Local Government Energy Audit:
Energy Audit Report

William Davies Middle School

Hamilton Township School District

1876 Dr. Dennis Foreman Drive
Mays Landing, NJ 08330

July 3, 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 William Davies Middle 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 Hamilton Township School District in controlling energy costs and protecting our environment by offering a wide range of energy management options and advice.

1.1 Facility Summary

William Davies Middle School is a 202,670 square foot facility. The two-story school building primarily includes classrooms, offices, gym, cafeteria, and mechanical spaces.

Lighting at William Davies Middle School consists primarily of a mixture of T8 fluorescent sources, which are inefficient as compared to currently available alternatives. Cooling and ventilation are provided by a combination of rooftop packaged units and split system air conditioning units. The units are over 11 years old and less efficient than currently available equipment. Heating is provided by steam coils in the packaged units served by a steam boiler as well as unit ventilators located in the zones which receive heating hot water (HHW) from a second boiler. The facility is equipped with rooftop mounted solar photovoltaic panels that can generate up to 50 kW. A thorough description of the facility and our observations are located in Section 2.

1.2 Your Cost Reduction Opportunities

Energy Conservation Measures

TRC evaluated ten measures, which together represent an opportunity for William Davies Middle School to reduce annual energy costs by $122,534 and annual greenhouse gas emissions by 822,209 lbs CO_2e. We estimate that if all measures are implemented as recommended, the project would pay for itself in 3.3 years. The breakdown of existing and potential utility costs and the estimated savings are shown in Figure 1 and Figure 2, respectively. Together these measures would reduce onsite energy usage by about 17%.

Figure 1 – Previous 12 Month Utility Costs

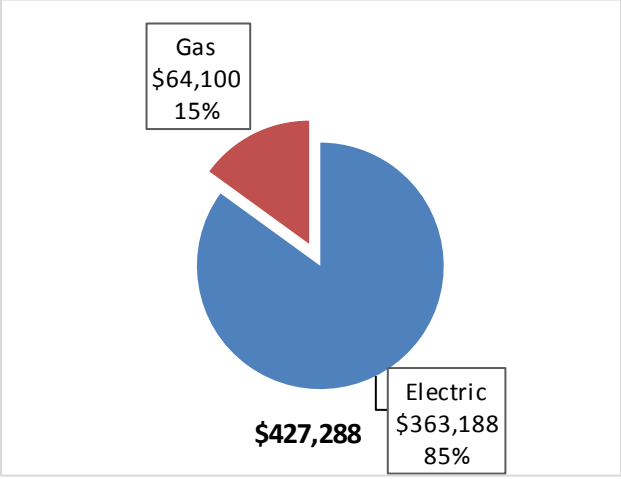
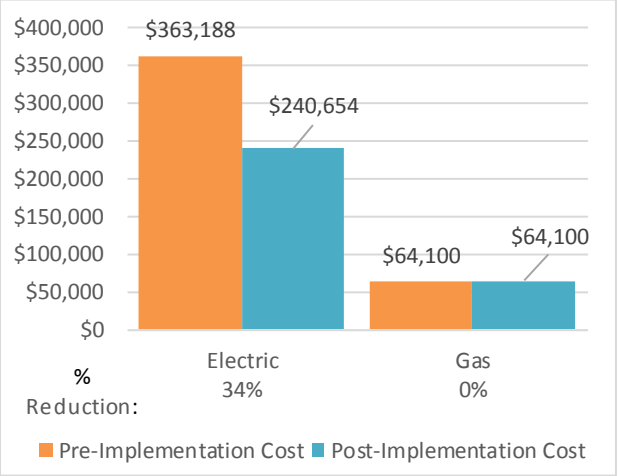


Figure 2 – Potential Post-Implementation Costs



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

Estimates of the total cost, energy savings, and financial incentives for the evaluated 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		High Priority?	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			**404,124**	**68.2**	**0.0**	**$60,647.93**	**$252,133.58**	**$29,635.00**	**$222,498.58**	**3.7**	**406,950**
ECM 1	Install LED Fixtures	Yes	46,223	8.2	0.0	$6,936.74	$94,145.17	$5,600.00	$88,545.17	12.8	46,546
ECM 2	Retrofit Fixtures with LED Lamps	Yes	357,902	60.0	0.0	$53,711.19	$157,988.41	$24,035.00	$133,953.41	2.5	360,404
Lighting Control Measures			**51,175**	**7.3**	**0.0**	**$7,679.89**	**$35,650.00**	**$3,010.00**	**$32,640.00**	**4.3**	**51,532**
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	40,851	5.8	0.0	$6,130.67	$25,650.00	$3,010.00	$22,640.00	3.7	41,137
ECM 4	Install High/Low Lighitng Controls	Yes	10,323	1.5	0.0	$1,549.21	$10,000.00	$0.00	$10,000.00	6.5	10,395
Motor Upgrades			**17,335**	**3.4**	**0.0**	**$2,601.49**	**$20,700.15**	**$0.00**	**$20,700.15**	**8.0**	**17,456**
ECM 5	Premium Efficiency Motors	Yes	17,335	3.4	0.0	$2,601.49	$20,700.15	$0.00	$20,700.15	8.0	17,456
Variable Frequency Drive (VFD) Measures			**220,439**	**19.9**	**0.0**	**$33,081.85**	**$67,766.80**	**$5,200.00**	**$62,566.80**	**1.9**	**221,981**
ECM 6	Install VFDs on Constant Volume (CV) HVAC	Yes	28,005	7.7	0.0	$4,202.82	$32,758.50	$4,000.00	$28,758.50	6.8	28,201
ECM 7	Install VFDs on Hot Water Pumps	Yes	160,250	12.3	0.0	$24,049.08	$28,674.00	$0.00	$28,674.00	1.2	161,370
ECM 8	Install VFDs on Cooling Tower Fans	Yes	32,184	0.0	0.0	$4,829.95	$6,334.30	$1,200.00	$5,134.30	1.1	32,409
Electric Unitary HVAC Measures			**120,203**	**40.3**	**0.0**	**$18,039.14**	**$65,885.07**	**$3,046.00**	**$62,839.07**	**3.5**	**121,043**
ECM 9	Install High Efficiency Electric AC	Yes	120,203	40.3	0.0	$18,039.14	$65,885.07	$3,046.00	$62,839.07	3.5	121,043
Plug Load Equipment Control - Vending Machine			**3,224**	**0.0**	**0.0**	**$483.79**	**$690.00**	**$0.00**	**$690.00**	**1.4**	**3,246**
ECM 10	Vending Machine Control	Yes	3,224	0.0	0.0	$483.79	$690.00	$0.00	$690.00	1.4	3,246
TOTALS FOR ALL EVALUATED MEASURES			**816,500**	**139.0**	**0.0**	**$122,534.07**	**$442,825.61**	**$40,891.00**	**$401,934.61**	**3.3**	**822,209**

* - 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 (IHP 2014). 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 than using 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 ten 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 William Davies Middle School include:

- Close Doors and Windows
- Use Window Treatments/Coverings
- Ensure Lighting Controls Are Operating Properly
- Perform Routine Motor Maintenance
- Use Fans to Reduce Cooling Load
- Practice Proper Use of Thermostat Schedules and Temperature Resets
- Perform Proper Boiler Maintenance
- Perform Proper Water Heater Maintenance
- Install Plug Load Controls
- Water Conservation

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

On-Site Generation Measures

TRC evaluated the potential for installing on-site generation for William Davies Middle School. Based on the configuration of the site and its loads there is a low potential for installing any PV and combined heat and power self-generation measures.

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

1.3 Implementation Planning

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

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

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

- SmartStart
- Pay for Performance - Existing Building (P4P)
- 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 7.

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

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

Additional information on relevant incentive programs is located in Section 7. You may also check the following website for more details: www.njcleanenergy.com/ci.

2 FACILITY INFORMATION AND EXISTING CONDITIONS

2.1 Project Contacts

Figure 4 – Project Contacts

Name	Role	E-Mail	Phone #
Customer			
Anne-Marie Fala	Business Administrator	falaa@hamiltonschools.org	609-476-6303
Designated Representative			
Bryan C. McGair	Account Executive	bryan.mcgair@schneider-electric.com	609-868-2750
TRC Energy Services			
Tom Page	Auditor	tpage@TRCsolutions.com	(732) 855-0033

2.2 General Site Information

On March 29, 2017, TRC performed an energy audit at William Davies Middle School located in Mays Landing, New Jersey. TRC's team met with Anne-Marie Fala, Business Administrator to review the facility operations and help focus our investigation on specific energy-using systems.

William Davies Middle School is a 202,670 square foot facility constructed in 1987. The two-story school building primarily includes classrooms, offices, gym, cafeteria, and mechanical spaces.

Lighting at William Davies Middle School consists primarily of a mixture of T8 fluorescent sources, which are inefficient as compared to currently available alternatives. Cooling and ventilation are provided by a combination of rooftop packaged units and split system air conditioning units. The units are over 11 years old and less efficient than currently available equipment. Heating is provided by steam coils in the packaged units served by a steam boiler as well as unit ventilators located in the zones which receive heating hot water (HHW) from a second boiler. The facility is equipped with rooftop mounted solar photovoltaic panels that can generate up to 50 kW.

2.3 Building Occupancy

The school building is open Monday through Friday from approximately 7:00 AM through 9:00 PM during the school year, September through June. During a typical day, the facility is occupied by a total of 650 staff and students.

Figure 5 - Building Schedule

Building Name	Weekday/Weekend	Operating Schedule
William Davies Middle School	Weekday	6am - 10pm
William Davies Middle School	Weekend	CLOSED

2.4 Building Envelope

The William Davies Middle School building is constructed of concrete block and structural steel with a brick façade. The perimeter of the building has pitched roofs covered with composite shingle tiles that are in good condition. The interior flat built-up roof is also in good condition. The building has double-pane windows which are in good condition and show little sign of excessive infiltration. The exterior doors are constructed of metal and are in good condition.

2.5 On-Site Generation

William Davies Middle School has installed a 50 kW solar energy project. The project included photovoltaic (PV) arrays on the roof. The systems provide 25% of the electricity required by the facility. TRC noted that there is space available to increase the current system, but the site is reportedly not interested in expanding capacity at this time.

2.6 Energy-Using Systems

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

Lighting System

Interior lighting at the facility is provided mostly by linear fluorescent T8 lamps with electronic ballasts and compact fluorescent screw-in lamps. The linear fluorescent fixtures are located in all areas of the building. The site has upgraded some fixtures to more efficient LED technology including the building exit signs. The interior lighting controls use a combination of occupancy sensors and manually operated switches.

The building's exterior lighting consists primarily of pole and building-mounted metal halide (MH) and high-pressure sodium (HPS) with manual controls.

Hot Water and Steam Heating Systems

The heating hot water system consists of one hot water non-condensing boiler unit and one steam boiler. The hot water boiler is an Aerco unit with a 2,000 MBh capacity operating at approximately 83% efficiency. The hot water boiler provides heat to natural draft convectors throughout the school. The H.B. Smith steam boiler has a 1,733 MBh capacity with 83% efficiency that provides heating to the 11 Aaon rooftop packaged units.

The boilers primarily operate during school operating hours and are controlled by facility staff. No setbacks or lockouts are in place. The boilers are in good condition and well maintained.

Direct Expansion Air Conditioning System (DX)

Space cooling is provided to all conditioned spaces using 18 packaged units and two split unit systems. These systems range in capacity from 1 ton to 30 tons with SEER efficiency ratings from 9 to 15. All of the units are controlled by independent programmable thermostats.

Domestic Hot Water Heating System

The domestic hot water heating system for the facility consists one A.O. Smith gas-fired 100 gallon storage tank water heater which performs at an efficiency of approximately 83%. The gas water heater serves the kitchen and restrooms.

Food Service Equipment

The kitchen equipment includes two full-size Blodgett convection ovens, two half-size Solaris convection ovens, two gas combination oven/steamer cookers, and three heating cabinets.

Refrigeration

The kitchen has one walk-in refrigerator and one walk-in freezer that are used to store food prepared for school lunches. Both are approximately 200 cubic feet in volume. There is also a solid door stand-up refrigerator with a 50 cubic foot capacity.

Building Plug Load

There are 100 computer work stations throughout the facility, the majority with LCD monitors. Classroom areas are equipped with smart boards and projectors. The facility plug load includes several copiers, printers, other office equipment, and a washer and dryer. A breakroom includes a refrigerator, microwave, and dishwasher. There are also two refrigerated and one non-refrigerated vending machines on site.

2.7 Water-Using Systems

There are 24 restrooms at this facility. A sampling of restrooms found that all fixtures meet current water-conservation guidelines for low-flow devices. The faucets are all rated below 2.2 gallons per minute (gpm). The toilets are all rated at less than 2.5 gallons per flush (gpf) and the urinals are rated at less than 2 gpf.

3 SITE ENERGY USE AND COSTS

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

3.1 Total Cost of Energy

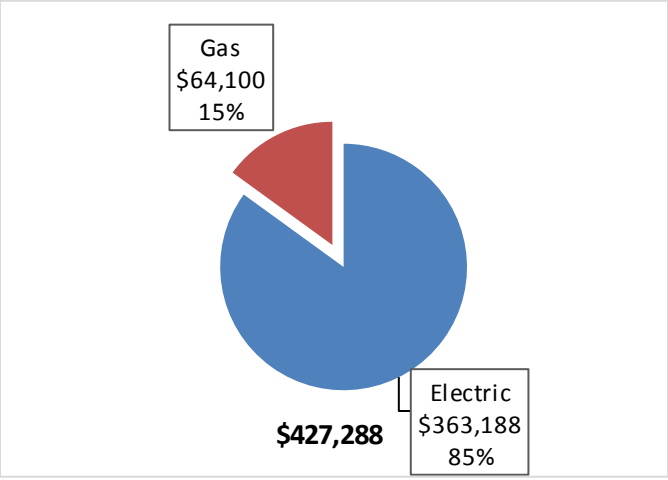
The following energy consumption and cost data is based on the last 12-month period of utility billing data that was provided for each utility. A profile of the annual energy consumption and energy cost of the facility was developed from this information.

Figure 6 - Utility Summary

Utility Summary for William Davies Middle School		
Fuel	**Usage**	**Cost**
Electricity	2,685,559 kWh	$363,188
Natural Gas	75,457 Therms	$64,100
Total		**$427,288**

The current annual energy cost for this facility is $427,288 as shown in the chart below.

Figure 7 - Energy Cost Breakdown



3.2 Electricity Usage

Electricity is provided by Atlantic City Electric. The average electric cost over the past 12 months was $0.150/kWh, which is the blended rate that includes energy supply, distribution, and other charges including onsite solar generation. This rate is used throughout the analyses in this report to assess energy costs and savings. The monthly demand charges were included with the total electric cost. The monthly electricity consumption and peak demand are shown in the chart below.

Figure 8 - Electric Usage & Demand

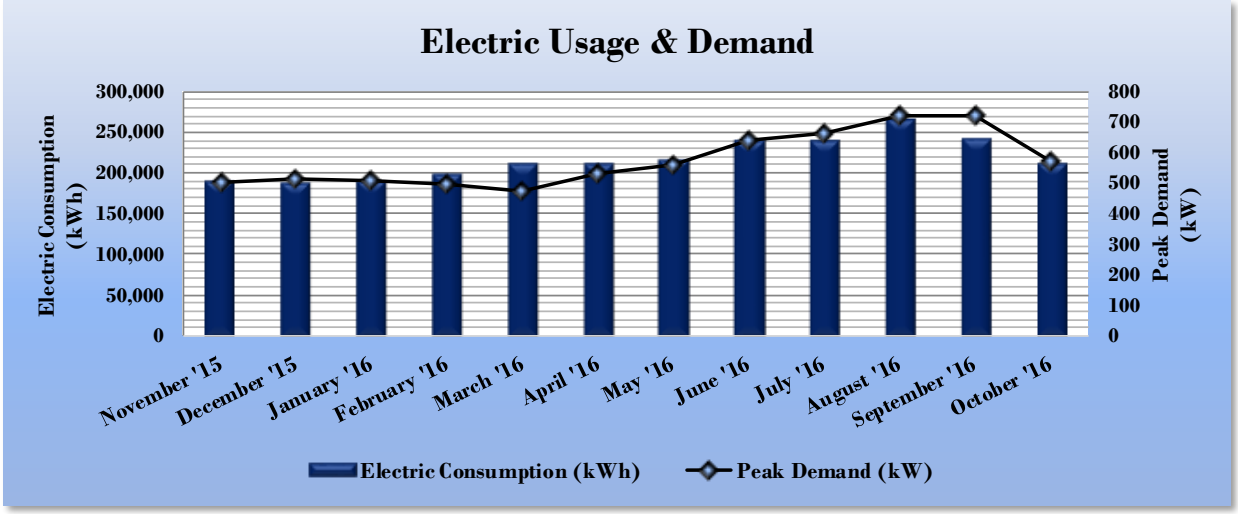


Figure 9 - Electric Usage & Demand

Electric Billing Data for William Davies Middle School				
Period Ending	Days in Period	Electric Usage (kWh)	Demand (kW)	Total Electric Cost
11/29/15	30	190,650	500	$27,179
12/30/15	30	189,393	513	$26,634
1/28/16	28	191,504	505	$27,543
2/28/16	30	199,800	495	$29,009
3/30/16	30	213,130	474	$28,151
4/28/16	28	211,444	533	$28,246
5/30/16	31	216,150	562	$29,907
6/29/16	29	239,307	642	$30,699
7/28/16	28	240,013	664	$31,753
8/30/16	32	265,615	723	$36,220
9/29/16	29	242,004	719	$31,058
10/30/16	30	212,972	570	$26,838
Totals	**355**	**2,611,982**	**723.06**	**$353,237**
Annual	**365**	**2,685,559**	**723.06**	**$363,188**

3.3 Natural Gas Usage

Natural gas is provided by South Jersey Gas. The average gas cost for the past 12 months is $0.849/therm, which is the blended rate used throughout the analyses in this report. The monthly gas consumption is shown in the chart below.

Figure 10 - Natural Gas Usage

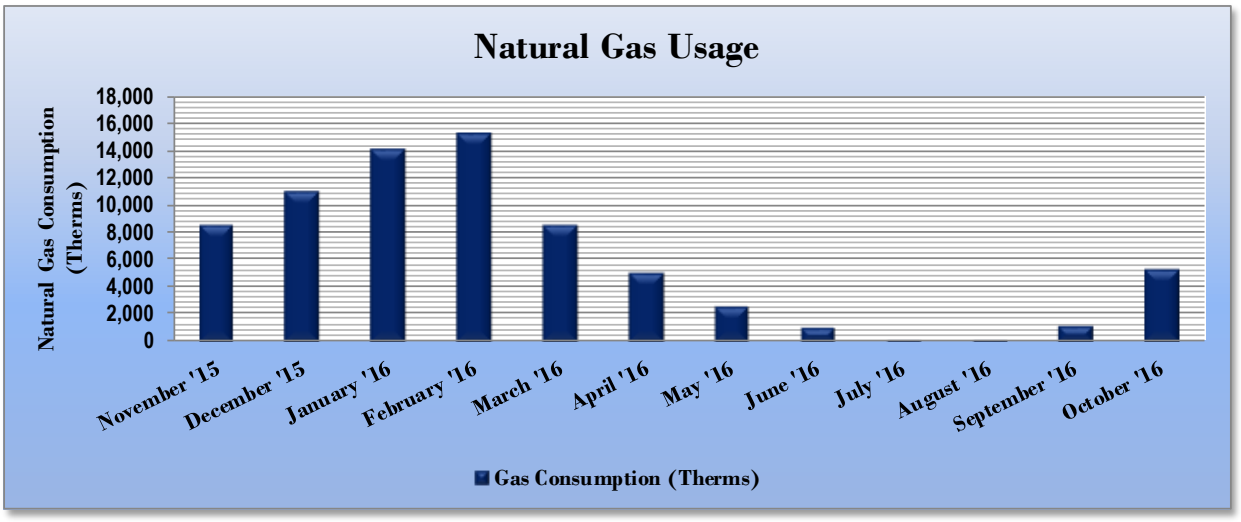


Figure 11 - Natural Gas Usage

Gas Billing Data for William Davies Middle School			
Period Ending	Days in Period	Natural Gas Usage (Therms)	Natural Gas Cost
11/29/15	30	8,571	$6,900
12/30/15	30	11,097	$9,083
1/28/16	28	14,211	$11,112
2/28/16	30	15,324	$11,388
3/30/16	30	8,524	$6,520
4/28/16	28	5,050	$4,041
5/30/16	31	2,613	$2,807
6/29/16	29	1,032	$1,109
7/28/16	28	157	$1,087
8/30/16	32	219	$1,264
9/29/16	29	1,194	$1,702
10/30/16	30	5,398	$5,332
Totals	**355**	**73,390**	**$62,344**
Annual	**365**	**75,457**	**$64,100**

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 12 - Energy Use Intensity Comparison – Existing Conditions

Energy Use Intensity Comparison - Existing Conditions		
	William Davies Middle School	National Median Building Type: School (K-12)
Source Energy Use Intensity (kBtu/ft^2)	181.1	141.4
Site Energy Use Intensity (kBtu/ft^2)	82.4	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 13 - Energy Use Intensity Comparison – Following Installation of Recommended Measures

Energy Use Intensity Comparison - Following Installation of Recommended Measures		
	William Davies Middle School	National Median Building Type: School (K-12)
Source Energy Use Intensity (kBtu/ft^2)	137.9	141.4
Site Energy Use Intensity (kBtu/ft^2)	68.7	58.2

Many types of commercial buildings are also eligible to receive an ENERGY STAR® score. This score is a percentile ranking from 1 to 100. It compares your building's energy performance to similar buildings nationwide. A score of 50 represents median energy performance, while a score of 75 means your building performs better than 75 percent of all similar buildings nationwide and may be eligible for ENERGY STAR® certification. Your building is one of the building categories that are eligible to receive a score. This facility has a current score of 52.

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

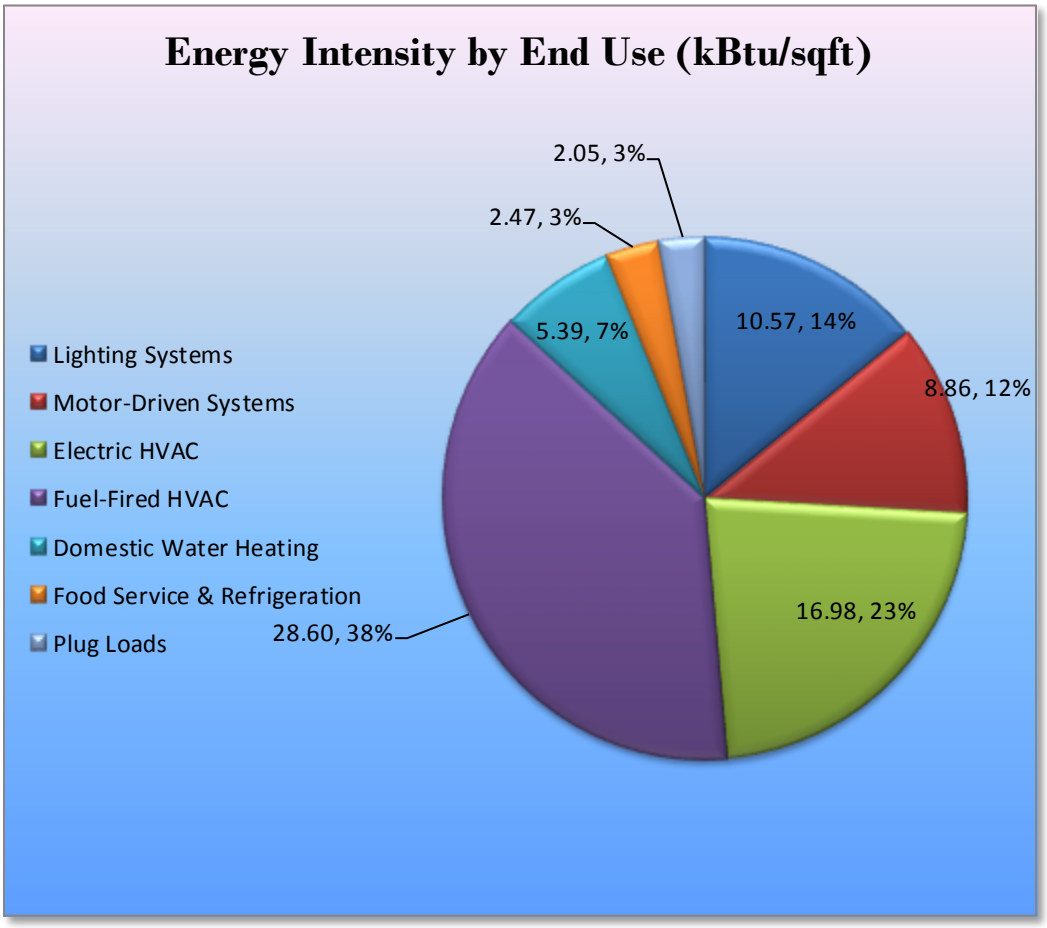
For more information on ENERGY STAR® certification go to: https://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/earn-recognition/energy-star-certification/how-app-1.

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 14 - Energy Balance (kBtu/SF)



4 ENERGY CONSERVATION MEASURES

Level of Analysis

The goal of this audit report is to identify potential energy efficiency opportunities, help prioritize specific measures for implementation, and provide information to the William Davies Middle School regarding financial incentives for which they may qualify to implement the recommended measures. For this audit report, most measures have received only a preliminary analysis of feasibility which identifies expected ranges of savings and costs. This level of analysis is usually considered sufficient to demonstrate project cost-effectiveness and help prioritize energy measures. Savings are based on the New Jersey Clean Energy Program Protocols to Measure Resource Savings 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 7.

The following sections describe the evaluated measures.

4.1 High Priority ECMs

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

Figure 15 – Summary of High Priority 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		**404,124**	**68.2**	**0.0**	**$60,647.93**	**$252,133.58**	**$29,635.00**	**$222,498.58**	**3.7**	**406,950**
ECM 1	Install LED Fixtures	46,223	8.2	0.0	$6,936.74	$94,145.17	$5,600.00	$88,545.17	12.8	46,546
ECM 2	Retrofit Fixtures with LED Lamps	357,902	60.0	0.0	$53,711.19	$157,988.41	$24,035.00	$133,953.41	2.5	360,404
Lighting Control Measures		**51,175**	**7.3**	**0.0**	**$7,679.89**	**$35,650.00**	**$3,010.00**	**$32,640.00**	**4.3**	**51,532**
ECM 3	Install Occupancy Sensor Lighting Controls	40,851	5.8	0.0	$6,130.67	$25,650.00	$3,010.00	$22,640.00	3.7	41,137
ECM 4	Install High/Low Lighitng Controls	10,323	1.5	0.0	$1,549.21	$10,000.00	$0.00	$10,000.00	6.5	10,395
Motor Upgrades		**17,335**	**3.4**	**0.0**	**$2,601.49**	**$20,700.15**	**$0.00**	**$20,700.15**	**8.0**	**17,456**
ECM 5	Premium Efficiency Motors	17,335	3.4	0.0	$2,601.49	$20,700.15	$0.00	$20,700.15	8.0	17,456
Variable Frequency Drive (VFD) Measures		**220,439**	**19.9**	**0.0**	**$33,081.85**	**$67,766.80**	**$5,200.00**	**$62,566.80**	**1.9**	**221,981**
ECM 6	Install VFDs on Constant Volume (CV) HVAC	28,005	7.7	0.0	$4,202.82	$32,758.50	$4,000.00	$28,758.50	6.8	28,201
ECM 7	Install VFDs on Hot Water Pumps	160,250	12.3	0.0	$24,049.08	$28,674.00	$0.00	$28,674.00	1.2	161,370
ECM 8	Install VFDs on Cooling Tower Fans	32,184	0.0	0.0	$4,829.95	$6,334.30	$1,200.00	$5,134.30	1.1	32,409
Electric Unitary HVAC Measures		**120,203**	**40.3**	**0.0**	**$18,039.14**	**$65,885.07**	**$3,046.00**	**$62,839.07**	**3.5**	**121,043**
ECM 9	Install High Efficiency Electric AC	120,203	40.3	0.0	$18,039.14	$65,885.07	$3,046.00	$62,839.07	3.5	121,043
Plug Load Equipment Control - Vending Machine		**3,224**	**0.0**	**0.0**	**$483.79**	**$690.00**	**$0.00**	**$690.00**	**1.4**	**3,246**
ECM 10	Vending Machine Control	3,224	0.0	0.0	$483.79	$690.00	$0.00	$690.00	1.4	3,246
TOTALS		**816,500**	**139.0**	**0.0**	**$122,534.07**	**$442,825.61**	**$40,891.00**	**$401,934.61**	**3.3**	**822,209**

* - 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

Recommended upgrades to existing lighting fixtures are summarized in Figure 16 below.

Figure 16 – 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		**404,124**	**68.2**	**0.0**	**$60,647.93**	**$252,133.58**	**$29,635.00**	**$222,498.58**	**3.7**	**406,950**
ECM 1	Install LED Fixtures	46,223	8.2	0.0	$6,936.74	$94,145.17	$5,600.00	$88,545.17	12.8	46,546
ECM 2	Retrofit Fixtures with LED Lamps	357,902	60.0	0.0	$53,711.19	$157,988.41	$24,035.00	$133,953.41	2.5	360,404

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	46,223	8.2	0.0	$6,936.74	$94,145.17	$5,600.00	$88,545.17	12.8	46,546

Measure Description

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

Additional savings from lighting maintenance can be anticipated since LEDs have lifetimes which are more than twice that of a fluorescent tube and more than ten times longer than many incandescent 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	352,750	59.1	0.0	$52,938.01	$155,087.51	$24,035.00	$131,052.51	2.5	355,216
Exterior	5,152	0.9	0.0	$773.17	$2,900.90	$0.00	$2,900.90	3.8	5,188

Measure Description

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

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

4.1.2 Lighting Control Measures

Figure 17 – 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		**51,175**	**7.3**	**0.0**	**$7,679.89**	**$35,650.00**	**$3,010.00**	**$32,640.00**	**4.3**	**51,532**
ECM 3	Install Occupancy Sensor Lighting Controls	40,851	5.8	0.0	$6,130.67	$25,650.00	$3,010.00	$22,640.00	3.7	41,137
ECM 4	Install High/Low Lighitng Controls	10,323	1.5	0.0	$1,549.21	$10,000.00	$0.00	$10,000.00	6.5	10,395

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 3: 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)
40,851	5.8	0.0	$6,130.67	$25,650.00	$3,010.00	$22,640.00	3.7	41,137

Measure Description

We recommend installing occupancy sensors to control lighting fixtures that are currently controlled by manual switches in all restrooms, storage rooms, classrooms, offices areas, etc. 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 4: 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)
10,323	1.5	0.0	$1,549.21	$10,000.00	$0.00	$10,000.00	6.5	10,395

Measure Description

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

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

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

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

4.1.3 Motor Upgrades

Figure 18 – Summary of Premium Efficiency Motors ECM

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		**17,335**	**3.4**	**0.0**	**$2,601.49**	**$20,700.15**	**$0.00**	**$20,700.15**	**8.0**	**17,456**
ECM 5	Premium Efficiency Motors	17,335	3.4	0.0	$2,601.49	$20,700.15	$0.00	$20,700.15	8.0	17,456

ECM 5: Premium Efficiency Motors

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
17,335	3.4	0.0	$2,601.49	$20,700.15	$0.00	$20,700.15	8.0	17,456

Measure Description

We recommend replacing standard efficiency motors with IHP 2014 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 (2012). Savings are based on the difference between baseline and proposed efficiencies and the assumed annual operating hours.

4.1.4 Variable Frequency Drive Measures

Our recommendations for variable frequency drive (VFD) measures are summarized in **Error! Reference source not found.** below.

Figure 19– Summary of Variable Frequency Drive ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Variable Frequency Drive (VFD) Measures		**220,439**	**19.9**	**0.0**	**$33,081.85**	**$67,766.80**	**$5,200.00**	**$62,566.80**	**1.9**	**221,981**
ECM 6	Install VFDs on Constant Volume (CV) HVAC	28,005	7.7	0.0	$4,202.82	$32,758.50	$4,000.00	$28,758.50	6.8	28,201
ECM 7	Install VFDs on Hot Water Pumps	160,250	12.3	0.0	$24,049.08	$28,674.00	$0.00	$28,674.00	1.2	161,370
ECM 8	Install VFDs on Cooling Tower Fans	32,184	0.0	0.0	$4,829.95	$6,334.30	$1,200.00	$5,134.30	1.1	32,409

ECM 6: Install VFDs on Constant Volume (CV) HVAC

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
28,005	7.7	0.0	$4,202.82	$32,758.50	$4,000.00	$28,758.50	6.8	28,201

Measure Description

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

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

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)
160,250	12.3	0.0	$24,049.08	$28,674.00	$0.00	$28,674.00	1.2	161,370

Measure Description

We recommend installing a variable frequency drives (VFD) to control a 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.

If two-way valves are not currently installed throughout the system, there will be additional cost for converting three-way valves to two-way valves.

ECM 8: Install VFDs on Cooling Tower Fans

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)
32,184	0.0	0.0	$4,829.95	$6,334.30	$1,200.00	$5,134.30	1.1	32,409

Measure Description

We recommend installing a variable frequency drives (VFD) to control the cooling tower fan motors. The VFD will allow the cooling tower fan to operate at the minimum speed necessary to maintain the temperature of the condenser water returning to the chiller. Energy savings results from reducing fan speed (and power) when there is a reduced load on the chiller and outside air wet bulb temperatures are depressed. The magnitude of energy savings is based on the estimated amount of time that the system will operate at reduced load.

4.1.5 Electric Unitary HVAC Measures

Our recommendations for unitary HVAC measures are summarized in **Error! Reference source not found.** below.

Figure 20- Summary of Electric Unitary HVAC 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)
Electric Unitary HVAC Measures		**120,203**	**40.3**	**0.0**	**$18,039.14**	**$65,885.07**	**$3,046.00**	**$62,839.07**	**3.5**	**121,043**
ECM 9	Install High Efficiency Electric AC	120,203	40.3	0.0	$18,039.14	$65,885.07	$3,046.00	$62,839.07	3.5	121,043

ECM 9: 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)
120,203	40.3	0.0	$18,039.14	$65,885.07	$3,046.00	$62,839.07	3.5	121,043

Measure Description

We recommend 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.

It should be noted that the economics associated with the measure reflects only replacing some of the rooftop package units.

4.1.6 Plug Load Equipment Control - Vending Machines

Figure 21– Plug Load Equipment Control – Vending Machines ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Plug Load Equipment Control - Vending Machine		**3,224**	**0.0**	**0.0**	**$483.79**	**$690.00**	**$0.00**	**$690.00**	**1.4**	**3,246**
ECM 10	Vending Machine Control	3,224	0.0	0.0	$483.79	$690.00	$0.00	$690.00	1.4	3,246

ECM 10: 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	$483.79	$690.00	$0.00	$690.00	1.4	3,246

Measure Description

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

5 ENERGY EFFICIENT PRACTICES

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

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.

Ensure Lighting Controls Are Operating Properly

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

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.

Use Fans to Reduce Cooling Load

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

Use 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°F-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.

Perform Boiler Maintenance

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

Perform Water Heater Maintenance

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

Plug Load Controls

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

Water Conservation

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

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

6 On-Site Generation Measures

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

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

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

6.1 Photovoltaic

Sunlight can be converted into electricity using photovoltaics (PV) modules. Modules are racked together into an array that produces direct current (DC) electricity. The DC 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.

The facility already has a PV array on a portion of the roof with some free space remaining. TRC noted that there is space available to increase the current system, but the site is reportedly not interested in expanding capacity at this time.

Solar projects must register their projects in the SREC Registration Program prior to the start of construction in order to establish the project's eligibility to earn SRECs. Registration of the intent to participate in New Jersey's solar marketplace provides market participants with information about developed new solar projects and insight into future SREC pricing.

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.

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

7 DEMAND RESPONSE

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

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

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

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

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

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

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

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

Figure 22- ECM Incentive Program Eligibility

Energy Conservation Measure		SmartStart Prescriptive	SmartStart Custom	Direct Install	Pay For Performance Existing Buildings
ECM 1	Install LED Fixtures	X			X
ECM 2	Retrofit Fixtures with LED Lamps	X			X
ECM 3	Install Occupancy Sensor Lighting Controls	X			X
ECM 4	Install High/Low Lighitng Controls				X
ECM 5	Premium Efficiency Motors				X
ECM 6	Install VFDs on Constant Volume (CV) HVAC	X			X
ECM 7	Install VFDs on Hot Water Pumps		X		X
ECM 8	Install VFDs on Cooling Tower Fans	X			X
ECM 9	Install High Efficiency Electric AC	X			X
ECM 10	Vending Machine Control				X

SmartStart is generally well-suited for implementation of individual measures or small group of measures. It provides flexibility to install measures at your own pace using in-house staff or a preferred contractor. Direct Install caters to small to mid-size facilities that can bundle multiple ECMs together. This can greatly simplify participation and may lead to higher incentive amounts, but requires the use of pre-approved contractors. The Pay for Performance (P4P) program is a "whole-building" energy improvement program designed for larger facilities. It requires implementation of multiple measures meeting minimum savings thresholds, as well as use of pre-approved consultants. This facility appears to meet all of the criteria for participating in the P4P program based on the measures identified in this study. Additional measures may be identified during the P4P evaluation so it is worth considering the P4P program for this site. 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 SmartStart custom program provides incentives for new and innovative technologies, or process improvements not defined through one of the prescriptive incentives listed above.

Although your facility is an existing building, and only the prescriptive incentives have been applied in the calculations, the SmartStart custom measure path is recommended for ECM 4 (Install VFDs on Well Pumps). These incentives are calculated utilizing a number of factors, including project cost, energy savings and comparison to existing conditions or a defined standard. To qualify, the proposed measure(s) must be at least 2% more efficient than current energy code or recognized industry standard, and save at least 75,000 kWh or 1,500 therms annually.

SmartStart 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 in the SmartStart program (inclusive of prescriptive and custom) 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 prescriptive program you will need to submit an application for the specific equipment installed or 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. Please note that SmartStart custom application requirements are different from the prescriptive applications and will most likely require additional effort to complete.

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

8.2 Pay for Performance - Existing Buildings

Overview

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

Incentives

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

How to Participate

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

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

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

8.3 Energy Savings Improvement Program

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

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

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

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

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

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

9 ENERGY PURCHASING AND PROCUREMENT STRATEGIES

9.1 Retail Electric Supply Options

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

Energy deregulation in New Jersey has increased energy buyers' options by separating the function of electricity distribution from that of electricity supply. So, though you may choose a different company from which to buy your electric power, responsibility for your 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 Rm	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,000	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.44	3,069	0.0	$460.59	$1,206.00	$195.00	2.20
Garage / Shipping Receiving	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,000	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.41	2,877	0.0	$431.80	$1,147.50	$185.00	2.23
Garage / Shipping Receiving	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
Restroom	1	Incandescent: 60W Standard A19 Bulb	Wall Switch	60	4,000	Relamp	No	1	LED Screw-In Lamps: Screw-in (6W) - 1L	Wall Switch	6	4,000	0.04	248	0.0	$37.28	$43.95	$5.00	1.04
Garage Rm 2	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,000	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.33	2,302	0.0	$345.44	$972.00	$155.00	2.37
Garage Rm 2	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
Garage Exterior Perimeter	8	Compact Fluorescent: 2x 26W CFL	None	52	4,000	Relamp	No	8	LED Screw-In Lamps: Screw-in (6W) - 2L	None	12	4,000	0.21	1,472	0.0	$220.91	$703.25	$0.00	3.18
Light Poles	2	Metal Halide: (1) 250W Lamp	None	295	4,000	Fixture Replacement	No	2	LED - Fixtures: Large Pole/Arm-Mounted Area/Roadway Fixture	None	46	4,000	0.33	2,291	0.0	$343.79	$6,649.99	$0.00	19.34
Kitchen Entrance	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,000	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.08	575	0.0	$86.36	$445.50	$65.00	4.41
Kitchen Entrance	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
Dishwasher Rm	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,000	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.08	575	0.0	$86.36	$420.40	$65.00	4.12
Dishwasher Rm	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,000	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.08	575	0.0	$86.36	$445.50	$65.00	4.41
Kitchen Serving Line	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,000	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.49	3,453	0.0	$518.16	$1,172.40	$215.00	1.85
Non-Food Storage	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,800	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.02	106	0.0	$15.95	$58.50	$10.00	3.04
Storage	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,800	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.02	106	0.0	$15.95	$58.50	$10.00	3.04
Kitchen Oven Area	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,000	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.22	1,535	0.0	$230.30	$738.00	$115.00	2.71
Pantry	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,800	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.04	213	0.0	$31.89	$117.00	$20.00	3.04
Kitchen Back Area	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,000	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.12	863	0.0	$129.54	$495.60	$80.00	3.21
Kitchen Hood	4	Incandescent: 60W Standard A19 Bulb	None	60	4,000	Relamp	Yes	4	LED Screw-In Lamps: Screw-in (6W) - 1L	Occupancy Sensor	6	2,800	0.15	1,027	0.0	$154.08	$445.81	$55.00	2.54
Kitchen Exit	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,000	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,000	0.02	152	0.0	$22.78	$58.50	$10.00	2.13
Kitchen Locker Rm	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,000	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,000	0.02	152	0.0	$22.78	$58.50	$10.00	2.13
Kitchen Restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 1L	Wall Switch	22	4,000	Relamp	No	1	LED - Linear Tubes: (1) 2' Lamp	Wall Switch	9	4,000	0.01	62	0.0	$9.32	$31.90	$5.00	2.89
Kitchen Oven Area	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
Gym	24	Linear Fluorescent - T5: 4' T5 (28W) - 4L	Wall Switch	120	4,000	Relamp	Yes	24	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,800	1.25	8,766	0.0	$1,315.50	$2,823.20	$550.00	1.73
Gym	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Gym Office B-04C	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,000	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.08	575	0.0	$86.36	$420.40	$65.00	4.12
Gym Office B-04D	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,000	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.08	575	0.0	$86.36	$420.40	$65.00	4.12
Gym Office Restroom 1	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	4,000	Relamp	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	4,000	0.01	81	0.0	$12.08	$35.90	$5.00	2.56
Gym Office Restroom 2	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	4,000	Relamp	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	4,000	0.01	81	0.0	$12.08	$35.90	$5.00	2.56
Aux Gym	24	Linear Fluorescent - T5: 4' T5 (28W) - 6L	Wall Switch	180	4,000	Relamp	Yes	24	LED - Linear Tubes: (6) 4' Lamps	Occupancy Sensor	87	2,800	1.87	13,149	0.0	$1,973.25	$3,761.36	$790.00	1.51
Building & Grounds Office F116	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.13	638	0.0	$95.68	$300.80	$60.00	2.52
Building & Grounds Office F116A	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.13	638	0.0	$95.68	$300.80	$60.00	2.52
Building & Grounds Office F116B	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.10	478	0.0	$71.76	$225.60	$45.00	2.52
Building & Grounds Office F116C	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.06	319	0.0	$47.84	$150.40	$30.00	2.52
Conf Rm	7	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Occupancy Sensor	62	2,800	Relamp	No	7	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	2,800	0.13	654	0.0	$98.10	$442.40	$0.00	4.51
Break Rm	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.13	638	0.0	$95.68	$300.80	$60.00	2.52
CRIA Conf Rm / Data Rm	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.06	319	0.0	$47.84	$150.40	$30.00	2.52
A-Wing Corridor	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,800	Relamp	No	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.32	1,594	0.0	$239.20	$877.50	$150.00	3.04
A-Wing 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
Class Rm A106	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.06	319	0.0	$47.84	$150.40	$30.00	2.52
Class Rm A117	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.39	1,913	0.0	$287.04	$902.40	$180.00	2.52
Class Rm A118	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.39	1,913	0.0	$287.04	$902.40	$180.00	2.52
Class Rm A119	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.39	1,913	0.0	$287.04	$902.40	$180.00	2.52
Class Rm A120	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.39	1,913	0.0	$287.04	$902.40	$180.00	2.52
Class Rm A121	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.39	1,913	0.0	$287.04	$902.40	$180.00	2.52
Science Class Rm A112	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.39	1,913	0.0	$287.04	$902.40	$180.00	2.52
Class Rm A113	5	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	5	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.16	797	0.0	$119.60	$376.00	$75.00	2.52
Corridor-A Intersection	12	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Occupancy Sensor	62	2,800	Relamp	No	12	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	2,800	0.23	1,121	0.0	$168.17	$758.40	$0.00	4.51
Corridor-A Intersection	12	Compact Fluorescent: 2x 26W CFL (recessed cans)	Occupancy Sensor	52	2,800	Relamp	No	12	LED Screw-In Lamps: Screw-in (6W) - 2L	Occupancy Sensor	12	2,800	0.31	1,546	0.0	$231.95	$1,054.87	$0.00	4.55
Corridor A111-A112	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,800	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.13	638	0.0	$95.68	$351.00	$60.00	3.04

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Corridor A111-A112	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
Storage Rm A-111A	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,800	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.09	425	0.0	$63.79	$234.00	$40.00	3.04
Science Class Rm A111	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.39	1,913	0.0	$287.04	$902.40	$180.00	2.52
Corridor A110 to 6/7 Office	11	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,800	Relamp	No	11	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.24	1,169	0.0	$175.41	$643.50	$110.00	3.04
Corridor A110 to 6/7 Office	4	Compact Fluorescent: 2x 26W CFL	Occupancy Sensor	52	2,800	Relamp	No	4	LED Screw-In Lamps: Screw-in (6W) - 2L	Occupancy Sensor	12	2,800	0.10	515	0.0	$77.32	$351.62	$0.00	4.55
Corridor A110 to 6/7 Office	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
Class A107	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.39	1,913	0.0	$287.04	$902.40	$180.00	2.52
Class A108	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.39	1,913	0.0	$287.04	$902.40	$180.00	2.52
Class A109	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.39	1,913	0.0	$287.04	$902.40	$180.00	2.52
Class A110	5	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	5	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.16	797	0.0	$119.60	$376.00	$75.00	2.52
Foyer Outside Library	28	Compact Fluorescent: 2x 26W CFL (recessed cans)	Wall Switch	52	4,000	Relamp	Yes	28	LED Screw-In Lamps: Screw-in (6W) - 2L	High/Low Control	12	2,800	0.80	5,616	0.0	$842.76	$2,861.37	$0.00	3.40
Foyer Outside Library	28	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	4,000	Relamp	Yes	28	LED - Linear Tubes: (1) 4' Lamp	High/Low Control	15	2,800	0.40	2,814	0.0	$422.35	$1,405.20	$140.00	3.00
Boys Rm	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,800	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.06	319	0.0	$47.84	$175.50	$30.00	3.04
Boys Rm	1	Compact Fluorescent: 2x 26W CFL (recessed cans)	Wall Switch	52	4,000	Relamp	No	1	LED Screw-In Lamps: Screw-in (6W) - 2L	Wall Switch	12	4,000	0.03	184	0.0	$27.61	$87.91	$0.00	3.18
Girls Rm	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,800	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.06	319	0.0	$47.84	$175.50	$30.00	3.04
Girls Rm	1	Compact Fluorescent: 2x 26W CFL (recessed cans)	Wall Switch	52	4,000	Relamp	No	1	LED Screw-In Lamps: Screw-in (6W) - 2L	Wall Switch	12	4,000	0.03	184	0.0	$27.61	$87.91	$0.00	3.18
Janitor Closet JC1A	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,800	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.02	106	0.0	$15.95	$58.50	$10.00	3.04
Corridor to A106	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,000	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,800	0.22	1,535	0.0	$230.30	$868.00	$80.00	3.42
Corridor to A106	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
Corridor to A116	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,000	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,800	0.08	575	0.0	$86.36	$575.50	$30.00	6.32
Corridor to A116	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
Class Rm A116	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.39	1,913	0.0	$287.04	$902.40	$180.00	2.52
Class Rm A115	5	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	5	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.16	797	0.0	$119.60	$376.00	$75.00	2.52
Class Rm A114	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.39	1,913	0.0	$287.04	$902.40	$180.00	2.52
Main Office Foyer	12	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	4,000	Relamp	Yes	12	LED - Linear Tubes: (2) U-Lamp	High/Low Control	33	2,800	0.31	2,147	0.0	$322.25	$958.40	$0.00	2.97

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Main Office Foyer	10	Compact Fluorescent: 2x 26W CFL (recessed cans)	Wall Switch	52	4,000	Relamp	Yes	10	LED Screw-In Lamps: Screw-in (6W) - 2L	High/Low Control	12	2,800	0.29	2,006	0.0	$300.99	$1,279.06	$0.00	4.25
Main Office Foyer	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
Corridor A101-A104	11	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,000	Relamp	Yes	11	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,800	0.30	2,110	0.0	$316.66	$1,043.50	$110.00	2.95
Corridor A101-A104	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
Class Rm A101	10	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	10	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.32	1,594	0.0	$239.20	$752.00	$150.00	2.52
Class Rm A102	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.29	1,435	0.0	$215.28	$676.80	$135.00	2.52
Class Rm A103	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.39	1,913	0.0	$287.04	$902.40	$180.00	2.52
Class Rm A104	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.39	1,913	0.0	$287.04	$902.40	$180.00	2.52
Class Rm A105	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.39	1,913	0.0	$287.04	$902.40	$180.00	2.52
B-Wing Corridor	16	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,000	None	Yes	16	LED - Linear Tubes: (2) 2' Lamps	High/Low Control	17	2,800	0.05	375	0.0	$56.33	$400.00	$0.00	7.10
B-Wing Corridor	4	Compact Fluorescent: 2x 26W CFL (recessed cans)	Wall Switch	52	4,000	Relamp	Yes	4	LED Screw-In Lamps: Screw-in (6W) - 2L	High/Low Control	12	2,800	0.11	802	0.0	$120.39	$751.62	$0.00	6.24
B-Wing 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
Class B101	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.29	1,435	0.0	$215.28	$676.80	$135.00	2.52
Class B102	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.29	1,435	0.0	$215.28	$676.80	$135.00	2.52
Class B103	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.29	1,435	0.0	$215.28	$676.80	$135.00	2.52
Class B104	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.29	1,435	0.0	$215.28	$676.80	$135.00	2.52
Class B105	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.29	1,435	0.0	$215.28	$676.80	$135.00	2.52
Class B106	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.29	1,435	0.0	$215.28	$676.80	$135.00	2.52
Comp Class B107	15	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	15	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.49	2,391	0.0	$358.80	$1,128.00	$225.00	2.52
Class B108	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.29	1,435	0.0	$215.28	$676.80	$135.00	2.52
Class B109	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.39	1,913	0.0	$287.04	$902.40	$180.00	2.52
Janitor Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.03	159	0.0	$23.92	$75.20	$15.00	2.52
Class B111	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.39	1,913	0.0	$287.04	$902.40	$180.00	2.52
Class B113	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.39	1,913	0.0	$287.04	$902.40	$180.00	2.52
Boys Rm	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,800	Relamp	No	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.17	850	0.0	$127.57	$468.00	$80.00	3.04

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Girls Rm	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,800	Relamp	No	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.17	850	0.0	$127.57	$468.00	$80.00	3.04
E-Wing Corridor	10	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,000	None	No	10	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,000	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
E-Wing 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
Class Rm E110	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.52	2,550	0.0	$382.72	$1,203.20	$240.00	2.52
Class Rm E110	4	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Occupancy Sensor	62	2,800	Relamp	No	4	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	2,800	0.08	374	0.0	$56.06	$252.80	$0.00	4.51
Class Rm E110	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
E-Wing Practice Rm 1	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.06	319	0.0	$47.84	$150.40	$30.00	2.52
E-Wing Practice Rm 2	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.06	319	0.0	$47.84	$150.40	$30.00	2.52
E-Wing Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.06	319	0.0	$47.84	$150.40	$30.00	2.52
Davies Hall of Honor	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,000	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.41	2,877	0.0	$431.80	$1,147.50	$185.00	2.23
Davies Hall of Honor	13	Compact Fluorescent: 2x 26W CFL (recessed cans)	Wall Switch	52	4,000	Relamp	Yes	13	LED Screw-In Lamps: Screw-in (6W) - 2L	Occupancy Sensor	12	2,800	0.37	2,607	0.0	$391.28	$1,412.78	$35.00	3.52
Davies Hall of Honor	6	Compact Fluorescent: 26W CFL Spotlight Bulbs	Wall Switch	26	4,000	Relamp	No	6	LED Screw-In Lamps: Screw-in (6W) - 1L	Wall Switch	6	4,000	0.08	552	0.0	$82.84	$527.44	$0.00	6.37
Boys Rm	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,800	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.06	319	0.0	$47.84	$175.50	$30.00	3.04
Girls Rm	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,800	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.06	319	0.0	$47.84	$175.50	$30.00	3.04
Dress Rm	25	Compact Fluorescent: 13W CFL	Wall Switch	13	4,000	Relamp	Yes	25	LED Screw-In Lamps: Screw-in (6W) - 1L	Occupancy Sensor	6	2,800	0.14	1,012	0.0	$151.87	$2,467.65	$35.00	16.02
Dress Rm	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,000	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.08	575	0.0	$86.36	$445.50	$65.00	4.41
Faculty Dining Rm	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,000	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.37	2,590	0.0	$388.62	$946.80	$170.00	2.00
Gym Corridor	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,000	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.55	3,836	0.0	$575.74	$1,440.00	$200.00	2.15
Gym 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
Boys Locker Rm	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,800	Relamp	No	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.22	1,063	0.0	$159.47	$585.00	$100.00	3.04
Boys Locker Rm	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
Boys PE Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.06	319	0.0	$47.84	$150.40	$30.00	2.52
Boys Rm	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,800	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.06	319	0.0	$47.84	$175.50	$30.00	3.04
Boys Rm	1	Compact Fluorescent: 2x 26W CFL (recessed cans)	Occupancy Sensor	52	2,800	Relamp	No	1	LED Screw-In Lamps: Screw-in (6W) - 2L	Occupancy Sensor	12	2,800	0.03	129	0.0	$19.33	$87.91	$0.00	4.55
Girls Locker Rm	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,800	Relamp	No	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.22	1,063	0.0	$159.47	$585.00	$100.00	3.04

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Girls Locker Rm	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
Girls PE Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.06	319	0.0	$47.84	$150.40	$30.00	2.52
Girls Rm	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,800	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.06	319	0.0	$47.84	$175.50	$30.00	3.04
Girls Rm	1	Compact Fluorescent: 2x 26W CFL (recessed cans)	Occupancy Sensor	52	2,800	Relamp	No	1	LED Screw-In Lamps: Screw-in (6W) - 2L	Occupancy Sensor	12	2,800	0.03	129	0.0	$19.33	$87.91	$0.00	4.55
E-Wing Corridor	24	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,000	Relamp	Yes	24	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,800	0.66	4,604	0.0	$690.89	$1,804.00	$240.00	2.26
E-Wing Corridor	4	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,000	None	No	4	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,000	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
E-Wing Corridor	7	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	7	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Mens Rm	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,000	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,000	0.04	304	0.0	$45.56	$117.00	$20.00	2.13
Womens Rm	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,000	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,000	0.04	304	0.0	$45.56	$117.00	$20.00	2.13
Boys Rm	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,000	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.11	767	0.0	$115.15	$504.00	$75.00	3.73
Girls Rm	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,000	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.11	767	0.0	$115.15	$504.00	$75.00	3.73
Tech Lab E102	33	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,000	Relamp	Yes	33	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.90	6,330	0.0	$949.97	$2,200.50	$365.00	1.93
Rm E100A	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,000	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.22	1,535	0.0	$230.30	$738.00	$115.00	2.71
Art Class E101	22	Linear Fluorescent - T8: 2' T8 (17W) - 1L	Wall Switch	22	4,000	Relamp	Yes	22	LED - Linear Tubes: (1) 2' Lamp	Occupancy Sensor	9	2,800	0.23	1,624	0.0	$243.76	$971.80	$145.00	3.39
Art Class E101	22	Halogen Incandescent: 75W Spotlight (screw-in)	Wall Switch	75	4,000	Relamp	Yes	22	LED Screw-In Lamps: Screw-in (6W) - 1L	Occupancy Sensor	6	2,800	1.02	7,165	0.0	$1,075.26	$1,506.97	$180.00	1.23
Art Class E101	20	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	4,000	Relamp	Yes	20	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	2,800	0.51	3,579	0.0	$537.08	$1,534.00	$35.00	2.79
Art Class E103	22	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,000	Relamp	Yes	22	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.90	6,330	0.0	$949.97	$1,924.40	$365.00	1.64
Class E104	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,000	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.49	3,453	0.0	$518.16	$1,172.40	$215.00	1.85
Class E105	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,000	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.49	3,453	0.0	$518.16	$1,172.40	$215.00	1.85
Class E106	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,000	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.49	3,453	0.0	$518.16	$1,172.40	$215.00	1.85
Office E106	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,000	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.08	575	0.0	$86.36	$420.40	$65.00	4.12
Class E107	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,000	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.49	3,453	0.0	$518.16	$1,172.40	$215.00	1.85
Fitness Rm	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,000	Relamp	Yes	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.66	4,604	0.0	$690.89	$1,473.20	$275.00	1.73
Fitness Rm	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,000	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.08	575	0.0	$86.36	$420.40	$65.00	4.12
E100 Corridor	11	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,000	None	Yes	11	LED - Linear Tubes: (2) 2' Lamps	High/Low Control	17	2,800	0.04	258	0.0	$38.73	$400.00	$0.00	10.33

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
E100 Corridor	6	Compact Fluorescent: 2x 17W CFL (recessed cans)	Wall Switch	34	4,000	Relamp	Yes	6	LED Screw-In Lamps: Screw-in (6W) - 2L	High/Low Control	12	2,800	0.10	707	0.0	$106.04	$927.44	$0.00	8.75
E100 Corridor	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Boys Rm	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,000	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.22	1,535	0.0	$230.30	$738.00	$115.00	2.71
Girls Rm	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,000	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.22	1,535	0.0	$230.30	$738.00	$115.00	2.71
D-Wing Corridor	27	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,000	None	Yes	27	LED - Linear Tubes: (2) 2' Lamps	High/Low Control	17	2,800	0.09	633	0.0	$95.06	$400.00	$0.00	4.21
D-Wing Corridor	6	Compact Fluorescent: 2x 17W CFL (recessed cans)	Wall Switch	34	4,000	Relamp	Yes	6	LED Screw-In Lamps: Screw-in (6W) - 2L	High/Low Control	12	2,800	0.10	707	0.0	$106.04	$927.44	$0.00	8.75
D-Wing Corridor	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Class D100	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.39	1,913	0.0	$287.04	$902.40	$180.00	2.52
Class D101	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.52	2,550	0.0	$382.72	$1,203.20	$240.00	2.52
Class D102	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.52	2,550	0.0	$382.72	$1,203.20	$240.00	2.52
Class D105	14	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	14	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.45	2,231	0.0	$334.88	$1,052.80	$210.00	2.52
Class D106	14	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	14	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.45	2,231	0.0	$334.88	$1,052.80	$210.00	2.52
Class D107	10	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	10	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.32	1,594	0.0	$239.20	$752.00	$150.00	2.52
Rm D108	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.13	638	0.0	$95.68	$300.80	$60.00	2.52
Trophy Cases	8	Compact Fluorescent: 2x 17W CFL (recessed cans)	Wall Switch	34	4,000	Relamp	Yes	8	LED Screw-In Lamps: Screw-in (6W) - 2L	Occupancy Sensor	12	2,800	0.13	942	0.0	$141.38	$973.25	$35.00	6.64
Trophy Case Corridor	12	Compact Fluorescent: 2x 17W CFL (recessed cans)	Wall Switch	34	4,000	Relamp	Yes	12	LED Screw-In Lamps: Screw-in (6W) - 2L	High/Low Control	12	2,800	0.20	1,413	0.0	$212.07	$1,454.87	$0.00	6.86
Trophy Case Corridor	5	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,000	None	No	5	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,000	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Techer Work Rm TRC1	7	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,000	Relamp	Yes	7	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.29	2,014	0.0	$302.26	$796.40	$140.00	2.17
CSS Office	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,000	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.12	863	0.0	$129.54	$495.60	$80.00	3.21
Nurses Office D109	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,000	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	4,000	0.03	228	0.0	$34.17	$75.20	$15.00	1.76
Mens Rm	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	4,000	Relamp	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	4,000	0.01	81	0.0	$12.08	$35.90	$5.00	2.56
Womens Rm	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	4,000	Relamp	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	4,000	0.01	81	0.0	$12.08	$35.90	$5.00	2.56
Stairwell (Door 21)	5	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,000	None	No	5	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,000	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Stairwell (Door 21)	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,000	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.11	767	0.0	$115.15	$504.00	$40.00	4.03
Stairwell (Door 21)	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
2nd Flr A-Wing Corridors	30	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	4,000	Relamp	Yes	30	LED - Linear Tubes: (2) U-Lamp	High/Low Control	33	2,800	0.76	5,368	0.0	$805.62	$2,296.00	$0.00	2.85
2nd Flr A-Wing Corridors	23	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,000	None	Yes	23	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,800	0.13	920	0.0	$138.14	$400.00	$0.00	2.90
2nd Flr A-Wing Corridors	14	Compact Fluorescent: 2x 26W CFL (recessed cans)	Wall Switch	52	4,000	Relamp	Yes	14	LED Screw-In Lamps: Screw-in (6W) - 2L	High/Low Control	12	2,800	0.40	2,808	0.0	$421.38	$1,630.68	$0.00	3.87
2nd Flr A-Wing Corridors	12	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	4,000	Relamp	Yes	12	LED - Linear Tubes: (1) 4' Lamp	High/Low Control	15	2,800	0.17	1,206	0.0	$181.01	$830.80	$60.00	4.26
2nd Flr A-Wing Corridors	12	Compact Fluorescent: 2x 17W CFL (recessed cans)	Wall Switch	34	4,000	Relamp	Yes	12	LED Screw-In Lamps: Screw-in (6W) - 2L	High/Low Control	12	2,800	0.20	1,413	0.0	$212.07	$1,454.87	$0.00	6.86
Class A200	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,800	Relamp	No	20	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.43	2,125	0.0	$318.93	$1,170.00	$200.00	3.04
Class A201	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,800	Relamp	No	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.17	850	0.0	$127.57	$468.00	$80.00	3.04
Class A202	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.29	1,435	0.0	$215.28	$676.80	$135.00	2.52
Class A203	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,800	Relamp	No	18	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.39	1,913	0.0	$287.04	$1,053.00	$180.00	3.04
Class A204	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,800	Relamp	No	18	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.39	1,913	0.0	$287.04	$1,053.00	$180.00	3.04
Class A205	14	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	14	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.45	2,231	0.0	$334.88	$1,052.80	$210.00	2.52
Class A206	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	13	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.42	2,072	0.0	$310.96	$977.60	$195.00	2.52
Class A207	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,800	Relamp	No	18	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.39	1,913	0.0	$287.04	$1,053.00	$180.00	3.04
Class A208	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,800	Relamp	No	18	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.39	1,913	0.0	$287.04	$1,053.00	$180.00	3.04
Class A209	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	13	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.42	2,072	0.0	$310.96	$977.60	$195.00	2.52
Class A210	31	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,800	Relamp	No	31	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.67	3,294	0.0	$494.35	$1,813.50	$310.00	3.04
Class A211	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.39	1,913	0.0	$287.04	$902.40	$180.00	2.52
Class A212	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,800	Relamp	No	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.17	850	0.0	$127.57	$468.00	$80.00	3.04
Class A213	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,800	Relamp	No	20	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.43	2,125	0.0	$318.93	$1,170.00	$200.00	3.04
Class A214	15	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	15	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.49	2,391	0.0	$358.80	$1,128.00	$225.00	2.52
Prep Rm A214A	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,000	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.16	1,151	0.0	$172.72	$570.80	$95.00	2.75
Class A215	15	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	15	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.49	2,391	0.0	$358.80	$1,128.00	$225.00	2.52
Class A216	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	8	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.26	1,275	0.0	$191.36	$601.60	$120.00	2.52
Storage Rm	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,000	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,000	0.02	152	0.0	$22.78	$58.50	$10.00	2.13
Janitors Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,000	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,000	0.02	152	0.0	$22.78	$58.50	$10.00	2.13

	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
Boys Rm	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,000	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.08	575	0.0	$86.36	$445.50	$65.00	4.41
Girls Rm	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,000	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.08	575	0.0	$86.36	$445.50	$65.00	4.41
Stairwell 3	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,000	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.11	767	0.0	$115.15	$504.00	$40.00	4.03
Stairwell 4	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,000	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.11	767	0.0	$115.15	$504.00	$40.00	4.03
Storage Rm	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,000	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,000	0.02	152	0.0	$22.78	$58.50	$10.00	2.13
Mens Rm	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	4,000	Relamp	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	4,000	0.01	81	0.0	$12.08	$35.90	$5.00	2.56
Womens Rm	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	4,000	Relamp	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	4,000	0.01	81	0.0	$12.08	$35.90	$5.00	2.56
Conf Rm CR2A	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,000	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.12	863	0.0	$129.54	$495.60	$80.00	3.21
Electrical Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,000	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,000	0.02	152	0.0	$22.78	$58.50	$10.00	2.13
A-Wing Entrance Foyer	7	Compact Fluorescent: 2x 26W CFL (recessed cans)	Wall Switch	52	4,000	Relamp	Yes	7	LED Screw-In Lamps: Screw-in (6W) - 2L	High/Low Control	12	2,800	0.20	1,404	0.0	$210.69	$1,015.34	$0.00	4.82
A-Wing Entrance Foyer	3	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	4,000	Relamp	Yes	3	LED - Linear Tubes: (2) U-Lamp	High/Low Control	33	2,800	0.08	537	0.0	$80.56	$389.60	$0.00	4.84
A-Wing Entrance Foyer	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,000	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,000	0.02	152	0.0	$22.78	$58.50	$10.00	2.13
A-Wing Entrance Foyer	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
Sci Lab A100	20	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,000	Relamp	Yes	20	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.82	5,755	0.0	$863.61	$1,774.00	$335.00	1.67
Elevator	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,000	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,000	0.02	152	0.0	$22.78	$58.50	$10.00	2.13
C-Wing Corridor	18	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,000	None	Yes	18	LED - Linear Tubes: (2) 2' Lamps	High/Low Control	17	2,800	0.06	422	0.0	$63.37	$400.00	$0.00	6.31
C-Wing Corridor	4	Compact Fluorescent: 2x 17W CFL (recessed cans)	Wall Switch	34	4,000	Relamp	No	4	LED Screw-In Lamps: Screw-in (6W) - 2L	Wall Switch	12	4,000	0.06	405	0.0	$60.75	$351.62	$0.00	5.79
C-Wing 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
Class C100	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.29	1,435	0.0	$215.28	$676.80	$135.00	2.52
Class C101	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.29	1,435	0.0	$215.28	$676.80	$135.00	2.52
Class C102	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.29	1,435	0.0	$215.28	$676.80	$135.00	2.52
Class C103	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.29	1,435	0.0	$215.28	$676.80	$135.00	2.52
Class C104	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.29	1,435	0.0	$215.28	$676.80	$135.00	2.52
Class C105	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.19	956	0.0	$143.52	$451.20	$90.00	2.52
Class C106	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.29	1,435	0.0	$215.28	$676.80	$135.00	2.52

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
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Class C107	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.13	638	0.0	$95.68	$300.80	$60.00	2.52
Class C108	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.29	1,435	0.0	$215.28	$676.80	$135.00	2.52
Class C109	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.13	638	0.0	$95.68	$300.80	$60.00	2.52
Class C110	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.29	1,435	0.0	$215.28	$676.80	$135.00	2.52
Class C111	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.13	638	0.0	$95.68	$300.80	$60.00	2.52
Class C112	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.39	1,913	0.0	$287.04	$902.40	$180.00	2.52
Class C113	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.13	638	0.0	$95.68	$300.80	$60.00	2.52
Class C114	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.19	956	0.0	$143.52	$451.20	$90.00	2.52
Class C115	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.13	638	0.0	$95.68	$300.80	$60.00	2.52
Server Rm	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,000	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.16	1,151	0.0	$172.72	$621.00	$60.00	3.25
Cafetorium	104	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,000	Relamp	Yes	104	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	2.84	19,949	0.0	$2,993.84	$6,354.00	$1,075.00	1.76
Cafetorium	26	Linear Fluorescent - T5: 4' T5 (28W) - 1L	Wall Switch	30	4,000	Relamp	Yes	26	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,800	0.34	2,374	0.0	$356.28	$1,203.40	$165.00	2.91
Cafetorium	22	Compact Fluorescent: 13W CFL	Wall Switch	13	4,000	Relamp	Yes	22	LED Screw-In Lamps: Screw-in (6W) - 1L	Occupancy Sensor	6	2,800	0.13	891	0.0	$133.65	$2,203.93	$35.00	16.23
Cafetorium	17	Halogen Incandescent: 75W Spotlight (screw-in)	Wall Switch	75	4,000	Relamp	Yes	17	LED Screw-In Lamps: Screw-in (6W) - 1L	Occupancy Sensor	6	2,800	0.79	5,537	0.0	$830.88	$1,287.20	$155.00	1.36
Cafetorium	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,000	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.08	575	0.0	$86.36	$420.40	$65.00	4.12
Cafetorium	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
Stage	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,000	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.41	2,877	0.0	$431.80	$1,147.50	$185.00	2.23
Stage	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
6/7 Office	13	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,000	Relamp	Yes	13	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.36	2,494	0.0	$374.23	$1,030.50	$165.00	2.31
Vice Principal's Office Rm 101	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,000	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.16	1,151	0.0	$172.72	$570.80	$95.00	2.75
Office Rm VP100	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,000	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.16	1,151	0.0	$172.72	$570.80	$95.00	2.75
Office Rm VP103	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,000	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.16	1,151	0.0	$172.72	$570.80	$95.00	2.75
Sm Office	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,000	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	4,000	0.03	228	0.0	$34.17	$75.20	$15.00	1.76
Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,000	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.08	575	0.0	$86.36	$420.40	$65.00	4.12
Copy Rm	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,000	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.08	575	0.0	$86.36	$420.40	$65.00	4.12

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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
Mens Rm	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,000	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,000	0.02	152	0.0	$22.78	$58.50	$10.00	2.13
Womens Rm	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,000	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,000	0.02	152	0.0	$22.78	$58.50	$10.00	2.13
Library	74	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	4,000	Relamp	Yes	74	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,800	1.06	7,438	0.0	$1,116.20	$4,276.60	$580.00	3.31
Library	46	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,000	Relamp	Yes	46	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	1.26	8,824	0.0	$1,324.20	$2,961.00	$495.00	1.86
Library	24	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,000	None	Yes	24	LED - Linear Tubes: (2) 2' Lamps	High/Low Control	17	2,800	0.08	563	0.0	$84.50	$400.00	$0.00	4.73
Library	20	Compact Fluorescent: 2x 13W CFL (recessed cans)	Wall Switch	26	4,000	Relamp	Yes	20	LED Screw-In Lamps: Screw-in (6W) - 2L	Occupancy Sensor	12	2,800	0.23	1,619	0.0	$243.00	$2,028.12	$35.00	8.20
Library Storage	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,000	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.25	1,726	0.0	$259.08	$721.20	$90.00	2.44
Library Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.13	638	0.0	$95.68	$300.80	$60.00	2.52
AV Storage D101A	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,000	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.16	1,151	0.0	$172.72	$570.80	$60.00	2.96
Main Office	7	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,000	Relamp	Yes	7	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.29	2,014	0.0	$302.26	$796.40	$140.00	2.17
Main Office	3	Compact Fluorescent: 2x 13W CFL (recessed cans)	Occupancy Sensor	26	2,800	Relamp	No	3	LED Screw-In Lamps: Screw-in (6W) - 2L	Occupancy Sensor	12	2,800	0.03	135	0.0	$20.30	$263.72	$0.00	12.99
Main Office	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
Copy Rm / Kitchen	5	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	5	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.16	797	0.0	$119.60	$376.00	$75.00	2.52
Principals Office MD102	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.10	478	0.0	$71.76	$225.60	$45.00	2.52
Conf RM MD103	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.10	478	0.0	$71.76	$225.60	$45.00	2.52
Conf RM MD109	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,800	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.04	213	0.0	$31.89	$117.00	$20.00	3.04
Office MD 104	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.10	478	0.0	$71.76	$225.60	$45.00	2.52
Office MD 105	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.06	319	0.0	$47.84	$150.40	$30.00	2.52
Office MD 106	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.06	319	0.0	$47.84	$150.40	$30.00	2.52
Office MD 108	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.06	319	0.0	$47.84	$150.40	$30.00	2.52
8th Grade Office Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,000	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,000	0.02	152	0.0	$22.78	$58.50	$10.00	2.13
VP Secretary Office	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.10	478	0.0	$71.76	$225.60	$45.00	2.52
8th Grade Office	5	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,000	Relamp	Yes	5	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.21	1,439	0.0	$215.90	$646.00	$110.00	2.48
8th Grade Office Corridor	9	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	4,000	Relamp	Yes	9	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	2,800	0.23	1,610	0.0	$241.69	$838.80	$0.00	3.47
8th Grade Office Corridor	3	Compact Fluorescent: 2x 13W CFL (recessed cans)	Wall Switch	26	4,000	Relamp	No	3	LED Screw-In Lamps: Screw-in (6W) - 2L	Wall Switch	12	4,000	0.03	193	0.0	$28.99	$263.72	$0.00	9.10

	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
8th Grade Office 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
Guidance Office	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,000	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.12	863	0.0	$129.54	$495.60	$80.00	3.21
Office VP200	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.06	319	0.0	$47.84	$150.40	$30.00	2.52
Office VP201	5	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,800	Relamp	No	5	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.16	797	0.0	$119.60	$376.00	$75.00	2.52
Teachers Lounge	15	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,000	Relamp	Yes	15	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.62	4,316	0.0	$647.70	$1,398.00	$260.00	1.76
Board Office Corridor (A-Wing)	11	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,000	Relamp	Yes	11	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	2,800	0.45	3,165	0.0	$474.98	$1,227.20	$165.00	2.24
Board Office	9	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	4,000	Relamp	Yes	9	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	2,800	0.23	1,610	0.0	$241.69	$838.80	$35.00	3.33
Board Office	3	Compact Fluorescent: 2x 13W CFL (recessed cans)	Wall Switch	26	4,000	Relamp	No	3	LED Screw-In Lamps: Screw-in (6W) - 2L	Wall Switch	12	4,000	0.03	193	0.0	$28.99	$263.72	$0.00	9.10
Board Office	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
Board Office	1	Incandescent: 60W Standard A19 Bulb	Wall Switch	60	4,000	Relamp	No	1	LED Screw-In Lamps: Screw-in (6W) - 1L	Wall Switch	6	4,000	0.04	248	0.0	$37.28	$43.95	$5.00	1.04
Board Office Inner Corridor	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,000	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,800	0.11	767	0.0	$115.15	$634.00	$40.00	5.16
Office F102	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,000	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.25	1,726	0.0	$259.08	$721.20	$125.00	2.30
StorageF102A	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,000	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.08	575	0.0	$86.36	$445.50	$30.00	4.81
Office F103	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,000	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.16	1,151	0.0	$172.72	$570.80	$95.00	2.75
Office F104	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,000	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.16	1,151	0.0	$172.72	$570.80	$95.00	2.75
Office F105	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,000	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.16	1,151	0.0	$172.72	$570.80	$95.00	2.75
Office F106	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,000	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.16	1,151	0.0	$172.72	$570.80	$95.00	2.75
Office F107	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,000	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.16	1,151	0.0	$172.72	$570.80	$95.00	2.75
Office F107	2	Compact Fluorescent: 2x 13W CFL (recessed cans)	Wall Switch	26	4,000	Relamp	No	2	LED Screw-In Lamps: Screw-in (6W) - 2L	Wall Switch	12	4,000	0.02	129	0.0	$19.33	$175.81	$0.00	9.10
Office F108	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,000	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.25	1,726	0.0	$259.08	$721.20	$125.00	2.30
Office F109	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,000	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.16	1,151	0.0	$172.72	$570.80	$95.00	2.75
Office F110	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,000	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.16	1,151	0.0	$172.72	$570.80	$95.00	2.75
File Rm F110A	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,800	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,800	0.04	213	0.0	$31.89	$117.00	$20.00	3.04
Office F113	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,000	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.16	1,151	0.0	$172.72	$570.80	$95.00	2.75
Office F113A	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,000	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.12	863	0.0	$129.54	$495.60	$80.00	3.21

	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
Office F113B	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,000	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.08	575	0.0	$86.36	$420.40	$65.00	4.12
Office F113C	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,000	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,800	0.12	863	0.0	$129.54	$495.60	$80.00	3.21
Office F114	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,000	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,000	0.04	304	0.0	$45.56	$117.00	$20.00	2.13
Exterior Perimeter	25	Compact Fluorescent: 2x 26W CFL	Wall Switch	52	3,200	Relamp	No	25	LED Screw-In Lamps: Screw-in (6W) - 2L	Wall Switch	12	3,200	0.66	3,680	0.0	$552.27	$2,197.65	$0.00	3.98
Exterior Perimeter	10	High-Pressure Sodium: (1) 100W Lamp	Wall Switch	138	3,200	Fixture Replacement	No	10	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	20	3,200	0.77	4,342	0.0	$651.67	$3,906.77	$1,000.00	4.46
Exterior Perimeter	4	High-Pressure Sodium: (1) 70W Lamp	Wall Switch	95	3,200	Fixture Replacement	No	4	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	20	3,200	0.20	1,104	0.0	$165.68	$1,562.71	$400.00	7.02
Parking Lot	42	Metal Halide: (1) 250W Lamp	Wall Switch	295	3,200	Fixture Replacement	No	42	LED - Fixtures: Outdoor Pole/Arm-Mounted Area/Roadway Fixture	Wall Switch	46	3,200	6.86	38,485	0.0	$5,775.60	$82,025.71	$4,200.00	13.47

Motor Inventory & Recommendations

		Existing Conditions						Proposed Conditions				Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	Motor Quantity	Motor Application	HP Per Motor	Full Load Efficiency	VFD Control?	Annual Operating Hours	Install High Efficiency Motors?	Full Load Efficiency	Install VFDs?	Number of VFDs	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Mechanical room	Boilers	1	Heating Hot Water Pump	5.0	87.5%	No	3,294	No	87.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Mechanical room	Boilers	1	Heating Hot Water Pump	5.0	85.5%	No	3,294	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Mechanical room	Space heating	2	Heating Hot Water Pump	20.0	87.5%	No	4,069	Yes	93.0%	Yes	2	6.62	70,647	0.0	$10,602.10	$17,164.06	$0.00	1.62
Mechanical room	Space heating	2	Heating Hot Water Pump	25.0	91.7%	No	4,880	Yes	93.6%	Yes	2	7.28	98,964	0.0	$14,851.81	$21,690.46	$0.00	1.46
Mechanical room	Boilers	1	Boiler Feed Water Pump	0.5	87.5%	No	3,294	No	87.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Cooling tower	Condenser water	1	Cooling Tower Fan	20.0	91.0%	No	4,069	Yes	93.0%	Yes	1	0.20	33,282	0.0	$4,994.67	$8,850.23	$1,200.00	1.53
Rooftop	Packaged units	10	Supply Fan	5.0	84.0%	No	3,294	Yes	89.5%	Yes	10	9.20	34,882	0.0	$5,234.76	$40,762.20	$4,000.00	7.02
Rooftop	Packaged units	7	Supply Fan	2.0	87.5%	No	3,294	No	87.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Electric HVAC Inventory & Recommendations

		Existing Conditions				Proposed Conditions								Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (kBtu/hr)	Install High Efficiency System?	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (kBtu/hr)	Cooling Mode Efficiency (SEER/EER)	Heating Mode Efficiency (COP)	Install Dual Enthalpy Economizer?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Rooftop	Space cooling	4	Packaged AC	30.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Space cooling	1	Packaged AC	3.50		Yes	1	Packaged AC	3.50		14.00		No	1.12	3,333	0.0	$500.24	$7,941.36	$322.00	15.23
Rooftop	Space cooling	4	Packaged AC	10.00		Yes	2	Packaged AC	10.00		11.50		No	21.75	64,928	0.0	$9,743.83	$35,642.11	$1,460.00	3.51
Rooftop	Space cooling	1	Packaged AC	6.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Space cooling	2	Packaged AC	16.00		Yes	1	Packaged AC	16.00		11.50		No	17.40	51,942	0.0	$7,795.06	$22,301.60	$1,264.00	2.70
Rooftop	Space cooling	5	Packaged AC	30.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Space cooling	1	Split-System AC	2.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Space cooling	1	Split-System AC	1.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Space cooling	1	Packaged AC	25.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Fuel Heating Inventory & Recommendations

		Existing Conditions			Proposed Conditions						Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Output Capacity per Unit (MBh)	Install High Efficiency System?	System Quantity	System Type	Output Capacity per Unit (MBh)	Heating Efficiency	Heating Efficiency Units	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Mechanical room	Space heating	1	Non-Condensing Hot Water Boiler	2,000.00	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Mechanical room	Space heating	1	Forced Draft Steam Boiler	1,733.00	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Space heating	11	Furnace	0.00	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
Mechanical room	Domestic hot water	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 Condi	Energy Impact & Financial Analysis						
Location	Quantity	Refrigerator/ Freezer Type	ENERGY STAR Qualified?	Install ENERGY STAR Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen	1	Stand-Up Refrigerator, Solid Door (>50 cu. ft.)	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	1	Stand-Up Freezer, Solid Door (>50 cu. ft.)	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	2	Stand-Up Refrigerator, Solid Door (31 - 50 cu. ft.)	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Commercial Ice Maker Inventory & Recommendations

	Existing Conditions			Proposed Condi	Energy Impact & Financial Analysis						
Location	Quantity	Ice Maker 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	Ice Making Head (<450 lbs/day), Batch	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
Kiitchen	2	Electric Convection Oven (Full Size)	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kiitchen	2	Electric Convection Oven (Half Size)	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kiitchen	1	Gas Combination Oven/Steam Cooker (<15 Pans)	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kiitchen	1	Gas Combination Oven/Steam Cooker (<15 Pans)	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kiitchen	3	Insulated Food Holding Cabinet (1/2 Size)	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

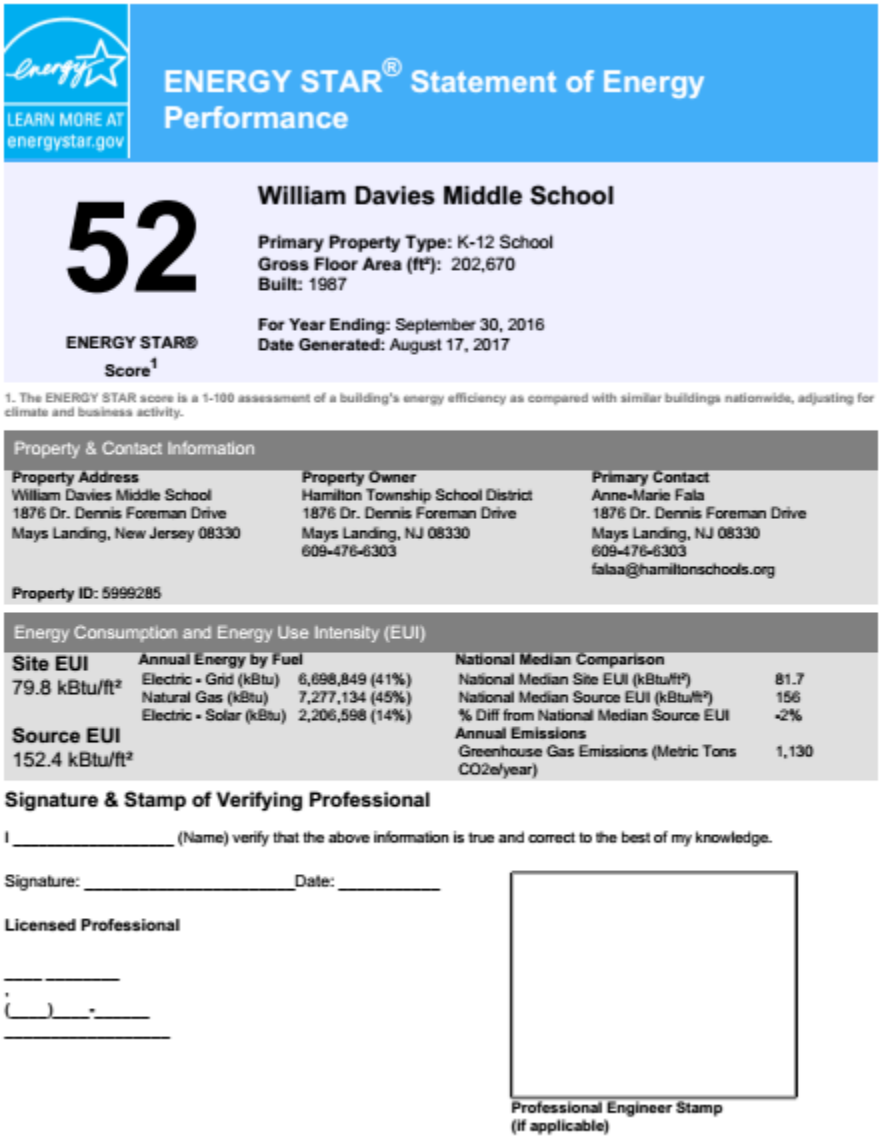
Plug Load Inventory

	Existing Conditions			
Location	Quantity	Equipment Description	Energy Rate (W)	ENERGY STAR Qualified?
Whole building	100	Desktop	110.0	Yes
Whole building	4	Copier	1,400.0	Yes
Whole building	9	Printer	460.0	Yes
Whole building	25	CRT (25")	120.0	Yes
Whole building	6	Microwave	1,000.0	No
Whole building	5	Refrigerator	750.0	Yes
Whole building	5	Refrigerator	750.0	Yes
Whole building	1	Dishwasher	1,500.0	Yes
Whole building	1	Washing machine	900.0	Yes
Whole building	1	Dryer	1,600.0	Yes
Whole building	6	LCD (42")	120.0	Yes

Vending Machine Inventory & Recommendations

	Existing Conditions		Proposed Conditions	Energy Impact & Financial Analysis						
Location	Quantity	Vending Machine Type	Install Controls?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Break room	2	Refrigerated	Yes	0.00	3,224	0.0	$483.79	$460.00	$0.00	0.95
Break room	1	Refrigerated	No	0.00	0	0.0	$0.00	$230.00	$0.00	0.00

Appendix B: ENERGY STAR® Statement of Energy Performance



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ENERGY STAR® Statement of Energy Performance

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ENERGY STAR® Score[1]

William Davies Middle School

Primary Property Type: K-12 School
Gross Floor Area (ft²): 202,670
Built: 1987

For Year Ending: September 30, 2016
Date Generated: August 17, 2017

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

Property & Contact Information

Property Address	Property Owner	Primary Contact
William Davies Middle School 1876 Dr. Dennis Foreman Drive Mays Landing, New Jersey 08330	Hamilton Township School District 1876 Dr. Dennis Foreman Drive Mays Landing, NJ 08330 609-476-6303	Anne-Marie Fala 1876 Dr. Dennis Foreman Drive Mays Landing, NJ 08330 609-476-6303 falaa@hamiltonschools.org

Property ID: 5999285

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
79.8 kBtu/ft²

Source EUI
152.4 kBtu/ft²

Annual Energy by Fuel	
Electric - Grid (kBtu)	6,698,849 (41%)
Natural Gas (kBtu)	7,277,134 (45%)
Electric - Solar (kBtu)	2,206,598 (14%)

National Median Comparison	
National Median Site EUI (kBtu/ft²)	81.7
National Median Source EUI (kBtu/ft²)	156
% Diff from National Median Source EUI	-2%
Annual Emissions	
Greenhouse Gas Emissions (Metric Tons CO2e/year)	1,130

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)