Local Government Energy Audit:
Energy Audit Report

Greenwich Township

Elementary School

101 Wyndham Farm Blvd.

Stewartsville, New Jersey 08886

Greenwich Township School District

October 3, 2018

Final Report by:

TRC Energy Services

Disclaimer

The intent of this energy analysis report is to identify energy savings opportunities and recommend upgrades to the building's energy using equipment and systems. Approximate savings are included in this report to help make decisions about reducing energy use at the building. 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 building 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 building should review available program incentives and eligibility requirements prior to selecting and installing any energy conservation measures.

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1 EXECUTIVE SUMMARY

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

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

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

1.1 Building Summary

Greenwich Township Elementary School is a 91,146 square foot building comprised of various space types including classrooms, offices, a media center, a small commercial kitchen, a cafeteria, a gymnasium, a stage, and various mechanical and storage spaces.

Lighting at Greenwich Township Elementary School consists of aging and inefficient linear and compact fluorescent lighting. Heating is supplied by two gas-fired hot water boilers. Cooling is provided by packaged terminal air conditioners located in classrooms, and packaged rooftop units serving the larger spaces. Domestic hot water is produced by a standalone storage tank water heater. A thorough description of the building and our observations are located in Section 2.

1.2 Your Cost Reduction Opportunities

Energy Conservation Measures

TRC evaluated nine measures and recommends six, which together represent an opportunity for Greenwich Township Elementary School to reduce annual energy costs by roughly $41,931 and annual greenhouse gas emissions by 335,271 lbs CO_2e. We estimate that if all measures were implemented as recommended, the project would pay for itself in roughly 4.6 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 Greenwich Township Elementary School's annual energy use by 13%.

Figure 1 – Previous 12 Month Utility Costs

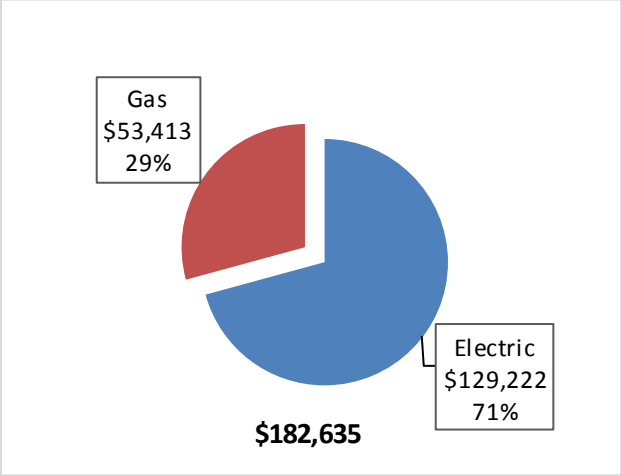
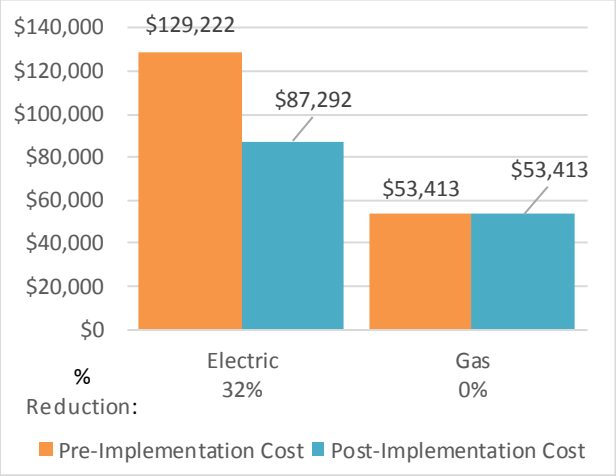


Figure 2 – Potential Post-Implementation Costs



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

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

Figure 3 – Summary of Energy Reduction Opportunities

Energy Conservation Measure		Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades			**247,393**	**37.0**	**0.0**	**$31,156.46**	**$145,188.75**	**$21,320.00**	**$123,868.75**	**4.0**	**249,123**
ECM 1	Install LED Fixtures	Yes	38,220	5.6	0.0	$4,813.36	$54,297.44	$7,100.00	$47,197.44	9.8	38,487
ECM 2	Retrofit Fixtures with LED Lamps	Yes	209,173	31.4	0.0	$26,343.10	$90,891.31	$14,220.00	$76,671.31	2.9	210,636
Lighting Control Measures			**54,936**	**8.2**	**0.0**	**$6,918.59**	**$48,440.00**	**$5,005.00**	**$43,435.00**	**6.3**	**55,320**
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	48,509	7.3	0.0	$6,109.14	$43,640.00	$5,005.00	$38,635.00	6.3	48,848
ECM 4	Install High/Low Lighitng Controls	Yes	6,427	0.9	0.0	$809.45	$4,800.00	$0.00	$4,800.00	5.9	6,472
Motor Upgrades			**1,615**	**0.5**	**0.0**	**$203.45**	**$9,086.33**	**$0.00**	**$9,086.33**	**44.7**	**1,627**
	Premium Efficiency Motors	No	1,615	0.5	0.0	$203.45	$9,086.33	$0.00	$9,086.33	44.7	1,627
Variable Frequency Drive (VFD) Measures			**30,614**	**7.9**	**0.0**	**$3,855.52**	**$27,761.00**	**$1,800.00**	**$25,961.00**	**6.7**	**30,828**
ECM 5	Install VFDs on Constant Volume (CV) HVAC	Yes	11,173	3.0	0.0	$1,407.06	$10,820.40	$1,800.00	$9,020.40	6.4	11,251
ECM 6	Install VFDs on Hot Water Pumps	Yes	19,442	4.9	0.0	$2,448.45	$16,940.60	$0.00	$16,940.60	6.9	19,578
Electric Unitary HVAC Measures			**35,773**	**21.2**	**0.0**	**$4,505.19**	**$182,774.34**	**$6,190.00**	**$176,584.34**	**39.2**	**36,023**
	Install High Efficiency Electric AC	No	4,105	2.4	0.0	$516.95	$21,930.30	$730.00	$21,200.30	41.0	4,133
	Install High Efficiency Packaged Terminal AC/HP	No	31,668	18.8	0.0	$3,988.24	$160,844.04	$5,460.00	$155,384.04	39.0	31,889
TOTAL FOR ALL MEASURES			**370,331**	**74.8**	**0.0**	**$46,639.20**	**$413,250.42**	**$34,315.00**	**$378,935.42**	**8.1**	**372,921**
TOTAL FOR RECOMMENDED MEASURES			**332,943**	**53.1**	**0.0**	**$41,930.56**	**$221,389.75**	**$28,125.00**	**$193,264.75**	**4.6**	**335,271**

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

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

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

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

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

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

Energy Efficient Practices

TRC also identified 15 low cost (or no cost) energy efficient practices. A building's energy performance can be significantly improved by employing certain behavioral or operational adjustments and by performing better routine maintenance on building systems. These practices can extend equipment lifetime, improve occupant comfort, provide better health and safety, as well as reduce annual energy and O&M costs. Potential opportunities identified at Greenwich Township Elementary School include:

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

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

On-Site Generation Measures

TRC evaluated the potential for installing on-site generation for Greenwich Township Elementary School. Based on the configuration of the site and its loads there is a low potential for installing any combined heat and power (CHP) self-generation measures.

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

1.3 Implementation Planning

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

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

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

- SmartStart
- Pay for Performance (P4P)
- Energy Savings Improvement Program (ESIP)

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

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

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

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

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

2 BUILDING INFORMATION AND EXISTING CONDITIONS

2.1 Project Contacts

Figure 4 – Project Contacts

Name	Role	E-Mail	Phone #
Customer			
Tim Mantz	Business Administrator	mantzt@gtsd.net	908-859-2022 ext. 1605
Ranea Pesaresi	Business Administrator	pesaresir@gtsd.net	908-859-2022 ext. 1600
Maria Eppolite	Superintendent	eppolitem@gtsd.net	908-859-2022 ext. 1606
Designated Representative			
Dan Ricker	Maintenance Supervisor	rickerd@gtsd.net	908-859-2022 ext. 2511
TRC Energy Services			
Alexander Klieverik	Auditor	aklieverik@trcsolutions.com	(732) 855-0033

2.2 General Site Information

On March 15, 2018, TRC performed an energy audit at Greenwich Township Elementary School located in Stewartsville, New Jersey. TRC's team met with Dan Ricker & John Alamorian to review the building operations and help focus our investigation on specific energy-using systems.

Greenwich Township Elementary School is a 91,146 square foot building comprised of various space types including classrooms, offices, a media center, a small commercial kitchen, a cafeteria, a gymnasium, a stage, and various mechanical and storage spaces.

The building was constructed in 2000 and has had no major renovation work completed since then.

2.3 Building Occupancy

The building is open Monday through Friday, and open on Saturdays for four months of the year for community programs. The typical schedule is presented in the table below. The entire building is used year-round, with camps and other summer programs running throughout the summer. During a typical day, the building is occupied by 112 staff and 451 students.

Figure 5 - Building Schedule

Building Name	Weekday/Weekend	Operating Schedule
Greenwich Township Elementary School	Weekday	6:00 AM to 11:00 PM
Greenwich Township Elementary School	Weekend	8:00 AM to 4:00 PM for 4 months/year

2.4 Building Envelope

The building is constructed of concrete block, and structural steel with a brick facade. The building has pitched roof areas with asphalt shingles and flat roof sections covered with light-colored gravel. The building has double pane windows which are in good condition and show little sign of excessive infiltration. The exterior doors are constructed of aluminum and in good condition except that the door seals have worn out which increases the level of outside air infiltration.

Image 1: Building Envelope

2.5 On-Site Generation

Greenwich Township Elementary School installed a solar energy project in 2013. There are approximately 1,380 PV panels in total. The systems provide approximately 40% of the electricity required by the building.

Hudson Energy, a national power-purchase agreement (PPA) provider, was the financier of this solar energy system, though now the PPA is Sun Edison.

2.6 Energy-Using Systems

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

Lighting System

Lighting at the building is provided mostly by 32-Watt linear fluorescent T8 lamps with electronic ballasts as well as some compact fluorescent lamps (CFL). Most of the fixtures are 2-lamp or 3-lamp, 4-foot long troffer fixtures. Classrooms typically contain troffers with parabolic reflectors while common hallway fixtures contain lensed diffusers.

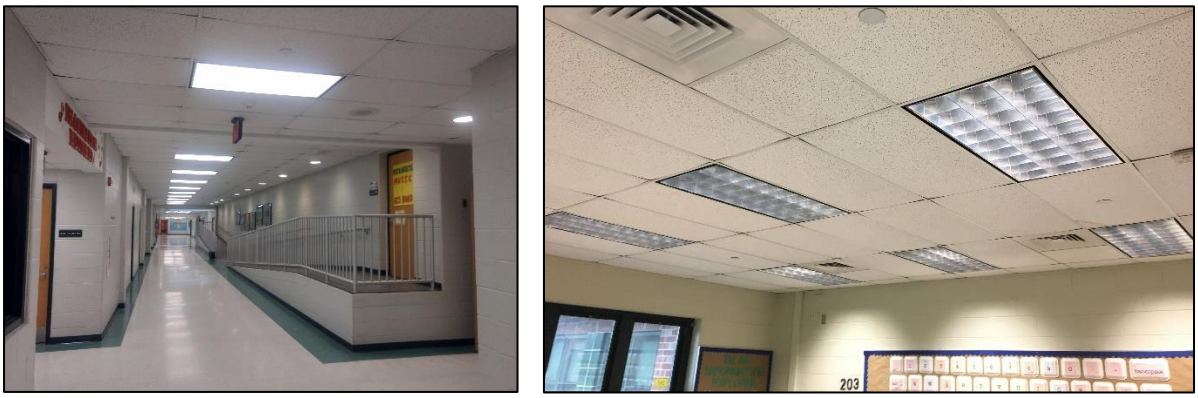


Image 2: Lighting Systems

Lighting control in most spaces is provided by manual wall switches. Some areas such as stairwells and hallways operate on a special key-activated wall switch that only the maintenance staff can operate.

The building's exterior lighting consists primarily of high pressure sodium (HPS) fixtures that are controlled by scheduling timers. The typical schedule is from 6:15 AM to 7:15 AM on weekdays, 6:00 PM to 12:00 AM during the winter months, and 7:00 PM to 12:00 AM during the summer months.

Hot Water Heating System

The hot water system for this building consists of two Weil McLain 3,000 MBH output, atmospheric boilers. The boilers have a nominal combustion efficiency of 83%. The hot water heating loop is configured in a constant flow primary distribution with a 15 HP supply pump and a 5 HP return pump. Hot water is supplied between 180°F and 190°F. The boilers provide hot water to air handlers, packaged rooftop units, and packaged terminal air conditioners located in classrooms.

Image 3: Hot Water Heating

The boilers operate in a lead/lag configuration. Both boilers may be required during cold weather. The lead boiler is rotated weekly.

The boilers are in good condition and well maintained.

Direct Expansion (DX) Air Conditioning System

The building is primarily cooled by 42 Airedale packaged terminal air conditioners (PTACs) with direct expansion coils (DX) and hot water coils, located in classroom HVAC closets. Each unit has a cooling capacity of 24,000 Btu/hr. Other areas are conditioned by a mixture of split-system air conditioners serving the air handler units, a ductless mini-split air conditioner serving the IDF room, and packaged rooftop units for larger areas including the gym, kitchen, and stage area.

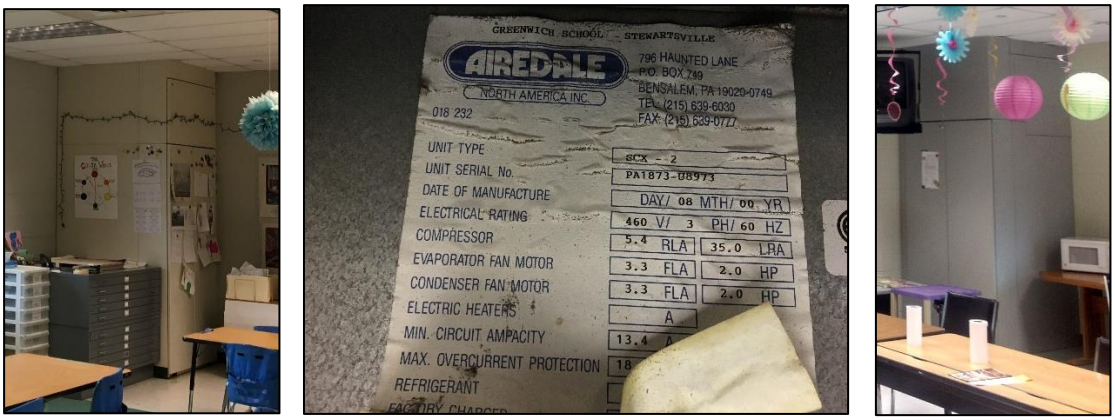


Image 4: DX Cooling Systems

There is a 10 ton Lennox direct-expansion (DX) package unit with hot water coils located on the roof, and used to condition the stage area. The unit provides constant air volume with a single 5 HP supply fan.

There are two 20-ton Lennox direct-expansion (DX) package units with hot water coils and outside air economizers used to condition the gymnasium. The units are located on the roof of the gymnasium. Each unit provides constant air volume with a single 7.5 HP supply fan. The units utilize a scroll compressor and a DX coil.

The kitchen is mainly conditioned by a 25 ton Trane direct-expansion (DX) package unit with hot water coils. The unit has a 7.5 HP supply fan and supplies constant air volume to the space.

Domestic Hot Water Heating System

The domestic hot water heating system for the building consists of one PVi gas fired standalone water heater with an input rating of 399 MBH and a nominal efficiency of 83%. The water heater has a 250 gallon storage tank. One 1.5 HP pump distributes 120°F water to the entire site.

Food Service Equipment

The building has a small commercial kitchen that is used to prepare lunch for the students. The ovens, range tops and griddle are all gas fired. There is one electric steamer and two electric steam tables used to prepare and serve lunches. The kitchen operates Monday through Friday from 8:00 AM to 2:30 PM.

There is a door type dishwasher with an electric booster heater that provides 145°F rinse water.

Refrigeration

There are two residential refrigerators with top freezers, seven compact refrigerators, and one refrigerated beverage vending machine located in various offices and classrooms throughout the building. The kitchen contains two reach-in refrigerators, a reach-in freezer, a refrigerator chest, and an ice cream freezer chest with a sliding glass top.

The kitchen also has two different cold storage areas: a walk-in cooler and a walk-in freezer. The cooler area is maintained at a constant temperature of 38°F and the freezer area is maintained at a constant 0°F. Cooler and freezer areas are served by two evaporators each. There is one condensing unit with reciprocating compressors connected to evaporators serving the cooler section, and there is one condensing unit connected to evaporators serving the freezer area.

Building Plug Load

There are roughly 250 computers throughout the building. Roughly 150 of the computers are Chromebooks used by students. The remaining computers are desktop units with LCD monitors, or laptops used by staff. There is no centralized PC power management software installed.

Other equipment contributing to the building plug load includes; 33 projectors and smartboards, 14 desk printers, three photocopiers, and 43 CRT televisions, three LCD televisions, and one electric kiln.

2.7 Water-Using Systems

There are 17 restrooms at this building. A sampling of restrooms found that the faucets are rated for 2.2 gallons per minute (gpm) or lower, the toilets are rated at 2.5 gallons per flush (gpf) and the urinals are rated at 2 gpf. There are no showers at this building.

3 SITE ENERGY USE AND COSTS

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

3.1 Total Cost of Energy

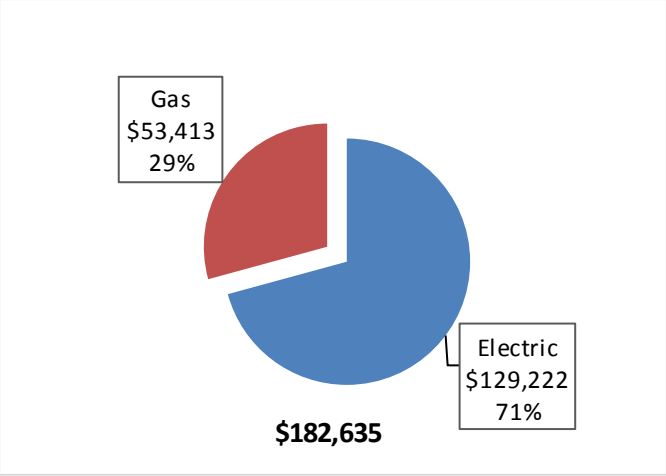
The following energy consumption and cost data is based on the last 12-month period of utility billing data that was provided for each utility. A profile of the annual energy consumption and energy cost of the building was developed from this information.

Figure 6 - Utility Summary

Utility Summary for Greenwich Township Elementary School		
Fuel	**Usage**	**Cost**
Electricity	1,026,070 kWh	$129,222
Natural Gas	50,278 Therms	$53,413
Total		**$182,635**

The current annual energy cost for this building is $182,635 as shown in the chart below.

Figure 7 - Energy Cost Breakdown



3.2 Electricity Usage

Electricity is provided by JCP&L. The average electric cost over the past 12 months was $0.126/kWh, which is the blended rate that includes energy supply, distribution, solar production, and other charges. This rate is used throughout the analyses in this report to assess energy costs and savings. The electric energy profile (pattern of consumption) indicates spikes in consumption during the summer months due to increased cooling load. The monthly electricity consumption and peak demand are shown in the chart below. The monthly electricity consumption and peak demand are shown in the chart below.

Figure 8 - Electric Usage & Demand

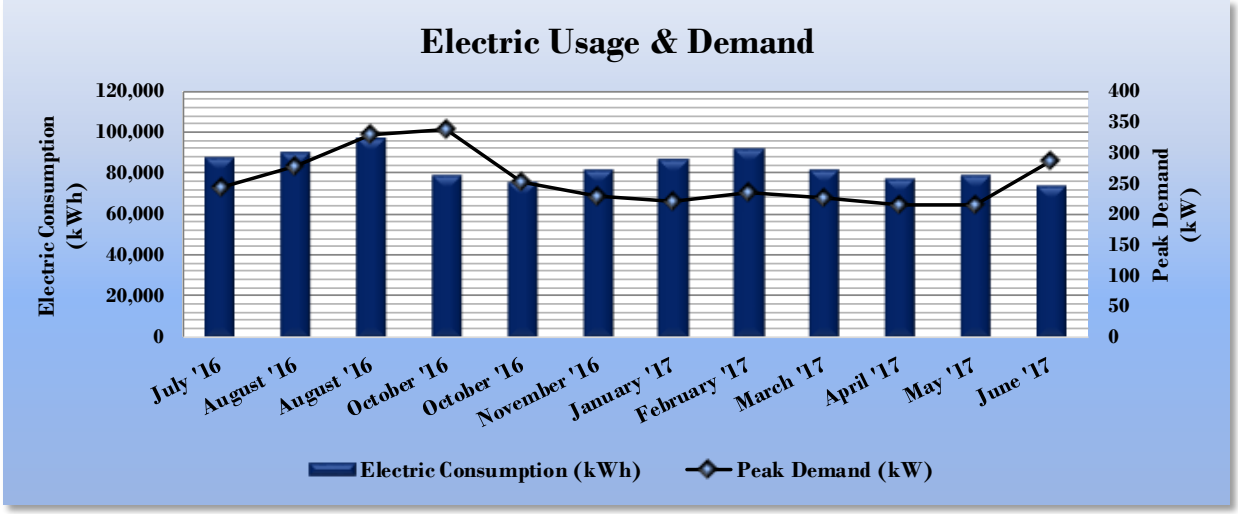


Figure 9 - Electric Usage & Demand

Electric Billing Data for Greenwich Township Elementary School					
Period Ending	Days in Period	Electric Usage (kWh)	Demand (kW)	Demand Cost	Total Electric Cost
7/20/16	32	87,373	243	$1,458	$10,708
8/16/16	26	89,856	277	$1,665	$11,130
9/15/16	29	97,020	329	$1,978	$13,218
10/17/16	31	79,361	338	$1,893	$10,291
11/15/16	28	75,388	253	$1,419	$9,385
12/15/16	29	81,611	228	$1,277	$9,914
1/18/17	33	86,345	221	$1,360	$10,521
2/17/17	29	92,247	235	$1,556	$11,452
3/21/17	31	81,473	227	$1,505	$10,298
4/18/17	27	77,318	214	$1,415	$9,807
5/18/17	29	78,933	214	$1,415	$9,977
6/20/17	32	73,845	287	$2,036	$9,335
Totals	**356**	**1,000,770**	**337.5**	**$18,977**	**$126,036**
Annual	**365**	**1,026,070**	**337.5**	**$19,457**	**$129,222**

3.3 Natural Gas Usage

Natural gas is provided by Elizabethtown Gas. The average gas cost for the past 12 months is $1.062/therm, which is the blended rate used throughout the analyses in this report. The monthly gas consumption is shown in the chart below. The usage profile is typical of a gas-heated school with minimal cooking or domestic hot water use.

Figure 10 - Natural Gas Usage

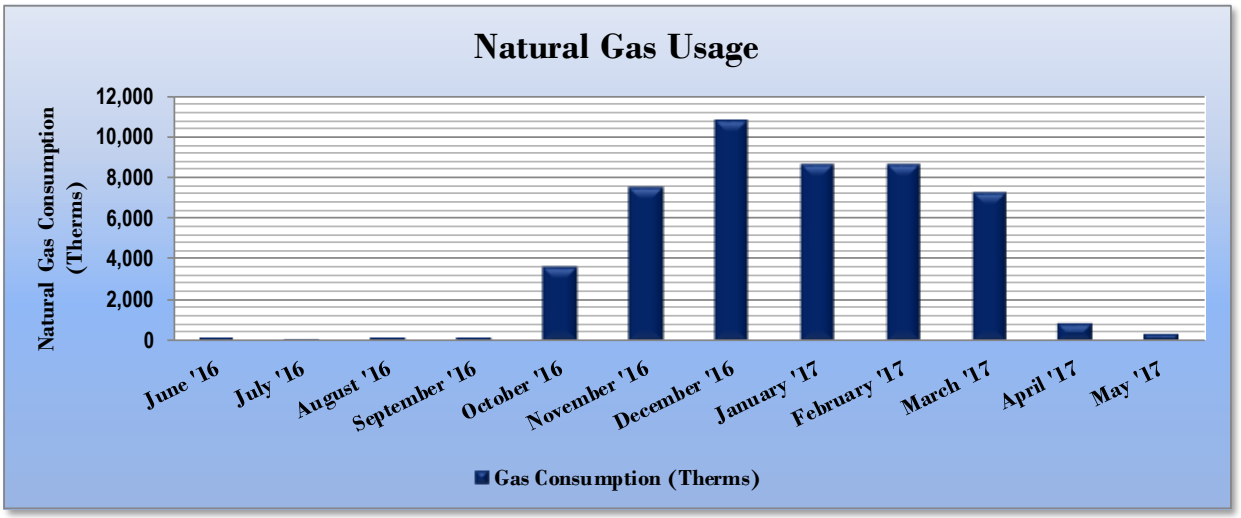


Figure 11 - Natural Gas Usage

Gas Billing Data for Greenwich Township Elementary School			
Period Ending	Days in Period	Natural Gas Usage (Therms)	Natural Gas Cost
7/14/16	30	179	$587
8/12/16	28	153	$570
9/14/16	32	185	$591
10/12/16	27	232	$622
11/10/16	28	3,633	$2,894
12/13/16	32	7,555	$5,601
1/12/17	29	10,784	$13,095
2/9/17	27	8,682	$10,630
3/15/17	33	8,617	$10,161
4/12/17	27	7,314	$5,129
5/11/17	28	886	$1,052
6/13/17	32	407	$726
Totals	**353**	**48,625**	**$51,657**
Annual	**365**	**50,278**	**$53,413**

3.4 Benchmarking

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

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

Figure 12 - Energy Use Intensity Comparison – Existing Conditions

Energy Use Intensity Comparison - Existing Conditions		
	Greenwich Township Elementary School	National Median Building Type: School (K-12)
Source Energy Use Intensity (kBtu/ft^2)	178.5	141.4
Site Energy Use Intensity (kBtu/ft^2)	93.6	58.2

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

Figure 13 - Energy Use Intensity Comparison – Following Installation of Recommended Measures

Energy Use Intensity Comparison - Following Installation of Recommended Measures		
	Greenwich Township Elementary School	National Median Building Type: School (K-12)
Source Energy Use Intensity (kBtu/ft^2)	139.4	141.4
Site Energy Use Intensity (kBtu/ft^2)	93.6	58.2

Many types of commercial buildings are also eligible to receive an ENERGY STAR® score. This score is a percentile ranking from 1 to 100. It compares your building's energy performance to similar buildings nationwide. A score of 50 represents median energy performance, while a score of 75 means your building performs better than 75 percent of all similar buildings nationwide and may be eligible for ENERGY STAR® certification. This building has a current score of 64.

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

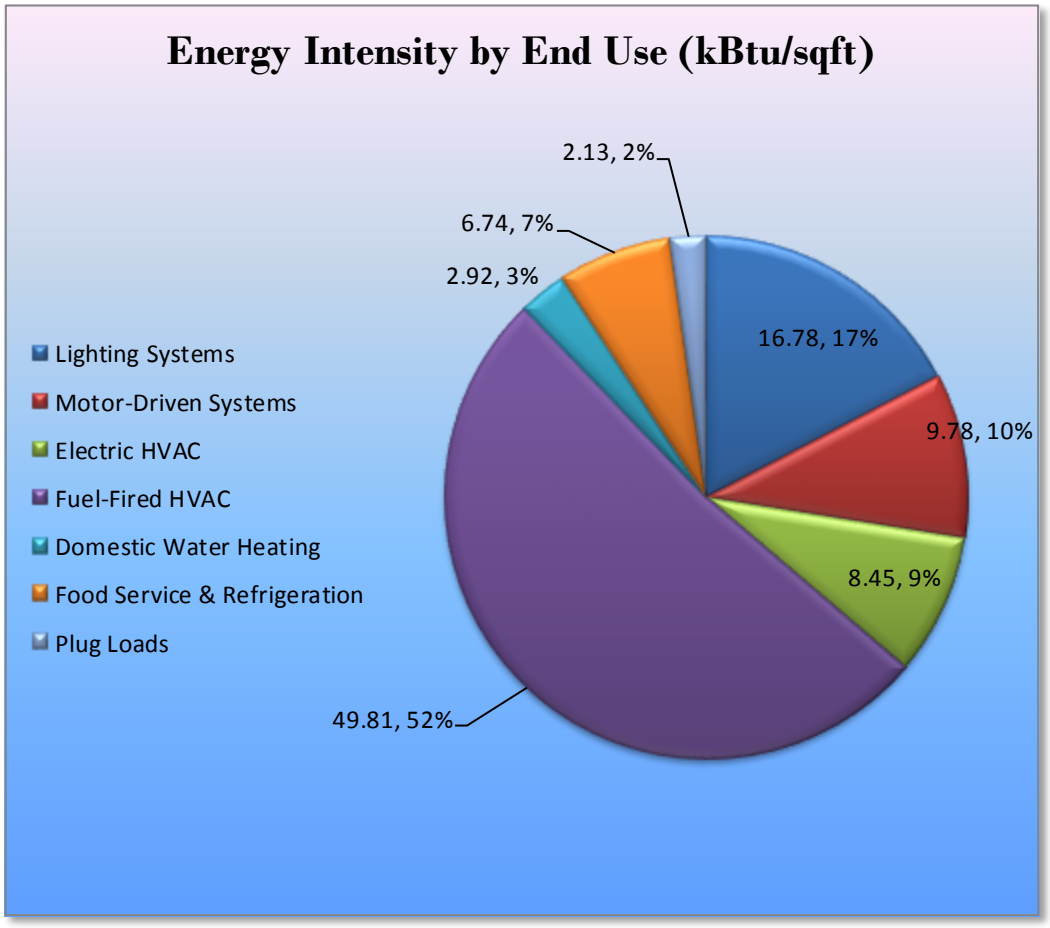
For more information on ENERGY STAR® certification go to: https://www.energystar.gov/buildings/building-owners-and-managers/existing-buildings/earn-recognition/energy-star-certification/how-app-1.

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

3.5 Energy End-Use Breakdown

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

Figure 14 - 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 Greenwich Township Elementary School regarding financial incentives for which they may qualify to implement the recommended measures. For this audit report, most measures have received only a preliminary analysis of feasibility which identifies expected ranges of savings and costs. This level of analysis is usually considered sufficient to demonstrate project cost-effectiveness and help prioritize energy measures. Savings are based on the New Jersey Clean Energy Program Protocols to Measure Resource Savings dated June 29, 2016, approved by the New Jersey Board of Public Utilities. Further analysis or investigation may be required to calculate more precise savings based on specific circumstances. A higher level of investigation may be necessary to support any custom SmartStart or Pay for Performance applications. Financial incentives for the ECMs identified in this report have been calculated based the NJCEP prescriptive SmartStart program. Some measures and proposed upgrade projects may be eligible for higher incentives than those shown below through other NJCEP programs as described in Section 8.

The following sections describe the evaluated measures.

4.1 Recommended ECMs

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

Figure 15 – 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		**247,393**	**37.0**	**0.0**	**$31,156.46**	**$145,188.75**	**$21,320.00**	**$123,868.75**	**4.0**	**249,123**
ECM 1	Install LED Fixtures	38,220	5.6	0.0	$4,813.36	$54,297.44	$7,100.00	$47,197.44	9.8	38,487
ECM 2	Retrofit Fixtures with LED Lamps	209,173	31.4	0.0	$26,343.10	$90,891.31	$14,220.00	$76,671.31	2.9	210,636
Lighting Control Measures		**54,936**	**8.2**	**0.0**	**$6,918.59**	**$48,440.00**	**$5,005.00**	**$43,435.00**	**6.3**	**55,320**
ECM 3	Install Occupancy Sensor Lighting Controls	48,509	7.3	0.0	$6,109.14	$43,640.00	$5,005.00	$38,635.00	6.3	48,848
ECM 4	Install High/Low Lighitng Controls	6,427	0.9	0.0	$809.45	$4,800.00	$0.00	$4,800.00	5.9	6,472
Variable Frequency Drive (VFD) Measures		**30,614**	**7.9**	**0.0**	**$3,855.52**	**$27,761.00**	**$1,800.00**	**$25,961.00**	**6.7**	**30,828**
ECM 5	Install VFDs on Constant Volume (CV) HVAC	11,173	3.0	0.0	$1,407.06	$10,820.40	$1,800.00	$9,020.40	6.4	11,251
ECM 6	Install VFDs on Hot Water Pumps	19,442	4.9	0.0	$2,448.45	$16,940.60	$0.00	$16,940.60	6.9	19,578
TOTALS		**332,943**	**53.1**	**0.0**	**$41,930.56**	**$221,389.75**	**$28,125.00**	**$193,264.75**	**4.6**	**335,271**

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

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

4.1.1 Lighting Upgrades

Our recommendations for upgrades to existing lighting fixtures are summarized in Figure 16 below.

Figure 16 – Summary of Lighting Upgrade ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		**247,393**	**37.0**	**0.0**	**$31,156.46**	**$145,188.75**	**$21,320.00**	**$123,868.75**	**4.0**	**249,123**
ECM 1	Install LED Fixtures	38,220	5.6	0.0	$4,813.36	$54,297.44	$7,100.00	$47,197.44	9.8	38,487
ECM 2	Retrofit Fixtures with LED Lamps	209,173	31.4	0.0	$26,343.10	$90,891.31	$14,220.00	$76,671.31	2.9	210,636

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	38,220	5.6	0.0	$4,813.36	$54,297.44	$7,100.00	$47,197.44	9.8	38,487

Measure Description

We recommend replacing exterior fixtures containing high pressure sodium (HPS) 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 high pressure sources.

ECM 2: Retrofit Fixtures with LED Lamps

Summary of Measure Economics

Interior/ Exterior	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Interior	208,940	31.4	0.0	$26,313.75	$90,555.11	$14,220.00	$76,335.11	2.9	210,401
Exterior	233	0.0	0.0	$29.34	$336.20	$0.00	$336.20	11.5	235

Measure Description

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

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

4.1.2 Lighting Control Measures

Our recommendations for upgrades to lighting control measures are summarized in Figure 17 below.

Figure 17 – Summary of Lighting Control ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Lighting Control Measures		**54,936**	**8.2**	**0.0**	**$6,918.59**	**$48,440.00**	**$5,005.00**	**$43,435.00**	**6.3**	**55,320**
ECM 3	Install Occupancy Sensor Lighting Controls	48,509	7.3	0.0	$6,109.14	$43,640.00	$5,005.00	$38,635.00	6.3	48,848
ECM 4	Install High/Low Lighitng Controls	6,427	0.9	0.0	$809.45	$4,800.00	$0.00	$4,800.00	5.9	6,472

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

ECM 3: Install Occupancy Sensor Lighting Controls

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
48,509	7.3	0.0	$6,109.14	$43,640.00	$5,005.00	$38,635.00	6.3	48,848

Measure Description

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

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

ECM 4: Install High/Low Lighting Controls

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
6,427	0.9	0.0	$809.45	$4,800.00	$0.00	$4,800.00	5.9	6,472

Measure Description

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

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

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

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

4.1.3 Variable Frequency Drive Measures

Our recommendations for variable frequency drive (VFD) measures are summarized in Figure 18 below.

Figure 18 – 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		**30,614**	**7.9**	**0.0**	**$3,855.52**	**$27,761.00**	**$1,800.00**	**$25,961.00**	**6.7**	**30,828**
ECM 5	Install VFDs on Constant Volume (CV) HVAC	11,173	3.0	0.0	$1,407.06	$10,820.40	$1,800.00	$9,020.40	6.4	11,251
ECM 6	Install VFDs on Hot Water Pumps	19,442	4.9	0.0	$2,448.45	$16,940.60	$0.00	$16,940.60	6.9	19,578

ECM 5: Install VFDs on Constant Volume (CV) HVAC

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
11,173	3.0	0.0	$1,407.06	$10,820.40	$1,800.00	$9,020.40	6.4	11,251

Measure Description

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

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

Targeted systems for this measure include the fans associated with the large air handling units that serve the kitchen and gymnasium.

Please note that an inverter duty motor is necessary on the fan before installing a VFD. An inverter duty motor can withstand the higher voltage spikes produced by VFDs and can run at very slow speeds without overheating. If the existing motors are not inverter duty, an additional cost of an inverter duty motor will need to be accounted for when implementing this measure. Including the estimated install cost and potential savings from the premium efficiency motors measure listed below, the simple payback period for this measure changes to 8.1 years.

ECM 6: 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)
19,442	4.9	0.0	$2,448.45	$16,940.60	$0.00	$16,940.60	6.9	19,578

Measure Description

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

Please note that an inverter duty motor is necessary on the pump before installing a VFD. An inverter duty motor can withstand the higher voltage spikes produced by VFDs and can run at very slow speeds without overheating. If the existing motors are not inverter duty, an additional cost of an inverter duty motor will need to be accounted for when implementing this measure. Including the estimated install cost and potential savings from the premium efficiency motors measure listed below, the simple payback period for this measure changes to 8.9 years.

4.2 ECMs Evaluated But Not Recommended

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

Figure 19 – Summary of Measures Evaluated, But Not Recommended

Energy Conservation Measure	Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Motor Upgrades		**1,615**	**0.5**	**0.0**	**$203.45**	**$9,086.33**	**$0.00**	**$9,086.33**	**44.7**	**1,627**
Premium Efficiency Motors	No	1,615	0.5	0.0	$203.45	$9,086.33	$0.00	$9,086.33	44.7	1,627
Electric Unitary HVAC Measures		**35,773**	**21.2**	**0.0**	**$4,505.19**	**$182,774.34**	**$6,190.00**	**$176,584.34**	**39.2**	**36,023**
Install High Efficiency Electric AC	No	4,105	2.4	0.0	$516.95	$21,930.30	$730.00	$21,200.30	41.0	4,133
Install High Efficiency Packaged Terminal AC/HP	No	31,668	18.8	0.0	$3,988.24	$160,844.04	$5,460.00	$155,384.04	39.0	31,889
TOTAL		**37,388**	**21.7**	**0.0**	**$4,708.63**	**$191,860.67**	**$6,190.00**	**$185,670.67**	**39.4**	**37,650**

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

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

Premium Efficiency Motors

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
1,615	0.5	0.0	$203.45	$9,086.33	$0.00	$9,086.33	44.7	1,627

Measure Description

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

Reasons for not Recommending

Due to the long payback period, we do not recommend replacing motors with NEMA Premium® efficiency motors strictly on the basis of the energy savings.

Install High Efficiency Air Conditioning Units

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
4,105	2.4	0.0	$516.95	$21,930.30	$730.00	$21,200.30	41.0	4,133

Measure Description

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

Reasons for not Recommending

Due to the long payback period, we do not recommend replacement of existing air conditioning units with high efficiency units strictly on the basis of energy savings.

Install High Efficiency PTAC/PTHP

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)
31,668	18.8	0.0	$3,988.24	$160,844.04	$5,460.00	$155,384.04	39.0	31,889

Measure Description

We typically recommend replacing packaged terminal air conditioners and heat pumps (PTAC and PTHP) with high efficiency PTAC and PTHP. 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 and a higher HPSF rating indicates more efficient heating mode for heat pumps. 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 heating and cooling loads, and the estimated annual operating hours.

Reasons for not Recommending

Due to the long payback period, we do not recommend replacement the existing PTAC units with high efficiency units strictly on the basis of energy savings.

5 ENERGY EFFICIENT PRACTICES

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

Reduce Air Leakage

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

Use Window Treatments/Coverings

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

Perform 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.

Perform Routine Motor Maintenance

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

Use Fans to Reduce Cooling Load

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

Install Destratification Fans

Allowing air to thermally stratify in spaces with high ceilings results in additional energy consumption by requiring the heating system to heat a volume of space much larger than the actual occupied space. Additional inefficiencies also occur because there are higher temperatures at the ceiling level than at the floor level. Higher temperatures at the ceiling accelerate heat loss through the roof, requiring additional energy consumption by the heating equipment in order to compensate for the accelerated heat transfer.

Destratification fans are specially designed to deliver a columnar, laminar flow of air balancing the air temperature from floor to ceiling. In addition to fuel savings, the use of destratification fans will reduce the recovery time necessary to warm the space after nightly temperature setbacks and will increase the comfort level of the occupants.

Clean Evaporator/Condenser Coils on AC Systems

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

Clean and/or Replace HVAC Filters

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

Perform Proper Boiler Maintenance

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

Perform Proper Water Heater Maintenance

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

Plug Load Controls

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

Replace Computer Monitors

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

Water Conservation

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

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

6 On-Site Generation Measures

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

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

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

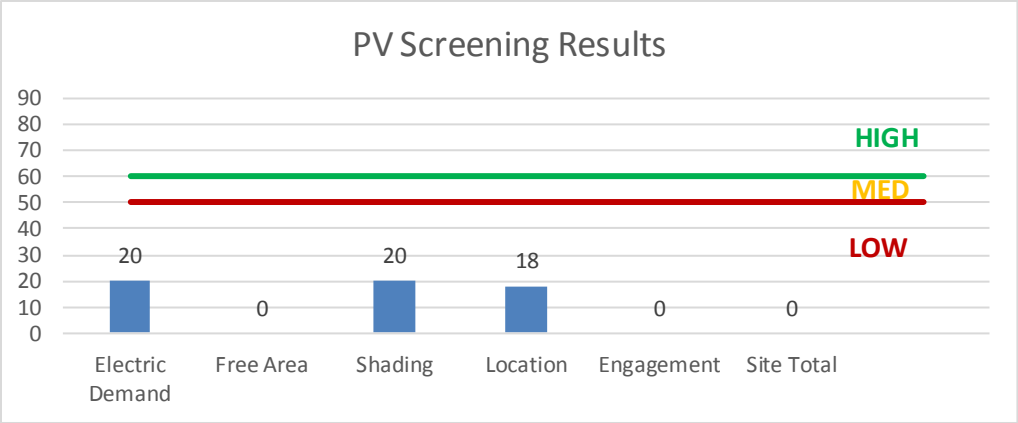
6.1 Photovoltaic

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

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

Greenwich Township Elementary School already has a photovoltaic installation, which produces approximately 40% of the electricity required by the building.

Figure 20 - Photovoltaic Screening



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

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

6.2 Combined Heat and Power

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

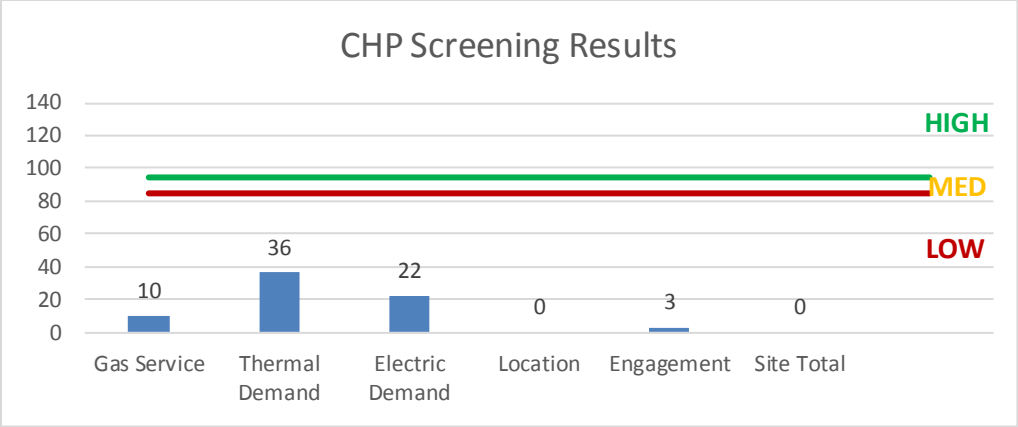
CHP systems are typically used to produce a portion of the electric power used onsite by a building, with the balance of electric power needs supplied by grid purchases. The heat is used to supplement (or supplant) existing boilers for the purpose of space heating and/or domestic hot water heating. Waste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

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

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

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

Figure 21 - 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 building 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 building because the payments can significantly offset annual electric costs.

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

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

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

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

We do not think this building is a good candidate for Demand Response.

8 PROJECT FUNDING / INCENTIVES

The NJCEP is able to provide the incentive programs described below, and other benefits to ratepayers, because of the Societal Benefits Charge (SBC) Fund. The SBC was created by the State of New Jersey's Electricity Restructuring Law (1999), which requires all customers of investor-owned electric and gas utilities to pay a surcharge on their monthly energy bills. As a customer of a state-regulated electric or gas utility and therefore a contributor to the fund your organization is eligible to participate in the LGEA program and also eligible to receive incentive payment for qualifying energy efficiency measures. Also available through the NJBPU are some alternative financing programs described later in this section. Please refer to Figure 22 for a list of the eligible programs identified for each recommended ECM.

Figure 22 - ECM Incentive Program Eligibility

Energy Conservation Measure		SmartStart Prescriptive	SmartStart Custom	Direct Install	Pay For Performance Existing Buildings	Large Energy Users Program	Combined Heat & Power and Fuel Cell
ECM 1	Install LED Fixtures	X			X		
ECM 2	Retrofit Fixtures with LED Lamps	X			X		
ECM 3	Install Occupancy Sensor Lighting Controls	X			X		
ECM 4	Install High/Low Lighitng Controls				X		
ECM 5	Install VFDs on Constant Volume (CV) HVAC	X			X		
ECM 6	Install VFDs on Hot Water Pumps				X		

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

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

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

8.1 SmartStart

Overview

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

Equipment with Prescriptive Incentives Currently Available:

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

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

Incentives

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

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

How to Participate

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

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

8.2 Pay for Performance

Overview

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

Incentives

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

How to Participate

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

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

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

8.3 Energy Savings Improvement Program

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

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

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

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

The ESIP approach may not be appropriate for all energy conservation and energy efficiency improvements. Entities should carefully consider all alternatives to develop an approach that best meets their needs. A detailed program 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 building's interconnection to the grid and repair to local power distribution will still reside with the traditional utility company serving your region.

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

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

9.2 Retail Natural Gas Supply Options

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

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

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

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

Appendix A: Equipment Inventory & Recommendations

Lighting Inventory & Recommendations

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Maintenance Office	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,883	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,718	0.19	1,295	0.0	$163.15	$738.00	$115.00	3.82
Boiler Room	11	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,883	Relamp	Yes	11	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,718	0.30	2,048	0.0	$257.98	$1,183.50	$180.00	3.89
Boiler Room	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Electrical Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	780	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	546	0.08	112	0.0	$14.13	$445.50	$65.00	26.92
Electrical Room	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
The Loft	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	780	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	546	0.14	187	0.0	$23.55	$562.50	$85.00	20.27
The Loft	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	780	Relamp	Yes	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	546	0.01	19	0.0	$2.38	$48.20	$10.00	16.03
Electrical Panel Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	780	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	546	0.05	75	0.0	$9.42	$387.00	$20.00	38.95
IDF Room (506B)	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,883	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,718	0.03	186	0.0	$23.45	$58.50	$10.00	2.07
Pump Room (511)	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	780	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	546	0.08	112	0.0	$14.13	$445.50	$65.00	26.92
Girl's RR	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,883	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,718	0.14	931	0.0	$117.27	$562.50	$85.00	4.07
Girl's RR	6	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	3,883	Relamp	Yes	6	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,718	0.09	585	0.0	$73.73	$215.40	$30.00	2.51
Office 213	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,750	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,625	0.12	809	0.0	$101.92	$495.60	$80.00	4.08
Faculty RR 1	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,883	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,718	0.03	186	0.0	$23.45	$174.50	$10.00	7.01
Faculty RR 2	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,883	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,718	0.03	186	0.0	$23.45	$174.50	$10.00	7.01
CR 209	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,883	Relamp	Yes	8	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,718	0.33	2,235	0.0	$281.44	$871.60	$155.00	2.55
CR 209	6	Compact Fluorescent: Pin Base: (50W) - 1L	Wall Switch	50	3,883	Relamp & Reballast	Yes	6	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 1L	Occupancy Sensor	23	2,718	0.13	908	0.0	$114.40	$549.06	$35.00	4.49
CR 209	1	Compact Fluorescent: Pin Base: (50W) - 2L	Wall Switch	100	3,883	Relamp & Reballast	Yes	1	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 2L	Occupancy Sensor	46	2,718	0.04	303	0.0	$38.13	$60.51	$0.00	1.59
Copy Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,883	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,718	0.05	372	0.0	$46.91	$233.00	$20.00	4.54
Media Center - Story Room	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,883	Relamp	Yes	7	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,718	0.19	1,304	0.0	$164.17	$679.50	$105.00	3.50
Media Center - Story Room	1	Compact Fluorescent: Pin Style: (18W) - 2L	Wall Switch	36	3,883	Relamp	Yes	1	LED Screw-In Lamps: Pin Style: LED (13W) - 2L	Occupancy Sensor	26	2,718	0.01	79	0.0	$10.01	$51.26	$0.00	5.12
Media Center - Story Room	2	Compact Fluorescent: Pin Base: (50W) - 1L	Wall Switch	50	3,883	Relamp & Reballast	Yes	2	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 1L	Occupancy Sensor	23	2,718	0.04	303	0.0	$38.13	$93.02	$0.00	2.44
Media Center	10	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	3,883	Relamp	Yes	10	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,718	0.14	976	0.0	$122.89	$629.00	$85.00	4.43
Media Center	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,883	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,718	0.14	931	0.0	$117.27	$562.50	$85.00	4.07
Media Center	16	Compact Fluorescent: Pin Style: (18W) - 2L	Wall Switch	36	3,883	Relamp	Yes	16	LED Screw-In Lamps: Pin Style: LED (13W) - 2L	Occupancy Sensor	26	2,718	0.19	1,272	0.0	$160.18	$1,090.16	$35.00	6.59

	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
Media Center	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Media Center	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,883	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,718	0.25	1,676	0.0	$211.08	$721.20	$125.00	2.82
Media Center Work Room (205A)	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,883	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,718	0.08	559	0.0	$70.36	$420.40	$65.00	5.05
Computer Lab (203)	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,883	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,718	0.37	2,514	0.0	$316.62	$946.80	$170.00	2.45
Server Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	780	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	546	0.08	112	0.0	$14.13	$420.40	$65.00	25.15
Faculty RR 3	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,883	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,718	0.03	186	0.0	$23.45	$328.50	$10.00	13.58
Faculty RR 4	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,883	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,718	0.03	186	0.0	$23.45	$328.50	$10.00	13.58
Main Office (Office 206)	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,750	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,625	0.16	1,079	0.0	$135.89	$570.80	$95.00	3.50
Main Office Front Area	15	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,883	Relamp	Yes	15	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,718	0.62	4,190	0.0	$527.69	$1,398.00	$260.00	2.16
Main Office Front Area	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Main Office Kitchen Area	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,883	Relamp	Yes	1	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,718	0.04	279	0.0	$35.18	$345.20	$15.00	9.39
Main Office RR	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,883	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,718	0.03	186	0.0	$23.45	$328.50	$10.00	13.58
Main Office Conf. Room (202E)	10	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,883	Relamp	Yes	10	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,718	0.41	2,793	0.0	$351.80	$1,022.00	$185.00	2.38
Main Office Corridor	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,883	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,718	0.16	1,117	0.0	$140.72	$570.80	$95.00	3.38
Main Office Corridor	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Superintendant's Office	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,750	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,625	0.25	1,618	0.0	$203.83	$721.20	$125.00	2.92
Superintendant's Office	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	3,750	Relamp	Yes	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,625	0.01	91	0.0	$11.46	$48.20	$10.00	3.33
Superintendant's Office Storage Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	780	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	546	0.03	37	0.0	$4.71	$174.50	$10.00	34.92
Business Administrator Office	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,750	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,625	0.25	1,618	0.0	$203.83	$721.20	$125.00	2.92
Business Administrator Office	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	3,750	Relamp	Yes	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,625	0.01	91	0.0	$11.46	$48.20	$10.00	3.33
Business Administrator Office Storage Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,883	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,718	0.03	186	0.0	$23.45	$174.50	$10.00	7.01
Main Office Back Area	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,883	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,718	0.25	1,676	0.0	$211.08	$721.20	$125.00	2.82
Office 202C	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,750	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,625	0.08	539	0.0	$67.94	$420.40	$65.00	5.23
Office 202B	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,750	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,625	0.08	539	0.0	$67.94	$420.40	$65.00	5.23
Office 202A	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,750	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,625	0.08	539	0.0	$67.94	$420.40	$65.00	5.23

	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
CR 101	20	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,883	Relamp	Yes	20	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,718	0.82	5,587	0.0	$703.59	$2,044.00	$370.00	2.38
CR 101	2	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	27	3,883	Relamp	Yes	2	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,718	0.03	176	0.0	$22.10	$69.60	$0.00	3.15
CR 101	6	Compact Fluorescent: Pin Base: (50W) - 1L	Wall Switch	50	3,883	Relamp & Reballast	Yes	6	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 1L	Occupancy Sensor	23	2,718	0.13	908	0.0	$114.40	$549.06	$35.00	4.49
CR 101	2	Compact Fluorescent: Pin Base: (50W) - 2L	Wall Switch	100	3,883	Relamp & Reballast	Yes	2	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 2L	Occupancy Sensor	46	2,718	0.09	606	0.0	$76.26	$121.02	$0.00	1.59
CR 101	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
CR 101 RR	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,883	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,718	0.03	186	0.0	$23.45	$174.50	$10.00	7.01
CR 103	20	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,883	Relamp	Yes	20	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,718	0.82	5,587	0.0	$703.59	$2,044.00	$370.00	2.38
CR 103	2	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	27	3,883	Relamp	Yes	2	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,718	0.03	176	0.0	$22.10	$69.60	$0.00	3.15
CR 103	6	Compact Fluorescent: Pin Base: (50W) - 1L	Wall Switch	50	3,883	Relamp & Reballast	Yes	6	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 1L	Occupancy Sensor	23	2,718	0.13	908	0.0	$114.40	$549.06	$35.00	4.49
CR 103	2	Compact Fluorescent: Pin Base: (50W) - 2L	Wall Switch	100	3,883	Relamp & Reballast	Yes	2	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 2L	Occupancy Sensor	46	2,718	0.09	606	0.0	$76.26	$121.02	$0.00	1.59
CR 103	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
CR 103 RR	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,883	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,718	0.03	186	0.0	$23.45	$174.50	$10.00	7.01
CR 105	14	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,883	Relamp	Yes	14	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,718	0.57	3,911	0.0	$492.51	$1,592.80	$280.00	2.67
CR 105	3	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	27	3,883	Relamp	Yes	3	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,718	0.04	263	0.0	$33.15	$374.40	$0.00	11.29
CR 105	2	Compact Fluorescent: Pin Base: (50W) - 1L	Wall Switch	50	3,883	Relamp & Reballast	Yes	2	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 1L	Occupancy Sensor	23	2,718	0.04	303	0.0	$38.13	$93.02	$0.00	2.44
CR 105	2	Compact Fluorescent: Pin Base: (50W) - 2L	Wall Switch	100	3,883	Relamp & Reballast	Yes	2	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 2L	Occupancy Sensor	46	2,718	0.09	606	0.0	$76.26	$121.02	$0.00	1.59
CR 105	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	3,883	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,718	0.01	98	0.0	$12.29	$35.90	$5.00	2.51
CR 105 RR	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,883	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,718	0.03	186	0.0	$23.45	$174.50	$10.00	7.01
CR 105 Storage 1	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	780	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	546	0.05	75	0.0	$9.42	$233.00	$20.00	22.61
CR 105 Storage 2	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	780	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	546	0.05	75	0.0	$9.42	$233.00	$20.00	22.61
Girl's RR	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	3,883	Relamp	Yes	2	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,718	0.03	195	0.0	$24.58	$71.80	$10.00	2.51
Girl's RR	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,883	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,718	0.08	559	0.0	$70.36	$445.50	$65.00	5.41
Janitor Closet 104B	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	780	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	546	0.05	75	0.0	$9.42	$387.00	$20.00	38.95
Boy's RR	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	3,883	Relamp	Yes	2	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,718	0.03	195	0.0	$24.58	$71.80	$10.00	2.51
Boy's RR	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,883	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,718	0.08	559	0.0	$70.36	$445.50	$65.00	5.41

	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
CR 107B	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,883	Relamp	Yes	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,718	0.66	4,469	0.0	$562.87	$1,473.20	$275.00	2.13
CR 107B	8	Compact Fluorescent: Pin Base: (50W) - 1L	Wall Switch	50	3,883	Relamp & Reballast	Yes	8	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 1L	Occupancy Sensor	23	2,718	0.18	1,211	0.0	$152.53	$642.08	$35.00	3.98
Nurse's Office	7	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,750	Relamp	Yes	7	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,625	0.29	1,888	0.0	$237.80	$796.40	$140.00	2.76
Nurse's Office	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	3,750	Relamp	Yes	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,625	0.03	182	0.0	$22.92	$96.40	$20.00	3.33
Nurse's Office Exam Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	1,560	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,092	0.12	337	0.0	$42.40	$495.60	$80.00	9.80
Nurse's Office Cot Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	1,560	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	1,560	0.06	178	0.0	$22.37	$150.40	$30.00	5.38
Nurse's Office RR	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,560	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,092	0.03	75	0.0	$9.42	$174.50	$10.00	17.46
CR 108	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,883	Relamp	Yes	13	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,718	0.53	3,631	0.0	$457.33	$1,247.60	$230.00	2.23
CR 108	1	Compact Fluorescent: Pin Base: (50W) - 1L	Wall Switch	50	3,883	Relamp & Reballast	Yes	1	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 1L	Occupancy Sensor	23	2,718	0.02	151	0.0	$19.07	$46.51	$0.00	2.44
CR 108	5	Compact Fluorescent: Pin Base: (50W) - 2L	Wall Switch	100	3,883	Relamp & Reballast	Yes	5	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 2L	Occupancy Sensor	46	2,718	0.22	1,514	0.0	$190.66	$572.55	$35.00	2.82
CR 108	2	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	27	3,883	Relamp	Yes	2	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,718	0.03	176	0.0	$22.10	$69.60	$0.00	3.15
CR 110	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,883	Relamp	Yes	13	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,718	0.53	3,631	0.0	$457.33	$1,247.60	$230.00	2.23
CR 110	5	Compact Fluorescent: Pin Base: (50W) - 1L	Wall Switch	50	3,883	Relamp & Reballast	Yes	5	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 1L	Occupancy Sensor	23	2,718	0.11	757	0.0	$95.33	$502.55	$35.00	4.90
CR 110	1	Compact Fluorescent: Pin Base: (50W) - 2L	Wall Switch	100	3,883	Relamp & Reballast	Yes	1	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 2L	Occupancy Sensor	46	2,718	0.04	303	0.0	$38.13	$60.51	$0.00	1.59
CR 110	2	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	27	3,883	Relamp	Yes	2	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,718	0.03	176	0.0	$22.10	$69.60	$0.00	3.15
CR 109	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,883	Relamp	Yes	13	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,718	0.53	3,631	0.0	$457.33	$1,247.60	$230.00	2.23
CR 109	5	Compact Fluorescent: Pin Base: (50W) - 1L	Wall Switch	50	3,883	Relamp & Reballast	Yes	5	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 1L	Occupancy Sensor	23	2,718	0.11	757	0.0	$95.33	$502.55	$35.00	4.90
CR 109	1	Compact Fluorescent: Pin Base: (50W) - 2L	Wall Switch	100	3,883	Relamp & Reballast	Yes	1	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 2L	Occupancy Sensor	46	2,718	0.04	303	0.0	$38.13	$60.51	$0.00	1.59
CR 109	2	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	27	3,883	Relamp	Yes	2	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,718	0.03	176	0.0	$22.10	$69.60	$0.00	3.15
CR 111	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,883	Relamp	Yes	13	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,718	0.53	3,631	0.0	$457.33	$1,247.60	$230.00	2.23
CR 111	5	Compact Fluorescent: Pin Base: (50W) - 1L	Wall Switch	50	3,883	Relamp & Reballast	Yes	5	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 1L	Occupancy Sensor	23	2,718	0.11	757	0.0	$95.33	$502.55	$35.00	4.90
CR 111	1	Compact Fluorescent: Pin Base: (50W) - 2L	Wall Switch	100	3,883	Relamp & Reballast	Yes	1	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 2L	Occupancy Sensor	46	2,718	0.04	303	0.0	$38.13	$60.51	$0.00	1.59
CR 111	2	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	27	3,883	Relamp	Yes	2	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,718	0.03	176	0.0	$22.10	$69.60	$0.00	3.15
CR 112	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,883	Relamp	Yes	13	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,718	0.53	3,631	0.0	$457.33	$1,247.60	$230.00	2.23
CR 112	5	Compact Fluorescent: Pin Base: (50W) - 1L	Wall Switch	50	3,883	Relamp & Reballast	Yes	5	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 1L	Occupancy Sensor	23	2,718	0.11	757	0.0	$95.33	$502.55	$35.00	4.90

	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
CR 112	2	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	27	3,883	Relamp	Yes	2	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,718	0.03	176	0.0	$22.10	$69.60	$0.00	3.15
CR 114	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,883	Relamp	Yes	13	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,718	0.53	3,631	0.0	$457.33	$1,247.60	$230.00	2.23
CR 114	5	Compact Fluorescent: Pin Base: (50W) - 1L	Wall Switch	50	3,883	Relamp & Reballast	Yes	5	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 1L	Occupancy Sensor	23	2,718	0.11	757	0.0	$95.33	$502.55	$35.00	4.90
CR 114	2	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	27	3,883	Relamp	Yes	2	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,718	0.03	176	0.0	$22.10	$69.60	$0.00	3.15
CR 113	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,883	Relamp	Yes	13	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,718	0.53	3,631	0.0	$457.33	$1,247.60	$230.00	2.23
CR 113	5	Compact Fluorescent: Pin Base: (50W) - 1L	Wall Switch	50	3,883	Relamp & Reballast	Yes	5	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 1L	Occupancy Sensor	23	2,718	0.11	757	0.0	$95.33	$502.55	$35.00	4.90
CR 113	2	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	27	3,883	Relamp	Yes	2	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,718	0.03	176	0.0	$22.10	$69.60	$0.00	3.15
CR 115	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,883	Relamp	Yes	13	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,718	0.53	3,631	0.0	$457.33	$1,247.60	$230.00	2.23
CR 115	5	Compact Fluorescent: Pin Base: (50W) - 1L	Wall Switch	50	3,883	Relamp & Reballast	Yes	5	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 1L	Occupancy Sensor	23	2,718	0.11	757	0.0	$95.33	$502.55	$35.00	4.90
CR 115	2	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	27	3,883	Relamp	Yes	2	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,718	0.03	176	0.0	$22.10	$69.60	$0.00	3.15
CR 501	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,883	Relamp	Yes	13	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,718	0.53	3,631	0.0	$457.33	$1,247.60	$230.00	2.23
CR 501	5	Compact Fluorescent: Pin Base: (50W) - 1L	Wall Switch	50	3,883	Relamp & Reballast	Yes	5	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 1L	Occupancy Sensor	23	2,718	0.11	757	0.0	$95.33	$502.55	$35.00	4.90
CR 501	2	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	27	3,883	Relamp	Yes	2	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,718	0.03	176	0.0	$22.10	$69.60	$0.00	3.15
CR 501	1	Compact Fluorescent: Pin Style: (9W) - 2L	Wall Switch	18	3,883	Relamp	Yes	1	LED Screw-In Lamps: Pin Style: LED (6W) - 2L	Occupancy Sensor	12	2,718	0.01	43	0.0	$5.40	$33.62	$0.00	6.23
CR 502 (SGI)	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,883	Relamp	Yes	13	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,718	0.53	3,631	0.0	$457.33	$1,247.60	$230.00	2.23
CR 502 (SGI)	5	Compact Fluorescent: Pin Base: (50W) - 1L	Wall Switch	50	3,883	Relamp & Reballast	Yes	5	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 1L	Occupancy Sensor	23	2,718	0.11	757	0.0	$95.33	$502.55	$35.00	4.90
CR 502 (SGI)	2	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	27	3,883	Relamp	Yes	2	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,718	0.03	176	0.0	$22.10	$69.60	$0.00	3.15
CR 502 (SGI)	1	Compact Fluorescent: Pin Style: (9W) - 2L	Wall Switch	18	3,883	Relamp	Yes	1	LED Screw-In Lamps: Pin Style: LED (6W) - 2L	Occupancy Sensor	12	2,718	0.01	43	0.0	$5.40	$33.62	$0.00	6.23
CR 503	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,883	Relamp	Yes	13	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,718	0.53	3,631	0.0	$457.33	$1,247.60	$230.00	2.23
CR 503	5	Compact Fluorescent: Pin Base: (50W) - 1L	Wall Switch	50	3,883	Relamp & Reballast	Yes	5	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 1L	Occupancy Sensor	23	2,718	0.11	757	0.0	$95.33	$502.55	$35.00	4.90
CR 503	2	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	27	3,883	Relamp	Yes	2	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,718	0.03	176	0.0	$22.10	$69.60	$0.00	3.15
CR 503	1	Compact Fluorescent: Pin Style: (9W) - 2L	Wall Switch	18	3,883	Relamp	Yes	1	LED Screw-In Lamps: Pin Style: LED (6W) - 2L	Occupancy Sensor	12	2,718	0.01	43	0.0	$5.40	$33.62	$0.00	6.23
CR 505	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,883	Relamp	Yes	13	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,718	0.53	3,631	0.0	$457.33	$1,247.60	$230.00	2.23
CR 505	5	Compact Fluorescent: Pin Base: (50W) - 1L	Wall Switch	50	3,883	Relamp & Reballast	Yes	5	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 1L	Occupancy Sensor	23	2,718	0.11	757	0.0	$95.33	$502.55	$35.00	4.90
CR 505	2	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	27	3,883	Relamp	Yes	2	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,718	0.03	176	0.0	$22.10	$69.60	$0.00	3.15

	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
CR 505	1	Compact Fluorescent: Pin Style: (9W) - 2L	Wall Switch	18	3,883	Relamp	Yes	1	LED Screw-In Lamps: Pin Style: LED (6W) - 2L	Occupancy Sensor	12	2,718	0.01	43	0.0	$5.40	$33.62	$0.00	6.23
CR 504 (Art)	22	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,883	Relamp	Yes	22	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,718	0.90	6,145	0.0	$773.95	$2,194.40	$400.00	2.32
CR 504 (Art)	2	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	27	3,883	Relamp	Yes	2	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,718	0.03	176	0.0	$22.10	$69.60	$0.00	3.15
CR 504 (Art) Kiln Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,883	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,718	0.05	372	0.0	$46.91	$387.00	$20.00	7.82
CR 504 (Art) Storage Room	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	780	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	546	0.11	150	0.0	$18.84	$504.00	$40.00	24.62
CR 504 (Art) Office	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,750	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,625	0.03	180	0.0	$22.65	$328.50	$10.00	14.06
Electrical Room 2	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	780	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	546	0.03	37	0.0	$4.71	$174.50	$10.00	34.92
CR 508	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,883	Relamp	Yes	13	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,718	0.53	3,631	0.0	$457.33	$1,247.60	$230.00	2.23
CR 508	5	Compact Fluorescent: Pin Base: (50W) - 1L	Wall Switch	50	3,883	Relamp & Reballast	Yes	5	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 1L	Occupancy Sensor	23	2,718	0.11	757	0.0	$95.33	$502.55	$35.00	4.90
CR 508	2	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	27	3,883	Relamp	Yes	2	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,718	0.03	176	0.0	$22.10	$69.60	$0.00	3.15
CR 508	1	Compact Fluorescent: Pin Style: (9W) - 2L	Wall Switch	18	3,883	Relamp	Yes	1	LED Screw-In Lamps: Pin Style: LED (6W) - 2L	Occupancy Sensor	12	2,718	0.01	43	0.0	$5.40	$33.62	$0.00	6.23
CR 510	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,883	Relamp	Yes	13	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,718	0.53	3,631	0.0	$457.33	$1,247.60	$230.00	2.23
CR 510	5	Compact Fluorescent: Pin Base: (50W) - 1L	Wall Switch	50	3,883	Relamp & Reballast	Yes	5	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 1L	Occupancy Sensor	23	2,718	0.11	757	0.0	$95.33	$502.55	$35.00	4.90
CR 510	2	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	27	3,883	Relamp	Yes	2	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,718	0.03	176	0.0	$22.10	$69.60	$0.00	3.15
CR 510	1	Compact Fluorescent: Pin Style: (9W) - 2L	Wall Switch	18	3,883	Relamp	Yes	1	LED Screw-In Lamps: Pin Style: LED (6W) - 2L	Occupancy Sensor	12	2,718	0.01	43	0.0	$5.40	$33.62	$0.00	6.23
CR 512	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,883	Relamp	Yes	13	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,718	0.53	3,631	0.0	$457.33	$1,247.60	$230.00	2.23
CR 512	5	Compact Fluorescent: Pin Base: (50W) - 1L	Wall Switch	50	3,883	Relamp & Reballast	Yes	5	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 1L	Occupancy Sensor	23	2,718	0.11	757	0.0	$95.33	$502.55	$35.00	4.90
CR 512	2	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	27	3,883	Relamp	Yes	2	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,718	0.03	176	0.0	$22.10	$69.60	$0.00	3.15
CR 512	1	Compact Fluorescent: Pin Style: (9W) - 2L	Wall Switch	18	3,883	Relamp	Yes	1	LED Screw-In Lamps: Pin Style: LED (6W) - 2L	Occupancy Sensor	12	2,718	0.01	43	0.0	$5.40	$33.62	$0.00	6.23
Copy Room (514)	7	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,883	Relamp	Yes	7	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,718	0.29	1,955	0.0	$246.26	$796.40	$140.00	2.67
Copy Room (514)	5	Compact Fluorescent: Pin Base: (50W) - 1L	Wall Switch	50	3,883	Relamp & Reballast	Yes	5	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 1L	Occupancy Sensor	23	2,718	0.11	757	0.0	$95.33	$502.55	$35.00	4.90
Copy Room (514)	2	Compact Fluorescent: Pin Style: (9W) - 1L	Wall Switch	9	3,883	Relamp	Yes	2	LED Screw-In Lamps: Pin Style: LED (6W) - 1L	Occupancy Sensor	6	2,718	0.01	43	0.0	$5.40	$46.62	$0.00	8.63
Faculty RR 5	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,883	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,718	0.03	186	0.0	$23.45	$174.50	$10.00	7.01
Boy's RR 2	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,883	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,718	0.11	745	0.0	$93.81	$504.00	$75.00	4.57
Boy's RR 2	2	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	27	3,883	Relamp	Yes	2	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,718	0.03	176	0.0	$22.10	$339.60	$0.00	15.36

	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
CR 521	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,883	Relamp	Yes	13	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,718	0.53	3,631	0.0	$457.33	$1,247.60	$230.00	2.23
CR 521	6	Compact Fluorescent: Pin Base: (50W) - 1L	Wall Switch	50	3,883	Relamp & Reballast	Yes	6	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 1L	Occupancy Sensor	23	2,718	0.13	908	0.0	$114.40	$549.06	$35.00	4.49
CR 521	1	Compact Fluorescent: Pin Style: (9W) - 2L	Wall Switch	18	3,883	Relamp	Yes	1	LED Screw-In Lamps: Pin Style: LED (6W) - 2L	Occupancy Sensor	12	2,718	0.01	43	0.0	$5.40	$33.62	$0.00	6.23
CR 521	2	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	27	3,883	Relamp	Yes	2	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,718	0.03	176	0.0	$22.10	$69.60	$0.00	3.15
CR 520	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,883	Relamp	Yes	13	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,718	0.53	3,631	0.0	$457.33	$1,247.60	$230.00	2.23
CR 520	2	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	27	3,883	Relamp	Yes	2	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,718	0.03	176	0.0	$22.10	$69.60	$0.00	3.15
CR 520	5	Compact Fluorescent: Pin Base: (50W) - 1L	Wall Switch	50	3,883	Relamp & Reballast	Yes	5	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 1L	Occupancy Sensor	23	2,718	0.11	757	0.0	$95.33	$502.55	$35.00	4.90
CR 520	1	Compact Fluorescent: Pin Style: (9W) - 2L	Wall Switch	18	3,883	Relamp	Yes	1	LED Screw-In Lamps: Pin Style: LED (6W) - 2L	Occupancy Sensor	12	2,718	0.01	43	0.0	$5.40	$33.62	$0.00	6.23
CR 522	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,883	Relamp	Yes	13	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,718	0.53	3,631	0.0	$457.33	$1,247.60	$230.00	2.23
CR 522	5	Compact Fluorescent: Pin Base: (50W) - 1L	Wall Switch	50	3,883	Relamp & Reballast	Yes	5	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 1L	Occupancy Sensor	23	2,718	0.11	757	0.0	$95.33	$502.55	$35.00	4.90
CR 522	1	Compact Fluorescent: Pin Style: (9W) - 2L	Wall Switch	18	3,883	Relamp	Yes	1	LED Screw-In Lamps: Pin Style: LED (6W) - 2L	Occupancy Sensor	12	2,718	0.01	43	0.0	$5.40	$33.62	$0.00	6.23
CR 522	2	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	27	3,883	Relamp	Yes	2	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,718	0.03	176	0.0	$22.10	$69.60	$0.00	3.15
CR 523	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,883	Relamp	Yes	13	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,718	0.53	3,631	0.0	$457.33	$1,247.60	$230.00	2.23
CR 523	2	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	27	3,883	Relamp	Yes	2	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,718	0.03	176	0.0	$22.10	$69.60	$0.00	3.15
CR 523	5	Compact Fluorescent: Pin Base: (50W) - 1L	Wall Switch	50	3,883	Relamp & Reballast	Yes	5	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 1L	Occupancy Sensor	23	2,718	0.11	757	0.0	$95.33	$502.55	$35.00	4.90
CR 523	1	Compact Fluorescent: Pin Style: (9W) - 2L	Wall Switch	18	3,883	Relamp	Yes	1	LED Screw-In Lamps: Pin Style: LED (6W) - 2L	Occupancy Sensor	12	2,718	0.01	43	0.0	$5.40	$33.62	$0.00	6.23
Office Area (525)	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,750	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,625	0.25	1,618	0.0	$203.83	$721.20	$125.00	2.92
Office Area (525)	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	3,750	Relamp	Yes	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,625	0.01	91	0.0	$11.46	$48.20	$10.00	3.33
Office Area (525) Woodruff	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,750	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,625	0.25	1,618	0.0	$203.83	$721.20	$125.00	2.92
Office Area (525) Office 2	5	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,750	Relamp	Yes	5	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,625	0.21	1,349	0.0	$169.86	$646.00	$110.00	3.16
Office Area (525)	1	Incandescent: Screw-In: (60W) - 1L	Wall Switch	60	3,750	Relamp	Yes	1	LED Screw-In Lamps: Screw-In: LED (9W) - 1L	Occupancy Sensor	9	2,625	0.04	232	0.0	$29.17	$323.75	$5.00	10.93
CR 526	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,883	Relamp	Yes	13	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,718	0.53	3,631	0.0	$457.33	$1,247.60	$230.00	2.23
CR 526	5	Compact Fluorescent: Pin Base: (50W) - 1L	Wall Switch	50	3,883	Relamp & Reballast	Yes	5	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 1L	Occupancy Sensor	23	2,718	0.11	757	0.0	$95.33	$502.55	$35.00	4.90
CR 526	1	Compact Fluorescent: Pin Style: (9W) - 2L	Wall Switch	18	3,883	Relamp	Yes	1	LED Screw-In Lamps: Pin Style: LED (6W) - 2L	Occupancy Sensor	12	2,718	0.01	43	0.0	$5.40	$33.62	$0.00	6.23
CR 526	2	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	27	3,883	Relamp	Yes	2	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,718	0.03	176	0.0	$22.10	$69.60	$0.00	3.15

	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
CR 524	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,883	Relamp	Yes	13	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,718	0.53	3,631	0.0	$457.33	$1,247.60	$230.00	2.23
CR 524	5	Compact Fluorescent: Pin Base: (50W) - 1L	Wall Switch	50	3,883	Relamp & Reballast	Yes	5	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 1L	Occupancy Sensor	23	2,718	0.11	757	0.0	$95.33	$502.55	$35.00	4.90
CR 524	1	Compact Fluorescent: Pin Style: (9W) - 2L	Wall Switch	18	3,883	Relamp	Yes	1	LED Screw-In Lamps: Pin Style: LED (6W) - 2L	Occupancy Sensor	12	2,718	0.01	43	0.0	$5.40	$33.62	$0.00	6.23
CR 524	2	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	27	3,883	Relamp	Yes	2	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,718	0.03	176	0.0	$22.10	$69.60	$0.00	3.15
CR 517	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,883	Relamp	Yes	13	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,718	0.53	3,631	0.0	$457.33	$1,247.60	$230.00	2.23
CR 517	5	Compact Fluorescent: Pin Base: (50W) - 1L	Wall Switch	50	3,883	Relamp & Reballast	Yes	5	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 1L	Occupancy Sensor	23	2,718	0.11	757	0.0	$95.33	$502.55	$35.00	4.90
CR 517	1	Compact Fluorescent: Pin Style: (9W) - 2L	Wall Switch	18	3,883	Relamp	Yes	1	LED Screw-In Lamps: Pin Style: LED (6W) - 2L	Occupancy Sensor	12	2,718	0.01	43	0.0	$5.40	$33.62	$0.00	6.23
CR 517	1	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	27	3,883	Relamp	Yes	1	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,718	0.01	88	0.0	$11.05	$34.80	$0.00	3.15
CR 518	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,883	Relamp	Yes	13	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,718	0.53	3,631	0.0	$457.33	$1,247.60	$230.00	2.23
CR 518	5	Compact Fluorescent: Pin Base: (50W) - 1L	Wall Switch	50	3,883	Relamp & Reballast	Yes	5	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 1L	Occupancy Sensor	23	2,718	0.11	757	0.0	$95.33	$502.55	$35.00	4.90
CR 518	1	Compact Fluorescent: Pin Style: (9W) - 2L	Wall Switch	18	3,883	Relamp	Yes	1	LED Screw-In Lamps: Pin Style: LED (6W) - 2L	Occupancy Sensor	12	2,718	0.01	43	0.0	$5.40	$33.62	$0.00	6.23
CR 518	2	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	27	3,883	Relamp	Yes	2	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,718	0.03	176	0.0	$22.10	$69.60	$0.00	3.15
CR 410	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,883	Relamp	Yes	13	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,718	0.53	3,631	0.0	$457.33	$1,247.60	$230.00	2.23
CR 410	5	Compact Fluorescent: Pin Base: (50W) - 1L	Wall Switch	50	3,883	Relamp & Reballast	Yes	5	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 1L	Occupancy Sensor	23	2,718	0.11	757	0.0	$95.33	$502.55	$35.00	4.90
CR 410	1	Compact Fluorescent: Pin Base: (50W) - 2L	Wall Switch	100	3,883	Relamp & Reballast	Yes	1	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 2L	Occupancy Sensor	46	2,718	0.04	303	0.0	$38.13	$60.51	$0.00	1.59
CR 410	2	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	27	3,883	Relamp	Yes	2	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,718	0.03	176	0.0	$22.10	$69.60	$0.00	3.15
CR 411	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,883	Relamp	Yes	13	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,718	0.53	3,631	0.0	$457.33	$1,247.60	$230.00	2.23
CR 411	5	Compact Fluorescent: Pin Base: (50W) - 1L	Wall Switch	50	3,883	Relamp & Reballast	Yes	5	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 1L	Occupancy Sensor	23	2,718	0.11	757	0.0	$95.33	$502.55	$35.00	4.90
CR 411	1	Compact Fluorescent: Pin Base: (50W) - 2L	Wall Switch	100	3,883	Relamp & Reballast	Yes	1	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 2L	Occupancy Sensor	46	2,718	0.04	303	0.0	$38.13	$60.51	$0.00	1.59
CR 411	2	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	27	3,883	Relamp	Yes	2	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,718	0.03	176	0.0	$22.10	$69.60	$0.00	3.15
CR 409	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,883	Relamp	Yes	13	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,718	0.53	3,631	0.0	$457.33	$1,247.60	$230.00	2.23
CR 409	5	Compact Fluorescent: Pin Base: (50W) - 1L	Wall Switch	50	3,883	Relamp & Reballast	Yes	5	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 1L	Occupancy Sensor	23	2,718	0.11	757	0.0	$95.33	$502.55	$35.00	4.90
CR 409	1	Compact Fluorescent: Pin Base: (50W) - 2L	Wall Switch	100	3,883	Relamp & Reballast	Yes	1	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 2L	Occupancy Sensor	46	2,718	0.04	303	0.0	$38.13	$60.51	$0.00	1.59
CR 409	1	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	27	3,883	Relamp	Yes	1	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,718	0.01	88	0.0	$11.05	$34.80	$0.00	3.15
CR 408	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,883	Relamp	Yes	13	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,718	0.53	3,631	0.0	$457.33	$1,247.60	$230.00	2.23

	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
CR 408	5	Compact Fluorescent: Pin Base: (50W) - 1L	Wall Switch	50	3,883	Relamp & Reballast	Yes	5	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 1L	Occupancy Sensor	23	2,718	0.11	757	0.0	$95.33	$502.55	$35.00	4.90
CR 408	1	Compact Fluorescent: Pin Base: (50W) - 2L	Wall Switch	100	3,883	Relamp & Reballast	Yes	1	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 2L	Occupancy Sensor	46	2,718	0.04	303	0.0	$38.13	$60.51	$0.00	1.59
CR 408	2	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	27	3,883	Relamp	Yes	2	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,718	0.03	176	0.0	$22.10	$69.60	$0.00	3.15
CR 407	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,883	Relamp	Yes	13	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,718	0.53	3,631	0.0	$457.33	$1,247.60	$230.00	2.23
CR 407	5	Compact Fluorescent: Pin Base: (50W) - 1L	Wall Switch	50	3,883	Relamp & Reballast	Yes	5	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 1L	Occupancy Sensor	23	2,718	0.11	757	0.0	$95.33	$502.55	$35.00	4.90
CR 407	1	Compact Fluorescent: Pin Base: (50W) - 2L	Wall Switch	100	3,883	Relamp & Reballast	Yes	1	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 2L	Occupancy Sensor	46	2,718	0.04	303	0.0	$38.13	$60.51	$0.00	1.59
CR 407	2	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	27	3,883	Relamp	Yes	2	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,718	0.03	176	0.0	$22.10	$69.60	$0.00	3.15
CR 406	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,883	Relamp	Yes	13	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,718	0.53	3,631	0.0	$457.33	$1,247.60	$230.00	2.23
CR 406	5	Compact Fluorescent: Pin Base: (50W) - 1L	Wall Switch	50	3,883	Relamp & Reballast	Yes	5	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 1L	Occupancy Sensor	23	2,718	0.11	757	0.0	$95.33	$502.55	$35.00	4.90
CR 406	1	Compact Fluorescent: Pin Base: (50W) - 2L	Wall Switch	100	3,883	Relamp & Reballast	Yes	1	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 2L	Occupancy Sensor	46	2,718	0.04	303	0.0	$38.13	$60.51	$0.00	1.59
CR 406	2	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	27	3,883	Relamp	Yes	2	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,718	0.03	176	0.0	$22.10	$69.60	$0.00	3.15
CR 404	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,883	Relamp	Yes	13	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,718	0.53	3,631	0.0	$457.33	$1,247.60	$230.00	2.23
CR 404	5	Compact Fluorescent: Pin Base: (50W) - 1L	Wall Switch	50	3,883	Relamp & Reballast	Yes	5	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 1L	Occupancy Sensor	23	2,718	0.11	757	0.0	$95.33	$502.55	$35.00	4.90
CR 404	1	Compact Fluorescent: Pin Base: (50W) - 2L	Wall Switch	100	3,883	Relamp & Reballast	Yes	1	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 2L	Occupancy Sensor	46	2,718	0.04	303	0.0	$38.13	$60.51	$0.00	1.59
CR 404	2	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	27	3,883	Relamp	Yes	2	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,718	0.03	176	0.0	$22.10	$69.60	$0.00	3.15
CR 405	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,883	Relamp	Yes	13	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,718	0.53	3,631	0.0	$457.33	$1,247.60	$230.00	2.23
CR 405	5	Compact Fluorescent: Pin Base: (50W) - 1L	Wall Switch	50	3,883	Relamp & Reballast	Yes	5	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 1L	Occupancy Sensor	23	2,718	0.11	757	0.0	$95.33	$502.55	$35.00	4.90
CR 405	1	Compact Fluorescent: Pin Base: (50W) - 2L	Wall Switch	100	3,883	Relamp & Reballast	Yes	1	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 2L	Occupancy Sensor	46	2,718	0.04	303	0.0	$38.13	$60.51	$0.00	1.59
CR 405	2	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	27	3,883	Relamp	Yes	2	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,718	0.03	176	0.0	$22.10	$69.60	$0.00	3.15
CR 403	14	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,883	Relamp	Yes	14	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,718	0.57	3,911	0.0	$492.51	$1,322.80	$245.00	2.19
CR 403	5	Compact Fluorescent: Pin Base: (50W) - 1L	Wall Switch	50	3,883	Relamp & Reballast	Yes	5	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 1L	Occupancy Sensor	23	2,718	0.11	757	0.0	$95.33	$502.55	$35.00	4.90
CR 403	1	Compact Fluorescent: Pin Base: (50W) - 2L	Wall Switch	100	3,883	Relamp & Reballast	Yes	1	LED Screw-In Lamps: Pin Base PL-L 2G11: LED (23W) - 2L	Occupancy Sensor	46	2,718	0.04	303	0.0	$38.13	$60.51	$0.00	1.59
CR 403	2	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	27	3,883	Relamp	Yes	2	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,718	0.03	176	0.0	$22.10	$69.60	$0.00	3.15
CR 403 RR	1	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	27	3,883	Relamp	Yes	1	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,718	0.01	88	0.0	$11.05	$150.80	$0.00	13.65
Faculty Room (402)	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,883	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,718	0.49	3,352	0.0	$422.15	$1,172.40	$215.00	2.27

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Faculty Room (402)	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	3,883	Relamp	Yes	2	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,718	0.03	195	0.0	$24.58	$71.80	$10.00	2.51
Workroom (402A)	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,883	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,718	0.08	559	0.0	$70.36	$420.40	$65.00	5.05
Boy's RR 3	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,883	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,718	0.08	559	0.0	$70.36	$445.50	$65.00	5.41
Boy's RR 3	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	3,883	Relamp	Yes	2	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,718	0.03	195	0.0	$24.58	$71.80	$10.00	2.51
Janitor Closet 401B	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	780	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	546	0.05	75	0.0	$9.42	$233.00	$20.00	22.61
Girl's RR	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,883	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,718	0.08	559	0.0	$70.36	$445.50	$65.00	5.41
Girl's RR	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	3,883	Relamp	Yes	2	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,718	0.03	195	0.0	$24.58	$71.80	$10.00	2.51
Electrical Closet	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	780	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	546	0.05	75	0.0	$9.42	$233.00	$20.00	22.61
Stage Area	8	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,883	Relamp	No	8	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,883	0.29	2,001	0.0	$251.97	$761.07	$160.00	2.39
Stage Area	3	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	3	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Stage/Music Office	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,750	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,625	0.03	180	0.0	$22.65	$174.50	$10.00	7.26
Gym Office (205A)	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,750	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,625	0.05	360	0.0	$45.30	$233.00	$20.00	4.70
Gym	16	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,883	Relamp	Yes	16	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,718	0.77	5,245	0.0	$660.51	$5,042.13	$880.00	6.30
Gym	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen Area	22	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,883	Relamp	Yes	22	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,718	0.90	6,145	0.0	$773.95	$2,734.40	$470.00	2.93
Kitchen Area	6	Compact Fluorescent: Screw-In: (13W) - 1L	Wall Switch	13	3,883	Relamp	No	6	LED Screw-In Lamps: Screw-In: LED (9W) - 1L	Wall Switch	9	3,883	0.02	107	0.0	$13.50	$322.52	$0.00	23.89
Kitchen Area	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen Storage (302A)	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	780	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	546	0.08	112	0.0	$14.13	$445.50	$30.00	29.40
Kitchen Back Area (Doorway #7)	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen Back Area (Doorway #7)	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,883	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,883	0.09	589	0.0	$74.24	$234.00	$40.00	2.61
Kitchen Office (302D)	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,750	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,625	0.08	539	0.0	$67.94	$420.40	$65.00	5.23
Cafeteria	49	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,883	Relamp	Yes	49	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,718	2.01	13,688	0.0	$1,723.80	$4,764.80	$875.00	2.26
Cafeteria	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Electrical Room	1	Compact Fluorescent: Pin Style: (9W) - 2L	Wall Switch	18	780	Relamp	Yes	1	LED Screw-In Lamps: Pin Style: LED (6W) - 2L	Occupancy Sensor	12	546	0.01	9	0.0	$1.08	$149.62	$0.00	137.96
Faculty RR 6	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,883	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,718	0.03	186	0.0	$23.45	$174.50	$10.00	7.01

	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
Cafeteria Hallway	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,883	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,718	0.16	1,117	0.0	$140.72	$551.00	$60.00	3.49
Cafeteria Hallway	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Long hallway from Cafeteria to CR 526	51	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,883	Relamp	Yes	51	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,718	1.39	9,497	0.0	$1,196.10	$3,983.50	$510.00	2.90
Long hallway from Cafeteria to CR 526	10	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	10	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Long hallway from Cafeteria to CR 526	18	Compact Fluorescent: Pin Style: (9W) - 2L	Wall Switch	18	3,883	Relamp	Yes	18	LED Screw-In Lamps: Pin Style: LED (6W) - 2L	High/Low Control	12	2,718	0.11	772	0.0	$97.19	$1,005.16	$0.00	10.34
Hallway from CR 520 to CR 504	21	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,883	Relamp	Yes	21	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,718	0.57	3,911	0.0	$492.51	$1,628.50	$210.00	2.88
Hallway from CR 520 to CR 504	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Hallway from CR 520 to CR 504	7	Compact Fluorescent: Pin Style: (9W) - 2L	Wall Switch	18	3,883	Relamp	Yes	7	LED Screw-In Lamps: Pin Style: LED (6W) - 2L	High/Low Control	12	2,718	0.04	300	0.0	$37.79	$435.34	$0.00	11.52
Hallway from CR 505 to CR 501	40	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,883	Relamp	Yes	40	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,718	1.09	7,449	0.0	$938.12	$3,140.00	$400.00	2.92
Hallway from CR 505 to CR 501	6	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	6	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Hallway from CR 505 to CR 501	17	Compact Fluorescent: Pin Style: (9W) - 2L	Wall Switch	18	3,883	Relamp	Yes	17	LED Screw-In Lamps: Pin Style: LED (6W) - 2L	High/Low Control	12	2,718	0.11	729	0.0	$91.79	$971.54	$0.00	10.58
Main Hallway	47	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,883	Relamp	Yes	47	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,718	1.28	8,753	0.0	$1,102.29	$3,749.50	$470.00	2.98
Main Hallway	6	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	6	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Main Hallway	19	Compact Fluorescent: Pin Style: (9W) - 2L	Wall Switch	18	3,883	Relamp	Yes	19	LED Screw-In Lamps: Pin Style: LED (6W) - 2L	High/Low Control	12	2,718	0.12	815	0.0	$102.59	$1,038.78	$0.00	10.13
Building Lights	45	High-Pressure Sodium: (1) 100W Lamp	Wall Switch	138	3,883	Fixture Replacement	No	45	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	30	3,883	3.19	21,704	0.0	$2,733.37	$17,580.47	$4,500.00	4.79
Building Lights	9	High-Pressure Sodium: (1) 150W Lamp	Wall Switch	188	3,883	Fixture Replacement	No	9	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	50	3,883	0.81	5,547	0.0	$698.53	$3,516.09	$900.00	3.75
Building Lights	10	Compact Fluorescent: Pin Style: (9W) - 2L	Wall Switch	18	3,883	Relamp	No	10	LED Screw-In Lamps: Pin Style: LED (6W) - 2L	Wall Switch	12	3,883	0.04	268	0.0	$33.75	$336.20	$0.00	9.96
Parking Lot Lights	17	High-Pressure Sodium: (1) 250W Lamp	Wall Switch	295	3,883	Fixture Replacement	No	17	LED - Fixtures: Outdoor Pole/Arm-Mounted Area/Roadway Fixture	Wall Switch	75	3,883	2.45	16,702	0.0	$2,103.46	$33,200.88	$1,700.00	14.98

Motor Inventory & Recommendations

		Existing Conditions						Proposed Conditions				Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	Motor Quantity	Motor Application	HP Per Motor	Full Load Efficiency	VFD Control?	Annual Operating Hours	Install High Efficiency Motors?	Full Load Efficiency	Install VFDs?	Number of VFDs	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Boiler Room	Heating Hot Water Distribution	1	Heating Hot Water Pump	15.0	91.0%	No	1,373	Yes	92.4%	Yes	1	1.92	7,403	0.0	$932.32	$7,085.87	$0.00	7.60
Boiler Room	Heating Hot Water Distribution	1	Heating Hot Water Pump	15.0	91.0%	No	1,373	Yes	92.4%	Yes	1	1.92	7,406	0.0	$932.66	$7,085.87	$0.00	7.60
Boiler Room	Heating Hot Water Distribution	1	Heating Hot Water Pump	5.0	86.8%	No	1,373	Yes	89.5%	Yes	1	0.69	2,609	0.0	$328.61	$4,196.91	$0.00	12.77
Boiler Room	Heating Hot Water Distribution	1	Heating Hot Water Pump	5.0	86.8%	No	1,373	Yes	89.5%	Yes	1	0.69	2,609	0.0	$328.61	$4,196.91	$0.00	12.77
Maintenance Office	East Corridor & RRs between 209 and 403	1	Supply Fan	1.0	82.5%	No	2,745	No	82.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Maintenance Office	East Corridor & RRs between 209 and 403	1	Return Fan	0.8	80.0%	No	2,745	No	80.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Stage Area	1	Supply Fan	5.0	87.5%	No	2,745	No	87.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Kitchen	1	Supply Fan	5.0	87.5%	No	2,745	No	87.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Kitchen	1	Supply Fan	3.0	87.5%	No	2,745	No	87.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Kitchen	1	Supply Fan	7.5	89.5%	No	3,391	Yes	91.7%	Yes	1	1.06	4,067	0.0	$512.25	$4,760.59	$600.00	8.12
Roof	Gym	1	Supply Fan	7.5	89.5%	No	3,391	Yes	91.7%	Yes	1	1.06	4,067	0.0	$512.25	$4,760.59	$600.00	8.12
Roof	Gym	1	Supply Fan	7.5	89.5%	No	3,391	Yes	91.7%	Yes	1	1.06	4,067	0.0	$512.25	$4,760.59	$600.00	8.12
The Loft	Media Center (Library)	1	Supply Fan	1.0	82.5%	No	2,745	No	82.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
The Loft	Main Office Area	1	Supply Fan	1.0	82.5%	No	2,745	No	82.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
The Loft	Front Corridor	1	Supply Fan	1.0	82.5%	No	2,745	No	82.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Whole Building	10	Exhaust Fan	0.8	80.0%	No	2,745	No	80.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Girl's RR ceiling	Girl's RR & Hallway	1	Supply Fan	1.0	82.5%	No	2,745	No	82.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Corridor ceiling near CR 525	North & West Corridors	1	Supply Fan	1.0	82.5%	No	2,745	No	82.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Corridor ceiling near CR 526	North & West Corridors	1	Supply Fan	1.0	82.5%	No	2,745	No	82.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Classroom HVAC Closets	Classrooms	42	Supply 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

		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
The Loft	Media Center (Library)	1	Return Fan	1.0	80.0%	No	2,745	No	80.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
The Loft	Main Office Area	1	Return Fan	1.0	80.0%	No	2,745	No	80.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
The Loft	Front Corridor	1	Return Fan	1.0	80.0%	No	2,745	No	80.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Pump Room	Sump Pump	1	Process Pump	1.0	82.5%	No	2,745	No	82.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Whole Building	Whole Building Unit Heaters	2	Supply Fan	0.3	78.0%	No	2,745	No	78.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Boiler Room	McQuay unit HV-2A	1	Water-Source Heat Pump Circulation Pump	0.3	78.0%	No	2,745	No	78.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Boiler Room	DHW Recirculation Pumps	2	Process Pump	0.2	75.0%	No	2,745	No	75.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Boiler Room	DHW Distribution pump	1	Process Pump	1.5	84.0%	No	2,745	No	84.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Electric HVAC Inventory & Recommendations

		Existing Conditions				Proposed Conditions							Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (kBtu/hr)	Install High Efficiency System?	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (kBtu/hr)	Cooling Mode Efficiency (SEER/EER)	Heating Mode Efficiency (COP)	Install Dual Enthalpy Economizer?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Roof	Stage Area	1	Packaged AC	10.00		Yes	1	Packaged AC	10.00		11.50		No	1.94	3,278	0.0	$412.86	$17,821.06	$730.00	41.40
Roof	Kitchen	1	Packaged AC	25.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Gym	1	Packaged AC	20.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Gym	1	Packaged AC	20.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof / IDF room	IDF Room	1	Ductless Mini-Split AC	1.50		Yes	1	Ductless Mini-Split AC	1.50		18.00		No	0.49	827	0.0	$104.09	$4,109.24	$0.00	39.48
Classroom HVAC Closets	Classrooms	42	Packaged Terminal AC	2.00		Yes	42	Packaged Terminal AC	2.00		12.00		No	18.76	31,668	0.0	$3,988.24	$160,844.04	$5,460.00	38.96

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	Whole Building	1	Non-Condensing Hot Water Boiler	3,000.00	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Boiler Room	Whole Building	1	Non-Condensing Hot Water Boiler	3,000.00	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00

DHW Inventory & Recommendations

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

Walk-In Cooler/Freezer Inventory & Recommendations

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

Commercial Refrigerator/Freezer Inventory & Recommendations

	Existing Conditions			Proposed Condi	Energy Impact & Financial Analysis						
Location	Quantity	Refrigerator/ Freezer Type	ENERGY STAR Qualified?	Install ENERGY STAR Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen	1	Stand-Up Refrigerator, Solid Door (≤15 cu. ft.)	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	1	Stand-Up Freezer, Solid Door (≤15 cu. ft.)	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	1	Freezer Chest	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	1	Stand-Up Refrigerator, Solid Door (31 - 50 cu. ft.)	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Novelty Cooler Inventory & Recommendations

	Existing Conditions		Proposed Conditions	Energy Impact & Financial Analysis						
Location	Quantity	Cooler Description	Install Automatic Shutoff Control?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Cafeteria	1	Ice Cream Chest	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Cooking Equipment Inventory & Recommendations

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

Dishwasher Inventory & Recommendations

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

Plug Load Inventory

	Existing Conditions			
Location	Quantity	Equipment Description	Energy Rate (W)	ENERGY STAR Qualified?
Whole Building	55	Desktop Computers	150.0	Yes
Whole Building	195	Laptop Computers	45.0	Yes
Whole Building	33	Projectors	150.0	Yes
Whole Building	33	Smartboards	50.0	Yes
Whole Building	14	Desk Printers	20.0	Yes
Whole Building	3	Photocopier	600.0	Yes
Whole Building	10	Microwave	900.0	No
Whole Building	7	Mini Fridge	153.0	Yes
Whole Building	43	TV	120.0	No
Whole Building	3	LCD TV	75.0	Yes
Whole Building	1	water cooler/heater	500.0	Yes
Whole Building	2	Refrigerators	172.0	Yes
Whole Building	2	Paper Shredder	150.0	Yes
Whole Building	1	Kiln	11,000.0	Yes

Vending Machine Inventory & Recommendations

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

Appendix B: ENERGY STAR® Statement of Energy Performance

ENERGY STAR® Statement of Energy Performance

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ENERGY STAR® Score[1]

Greenwich Township Elementary School

Primary Property Type: K-12 School
Gross Floor Area (ft²): 91,146
Built: 2000

For Year Ending: May 31, 2017
Date Generated: April 20, 2018

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

Property & Contact Information

Property Address	Property Owner	Primary Contact
Greenwich Township Elementary School 101 Wyndham Farm Boulevard Stewartsville, New Jersey 08886	Greenwich Township School District (Warren) 101 Wyndham Farm Boulevard Stewartsville, NJ 08886 (908) 859-9022	Tim Mantz 101 Wyndham Farm Boulevard Stewartsville, NJ 08886 (908) 859-9022 Ext. 1605 mantzt@gtsd.net

Property ID: 6305542

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
90.5 kBtu/ft²

Source EUI
143.8 kBtu/ft²

Annual Energy by Fuel	
Electric - Grid (kBtu)	2,157,724 (26%)
Natural Gas (kBtu)	4,876,240 (59%)
Electric - Solar (kBtu)	1,214,024 (15%)

National Median Comparison	
National Median Site EUI (kBtu/ft²)	103.6
National Median Source EUI (kBtu/ft²)	164.7
% Diff from National Median Source EUI	-13%
Annual Emissions	
Greenhouse Gas Emissions (Metric Tons CO2e/year)	498

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)