Local Government Energy Audit:

Energy Audit Report

Deane Porter School

Rumson Public Schools

50 Black Point Road

Rumson, NJ 07760

December 26, 2017

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 savings are included in this report to help make decisions about reducing energy use at the facility. This report, however, is not intended to serve as a detailed engineering design document. Further design and analysis may be necessary in order to implement some of the measures recommended in this report.

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

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

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

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I Executive Summary

The New Jersey Board of Public Utilities (NJBPU) has sponsored this Local Government Energy Audit (LGEA) Report for Deane Porter School. The goal of an LGEA report is to provide you with information on how your facility uses energy, identify energy conservation measures (ECMs) that can reduce your energy use, and provide information and assistance to help facilities implement ECMs. The LGEA report also contains valuable information on financial incentives from New Jersey's Clean Energy Program (NJCEP) for implementing ECMs.

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

1.1 Facility Summary

Deane Porter School is a one-story building totaling 67,000 square foot and was constructed in 1963. The building has a flat roof and exterior walls are finished with brick masonry. Interior lighting consists of a combination of linear fluorescent T8 fixtures, compact fluorescent lamps and LED fixtures. Heating is provided by two (2) non-condensing boilers. The cooling system consists of packaged heat pumps, split system air conditioners, and one window unit. 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 eleven (11) measures including nine (9) high priority which together represent an opportunity to reduce annual energy costs by $14,141 and annual greenhouse gas emissions by 115,086 lbs CO_2e. We estimate that if all measures were implemented as recommended, the project would pay for itself in roughly 5 years. The breakdown of existing and potential utility costs after project implementation are illustrated in Figure 1 and Figure 2, respectively. Together these measures represent an opportunity to reduce Deane Porter School's annual energy use by 19%.

Figure 1 – Previous 12 Month Utility Costs

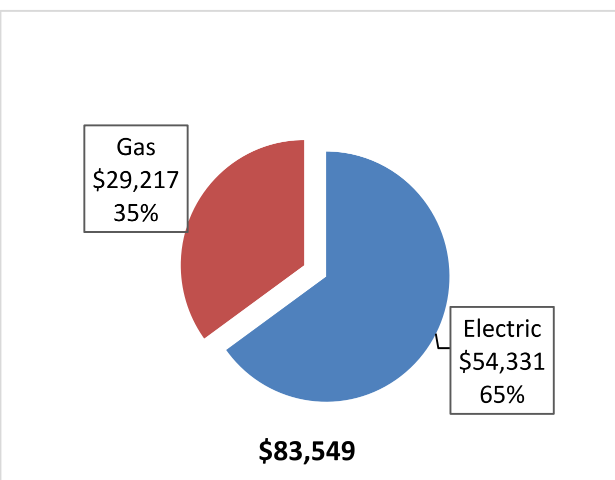
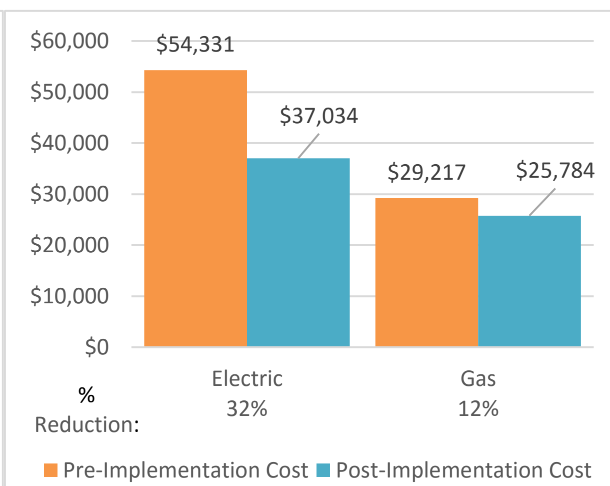


Figure 2 – Potential Post-Implementation Costs



A detailed description of Deane Porter School's existing energy use can be found in Section 3.

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

Figure 3 – Summary of Energy Reduction Opportunities

Energy Conservation Measure		Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades			**76,522**	**19.3**	**0.0**	**$9,476.52**	**$61,614.28**	**$7,155.00**	**$54,459.28**	**5.7**	**77,057**
ECM 1	Install LED Fixtures	Yes	4,548	2.1	0.0	$563.26	$7,813.54	$2,000.00	$5,813.54	10.3	4,580
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	5,434	1.2	0.0	$672.92	$5,880.00	$300.00	$5,580.00	8.3	5,472
ECM 3	Retrofit Fixtures with LED Lamps	Yes	65,512	15.9	0.0	$8,113.09	$46,092.31	$4,855.00	$41,237.31	5.1	65,970
ECM 4	Install LED Exit Signs	Yes	1,028	0.1	0.0	$127.25	$1,828.44	$0.00	$1,828.44	14.4	1,035
Lighting Control Measures			**18,634**	**4.2**	**0.0**	**$2,307.69**	**$7,191.00**	**$1,000.00**	**$6,191.00**	**2.7**	**18,765**
ECM 5	Install Occupancy Sensor Lighting Controls	Yes	16,041	3.7	0.0	$1,986.55	$6,031.00	$960.00	$5,071.00	2.6	16,153
ECM 6	Install High/Low Lighitng Controls	Yes	2,593	0.6	0.0	$321.13	$1,160.00	$40.00	$1,120.00	3.5	2,611
Motor Upgrades			**665**	**0.1**	**0.0**	**$82.34**	**$2,262.88**	**$0.00**	**$2,262.88**	**27.5**	**670**
ECM 7	Premium Efficiency Motors	Yes	665	0.1	0.0	$82.34	$2,262.88	$0.00	$2,262.88	27.5	670
Variable Frequency Drive (VFD) Measures			**18,139**	**1.9**	**0.0**	**$2,246.31**	**$7,213.60**	**$0.00**	**$7,213.60**	**3.2**	**18,266**
ECM 8	Install VFDs on Hot Water Pumps	Yes	18,139	1.9	0.0	$2,246.31	$7,213.60	$0.00	$7,213.60	3.2	18,266
Electric Unitary HVAC Measures			**25,716**	**15.2**	**0.0**	**$3,184.64**	**$71,312.32**	**$4,300.00**	**$67,012.32**	**21.0**	**25,895**
	Install High Efficiency Electric AC	No	25,716	15.2	0.0	$3,184.64	$71,312.32	$4,300.00	$67,012.32	21.0	25,895
Gas Heating (HVAC/Process) Replacement			**0**	**0.0**	**330.7**	**$3,404.17**	**$112,211.74**	**$12,060.00**	**$100,151.74**	**29.4**	**38,718**
	Install High Efficiency Hot Water Boilers	No	0	0.0	330.7	$3,404.17	$112,211.74	$12,060.00	$100,151.74	29.4	38,718
Domestic Water Heating Upgrade			**0**	**0.0**	**2.8**	**$28.94**	**$21.51**	**$0.00**	**$21.51**	**0.7**	**329**
ECM 9	Install Low-Flow Domestic Hot Water Devices	Yes	0	0.0	2.8	$28.94	$21.51	$0.00	$21.51	0.7	329
TOTAL (RECOMMENEDED MEASURES)			**113,960**	**25.5**	**2.8**	**$14,141.79**	**$78,303.27**	**$8,155.00**	**$70,148.27**	**5.0**	**115,086**
TOTALS (ALL EVALUATED MEASURES)			**139,675**	**40.8**	**333.5**	**$20,730.60**	**$261,827.34**	**$24,515.00**	**$237,312.34**	**11.4**	**179,699**

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

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

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

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

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

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

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

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

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

Energy Efficient Practices

TRC also identified 16 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 Deane Porter School include:

- Reduce Air Leakage
- Close Doors and Windows
- Perform Proper Lighting Maintenance
- Develop a Lighting Maintenance Schedule
- Ensure Lighting Controls Are Operating Properly
- Turn Off Unneeded Motors
- Perform Routine Motor Maintenance
- Practice Proper Use of Thermostat Schedules and Temperature Resets
- Clean Evaporator/Condenser Coils on AC Systems
- Clean and/or Replace HVAC Filters
- Check for and Seal Duct Leakage
- Perform Proper Boiler Maintenance
- Perform Proper Furnace Maintenance
- Perform Proper Water Heater Maintenance
- Perform Maintenance on Compressed Air Systems
- 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 Deane Porter School. Based on the configuration of the site and its loads there is a high potential for installing a photovoltaic (PV) array.

Figure 4 – Photovoltaic Potential

Potential	High	
System Potential	150	kW DC STC
Electric Generation	178,705	kWh/yr
Displaced Cost	$15,550	/yr
Installed Cost	$390,000	

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

1.3 Implementation Planning

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

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

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

1. SmartStart (SS)
2. Direct Install (DI)
3. Energy Savings Improvement Program (ESIP)

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

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

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

Additional information on relevant incentive programs is located in Section 8 or: [www.njcleanenergy.com/ci.](http://www.njcleanenergy.com/ci)

2 FACILITY INFORMATION AND EXISTING CONDITIONS

2.1 Project Contacts

Figure 5 – Project Contacts

Name	Role	E-Mail	Phone #
Customer			
James O'Brien	Head Custodian	jobrien@rumsonschool.org	732-842-0354
Designated Representative			
James O'Brien	Head Custodian	jobrien@rumsonschool.org	732-842-0354
TRC Energy Services			
Moussa Traore	Auditor	mtraore@trcsolutions.com	(732) 855-0033

2.2 General Site Information

On July 11, 2017, TRC performed an energy audit at Deane Porter School located in Rumson, New Jersey. TRCs' auditor met with James O'Brien, Head Custodian to review the facility operations and help focus our investigation on specific energy-using systems.

The 67,000 square foot elementary school building is a one-story facility and is comprised of classrooms, administrative offices, cafeteria, kitchen, gymnasium, nurse room, and mechanical spaces. The building was constructed in 1963 and has a flat roof which was replaced in 2009.

2.3 Building Occupancy

Deane Porter School is open Monday through Friday and the school operates on a 12 month schedule. The typical schedule is presented in the table below. During a typical day, the school is occupied by approximately 400 students and 58 staff members.

Figure 6 - Building Schedule

Building Name	Weekday/Weekend	Operating Schedule
Deane Porter School	Weekday	6:30 AM - 4:30 PM
Deane Porter School	Weekend	Closed

2.4 Building Envelope

The one-story building has a concrete foundation and a flat, built up rubber roof covered with a white and black membrane. Portions of the roof covered with a white membrane can contribute to cooling savings by reflecting heat. The roof was replaced in 2009 and is in good condition.

Exterior walls are finished with brick masonry. The windows throughout the facility are double pane, glass with metal frames. Exterior doors are constructed of metal and are in good condition as well. Overall, the building's envelope is in good condition with no signs of leaks from the roof and no signs of outside air infiltration.

2.5 On-Site Generation

Deane Porter School has one 50 kW diesel fuel backup power generator located in the rear of the building.

2.6 Energy-Using Systems

Lighting System

Interior lighting is provided by a combination of linear fluorescent fixtures and lamps, compact fluorescent lamps, and LED fixtures. Linear fluorescent fixtures consist mainly of 32 W T8 lamps. The corridors, cafeteria, main lobby, and most of the classrooms are lit with 32 W fluorescent T8. The computer room is lit with a combination of linear fluorescent T8-T12 fixtures and compact fluorescent lamps. Classrooms 200, 201, 202, 203, 402, 403, and 404 are lit with 40 W LED lights. Lighting in the kitchen has been retrofitted with 17 W LED linear tubes. The gymnasium is lit with six (6) lamps, 4 foot long linear 32 W fluorescent T8. Exit signs throughout the building are fluorescent lamps. Interior lighting control is provided by both occupancy sensors and manual wall switches.

The facility exterior lighting consists of 150 W metal halide and LED outdoor wall mounted area fixtures, and are controlled with photocells.

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

Heating Hot Water System

The hot water system consists of two (2) H.B. Smith non-condensing hot water boilers with an output capacity of 3,015 MBh and an estimated combustion efficiency of 78% each. The boilers are 25 years old and are at the end of their useful service life.

They operate in a lead/lag configuration. The boilers are configured in a constant flow distribution with a total of two (2) 7.5 hp hot water pumps located in the boiler room. Typical classrooms contain a vertical unit ventilator with hot water coils for heating and direct expansion coils for cooling and dehumidification. The hot water system is controlled with Johnson METASYS® building automation system. Thermostats are located in the classrooms for individual control of the unit ventilators.

Direct Expansion Air Conditioning System (DX)

Cooling consists of a combination of window units, split air conditioners (AC), and packaged units. One (1) 1 ton window unit serves room 110. One (1) 4 ton York split air conditioner (AC) and one (1) 5 ton Trane packaged AC all located on the roof serve the cafeteria. The units are 15 and 18 years old and the packaged unit is a constant air volume unit.

The main office is served by a 14 years old 10 ton York split AC. This unit is at the end of its useful life service as defined by ASHRAE.

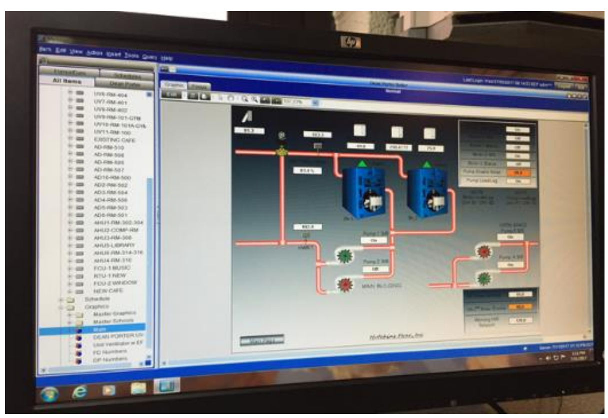
500 Wing classrooms are served with eleven (11) 3 ton Airedale packaged heat pumps. The units are 8 years old and are in good condition. 300 Wing classrooms and the library are served by 7.5 and 2 ton York split AC which are 15 years old and are also at the end of their useful life service. Six (6) indoor air handler units located above the ceiling serve the 300 wing classrooms. They are equipped with hot water coils for heating and DX coils for ventilation.

The cafeteria has also one (1) air handler unit that is equipped with hot water and DX coils. Rooftop mounted exhaust fans are used to exhaust air in the common areas.

The rooftop packaged units, Airedale heat pumps and the air handler units are controlled with Johnson METASYS® building energy management system.

Building Energy Management System (BEMS)

The heating hot water system, the air handler units and the rooftop packaged units are controlled with Johnson METASYS® building energy management system.



Domestic Hot Water Heating System

The domestic hot water heating system for the facility consists of one (1) A.O. Smith gas fired non-condensing hot water heater with an input rating of 500 MBh and nominal efficiency of 80%. It has a 85 gallon storage tank. The water heater is six years old and appears to be in good condition.

Food Service & Refrigeration

The school houses a non-commercial kitchen that is used to prepare breakfast and lunch for students. The kitchen includes gas cooking ovens, insulated food holding cabinets, and four stand-up refrigerators. The kitchen is well maintained.

Building Plug Load

There are approximately 127 computer work stations throughout the facility and they are mostly desktop units with LCD monitors. There is no centralized PC power management software installed.

2.7 Water-Using Systems

There are several restrooms at this facility. A sampling of restrooms found that all of the faucets are rated as low, except the kitchen that has three faucets rated for 3 gallons per minute (gpm) or higher.

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 0 for additional information.

3.1 Total Cost of Energy

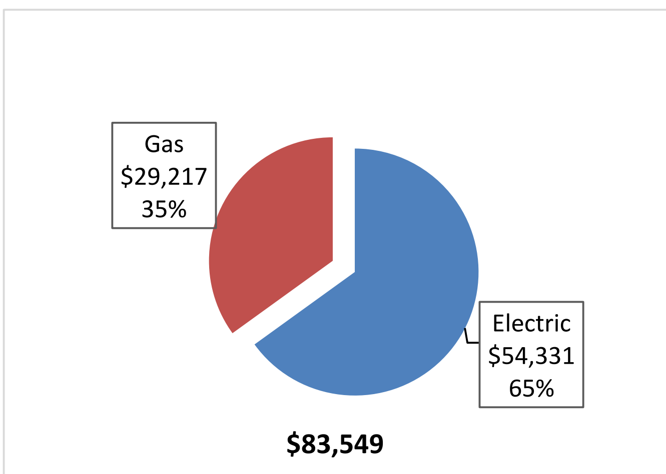
The following energy consumption and cost data is based on the last 12-month period of utility billing data that was provided for each utility. A profile of the annual energy consumption and energy cost of the facility was developed from this information.

Figure 7 - Utility Summary

Utility Summary for Deane Porter School		
Fuel	**Usage**	**Cost**
Electricity	438,720 kWh	$54,331
Natural Gas	28,381 Therms	$29,217
Total		**$83,549**

The current annual energy cost for this facility is $83,549 as shown in the chart below.

Figure 8 - Energy Cost Breakdown



3.2 Electricity Usage

Electricity is provided by JCP&L. The average electric cost over the past 12 months was $0.124/kWh, which is the blended rate that includes energy supply, distribution, and other charges. This rate is used throughout the analyses in this report to assess energy costs and savings. The monthly electricity consumption and peak demand are shown in the chart below.

Figure 9 - Electric Usage & Demand

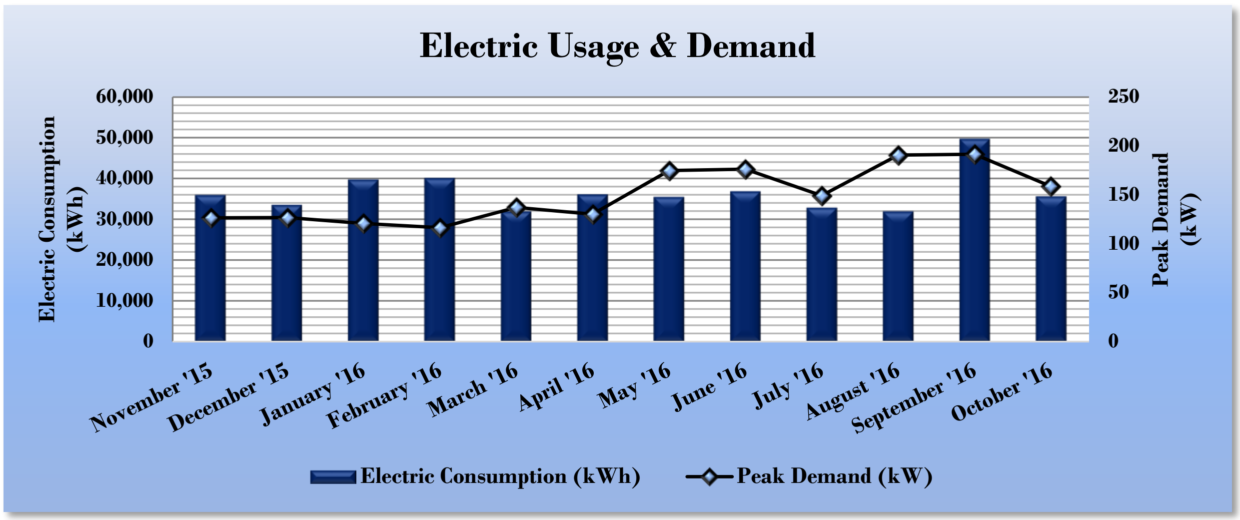


Figure 10 - Electric Usage & Demand

Electric Billing Data for Deane Porter School					
Period Ending	Days in Period	Electric Usage (kWh)	Demand (kW)	Demand Cost	Total Electric Cost
12/7/15	30	35,840	126	$150	$4,221
1/6/16	31	33,440	127	$139	$3,987
2/4/16	30	39,680	121	$166	$4,565
3/7/16	31	40,000	116	$168	$4,572
4/5/16	30	31,840	137	$133	$3,889
5/4/16	31	36,000	130	$150	$4,268
6/2/16	30	35,360	175	$148	$4,524
7/5/16	31	36,800	176	$154	$4,808
8/3/16	30	32,800	149	$137	$4,239
9/2/16	30	31,840	191	$133	$4,403
10/4/16	30	49,600	191	$209	$6,258
11/3/16	31	35,520	159	$148	$4,596
Totals	**365**	**438,720**	**191.4**	**$1,834**	**$54,331**
Annual	**365**	**438,720**	**191.4**	**$1,834**	**$54,331**

3.3 Natural Gas Usage

Natural gas is provided by NJ Natural Gas. The average gas cost for the past 12 months is $1.029/therm, which is the blended rate used throughout the analyses in this report. The gas profile is typical for a facility with gas space heating and a small gas-fired domestic hot water heater. The monthly gas consumption is shown in the chart below.

Figure 11 - Natural Gas Usage

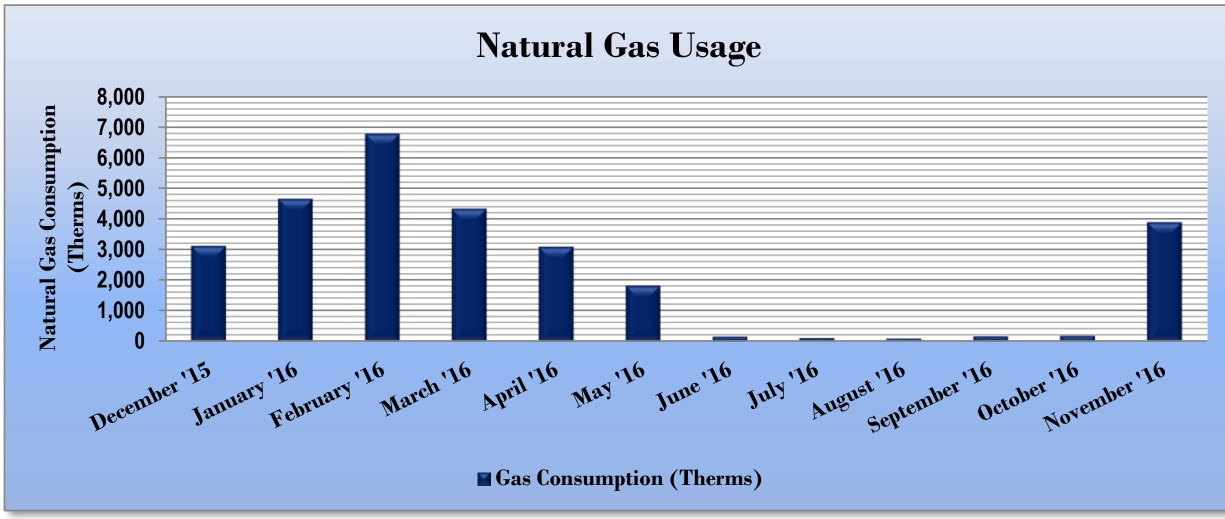


Figure 12 - Natural Gas Usage

Gas Billing Data for Deane Porter School			
Period Ending	Days in Period	Natural Gas Usage (Therms)	Natural Gas Cost
12/18/15	31	3,121	$2,991
1/20/16	30	4,656	$4,216
2/22/16	30	6,779	$5,912
3/23/16	31	4,333	$3,959
4/21/16	29	3,091	$2,966
5/23/16	31	1,821	$1,953
6/21/16	30	155	$622
7/22/16	31	105	$582
8/19/16	31	91	$571
9/19/16	30	159	$624
10/19/16	31	176	$721
11/17/16	30	3,894	$4,102
Totals	**365**	**28,381**	**$29,217**
Annual	**365**	**28,381**	**$29,217**

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 13 - Energy Use Intensity Comparison – Existing Conditions

Energy Use Intensity Comparison - Existing Conditions		
	Deane Porter School	National Median Building Type: School (K-12)
Source Energy Use Intensity (kBtu/ft^2)	114.6	141.4
Site Energy Use Intensity (kBtu/ft^2)	64.7	58.2

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

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

Energy Use Intensity Comparison - Following Installation of Recommended Measures		
	Deane Porter School	National Median Building Type: School (K-12)
Source Energy Use Intensity (kBtu/ft^2)	96.4	141.4
Site Energy Use Intensity (kBtu/ft^2)	58.9	58.2

Many types of commercial buildings are also eligible to receive an ENERGY STAR™ score. This score is a percentile ranking from 1 to 100. It compares your building's energy performance to similar buildings nationwide. A score of 50 represents median energy performance, while a score of 75 means your building performs better than 75 percent of all similar buildings nationwide and may be eligible for ENERGY STAR® certification. This facility has a current score of 66.

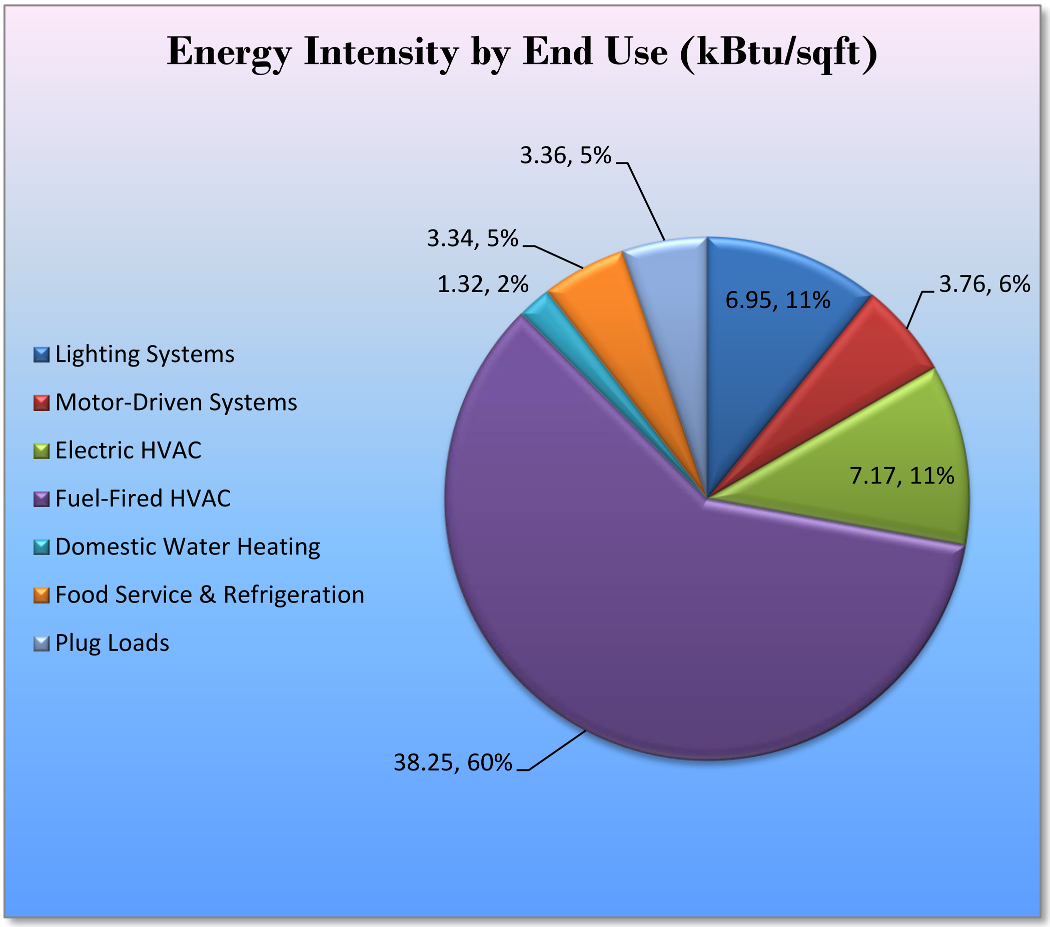
A Portfolio Manager Statement of Energy Performance (SEP) was generated for this facility, see Appendix B: ENERGY STAR® Statement of Energy Performance. For more information on ENERGY STAR® certification go to: https://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/earn-recognition/energy-star-certification/how-app-1.

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 15 - Energy Balance (% and kBtu/SF)



4 Energy Conservation Measures

Level of Analysis

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

The following sections describe the evaluated measures.

4.1 Recommended ECMs

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

Figure 16 – Summary of Recommended ECMs

Energy Conservation Measure		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		**76,522**	**19.3**	**0.0**	**$9,476.52**	**$61,614.28**	**$7,155.00**	**$54,459.28**	**5.7**	**77,057**
ECM 1	Install LED Fixtures	4,548	2.1	0.0	$563.26	$7,813.54	$2,000.00	$5,813.54	10.3	4,580
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	5,434	1.2	0.0	$672.92	$5,880.00	$300.00	$5,580.00	8.3	5,472
ECM 3	Retrofit Fixtures with LED Lamps	65,512	15.9	0.0	$8,113.09	$46,092.31	$4,855.00	$41,237.31	5.1	65,970
ECM 4	Install LED Exit Signs	1,028	0.1	0.0	$127.25	$1,828.44	$0.00	$1,828.44	14.4	1,035
Lighting Control Measures		**18,634**	**4.2**	**0.0**	**$2,307.69**	**$7,191.00**	**$1,000.00**	**$6,191.00**	**2.7**	**18,765**
ECM 5	Install Occupancy Sensor Lighting Controls	16,041	3.7	0.0	$1,986.55	$6,031.00	$960.00	$5,071.00	2.6	16,153
ECM 6	Install High/Low Lighitng Controls	2,593	0.6	0.0	$321.13	$1,160.00	$40.00	$1,120.00	3.5	2,611
Motor Upgrades		**665**	**0.1**	**0.0**	**$82.34**	**$2,262.88**	**$0.00**	**$2,262.88**	**27.5**	**670**
ECM 7	Premium Efficiency Motors	665	0.1	0.0	$82.34	$2,262.88	$0.00	$2,262.88	27.5	670
Variable Frequency Drive (VFD) Measures		**18,139**	**1.9**	**0.0**	**$2,246.31**	**$7,213.60**	**$0.00**	**$7,213.60**	**3.2**	**18,266**
ECM 8	Install VFDs on Hot Water Pumps	18,139	1.9	0.0	$2,246.31	$7,213.60	$0.00	$7,213.60	3.2	18,266
Domestic Water Heating Upgrade		**0**	**0.0**	**2.8**	**$28.94**	**$21.51**	**$0.00**	**$21.51**	**0.7**	**329**
ECM 9	Install Low-Flow Domestic Hot Water Devices	0	0.0	2.8	$28.94	$21.51	$0.00	$21.51	0.7	329
TOTALS		**113,960**	**25.5**	**2.8**	**$14,141.79**	**$78,303.27**	**$8,155.00**	**$70,148.27**	**5.0**	**115,086**

* - 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 17 below.

Figure 17 – Summary of Lighting Upgrade ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		76,522	19.3	0.0	$9,476.52	$61,614.28	$7,155.00	$54,459.28	5.7	77,057
ECM 1	Install LED Fixtures	4,548	2.1	0.0	$563.26	$7,813.54	$2,000.00	$5,813.54	10.3	4,580
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	5,434	1.2	0.0	$672.92	$5,880.00	$300.00	$5,580.00	8.3	5,472
ECM 3	Retrofit Fixtures with LED Lamps	65,512	15.9	0.0	$8,113.09	$46,092.31	$4,855.00	$41,237.31	5.1	65,970
ECM 4	Install LED Exit Signs	1,028	0.1	0.0	$127.25	$1,828.44	$0.00	$1,828.44	14.4	1,035

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	4,548	2.1	0.0	$563.26	$7,813.54	$2,000.00	$5,813.54	10.3	4,580

Measure Description

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

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

ECM 2: Retrofit Fluorescent Fixtures with LED Lamps and Drivers

Summary of Measure Economics

Interior/ Exterior	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Interior	5,434	1.2	0.0	$672.92	$5,880.00	$300.00	$5,580.00	8.3	5,472
Exterior	0	0.0	0.0	$0.00	$0.00	$0.00	$0.00	0.0	0

Measure Description

We recommend retrofitting existing linear fluorescent T12 fixtures by removing fluorescent tubes and ballasts and replacing them with LEDs and LED drivers (if necessary), which are designed to be used retrofitted fluorescent fixtures. The measure uses the existing fixture housing but replaces the rest of the components with more efficient lighting technology. This measure saves energy by installing LEDs which use less power than other lighting technologies yet provide equivalent lighting output for the space.

ECM 3: Retrofit Fixtures with LED Lamps

Summary of Measure Economics

Interior/ Exterior	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Interior	65,512	15.9	0.0	$8,113.09	$46,092.31	$4,855.00	$41,237.31	5.1	65,970
Exterior	0	0.0	0.0	$0.00	$0.00	$0.00	$0.00	0.0	0

Measure Description

We recommend retrofitting existing linear fluorescent T8 fixtures and compact fluorescent lamps 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 (10) times longer than many incandescent lamps.

ECM 4: Install LED EXIT Signs

Summary of Measure Economics

Interior/ Exterior	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Interior	1,028	0.1	0.0	$127.25	$1,828.44	$0.00	$1,828.44	14.4	1,035
Exterior	0	0.0	0.0	$0.00	$0.00	$0.00	$0.00	0.0	0

Measure Description

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

4.1.2 Lighting Control Measures

Figure 18 – Summary of Lighting Control ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Lighting Control Measures		**18,634**	**4.2**	**0.0**	**$2,307.69**	**$7,191.00**	**$1,000.00**	**$6,191.00**	**2.7**	**18,765**
ECM 5	Install Occupancy Sensor Lighting Controls	16,041	3.7	0.0	$1,986.55	$6,031.00	$960.00	$5,071.00	2.6	16,153
ECM 6	Install High/Low Lighitng Controls	2,593	0.6	0.0	$321.13	$1,160.00	$40.00	$1,120.00	3.5	2,611

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

ECM 5: Install Occupancy Sensor Lighting Controls

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
16,041	3.7	0.0	$1,986.55	$6,031.00	$960.00	$5,071.00	2.6	16,153

Measure Description

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

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

ECM 6: Install High/Low Lighting Controls

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
2,593	0.6	0.0	$321.13	$1,160.00	$40.00	$1,120.00	3.5	2,611

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 interior corridors. 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

ECM 7: Premium Efficiency Motors

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
665	0.1	0.0	$82.34	$2,262.88	$0.00	$2,262.88	27.5	670

Measure Description

We recommend replacing existing 7.5 hp standard heating hot water efficiency motors with *NEMA Premium™* efficiency motors. Our evaluation assumes that existing motors will be replaced with motors of equivalent size and type. Although occasionally additional savings can be achieved by downsizing motors to better meet the motor's current load requirements. The base case motor efficiencies are estimated from nameplate information and our best estimates of motor run hours. Efficiencies of proposed motor upgrades are obtained from the *New Jersey's Clean Energy Program Protocols to Measure*

Resource Savings (2016). Savings are based on the difference between baseline and proposed efficiencies and the assumed annual operating hours.

4.1.4 Variable Frequency Drive Measures

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

Figure 19 – Summary of Variable Frequency Drive ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Variable Frequency Drive (VFD) Measures		**18,139**	**1.9**	**0.0**	**$2,246.31**	**$7,213.60**	**$0.00**	**$7,213.60**	**3.2**	**18,266**
ECM 8	Install VFDs on Hot Water Pumps	18,139	1.9	0.0	$2,246.31	$7,213.60	$0.00	$7,213.60	3.2	18,266

ECM 8: 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)
18,139	1.9	0.0	$2,246.31	$7,213.60	$0.00	$7,213.60	3.2	18,266

Measure Description

We recommend installing a variable frequency drives (VFD) to control the two 7.5 hp hot water pumps located in the boiler room. This measure requires that a majority of the hot water coils be served by 2-way valves and that a differential pressure sensor is installed in the hot water loop. As the hot water valves close, the differential pressure increases. The VFD modulates pump speed to maintain a differential pressure setpoint. Energy savings results from reducing pump motor speed (and power) as hot water valves close. The magnitude of energy savings is based on the estimated amount of time that the system will operate at reduced load.

4.1.5 Domestic Hot Water Heating System Upgrades

Our recommendations for domestic water heating system improvements are summarized in Figure 20 below.

Figure 20 - Summary of Domestic Water Heating ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Domestic Water Heating Upgrade		**0**	**0.0**	**2.8**	**$28.94**	**$21.51**	**$0.00**	**$21.51**	**0.7**	**329**
ECM 9	Install Low-Flow Domestic Hot Water Devices	0	0.0	2.8	$28.94	$21.51	$0.00	$21.51	0.7	329

ECM 9: Install Low-Flow DHW Devices

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
0	0.0	2.8	$28.94	$21.51	$0.00	$21.51	0.7	329

Measure Description

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

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.

4.2 ECMs Evaluated but Not Recommended

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

Figure 21 – Summary of Measures Evaluated, but Not Recommended

Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Electric Unitary HVAC Measures	**25,716**	**15.2**	**0.0**	**$3,184.64**	**$71,312.32**	**$4,300.00**	**$67,012.32**	**21.0**	**25,895**
Install High Efficiency Electric AC	25,716	15.2	0.0	$3,184.64	$71,312.32	$4,300.00	$67,012.32	21.0	25,895
Gas Heating (HVAC/Process) Replacement	**0**	**0.0**	**330.7**	**$3,404.17**	**$112,211.74**	**$12,060.00**	**$100,151.74**	**29.4**	**38,718**
Install High Efficiency Hot Water Boilers	0	0.0	330.7	$3,404.17	$112,211.74	$12,060.00	$100,151.74	29.4	38,718
TOTALS	**25,716**	**15.2**	**330.7**	**$6,588.81**	**$183,524.06**	**$16,360.00**	**$167,164.06**	**25.4**	**64,614**

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

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

Install High Efficiency Air Conditioning Units

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
25,716	15.2	0.0	$3,184.64	$71,312.32	$4,300.00	$67,012.32	21.0	25,895

Measure Description

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

Reasons for not Recommending

The simple payback of this measure exceeds the expected useful live of the equipment and is therefore not recommended on the basis of energy savings alone.

Install High Efficiency Hot Water Boilers

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
0	0.0	330.7	$3,404.17	$112,211.74	$12,060.00	$100,151.74	29.4	38,718

Measure Description

We evaluated replacing existing older hot water boilers with high efficiency hot water boilers. Significant improvements have been made in combustion technology resulting in increased overall boiler efficiency. Energy savings results from improved combustion efficiency and reduced standby losses at low loads.

The most notable efficiency improvement is condensing hydronic boilers that can achieve over 90% efficiency under the proper conditions. Condensing hydronic boilers typically operate at efficiencies between 85% and 87% (comparable to other high efficiency boilers) when the return water temperature is above 130°F. The boiler efficiency increases as the return water temperature drops below 130°F. Therefore, condensing hydronic boilers were only evaluated when the return water temperature is less than 130°F during most of the operating hours. As a result, condensing hydronic boilers are recommended for this site.

Reasons for not Recommending

The simple payback of this measure exceeds the expected useful live of the equipment and is therefore not recommended on the basis of energy savings alone.

5 Energy Efficient Practices

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

Reduce Air Leakage

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

Close Doors and Windows

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

Perform Proper Lighting Maintenance

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

Develop a Lighting Maintenance Schedule

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

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.

Turn Off Unneeded Motors

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

Perform Routine Motor Maintenance

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

Practice Proper Use of Thermostat Schedules and Temperature Resets

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

Clean Evaporator/Condenser Coils on AC Systems

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

Clean and/or Replace HVAC Filters

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

Check for and Seal Duct Leakage

Duct leakage in commercial buildings typically accounts for 5% to 25% of the supply airflow. In the case of rooftop air handlers, duct leakage can occur to the outside of the building, significantly increasing cooling and heating costs. By sealing sources of leakage, cooling, heating, and ventilation energy use can be reduced significantly, depending on the severity of air leakage.

Perform Proper Boiler Maintenance

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

Perform Proper Furnace Maintenance

Preventative furnace maintenance can extend the life of the system, maintain energy efficiency, and ensure safe operation. Following the manufacturer's instructions, a yearly tune-up should include tasks such as checking for gas / carbon monoxide leaks; changing the air and fuel filters; checking components for cracks, corrosion, dirt, or debris build-up; ensuring the ignition system is working properly; testing and adjusting operation and safety controls; inspecting the electrical connections; and ensuring proper lubrication for motors and bearings.

Perform Proper Water Heater Maintenance

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

Perform Maintenance on Compressed Air Systems

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

Water Conservation

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

Installing dual flush or low-flow toilets and low-flow or waterless urinals are additional ways to reduce the sites water use, however, these devices do not provide energy savings at the site level. Any reduction in water use does however ultimately reduce grid level electricity use since a significant amount of electricity is used to deliver water from reservoirs to end users. The EPA WaterSense™ ratings for urinals is 0.5 gallons per flush (gpf) and toilets that use as little as 1.28 gpf (this is lower than the current 1.6 gpf federal standard). Refer to Section 4.1.5 for any low-flow ECM recommendations.

6 On-Site Generation Measures

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

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

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

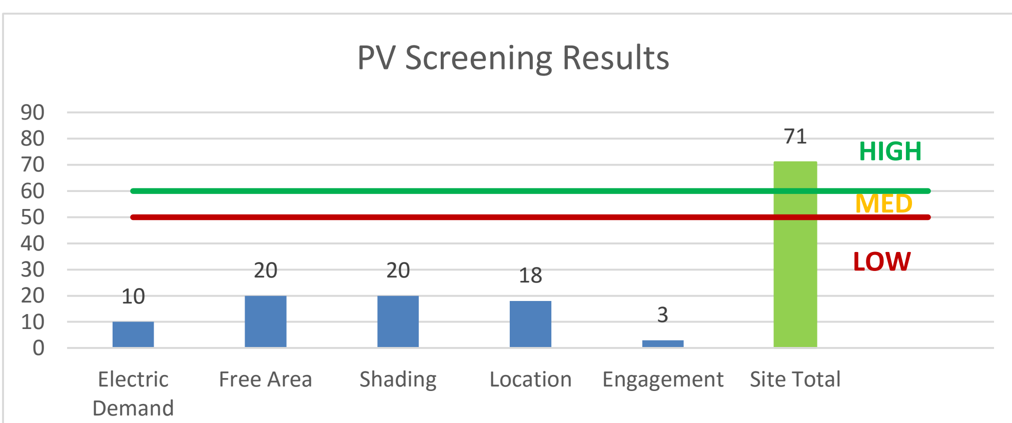
6.1 Photovoltaic

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

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

In order to be cost-effective, a solar PV array needs certain minimum criteria, such as flat or south-facing rooftop or other unshaded space on which to place the PV panels. In our opinion, the facility does appear meet these minimum criteria for cost-effective PV installation.

Figure 22 - Photovoltaic Screening



Potential	High	
System Potential	150	kW DC STC
Electric Generation	178,705	kWh/yr
Displaced Cost	$15,550	/yr
Installed Cost	$390,000	

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. Refer to Section 8.3 for additional information.

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

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

Roof Top Free Area for PV installation

6.2 Combined Heat and Power

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

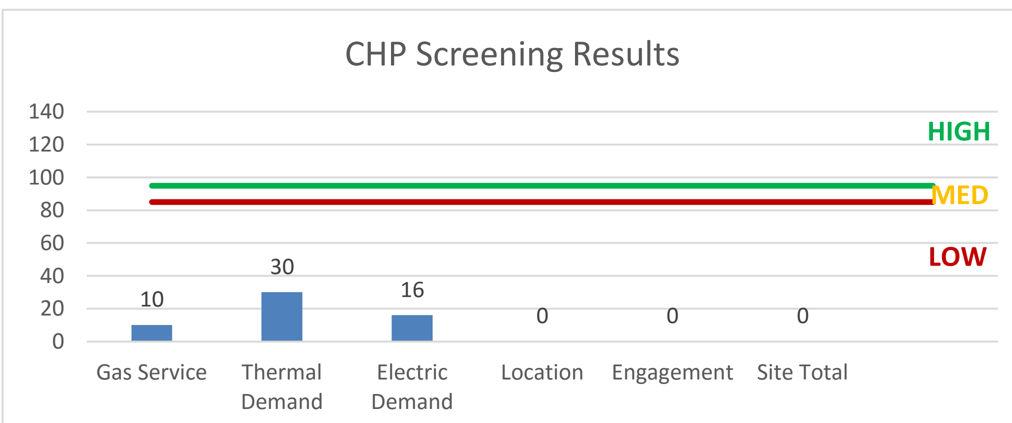
CHP systems are typically used to produce a portion of the electric power used onsite by a facility, with the balance of electric power needs supplied by grid purchases. The heat is used to supplement (or supplant) existing boilers for the purpose of space heating and/or domestic hot water heating. Waste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

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

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

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

Figure 23 - Combined Heat and Power Screening



7 Demand Response

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

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

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

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

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

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

In our opinion Deane Porter School is not a good candidate for DR due to the limited loads that could be shed. The primary candidate for load shedding would be the air conditioning equipment.

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

Figure 24 - ECM Incentive Program Eligibility

Energy Conservation Measure		SmartStart Prescriptive	SmartStart Custom	Direct Install
ECM 1	Install LED Fixtures	x		x
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	x		x
ECM 3	Retrofit Fixtures with LED Lamps	x		x
ECM 4	Install LED Exit Signs			x
ECM 5	Install Occupancy Sensor Lighting Controls	x		x
ECM 6	Install High/Low Lighitng Controls	x		x
ECM 7	Premium Efficiency Motors			x
ECM 8	Install VFDs on Hot Water Pumps	x		x
ECM 9	Install Low-Flow Domestic Hot Water Devices			

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

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

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

8.1 SmartStart

Overview

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

Equipment with Prescriptive Incentives Currently Available:

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

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

Incentives

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

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

How to Participate

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

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

8.2 Direct Install

Overview

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

Incentives

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

How to Participate

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

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

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

8.3 SREC Registration Program

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

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

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

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

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

8.4 Energy Savings Improvement Program

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

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

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

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

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

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

9 Energy Purchasing and Procurement Strategies

9.1 Retail Electric Supply Options

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

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

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

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

9.2 Retail Natural Gas Supply Options

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

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

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

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

Appendix A: Equipment Inventory & Recommendations

Lighting Inventory & Recommendations

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Boiler Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,500	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,500	0.02	95	0.0	$11.75	$58.50	$10.00	4.13
Boiler Room	3	Compact Fluorescent: Screen in Lamp	Wall Switch	23	2,500	Relamp	No	3	LED Screw-In Lamps: Downlight Solid State Retrofit	Wall Switch	7	2,500	0.03	138	0.0	$17.09	$161.26	$0.00	9.44
Main Lobby	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,500	Relamp	Yes	10	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,750	0.27	1,199	0.0	$148.47	$701.00	$100.00	4.05
Corridor 500 wing	15	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,500	Relamp	Yes	15	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	1,750	0.62	2,697	0.0	$334.06	$1,360.00	$265.00	3.28
Corridor 500 wing	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	1,750	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,750	0.13	398	0.0	$49.35	$351.00	$60.00	5.90
Corridor 500 wing	8	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Occupancy Sensor	62	1,750	Relamp	No	8	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,750	0.15	467	0.0	$57.82	$505.60	$0.00	8.74
Corridor 500 wing	6	Exit Signs: Fluorescent	None	12	8,760	Fixture Replacement	No	6	LED Exit Signs: 2 W Lamp	None	6	8,760	0.02	363	0.0	$44.91	$645.33	$0.00	14.37
Corridor 100 wing	6	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,500	Relamp	Yes	6	LED - Linear Tubes: (4) 4' Lamps	High/Low Control	58	1,750	0.29	1,266	0.0	$156.80	$686.80	$120.00	3.61
Corridor 100 wing	1	Exit Signs: Fluorescent	None	12	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.00	60	0.0	$7.49	$107.56	$0.00	14.37
Corridor 400 wing	10	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	2,500	Relamp	Yes	10	LED - Linear Tubes: (2) U-Lamp	High/Low Control	33	1,750	0.25	1,118	0.0	$138.50	$748.00	$0.00	5.40
Corridor 400 wing	2	Exit Signs: Fluorescent	None	12	8,760	Fixture Replacement	No	2	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	121	0.0	$14.97	$215.11	$0.00	14.37
Corridor 300 wing	22	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	2,500	Relamp	Yes	22	LED - Linear Tubes: (2) U-Lamp	High/Low Control	33	1,750	0.56	2,460	0.0	$304.70	$1,622.40	$0.00	5.32
Corridor 300 wing	3	Exit Signs: Fluorescent	None	12	8,760	Fixture Replacement	No	3	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	181	0.0	$22.46	$322.67	$0.00	14.37
Corridor 200 wing	10	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	2,500	Relamp	Yes	10	LED - Linear Tubes: (2) U-Lamp	High/Low Control	33	1,750	0.25	1,118	0.0	$138.50	$864.00	$0.00	6.24
Corridor 200 wing	2	Exit Signs: Fluorescent	None	12	8,760	Fixture Replacement	No	2	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	121	0.0	$14.97	$215.11	$0.00	14.37
Corridor 300 wing	2	Compact Fluorescent: Screen in Lamp	Wall Switch	23	2,500	Relamp	No	2	LED Screw-In Lamps: Downlight Solid State Retrofit	Wall Switch	7	2,500	0.02	92	0.0	$11.39	$107.51	$0.00	9.44
Room 301	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,500	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,750	0.10	422	0.0	$52.27	$306.27	$60.00	4.71
Room 303	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,500	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,750	0.19	844	0.0	$104.53	$496.53	$100.00	3.79
Girls Restroom	2	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	2,500	Relamp	Yes	2	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,750	0.05	224	0.0	$27.70	$241.40	$0.00	8.71
Room 302	22	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	2,500	Relamp	Yes	22	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,750	0.56	2,460	0.0	$304.70	$1,506.40	$20.00	4.88
Room 304	29	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	2,500	Relamp	Yes	29	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,750	0.74	3,243	0.0	$401.65	$2,064.80	$40.00	5.04
Electrical Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,500	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	2,500	0.03	142	0.0	$17.62	$75.20	$15.00	3.42
Room 305	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,500	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,750	0.08	360	0.0	$44.54	$266.40	$50.00	4.86
Room 306	29	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	2,500	Relamp	Yes	29	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,750	0.74	3,243	0.0	$401.65	$2,064.80	$40.00	5.04
Room 308	22	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	2,500	Relamp	Yes	22	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,750	0.56	2,460	0.0	$304.70	$1,506.40	$20.00	4.88

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Room 310	22	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	2,500	Relamp	Yes	22	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,750	0.56	2,460	0.0	$304.70	$1,506.40	$20.00	4.88
Work Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,500	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,750	0.05	240	0.0	$29.69	$233.00	$40.00	6.50
Room 309	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,500	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,750	0.12	539	0.0	$66.81	$341.60	$65.00	4.14
Room 312	29	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	2,500	Relamp	Yes	29	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,750	0.74	3,243	0.0	$401.65	$2,064.80	$40.00	5.04
Room 311	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,500	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,750	0.08	360	0.0	$44.54	$266.40	$50.00	4.86
Closet	2	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	2,500	Relamp	No	2	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	2,500	0.04	167	0.0	$20.65	$126.40	$0.00	6.12
Room 314	29	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	2,500	Relamp	Yes	29	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,750	0.74	3,243	0.0	$401.65	$2,064.80	$40.00	5.04
Room 316	22	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	2,500	Relamp	Yes	22	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,750	0.56	2,460	0.0	$304.70	$1,506.40	$20.00	4.88
Computer Room	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,500	Relamp	No	20	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,500	0.43	1,898	0.0	$234.99	$1,170.00	$200.00	4.13
Computer Room	60	Linear Fluorescent - T12: 4' T12 (40W) - 1L	Wall Switch	46	2,500	Relamp & Reballast	Yes	60	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,750	1.41	6,184	0.0	$765.85	$6,344.00	$380.00	7.79
Computer Room	2	Exit Signs: Fluorescent	None	12	8,760	Fixture Replacement	No	2	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	121	0.0	$14.97	$215.11	$0.00	14.37
Computer Room	11	Compact Fluorescent: Screen in Lamp	Wall Switch	23	2,500	Relamp	Yes	11	LED Screw-In Lamps: Downlight Solid State Retrofit	Occupancy Sensor	7	1,750	0.13	572	0.0	$70.89	$707.28	$20.00	9.70
Room 313	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,500	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,750	0.19	844	0.0	$104.53	$496.53	$100.00	3.79
Boys Restroom	2	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	2,500	Relamp	Yes	2	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,750	0.05	224	0.0	$27.70	$242.40	$0.00	8.75
Room 315	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,500	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,750	0.10	422	0.0	$52.27	$306.27	$60.00	4.71
Closet	1	LED - Fixtures: Downlight Solid State Retrofit	Wall Switch	9	2,500	None	No	1	LED - Fixtures: Downlight Solid State Retrofit	Wall Switch	9	2,500	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Room 402	12	LED - Fixtures: Other	Wall Switch	40	2,500	None	Yes	12	LED - Fixtures: Other	Occupancy Sensor	40	1,750	0.09	414	0.0	$51.27	$116.00	$20.00	1.87
Boys Restroom	1	Compact Fluorescent: Screen in Lamp	Wall Switch	23	2,500	Relamp	No	1	LED Screw-In Lamps: Downlight Solid State Retrofit	Wall Switch	7	2,500	0.01	46	0.0	$5.70	$53.75	$0.00	9.44
Girls Restroom	1	Compact Fluorescent: Screen in Lamp	Wall Switch	23	2,500	Relamp	No	1	LED Screw-In Lamps: Downlight Solid State Retrofit	Wall Switch	7	2,500	0.01	46	0.0	$5.70	$53.75	$0.00	9.44
Room 404	12	LED - Fixtures: Other	Wall Switch	40	2,500	None	Yes	12	LED - Fixtures: Other	Occupancy Sensor	40	1,750	0.09	414	0.0	$51.27	$116.00	$20.00	1.87
Room 403	12	LED - Fixtures: Other	Wall Switch	40	2,500	None	Yes	12	LED - Fixtures: Other	Occupancy Sensor	40	1,750	0.09	414	0.0	$51.27	$116.00	$20.00	1.87
Nurse Room	2	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	2,500	Relamp	Yes	2	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,750	0.05	224	0.0	$27.70	$242.40	$20.00	8.03
Nurse Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,500	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,750	0.10	422	0.0	$52.27	$306.27	$60.00	4.71
Nurse Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,500	Relamp	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,500	0.01	50	0.0	$6.23	$35.90	$5.00	4.96
Nurse Room	1	Linear Fluorescent - T8: 2' T8 (17W) - 1L	Wall Switch	22	2,500	Relamp	No	1	LED - Linear Tubes: (1) 2' Lamp	Wall Switch	9	2,500	0.01	39	0.0	$4.81	$31.90	$5.00	5.60

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Custodial Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,500	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,500	0.02	95	0.0	$11.75	$58.50	$10.00	4.13
Corridor 100 wing	10	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	2,500	Relamp	Yes	10	LED - Linear Tubes: (2) U-Lamp	High/Low Control	33	1,750	0.25	1,118	0.0	$138.50	$748.00	$0.00	5.40
Corridor 100 wing	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,500	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,500	0.04	161	0.0	$19.94	$95.13	$20.00	3.77
Corridor 100 wing	1	Exit Signs: Fluorescent	None	12	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.00	60	0.0	$7.49	$107.56	$0.00	14.37
Room 106	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,500	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,500	0.04	190	0.0	$23.50	$117.00	$20.00	4.13
Boys Restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 1L	Wall Switch	22	2,500	Relamp	No	1	LED - Linear Tubes: (1) 2' Lamp	Wall Switch	9	2,500	0.01	39	0.0	$4.81	$31.90	$5.00	5.60
Girls Restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 1L	Wall Switch	22	2,500	Relamp	No	1	LED - Linear Tubes: (1) 2' Lamp	Wall Switch	9	2,500	0.01	39	0.0	$4.81	$31.90	$5.00	5.60
Room 108	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,500	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,750	0.16	719	0.0	$89.08	$467.00	$80.00	4.34
Room 110	7	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,500	Relamp	Yes	7	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,750	0.34	1,477	0.0	$182.93	$781.93	$160.00	3.40
Restroom	2	Linear Fluorescent - T8: 2' T8 (17W) - 1L	Wall Switch	22	2,500	Relamp	No	2	LED - Linear Tubes: (1) 2' Lamp	Wall Switch	9	2,500	0.02	78	0.0	$9.61	$63.80	$10.00	5.60
Closet	1	Compact Fluorescent: Screen in Lamp	Wall Switch	23	2,500	Relamp	No	1	LED Screw-In Lamps: Downlight Solid State Retrofit	Wall Switch	7	2,500	0.01	46	0.0	$5.70	$53.75	$0.00	9.44
Room 200	12	LED - Fixtures: Other	Wall Switch	40	2,500	None	Yes	12	LED - Fixtures: Other	Occupancy Sensor	40	1,750	0.09	414	0.0	$51.27	$116.00	$20.00	1.87
Room 201	12	LED - Fixtures: Other	Wall Switch	40	2,500	None	Yes	12	LED - Fixtures: Other	Occupancy Sensor	40	1,750	0.09	414	0.0	$51.27	$116.00	$20.00	1.87
Room 202	12	LED - Fixtures: Other	Wall Switch	40	2,500	None	Yes	12	LED - Fixtures: Other	Occupancy Sensor	40	1,750	0.09	414	0.0	$51.27	$116.00	$20.00	1.87
Room 203	12	LED - Fixtures: Other	Wall Switch	40	2,500	None	Yes	12	LED - Fixtures: Other	Occupancy Sensor	40	1,750	0.09	414	0.0	$51.27	$116.00	$20.00	1.87
Cafeteria	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,500	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,750	0.55	2,398	0.0	$296.94	$1,286.00	$220.00	3.59
Cafeteria	16	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,500	Relamp	No	16	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,500	0.59	2,576	0.0	$319.01	$1,522.13	$320.00	3.77
Cafeteria	3	Exit Signs: Fluorescent	None	12	8,760	None	No	3	Exit Signs: Fluorescent	None	12	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Restroom	1	Compact Fluorescent: Screen in Lamp	Wall Switch	23	2,500	Relamp	No	1	LED Screw-In Lamps: Downlight Solid State Retrofit	Wall Switch	7	2,500	0.01	46	0.0	$5.70	$53.75	$0.00	9.44
Kitchen	16	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,500	None	No	16	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,500	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Room 103A	4	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	2,500	Relamp	Yes	4	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,750	0.10	447	0.0	$55.40	$368.80	$20.00	6.30
Closet	3	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	2,500	Relamp	Yes	3	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,750	0.08	336	0.0	$41.55	$305.60	$0.00	7.35
Boys Restroom	2	Compact Fluorescent: Screen in Lamp	Wall Switch	23	2,500	Relamp	No	2	LED Screw-In Lamps: Downlight Solid State Retrofit	Wall Switch	7	2,500	0.02	92	0.0	$11.39	$107.51	$0.00	9.44
Girls Restroom	2	Compact Fluorescent: Screen in Lamp	Wall Switch	23	2,500	Relamp	No	2	LED Screw-In Lamps: Downlight Solid State Retrofit	Wall Switch	7	2,500	0.02	92	0.0	$11.39	$127.30	$0.00	11.17
Gymnasium	10	Linear Fluorescent - T8: 4' T8 (32W) - 6L	Wall Switch	176	2,500	Relamp	Yes	10	LED - Linear Tubes: (6) 4' Lamps	Occupancy Sensor	87	1,750	0.75	3,309	0.0	$409.80	$1,458.23	$320.00	2.78

	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
Gymnasium	1	Exit Signs: Fluorescent	None	12	8,760	None	No	1	Exit Signs: Fluorescent	None	12	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Room 100	10	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	2,500	Relamp	Yes	10	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,750	0.25	1,118	0.0	$138.50	$748.00	$20.00	5.26
Room 100	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,500	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,500	0.04	190	0.0	$23.50	$117.00	$20.00	4.13
Principal Office	4	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	2,500	Relamp	Yes	4	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,750	0.10	447	0.0	$55.40	$368.80	$20.00	6.30
Main Lobby	3	Compact Fluorescent: Screen in Lamp	Wall Switch	23	2,500	Relamp	No	3	LED Screw-In Lamps: Downlight Solid State Retrofit	Wall Switch	9	2,500	0.03	121	0.0	$14.95	$161.26	$0.00	10.78
Room 500	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,500	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,750	0.49	2,158	0.0	$267.25	$1,018.40	$200.00	3.06
Restroom	2	Compact Fluorescent: Screen in Lamp	Wall Switch	23	2,500	Relamp	No	2	LED Screw-In Lamps: Downlight Solid State Retrofit	Wall Switch	9	2,500	0.02	81	0.0	$9.97	$107.51	$0.00	10.78
Restroom	5	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,500	Relamp	Yes	5	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,750	0.24	1,055	0.0	$130.67	$591.67	$100.00	3.76
Room 502	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,500	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,750	0.49	2,158	0.0	$267.25	$1,018.40	$200.00	3.06
Room 504	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,500	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,750	0.49	2,158	0.0	$267.25	$1,018.40	$200.00	3.06
Room 506	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,500	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,750	0.49	2,158	0.0	$267.25	$1,018.40	$200.00	3.06
Room 501	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,500	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,750	0.49	2,158	0.0	$267.25	$1,018.40	$200.00	3.06
Room 503	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,500	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,750	0.49	2,158	0.0	$267.25	$1,018.40	$200.00	3.06
Room 508	16	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	114	1,750	Relamp	No	16	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,750	0.59	1,803	0.0	$223.31	$1,522.13	$320.00	5.38
Room 508	5	Compact Fluorescent: Screen in Lamp	Occupancy Sensor	23	1,750	Relamp	No	5	LED Screw-In Lamps: Downlight Solid State Retrofit	Occupancy Sensor	7	1,750	0.05	161	0.0	$19.94	$268.77	$0.00	13.48
Room 508 - Restroom	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Occupancy Sensor	62	1,750	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,750	0.02	58	0.0	$7.23	$63.20	$0.00	8.74
Room 510	16	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	114	1,750	Relamp	No	16	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,750	0.59	1,803	0.0	$223.31	$1,522.13	$320.00	5.38
Room 510	5	Compact Fluorescent: Screen in Lamp	Occupancy Sensor	23	1,750	Relamp	No	5	LED Screw-In Lamps: Downlight Solid State Retrofit	Occupancy Sensor	7	1,750	0.05	161	0.0	$19.94	$268.77	$0.00	13.48
Room 510 - Restroom	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Occupancy Sensor	62	1,750	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,750	0.02	58	0.0	$7.23	$63.20	$0.00	8.74
Room 505	16	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	114	1,750	Relamp	No	16	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,750	0.59	1,803	0.0	$223.31	$1,522.13	$320.00	5.38
Room 505	5	Compact Fluorescent: Screen in Lamp	Occupancy Sensor	23	1,750	Relamp	No	5	LED Screw-In Lamps: Downlight Solid State Retrofit	Occupancy Sensor	7	1,750	0.05	161	0.0	$19.94	$268.77	$0.00	13.48
Room 505 - Restroom	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Occupancy Sensor	62	1,750	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,750	0.02	58	0.0	$7.23	$63.20	$0.00	8.74
Room 507	16	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	114	1,750	Relamp	No	16	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,750	0.59	1,803	0.0	$223.31	$1,522.13	$320.00	5.38
Room 507	5	Compact Fluorescent: Screen in Lamp	Occupancy Sensor	23	1,750	Relamp	No	5	LED Screw-In Lamps: Downlight Solid State Retrofit	Occupancy Sensor	7	1,750	0.05	161	0.0	$19.94	$268.77	$0.00	13.48
Room 507 - Restroom	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Occupancy Sensor	62	1,750	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,750	0.02	58	0.0	$7.23	$63.20	$0.00	8.74

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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
Room 512	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	1,750	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,750	0.04	133	0.0	$16.45	$117.00	$20.00	5.90
Closet	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	1,750	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,750	0.13	398	0.0	$49.35	$351.00	$60.00	5.90
Storage	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	1,750	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,750	0.09	266	0.0	$32.90	$234.00	$40.00	5.90
Electrical Closet	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	1,750	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,750	0.04	133	0.0	$16.45	$117.00	$20.00	5.90
Exterior Wall Pack	12	Metal Halide: (1) 150W Lamp	Daylight Dimming	190	1,250	Fixture Replacement	No	12	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Daylight Dimming	7	1,250	1.44	3,157	0.0	$390.93	$4,688.12	$1,200.00	8.92
Garage	6	Compact Fluorescent: Screen in Lamp	Wall Switch	23	2,500	Relamp	Yes	6	LED Screw-In Lamps: Downlight Solid State Retrofit	Occupancy Sensor	7	1,750	0.07	312	0.0	$38.67	$438.52	$20.00	10.82
Wall Pack	2	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Daylight Dimming	25	1,250	None	No	2	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Daylight Dimming	25	1,250	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Wall Pack	2	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Daylight Dimming	9	1,250	None	No	2	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Daylight Dimming	9	1,250	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Front Entrance - Exterior	8	Metal Halide: (1) 100W Lamp	Daylight Dimming	128	1,250	Fixture Replacement	No	8	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Daylight Dimming	7	1,250	0.63	1,392	0.0	$172.32	$3,125.42	$800.00	13.49

Motor Inventory & Recommendations

		Existing Conditions						Proposed Conditions				Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	Motor Quantity	Motor Application	HP Per Motor	Full Load Efficiency	VFD Control?	Annual Operating Hours	Install High Efficiency Motors?	Full Load Efficiency	Install VFDs?	Number of VFDs	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Boiler Room	Hot Water System	2	Heating Hot Water Pump	7.5	88.9%	No	3,391	Yes	91.0%	Yes	2	2.00	18,804	0.0	$2,328.64	$9,476.48	$0.00	4.07
Boiler Room	Combustion System	2	Other	1.5	80.0%	No	2,745	No	80.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Boiler Room	Boiler	2	Other	1.0	85.5%	No	2,745	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Boiler Room	Hot Water System	2	Heating Hot Water Pump	1.0	83.5%	No	2,745	No	83.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Exhaust Air System	2	Exhaust Fan	0.3	65.0%	No	2,745	No	65.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Exhaust Air System	1	Exhaust Fan	0.3	65.0%	No	2,745	No	65.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Exhaust Air System	4	Exhaust Fan	0.3	65.0%	No	2,745	No	65.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Exhaust Air System	2	Exhaust Fan	0.3	65.0%	No	2,745	No	65.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Exhaust Air System	1	Exhaust Fan	0.1	65.0%	No	2,745	No	65.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Exhaust Air System	1	Kitchen Hood Exhaust Fan	1.0	82.5%	No	5,250	No	82.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Exhaust Air System	4	Exhaust Fan	0.2	65.0%	No	2,745	No	65.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Exhaust Air System	4	Exhaust Fan	0.2	65.0%	No	2,745	No	65.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Exhaust Air System	4	Exhaust Fan	0.2	65.0%	No	2,745	No	65.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Exhaust Air System	1	Exhaust Fan	0.5	65.0%	No	2,745	No	65.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Exhaust Air System	6	Exhaust Fan	1.5	84.0%	No	2,745	No	84.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Cafeteria	1	Exhaust Fan	1.5	84.0%	No	2,745	No	84.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
School	Classrooms	30	Other	0.1	65.0%	No	2,745	No	65.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Room 302-304	Air Handler	1	Supply Fan	0.5	65.0%	No	2,745	No	65.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Room 305-306	Air Handler	1	Supply Fan	0.3	65.0%	No	2,745	No	65.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Room 308-310	Air Handler	1	Supply Fan	0.8	65.0%	No	2,745	No	65.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00

		Existing Conditions						Proposed Conditions				Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	Motor Quantity	Motor Application	HP Per Motor	Full Load Efficiency	VFD Control?	Annual Operating Hours	Install High Efficiency Motors?	Full Load Efficiency	Install VFDs?	Number of VFDs	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Room 311-312	Air Handler	1	Supply Fan	0.8	65.0%	No	2,745	No	65.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Cafeteria	Air Handler	1	Supply Fan	1.5	82.0%	No	2,745	No	82.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Room 314-316	Air Handler	1	Supply Fan	0.5	65.0%	No	2,745	No	65.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Electric HVAC Inventory & Recommendations

		Existing Conditions				Proposed Conditions								Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (kBtu/hr)	Install High Efficiency System?	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (kBtu/hr)	Cooling Mode Efficiency (SEER/EER)	Heating Mode Efficiency (COP)	Install Dual Enthalpy Economizer?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Room 102	Room 102	1	Packaged Terminal HP	0.75	8.10	No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Room 110	room 110	1	Window AC	1.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Cafeteria	1	Split-System AC	4.00		Yes	1	Split-System AC	4.00		14.00		No	1.28	2,154	0.0	$266.79	$5,984.88	$368.00	21.05
Rooftop	Cafeteria	1	Packaged AC	5.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Main Office	1	Split-System AC	10.00		Yes	1	Split-System AC	10.00		11.50		No	2.47	4,165	0.0	$515.84	$11,637.70	$730.00	21.15
Rooftop	Classrooms - 500 Wing	1	Packaged AC	3.00		Yes	1	Packaged AC	3.00		14.00		No	1.11	1,882	0.0	$233.05	$6,806.88	$276.00	28.02
Rooftop	Classrooms - 300 Wing/Library	4	Split-System AC	7.50		Yes	4	Split-System AC	7.50		11.50		No	7.40	12,496	0.0	$1,547.51	$34,913.10	$2,190.00	21.15
Rooftop	Classrooms - 300 Wing	2	Split-System AC	2.00		Yes	2	Split-System AC	2.00		14.00		No	1.49	2,509	0.0	$310.73	$5,984.88	$368.00	18.08
Rooftop	Classrooms - 300 Wing	1	Split-System AC	4.00		Yes	1	Split-System AC	4.00		14.00		No	1.49	2,509	0.0	$310.73	$5,984.88	$368.00	18.08
Classrooms - 500 Wing	Classrooms - 500 Wing	11	Packaged Terminal HP	3.00	36.00	No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Fuel Heating Inventory & Recommendations

		Existing Conditions			Proposed Conditions						Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Output Capacity per Unit (MBh)	Install High Efficiency System?	System Quantity	System Type	Output Capacity per Unit (MBh)	Heating Efficiency	Heating Efficiency Units	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Boiler Room	School	2	Non-Condensing Hot Water Boiler	3,015.00	Yes	2	Condensing Hot Water Boiler	3,015.00	93.00%	Ec	0.00	0	330.7	$3,404.17	$112,211.74	$12,060.00	29.42

DHW Inventory & Recommendations

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

Low-Flow Device Recommendations

	Recommedation Inputs				Energy Impact & Financial Analysis						
Location	Device Quantity	Device Type	Existing Flow Rate (gpm)	Proposed Flow Rate (gpm)	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen	3	Faucet Aerator (Kitchen)	3.00	2.20	0.00	0	2.8	$28.94	$21.51	$0.00	0.74

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 (16 - 30 cu. ft.)	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	1	Refrigerator Chest	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	3	Stand-Up Refrigerator, Solid Door (31 - 50 cu. ft.)	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	1	Refrigerator Chest	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	1	Refrigerator Chest	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Cooking Equipment Inventory & Recommendations

	Existing Conditions			Proposed Conditions	Energy Impact & Financial Analysis						
Location	Quantity	Equipment Type	High Efficiency Equipement?	Install High Efficiency Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen	1	Insulated Food Holding Cabinet (Full Size)	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	1	Gas Combination Oven/Steam Cooker (<15 Pans)	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	1	Gas Convection Oven (Half Size)	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	1	Gas Convection Oven (Half 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?
School	127	Desktop with LCD Monitor	191.0	Yes
School	675	Labtop	45.0	Yes
School	14	Printer	75.0	Yes
School	7	Microwave	1,000.0	No
School	23	Wall TV	120.0	Yes
School	6	Water Cooler	125.0	Yes
School	4	Coffee Machine	950.0	Yes
School	2	Small Freezer	158.0	Yes
School	7	Copy Machine	1,050.0	Yes
School	2	Refrigerator	207.0	Yes
School	3	Toaster	1,000.0	No

Appendix B: ENERGY STAR® Statement of Energy Performance

ENERGY STAR® Statement of Energy Performance

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ENERGY STAR® Score[1]

Deane-Porter School

Primary Property Type: K-12 School
Gross Floor Area (ft²): 67,000
Built: 1963

For Year Ending: October 31, 2016
Date Generated: August 25, 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
Deane-Porter School 50 Black Point Road Rumson, New Jersey 07760	Rumson Public Schools 60 Forrest Avenue Rumson, NJ 07760 (732) 842-0354	James O'Brien 60 Forrest Avenue Rumson, NJ 07760 732-842-0354 jobrien@rumsonschool.org

Property ID: 6019689

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
62.3 kBtu/ft²

Annual Energy by Fuel

Electric - Grid (kBtu)	1,505,720 (36%)
Natural Gas (kBtu)	2,669,453 (64%)

Source EUI
112.4 kBtu/ft²

National Median Comparison

National Median Site EUI (kBtu/ft²)	72.1
National Median Source EUI (kBtu/ft²)	130.1
% Diff from National Median Source EUI	-14%

Annual Emissions

Greenhouse Gas Emissions (Metric Tons CO2e/year)	309

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)