity	Equipment Description	Energy Rate (W)	ENERGY STAR Qualified?
Whole Building	116	Desktop Computer	150.0	Yes
Whole Building	70	Projector	200.0	Yes
Whole Building	620	Chromebooks/Laptops	40.0	Yes
Whole Building	6	Desk Printer	60.0	Yes
Whole Building	2	Photocopier	600.0	Yes
Whole Building	70	TV (Tube)	120.0	No
Whole Building	3	Refrigerator	172.0	Yes
Whole Building	4	Mini Fridge	153.0	Yes
Gym2 (2)	12	Destratification fans	200.0	Yes
Tech Room	1	3-D Printer	100.0	Yes

Appendix B: ENERGY STAR® Statement of Energy Performance

ENERGY STAR® Statement of Energy Performance

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ENERGY STAR® Score[1]

Sharon Elementary School

Primary Property Type: K-12 School
Gross Floor Area (ft²): 142,000
Built: 1958

For Year Ending: February 28, 2017
Date Generated: March 14, 2018

1. The ENERGY STAR score is a 1-100 assessment of a building's energy efficiency as compared with similar buildings nationwide, adjusting for climate and business activity.

Property & Contact Information

Property Address	Property Owner	Primary Contact
Sharon Elementary School 234 Sharon Road Robbinsville, New Jersey 08691	Robbinsville Board of Education 155 Robbinsville-Edinburg Road Robbinsville, NJ 08691 609-632-0910	Kimberly Keener 155 Robbinsville-Edinburg Road Robbinsville, NJ 08691 609-632-0910 ext 3022 kkeener@robbinsville.k12.nj.us

Property ID: 6253881

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
58.2 kBtu/ft²

Source EUI
120.1 kBtu/ft²

Annual Energy by Fuel	
Electric - Grid (kBtu)	4,017,272 (49%)
Electric - Solar (kBtu)	323,389 (4%)
Natural Gas (kBtu)	3,924,243 (48%)

National Median Comparison	
National Median Site EUI (kBtu/ft²)	63.5
National Median Source EUI (kBtu/ft²)	131.2
% Diff from National Median Source EUI	-8%
Annual Emissions	
Greenhouse Gas Emissions (Metric Tons CO2e/year)	654

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)