Local Government Energy Audit:
Energy Audit Report

Jackson Liberty High School

125 North Hope Chapel Road

Jackson, NJ 08527

Jackson Township Board of Education

July 3, 2018

Final Report by:

TRC Energy Services

Disclaimer

The intent of this energy analysis report is to identify energy savings opportunities and recommend upgrades to the facility's energy using equipment and systems. Approximate savings are included in this report to help make decisions about reducing energy use at the facility. This report, however, is not intended to serve as a detailed engineering design document. Further design and analysis may be necessary in order to implement some of the measures recommended in this report.

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

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

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

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1 EXECUTIVE SUMMARY

The New Jersey Board of Public Utilities (NJBPU) has sponsored this Local Government Energy Audit (LGEA) Report for Jackson Liberty High School.

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

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

1.1 Facility Summary

Jackson Liberty High School is a 300,000 square foot, two story facility comprised of various space types such as classrooms, offices, hallways, gymnasium, auditorium, kitchen, storage closets and a mechanical space. During the weekdays the school is occupied from 7:00 AM to 6:00 PM. On Saturdays, the gym, auditorium and band rooms are occupied from 9:00 AM to 1:00 PM. There are no sports activities on Sunday. The maintenance garage and a concession stand are also served by the main meter and are included in the scope of the audit.

This building was constructed in 2005. Most of the building is conditioned using heat pump units located in the classrooms, offices and hallways supplemented by energy recovery units mounted on the roof. Larger spaces such as the gym, auditorium, cafeteria etc., are conditioned using rooftop units with built in furnaces. Facility lighting consists of linear fluorescent T8 tube fixtures, 4-pin CFL lamp (compact fluorescent lamp) fixtures and incandescent lamps

A thorough description of the facility and our observations are located in Section 2.

1.2 Your Cost Reduction Opportunities

Energy Conservation Measures

TRC evaluated eight measures and recommends six measures which together represent an opportunity for Jackson Liberty High School to reduce annual energy costs by $80,884 and annual greenhouse gas emissions by 756,818 lbs CO_2e. We estimate that if all measures were implemented as recommended, the project would pay for itself in 10.5 years. The breakdown of existing and potential utility costs after project implementation are illustrated in Figure 1 and Figure 2, respectively. Together these measures represent an opportunity to reduce Jackson Liberty High School's annual energy use by 12%.

Figure 1 – Previous 12 Month Utility Costs

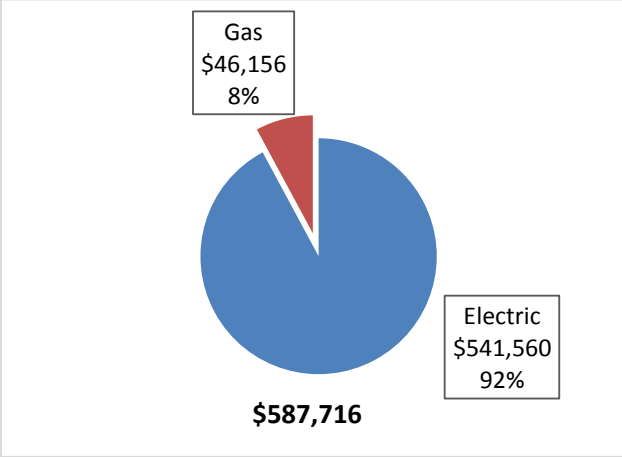
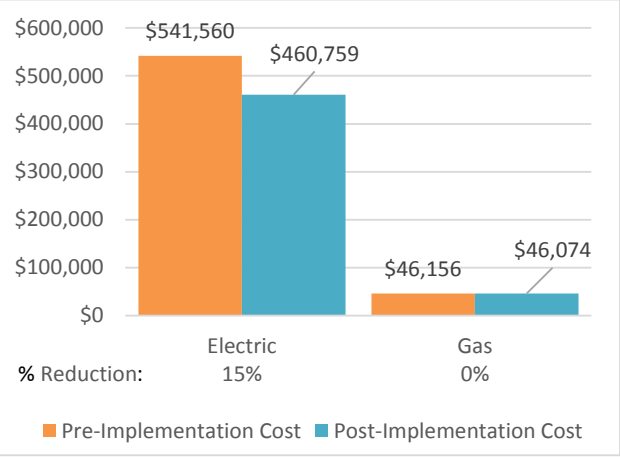


Figure 2 – Potential Post-Implementation Costs



A detailed description of Jackson Liberty High 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			**628,342**	**117.6**	**0.0**	**$67,623.32**	**$773,092.29**	**$51,600.00**	**$721,492.29**	**10.7**	**632,735**
ECM 1	Install LED Fixtures	Yes	198,104	27.3	0.0	$21,320.29	$488,612.32	$12,240.00	$476,372.32	22.3	199,489
ECM 2	Retrofit Fixtures with LED Lamps	Yes	430,238	90.3	0.0	$46,303.03	$284,479.97	$39,360.00	$245,119.97	5.3	433,247
Lighting Control Measures			**81,529**	**15.4**	**0.0**	**$8,774.25**	**$134,442.00**	**$7,765.00**	**$126,677.00**	**14.4**	**82,099**
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	63,056	11.9	0.0	$6,786.25	$61,042.00	$7,765.00	$53,277.00	7.9	63,497
	Install High/Low Lighitng Controls	No	18,472	3.5	0.0	$1,988.00	$73,400.00	$0.00	$73,400.00	36.9	18,601
Variable Frequency Drive (VFD) Measures			**46,501**	**12.9**	**0.0**	**$5,004.47**	**$83,784.88**	**$7,760.00**	**$76,024.88**	**15.2**	**46,826**
ECM 4	Install VFDs on Constant Volume (CV) HVAC	Yes	46,501	12.9	0.0	$5,004.47	$83,784.88	$7,760.00	$76,024.88	15.2	46,826
Electric Unitary HVAC Measures			**38,473**	**21.7**	**0.0**	**$4,140.53**	**$594,871.80**	**$1,782.00**	**$593,089.80**	**143.2**	**38,742**
	Install High Efficiency Electric AC	No	38,473	21.7	0.0	$4,140.53	$594,871.80	$1,782.00	$593,089.80	143.2	38,742
Domestic Water Heating Upgrade			**0**	**0.0**	**6.6**	**$82.23**	**$100.38**	**$0.00**	**$100.38**	**1.2**	**774**
ECM 5	Install Low-Flow Domestic Hot Water Devices	Yes	0	0.0	6.6	$82.23	$100.38	$0.00	$100.38	1.2	774
Plug Load Equipment Control - Vending Machine			**12,895**	**0.0**	**0.0**	**$1,387.75**	**$1,840.00**	**$0.00**	**$1,840.00**	**1.3**	**12,985**
ECM 6	Vending Machine Control	Yes	12,895	0.0	0.0	$1,387.75	$1,840.00	$0.00	$1,840.00	1.3	12,985
TOTALS			**807,739**	**167.6**	**6.6**	**$87,012.56**	**$1,588,131.35**	**$68,907.00**	**$1,519,224.35**	**17.5**	**814,161**
TOTAL OF RECOMMENDED MEASURES			**750,794**	**142**	**7**	**$ 80,884.03**	**$ 919,859.55**	**$ 67,125.00**	**$ 852,734.55**	**10.5**	**756,818**

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

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

Lighting Upgrades generally involve the replacement of existing lighting components such as lamps and ballasts (or the entire fixture) with higher efficiency lighting components. These measure 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.

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.

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

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

Energy Efficient Practices

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

- Develop a Lighting Maintenance Schedule
- Ensure Lighting Controls Are Operating Properly
- Perform Routine Motor Maintenance
- Practice Proper Use of Thermostat Schedules and Temperature Resets
- Ensure Economizers are Functioning Properly
- Install Plug Load Controls
- Water Conservation

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

On-Site Generation Measures

TRC evaluated the potential for installing additional on-site generation for Jackson Liberty High School. Based on the configuration of the site and its loads there is a low potential for installing PV and combined heat and power self-generation measures.

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

1.3 Implementation Planning

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

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

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

- SmartStart
- Pay for Performance- Existing Buildings (P4P EB)
- SREC (Solar Renewable Energy Certificate) Registration Program (SRP)
- Energy Savings Improvement Program (ESIP)

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

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 8.4 for additional information on the ESIP Program.

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

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

2 FACILITY INFORMATION AND EXISTING CONDITIONS

2.1 Project Contacts

Figure 4 – Project Contacts

Name	Role	E-Mail	Phone #
Customer			
Michelle Richardson	Business Administrator	mrichardson@jacksonsd.org	(732) 833-4600
John Blair	Energy Education Specialist	jblair@jacksonsd.org	(732) 833-4600 Extn: 4380
TRC Energy Services			
Smruti Srinivasan	Auditor	ssrinivasan@trcsolutions.com	(732) 855-0033

2.2 General Site Information

On October 18, 2017, TRC performed an energy audit at Jackson Liberty High School located in Jackson, New Jersey. TRC's team met with John Blair to review the facility operations and help focus our investigation on specific energy-using systems.

Jackson Liberty High School is a 300,000 square foot, two story facility comprised of various space types such as classrooms, offices, hallways, gymnasium, auditorium, kitchen, storage closets and a mechanical space. During the weekdays the school is occupied from 7:00 AM to 6:00 PM. On Saturdays, the gym, auditorium and band rooms are occupied from 9:00 AM to 1:00 PM. There are no sports activities on Sunday. The maintenance garage and a concession stand are also served by the main meter and included in the scope of the audit.

This building was constructed in 2005. Most of the building is conditioned by heat pump units located in the classrooms, offices and hallways supplemented by energy recovery units mounted on the roof. Larger spaces such as the gym, auditorium, cafeteria etc., are conditioned using rooftop units with built in furnaces. Facility lighting consists of linear fluorescent T8 fixtures, 4-pin CFL lamp (compact fluorescent lamp) fixtures and incandescent lamps.

2.3 Building Occupancy

The typical schedule is presented in the table below. During a typical day, approximately 150 full time staff (administration, teachers and maintenance) and 1295 students occupy the facility.

Figure 5 - Building Schedule

Building Name	Weekday/Weekend	Operating Schedule
Jackson Liberty High School	Weekday	7 AM - 6 PM
Jackson Liberty High School	Weekend	Saturay: 9 AM - 1 PM (Sports, auditorium and band room activities) Sunday - No sports

2.4 Building Envelope

The building is constructed of concrete and structural steel with a brick and concrete facade. The building has flat built up rubber roof sections covered with gravel. The roofs are in good condition. The building has double pane windows and aluminum exterior doors that are in good condition and show no signs of excessive infiltration.

Image 1 Building Envelope

2.5 On-Site Generation

Jackson Liberty High School installed a 1.4 MW (approximately) solar energy project in 2010. The project included photovoltaic (PV) panels mounted on the roof and solar arrays on the ground. There are 4,968 PV panels in total. The systems provide roughly 30% of the electricity required by the facility. The Board of Education has a power purchase agreement with Solar City.

2.6 Energy-Using Systems

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

Lighting System

Lighting is provided mostly by 32-Watt linear fluorescent T8 lamps with electronic ballasts as well as some compact fluorescent lamps (CFL). Most of the 4-foot and 2-foot T8 fixtures are 2-lamp or 3-lamp, 4-foot long troffers and 2-foot U-bent lamp fixtures. The compact fluorescent lamps are 18-Watt or 32-Watt 4 pins, recessed can fixtures. The building exit lights are 2-Watt LED fixtures.

Lighting control in most spaces is provided by manual switches. Lighting in classrooms and offices in a few sections are controlled using occupancy sensors. The occupancy sensors are either wall or ceiling mounted depending on the space layout.

Many hallways and entrances have ample day light and yet have all of the lights switched ON. High/low controls for these spaces have been evaluated.

The building's exterior lighting consists of pole fixtures with 250-Watt metal halide lamps and 400-Watt high pressure sodium lamps. Wall pack fixtures have 26-Watt compact fluorescent lamps. Courtyard lights have 50-Watt metal halide lamps and smaller pole lights have 70-Watt metal halide lamps. All exterior lights are controlled using photo cells.

Image 2 Lighting System

Hot Water Heating System and Direct Expansion Air Conditioning System (DX)

First and second floor classrooms, offices and hallways are conditioned using Florida Heat Pump ground source heat pump units in the respective spaces and ceilings. The capacity of these units were assumed for analytical purposes as specific information was unavailable to the auditor during the site visit. The water is circulated from the ground to the heat pumps using three 75 HP pumps that are equipped with variable frequency drives. There are dedicated ventilation units for these spaces located on the roof. They are fitted with energy recovery wheels.

The regular gym (90-ton), auxiliary gym (10-ton) and auditorium (35-ton) are conditioned using rooftop packaged units with DX cooling coils and built in gas-fired furnaces. The cafeteria and some D-wing hallways have make up air units with gas fired furnaces for heating.

Stairwell, entrances, receiving, and storage rooms are heated using 5 kW ceiling or wall mounted electric unit heaters.

The maintenance garage offices are cooled using 2-ton split AC units and heated using electric heaters. The garage has six 5 kW warm air unit heaters.

The concession stand is conditioned by a rooftop packaged unit. There was no roof access provided during the audit, therefore, the capacities have been assumed for analytical purposes.

All units are original to the building and installed in 2005. The packaged units and the heat pumps units have been evaluated for replacement.

All space temperatures and schedules are being controlled via a Johnson Controls Metasys. The individual spaces have thermostats with a capacity to alter the temperature by a few degrees. The occupied cooling setpoint in the building 72°F and occupied heating setpoint is 69°F. The unoccupied cooling setpoint in the building is 80°F and unoccupied heating setpoint 62°F.

Image 3 Heating and Air Conditioning System

Domestic Hot Water Heating System

The domestic hot water heating system for the facility consists of two gas fired Lochivar domestic hot water heaters with an input capacities of 1000 MBh and 200 MBh and tank capacities of 500 and 85 gallons respectively. The larger system has an efficiency of 87% and the smaller unit an efficiency of 84%. Both units were installed in 2006 and appeared to be in good condition.

Food Service & Refrigeration

There are two kitchens at the Liberty High School. There are a total of two walk in Bally freezers and one walk-in refrigerator. Both kitchens have a mixture of gas and electric equipment. Other cooking equipment include six gas-fired Garland convection ovens, one Cleveland convection steamer, two commercial dishwasher with electric boosters, two gas fired cooking range with six burners, three milk coolers, four food-warming cabinets, and several commercial and merchandise refrigerators.

Building Plug Load

There are 370 computer work stations, 1400 laptops and 40 Chromebook carts throughout the facility. The office plug loads at the facility include printers, paper shredders, projectors and smart boards. A few private offices and the teacher's lounge have kitchenette equipment such as small refrigerators, coffee machines and microwave ovens. The teacher's lounge also has eight refrigerated and four non-refrigerated vending machine without controls. There is no centralized PC power management software installed. The wood shop also has motor plug loads such as the bench-top drill press, band saw, table saws, 3-D printers, lathes and a dedicated exhaust system.

2.7 Water-Using Systems

Most faucets are rated for 2.2 gallons per minute (gpm) or lower, the toilets are rated at 1.6 gallons per flush (gpf) and the urinals are rated at 1 gallons per flush. Spaces such as the nurse's office, science prep rooms and home economics rooms have higher flow rate fixtures and have been evaluated low flow fixture installation. The men and women locker rooms have showers heads with a flow rate of 1.5 gpm.

3 SITE ENERGY USE AND COSTS

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

3.1 Total Cost of Energy

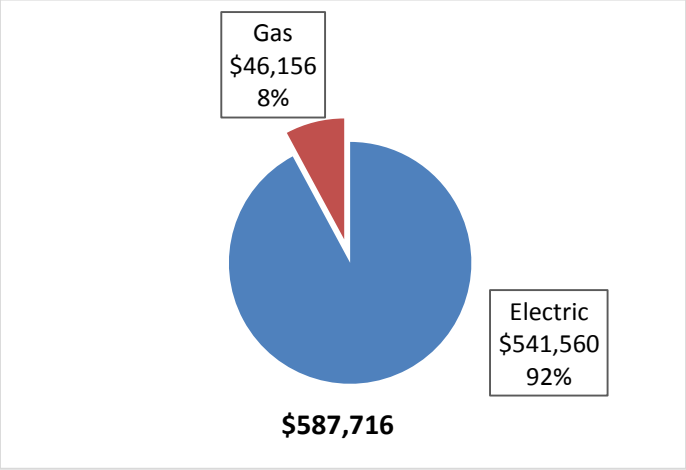
The following energy consumption and cost data is based on the last 12-month period of utility billing data that was provided for each utility. A profile of the annual energy consumption and energy cost of the facility was developed from this information.

Figure 6 - Utility Summary

Utility Summary for Jackson Liberty High School		
Fuel	**Usage**	**Cost**
Electricity	5,032,069 kWh	$541,560
Natural Gas	37,117 Therms	$46,156
Total		**$587,716**

The current annual energy cost for this facility is $587,716 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 $0.108/kWh, which is the blended rate that includes energy supply, distribution, and other charges. This rate is used throughout the analyses in this report to assess energy costs and savings. The third party electric supply is provided by Constellation Energy. Additional energy is provided by solar PV panels as part of a power purchase agreement with Solar City. This component is included in the total usage, less the energy sold back to the utility. The monthly electricity consumption and peak demand are shown in the chart below. Please refer to Section 6.1 for concerns related to the solar production.

Figure 8 - Electric Usage & Demand

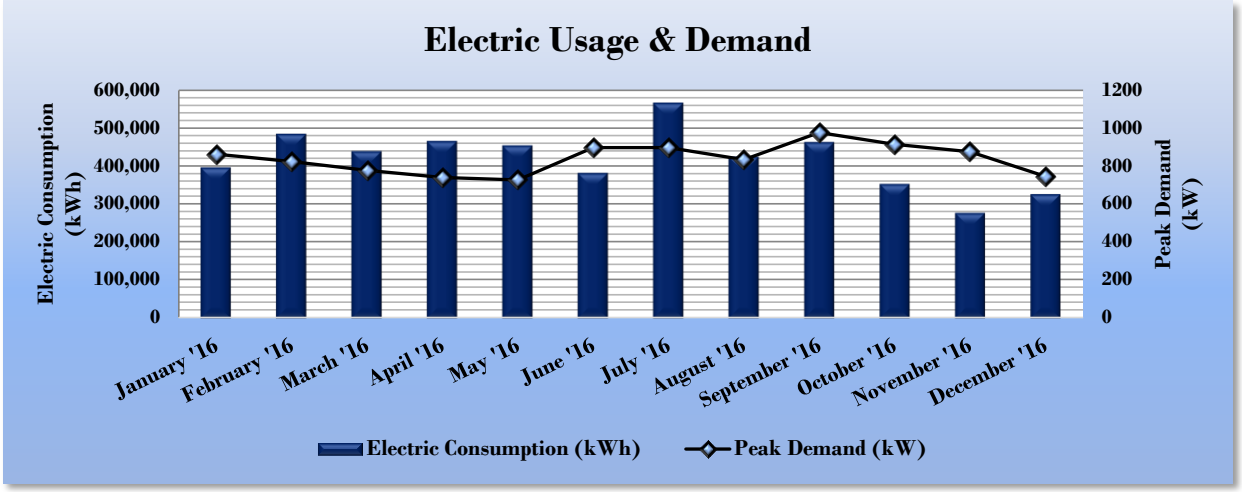


Figure 9 - Electric Usage & Demand

Electric Billing Data for Jackson Liberty High School					
Period Ending	Days in Period	Electric Usage (kWh)	Demand (kW)	Demand Cost	Total Electric Cost
1/31/16	30	396,555	862		$42,956
2/28/16	28	484,932	823		$45,187
3/31/16	32	439,289	776		$44,828
4/30/16	30	465,639	739		$44,190
5/31/16	31	453,886	726		$42,323
6/30/16	30	382,038	898		$52,373
7/31/16	31	566,237	898		$58,690
8/31/16	31	424,571	833		$45,272
9/30/16	30	463,197	977		$39,291
10/31/16	31	352,579	914		$52,396
11/30/16	30	277,190	875		$34,716
12/31/16	31	325,956	745		$39,338
Totals	**365**	**5,032,069**	**976.8**	**$0**	**$541,560**
Annual	**365**	**5,032,069**	**976.8**	**$0**	**$541,560**

3.3 Natural Gas Usage

Natural gas is provided by NJ Natural Gas. The average gas cost for the past 12 months is $1.244/therm, which is the blended rate used throughout the analyses in this report. The monthly gas consumption is shown in the chart below.

Figure 10 - Natural Gas Usage

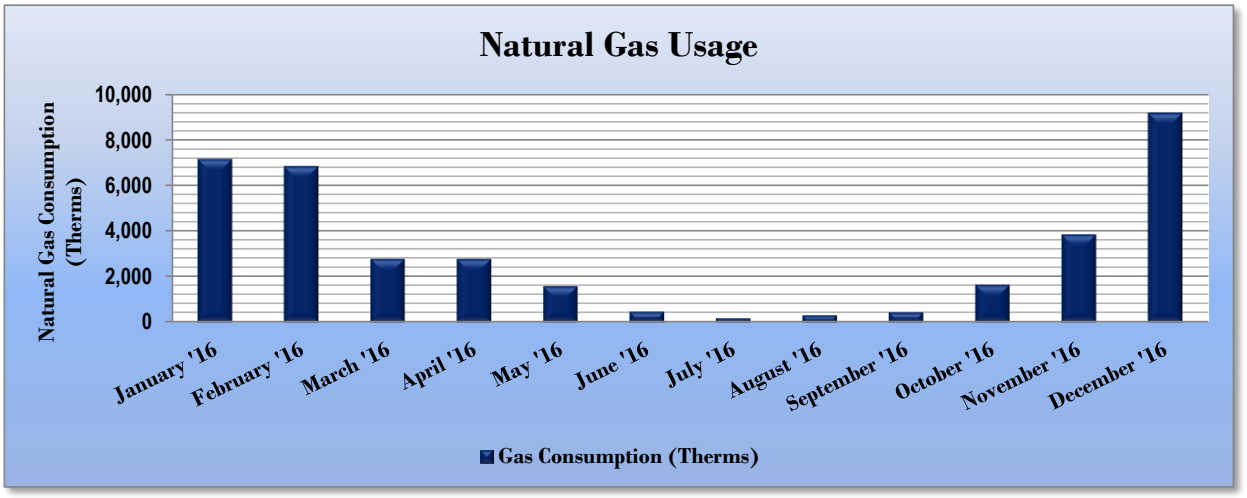


Figure 11 - Natural Gas Usage

Gas Billing Data for Jackson Liberty High School			
Period Ending	Days in Period	Natural Gas Usage (Therms)	Natural Gas Cost
2/8/16	30	7,163	$7,980
3/7/16	28	6,847	$7,652
4/5/16	29	2,781	$3,426
5/4/16	29	2,777	$3,421
6/7/16	34	1,581	$2,179
7/6/16	29	466	$1,020
8/6/16	31	180	$721
9/6/16	31	304	$849
10/4/16	28	439	$1,005
11/4/16	31	1,646	$2,406
12/7/16	33	3,853	$4,912
1/9/17	33	9,181	$10,712
Totals	**366**	**37,218**	**$46,282**
Annual	**365**	**37,117**	**$46,156**

3.4 Benchmarking

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

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

Figure 12 - Energy Use Intensity Comparison – Existing Conditions

Energy Use Intensity Comparison - Existing Conditions		
	Jackson Liberty High School	National Median Building Type: School (K-12)
Source Energy Use Intensity (kBtu/ft^2)	192.7	141.4
Site Energy Use Intensity (kBtu/ft^2)	69.6	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		
	Jackson Liberty High School	National Median Building Type: School (K-12)
Source Energy Use Intensity (kBtu/ft^2)	165.9	141.4
Site Energy Use Intensity (kBtu/ft^2)	61.0	58.2

Many types of commercial buildings are also eligible to receive an ENERGY STAR® score. This score is a percentile ranking from 1 to 100. It compares your building's energy performance to similar buildings nationwide. A score of 50 represents median energy performance, while a score of 75 means your building performs better than 75 percent of all similar buildings nationwide and may be eligible for ENERGY STAR® certification. Your building is one of the building categories that are eligible to receive a score. This facility has a current score of 55.

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

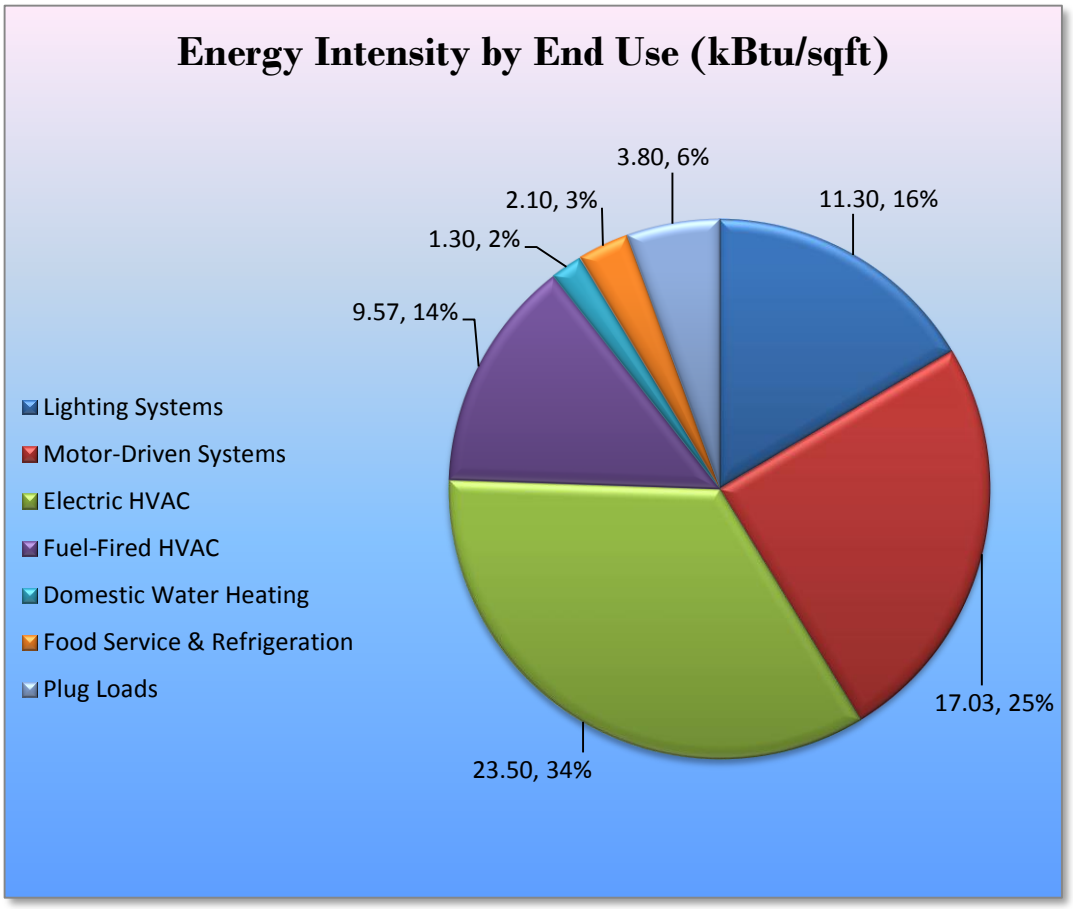
For more information on ENERGY STAR® certification go to: https://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/earn-recognition/energy-star-certification/how-app-1.

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

3.5 Energy End-Use Breakdown

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

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

The following sections describe the evaluated measures.

4.1 Recommended ECMs

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

Figure 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		**628,342**	**117.6**	**0.0**	**$67,623.32**	**$773,092.29**	**$51,600.00**	**$721,492.29**	**10.7**	**632,735**
ECM 1	Install LED Fixtures	198,104	27.3	0.0	$21,320.29	$488,612.32	$12,240.00	$476,372.32	22.3	199,489
ECM 2	Retrofit Fixtures with LED Lamps	430,238	90.3	0.0	$46,303.03	$284,479.97	$39,360.00	$245,119.97	5.3	433,247
Lighting Control Measures		**63,056**	**11.9**	**0.0**	**$6,786.25**	**$61,042.00**	**$7,765.00**	**$53,277.00**	**7.9**	**63,497**
ECM 3	Install Occupancy Sensor Lighting Controls	63,056	11.9	0.0	$6,786.25	$61,042.00	$7,765.00	$53,277.00	7.9	63,497
Variable Frequency Drive (VFD) Measures		**46,501**	**12.9**	**0.0**	**$5,004.47**	**$83,784.88**	**$7,760.00**	**$76,024.88**	**15.2**	**46,826**
ECM 4	Install VFDs on Constant Volume (CV) HVAC	46,501	12.9	0.0	$5,004.47	$83,784.88	$7,760.00	$76,024.88	15.2	46,826
Domestic Water Heating Upgrade		**0**	**0.0**	**6.6**	**$82.23**	**$100.38**	**$0.00**	**$100.38**	**1.2**	**774**
ECM 5	Install Low-Flow Domestic Hot Water Devices	0	0.0	6.6	$82.23	$100.38	$0.00	$100.38	1.2	774
Plug Load Equipment Control - Vending Machine		**12,895**	**0.0**	**0.0**	**$1,387.75**	**$1,840.00**	**$0.00**	**$1,840.00**	**1.3**	**12,985**
ECM 6	Vending Machine Control	12,895	0.0	0.0	$1,387.75	$1,840.00	$0.00	$1,840.00	1.3	12,985
TOTALS		**750,794**	**142.4**	**6.6**	**$80,884.03**	**$919,859.55**	**$67,125.00**	**$852,734.55**	**10.5**	**756,818**

* - 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		**628,342**	**117.6**	**0.0**	**$67,623.32**	**$773,092.29**	**$51,600.00**	**$721,492.29**	**10.7**	**632,735**
ECM 1	Install LED Fixtures	198,104	27.3	0.0	$21,320.29	$488,612.32	$12,240.00	$476,372.32	22.3	199,489
ECM 2	Retrofit Fixtures with LED Lamps	430,238	90.3	0.0	$46,303.03	$284,479.97	$39,360.00	$245,119.97	5.3	433,247

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	25,339	4.8	0.0	$2,727.05	$187,572.00	$10,390.00	$177,182.00	65.0	25,516
Exterior	172,765	22.5	0.0	$18,593.24	$301,040.32	$1,850.00	$299,190.32	16.1	173,973

Measure Description

We recommend replacing pole and wall mounted exterior fixtures containing high pressure sodium and metal halide lamps with new high performance LED light fixtures. We also recommend replacement of compact fluorescent gym lighting with LED fixtures equipped with onboard controls, and of the metal halide fixtures located in the Eco chamber.

This measure saves energy by installing LEDs which use less power than other technologies with a comparable light output.

Additional savings from lighting maintenance can be anticipated since LEDs have lifetimes which are more than twice that of a fluorescent tubes, metal halide, or high pressure sodium 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	428,038	90.0	0.0	$46,066.25	$281,469.80	$39,360.00	$242,109.80	5.3	431,031
Exterior	2,200	0.3	0.0	$236.79	$3,010.17	$0.00	$3,010.17	12.7	2,216

Measure Description

We recommend retrofitting existing CFL and linear T8 fluorescent lighting technologies with LED lamps. Many LED tube lamps are direct replacements for existing fluorescent lamps and can be installed while leaving the fluorescent fixture ballast in place. LED bulbs can be used in existing fixtures as a direct replacement for most other lighting technologies. This measure saves energy by installing LEDs which use less power than other lighting technologies yet provide equivalent lighting output for the space.

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

4.1.2 Lighting Control Measures

Our recommendations for 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		**63,056**	**11.9**	**0.0**	**$6,786.25**	**$61,042.00**	**$7,765.00**	**$53,277.00**	**7.9**	**63,497**
ECM 3	Install Occupancy Sensor Lighting Controls	63,056	11.9	0.0	$6,786.25	$61,042.00	$7,765.00	$53,277.00	7.9	63,497

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)
63,056	11.9	0.0	$6,786.25	$61,042.00	$7,765.00	$53,277.00	7.9	63,497

Measure Description

We recommend installing occupancy sensors to control lighting fixtures that are currently controlled by manual switches in most of the restrooms, classrooms and offices areas. 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.

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		**46,501**	**12.9**	**0.0**	**$5,004.47**	**$83,784.88**	**$7,760.00**	**$76,024.88**	**15.2**	**46,826**
ECM 4	Install VFDs on Constant Volume (CV) HVAC	46,501	12.9	0.0	$5,004.47	$83,784.88	$7,760.00	$76,024.88	15.2	46,826

ECM 4: 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)
46,501	12.9	0.0	$5,004.47	$83,784.88	$7,760.00	$76,024.88	15.2	46,826

Measure Description

We recommend installing variable frequency drives (VFDs) to control supply and return fan motor speeds to convert constant-volume, single-zone air handling systems into variable-air-volume (VAV) systems. This measure is recommended for the supply and return fan motors associated with RTU2, serving the auditorium, and RTU 1A, serving the regular gym.

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.

4.1.4 Domestic Hot Water Heating System Upgrades

Our recommendations for domestic water heating system improvements are summarized in Figure 19 below.

Figure 19 - Summary of Domestic Water Heating ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Domestic Water Heating Upgrade		**0**	**0.0**	**6.6**	**$82.23**	**$100.38**	**$0.00**	**$100.38**	**1.2**	**774**
ECM 5	Install Low-Flow Domestic Hot Water Devices	0	0.0	6.6	$82.23	$100.38	$0.00	$100.38	1.2	774

ECM 5: Install Low-Flow DHW Devices

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
0	0.0	6.6	$82.23	$100.38	$0.00	$100.38	1.2	774

Measure Description

We recommend installing low-flow domestic hot water devices to reduce overall hot water demand. In this facility, we primarily recommend the devices be installed in areas with high flow aerators, including Home Economics, the Nurses' Office, the Science Prep Rooms, and Room N101. Energy demand from domestic hot water heating systems can be reduced by reducing water usage in general. Faucet aerators and low-flow showerheads can reduce hot water usage, relative to standard showerheads and aerators, which saves energy.

Low-flow devices reduce the overall water flow from the fixture, while still adequate pressure for washing. This reduces the amount of water used per day resulting in energy and water savings.

4.1.5 Plug Load Equipment Control - Vending Machines

Our recommendations for plug load equipment controls are summarized in Figure 20 below.

Figure 20 - Summary of Plug Load Equipment 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)
Plug Load Equipment Control - Vending Machine		**12,895**	**0.0**	**0.0**	**$1,387.75**	**$1,840.00**	**$0.00**	**$1,840.00**	**1.3**	**12,985**
ECM 6	Vending Machine Control	12,895	0.0	0.0	$1,387.75	$1,840.00	$0.00	$1,840.00	1.3	12,985

ECM 6: Vending Machine Control

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
12,895	0.0	0.0	$1,387.75	$1,840.00	$0.00	$1,840.00	1.3	12,985

Measure Description

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

4.2 ECMs Evaluated But Not Recommended

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

Figure 21 – Summary of Measures Evaluated, But Not Recommended

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Control Measures		**18,472**	**3.5**	**0.0**	**$1,988.00**	**$73,400.00**	**$0.00**	**$73,400.00**	**36.9**	**18,601**
	Install High/Low Lighitng Controls	18,472	3.5	0.0	$1,988.00	$73,400.00	$0.00	$73,400.00	36.9	18,601
Electric Unitary HVAC Measures		**38,473**	**21.7**	**0.0**	**$4,140.53**	**$594,871.80**	**$1,782.00**	**$593,089.80**	**143.2**	**38,742**
	Install High Efficiency Electric AC	38,473	21.7	0.0	$4,140.53	$594,871.80	$1,782.00	$593,089.80	143.2	38,742
TOTALS		**56,945**	**25.2**	**0.0**	**$6,128.53**	**$668,271.80**	**$1,782.00**	**$666,489.80**	**108.8**	**57,343**

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

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

Install High/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)
18,472	3.5	0.0	$1,988.00	$73,400.00	$0.00	$73,400.00	36.9	18,601

Measure Description

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

Lighting fixtures with these controls operate at default low levels when the area is not occupied to provide minimal lighting to meet security or safety requirements. Sensors detect occupancy using ultrasonic and/or infrared sensors. The lighting systems are switched to full lighting levels whenever an occupant is detected. Fixtures are automatically switched back to low level after an area has been vacant for a preset period of time. In parking lots with significant ambient lighting this control can sometimes be combined with photocell controls to turn the lights off when there is sufficient daylighting. Energy savings results from only providing full lighting levels when it is required.

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

Reasons for not Recommending

Based on the arrangement of fixtures and the configuration of the space, it was judged that the number of control units required to provide sufficient coverage of the hallways to maintain adequate illumination would result in the measure not being cost effective.

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)
38,473	21.7	0.0	$4,140.53	$594,871.80	$1,782.00	$593,089.80	143.2	38,742

Measure Description

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

Reasons for not Recommending

The equipment addressed by the measure is approaching the end of its useful life, and was therefore evaluated for replacement. The payback period for investment in the replacement equipment is longer than the expected useful life of the proposed replacement equipment. The measure is therefore not cost effective on the basis of energy savings alone. As the District plans for replacement of this equipment, we suggest consideration be given to replacement with a higher efficiency equivalents of the respective units.

5 ENERGY EFFICIENT PRACTICES

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

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.

Practice Proper Use of Thermostat Schedules and Temperature Resets

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

Ensure Economizers are Functioning Properly

Economizers, when properly configured, can be used to significantly reduce mechanical cooling. However, if the outdoor thermostat or enthalpy control is malfunctioning or the damper is stuck or improperly adjusted, benefits from the economizer may not be fully realized. As such, periodic inspection and maintenance is required to ensure proper operation. This maintenance should be scheduled with maintenance of the facility's air conditioning system and should include proper setting of the outdoor thermostat/enthalpy control, inspection of control and damper operation, lubrication of damper connections, and adjustment of minimum damper position. A malfunctioning economizer can significantly increase the amount of heating and mechanical cooling required by introducing excess amounts of cold or hot outside air.

Plug Load Controls

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

Water Conservation

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

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

Refer to Section 4.1.4 for any low-flow ECM recommendations.

6 On-Site Generation Measures

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

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

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

6.1 Photovoltaic

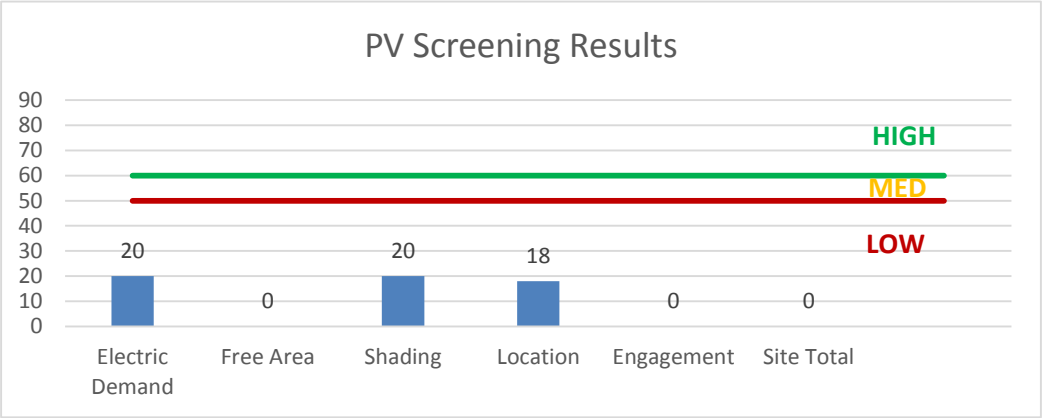
Sunlight can be converted into electricity using photovoltaics (PV) modules. Modules are racked together into an array that produces direct current (DC) electricity. The DC current is converted to alternating current (AC) through an inverter. The inverter is interconnected to the facility's electrical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

As described in Section 2.6, Liberty High School is equipped with a PV system consisting of 4,968 panels (both roof and ground mounted). We evaluated the expansion potential of this PV system. Based on the JCPL bills indicating the energy purchased directly from the utility, it appears that there is a high potential for expanding the PV system. However, the size of the array, 1.4 MW, suggests that the system should be able to provide a larger share of the site's electrical energy use than it currently does, which is about 30%. Even though the school is purchasing the bulk of its electricity, it also seems to be exporting significant amounts of electricity back to the grid during periods.

Also, a review of prior bills suggests that the billed demand from the utility did not reduce significantly after the site installed 1.4 MW of solar array.

We recommend more detailed review of the historical billing including the solar production and consumption. As warranted, we would further recommend an analysis of the solar production itself to ensure the system is functioning as intended. Until then, we do not recommend the expansion of the PV system.

Figure 22 - Photovoltaic Screening



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

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

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

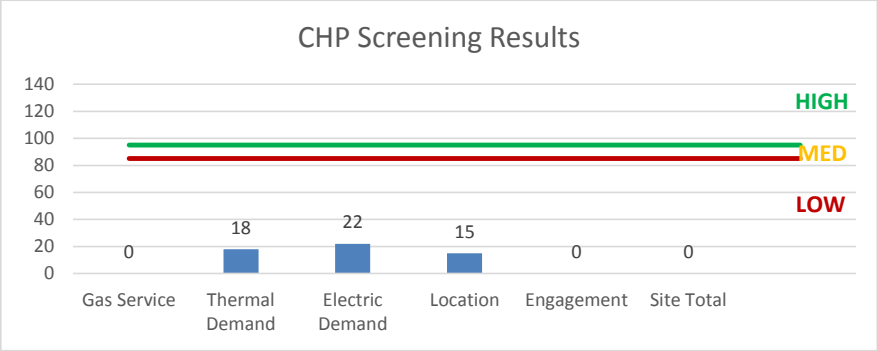
6.2 Combined Heat and Power

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

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

A preliminary screening based on heating and electrical demand, siting, and interconnection shows that the facility has a Low potential for installing a cost-effective CHP system. Lack of gas service is the most significant factor contributing to the potential for CHP at the site. In our opinion, the facility does not appear to meet the minimum requirements for a cost-effective CHP installation. For a list of qualified firms in New Jersey specializing in commercial CHP cost assessment and installation, go to: http://www.njcleanenergy.com/commercial-industrial/programs/nj-smartstart-buildings/tools-and-resources/tradeally/approved_vendorsearch/.

Figure 23 - Combined Heat and Power Screening



7 DEMAND RESPONSE

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

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

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

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

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

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

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

This school is already participating in a district wide demand response program.

8 PROJECT FUNDING / INCENTIVES

The NJCEP is able to provide the incentive programs described below, and other benefits to ratepayers, because of the Societal Benefits Charge (SBC) Fund. The SBC was created by the State of New Jersey's Electricity Restructuring Law (1999), which requires all customers of investor-owned electric and gas utilities to pay a surcharge on their monthly energy bills. As a customer of a state-regulated electric or gas utility and therefore a contributor to the fund your organization is eligible to participate in the LGEA program and also eligible to receive incentive payment for qualifying energy efficiency measures. Also available through the NJBPU are some alternative financing programs described later in this section. Please refer to Figure 24 for a list of the eligible programs identified for each recommended ECM.

Figure 24 - ECM Incentive Program Eligibility

Energy Conservation Measure		SmartStart Prescriptive	SmartStart Custom	Direct Install	Pay For Performance Existing Buildings	Large Energy Users Program	Combined Heat & Power and Fuel Cell
ECM 1	Install LED Fixtures	x					
ECM 2	Retrofit Fixtures with LED Lamps	x					
ECM 3	Install Occupancy Sensor Lighting Controls	x					
ECM 4	Install VFDs on Constant Volume (CV) HVAC	x					
ECM 5	Install Low-Flow Domestic Hot Water Devices						
ECM 6	Vending Machine Control						

SmartStart is generally well-suited for implementation of individual measures or small group of measures. It provides flexibility to install measures at your own pace using in-house staff or a preferred contractor. 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 scope of work presented in this audit report does not quite meet the requirements of the current P4P program. However, due to the size of the facility and existing conditions, should additional measures be identified at a later point in time, for example through further evaluation or the Energy Savings Improvement Program process, this facility could potentially meet the requirements necessary to participate in the P4P program.

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

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

8.1 SmartStart

Overview

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

Equipment with Prescriptive Incentives Currently Available:

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

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

Incentives

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

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

How to Participate

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

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

8.2 Pay for Performance - Existing Buildings

Overview

The Pay for Performance – Existing Buildings (P4P EB) program is designed for larger customers with a peak demand over 200 kW in 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 SREC Registration Program

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

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

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

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

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

8.4 Energy Savings Improvement Program

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

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

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

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

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

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

9 ENERGY PURCHASING AND PROCUREMENT STRATEGIES

9.1 Retail Electric Supply Options

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

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

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

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

9.2 Retail Natural Gas Supply Options

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

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

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

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

Appendix A: Equipment Inventory & Recommendations

Lighting Inventory & Recommendations

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Pump Room	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	No	15	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,024	0.32	1,721	0.0	$185.26	$877.50	$150.00	3.93
Teacher's lounge H101a	7	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	7	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.29	1,523	0.0	$163.87	$796.40	$140.00	4.01
H101a -restroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.05	290	0.0	$31.21	$233.00	$20.00	6.82
Receiving	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.49	2,610	0.0	$280.92	$1,323.00	$215.00	3.94
H102A	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.05	290	0.0	$31.21	$233.00	$20.00	6.82
Receiving storage	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.33	1,740	0.0	$187.28	$972.00	$120.00	4.55
Kitchen B-wing	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	3,024	0.39	2,066	0.0	$222.31	$902.40	$180.00	3.25
Custodial Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,024	0.02	115	0.0	$12.35	$58.50	$10.00	3.93
Kitchen Restroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.05	290	0.0	$31.21	$233.00	$20.00	6.82
Lounge	14	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	14	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.57	3,045	0.0	$327.74	$1,322.80	$245.00	3.29
Kitchen Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.08	435	0.0	$46.82	$266.40	$30.00	5.05
Kitchen storage	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.12	653	0.0	$70.23	$495.60	$80.00	5.92
Gym hall	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	2,117	0.12	653	0.0	$70.23	$425.60	$45.00	5.42
Supply closet	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.16	870	0.0	$93.64	$467.00	$60.00	4.35
Girls locker room	41	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	41	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	1.12	5,946	0.0	$639.88	$3,208.50	$515.00	4.21
Girls locker - restroom	10	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	10	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	2,117	0.25	1,353	0.0	$145.59	$902.00	$35.00	5.96
Shower	4	Compact Fluorescent: 1 Lamp	Wall Switch	18	3,024	Relamp	No	4	LED Screw-In Lamps: Recessed Can fixtures	Wall Switch	13	3,024	0.01	75	0.0	$8.08	$215.01	$0.00	26.60
Gym Officer	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.25	1,305	0.0	$140.46	$721.20	$125.00	4.24
Gym office restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.03	145	0.0	$15.61	$174.50	$10.00	10.54
Girls team room	14	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	14	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.38	2,030	0.0	$218.50	$1,089.00	$175.00	4.18
Boys locker room	41	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	41	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	1.12	5,946	0.0	$639.88	$3,208.50	$515.00	4.21
Boys locker - restroom	10	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	10	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	2,117	0.25	1,353	0.0	$145.59	$902.00	$35.00	5.96
Shower	4	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	18	3,024	Relamp	Yes	4	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,117	0.02	109	0.0	$11.75	$259.60	$20.00	20.39
Gym Officer	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.25	1,305	0.0	$140.46	$721.20	$125.00	4.24
Gym office restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.03	145	0.0	$15.61	$174.50	$10.00	10.54

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Boys team room	14	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	14	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.38	2,030	0.0	$218.50	$1,089.00	$175.00	4.18
Kitchen hood	4	Incandescent: 1 Lamp	Wall Switch	60	3,024	Relamp	No	4	LED Screw-In Lamps: Kitchen hood	Wall Switch	9	3,024	0.13	709	0.0	$76.35	$215.01	$20.00	2.55
Cafeteria	44	Compact Fluorescent: 2 Lamps	Wall Switch	32	3,024	Relamp	Yes	44	LED Screw-In Lamps: Recessed can fixtures	Occupancy Sensor	22	2,117	0.47	2,497	0.0	$268.75	$5,810.26	$140.00	21.10
Cafeteria	23	Compact Fluorescent: 2 Lamps	Wall Switch	32	3,024	Relamp	Yes	23	LED Screw-In Lamps: Recessed can fixtures	Occupancy Sensor	22	2,117	0.25	1,305	0.0	$140.48	$3,552.64	$140.00	24.29
Big Gym	40	Compact Fluorescent: 6 Lamps	Wall Switch	252	3,024	Fixture Replacement	Yes	40	LED - Fixtures: High-Bay	Occupancy Sensor	176	2,117	3.37	17,878	0.0	$1,924.02	$116,208.00	$7,400.00	56.55
Weight room	9	Compact Fluorescent: 6 Lamps	Wall Switch	252	3,024	Fixture Replacement	Yes	9	LED - Fixtures: High-Bay	Occupancy Sensor	120	2,117	0.99	5,258	0.0	$565.89	$26,146.80	$1,665.00	43.26
Trainers room	14	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	14	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.38	2,030	0.0	$218.50	$1,089.00	$175.00	4.18
G106C	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.05	290	0.0	$31.21	$233.00	$20.00	6.82
G106 D	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	3,024	0.03	172	0.0	$18.53	$75.20	$15.00	3.25
Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.03	145	0.0	$15.61	$174.50	$10.00	10.54
Gym hall Storage	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.12	653	0.0	$70.23	$495.60	$45.00	6.42
Gym hall storage	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.41	2,175	0.0	$234.10	$1,147.50	$150.00	4.26
Receivring	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.11	580	0.0	$62.43	$504.00	$75.00	6.87
Receiving hall	19	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	19	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	2,117	0.78	4,133	0.0	$444.80	$2,028.80	$285.00	3.92
Wrestling room (Auxillary gym)	18	Compact Fluorescent: 6 Lamps	Wall Switch	252	3,024	Fixture Replacement	Yes	18	LED - Fixtures: High-Bay	Occupancy Sensor	176	2,117	1.52	8,045	0.0	$865.81	$52,293.60	$3,330.00	56.55
G105 Office	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	8	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.33	1,740	0.0	$187.28	$871.60	$155.00	3.83
Hallway	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	8	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	2,117	0.33	1,740	0.0	$187.28	$801.60	$120.00	3.64
Hallway	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	1	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	2,117	0.04	218	0.0	$23.41	$75.20	$15.00	2.57
F hallway	11	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	11	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	2,117	0.45	2,393	0.0	$257.51	$1,627.20	$165.00	5.68
F 105	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.37	1,958	0.0	$210.69	$946.80	$170.00	3.69
F104 E	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	3,024	0.03	172	0.0	$18.53	$75.20	$15.00	3.25
F 104 C	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,024	0.02	115	0.0	$12.35	$58.50	$10.00	3.93
F104 T	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,024	0.02	115	0.0	$12.35	$58.50	$10.00	3.93
F 104 Music room	25	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	25	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	1.03	5,438	0.0	$585.26	$2,150.00	$410.00	2.97
F104 Music room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.05	290	0.0	$31.21	$117.00	$55.00	1.99

	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
F104 D	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.16	870	0.0	$93.64	$416.80	$80.00	3.60
F104 A	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,024	0.02	115	0.0	$12.35	$58.50	$10.00	3.93
F 104 b	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,024	0.02	115	0.0	$12.35	$58.50	$10.00	3.93
F 105 hallway	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,117	0.05	290	0.0	$31.21	$317.00	$20.00	9.52
F 104 E	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.12	653	0.0	$70.23	$341.60	$65.00	3.94
F 104 F	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.08	435	0.0	$46.82	$266.40	$50.00	4.62
F106 B	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.08	435	0.0	$46.82	$266.40	$50.00	4.62
F 106 C	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.08	435	0.0	$46.82	$266.40	$50.00	4.62
Band room	28	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	28	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	1.15	6,091	0.0	$655.49	$2,645.60	$490.00	3.29
F 106 A	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.16	870	0.0	$93.64	$570.80	$95.00	5.08
F 106 D	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.25	1,305	0.0	$140.46	$721.20	$125.00	4.24
F 106 E	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.25	1,305	0.0	$140.46	$721.20	$125.00	4.24
F 108 - Instrument room	14	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	14	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.57	3,045	0.0	$327.74	$1,322.80	$245.00	3.29
F-hallway	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	2,117	0.37	1,958	0.0	$210.69	$876.80	$135.00	3.52
Girls restroom	4	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	4	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	2,117	0.10	541	0.0	$58.24	$522.80	$35.00	8.38
Boys restroom	4	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	4	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	2,117	0.10	541	0.0	$58.24	$522.80	$35.00	8.38
F110	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.12	653	0.0	$70.23	$495.60	$80.00	5.92
F112	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.37	1,958	0.0	$210.69	$946.80	$170.00	3.69
Auditorium	4	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	No	4	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	3,024	0.08	403	0.0	$43.41	$252.80	$0.00	5.82
F 101 A	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.33	1,740	0.0	$187.28	$972.00	$155.00	4.36
Stage	24	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	No	24	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,024	0.52	2,754	0.0	$296.42	$1,404.00	$240.00	3.93
Auditorium	10	Compact Fluorescent: 2 Lamps	Wall Switch	36	3,024	Relamp	Yes	10	LED Screw-In Lamps: Recessed can fixtures	Occupancy Sensor	25	2,117	0.12	638	0.0	$68.72	$1,345.06	$35.00	19.07
Auditorium	64	Halogen Incandescent: 1 Lamp	Wall Switch	90	3,024	Relamp	No	64	LED Screw-In Lamps: Spot fixture	Wall Switch	14	3,024	3.21	17,026	0.0	$1,832.40	$6,262.59	$320.00	3.24
Auditorium hall	10	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	10	LED - Linear Tubes: (2) U-Lamp	High/Low Control	33	2,117	0.25	1,353	0.0	$145.59	$1,432.00	$0.00	9.84
F103 office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.11	580	0.0	$62.43	$504.00	$75.00	6.87

	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
F101 hallway	27	U-Bend Fluorescent - T8: U T8 (32W) - 3L	Wall Switch	92	3,024	Relamp	Yes	27	LED - Linear Tubes: (3) U-Lamp	High/Low Control	50	2,117	1.02	5,385	0.0	$579.53	$5,357.30	$0.00	9.24
F101 hallway	19	Compact Fluorescent: 1 Lamp	Wall Switch	18	3,024	Relamp	Yes	19	LED Screw-In Lamps: Recessed can fixtures	High/Low Control	13	2,117	0.11	607	0.0	$65.28	$1,421.31	$0.00	21.77
Girls restroom	8	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	3,024	Relamp	Yes	8	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	2,117	0.18	978	0.0	$105.24	$763.60	$155.00	5.78
Girls restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.03	145	0.0	$15.61	$58.50	$45.00	0.87
Boys restroom	8	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	3,024	Relamp	Yes	8	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	2,117	0.18	978	0.0	$105.24	$763.60	$155.00	5.78
Boys restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.03	145	0.0	$15.61	$58.50	$45.00	0.87
Front entrance	66	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	3,024	Relamp	No	66	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	3,024	1.19	6,312	0.0	$679.29	$4,072.20	$990.00	4.54
Front entrance	64	Compact Fluorescent: 11 Lamps	Wall Switch	198	3,024	Relamp	No	64	LED Screw-In Lamps: Recessed can fixtures	Wall Switch	139	3,024	2.49	13,220	0.0	$1,422.81	$37,842.11	$0.00	26.60
Entrance corridor	8	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	3,024	Relamp	No	8	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	3,024	0.14	765	0.0	$82.34	$493.60	$120.00	4.54
Eco chamber	34	Metal Halide: (1) 50W Lamp	Wall Switch	72	3,024	Fixture Replacement	No	34	LED - Fixtures: Ceiling Mount	Wall Switch	22	3,024	1.12	5,959	0.0	$641.34	$7,663.60	$340.00	11.42
Eco chamber	2	Compact Fluorescent: 2 Lamps	Wall Switch	36	3,024	Relamp	No	2	LED Screw-In Lamps: Recessed can fixtures	Wall Switch	25	3,024	0.01	75	0.0	$8.08	$215.01	$0.00	26.60
F102	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.12	653	0.0	$70.23	$495.60	$80.00	5.92
A101-Main office suite	21	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	3,024	Relamp	Yes	21	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	2,117	0.48	2,567	0.0	$276.26	$1,835.70	$385.00	5.25
A101-Main office suite	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.25	1,305	0.0	$140.46	$721.20	$125.00	4.24
Restroom - Main office	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	1	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.04	218	0.0	$23.41	$191.20	$15.00	7.53
A101C - Storage	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	3,024	0.03	172	0.0	$18.53	$75.20	$15.00	3.25
Hallway	8	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	3,024	Relamp	Yes	8	LED - Linear Tubes: (3) 2' Lamps	High/Low Control	26	2,117	0.18	978	0.0	$105.24	$693.60	$120.00	5.45
Tech closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	3,024	0.03	172	0.0	$18.53	$75.20	$15.00	3.25
Halllway guidance	70	Linear Fluorescent - T8: 2' T8 (17W) - 4L	Wall Switch	63	3,024	Relamp	Yes	70	LED - Linear Tubes: (4) 2' Lamps	High/Low Control	34	2,117	1.80	9,543	0.0	$1,026.99	$34,157.33	$1,400.00	31.90
Hallway guidance	67	Compact Fluorescent: 1 Lamp	Wall Switch	18	3,024	Relamp	Yes	67	LED Screw-In Lamps: Recessed can fixtures	High/Low Control	13	2,117	0.40	2,139	0.0	$230.20	$3,601.45	$0.00	15.65
Hallway guidance	62	Linear Fluorescent - T5: 4' T5 (28W) - 1L	Wall Switch	30	3,024	Relamp	Yes	62	LED - Linear Tubes: (1) 4' Lamp	High/Low Control	15	2,117	0.81	4,280	0.0	$460.61	$22,225.80	$310.00	47.58
Stairwell Door 12	4	Linear Fluorescent - T8: 2' T8 (17W) - 1L	Wall Switch	22	3,024	Relamp	No	4	LED - Linear Tubes: (1) 2' Lamp	Wall Switch	9	3,024	0.04	188	0.0	$20.21	$127.60	$20.00	5.32
Stairwell Door 12	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,024	0.09	459	0.0	$49.40	$234.00	$40.00	3.93
Child study suite	13	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	3,024	Relamp	Yes	13	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	2,117	0.30	1,589	0.0	$171.02	$1,072.10	$230.00	4.92
A105B	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.08	435	0.0	$46.82	$420.40	$65.00	7.59

	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
A105C	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.08	435	0.0	$46.82	$420.40	$65.00	7.59
A105E	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.16	870	0.0	$93.64	$570.80	$95.00	5.08
A105 L	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.08	435	0.0	$46.82	$420.40	$65.00	7.59
A105 K	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.08	435	0.0	$46.82	$420.40	$65.00	7.59
A105 I	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.08	435	0.0	$46.82	$420.40	$65.00	7.59
Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.03	145	0.0	$15.61	$174.50	$10.00	10.54
A105 H	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.08	435	0.0	$46.82	$420.40	$65.00	7.59
Copy room	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.08	435	0.0	$46.82	$420.40	$65.00	7.59
A105 G	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.08	435	0.0	$46.82	$420.40	$65.00	7.59
A105	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.12	653	0.0	$70.23	$495.60	$80.00	5.92
A108 - Supervisor office	10	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	10	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.41	2,175	0.0	$234.10	$1,022.00	$185.00	3.58
A108 a	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.12	653	0.0	$70.23	$495.60	$80.00	5.92
A108 b	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.12	653	0.0	$70.23	$495.60	$80.00	5.92
A108 d	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.16	870	0.0	$93.64	$570.80	$95.00	5.08
Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.03	145	0.0	$15.61	$174.50	$10.00	10.54
A108 e	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.16	870	0.0	$93.64	$570.80	$95.00	5.08
A108 f	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.12	653	0.0	$70.23	$495.60	$80.00	5.92
A108 g	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.12	653	0.0	$70.23	$495.60	$80.00	5.92
A108 h	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.12	653	0.0	$70.23	$495.60	$80.00	5.92
A108 i	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.12	653	0.0	$70.23	$495.60	$80.00	5.92
D102	20	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,117	Relamp	No	20	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.65	2,410	0.0	$259.37	$1,504.00	$300.00	4.64
D102 A	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,117	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.04	161	0.0	$17.29	$117.00	$20.00	5.61
D104	15	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,117	Relamp	No	15	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.49	1,807	0.0	$194.52	$1,128.00	$225.00	4.64
D108	15	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,117	Relamp	No	15	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.49	1,807	0.0	$194.52	$1,128.00	$225.00	4.64
D103	20	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,117	Relamp	No	20	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.65	2,410	0.0	$259.37	$1,504.00	$300.00	4.64

	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
D101 tool shop	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,117	Relamp	No	18	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.39	1,446	0.0	$155.62	$1,053.00	$180.00	5.61
D101 a	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,117	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.10	361	0.0	$38.90	$225.60	$45.00	4.64
D101 b	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,117	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.10	361	0.0	$38.90	$225.60	$45.00	4.64
Girls restroom	4	Linear Fluorescent - T8: 2' T8 (17W) - 4L	Wall Switch	63	3,024	Relamp	Yes	4	LED - Linear Tubes: (4) 2' Lamps	Occupancy Sensor	34	2,117	0.10	545	0.0	$58.68	$576.13	$115.00	7.86
Boys restroom	4	Linear Fluorescent - T8: 2' T8 (17W) - 4L	Wall Switch	63	3,024	Relamp	Yes	4	LED - Linear Tubes: (4) 2' Lamps	Occupancy Sensor	34	2,117	0.10	545	0.0	$58.68	$576.13	$115.00	7.86
Guidance office suite	5	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	5	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.21	1,088	0.0	$117.05	$646.00	$110.00	4.58
Guidance office suite	5	Linear Fluorescent - T8: 2' T8 (17W) - 4L	Wall Switch	63	3,024	Relamp	Yes	5	LED - Linear Tubes: (4) 2' Lamps	Occupancy Sensor	34	2,117	0.13	682	0.0	$73.36	$652.67	$135.00	7.06
A104 a	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.12	653	0.0	$70.23	$495.60	$80.00	5.92
A104 b	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.16	870	0.0	$93.64	$570.80	$95.00	5.08
A104 c	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.12	653	0.0	$70.23	$495.60	$80.00	5.92
A104 i	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.12	653	0.0	$70.23	$495.60	$80.00	5.92
A104 d	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.12	653	0.0	$70.23	$495.60	$80.00	5.92
A104 e	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.12	653	0.0	$70.23	$495.60	$80.00	5.92
A104 h	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.12	653	0.0	$70.23	$495.60	$80.00	5.92
A104 g	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.08	435	0.0	$46.82	$420.40	$65.00	7.59
Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.03	145	0.0	$15.61	$174.50	$10.00	10.54
A104 f	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.08	435	0.0	$46.82	$420.40	$65.00	7.59
A101 d	5	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	5	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.21	1,088	0.0	$117.05	$646.00	$110.00	4.58
A101 e	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.16	870	0.0	$93.64	$570.80	$95.00	5.08
A101 f	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.16	870	0.0	$93.64	$570.80	$95.00	5.08
Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.16	870	0.0	$93.64	$570.80	$95.00	5.08
Office	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.25	1,305	0.0	$140.46	$721.20	$125.00	4.24
Office	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.12	653	0.0	$70.23	$495.60	$80.00	5.92
A102 Food service suite	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.25	1,305	0.0	$140.46	$721.20	$125.00	4.24
G100A - kitchen office	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.16	870	0.0	$93.64	$570.80	$95.00	5.08

	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
G100A - kitchen office	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.08	435	0.0	$46.82	$150.40	$65.00	1.82
G100A - kitchen office	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.16	870	0.0	$93.64	$300.80	$95.00	2.20
G100A - kitchen office	6	Compact Fluorescent: 1 Lamp	Wall Switch	18	3,024	Relamp	Yes	6	LED Screw-In Lamps: Recessed can fixtures	Occupancy Sensor	13	2,117	0.04	192	0.0	$20.61	$322.52	$35.00	13.95
G100A - kitchen office	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.16	870	0.0	$93.64	$300.80	$95.00	2.20
N101	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	8	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.33	1,740	0.0	$187.28	$871.60	$155.00	3.83
Nurse's office	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	No	4	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	3,024	0.13	689	0.0	$74.10	$300.80	$60.00	3.25
Nurse's office suite	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	No	16	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	3,024	0.52	2,754	0.0	$296.42	$1,203.20	$240.00	3.25
Nurse's office suite	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,024	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,117	0.19	1,021	0.0	$109.88	$650.53	$115.00	4.87
N102d	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.05	290	0.0	$31.21	$233.00	$20.00	6.82
N102 f	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,024	0.02	115	0.0	$12.35	$58.50	$10.00	3.93
Restroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.05	290	0.0	$31.21	$233.00	$20.00	6.82
G100 e	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.25	1,305	0.0	$140.46	$567.20	$110.00	3.25
G hallway	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	10	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,117	0.27	1,450	0.0	$156.07	$785.00	$100.00	4.39
G hallway	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	8	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	2,117	0.33	1,740	0.0	$187.28	$801.60	$120.00	3.64
B101 classroom	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,117	Relamp	No	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.19	723	0.0	$77.81	$526.50	$90.00	5.61
Faculty restroom - Men	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	1	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.04	218	0.0	$23.41	$191.20	$15.00	7.53
Faculty restroom - Women	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.03	145	0.0	$15.61	$174.50	$10.00	10.54
Girls restroom	3	Linear Fluorescent - T8: 2' T8 (17W) - 4L	Wall Switch	63	3,024	Relamp	Yes	3	LED - Linear Tubes: (4) 2' Lamps	Occupancy Sensor	34	2,117	0.08	409	0.0	$44.01	$499.60	$95.00	9.19
Boys restroom	3	Linear Fluorescent - T8: 2' T8 (17W) - 4L	Wall Switch	63	3,024	Relamp	Yes	3	LED - Linear Tubes: (4) 2' Lamps	Occupancy Sensor	34	2,117	0.08	409	0.0	$44.01	$499.60	$95.00	9.19
B103, B105, B107, B109	36	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,117	Relamp	No	36	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	1.17	4,338	0.0	$466.86	$2,707.20	$540.00	4.64
B-hallway	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	13	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	2,117	0.53	2,828	0.0	$304.33	$1,777.60	$195.00	5.20
B111, B113	18	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,117	Relamp	No	18	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.58	2,169	0.0	$233.43	$1,353.60	$270.00	4.64
Science room - B115, B119, B118, B121, B114, B120	84	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,117	Relamp	No	84	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	2.73	10,122	0.0	$1,089.34	$6,316.80	$1,260.00	4.64
Science room prep (B123,B116,B117,B122)	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.66	3,480	0.0	$374.57	$1,667.20	$320.00	3.60
B-hallway	10	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	10	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	2,117	0.41	2,175	0.0	$234.10	$952.00	$150.00	3.43

	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
B125, B127, B126, B124	36	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,117	Relamp	No	36	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	1.17	4,338	0.0	$466.86	$2,707.20	$540.00	4.64
B128 - sprinkler room	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,024	0.09	459	0.0	$49.40	$234.00	$40.00	3.93
B-hallway	14	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	14	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	2,117	0.57	3,045	0.0	$327.74	$1,852.80	$210.00	5.01
B100 C2	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,024	0.02	115	0.0	$12.35	$58.50	$10.00	3.93
Entrance - door 16	17	Linear Fluorescent - T8: 2' T8 (17W) - 4L	Wall Switch	63	3,024	Relamp	No	17	LED - Linear Tubes: (4) 2' Lamps	Wall Switch	34	3,024	0.32	1,714	0.0	$184.51	$1,301.07	$340.00	5.21
Entrance between doors	3	Linear Fluorescent - T8: 2' T8 (17W) - 4L	Wall Switch	63	3,024	Relamp	No	3	LED - Linear Tubes: (4) 2' Lamps	Wall Switch	34	3,024	0.06	303	0.0	$32.56	$229.60	$60.00	5.21
Girls restroom	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.11	580	0.0	$62.43	$504.00	$75.00	6.87
Boys restroom	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.11	580	0.0	$62.43	$504.00	$75.00	6.87
Media center hallway	17	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	17	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	2,117	0.70	3,698	0.0	$397.98	$3,078.40	$255.00	7.09
Media center hallway	3	Compact Fluorescent: 1 Lamp	Wall Switch	18	3,024	Relamp	Yes	3	LED Screw-In Lamps: Recessed can fixtures	High/Low Control	13	2,117	0.02	96	0.0	$10.31	$161.26	$0.00	15.65
Media center hallway	2	Linear Fluorescent - T8: 2' T8 (17W) - 4L	Wall Switch	63	3,024	Relamp	Yes	2	LED - Linear Tubes: (4) 2' Lamps	High/Low Control	34	2,117	0.05	273	0.0	$29.34	$153.07	$40.00	3.85
Media center	21	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	3,024	Relamp	Yes	21	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	2,117	0.48	2,567	0.0	$276.26	$1,565.70	$350.00	4.40
Media center	56	U-Bend Fluorescent - T8: U T8 (32W) - 3L	Wall Switch	92	3,024	Relamp	Yes	56	LED - Linear Tubes: (3) U-Lamp	Occupancy Sensor	50	2,117	2.11	11,169	0.0	$1,201.99	$5,554.40	$140.00	4.50
Media center	21	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	3,024	Relamp	Yes	21	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	2,117	0.48	2,567	0.0	$276.26	$1,565.70	$350.00	4.40
Media center	95	Compact Fluorescent: 2 Lamps	Wall Switch	84	3,024	Relamp	Yes	95	LED Screw-In Lamps: Recessed can fixtures	Occupancy Sensor	59	2,117	2.67	14,153	0.0	$1,523.19	$10,213.07	$35.00	6.68
Media center	10	Compact Fluorescent: 1 Lamp	Wall Switch	18	3,024	Relamp	Yes	10	LED Screw-In Lamps: Recessed can fixtures	Occupancy Sensor	13	2,117	0.06	319	0.0	$34.36	$537.53	$35.00	14.63
E102 a Office	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	13	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.53	2,828	0.0	$304.33	$1,247.60	$230.00	3.34
E102 d storage	1	Compact Fluorescent: 1 Lamp	Wall Switch	18	3,024	Relamp	No	1	LED Screw-In Lamps: Recessed can fixtures	Wall Switch	13	3,024	0.00	19	0.0	$2.02	$53.75	$0.00	26.60
Storage	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.08	435	0.0	$46.82	$291.50	$30.00	5.59
E102 f	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.05	290	0.0	$31.21	$233.00	$20.00	6.82
Storage	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.08	435	0.0	$46.82	$291.50	$30.00	5.59
Tech closet	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.16	870	0.0	$93.64	$416.80	$60.00	3.81
C101	14	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,117	Relamp	No	14	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.45	1,687	0.0	$181.56	$1,052.80	$210.00	4.64
Elevator room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,024	0.02	115	0.0	$12.35	$58.50	$10.00	3.93
C- hallway	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,117	0.44	2,320	0.0	$249.71	$1,736.00	$160.00	6.31

	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
C100 E1	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.08	435	0.0	$46.82	$445.50	$65.00	8.13
C102	10	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,117	Relamp	No	10	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.32	1,205	0.0	$129.68	$752.00	$150.00	4.64
C103, C104, C106, C108, C107, C105	54	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,117	Relamp	No	54	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	1.75	6,507	0.0	$700.29	$4,060.80	$810.00	4.64
C109, C115	24	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,117	Relamp	No	24	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.78	2,892	0.0	$311.24	$1,804.80	$360.00	4.64
C110 - office	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.08	435	0.0	$46.82	$420.40	$65.00	7.59
C112, C114	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	8	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.33	1,740	0.0	$187.28	$871.60	$155.00	3.83
C112, C114	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	3,024	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	3,024	0.02	96	0.0	$10.29	$61.70	$15.00	4.54
Door 13	17	Linear Fluorescent - T8: 2' T8 (17W) - 4L	Wall Switch	63	3,024	Relamp	No	17	LED - Linear Tubes: (4) 2' Lamps	Wall Switch	34	3,024	0.32	1,714	0.0	$184.51	$1,301.07	$340.00	5.21
Door 13	15	Compact Fluorescent: 1 Lamp	Wall Switch	18	3,024	Relamp	No	15	LED Screw-In Lamps: Recessed can fixtures	Wall Switch	13	3,024	0.05	282	0.0	$30.32	$806.30	$0.00	26.60
C100 C1	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,024	0.02	115	0.0	$12.35	$58.50	$10.00	3.93
Faculty restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.03	145	0.0	$15.61	$174.50	$10.00	10.54
Faculty restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.03	145	0.0	$15.61	$174.50	$10.00	10.54
Girls restroom	4	Linear Fluorescent - T8: 2' T8 (17W) - 4L	Wall Switch	63	3,024	Relamp	Yes	4	LED - Linear Tubes: (4) 2' Lamps	Occupancy Sensor	34	2,117	0.10	545	0.0	$58.68	$576.13	$115.00	7.86
Boys restroom	4	Linear Fluorescent - T8: 2' T8 (17W) - 4L	Wall Switch	63	3,024	Relamp	Yes	4	LED - Linear Tubes: (4) 2' Lamps	Occupancy Sensor	34	2,117	0.10	545	0.0	$58.68	$576.13	$115.00	7.86
C113 Admin office	12	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	3,024	Relamp	Yes	12	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	2,117	0.28	1,467	0.0	$157.87	$1,010.40	$215.00	5.04
C113 A	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.08	435	0.0	$46.82	$420.40	$65.00	7.59
C113 B	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.08	435	0.0	$46.82	$420.40	$65.00	7.59
Conference room	9	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	3,024	Relamp	Yes	9	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	2,117	0.21	1,100	0.0	$118.40	$825.30	$170.00	5.53
Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.03	145	0.0	$15.61	$174.50	$10.00	10.54
C113 C	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.12	653	0.0	$70.23	$495.60	$80.00	5.92
C116	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.08	435	0.0	$46.82	$420.40	$65.00	7.59
C hallway	17	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	17	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	2,117	0.70	3,698	0.0	$397.98	$3,078.40	$255.00	7.09
C118, C120, C121, C119, C123, C122, C124	63	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,117	Relamp	No	63	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	2.04	7,591	0.0	$817.00	$4,737.60	$945.00	4.64
C125	14	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,117	Relamp	No	14	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.45	1,687	0.0	$181.56	$1,052.80	$210.00	4.64
Cafeteria	4	Linear Fluorescent - T8: 2' T8 (17W) - 4L	Wall Switch	63	3,024	Relamp	No	4	LED - Linear Tubes: (4) 2' Lamps	Wall Switch	34	3,024	0.08	403	0.0	$43.41	$306.13	$80.00	5.21

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Hallway	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	2,117	0.08	435	0.0	$46.82	$350.40	$30.00	6.84
Cafeteria 2	30	Compact Fluorescent: 2 Lamps	Wall Switch	36	3,024	Relamp	Yes	30	LED Screw-In Lamps: Recessed can fixtures	Occupancy Sensor	25	2,117	0.36	1,915	0.0	$206.15	$3,765.18	$70.00	17.93
Cafeteria 2	20	Compact Fluorescent: 1 Lamp	Wall Switch	42	3,024	Relamp	Yes	20	LED Screw-In Lamps: Recessed can fixtures	Occupancy Sensor	29	2,117	0.28	1,490	0.0	$160.34	$1,075.06	$35.00	6.49
Kitchen	23	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	No	23	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,024	0.50	2,639	0.0	$284.07	$1,345.50	$230.00	3.93
Girls restroom	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.16	870	0.0	$93.64	$570.80	$95.00	5.08
Boys restroom	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.16	870	0.0	$93.64	$570.80	$95.00	5.08
E hallway	17	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	17	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	2,117	0.70	3,698	0.0	$397.98	$3,078.40	$255.00	7.09
E111 classroom	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,117	Relamp	No	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.52	1,928	0.0	$207.49	$1,203.20	$240.00	4.64
E107 classroom	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.66	3,480	0.0	$374.57	$1,473.20	$275.00	3.20
Media center alternative entrance	3	Compact Fluorescent: 1 Lamp	Wall Switch	18	3,024	Relamp	No	3	LED Screw-In Lamps: Recessed can fixtures	Wall Switch	13	3,024	0.01	56	0.0	$6.06	$161.26	$0.00	26.60
Courtyard entrance	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,024	0.06	344	0.0	$37.05	$175.50	$30.00	3.93
Faculty restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.03	145	0.0	$15.61	$174.50	$10.00	10.54
Custodial Closet	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	3,024	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	3,024	0.02	96	0.0	$10.29	$61.70	$15.00	4.54
E105	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,117	Relamp	No	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.52	1,928	0.0	$207.49	$1,203.20	$240.00	4.64
E103 - faculty lounge	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.37	1,958	0.0	$210.69	$946.80	$170.00	3.69
School store	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.16	870	0.0	$93.64	$570.80	$95.00	5.08
School store office	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.08	435	0.0	$46.82	$420.40	$65.00	7.59
Media center main entrance	18	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	3,024	Relamp	Yes	18	LED - Linear Tubes: (3) 2' Lamps	High/Low Control	26	2,117	0.41	2,200	0.0	$236.80	$2,910.60	$270.00	11.15
Media center main entrance	4	Compact Fluorescent: 1 Lamp	Wall Switch	18	3,024	Relamp	Yes	4	LED Screw-In Lamps: Recessed can fixtures	High/Low Control	13	2,117	0.02	128	0.0	$13.74	$215.01	$0.00	15.65
A110 - Lecture hall	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.66	3,480	0.0	$374.57	$1,473.20	$275.00	3.20
A110 - Lecture hall	28	Halogen Incandescent: 1 Lamp	Wall Switch	90	3,024	Relamp	Yes	28	LED Screw-In Lamps: Spot fixture	Occupancy Sensor	14	2,117	1.48	7,843	0.0	$844.12	$3,279.88	$210.00	3.64
C100 E2	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.11	580	0.0	$62.43	$504.00	$75.00	6.87
Hallway C	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.11	580	0.0	$62.43	$504.00	$75.00	6.87
D119	14	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	14	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.57	3,045	0.0	$327.74	$1,322.80	$245.00	3.29
D119 a	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	3,024	0.03	172	0.0	$18.53	$75.20	$15.00	3.25

	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
D119 restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.03	145	0.0	$15.61	$174.50	$10.00	10.54
D116	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.11	580	0.0	$62.43	$504.00	$75.00	6.87
D118	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.25	1,305	0.0	$140.46	$721.20	$125.00	4.24
D hallway	22	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	22	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	2,117	0.90	4,786	0.0	$515.03	$4,854.40	$330.00	8.78
D hallway	5	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	3,024	Relamp	Yes	5	LED - Linear Tubes: (3) 2' Lamps	High/Low Control	26	2,117	0.12	611	0.0	$65.78	$308.50	$75.00	3.55
D114	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,117	Relamp	No	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.52	1,928	0.0	$207.49	$1,203.20	$240.00	4.64
D117	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.08	435	0.0	$46.82	$266.40	$50.00	4.62
D111	17	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,117	Relamp	No	17	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.55	2,048	0.0	$220.46	$1,278.40	$255.00	4.64
D111	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	3,024	0.06	344	0.0	$37.05	$150.40	$30.00	3.25
D115	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,117	Relamp	No	13	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.42	1,566	0.0	$168.59	$977.60	$195.00	4.64
D113	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.12	653	0.0	$70.23	$341.60	$65.00	3.94
D112 - Home Ec	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,117	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.39	1,446	0.0	$155.62	$902.40	$180.00	4.64
D112 - Home Ec	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.12	653	0.0	$70.23	$225.60	$80.00	2.07
D112 - Home Ec	2	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	3,024	Relamp	Yes	2	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	2,117	0.05	244	0.0	$26.31	$123.40	$65.00	2.22
D110	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,117	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.39	1,446	0.0	$155.62	$902.40	$180.00	4.64
D110	2	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	3,024	Relamp	Yes	2	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	2,117	0.05	244	0.0	$26.31	$239.40	$30.00	7.96
D107	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.05	290	0.0	$31.21	$387.00	$55.00	10.64
D109	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,117	Relamp	No	13	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.42	1,566	0.0	$168.59	$977.60	$195.00	4.64
TV studio	15	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	No	15	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	3,024	0.49	2,582	0.0	$277.89	$1,128.00	$225.00	3.25
TV studio	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	No	8	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,024	0.17	918	0.0	$98.81	$468.00	$80.00	3.93
D105 E	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	3,024	0.03	172	0.0	$18.53	$75.20	$15.00	3.25
D105 C	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	3,024	0.03	172	0.0	$18.53	$75.20	$15.00	3.25
Bay F1	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	3,024	0.03	172	0.0	$18.53	$75.20	$15.00	3.25
D105 F	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	3,024	0.03	172	0.0	$18.53	$75.20	$15.00	3.25
D105 G	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	3,024	0.03	172	0.0	$18.53	$75.20	$15.00	3.25

	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
TV studio	4	Halogen Incandescent: 1 Lamp	Wall Switch	90	3,024	Relamp	No	4	LED Screw-In Lamps: Spot fixture	Wall Switch	14	3,024	0.20	1,064	0.0	$114.53	$391.41	$20.00	3.24
Parking lot (pole with single fixture)	57	Metal Halide: (1) 250W Lamp	Wall Switch	295	4,380	Fixture Replacement	No	57	LED - Fixtures: Large Pole/Arm-Mounted Area/Roadway Fixture	Wall Switch	89	4,380	7.72	59,288	0.0	$6,380.68	$189,524.60	$0.00	29.70
Parking lot (pole with double fixture)	54	High-Pressure Sodium: (1) 400W Lamp	Wall Switch	465	4,380	Fixture Replacement	No	27	LED - Fixtures: Large Pole/Arm-Mounted Area/Roadway Fixture	Wall Switch	140	4,380	13.99	107,507	0.0	$11,570.12	$89,774.81	$0.00	7.76
Wall packs	56	Compact Fluorescent: 1 Lamp	Wall Switch	26	4,380	Relamp	No	56	LED Screw-In Lamps: Recessed can fixtures	Wall Switch	18	4,380	0.29	2,200	0.0	$236.79	$3,010.17	$0.00	12.71
Courtyard lights	9	Metal Halide: (1) 50W Lamp	Wall Switch	72	4,380	Fixture Replacement	No	9	LED - Fixtures: Outdoor Pole/Arm-Mounted Area/Roadway Fixture	Wall Switch	22	4,380	0.30	2,285	0.0	$245.89	$17,576.94	$900.00	67.82
Smaller pole lights	3	Metal Halide: (1) 70W Lamp	Wall Switch	95	4,380	Fixture Replacement	No	3	LED - Fixtures: Outdoor Pole/Arm-Mounted Decorative Fixture	Wall Switch	29	4,380	0.13	1,005	0.0	$108.15	$1,038.56	$150.00	8.22
Stairwell	10	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	3,024	0.55	2,932	0.0	$315.51	$150.40	$30.00	0.38
B wing hallway	27	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	27	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	2,117	1.11	5,873	0.0	$632.08	$5,230.40	$405.00	7.63
B201, B203, B205	27	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,117	Relamp	No	27	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.88	3,253	0.0	$350.14	$2,030.40	$405.00	4.64
Faculty restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.03	145	0.0	$15.61	$174.50	$10.00	10.54
Faculty restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.03	145	0.0	$15.61	$174.50	$10.00	10.54
Girls restroom	3	Linear Fluorescent - T8: 2' T8 (17W) - 4L	Wall Switch	63	3,024	Relamp	Yes	3	LED - Linear Tubes: (4) 2' Lamps	Occupancy Sensor	34	2,117	0.08	409	0.0	$44.01	$499.60	$95.00	9.19
Boys restroom	3	Linear Fluorescent - T8: 2' T8 (17W) - 4L	Wall Switch	63	3,024	Relamp	Yes	3	LED - Linear Tubes: (4) 2' Lamps	Occupancy Sensor	34	2,117	0.08	409	0.0	$44.01	$499.60	$95.00	9.19
B200 T1	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	3,024	0.03	172	0.0	$18.53	$75.20	$15.00	3.25
B200 C1	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,024	0.02	115	0.0	$12.35	$58.50	$10.00	3.93
B209, B207, B210, B213, B211, B212	54	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,117	Relamp	No	54	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	1.75	6,507	0.0	$700.29	$4,060.80	$810.00	4.64
B214, B215, B219, B218, B206, B221	84	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,117	Relamp	No	84	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	2.73	10,122	0.0	$1,089.34	$6,316.80	$1,260.00	4.64
Prep B216, 217, 223, 222	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.66	3,480	0.0	$374.57	$1,319.20	$260.00	2.83
B225, B224, B227	27	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,117	Relamp	No	27	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.88	3,253	0.0	$350.14	$2,030.40	$405.00	4.64
B226 - Green house	6	Linear Fluorescent - T8: 2' T8 (17W) - 1L	Wall Switch	22	3,024	Relamp	No	6	LED - Linear Tubes: (1) 2' Lamp	Wall Switch	9	3,024	0.05	282	0.0	$30.32	$191.40	$30.00	5.32
B228 - Faculty Lounge	7	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	7	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.29	1,523	0.0	$163.87	$796.40	$140.00	4.01
B200 T2	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,024	0.02	115	0.0	$12.35	$58.50	$10.00	3.93
B229	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.08	435	0.0	$46.82	$445.50	$65.00	8.13
Boys restroom	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.16	870	0.0	$93.64	$570.80	$95.00	5.08
Girls restroom	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.16	870	0.0	$93.64	$570.80	$95.00	5.08

	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
Area near elevator	23	Linear Fluorescent - T8: 2' T8 (17W) - 4L	Wall Switch	63	3,024	Relamp	No	23	LED - Linear Tubes: (4) 2' Lamps	Wall Switch	34	3,024	0.44	2,320	0.0	$249.64	$1,760.27	$460.00	5.21
Area near elevator	7	Compact Fluorescent: 1 Lamp	Wall Switch	18	3,024	Relamp	No	7	LED Screw-In Lamps: Recessed can fixtures	Wall Switch	13	3,024	0.02	131	0.0	$14.15	$376.27	$0.00	26.60
Faculty restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.03	145	0.0	$15.61	$174.50	$10.00	10.54
C201	14	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,117	Relamp	No	14	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.45	1,687	0.0	$181.56	$1,052.80	$210.00	4.64
C hallway	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	16	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	2,117	0.66	3,480	0.0	$374.57	$1,403.20	$240.00	3.11
C200 E	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.08	435	0.0	$46.82	$445.50	$65.00	8.13
C203, C202, C205, C204, C209, C207, C208, C206	72	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,117	Relamp	No	72	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	2.34	8,676	0.0	$933.72	$5,414.40	$1,080.00	4.64
C210 - office	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.08	435	0.0	$46.82	$420.40	$65.00	7.59
C211	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,117	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.39	1,446	0.0	$155.62	$902.40	$180.00	4.64
C200 c	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	3,024	Relamp	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	3,024	0.01	61	0.0	$6.55	$35.90	$5.00	4.72
Outside admin office	18	Linear Fluorescent - T8: 2' T8 (17W) - 4L	Wall Switch	63	3,024	Relamp	No	18	LED - Linear Tubes: (4) 2' Lamps	Wall Switch	34	3,024	0.34	1,815	0.0	$195.37	$1,377.60	$360.00	5.21
Outside admin office	24	Compact Fluorescent: 1 Lamp	Wall Switch	18	3,024	Relamp	No	24	LED Screw-In Lamps: Recessed can fixtures	Wall Switch	13	3,024	0.08	451	0.0	$48.50	$1,290.07	$0.00	26.60
Faculty restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	1	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.04	218	0.0	$23.41	$191.20	$15.00	7.53
Faculty restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	1	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.04	218	0.0	$23.41	$191.20	$15.00	7.53
Girls restroom	6	Linear Fluorescent - T8: 2' T8 (17W) - 4L	Wall Switch	63	3,024	Relamp	Yes	6	LED - Linear Tubes: (4) 2' Lamps	Occupancy Sensor	34	2,117	0.15	818	0.0	$88.03	$729.20	$155.00	6.52
Boys restroom	6	Linear Fluorescent - T8: 2' T8 (17W) - 4L	Wall Switch	63	3,024	Relamp	Yes	6	LED - Linear Tubes: (4) 2' Lamps	Occupancy Sensor	34	2,117	0.15	818	0.0	$88.03	$729.20	$155.00	6.52
C215 admin office	12	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	3,024	Relamp	Yes	12	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	2,117	0.28	1,467	0.0	$157.87	$1,010.40	$215.00	5.04
215 E	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.08	435	0.0	$46.82	$266.40	$50.00	4.62
215 D	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.08	435	0.0	$46.82	$266.40	$50.00	4.62
Conference room	9	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	3,024	Relamp	Yes	9	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	2,117	0.21	1,100	0.0	$118.40	$825.30	$170.00	5.53
Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.03	145	0.0	$15.61	$174.50	$10.00	10.54
Office - Assisstant principal	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.12	653	0.0	$70.23	$341.60	$65.00	3.94
C200 T - Tech closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,024	0.02	115	0.0	$12.35	$58.50	$10.00	3.93
C214	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,117	Relamp	No	8	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.26	964	0.0	$103.75	$601.60	$120.00	4.64
C214	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Occupancy Sensor	53	2,117	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	2,117	0.02	67	0.0	$7.20	$61.70	$15.00	6.48

	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
C212	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,117	Relamp	No	8	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.26	964	0.0	$103.75	$601.60	$120.00	4.64
C212	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Occupancy Sensor	53	2,117	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	2,117	0.02	67	0.0	$7.20	$61.70	$15.00	6.48
Restroom - 214	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.03	145	0.0	$15.61	$174.50	$10.00	10.54
Restroom - 212	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.03	145	0.0	$15.61	$174.50	$10.00	10.54
C217	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,117	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.39	1,446	0.0	$155.62	$902.40	$180.00	4.64
C216	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.08	435	0.0	$46.82	$266.40	$50.00	4.62
C223, C221, C218, C220, C225, C222, C224	63	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,117	Relamp	No	63	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	2.04	7,591	0.0	$817.00	$4,737.60	$945.00	4.64
C- hallway	14	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	14	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	2,117	0.57	3,045	0.0	$327.74	$1,852.80	$210.00	5.01
C227	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.16	870	0.0	$93.64	$416.80	$80.00	3.60
C229	14	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,117	Relamp	No	14	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.45	1,687	0.0	$181.56	$1,052.80	$210.00	4.64
Concession stand - Girls' restroom	7	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	7	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.29	1,523	0.0	$163.87	$796.40	$140.00	4.01
Concession stand - Girls' restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	3,024	Relamp	Yes	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,117	0.01	73	0.0	$7.90	$48.20	$45.00	0.41
Inside kitchen	7	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	No	7	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	3,024	0.23	1,205	0.0	$129.68	$526.40	$105.00	3.25
CS 2 - Storage	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.11	580	0.0	$62.43	$350.00	$40.00	4.97
CS 3 - Electrical room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,024	0.04	230	0.0	$24.70	$117.00	$20.00	3.93
Concession stand - Boys' restroom	7	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	7	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.29	1,523	0.0	$163.87	$796.40	$140.00	4.01
Concession stand - Boys' restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	3,024	Relamp	Yes	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,117	0.01	73	0.0	$7.90	$48.20	$45.00	0.41
Maintenance building	17	Linear Fluorescent - T8: 8' T8 (59W) - 2L	Wall Switch	110	3,024	Relamp	No	17	LED - Linear Tubes: (2) 8' Lamps	Wall Switch	72	3,024	0.42	2,247	0.0	$241.78	$1,870.00	$0.00	7.73
Maintenance foreman office	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,024	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,117	0.08	435	0.0	$46.82	$266.40	$50.00	4.62
Storage	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,024	0.02	115	0.0	$12.35	$58.50	$10.00	3.93
Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,024	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,117	0.03	145	0.0	$15.61	$174.50	$10.00	10.54
Wall pack - Maintenance building	8	High-Pressure Sodium: (1) 70W Lamp	Wall Switch	95	4,380	Fixture Replacement	No	8	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	29	4,380	0.35	2,680	0.0	$288.39	$3,125.42	$800.00	8.06
Exit Signs	129	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	129	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

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
Pump room	All school	1	Heating Hot Water Pump	75.0	95.4%	Yes	5,329	No	95.4%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Pump room	All School	1	Heating Hot Water Pump	75.0	95.4%	Yes	5,329	No	95.4%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Pump room	All school	1	Heating Hot Water Pump	75.0	95.4%	Yes	5,329	No	95.4%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Pump room	All school	6	Water Supply Pump	0.8	60.0%	No	2,745	No	60.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Exhaust	10	Exhaust Fan	0.5	60.0%	No	2,745	No	60.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	HR1, HR2 (Locker room), HR7, HR3 (hallway)	3	Supply Fan	0.3	60.0%	No	2,745	No	60.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	HR1, HR2 (Locker room), HR7, HR3 (hallway)	3	Exhaust Fan	0.8	60.0%	No	2,745	No	60.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	HR5 (Music room), HR6 (Band room), HR8, HR9	4	Supply Fan	2.0	86.5%	No	2,745	No	86.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	HR5 (Music room), HR6 (Band room), HR8, HR10	4	Exhaust Fan	3.0	89.5%	No	2,745	No	89.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	HR4 (Hallway)	1	Supply Fan	0.8	60.0%	No	2,745	No	60.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	HR4 (Hallway)	1	Exhaust Fan	1.5	86.5%	No	2,745	No	86.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Hallway MAU-3	1	Supply Fan	3.0	89.5%	No	2,745	No	89.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	HR11, HR 15, HR20	3	Supply Fan	1.5	86.5%	No	2,745	No	86.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	HR11, HR 15, HR20	3	Exhaust Fan	1.5	86.5%	No	2,745	No	86.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	HR12	1	Supply Fan	0.3	60.0%	No	2,745	No	60.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	HR12	1	Exhaust Fan	0.8	60.0%	No	2,745	No	60.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	HR13, HR18, HR16	3	Supply Fan	1.0	85.5%	No	2,745	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	HR13, HR18, HR16	3	Exhaust Fan	1.5	86.5%	No	2,745	No	86.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	HR19, HR17	2	Supply Fan	1.5	86.5%	No	2,745	No	86.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	HR19, HR17	2	Exhaust Fan	2.0	86.5%	No	2,745	No	86.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00

		Existing Conditions						Proposed Conditions				Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	Motor Quantity	Motor Application	HP Per Motor	Full Load Efficiency	VFD Control?	Annual Operating Hours	Install High Efficiency Motors?	Full Load Efficiency	Install VFDs?	Number of VFDs	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Roof	HR14	1	Supply Fan	0.8	60.0%	No	2,745	No	60.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	HR14	1	Exhaust Fan	1.0	85.5%	No	2,745	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	MAU 4 - D wing	1	Supply Fan	0.3	60.0%	No	2,745	No	60.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	MAU - 1	1	Supply Fan	0.8	60.0%	No	2,745	No	60.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	MAU - 7 (Cafeteria)	1	Supply Fan	1.5	86.5%	No	2,745	No	86.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	MAU - 7 (Cafeteria)	1	Exhaust Fan	1.5	86.5%	No	2,745	No	86.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	HR32	1	Supply Fan	1.5	86.5%	No	2,745	No	86.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	HR32	1	Exhaust Fan	2.0	86.5%	No	2,745	No	86.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	HR 21, HR 28	2	Supply Fan	1.5	86.5%	No	2,745	No	86.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	HR 21, HR 28	2	Exhaust Fan	1.5	86.5%	No	2,745	No	86.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	HR33, HR 30, HR 29	3	Supply Fan	1.0	85.5%	No	2,745	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	HR33, HR 30, HR 29	3	Exhaust Fan	1.5	86.5%	No	2,745	No	86.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	HR31,HR24	2	Supply Fan	1.5	86.5%	No	2,745	No	86.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	HR31,HR24	2	Exhaust Fan	2.0	86.5%	No	2,745	No	86.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	HR 25	1	Supply Fan	3.0	89.5%	No	2,745	No	89.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	HR 25	1	Exhaust Fan	3.0	89.5%	No	2,745	No	89.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	HR 27	1	Supply Fan	1.5	86.5%	No	2,745	No	86.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	HR 27	1	Exhaust Fan	2.0	86.5%	No	2,745	No	86.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	MAU 2	1	Supply Fan	2.0	86.5%	No	2,745	No	86.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	HR 23	1	Supply Fan	2.0	86.5%	No	2,745	No	86.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00

		Existing Conditions						Proposed Conditions				Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	Motor Quantity	Motor Application	HP Per Motor	Full Load Efficiency	VFD Control?	Annual Operating Hours	Install High Efficiency Motors?	Full Load Efficiency	Install VFDs?	Number of VFDs	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Roof	HR 23	1	Supply Fan	3.0	89.5%	No	2,745	No	89.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	HR 22	1	Supply Fan	5.0	89.5%	No	2,745	No	89.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	HR 22	1	Exhaust Fan	7.5	91.7%	No	3,391	No	91.7%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	HR 26	1	Supply Fan	3.0	89.5%	No	2,745	No	89.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	HR 26	1	Exhaust Fan	5.0	89.5%	No	2,745	No	89.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	MAU 5&6 - Cafeteria B	2	Supply Fan	3.0	89.5%	No	2,745	No	89.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	MAU 5&6 - Cafeteria B	2	Exhaust Fan	2.0	86.5%	No	2,745	No	86.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Exhaust hoods	10	Exhaust Fan	0.3	60.0%	No	2,745	No	60.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Elevator room	Elevator	1	Other	25.0	93.6%	No	4,067	No	93.6%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	RT2 - Auditorium	2	Supply Fan	7.5	91.7%	No	3,391	No	91.7%	Yes	2	1.98	7,448	0.0	$801.61	$7,213.60	$1,200.00	7.50
Roof	RT2 - Auditorium	6	Exhaust Fan	1.0	85.5%	No	2,745	No	85.5%	Yes	6	0.85	2,587	0.0	$278.38	$15,216.40	$480.00	52.94
Roof	RTU 1A - Regular Gym	4	Supply Fan	15.0	92.4%	No	3,391	No	92.4%	Yes	4	7.85	29,568	0.0	$3,182.14	$20,777.80	$4,800.00	5.02
Roof	RTU 1A - Regular Gym	16	Return Fan	1.0	85.5%	No	2,745	No	85.5%	Yes	16	2.26	6,898	0.0	$742.35	$40,577.08	$1,280.00	52.94
Classrooms, offices hallways - Zone A, Zone B1, Zone B2, Zone C1, Zone C2, Zone D, Zone E, Zone F, Zone G, Zone H, Zone N	Classrooms, offices hallways - Zone A, Zone B1, Zone B2, Zone C1, Zone C2, Zone D, Zone E, Zone F, Zone G, Zone H, Zone N	212	Supply Fan	0.5	60.0%	No	2,745	No	60.0%	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	RTU 1A - Regular Gym	2	Packaged AC	90.00		Yes	2	Packaged AC	90.00		10.00		No	16.08	28,800	0.0	$3,099.51	$398,874.90	$0.00	128.69
Roof	RT3 - Auxilary Gym	2	Packaged AC	10.00		Yes	2	Packaged AC	10.00		11.50		No	1.78	3,192	0.0	$343.51	$35,642.11	$1,460.00	99.51
Roof	RT2 - Auditorium	2	Packaged AC	35.00		Yes	2	Packaged AC	35.00		9.50		No	3.29	5,556	0.0	$597.92	$155,118.02	$0.00	259.43
Roof	Gym storage	1	Split-System AC	1.50		Yes	1	Split-System AC	1.50		14.00		No	0.23	397	0.0	$42.68	$2,244.33	$138.00	49.35
Ceiling mounted	Stariwells and entrances	20	Electric Resistance Heat		17.06	No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Receiving	Receiving	3	Electric Resistance Heat		17.06	No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Band room storage	Band room storage	3	Electric Resistance Heat		17.06	No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
F101a	F101a	2	Electric Resistance Heat		17.06	No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Classrooms, offices hallways - Zone A, Zone B1, Zone B2, Zone C1, Zone C2, Zone D, Zone E, Zone F, Zone G, Zone H, Zone N	Classrooms, offices hallways - Zone A, Zone B1, Zone B2, Zone C1, Zone C2, Zone D, Zone E, Zone F, Zone G, Zone H, Zone N	212	Groundwater Source HP	4.00	36.50	No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Maintenance garage offices	1	Split-System AC	2.00		Yes	1	Split-System AC	2.00		14.00		No	0.31	529	0.0	$56.91	$2,992.44	$184.00	49.35
Roof	Concession stand	1	Packaged AC	10.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Maintenance garage offices	2	Electric Resistance Heat		10.24	No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Maintenance garage	6	Electric Resistance Heat		17.06	No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Fuel Heating Inventory & Recommendations

		Existing Conditions			Proposed Conditions						Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Output Capacity per Unit (MBh)	Install High Efficiency System?	System Quantity	System Type	Output Capacity per Unit (MBh)	Heating Efficiency	Heating Efficiency Units	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Roof	RT3 - Auxilary Gym	2	Furnace	202.50	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	RTU 1A - Regular Gym	2	Furnace	820.00	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	RT2 - Auditorium	2	Furnace	486.00	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Hallway, MAU5, MAU6	3	Furnace	240.00	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	D wing	2	Furnace	80.00	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Cafeteria A	1	Furnace	160.00	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	MAU-2	1	Furnace	258.50	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
Pump room	All sinks and restrooms in the school	1	Storage Tank Water Heater (> 50 Gal)	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Concession stand	Concession stand restrooms and sinks	1	Storage Tank Water Heater (> 50 Gal)	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Low-Flow Device Recommendations

	Recommedation Inputs				Energy Impact & Financial Analysis						
Location	Device Quantity	Device Type	Existing Flow Rate (gpm)	Proposed Flow Rate (gpm)	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Nurse's office, N101, Science prep rooms, Home ec room	14	Faucet Aerator (Kitchen)	2.50	2.20	0.00	0	6.6	$82.23	$100.38	$0.00	1.22

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	2	Cooler (35F to 55F)	No	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	1	Low Temp Freezer (-35F to -5F)	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	3	Refrigerator Chest	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	6	Stand-Up Refrigerator, Solid Door (16 - 30 cu. ft.)	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	3	Stand-Up Refrigerator, Solid Door (31 - 50 cu. ft.)	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	1	Stand-Up Freezer, Solid Door (31 - 50 cu. ft.)	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Cooking Equipment Inventory & Recommendations

	Existing Conditions			Proposed Conditions	Energy Impact & Financial Analysis						
Location	Quantity	Equipment Type	High Efficiency Equipement?	Install High Efficiency Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen	6	Gas Convection Oven (Half Size)	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	1	Gas Steamer	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	1	Gas Combination Oven/Steam Cooker (<15 Pans)	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

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	2	Single Tank Conveyor (High Temp)	Electric	N/A	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?
Liberty High School	370	Computer	145.0	Yes
Liberty High School	1,400	Laptop	45.0	Yes
Liberty High School	27	Small printer	20.0	Yes
Liberty High School	13	Medium printer	60.0	Yes
Liberty High School	12	Large printer	200.0	Yes
Liberty High School	6	Paper shredder	150.0	Yes
Liberty High School	63	Projector	200.0	Yes
Liberty High School	21	Microwave	1,000.0	Yes
Liberty High School	1	Small refrigerator	40.0	Yes
Liberty High School	5	Mediuim refrigerator	60.0	Yes
Liberty High School	10	Large refrigerator	218.0	Yes
Liberty High School	6	Coffee Machine	400.0	Yes
Liberty High School	1	Toaster	850.0	Yes
Liberty High School	1	Toaster oven	1,200.0	Yes
Liberty High School	2	Clothes washer	1,500.0	Yes
Liberty High School	2	Clothes dryer	3,000.0	Yes
Liberty High School	1	Television LCD	120.0	Yes
Liberty High School	6	Television LED	100.0	Yes
Liberty High School	1	Kettle	1,500.0	Yes
Liberty High School	2	Kiln	15,000.0	Yes
Liberty High School	2	Induction stove	3,000.0	Yes
Liberty High School	6	Drill press	1,500.0	No
Liberty High School	4	Band Saw	1,100.0	No
Liberty High School	2	Electric Lathes	4,000.0	No
Liberty High School	36	Chrome book capacity	30.0	No
Liberty High School	1	TV studio	5,000.0	No

Vending Machine Inventory & Recommendations

	Existing Conditions		Proposed Conditions	Energy Impact & Financial Analysis						
Location	Quantity	Vending Machine Type	Install Controls?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Liberty high school	8	Refrigerated	Yes	0.00	12,895	0.0	$1,387.75	$1,840.00	$0.00	1.33

Appendix B: ENERGY STAR® Statement of Energy Performance

ENERGY STAR® Statement of Energy Performance

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ENERGY STAR® Score[1]

Jackson Liberty High School

Primary Property Type: K-12 School
Gross Floor Area (ft²): 300,000
Built: 2005

For Year Ending: November 30, 2016
Date Generated: March 26, 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
Jackson Liberty High School 125 N. Hope Chapel Road Jackson, New Jersey 08527	Jackson Township BOE 151 Don Connor Boulevard Jackson, NJ 08527 (732) 833-4600	Michelle Richardson 151 Don Connor Boulevard Jackson, NJ 08527 (732) 833-4600 sstewart@trcsolutions.com

Property ID: 2552302

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
70.5 kBtu/ft²

Source EUI
159.6 kBtu/ft²

Annual Energy by Fuel

Natural Gas (kBtu)	3,279,879 (16%)
Electric - Solar (kBtu)	5,463,200 (26%)
Electric - Grid (kBtu)	12,416,270 (59%)

National Median Comparison

National Median Site EUI (kBtu/ft²)	73.9
National Median Source EUI (kBtu/ft²)	167.3
% Diff from National Median Source EUI	-5%

Annual Emissions

Greenhouse Gas Emissions (Metric Tons CO2e/year)	1,552

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)