Local Government Energy Audit:
Energy Audit Report

Mary Shoemaker Elementary School

Woodstown-Pilesgrove Regional School District

201 East Millbrook Avenue
Woodstown, New Jersey 08098

October 24, 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 Mary Shoemaker Elementary School.

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

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

1.1 Facility Summary

Mary Shoemaker Elementary School is a 59,071 square foot facility built in 1958. The building is a single-story facility comprised of various space types typically found within schools. Such spaces include classrooms, kitchen, gymnasium, multipurpose room, administration offices, meeting rooms, hallways, locker rooms and restrooms.

Interior lighting at the facility mainly consists of 2-lamp, T8 linear fluorescent fixtures and incandescent fixtures controlled by manual switches. Exterior lighting is mainly provided by incandescent, high pressure sodium (HPS), and metal halide (MH) fixtures of various wattages controlled by photocells. The existing lighting sources are all inefficient in performance when compared to the latest lighting technology available in the market.

Cooling and ventilation is provided by an array of HVAC systems that include split-system air conditioning units, package units, packaged terminal units, and window-mounted air conditioning units. Heating is provided by two low-NO_x hot water boilers in conjunction with unit ventilators.

A thorough description of the facility and our observations can be found in Section 2.

1.2 Your Cost Reduction Opportunities

Energy Conservation Measures

TRC evaluated 10 measures and recommends eight measures which together represent an opportunity for Mary Shoemaker Elementary School to reduce annual energy costs by roughly $15,648 and annual greenhouse gas emissions by 104,154 lbs CO_2e. We estimate that if all measures were implemented as recommended, the project would pay for itself in roughly 4.1 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 Mary Shoemaker Elementary School's annual energy use by 12%.

Figure 1 – Previous 12 Month Utility Costs

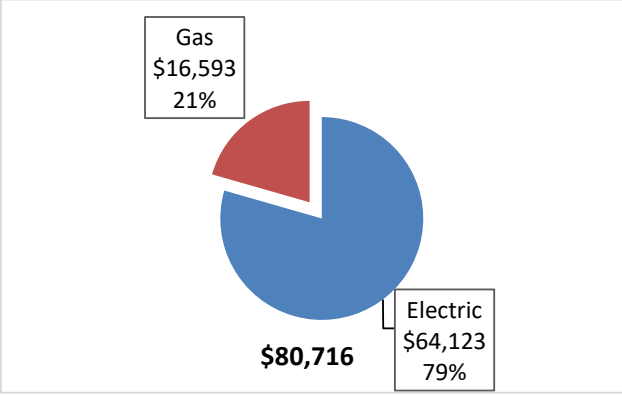
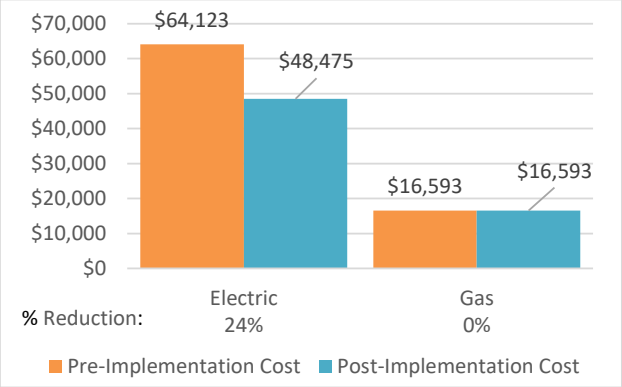


Figure 2 – Potential Post-Implementation Costs



A detailed description of Mary Shoemaker 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			**62,334**	**15.3**	**0.0**	**$9,430.47**	**$50,379.75**	**$8,585.00**	**$41,794.75**	**4.4**	**62,770**
ECM 1	Install LED Fixtures	Yes	7,068	3.1	0.0	$1,069.37	$13,824.47	$2,610.00	$11,214.47	10.5	7,118
ECM 2	Retrofit Fixtures with LED Lamps	Yes	54,845	12.2	0.0	$8,297.48	$35,694.84	$5,975.00	$29,719.84	3.6	55,229
ECM 3	Install LED Exit Signs	Yes	420	0.0	0.0	$63.61	$860.44	$0.00	$860.44	13.5	423
Lighting Control Measures			**11,633**	**2.5**	**0.0**	**$1,760.00**	**$14,550.00**	**$1,805.00**	**$12,745.00**	**7.2**	**11,715**
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	9,936	2.2	0.0	$1,503.19	$13,350.00	$1,805.00	$11,545.00	7.7	10,005
ECM 5	Install High/Low Lighitng Controls	Yes	1,697	0.4	0.0	$256.81	$1,200.00	$0.00	$1,200.00	4.7	1,709
Motor Upgrades			**3,789**	**0**	**0**	**$573.30**	**$11,079.54**	**$0.00**	**$11,079.54**	**19.3**	**3,816**
ECM 6	Premium Efficiency Motors (for Heating Hot Water Pumps)	Yes	2,239	0.5	0.0	$338.71	$2,687.10	$0.00	$2,687.10	7.9	2,254
	Premium Efficiency Motors (for Univents)	No	1,551	0.4	0.0	$234.59	$8,392.44	$0.00	$8,392.44	35.8	1,561
Variable Frequency Drive (VFD) Measures			**24,000**	**2.5**	**0.0**	**$3,630.97**	**$6,334.30**	**$0.00**	**$6,334.30**	**1.7**	**24,168**
ECM 7	Install VFDs on Hot Water Pumps	Yes	24,000	2.5	0.0	$3,630.97	$6,334.30	$0.00	$6,334.30	1.7	24,168
Electric Unitary HVAC Measures			**4,272**	**2.5**	**0.0**	**$646.26**	**$26,516.69**	**$1,642.00**	**$24,874.69**	**38.5**	**4,302**
	Install High Efficiency Electric AC	No	4,272	2.5	0.0	$646.26	$26,516.69	$1,642.00	$24,874.69	38.5	4,302
Plug Load Equipment Control - Vending Machine			**3,224**	**0.0**	**0.0**	**$487.71**	**$690.00**	**$0.00**	**$690.00**	**1.4**	**3,246**
ECM 8	Vending Machine Control	Yes	3,224	0.0	0.0	$487.71	$690.00	$0.00	$690.00	1.4	3,246
TOTAL FOR ALL RECOMMENDED MEASURES			**103,430**	**20.8**	**0.0**	**$15,647.85**	**$74,641.15**	**$10,390.00**	**$64,251.15**	**4.1**	**104,154**
TOTALS FOR ALL EVALUATED MEASURES			**109,253**	**23.3**	**0.0**	**$16,528.71**	**$109,550.28**	**$12,032.00**	**$97,518.28**	**5.9**	**110,017**

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

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

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

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

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

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

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

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

Energy Efficient Practices

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

- Reduce Air Leakage
- Close Doors and Windows
- Use Window Treatments/Coverings
- Perform Proper Lighting Maintenance
- Develop a Lighting Maintenance Schedule
- Turn Off Unneeded Motors
- Perform Routine Motor Maintenance
- 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
- Perform Maintenance on Compressed Air Systems
- Install Plug Load Controls

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 Mary Shoemaker 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	126	kW DC STC
Electric Generation	150,112	kWh/yr
Displaced Cost	$13,060	/yr
Installed Cost	$491,400	

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

1.3 Implementation Planning

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

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

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

- SmartStart
- Direct Install
- 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.

This facility may also qualify for the Direct Install program which can provide turnkey installation of multiple measures, through an authorized network of participating contractors. This program can provide substantially higher incentives that SmartStart, up to 70% of the cost of selected measures, although measure eligibility will have to be assessed and be verified by the designated Direct Install contractor and, in most cases, they will perform the installation work.

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

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

Additional information on relevant incentive programs is located in Section 8 or: www.njcleanenergy.com/ci.

2 FACILITY INFORMATION AND EXISTING CONDITIONS

2.1 Project Contacts

Figure 5 – Project Contacts

Name	Role	E-Mail	Phone #
Customer			
Rose Wang Chin	Business Admin/Board	chin.r@woodstown.org	(856) 769-0144 Ext. 22251
Designated Representative			
Bryan McGair	Account Executive	bryan.mcgair@schneider-electric.com	(609) 654-4831
TRC Energy Services			
Moussa Traore	Auditor	mtraore@trcsolutions.com	(732) 855-0033

2.2 General Site Information

On March 29, 2018, TRC performed an energy audit at Mary Shoemaker Elementary School located in Woodstown, New Jersey. TRC's auditor met with Ryan Danner to review the facility operations and help focus our investigation on specific energy-using systems.

2.3 Building Occupancy

The typical schedule is presented in the table below

Figure 6 - Building Schedule

Building Name	Weekday/Weekend	Operating Schedule
Mary Shoemaker ES	Weekday	7:30 AM - 6:00 PM
Mary Shoemaker ES	Saturday	8:00 AM - 4:00 PM
Mary Shoemaker ES	Sunday	Closed

2.4 Building Envelope

Mary Shoemaker Elementary School is a single-story building constructed of concrete masonry block with brick exterior. The building has double-pane clear windows and metal doors and a flat roof, all in good condition.

Figure 7 – Building Façade

2.5 On-Site Generation

Mary Shoemaker Elementary School does not have any on-site electric generation capacity.

2.6 Energy-Using Systems

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

Lighting System

Interior lighting mainly consists of 2-lamp, T8 linear fluorescent fixtures and incandescent fixtures controlled by manual switches. Exterior lighting is mainly provided by incandescent, high pressure sodium (HPS), and metal halide (MH) fixtures of various wattages controlled by photocells. The existing lighting sources are all inefficient in performance when compared to the latest lighting technology available in the market.

Figure 8 - Building Lighting Systems

Interior 2-Lamp T8 Fixture 	*Interior 2-Lamp T8 Fixture* 
Interior 2-Lamp T8 Fixture 	*Interior 2-Lamp T8 Fixture* 

Exterior MH Fixture 	*Exterior HPS Fixture* 
Exterior Incandescent Fixture 	*Exterior HPS Fixture* 

Hot Water Heating System

The hot water system consists of a two Benchmark 2.0 Low NO_x 2,000 kBtu/hr output boilers configured in a constant-flow primary distribution loop with two 10-hp constant speed hot water pumps. Space heating is provided via Nesbitt unit ventilators.

Figure 9 - Building Heating System

Benchmark Hot Water Boilers 	*Nesbittt Unit Ventilator* 
Heating Hot Water Distribution Pump 	*Heating Hot Water Distribution Pump Nameplate* 

Direct Expansion Air Conditioning System (DX)

Eleven split-system air conditioners of various tonnages and vintages are used to condition large common areas such hallways the library, and the gym. A single 15-ton Daikin package air conditioning unit in fairly new condition and serves the multipurpose room. Cooling for portable classrooms is provided by individual Islandaire packaged terminal air conditioner units. Other classroom locations are served by 1.5-ton GE window-mounted air conditioners that are approximately five years old.

Figure 10 - Building AC Systems

Goodman Split-System AC Condenser Unit

Split-System AC Condenser Unit

Split-System AC Condenser Unit

Daikin Package AC Unit

Islandaire Packaged Terminal AC unit

GE Window-Mounted AC

Domestic Hot Water Heating System

The domestic hot water heating system is comprised of one natural gas and two electric water heaters.

The A.O. Smith natural gas water heater has an input rating of 250 kBtu/hr and a nominal efficiency of 96%. This water heater has a 100-gallon storage tank. The Ruud electric water heater has an input capacity of 4.5 kW and an 80-gallon storage tank while the Bradford-White electric water heater has an input capacity of 4.5 kW and a 40-gallon storage tank.

Figure 11 - Domestic Hot Water System

AO Smith Gas Domestic Hot Water Heater	*Ruud Electric Domestic Hot Water Heater*	*Bradford-White Electric Domestic Hot Water Heater*
		

Food Service & Laundry Equipment

The school has two gas convection ovens, one-full size and one-half-size, and a small dish washer. The school has a small laundry consisting of a combination washer-dryer.

Figure 12 – Food Service and Laundry Equipment

Southbend Gas Convection Oven 	*Chef Gas Convection Oven* 
Dishwasher 	*Washer-Dryer Combo* 

Refrigeration

The kitchen has two large solid-door commercial refrigerators and one refrigerator chest. The kitchen also has one large solid-door commercial freezer.

Figure 13 – Refrigeration Equipment

Continental Commercial Refrigerator 	*Kelvinator Refrigerator Chest* 
Beverage Commercial Refrigerator 	*Glenco Commercial Freezer* 

Building Plug Load

There are roughly 93 computer work stations, 12 printers, and five copy machines throughout the facility. There are also about 25 cathode ray tube and 10 LCD televisions.

The facility has a number of microwave ovens and coffee machines in different areas of the facility as well two refrigerated and one non-refrigerated vending machine.

3 SITE ENERGY USE AND COSTS

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

3.1 Total Cost of Energy

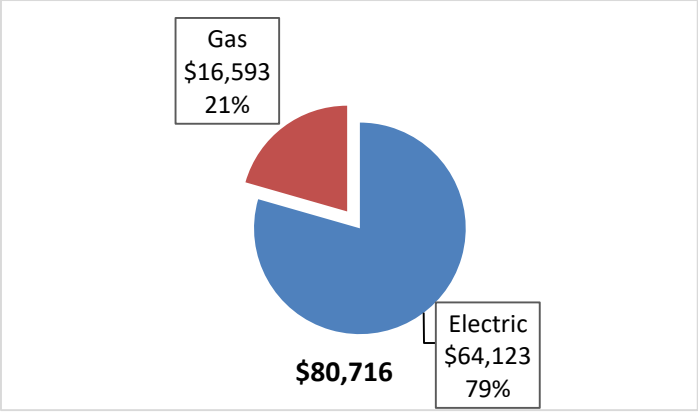
The following energy consumption and cost data is based on the last 12-month period of utility billing data that was provided for each utility. A profile of the annual energy consumption and energy cost of the facility was developed from this information.

Figure 14 - Utility Summary

Utility Summary for Mary Shoemaker ES		
Fuel	**Usage**	**Cost**
Electricity	423,842 kWh	$64,123
Natural Gas	14,474 Therms	$16,593
Total		**$80,716**

The current annual energy cost for this facility is $80,716 as shown in the chart below.

Figure 15 - Energy Cost Breakdown



3.2 Electricity Usage

Electricity is provided by Atlantic City Electric. The average electric cost over the past 12 months was $0.151/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 16 - Electric Usage & Demand

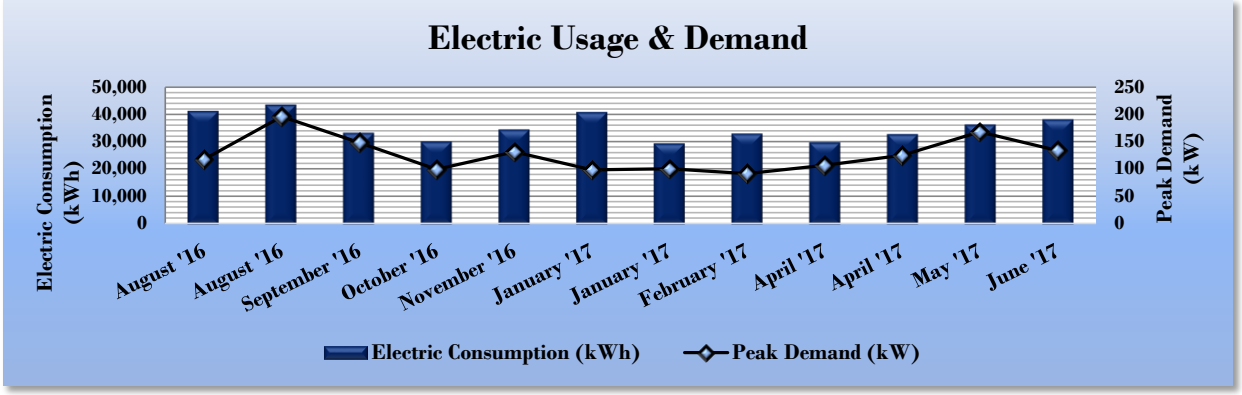


Figure 17 - Electric Usage & Demand

Electric Billing Data for Mary Shoemaker ES				
Period Ending	Days in Period	Electric Usage (kWh)	Demand (kW)	Total Electric Cost
8/16/16	31	41,040	118	$6,205
9/15/16	30	43,360	196	$6,519
10/14/16	29	33,200	148	$4,860
11/14/16	31	30,000	99	$4,980
12/12/16	28	34,400	131	$5,153
1/17/17	36	40,720	98	$6,710
2/13/17	27	29,280	100	$4,592
3/14/17	29	32,880	91	$5,034
4/17/17	34	29,760	106	$4,191
5/12/17	25	32,720	125	$4,742
6/14/17	33	36,160	168	$5,612
7/14/17	30	38,000	134	$5,173
Totals	**363**	**421,520**	**196**	**$63,771**
Annual	**365**	**423,842**	**196**	**$64,123**

3.3 Natural Gas Usage

Natural gas is provided by South Jersey Gas. The average gas cost for the past 12 months is $1.146/therm, which is the blended rate used throughout the analyses in this report. The monthly gas consumption is shown in the chart below.

Figure 18 - Natural Gas Usage

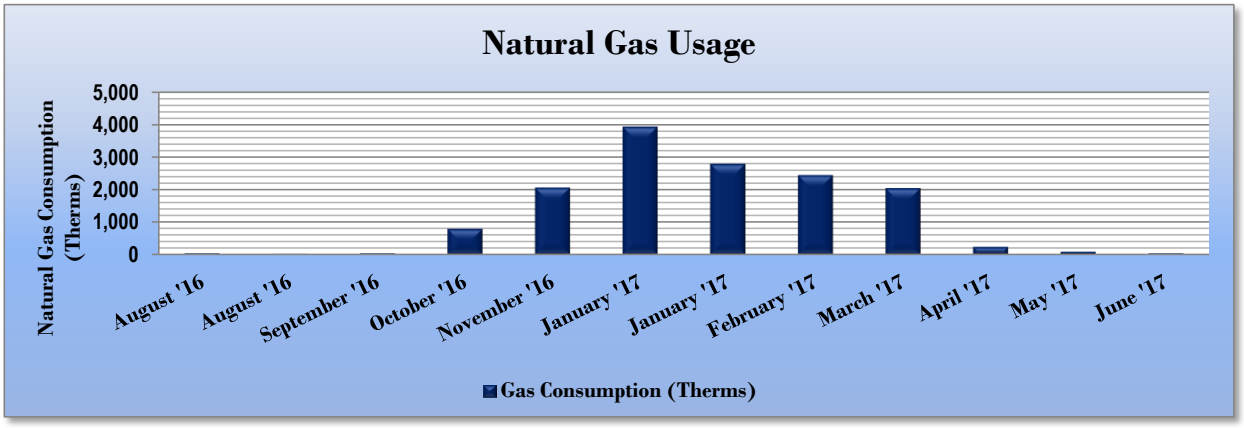


Figure 19 - Natural Gas Usage

Gas Billing Data for Mary Shoemaker ES			
Period Ending	Days in Period	Natural Gas Usage (Therms)	Natural Gas Cost
8/16/16	31	27	$54
9/15/16	30	14	$42
10/14/16	29	29	$57
11/11/16	31	788	$853
12/12/16	28	2,047	$2,186
1/16/17	36	3,917	$4,741
2/13/17	27	2,776	$3,199
3/14/17	29	2,427	$2,600
4/13/17	34	2,031	$2,302
5/12/17	25	229	$284
6/14/17	33	80	$121
7/14/17	30	30	$63
Totals	**363**	**14,394**	**$16,502**
Annual	**365**	**14,474**	**$16,593**

3.4 Benchmarking

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

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

Figure 20 - Energy Use Intensity Comparison – Existing Conditions

Energy Use Intensity Comparison - Existing Conditions		
	Mary Shoemaker ES	National Median Building Type: School (K-12)
Source Energy Use Intensity (kBtu/ft^2)	102.6	141.4
Site Energy Use Intensity (kBtu/ft^2)	49.0	58.2

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

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

Energy Use Intensity Comparison - Following Installation of Recommended Measures		
	Mary Shoemaker ES	National Median Building Type: School (K-12)
Source Energy Use Intensity (kBtu/ft^2)	83.8	141.4
Site Energy Use Intensity (kBtu/ft^2)	43.0	58.2

Many types of commercial buildings are also eligible to receive an ENERGY STAR® score. This score is a percentile ranking from 1 to 100. It compares your building's energy performance to similar buildings nationwide. A score of 50 represents median energy performance, while a score of 75 means your building performs better than 75 percent of all similar buildings nationwide and may be eligible for ENERGY STAR® certification. This building has a current score of 84.

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

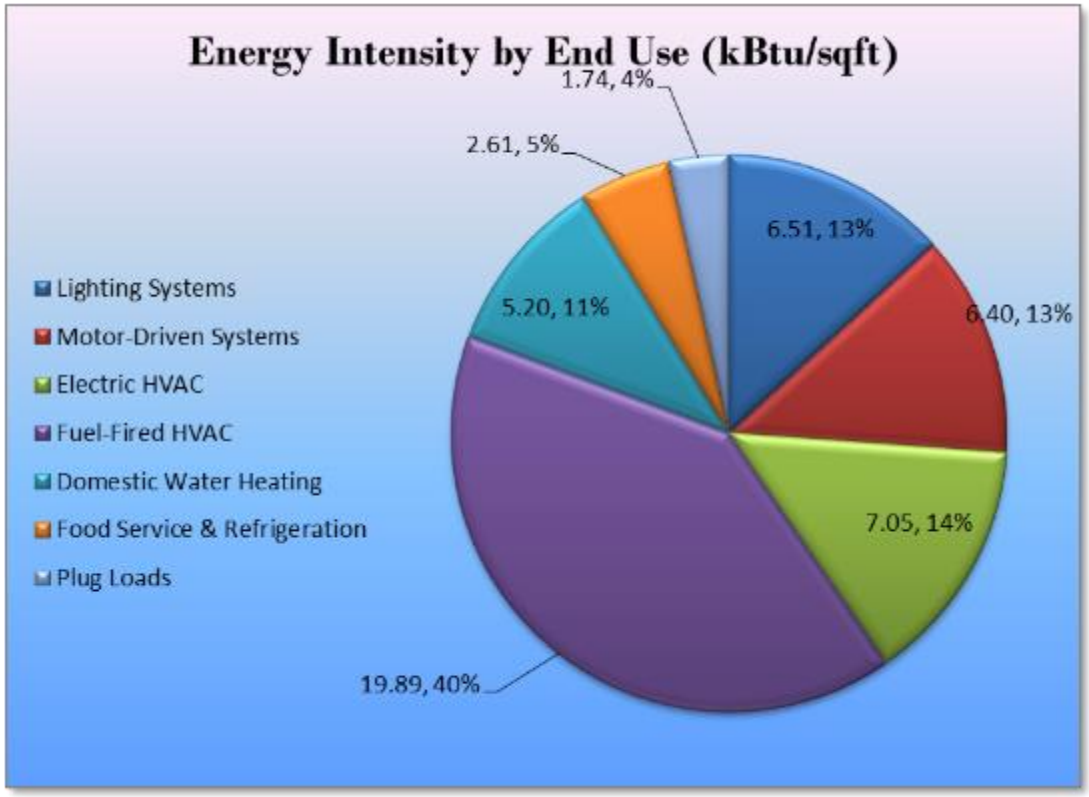
For more information on ENERGY STAR® certification go to: https://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/earn-recognition/energy-star-certification/how-app-1.

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

3.5 Energy End-Use Breakdown

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

Figure 22 - Energy Balance (% and kBtu/SF)



4 ENERGY CONSERVATION MEASURES

Level of Analysis

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

The following sections describe the evaluated measures.

4.1 Recommended ECMs

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

Figure 23 – Summary of Recommended ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		**62,334**	**15.3**	**0.0**	**$9,430.47**	**$50,379.75**	**$8,585.00**	**$41,794.75**	**4.4**	**62,770**
ECM 1	Install LED Fixtures	7,068	3.1	0.0	$1,069.37	$13,824.47	$2,610.00	$11,214.47	10.5	7,118
ECM 2	Retrofit Fixtures with LED Lamps	54,845	12.2	0.0	$8,297.48	$35,694.84	$5,975.00	$29,719.84	3.6	55,229
ECM 3	Install LED Exit Signs	420	0.0	0.0	$63.61	$860.44	$0.00	$860.44	13.5	423
Lighting Control Measures		**11,633**	**2.5**	**0.0**	**$1,760.00**	**$14,550.00**	**$1,805.00**	**$12,745.00**	**7.2**	**11,715**
ECM 4	Install Occupancy Sensor Lighting Controls	9,936	2.2	0.0	$1,503.19	$13,350.00	$1,805.00	$11,545.00	7.7	10,005
ECM 5	Install High/Low Lighitng Controls	1,697	0.4	0.0	$256.81	$1,200.00	$0.00	$1,200.00	4.7	1,709
Motor Upgrades		**2,239**	**0.5**	**0.0**	**$338.71**	**$2,687.10**	**$0.00**	**$2,687.10**	**7.9**	**2,254**
ECM 6	Premium Efficiency Motors (for Heating Hot Water Pumps)	2,239	0.5	0.0	$338.71	$2,687.10	$0.00	$2,687.10	7.9	2,254
Variable Frequency Drive (VFD) Measures		**24,000**	**2.5**	**0.0**	**$3,630.97**	**$6,334.30**	**$0.00**	**$6,334.30**	**1.7**	**24,168**
ECM 7	Install VFDs on Hot Water Pumps	24,000	2.5	0.0	$3,630.97	$6,334.30	$0.00	$6,334.30	1.7	24,168
Plug Load Equipment Control - Vending Machine		**3,224**	**0.0**	**0.0**	**$487.71**	**$690.00**	**$0.00**	**$690.00**	**1.4**	**3,246**
ECM 8	Vending Machine Control	3,224	0.0	0.0	$487.71	$690.00	$0.00	$690.00	1.4	3,246
TOTALS		**103,430**	**20.8**	**0.0**	**$15,647.85**	**$74,641.15**	**$10,390.00**	**$64,251.15**	**4.1**	**104,154**

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

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

4.1.1 Lighting Upgrades

Our recommendations for upgrades to existing lighting fixtures are summarized in Figure 24 below.

Figure 24 – Summary of Lighting Upgrade ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		**62,334**	**15.3**	**0.0**	**$9,430.47**	**$50,379.75**	**$8,585.00**	**$41,794.75**	**4.4**	**62,770**
ECM 1	Install LED Fixtures	7,068	3.1	0.0	$1,069.37	$13,824.47	$2,610.00	$11,214.47	10.5	7,118
ECM 2	Retrofit Fixtures with LED Lamps	54,845	12.2	0.0	$8,297.48	$35,694.84	$5,975.00	$29,719.84	3.6	55,229
ECM 3	Install LED Exit Signs	420	0.0	0.0	$63.61	$860.44	$0.00	$860.44	13.5	423

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

ECM 1: Install LED Fixtures

Summary of Measure Economics

Interior/ Exterior	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Interior	0	0.0	0.0	$0.00	$0.00	$0.00	$0.00	0.0	0
Exterior	7,068	3.1	0.0	$1,069.37	$13,824.47	$2,610.00	$11,214.47	10.5	7,118

Measure Description

We recommend replacing exterior fixtures containing high-pressure sodium (HPS) and metal halide (MH) 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 may be twice as long as HPS and MH lamps.

ECM 2: Retrofit Fixtures with LED Lamps

Summary of Measure Economics

Interior/ Exterior	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Interior	54,071	11.9	0.0	$8,180.39	$35,318.57	$5,940.00	$29,378.57	3.6	54,449
Exterior	774	0.3	0.0	$117.09	$376.27	$35.00	$341.27	2.9	779

Measure Description

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

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

ECM 3: Install LED Exit Signs

Summary of Measure Economics

Interior/ Exterior	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Interior	420	0.0	0.0	$63.61	$860.44	$0.00	$860.44	13.5	423
Exterior	0	0.0	0.0	$0.00	$0.00	$0.00	$0.00	0.0	0

Measure Description

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

4.1.2 Lighting Control Measures

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

Figure 25 – Summary of Lighting Control ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Lighting Control Measures		**11,633**	**2.5**	**0.0**	**$1,760.00**	**$14,550.00**	**$1,805.00**	**$12,745.00**	**7.2**	**11,715**
ECM 4	Install Occupancy Sensor Lighting Controls	9,936	2.2	0.0	$1,503.19	$13,350.00	$1,805.00	$11,545.00	7.7	10,005
ECM 5	Install High/Low Lighitng Controls	1,697	0.4	0.0	$256.81	$1,200.00	$0.00	$1,200.00	4.7	1,709

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)
9,936	2.2	0.0	$1,503.19	$13,350.00	$1,805.00	$11,545.00	7.7	10,005

Measure Description

We recommend installing occupancy sensors to control lighting fixtures that are currently controlled by manual switches in classrooms, offices, conference rooms and restrooms. 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)
1,697	0.4	0.0	$256.81	$1,200.00	$0.00	$1,200.00	4.7	1,709

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. In hallways with significant ambient lighting this control can sometimes be combined with photocell controls to turn the lights off when there is sufficient daylighting. Energy savings results from only providing full lighting levels when it is required.

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

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

4.1.3 Motor Upgrades

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

Figure 26- Summary of Motor Upgrade ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Motor Upgrades		**3,789**	**0**	**0**	**$573.30**	**$11,079.54**	**$0.00**	**$11,079.54**	**19.3**	**3,816**
ECM 6	Premium Efficiency Motors (for Heating Hot Water Pumps)	2,239	0.5	0.0	$338.71	$2,687.10	$0.00	$2,687.10	7.9	2,254

ECM 6: Premium Efficiency Motors (for Heating Hot Water Pumps)

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
2,239	0.5	0.0	$338.71	$2,687.10	$0.00	$2,687.10	7.9	2,254

Measure Description

We recommend replacing heating hot water pump standard efficiency motors with NEMA Premium® efficiency motors. Our evaluation assumes that existing motors will be replaced with motors of equivalent size and type. Although occasionally additional savings can be achieved by downsizing motors to better meet the motor's current load requirements. The base case motor efficiencies are estimated from nameplate information and our best estimates of motor run hours. Efficiencies of proposed motor upgrades are obtained from the *New Jersey's Clean Energy Program Protocols to Measure Resource Savings (2016)*. Savings are based on the difference between baseline and proposed efficiencies and the assumed annual operating hours. These motors are also recommended for a variable frequency drive measure. Replacement motors will be inverter rated to ensure compatibility with the recommended VFDs

4.1.4 Variable Frequency Drive Measures

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

Figure 27 – Summary of Variable Frequency Drive ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Variable Frequency Drive (VFD) Measures		**24,000**	**2.5**	**0.0**	**$3,630.97**	**$6,334.30**	**$0.00**	**$6,334.30**	**1.7**	**24,168**
ECM 7	Install VFDs on Hot Water Pumps	24,000	2.5	0.0	$3,630.97	$6,334.30	$0.00	$6,334.30	1.7	24,168

ECM 7: Install VFDs on Hot Water Pumps

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
24,000	2.5	0.0	$3,630.97	$6,334.30	$0.00	$6,334.30	1.7	24,168

Measure Description

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

4.1.5 Plug Load Equipment Control - Vending Machines

Our recommendations for plug load equipment controls are summarized in Figure 28 below.

Figure 28- Summary of Plug Load Equipment Control ECMSs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Plug Load Equipment Control - Vending Machine		**3,224**	**0.0**	**0.0**	**$487.71**	**$690.00**	**$0.00**	**$690.00**	**1.4**	**3,246**
ECM 8	Vending Machine Control	3,224	0.0	0.0	$487.71	$690.00	$0.00	$690.00	1.4	3,246

ECM 8: Vending Machine Control

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
3,224	0.0	0.0	$487.71	$690.00	$0.00	$690.00	1.4	3,246

Measure Description

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

4.2 ECMs Evaluated But Not Recommended

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

Figure 29 – Summary of Measures Evaluated, But Not Recommended

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)
Motor Upgrades		**1,551**	**0**	**0**	**$234.59**	**$8,392.44**	**$0.00**	**$8,392.44**	**35.8**	**1,561**
Premium Efficiency Motors (for Univents)	No	1,551	0.4	0.0	$234.59	$8,392.44	$0.00	$8,392.44	35.8	1,561
Electric Unitary HVAC Measures		**4,272**	**3**	**0**	**$646.26**	**$26,516.69**	**$1,642.00**	**$24,874.69**	**38.5**	**4,302**
Install High Efficiency Electric AC	No	4,272	2.5	0.0	$646.26	$26,516.69	$1,642.00	$24,874.69	38.5	4,302
TOTAL FOR ALL RECOMMENDED MEASURES		**5,822**	**2.9**	**0**	**$ 880.85**	**$ 34,909.13**	**$ 1,642.00**	**$ 33,267.13**	**37.8**	**5,863**

* - 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 (for Univents)

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
1,551	0.4	0.0	$234.59	$8,392.44	$0.00	$8,392.44	35.8	1,561

Measure Description

The school district is considering replacing a majority of the old fan coil units at this site. The primary savings from replacing fan coil units will be from improved fan motor efficiency, however, those savings are unlikely to justify replacing the fan coils. Additional savings may be realized from installing fan coils that provide for more optimal use of outside air than the existing fan coil units.

The potential savings from installing new fan coil units with electronically commutated (EC) motors was evaluated. EC motors are generally more efficient than other fractional hp motors and have the capability of operating at variable speeds. We evaluated replacing univent standard efficiency motors with EC motors. Our evaluation assumes that existing motors will be replaced with motors of equivalent size and type. The base case motor efficiencies are estimated from nameplate information. Efficiencies of the proposed motor upgrades are obtained from the current *Code of Federal Regulations Title 10 Part 431.446 Small Electric Motors Energy Conservation Standards and Their Effective Dates*. Savings are based on the difference between existing and proposed efficiencies and the assumed annual operating hours.

In general, replacing the fan coil units should be considered a capital improvement measure that has the potential to provide energy savings and improve occupant comfort.

Install High Efficiency Air Conditioning Units

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
4,272	2.5	0.0	$646.26	$26,516.69	$1,642.00	$24,874.69	38.5	4,302

Measure Description

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

Reasons for not Recommending

The simple payback for this measure is greater than the typical useful life of 15 years for package units. Therefore, this measure is not recommended.

5 ENERGY EFFICIENT PRACTICES

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

Reduce Air Leakage

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

Close Doors and Windows

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

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 Proper 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.

Turn Off Unneeded Motors

Electric motors often run unnecessarily, and this is an overlooked opportunity to save energy. These motors should be identified and turned off when appropriate. For example, exhaust fans often run unnecessarily when ventilation requirements are already met. Reducing run hours for these motors can result in significant energy savings. Whenever possible, use automatic devices such as twist timers or occupancy sensors to ensure that motors are turned off when not needed.

Perform Routine Motor Maintenance

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

Practice Proper Use of Thermostat Schedules and Temperature Resets

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

Clean Evaporator/Condenser Coils on AC Systems

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

Clean and/or Replace HVAC Filters

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

Perform Proper Boiler Maintenance

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

Perform Proper Water Heater Maintenance

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

Perform Maintenance on Compressed Air Systems

Like all electro-mechanical equipment, compressed air systems require periodic maintenance to operate at peak efficiency. A maintenance plan should be developed for process related compressed air systems to include inspection, cleaning, and replacement of inlet filter cartridges, cleaning of drain traps, daily inspection of lubricant levels to reduce unwanted friction, inspection of belt condition and tension, checking for system leaks and adjustment of loose connections, and overall system cleaning. Contact a qualified technician for help with setting up periodic maintenance schedule.

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.

6 On-Site Generation Measures

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

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

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

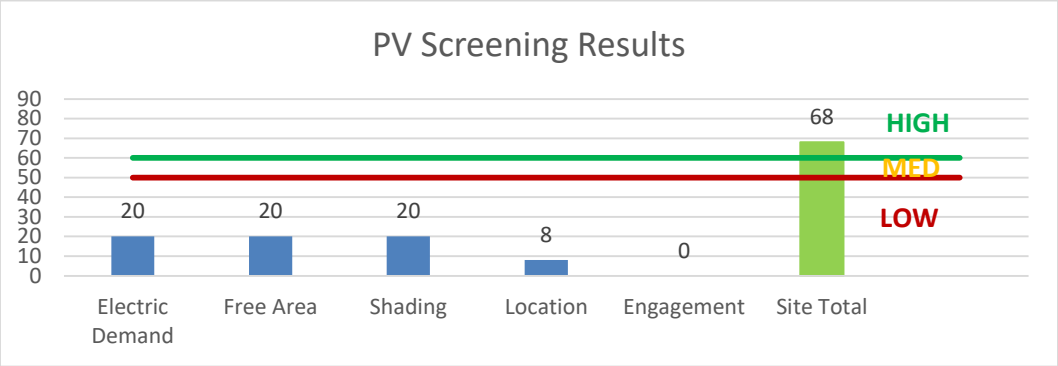
6.1 Photovoltaic

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

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

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

Figure 30 - Photovoltaic Screening



Solar projects must register their projects in the SREC (Solar Renewable Energy Certificate) Registration Program (SRP) prior to the start of construction in order to establish the project's eligibility to earn SRECs. Registration of the intent to participate in New Jersey's solar marketplace provides market participants with information about developed new solar projects and insight into future SREC pricing. Refer to Section 8.3 for additional information.

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

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

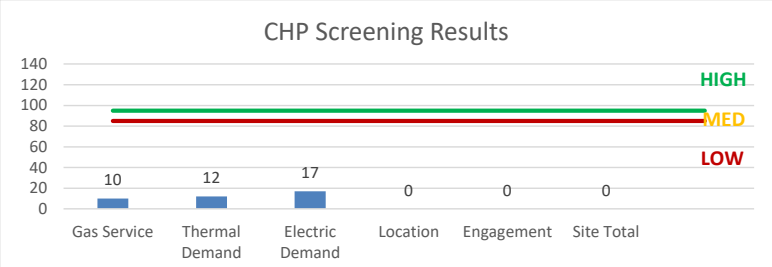
6.2 Combined Heat and Power

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

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

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

Figure 31 - 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.

We believe there is a low opportunity for DR at this site.

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

Figure 32 - ECM Incentive Program Eligibility

Energy Conservation Measure		SmartStart Prescriptive	SmartStart Custom	Direct Install	Pay For Performance Existing Buildings	Large Energy Users Program	Combined Heat & Power and Fuel Cell
ECM 1	Install LED Fixtures	x		x			
ECM 2	Retrofit Fixtures with LED Lamps	x		x			
ECM 3	Install LED Exit Signs			x			
ECM 4	Install Occupancy Sensor Lighting Controls	x		x			
ECM 5	Install High/Low Lighitng Controls			x			
ECM 6	Premium Efficiency Motors (for Heating Hot Water Pumps)	x		x			
ECM 7	Install VFDs on Hot Water Pumps			x			
ECM 8	Vending Machine Control						

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

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

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

8.1 SmartStart

Overview

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

Equipment with Prescriptive Incentives Currently Available:

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

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

Incentives

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

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

How to Participate

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

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

8.2 Direct Install

Overview

Direct Install is a turnkey program available to existing small to medium-sized facilities with a peak electric demand that does not exceed 200 kW for any recent 12-month period. You will work directly with a pre-approved contractor who will perform a free energy assessment at your facility, identify specific eligible measures, and provide a clear scope of work for installation of selected measures. Energy efficiency measures may include lighting and lighting controls, refrigeration, HVAC, motors, variable speed drives and controls.

Incentives

The program pays up to **70%** of the total installed cost of eligible measures, up to $125,000 per project. Direct Install participants will also be held to a fiscal year cap of $250,000 per entity.

How to Participate

To participate in the Direct Install program you will need to contact the participating contractor who the region of the state where your facility is located. A complete list of Direct Install program partners is provided on the Direct Install website linked below. The contractor will be paid the measure incentives directly by the program which will pass on to you in the form of reduced material and implementation costs. This means up to 70% of eligible costs are covered by the program, subject to program caps and eligibility, while the remaining 30% of the cost is paid to the contractor by the customer.

Since Direct Install offers a free assessment of eligible measures, Direct Install is also available to small businesses and other commercial facilities too that may not be eligible for the more detailed facility audits provided by LGEA.

Detailed program descriptions and applications can be found at: www.njcleanenergy.com/DI.

8.3 SREC Registration Program

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

After the registration is accepted, construction is complete, and final paperwork has been submitted and is deemed complete, the project is issued a New Jersey certification number which enables it to generate New Jersey SRECs. SREC's are generated once the solar project has been authorized to be energized by the Electric Distribution Company (EDC).

Each time a solar installation generates 1,000 kilowatt-hours (kWh) of electricity, an SREC is earned. Solar project owners report the energy production to the SREC Tracking System. This reporting allows SREC's to be placed in the customer's electronic account. SRECs can then be sold on the SREC Tracking System, providing revenue for the first 15 years of the project's life.

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

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

8.4 Energy Savings Improvement Program

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

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

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

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

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

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

9 ENERGY PURCHASING AND PROCUREMENT STRATEGIES

9.1 Retail Electric Supply Options

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

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

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

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

9.2 Retail Natural Gas Supply Options

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

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

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

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

Appendix A: Equipment Inventory & Recommendations

Lighting Inventory & Recommendations

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Boiler Room	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	No	8	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,602	0.15	687	0.0	$103.90	$468.00	$80.00	3.73
1st Grade Corridor	13	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	13	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,821	0.36	1,622	0.0	$245.36	$960.50	$130.00	3.38
1st Grade Corridor	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
Main Corridor	31	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	31	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,821	0.85	3,867	0.0	$585.09	$2,213.50	$310.00	3.25
Main Corridor	5	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	5	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Courage Corridor	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	10	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,821	0.27	1,248	0.0	$188.74	$785.00	$100.00	3.63
Courage Corridor	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
Gym	14	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,602	Relamp	Yes	14	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,821	0.67	3,074	0.0	$465.11	$1,601.87	$315.00	2.77
Gym	3	Exit Signs: Fluorescent	None	12	8,760	Fixture Replacement	No	3	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	181	0.0	$27.43	$322.67	$0.00	11.76
Storage Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,602	0.06	296	0.0	$44.81	$175.50	$30.00	3.25
Gym Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,821	0.05	250	0.0	$37.75	$233.00	$40.00	5.11
Respect Corridor	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	9	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,821	0.25	1,123	0.0	$169.87	$726.50	$90.00	3.75
Respect Corridor	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
Wisdom Way	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,602	0.06	296	0.0	$44.81	$175.50	$30.00	3.25
Main Lobby	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,602	0.09	395	0.0	$59.75	$234.00	$40.00	3.25
Main Lobby	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
Main Lobby	1	Incandescent: Screw-in	Wall Switch	100	2,602	Relamp	No	1	LED Screw-In Lamps: LED- 15W lamp	Wall Switch	15	2,602	0.06	254	0.0	$38.47	$53.75	$5.00	1.27
Kindness Lane	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,821	0.33	1,497	0.0	$226.49	$902.00	$120.00	3.45
Kindness Lane	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
Cafeteria	9	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	32	2,602	None	No	9	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	32	2,602	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Cafeteria	3	Exit Signs: Fluorescent	None	12	8,760	Fixture Replacement	No	3	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	181	0.0	$27.43	$322.67	$0.00	11.76
Kitchen	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	No	7	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,602	0.15	691	0.0	$104.55	$409.50	$70.00	3.25
Kitchen	1	Exit Signs: Fluorescent	None	12	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.00	60	0.0	$9.14	$107.56	$0.00	11.76
Room 105	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,821	0.22	998	0.0	$150.99	$738.00	$115.00	4.13
Room 104	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,821	0.22	998	0.0	$150.99	$738.00	$115.00	4.13

	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
Room 103	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,821	0.22	998	0.0	$150.99	$738.00	$115.00	4.13
Room 102	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,821	0.22	998	0.0	$150.99	$738.00	$115.00	4.13
Room 101	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,821	0.22	998	0.0	$150.99	$738.00	$115.00	4.13
Room 109	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,821	0.22	998	0.0	$150.99	$738.00	$115.00	4.13
Staff Restroom	1	Incandescent: Screw-in	Wall Switch	60	2,602	Relamp	No	1	LED Screw-In Lamps: LED-9W lamp	Wall Switch	9	2,602	0.03	153	0.0	$23.08	$53.75	$5.00	2.11
VP office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,821	0.11	499	0.0	$75.50	$350.00	$60.00	3.84
Room 110	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,821	0.22	998	0.0	$150.99	$738.00	$115.00	4.13
Room 111	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,821	0.27	1,248	0.0	$188.74	$855.00	$135.00	3.81
Room 112	11	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	11	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,821	0.30	1,372	0.0	$207.61	$913.50	$145.00	3.70
Restroom	1	Incandescent: Screw-in	Occupancy Sensor	60	1,821	Relamp	No	1	LED Screw-In Lamps: LED-9W lamp	Occupancy Sensor	9	1,821	0.03	107	0.0	$16.16	$53.75	$5.00	3.02
Room 100 Library	63	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	63	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,821	1.72	7,860	0.0	$1,189.06	$5,575.50	$875.00	3.95
Room 100 Library	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,602	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,602	0.01	48	0.0	$7.24	$48.20	$10.00	5.27
Room 100 Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,821	0.11	499	0.0	$75.50	$350.00	$60.00	3.84
Room 100 Conference Room	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,821	0.11	499	0.0	$75.50	$350.00	$60.00	3.84
Room 100	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
Room 113	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,821	0.22	998	0.0	$150.99	$738.00	$115.00	4.13
Guidance Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,821	0.05	250	0.0	$37.75	$387.00	$55.00	8.80
Guidance Office	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	2,602	0.02	87	0.0	$13.13	$63.20	$0.00	4.81
Restroom	2	LED Screw-In Lamps: Screw-in	Occupancy Sensor	9	1,821	None	No	2	LED Screw-In Lamps: Screw-in	Occupancy Sensor	9	1,821	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Expo Light	1	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	32	2,602	None	No	1	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	32	2,602	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Nurse Office	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	7	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,821	0.19	873	0.0	$132.12	$525.50	$90.00	3.30
Nurse Office	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,602	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,602	0.01	48	0.0	$7.24	$48.20	$10.00	5.27
Room 124	13	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	13	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,821	0.36	1,622	0.0	$245.36	$1,030.50	$165.00	3.53
Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,602	0.02	99	0.0	$14.94	$58.50	$10.00	3.25
Girls Restroom	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	32	1,821	None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	32	1,821	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
Room 120	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,821	0.22	998	0.0	$150.99	$738.00	$115.00	4.13
Custodian	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,602	0.02	99	0.0	$14.94	$58.50	$10.00	3.25
Boys Restroom	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	32	1,821	None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	32	1,821	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Room 121	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,821	0.22	998	0.0	$150.99	$738.00	$115.00	4.13
Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,602	0.02	99	0.0	$14.94	$58.50	$10.00	3.25
Room 122	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,821	0.22	998	0.0	$150.99	$738.00	$115.00	4.13
Room 122	4	Incandescent: Screw-in	Wall Switch	100	2,602	Relamp	No	4	LED Screw-In Lamps: LED- 15W lamp	Wall Switch	15	2,602	0.22	1,017	0.0	$153.89	$215.01	$20.00	1.27
Room 123	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,821	0.22	998	0.0	$150.99	$738.00	$115.00	4.13
Room 129	11	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	11	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,821	0.30	1,372	0.0	$207.61	$913.50	$145.00	3.70
Faculty Room	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,821	0.11	499	0.0	$75.50	$350.00	$60.00	3.84
Restroom	2	Incandescent: Screw-in	Wall Switch	60	2,602	Relamp	No	2	LED Screw-In Lamps: LED-9W lamp	Wall Switch	9	2,602	0.07	305	0.0	$46.17	$107.51	$10.00	2.11
Room 125	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,821	0.22	998	0.0	$150.99	$738.00	$115.00	4.13
Room 125	4	Incandescent: Screw-in	Wall Switch	60	2,602	Relamp	No	4	LED Screw-In Lamps: LED-9W lamp	Wall Switch	9	2,602	0.13	610	0.0	$92.33	$215.01	$20.00	2.11
Room 124	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,821	0.22	998	0.0	$150.99	$738.00	$115.00	4.13
Room 124	4	Incandescent: Screw-in	Wall Switch	60	2,602	Relamp	No	4	LED Screw-In Lamps: LED-9W lamp	Wall Switch	9	2,602	0.13	610	0.0	$92.33	$215.01	$20.00	2.11
Room 127	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,821	0.22	998	0.0	$150.99	$738.00	$115.00	4.13
Room 127	4	Incandescent: Screw-in	Wall Switch	60	2,602	Relamp	No	4	LED Screw-In Lamps: LED-9W lamp	Wall Switch	9	2,602	0.13	610	0.0	$92.33	$215.01	$20.00	2.11
Room 126	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,821	0.22	998	0.0	$150.99	$738.00	$115.00	4.13
Room 126	4	Incandescent: Screw-in	Wall Switch	60	2,602	Relamp	No	4	LED Screw-In Lamps: LED-9W lamp	Wall Switch	9	2,602	0.13	610	0.0	$92.33	$215.01	$20.00	2.11
Ext Perimeter	7	Incandescent: Screw-in	Daylight Dimming	100	1,301	Relamp	No	7	LED Screw-In Lamps: LED- 15W lamp	Daylight Dimming	15	1,301	0.39	890	0.0	$134.65	$376.27	$35.00	2.53
Main Office	11	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	11	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,821	0.30	1,372	0.0	$207.61	$913.50	$145.00	3.70
Principal's Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,821	0.05	250	0.0	$37.75	$233.00	$40.00	5.11
Principal's Restrooom	1	Incandescent: Screw-in	Wall Switch	60	2,602	Relamp	No	1	LED Screw-In Lamps: LED-9W lamp	Wall Switch	9	2,602	0.03	153	0.0	$23.08	$53.75	$5.00	2.11
Boys Restroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,821	0.05	250	0.0	$37.75	$233.00	$40.00	5.11
Girls Restroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,821	0.05	250	0.0	$37.75	$233.00	$40.00	5.11

	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
Room 130	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,821	0.22	998	0.0	$150.99	$738.00	$115.00	4.13
Room 140	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,821	0.25	1,123	0.0	$169.87	$796.50	$125.00	3.95
Closet	1	Incandescent: Screw-in	Wall Switch	60	2,602	Relamp	No	1	LED Screw-In Lamps: LED-9W lamp	Wall Switch	9	2,602	0.03	153	0.0	$23.08	$53.75	$5.00	2.11
Room 115	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,821	0.25	1,123	0.0	$169.87	$796.50	$125.00	3.95
Closet	1	Incandescent: Screw-in	Wall Switch	60	2,602	Relamp	No	1	LED Screw-In Lamps: LED-9W lamp	Wall Switch	9	2,602	0.03	153	0.0	$23.08	$53.75	$5.00	2.11
Room 116	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,821	0.25	1,123	0.0	$169.87	$796.50	$125.00	3.95
Closet	1	Incandescent: Screw-in	Wall Switch	60	2,602	Relamp	No	1	LED Screw-In Lamps: LED-9W lamp	Wall Switch	9	2,602	0.03	153	0.0	$23.08	$53.75	$5.00	2.11
Room 117	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,821	0.25	1,123	0.0	$169.87	$796.50	$125.00	3.95
Room 118	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,821	0.25	1,123	0.0	$169.87	$796.50	$125.00	3.95
Closet	2	Incandescent: Screw-in	Wall Switch	60	2,602	Relamp	No	2	LED Screw-In Lamps: LED-9W lamp	Wall Switch	9	2,602	0.07	305	0.0	$46.17	$107.51	$10.00	2.11
Room 119	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,821	0.25	1,123	0.0	$169.87	$796.50	$125.00	3.95
Closet	1	Incandescent: Screw-in	Wall Switch	60	2,602	Relamp	No	1	LED Screw-In Lamps: LED-9W lamp	Wall Switch	9	2,602	0.03	153	0.0	$23.08	$53.75	$5.00	2.11
Kitchen Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,602	0.04	197	0.0	$29.87	$117.00	$20.00	3.25
Music Room	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,821	0.25	1,123	0.0	$169.87	$796.50	$125.00	3.95
Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,821	0.05	250	0.0	$37.75	$233.00	$40.00	5.11
Air Room	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	No	12	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,602	0.26	1,185	0.0	$179.24	$702.00	$120.00	3.25
Maintenance Room	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,602	0.13	592	0.0	$89.62	$351.00	$60.00	3.25
Closet	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	No	8	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,602	0.17	790	0.0	$119.49	$468.00	$80.00	3.25
Boys Restroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,821	0.05	250	0.0	$37.75	$233.00	$40.00	5.11
Custodian	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,602	0.02	99	0.0	$14.94	$58.50	$10.00	3.25
Girls Restroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,821	0.05	250	0.0	$37.75	$233.00	$40.00	5.11
Room 78	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,821	0.11	499	0.0	$75.50	$350.00	$60.00	3.84
Storgae Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,602	0.06	296	0.0	$44.81	$175.50	$30.00	3.25
Room 108	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,821	0.22	998	0.0	$150.99	$738.00	$115.00	4.13
Girls Restroom	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,821	0.08	374	0.0	$56.62	$291.50	$50.00	4.27

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Custodian	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,602	0.02	99	0.0	$14.94	$58.50	$10.00	3.25
Room 107	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,821	0.25	1,123	0.0	$169.87	$796.50	$125.00	3.95
Boys Restroom	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,821	0.08	374	0.0	$56.62	$291.50	$50.00	4.27
Room 106	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,821	0.22	998	0.0	$150.99	$738.00	$115.00	4.13
Pole Lighting	1	LED Screw-In Lamps: LED - 125W lamp	Daylight Dimming	125	1,301	None	No	1	LED Screw-In Lamps: LED - 125W lamp	Daylight Dimming	125	1,301	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Perimeter	15	High-Pressure Sodium: (1) 250W Lamp	Daylight Dimming	295	1,301	Fixture Replacement	No	15	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Daylight Dimming	89	1,301	2.03	4,633	0.0	$700.99	$5,860.16	$1,500.00	6.22
Perimeter	6	Metal Halide: (1) 175W Lamp	Daylight Dimming	215	1,301	Fixture Replacement	No	6	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Daylight Dimming	65	1,301	0.59	1,351	0.0	$204.36	$2,344.06	$600.00	8.53
Pole Lighting	2	Metal Halide: (1) 400W Lamp	Daylight Dimming	458	1,301	Fixture Replacement	No	2	LED - Fixtures: Outdoor Pole/Arm-Mounted Area/Roadway Fixture	Daylight Dimming	137	1,301	0.42	959	0.0	$145.11	$3,905.99	$200.00	25.54
Perimeter	3	Metal Halide: (1) 50W Lamp	Daylight Dimming	72	1,301	Fixture Replacement	No	3	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Daylight Dimming	22	1,301	0.10	226	0.0	$34.22	$1,172.03	$300.00	25.48
Front Entrance	1	LED Screw-In Lamps: LED - 9W lamp	Daylight Dimming	9	1,301	None	No	1	LED Screw-In Lamps: LED - 9W lamp	Daylight Dimming	9	1,301	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Front Entrance	2	Metal Halide: (1) 400W Lamp	Daylight Dimming	458	1,301	Fixture Replacement	No	2	LED - Fixtures: Downlight Recessed	Daylight Dimming	137	1,301	0.42	959	0.0	$145.11	$542.23	$10.00	3.67
Trailer Offices	19	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,602	Relamp	Yes	19	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,821	0.52	2,370	0.0	$358.61	$1,651.50	$260.00	3.88
Trailer Offices	1	Exit Signs: Fluorescent	None	12	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.00	60	0.0	$9.14	$107.56	$0.00	11.76
Trailer Offices	2	Incandescent: Screw-in	Wall Switch	60	2,602	Relamp	No	2	LED Screw-In Lamps: LED-9W lamp	Wall Switch	9	2,602	0.07	305	0.0	$46.17	$107.51	$10.00	2.11

Motor Inventory & Recommendations

		Existing Conditions						Proposed Conditions				Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	Motor Quantity	Motor Application	HP Per Motor	Full Load Efficiency	VFD Control?	Annual Operating Hours	Install High Efficiency Motors?	Full Load Efficiency	Install VFDs?	Number of VFDs	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Boiler Room	Heating System	2	Heating Hot Water Pump	10.0	86.5%	No	3,391	Yes	91.7%	Yes	1	2.94	26,239	0.0	$3,969.68	$9,021.40	$0.00	2.27
Boiler Room	Boiler Room	1	Ventilation Fan	2.0	84.0%	No	2,745	No	84.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Boiler Room	Air Compressor	1	Air Compressor	10.0	91.7%	No	4,957	No	91.7%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Restroom	6	Exhaust Fan	0.3	78.0%	No	2,745	No	78.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Corridor	1	Exhaust Fan	0.3	78.0%	No	2,745	No	78.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Restroom	8	Exhaust Fan	0.3	78.0%	No	2,745	No	78.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Cafeteria	2	Exhaust Fan	0.3	78.0%	No	2,745	No	78.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Library	1	Exhaust Fan	0.3	78.0%	No	2,745	No	78.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Restroom	4	Exhaust Fan	0.5	78.0%	No	2,745	No	78.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Gym	2	Exhaust Fan	0.5	78.0%	No	2,745	No	78.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	Dishwasher	1	Other	1.5	78.0%	No	2,745	No	78.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
School	Classrooms	21	Supply Fan	0.2	65.0%	No	2,745	Yes	80.0%	No		0.42	1,551	0.0	$234.59	$8,392.44	$0.00	35.78
Kitchen	Kitchen	1	Supply Fan	1.0	85.5%	No	2,745	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
School	Classrooms	12	Supply Fan	0.2	65.0%	No	2,745	No	65.0%	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	Corridor	1	Split-System AC	4.00		Yes	1	Split-System AC	4.00		14.00		No	0.38	646	0.0	$97.78	$5,984.88	$368.00	57.45
Roof	Room 111	1	Split-System AC	2.50		Yes	1	Split-System AC	2.50		14.00		No	0.11	186	0.0	$28.20	$3,740.55	$230.00	124.47
Roof	Office	1	Split-System AC	1.50		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Corridor	1	Split-System AC	3.00		Yes	1	Split-System AC	3.00		14.00		No	0.69	1,163	0.0	$176.00	$4,488.66	$276.00	23.94
Roof	Cafeteria	1	Packaged AC	16.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Library	1	Split-System AC	8.00		Yes	1	Split-System AC	8.00		11.50		No	0.84	1,416	0.0	$214.26	$9,310.16	$584.00	40.73
Roof	Kitchen	1	Split-System AC	5.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Kitchen	1	Split-System AC	2.00		Yes	1	Split-System AC	2.00		14.00		No	0.51	859	0.0	$130.03	$2,992.44	$184.00	21.60
Roof	Gym	4	Split-System AC	5.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Room 108	Room 108	1	Window AC	1.50		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Room 105	Room 105	1	Window AC	1.50		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Room 106	Room 106	1	Window AC	1.50		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Room 104	Room 104	1	Window AC	1.50		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Room 103	Room 103	1	Window AC	1.50		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Room 102	Room 102	1	Window AC	1.50		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Room 101	Room 101	1	Window AC	1.50		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Room 109	Room 109	1	Window AC	1.50		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Room 110	Room 110	1	Window AC	1.50		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Room 113	Room 113	1	Window AC	1.50		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Room 130	Room 130	1	Window AC	1.50		No							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	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
Room 121	Room 121	1	Window AC	1.50		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Room 122	Room 122	1	Window AC	1.50		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Room 123	Room 123	1	Window AC	1.50		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Faculty Room	Faculty Room	1	Window AC	1.50		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Room 127	Room 127	1	Window AC	1.50		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Room 126	Room 126	1	Window AC	1.50		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Room 124	Room 124	1	Window AC	1.50		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Room 125	Room 125	1	Window AC	1.50		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Trailer	Trailer and Other spaces	6	Packaged Terminal AC	1.50		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Fuel Heating Inventory & Recommendations

		Existing Conditions			Proposed Conditions						Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Output Capacity per Unit (MBh)	Install High Efficiency System?	System Quantity	System Type	Output Capacity per Unit (MBh)	Heating Efficiency	Heating Efficiency Units	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Boiler Room	School Building	2	Condensing Hot Water Boiler	2,000.00	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00

DHW Inventory & Recommendations

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

Commercial Refrigerator/Freezer Inventory & Recommendations

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

Cooking Equipment Inventory & Recommendations

	Existing Conditions			Proposed Conditions	Energy Impact & Financial Analysis						
Location	Quantity	Equipment Type	High Efficiency Equipement?	Install High Efficiency Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen	1	Gas Convection Oven (Half Size)	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	1	Gas Convection Oven (Full Size)	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	Single Tank Conveyor (High Temp)	Electric	Electric	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Plug Load Inventory

	Existing Conditions			
Location	Quantity	Equipment Description	Energy Rate (W)	ENERGY STAR Qualified?
School	92	Desktop and LCD monitor	160.0	Yes
School	6	Microwave	1,000.0	No
School	1	Washer and Dryer	3,400.0	No
School	12	Printer	500.0	Yes
School	25	Old TV	180.0	No
School	1	Kiln	8,000.0	No
School	2	small freezer	400.0	Yes
School	2	coffee maker	400.0	No
School	5	copy machine	500.0	Yes
School	10	LCD TV	150.0	No
School	1	Refrigerator	600.0	No

Vending Machine Inventory & Recommendations

	Existing Conditions		Proposed Conditions	Energy Impact & Financial Analysis						
Location	Quantity	Vending Machine Type	Install Controls?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Storage Room	1	Refrigerated	Yes	0.00	1,612	0.0	$243.85	$230.00	$0.00	0.94
Faculty Room	1	Refrigerated	Yes	0.00	1,612	0.0	$243.85	$230.00	$0.00	0.94
Faculty Room	1	Non-Refrigerated	No	0.00	0	0.0	$0.00	$230.00	$0.00	0.00

Appendix B: ENERGY STAR® Statement of Energy Performance

ENERGY STAR® Statement of Energy Performance

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ENERGY STAR® Score[1]

Mary Shoemaker Elementary School

Primary Property Type: K-12 School
Gross Floor Area (ft²): 59,071
Built: 1958

For Year Ending: June 30, 2017
Date Generated: May 02, 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
Mary Shoemaker Elementary School 201 E Millbrooke Ave Woodstown, New Jersey 08098	Woodstown-Pilesgrove Regional SD E Lake Road Woodstown, NJ 08098 (____)____-_____	Rose Chin E Lake Road Woodstown, NJ 08098 856-769-0144 x22251 chin.r@woodstown.org

Property ID: 6264439

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
48.5 kBtu/ft²

Source EUI
101.4 kBtu/ft²

Annual Energy by Fuel	
Natural Gas (kBtu)	1,441,025 (50%)
Electric - Grid (kBtu)	1,426,034 (50%)

National Median Comparison	
National Median Site EUI (kBtu/ft²)	69.6
National Median Source EUI (kBtu/ft²)	145.4
% Diff from National Median Source EUI	-30%
Annual Emissions	
Greenhouse Gas Emissions (Metric Tons CO2e/year)	235

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)