Local Government Energy Audit Report

Livingston Elementary School

April 19, 2019

Prepared for:

Township of Union Public Schools
960 Midland Boulevard
Union, NJ 07083

Prepared by:

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Disclaimer

The goal of this audit report is to identify potential energy efficiency opportunities, help prioritize specific measures for implementation, and provide information about financial incentives that may be available. Most energy conservation measures have received preliminary analysis of feasibility that identifies expected ranges of savings and costs. This level of analysis is usually considered sufficient to establish a basis for further discussion and to help prioritize energy measures.

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

TRC bases estimated installation costs on our experience at similar facilities, pricing from local contractors and vendors, and/or cost estimates from *RS Means*. We encourage the owner of the facility is encouraged to independently confirm these cost estimates and to obtain multiple estimates when considering measure installations. Actual installation costs can vary widely based on individual 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. Review available program incentives and eligibility requirements prior to selecting and installing any energy conservation measures.

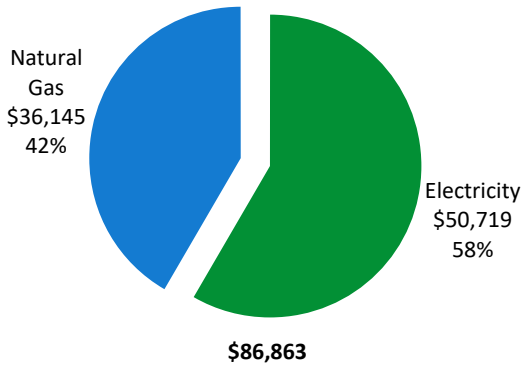
Perform any implementation of energy conservation measures in strict conformance with applicable local, state and federal requirements.

Table of Contents

1 EXECUTIVE SUMMARY

The New Jersey Board of Public Utilities (NJBPU) has sponsored this Local Government Energy Audit (LGEA) report for Livingston Elementary School. This report provides you with information about your facility's energy use, identifies energy conservation measures (ECMs) that can reduce your energy use, and provides information and assistance to help make changes in your facility. TRC Energy Services (TRC) conducted this study as part of a comprehensive effort to assist New Jersey school districts and local governments in controlling their energy costs and help protect our environment by reducing statewide energy consumption.

BUILDING PERFORMANCE REPORT

Annual Utilities	Costs: $86,863 Electricity: 306,368 kWh Natural Gas: 34,977 Therms	
ENERGY STAR® Benchmarking Score	36 *(1-100 scale)*	This building performs at or below the national average. This report contains suggestions about how to improve building performance and reduce energy costs.

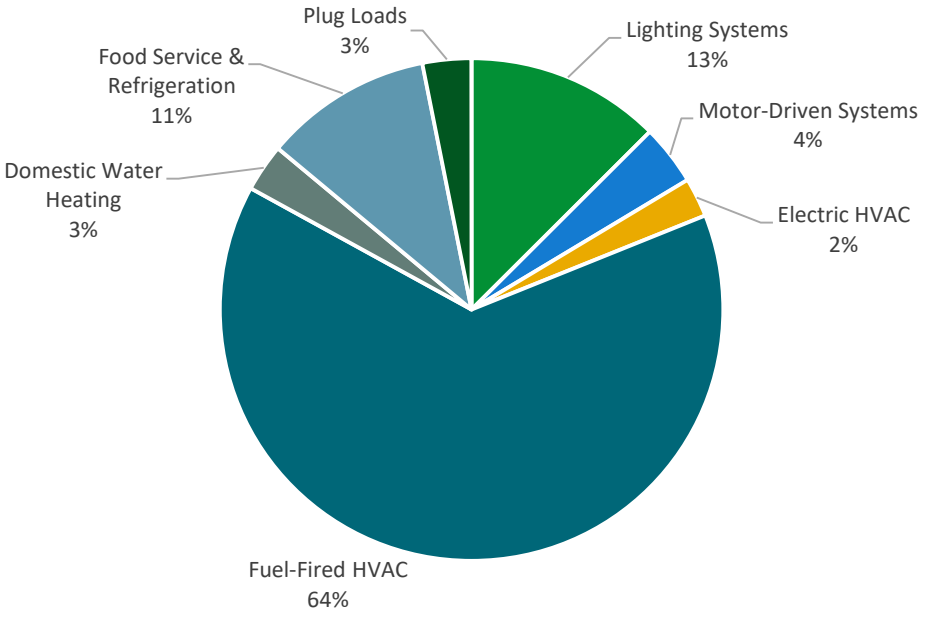


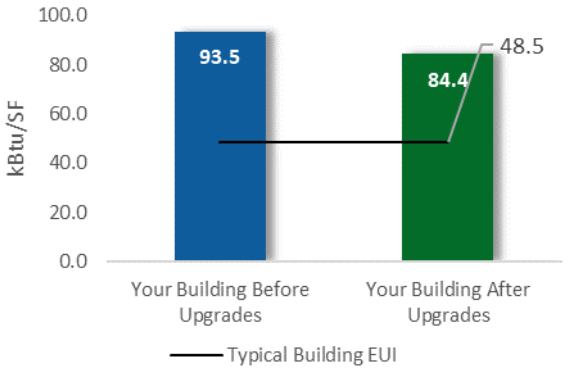
Figure 1 - Energy Use by System

POTENTIAL IMPROVEMENTS

This energy audit considered a range of potential energy improvements in your building. Costs and savings will vary between improvements. Presented below are two potential scopes of work for your consideration.

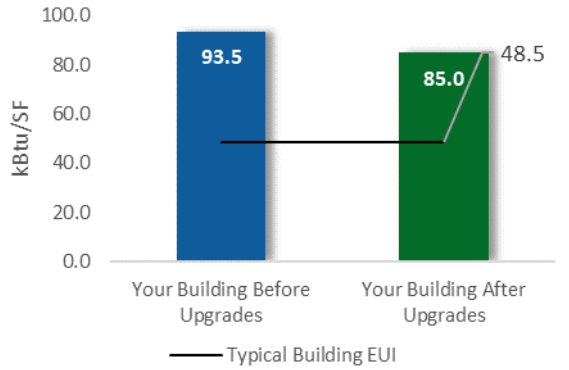
Scenario 1: Full Package (all evaluated measures)

Installation Cost	$74,563
Potential Rebates & Incentives[1]	$8,626
Annual Cost Savings	$21,155
Annual Energy Savings	Electricity: 129,304 kWh Natural Gas: 18 Therms
Greenhouse Gas Emission Savings	65 Tons
Simple Payback	3.1 Years
Site Energy Savings (all utilities)	10%



Scenario 2: Cost Effective Package[2]

Installation Cost	$70,207
Potential Rebates & Incentives	$8,626
Annual Cost Savings	$20,966
Annual Energy Savings	Electricity: 128,161 kWh
Greenhouse Gas Emission Savings	63 Tons
Simple Payback	2.9 Years
Site Energy Savings (all utilities)	9%



On-site Generation Potential

Photovoltaic	High
Combined Heat and Power	None

[1] Incentives are based on current SmartStart Prescriptive incentives. Other Program incentives may apply.

[2] A cost-effective measure is defined as one where the simple payback does not exceed two-thirds of the expected proposed equipment useful life. Simple payback is based on the net measure cost after potential incentives.

#	Energy Conservation Measure	*Recommend?*	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Lifetime Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades			**111,907**	**27.6**	**-21**	**$18,307**	**$274,605**	**$51,557**	**$7,051**	**$44,506**	**2.4**	**110,208**
ECM 1	Install LED Fixtures	Yes	22,206	4.3	-3	$3,649	$54,739	$23,400	$1,530	$21,870	6.0	22,057
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	2,961	0.8	-1	$484	$7,256	$1,238	$180	$1,058	2.2	2,909
ECM 3	Retrofit Fixtures with LED Lamps	Yes	86,741	22.5	-18	$14,174	$212,610	$26,920	$5,341	$21,579	1.5	85,243
Lighting Control Measures			**14,642**	**3.8**	**-3**	**$2,392**	**$19,138**	**$18,420**	**$1,575**	**$16,845**	**7.0**	**14,386**
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	12,211	3.2	-3	$1,995	$15,961	$12,150	$1,575	$10,575	5.3	11,997
ECM 5	Install High/Low Lighting Controls	Yes	2,431	0.6	-1	$397	$3,178	$6,270	$0	$6,270	15.8	2,389
Electric Unitary HVAC Measures			**1,143**	**1.5**	**0**	**$189**	**$2,837**	**$4,355**	**$0**	**$4,355**	**23.0**	**1,151**
	Install High Efficiency Air Conditioning Units	No	1,143	1.5	0	$189	$2,837	$4,355	$0	$4,355	23.0	1,151
Food Service & Refrigeration Measures			**1,612**	**0.2**	**0**	**$267**	**$1,334**	**$230**	**$0**	**$230**	**0.9**	**1,623**
ECM 6	Vending Machine Control	Yes	1,612	0.2	0	$267	$1,334	$230	$0	$230	0.9	1,623
TOTALS			**129,304**	**33.0**	**-24**	**$21,155**	**$297,915**	**$74,563**	**$8,626**	**$65,937**	**3.1**	**127,368**

* - All incentives presented in this table are based on NJ SmartStart 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).

Figure 2 – Evaluated Energy Improvements

For more detail on each evaluated energy improvement and a break out of cost-effective improvements, see **Section 4: Energy Conservation Measures**.

1.1 Planning Your Project

Careful planning makes for a successful energy project. When considering this scope of work, you will have some decisions to make, such as:

- How will the project be funded and/or financed?
- Is it best to pursue individual ECMs, groups of ECMs, or use a comprehensive approach where all ECMs are installed together?
- Are there other facility improvements that should happen at the same time?

Pick Your Installation Approach

New Jersey's Clean Energy Programs give you the flexibility to do a little or a lot. Rebates, incentives, and financing are available to help reduce both your installation costs and your energy bills. If you are planning to take advantage of these programs, make sure to review incentive program guidelines before proceeding. This is important because in most cases you will need to submit applications for the incentives before purchasing materials or starting installation.

The potential ECMs identified for this building likely qualify for multiple incentive and funding programs. Based on current program rules and requirements, your measures are likely to qualify for the following programs:

Energy Conservation Measure		SmartStart	Direct Install	Pay For Performance
ECM 1	Install LED Fixtures	x	x	
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	x	x	
ECM 3	Retrofit Fixtures with LED Lamps	x	x	
ECM 4	Install Occupancy Sensor Lighting Controls	x	x	
ECM 5	Install High/Low Lighting Controls		x	
ECM 6	Vending Machine Control		x	

Figure 3 – Funding Options

New Jersey's Clean Energy Programs At-A-Glance

	SmartStart Flexibility to install at your own pace	**Direct Install** Turnkey installation	**Pay for Performance** Whole building upgrades
Who should use it?	Buildings installing individual measures or small group of measures.	Small to mid-size facilities that can bundle multiple measures together. Average peak demand should be below 200 kW. Not suitable for significant building shell issues.	Mid to large size facilities looking to implement as many measures as possible at one time. Peak demand should be over 200 kW.
How does it work?	Use in-house staff or your preferred contractor.	Pre-approved contractors pass savings along to you via reduced material and labor costs.	Whole-building approach to energy upgrades designed to reduce energy use by at least 15%. The more you save, the higher the incentives.
What are the Incentives?	Fixed incentives for specific energy efficiency measures.	Incentives pay up to 70% of eligible costs, up to $125,000 per project. You pay the remaining 30% directly to the contractor.	Up to 25% of installation cost, calculated based on level of energy savings per square foot.
How do I participate?	Submit an application for the specific equipment to be installed.	Contact a participating contractor in your region.	Contact a pre-qualified partner to develop your energy reduction plan and set your energy savings targets.

Take the next step by visiting **www.njcleanenergy.com** for program details, applications, and to contact a qualified contractor.

Individual Measures with SmartStart

For facilities wishing 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, you can use internal resources or an outside firm or contractor to perform the final design of the ECM(s) and install the equipment. Program pre-approval is required for some SmartStart incentives, so only after receiving pre-approval should you proceed with ECM installation.

Turnkey Installation with Direct Install

The Direct Install program provides turnkey installation of multiple measures through an authorized network of participating contractors. This program can provide substantially higher incentives than SmartStart, up to 70% of the cost of selected measures. Direct Install contractors will assess and verify individual measure eligibility and, in most cases, they perform the installation work. The Direct Install program is available to sites with an average peak demand of less than 200 kW.

Whole Building Approach with Pay for Performance

Pay for Performance can be a good option for medium to large sized facilities to achieve deep energy savings. Pay for Performance allows you to install as many measures as possible under a single project as well as address measures that may not qualify for other programs. Many facilities pursuing an Energy Savings Improvement Program (ESIP) loan also use this program. Pay for Performance works for larger customers with a peak demand over 200 kW. 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.

More Options from Around the State

Financing and Planning Support with the Energy Savings Improvement Program (ESIP)

For larger facilities with limited capital availability to implement ECMs, project financing may be available through the 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. You have already taken the first step as an LGEA customer, because this report is required to participate in ESIP.

Resiliency with Return on Investment through Combined Heat & Power (CHP)

The CHP program provides incentives for combined heat and power (aka cogeneration) and waste heat to power projects. Combined heat and power systems generate power on-site and recover heat from the generation system to meet on-site thermal loads. Waste heat to power systems use waste heat to generate power. You will work with a qualified developer who will design a system that meets your building's heating and cooling needs.

Ongoing Electric Savings with Demand Response

The Demand Response Energy Aggregator program reduces 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. By enabling commercial facilities to reduce their electric demand 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 demand response (DR) programs. Program participation is voluntary, and facilities receive payments regardless of whether they are called upon to curtail their load during times of peak demand.

2 EXISTING CONDITIONS

The New Jersey Board of Public Utilities (NJBPU) has sponsored this Local Government Energy Audit (LGEA) Report for Livingston Elementary School. This report provides information on how your facility uses energy, identifies energy conservation measures (ECMs) that can reduce your energy use, and provides information and assistance to help you implement the ECMs. This report also contains valuable information on financial incentives from New Jersey's Clean Energy Program (NJCEP) for implementing ECMs.

TRC conducted this study as part of a comprehensive effort to assist New Jersey educational and local government facilities in controlling energy costs and protecting our environment by offering a wide range of energy management options and advice.

2.1 Site Overview

On August 20, 2018, TRC performed an energy audit at Livingston Elementary School located in Union, NJ. TRC met with Bernie Pecoritello to review the facility operations and help focus our investigation on specific energy-using systems.

Livingston Elementary School is a 2-story, 48,600 square foot building built in 1926. Spaces include: classrooms, a gymnasium, an auditorium, offices, a cafeteria, corridors, stairwells and mechanical spaces.

Recent improvements include a new roof, domestic hot water heaters and space heating steam boilers. Interior lighting consists mainly of T8 fixtures. The majority of space cooling is provided by window AC units (classrooms), package AC (auditorium) and split-system AC units (cafeteria).

2.2 Building Occupancy

The facility is occupied from September through June. Typical weekday occupancy is 68 staff and 440 students. During the weekdays the facility is occupied from 6 AM to 6 PM. The school is closed on the weekends.

Building Name	Weekday/Weekend	Operating Schedule
Livingston Elementary School	Weekday	7:00 AM - 6:00 PM
	Weekend	No Operation

Figure 4 - Building Occupancy Schedule

2.3 Building Envelope

Building walls are clay brick with concrete structural support. There are pitched and flat roof sections. Wood trusses support the roof. The pitched roof is covered with asphalt shingles while the flat roof is covered with an impermeable membrane (EPDM, TPO or PVC). Both roof coverings are new.

The windows are double glazed and have aluminum frames. The windows are old and in fair condition. The exterior doors are older wood or commercial grade steel units and are in good condition.

Wall

Entrance Doors

Roof

Windows

2.4 Lighting Systems

There majority of interior lighting are 4-foot 32-Watt T8 fixtures. There is one area near the auditorium stage that has T12 fixtures and an area in the electrical and boiler room with T5 High Output fixtures. Most fixtures are in fair condition. There are pin-type CFL found throughout the building and incandescent bulb and metal halide (MH) fixtures in the auditorium. MH fixtures are also found in the gym as well. All exit signs are LED. Most of the lighting in the facility are controlled using wall switches.

Auditorium Lights

Cafeteria T8 Fixtures

Gym Lights

Kitchen Lights

Exterior fixtures include wall packs with 250 and 400-Watt metal halide, and 70-Watt high pressure sodium fixtures, downlight recessed fixtures over the doorways. There are a few wall pack and wall-mounted LED fixtures as well. Exterior light fixtures are generally controlled by photocells or a schedule timer.

Wall Pack

Ceiling Mount

Wall Pack

Ceiling Mount LED

2.5 Air Handling Systems

Unit Ventilators

There are unit ventilators that have supply fan motors and outside air dampers and fan coil valves (heating). This system to be in fair operating condition.

Packaged Units

The auditorium is served by five roof mounted packaged units controlled by thermostats. Each unit has a 5-Ton cooling capacity (10 EER) with a heating capacity of 78 MBh (gas fired furnace section).

Air Conditioners

Smaller spaces such as the offices and classrooms use window air conditioning (AC) units. These vary in capacity between 0.5 and 1.5 tons. Many of these units are old and have been evaluated for replacement. The older ones are not ENERGY STAR® labeled. The cafeteria has a couple smaller mini-split system AC units with a 2.5 Ton cooling capacity. The window AC units are manually controlled, while the split system AC units are controlled with programmable thermostats.

Package ACs on roof

Split AC (Cafeteria)

Window ACs

Window AC

2.6 Heating Steam Systems

Two Unilux ZF300LS steam boilers serve the building space heating load. The burners are modulating with a nominal efficiency of 83%. The boilers are new and serve a 2-pipe steam distribution system and serves the building heating terminals (unit ventilators and radiators). There is a 0.5 hp boiler feed pump in the mechanical room and 1.5 hp combustion air fans serving each boiler.

Steam Boilers

Condensate Tank and Feed Pumps

Unit Ventilator in classroom

Radiators in Gym

2.7 Domestic Hot Water

Hot water is produced by two storage tank water heaters. The gas-fired water heaters are 73 and 98 gallons each with a heating capacity of 75 MBh and an 80% thermal efficiency.

DHW Heaters

2.8 Food Service Equipment

The kitchen has a mixture of gas and electric kitchen equipment used to prepare approximately 550 breakfast and lunches for students and staff in the school. Most cooking is done using a convection gas-fired oven, gas fryers and gas burners. Bulk prepared foods are held for serving in several holding cabinets. The dishwasher is an ENERGY STAR® high temperature unit with an electric booster. The equipment installed is in good condition.

Visit https://www.energystar.gov/products/commercial_food_service_equipment for the latest information on high efficiency food service equipment.

Dishwasher

Oven, Stove

2.9 Refrigeration

The kitchen has several stand-up refrigerators with solid doors. There is a stand-up solid door freezer and refrigerated chests. All equipment is in good condition.

Visit https://www.energystar.gov/products/commercial_food_service_equipment for the latest information on high efficiency food service equipment.

Freezers

Refrigerators

2.10 Plug Load & Vending Machines

The utility bill analysis indicates that plug loads consume approximately 3.13% percent of total building energy use. This is lower than a typical building.

Livingstone ES seems to already be doing a great job managing electrical plug loads. This report makes additional suggestions for ECMs in this area as well as Energy Efficient Best Practices.

There are approximately 121 computer work stations throughout the facility. Plug loads throughout the building include general café and office equipment. There are classroom typical loads such as smart boards, projectors, and fans.

There are several residential style refrigerators throughout the building that are used to store food for staff. These vary in condition and efficiency.

There is one refrigerated beverage vending machine and one non-refrigerated vending machine. Vending machines are not equipped with occupancy-based controls.

Vending Machines

Copy Machines

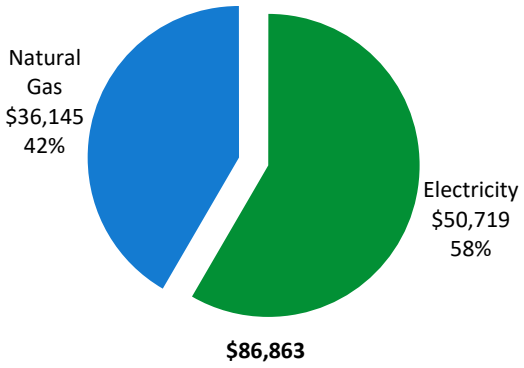
Server

Computers

3 ENERGY USE AND COSTS

Twelve months of utility billing data are used to develop annual energy consumption and cost data. This information creates a profile of the annual energy consumption and energy costs.

Utility Summary		
Fuel	**Usage**	**Cost**
Electricity	306,368 kWh	$50,719
Natural Gas	34,977 Therms	$36,145
Total		**$86,863**



An energy balance identifies and quantifies energy use in your various building systems. This can highlight areas with the most potential for improvement. This energy balance was developed using calculated energy use for each of the end uses noted in the figure.

The energy auditor collects information regarding equipment operating hours, capacity, efficiency, and other operational parameters from facility staff, drawings, and on-site observations. This information is used as the inputs to calculate the existing conditions energy use for the site. The calculated energy use is then compared to the historical energy use and the initial inputs are revised, as necessary, to balance the calculated energy use to the historical energy use.

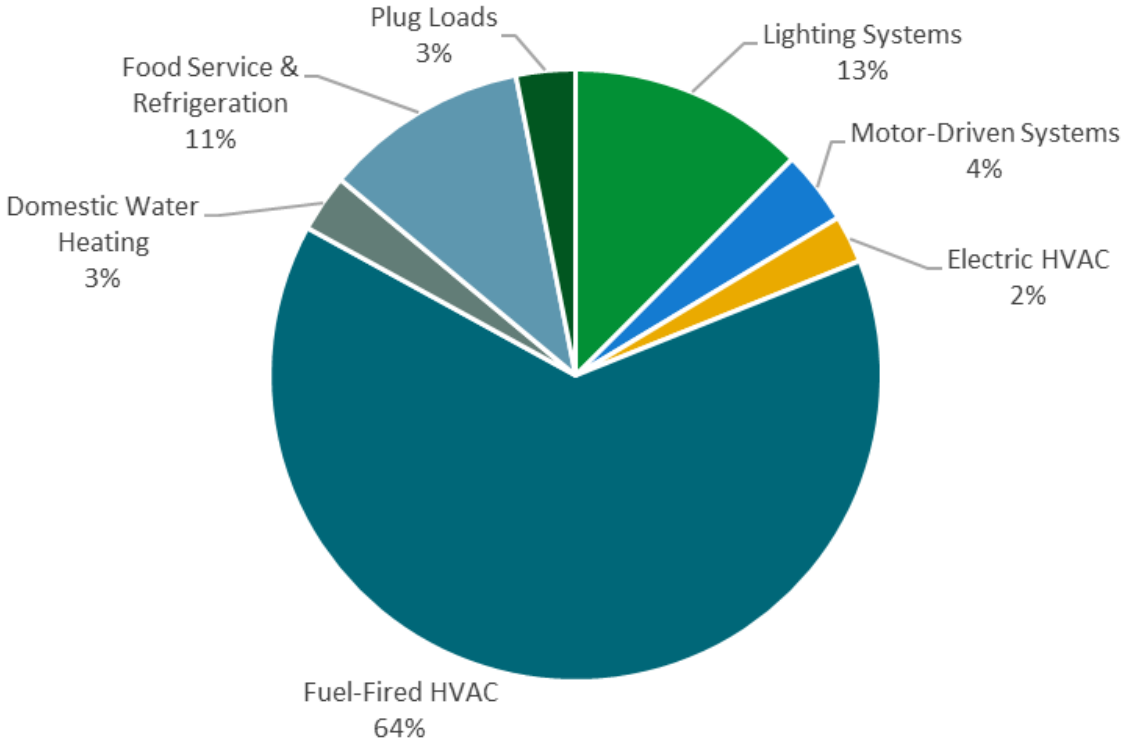
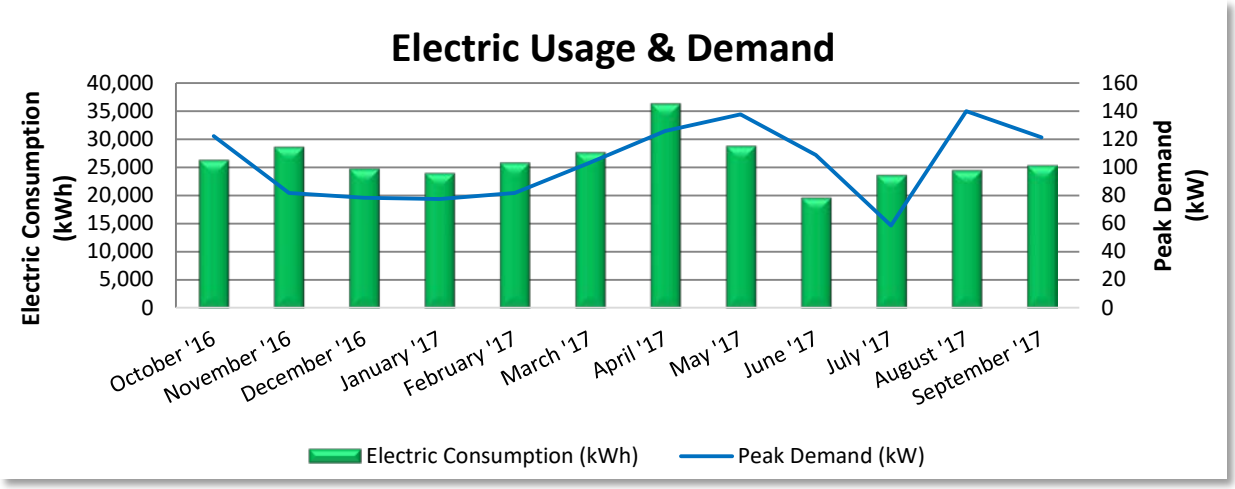


Figure 5 - Energy Balance

3.1 Electricity

PSE&G delivers electricity under rate class GLP, with electric production provided by Agera Energy/SJE, a third-party supplier.



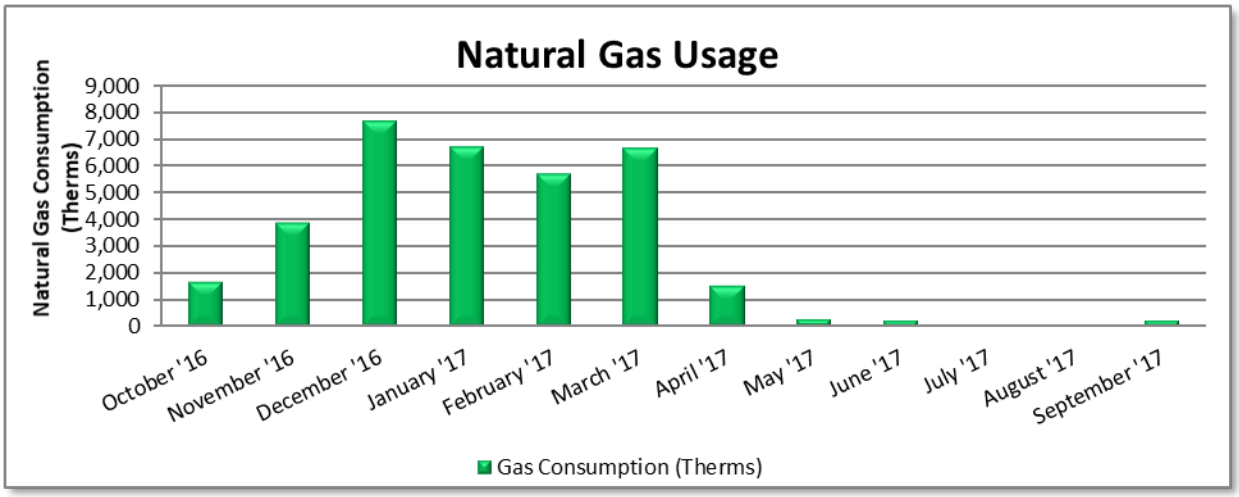
Electric Billing Data					
Period Ending	**Days in Period**	**Electric Usage (kWh)**	**Demand (kW)**	**Demand Cost**	**Total Electric Cost**
11/11/16	28	26,370	122	$547	$4,290
12/15/16	34	28,710	82	$366	$4,462
1/17/17	33	24,840	78	$350	$3,913
2/14/17	28	24,120	77	$345	$3,806
3/16/17	30	25,920	82	$368	$4,185
4/17/17	32	27,720	104	$467	$4,550
5/30/17	43	36,450	126	$834	$5,848
6/28/17	29	28,890	138	$621	$5,371
7/31/17	33	19,710	109	$491	$3,858
8/29/17	29	23,760	59	$264	$3,712
9/28/17	30	24,570	140	$642	$4,898
10/26/17	28	25,380	122	$519	$3,496
Totals	**377**	**316,440**	**140**	**$5,814**	**$52,386**
Annual	**365**	**306,368**	**140**	**$5,629**	**$50,719**

Notes:

- Peak demand of 140 kW occurred in September '17.
- The average electric cost over the past 12 months was $0.166/kWh, which is the blended rate that includes energy supply, distribution, demand, and other charges. This report uses this blended rate to estimate energy cost savings. If the site has on-site generation, manually insert the graphs for on-site and purchased electricity. If the site has multiple electric accounts and there is an account for a specific system (e.g. chiller) with large use manually insert an additional graph for the specific use account and note what it serves.
- The use profile is higher towards late spring months which indicates increase space cooling demand and use.

3.2 Natural Gas

Elizabethtown Gas delivers natural gas under rate class 231, with natural gas supply provided by Hudson Energy, a third-party supplier.



Gas Billing Data			
Period Ending	**Days in Period**	**Natural Gas Usage (Therms)**	**Natural Gas Cost**
11/1/16	29	1,678	$2,328
12/2/16	31	3,919	$4,939
1/3/17	32	7,706	$9,919
1/31/17	28	6,748	$5,339
3/1/17	29	5,734	$4,582
3/31/17	30	6,698	$5,398
5/1/17	31	1,562	$1,438
6/1/17	31	300	$515
6/30/17	29	241	$472
8/1/17	32	86	$385
9/5/17	35	72	$357
10/3/17	28	234	$474
Totals	**365**	**34,977**	**$36,145**
Annual	**365**	**34,977**	**$36,145**

Notes:

- The average gas cost for the past 12 months is $1.033/therm, which is the blended rate used throughout the analysis.
- The consumption profile indicates a space heating as being the predominant use. Use increases in the winter months.

3.3 Benchmarking

Your building was benchmarked using the United States Environmental Protection Agency's *Portfolio Manager®* software. Benchmarking compares your building's energy use to that of similar buildings across the county, while neutralizing variations due to location, occupancy and operating hours. Some building types can be scored with a 1-100 ranking of a building's energy performance relative to the national building market. A score of 50 represents the national average and a score of 100 is best.

This ENERGY STAR® benchmarking score provides a comprehensive snapshot of your building's energy performance. It assesses the building's physical assets, operations, and occupant behavior, which is compiled into a quick and easy-to-understand score.

Benchmarking Score	36

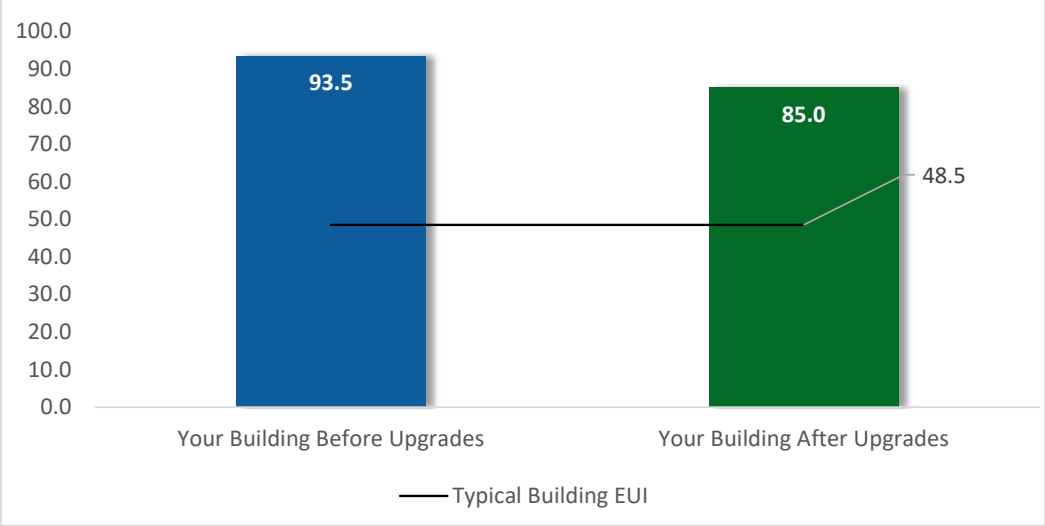


Figure 6 - Energy Use Intensity Comparison

Energy use intensity (EUI) measures energy consumption per square foot and is the standard metric for comparing buildings' energy performance. A lower EUI means better performance and less energy consumed. A number of factors can cause a building to vary from the "typical" energy usage. Local weather conditions, building age and insulation levels, equipment efficiency, daily occupancy hours, changes in occupancy throughout the year, equipment operating hours, and occupant behavior all contribute to a building's energy use and the benchmarking score.

Tracking Your Energy Performance

Keeping track of your energy use on a monthly basis is one of the best ways to keep energy costs in check. Update your utility information in Portfolio Manager® regularly, so that you can keep track of your building's performance.

We have created a Portfolio Manager® account for your facility and we have already entered the monthly utility data shown above for you. Account login information for your account will be sent via email.

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. For more information on ENERGY STAR® and Portfolio Manager®, visit their website[3].

The goal of this audit report is to identify and evaluate potential energy efficiency improvements, provide information about the cost effectiveness of those improvements, and recognize potential financial incentives from NJBPU. Most energy conservation measures have received preliminary analysis of feasibility which identifies expected ranges of savings and costs. This level of analysis is typically sufficient to demonstrate project cost-effectiveness and help prioritize energy measures.

Calculations of energy use and savings are based on the current version of the *New Jersey's Clean Energy Program Protocols to Measure Resource Savings*, which is 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.

Operation and maintenance costs for the proposed new equipment will generally be lower than the current costs for the existing equipment—especially if the existing equipment is at or past its normal useful life. We have conservatively assumed there to be no impact on overall maintenance costs over the life of the equipment.

Financial incentives are based on the current NJCEP prescriptive SmartStart program. A higher level of investigation may be necessary to support any SmartStart Custom, Pay for Performance, or Direct Install incentive applications. Some measures and proposed upgrades may be eligible for higher incentives than those shown below through other NJCEP programs described in a following section of this report.

For a detailed list of the locations and recommended energy conservation measures for all inventoried equipment, see **Appendix A: Equipment Inventory & Recommendations.**

#	Energy Conservation Measure	*Recommend?*	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Lifetime Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades			**111,907**	**27.6**	**-21**	**$18,307**	**$274,605**	**$51,557**	**$7,051**	**$44,506**	**2.4**	**110,208**
ECM 1	Install LED Fixtures	Yes	22,206	4.3	-3	$3,649	$54,739	$23,400	$1,530	$21,870	6.0	22,057
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	2,961	0.8	-1	$484	$7,256	$1,238	$180	$1,058	2.2	2,909
ECM 3	Retrofit Fixtures with LED Lamps	Yes	86,741	22.5	-18	$14,174	$212,610	$26,920	$5,341	$21,579	1.5	85,243
Lighting Control Measures			**14,642**	**3.8**	**-3**	**$2,392**	**$19,138**	**$18,420**	**$1,575**	**$16,845**	**7.0**	**14,386**
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	12,211	3.2	-3	$1,995	$15,961	$12,150	$1,575	$10,575	5.3	11,997
ECM 5	Install High/Low Lighting Controls	Yes	2,431	0.6	-1	$397	$3,178	$6,270	$0	$6,270	15.8	2,389
Electric Unitary HVAC Measures			**1,143**	**1.5**	**0**	**$189**	**$2,837**	**$4,355**	**$0**	**$4,355**	**23.0**	**1,151**
	Install High Efficiency Air Conditioning Units	No	1,143	1.5	0	$189	$2,837	$4,355	$0	$4,355	23.0	1,151
Food Service & Refrigeration Measures			**1,612**	**0.2**	**0**	**$267**	**$1,334**	**$230**	**$0**	**$230**	**0.9**	**1,623**
ECM 6	Vending Machine Control	Yes	1,612	0.2	0	$267	$1,334	$230	$0	$230	0.9	1,623
TOTALS			**129,304**	**33.0**	**-24**	**$21,155**	**$297,915**	**$74,563**	**$8,626**	**$65,937**	**3.1**	**127,368**

* - All incentives presented in this table are based on NJ SmartStart 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).

Figure 7 – All Evaluated 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		**111,907**	**27.6**	**-21**	**$18,307**	**$51,557**	**$7,051**	**$44,506**	**2.4**	**110,208**
ECM 1	Install LED Fixtures	22,206	4.3	-3	$3,649	$23,400	$1,530	$21,870	6.0	22,057
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	2,961	0.8	-1	$484	$1,238	$180	$1,058	2.2	2,909
ECM 3	Retrofit Fixtures with LED Lamps	86,741	22.5	-18	$14,174	$26,920	$5,341	$21,579	1.5	85,243
Lighting Control Measures		**14,642**	**3.8**	**-3**	**$2,392**	**$18,420**	**$1,575**	**$16,845**	**7.0**	**14,386**
ECM 4	Install Occupancy Sensor Lighting Controls	12,211	3.2	-3	$1,995	$12,150	$1,575	$10,575	5.3	11,997
ECM 5	Install High/Low Lighting Controls	2,431	0.6	-1	$397	$6,270	$0	$6,270	15.8	2,389
Food Service & Refrigeration Measures		**1,612**	**0.2**	**0**	**$267**	**$230**	**$0**	**$230**	**0.9**	**1,623**
ECM 6	Vending Machine Control	1,612	0.2	0	$267	$230	$0	$230	0.9	1,623
TOTALS		**128,161**	**31.5**	**-24**	**$20,966**	**$70,207**	**$8,626**	**$61,581**	**2.9**	**126,217**

* - All incentives presented in this table are based on NJ SmartStart 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).

Figure 8 – Cost Effective ECMs

4.1 Lighting

#	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		**111,907**	**27.6**	**-21**	**$18,307**	**$51,557**	**$7,051**	**$44,506**	**2.4**	**110,208**
ECM 1	Install LED Fixtures	22,206	4.3	-3	$3,649	$23,400	$1,530	$21,870	6.0	22,057
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	2,961	0.8	-1	$484	$1,238	$180	$1,058	2.2	2,909
ECM 3	Retrofit Fixtures with LED Lamps	86,741	22.5	-18	$14,174	$26,920	$5,341	$21,579	1.5	85,243

When considering lighting upgrades, we suggest using a comprehensive design approach that simultaneously upgrades lighting fixtures and controls to maximize energy savings and improve occupant lighting. Comprehensive design will also consider appropriate lighting levels for different space types to make sure that the right amount of light is delivered where needed. If conversion to LED light sources are proposed, we suggest converting all of a specific lighting type (e.g. linear fluorescent) to LED lamps to minimize the number of lamp types in use at the facility, which should help reduce future maintenance costs.

ECM 1: Install LED Fixtures

Replace existing HID fixtures with new LED light fixtures. This measure saves energy by installing LEDs which use less power than other technologies with a comparable light output.

In some cases, HID fixtures can be retrofit with screw-based LED lamps. Replacing an existing HID fixture with a new LED fixture will generally provide better overall lighting optics; however, replacing the HID lamp with a LED screw-in lamp is typically a less expensive retrofit. We recommend you work with your lighting contractor to determine which retrofit solution is best suited to your needs and will be compatible with the existing fixture(s).

Maintenance savings may also be achieved since LED lamps last longer than other light sources and therefore do not need to be replaced as often.

Affected building areas: auditorium and gym metal halide (MH) and exterior MH and high-pressure sodium (HPS) fixtures

ECM 2: Retrofit Fluorescent Fixtures with LED Lamps and Drivers

Retrofit fluorescent fixtures by removing the fluorescent tubes and ballasts and replacing them with LED tubes and LED drivers (if necessary), which are designed to be used in retrofitted fluorescent fixtures.

The measure uses the existing fixture housing but replaces the electric components with more efficient lighting technology which use less power than other lighting technologies but provides equivalent lighting output. Maintenance savings may also be achieved since LED tubes last longer than fluorescent tubes and therefore do not need to be replaced as often.

Affected building areas: fluorescent T12 fixtures located in the auditorium stage area

ECM 3: Retrofit Fixtures with LED Lamps

Replace fluorescent, HID, or incandescent lamps with LED lamps. Many LED tubes are direct replacements for existing fluorescent tubes and can be installed while leaving the fluorescent fixture ballast in place. LED lamps 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. Maintenance savings may also be available, as longer-lasting LEDs lamps will not need to be replaced as often as the existing lamps.

Affected building areas: all areas with fluorescent fixtures (T8 and T5HO), CFL lamps and incandescent (classrooms, office, storage rooms, etc.)

4.2 Lighting Controls

#	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		**14,642**	**3.8**	**-3**	**$2,392**	**$18,420**	**$1,575**	**$16,845**	**7.0**	**14,386**
ECM 4	Install Occupancy Sensor Lighting Controls	12,211	3.2	-3	$1,995	$12,150	$1,575	$10,575	5.3	11,997
ECM 5	Install High/Low Lighting Controls	2,431	0.6	-1	$397	$6,270	$0	$6,270	15.8	2,389

Lighting controls reduce energy use by turning off or lowering, lighting fixture power levels when not in use. A comprehensive approach to lighting design should upgrade the lighting fixtures and the controls together for maximum energy savings and improved lighting for occupants.

ECM 4: Install Occupancy Sensor Lighting Controls

Install occupancy sensors to control lighting fixtures in areas that are frequently unoccupied, even for short periods. For most spaces, we recommend lighting controls use dual technology sensors, which reduce the possibility of lights turning off unexpectedly.

Occupancy sensors detect occupancy using ultrasonic and/or infrared sensors. When an occupant enters the space, the lighting fixtures switch to full lighting levels. Most occupancy sensor lighting controls allow users to manually turn fixtures on/off, as needed. Some controls can also provide dimming options.

Occupancy sensors can be mounted on the wall at existing switch locations, mounted on the ceiling, or in remote locations. In general, wall switch replacement sensors are best suited to single occupant offices and other small rooms. Ceiling-mounted or remote mounted sensors are used in large spaces, locations without local switching, and where wall switches are not in the line-of-sight of the main work area.

This measure provides energy savings by reducing the lighting operating hours.

Affected building areas: offices, auditorium, classrooms, gymnasium, restrooms, and storage rooms

ECM 5: Install High/Low Lighting Controls

Install 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.

Lighting fixtures with these controls operate at default low levels when the area is unoccupied to provide minimal lighting to meet security or safety requirements. Sensors detect occupancy using ultrasonic and/or infrared sensors. When an occupant enters the space, the lighting fixtures switch to full lighting levels. Fixtures automatically switch back to low level after a predefined period of vacancy. In parking lots and parking garages with significant ambient lighting, this control can sometimes be combined with photocell controls to turn the lights off when there is sufficient daylight.

This measure provides energy savings by reducing the light fixture power draw when reduced light output is appropriate.

Affected building areas: hallways

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

4.3 Electric Unitary HVAC

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Electric Unitary HVAC Measures		**1,143**	**1.5**	**0**	**$189**	**$4,355**	**$0**	**$4,355**	**23.0**	**1,151**
	Install High Efficiency Air Conditioning Units	1,143	1.5	0	$189	$4,355	$0	$4,355	23.0	1,151

Install High Efficiency Air Conditioning Units

Replace standard efficiency packaged air conditioning (AC) units with high efficiency packaged air conditioning units. 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.

4.4 Food Service & Refrigeration Measures

#	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)
Food Service & Refrigeration Measures		**1,612**	**0.2**	**0**	**$267**	**$230**	**$0**	**$230**	**0.9**	**1,623**
ECM 6	Vending Machine Control	1,612	0.2	0	$267	$230	$0	$230	0.9	1,623

ECM 6: Vending Machine Control

Vending machines operate continuously, even during unoccupied hours. Install occupancy sensor controls to reduce energy use. These controls power down vending machines when the vending machine area has been vacant for some time, and they power up the machines at necessary regular intervals or when the surrounding area is occupied. Energy savings are dependent on the vending machine and activity level in the area surrounding the machines.

5 ENERGY EFFICIENT BEST PRACTICES

A whole building maintenance plan will extend equipment life; improve occupant comfort, health, and safety; and reduce energy and maintenance costs. You may already be doing some of these things— see our list below for potential additions to your maintenance plan. Be sure to consult with qualified equipment specialists for details on proper maintenance and system operation.

Energy Tracking with ENERGY STAR® Portfolio Manager®

You've heard it before - you can't manage what you don't measure. ENERGY STAR® Portfolio Manager® is an online tool that you can use to measure and track energy and water consumption, as well as greenhouse gas emissions[4]. Your account has already been established. Now you can continue to keep tabs on your energy performance every month.

Weatherization

Caulk or weather strip leaky doors and windows to reduce drafts and loss of heated or cooled air. Sealing cracks and openings can reduce heating and cooling costs, improve building durability, and create a healthier indoor environment.

Lighting Controls

As part of a lighting maintenance schedule, test lighting controls to ensure proper functioning. For occupancy sensors, this requires triggering the sensor and verifying that the sensor's timer settings are correct. For daylight and photocell sensors, maintenance involves cleaning sensor lenses and confirming that setpoints and sensitivity are configured properly.

Thermostat Schedules and Temperature Resets

Use thermostat setback temperatures and schedules to reduce heating and cooling energy use during periods of low or no occupancy. 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 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.

AC System Evaporator/Condenser Coil Cleaning

Dirty evaporator and condenser coils restrict air flow and restrict heat transfer. This increases the loads on the evaporator and condenser fan, and decreases overall cooling system performance. Keeping the coils clean allows the fans and cooling system to operate more efficiently.

[4] https://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/use-portfolio-manager

HVAC Filter Cleaning and Replacement

Air filters should be checked regularly (often monthly) and cleaned or replaced when appropriate. Air filters reduce indoor air pollution, increase occupant comfort, and help keep equipment operating efficiently. If the building has a building management system, consider installing a differential pressure switch across filters to send an alarm about premature fouling or overdue filter replacement. Over time, filters become less and less effective as particulate buildup increases. Dirty filters also restrict air flow through the air conditioning or heat pump system, which increases the load on the distribution fans.

Steam Trap Repair and Replacement

Steam traps are a crucial part of delivering heat from the boiler to the space heating units. Repair or replace traps that are blocked or allowing steam to pass. Inspect steam traps as part of a regular steam system maintenance plan.

Boiler Maintenance

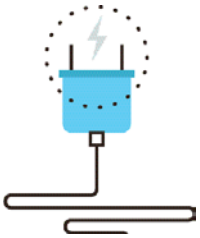
Many boiler problems develop slowly over time, so regular inspection and maintenance is essential to keeping the heating system running efficiently and preventing expensive repairs. Annual tune-ups should include a combustion analysis to analyze the exhaust from the boilers and to ensure the boiler is operating safely. Boilers should be cleaned according to the manufacturer's instructions to remove soot and scale from the water side or fire side of the boiler.

Water Heater Maintenance

Preventative maintenance can extend the life of the system, maintain energy efficiency, and ensure safe operation. At least once a year, follow manufacturer instructions to drain a few gallons out of the water heater using the drain valve. If there is a lot of sediment or debris, then a full flush is recommended. Turn the temperature down and then completely drain the tank. Annual checks should include checks for:

- Leaks or heavy corrosion on the pipes and valves.
- Corrosion or wear on the gas line and on the piping. If you noticed any black residue, soot, or charred metal, this is a sign you may be having combustion issues and you should have the unit serviced by a professional.
- For electric water heaters, look for signs of leaking such as rust streaks or residue around the upper and lower panels covering the electrical components on the tank.
- For water heaters more than three years old, have a technician inspect the sacrificial anode annually.

Plug Load Controls



Reducing plug loads is a common way to decrease your electrical use. Limiting the energy use of plug loads can include increasing occupant awareness, removing under-used equipment, installing hardware controls, and using software controls. Consider enabling the most aggressive power settings on existing devices or install load sensing or

occupancy sensing (advanced) power strips[5]. Your local utility may offer incentives or rebates for this equipment.

Water Conservation

Installing dual flush or low-flow toilets and low-flow/waterless urinals are ways to reduce water use. The EPA WaterSense™ ratings for urinals is 0.5 gallons per flush (gpf) and for flush valve toilets is 1.28 gpf (this is lower than the current 1.6 gpf federal standard).

For more information regarding water conservation go to the EPA's WaterSense™ website[6] or download a copy of EPA's "WaterSense™ at Work: Best Management Practices for Commercial and Institutional Facilities,"[7] to get ideas for creating a water management plan and best practices for a wide range of water using systems.

Water conservation devices that do not reduce hot water consumption will not provide energy savings at the site level, but they may significantly affect your water and sewer usage costs. 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.

If the facility has detached buildings with a master water meter for the entire campus, check for unnatural wet areas in the lawn or water seeping in the foundation at water pipe penetrations through the foundation. Periodically check overnight meter readings when the facility is unoccupied, and there is no other scheduled water usage.

Manage irrigation systems to use water more effectively outside the building. Adjust spray patterns so that water lands on intended lawns and plantings and not on pavement and walls. Consider installing an evapotranspiration irrigation controller that will prevent over-watering.

Procurement Strategies

Purchasing efficient products reduces energy costs without compromising quality. Consider modifying your procurement policies and language to require ENERGY STAR® or WaterSense™ products where available.

[5] For additional information refer to "Assessing and Reducing Plug and Process Loads in Office Buildings" http://www.nrel.gov/docs/fy13osti/54175.pdf, or "Plug Load Best Practices Guide" http://www.advancedbuildings.net/plug-load-best-practices-guide-offices

[6] https://www.epa.gov/watersense

[7] https://www.epa.gov/watersense/watersense-work-0

6 On-site Generation

You don't have to look far in New Jersey to see one of the thousands of solar electric systems providing clean power to homes, businesses, schools, and government buildings. On-site generation includes both renewable (e.g., solar, wind) and non-renewable (e.g., fuel cells) technologies that generate power to meet all or a portion of the facility's electric energy needs. Also referred to as distributed generation, these systems contribute to greenhouse gas (GHG) emission reductions, demand reductions and reduced customer electricity purchases reduction, which results in improved electric grid reliability through better use of transmission and distribution systems.

Preliminary screenings were performed to determine if an on-site generation measure could be a cost-effective solution for your facility. Before deciding to install an on-site generation system, we recommend conducting a feasibility study to analyze 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 Solar Photovoltaic

Photovoltaic (PV) panels convert sunlight into electricity. Individual panels are combined into an array that produces direct current (DC) electricity. The DC current is converted to alternating current (AC) through an inverter. The inverter is then connected to the building's electrical distribution system.

The amount of free area, ease of installation (location), and the lack of shading elements contribute to a high potential. A PV array located on the roof may be feasible. If you are interested in pursuing the installation of PV, we recommend conducting a full feasibility study.

The graphic below displays the results of the PV potential screening conducted as a part of this audit. The position of each slider indicates the potential (potential increases to the right) that each factor contributes to the overall site potential.

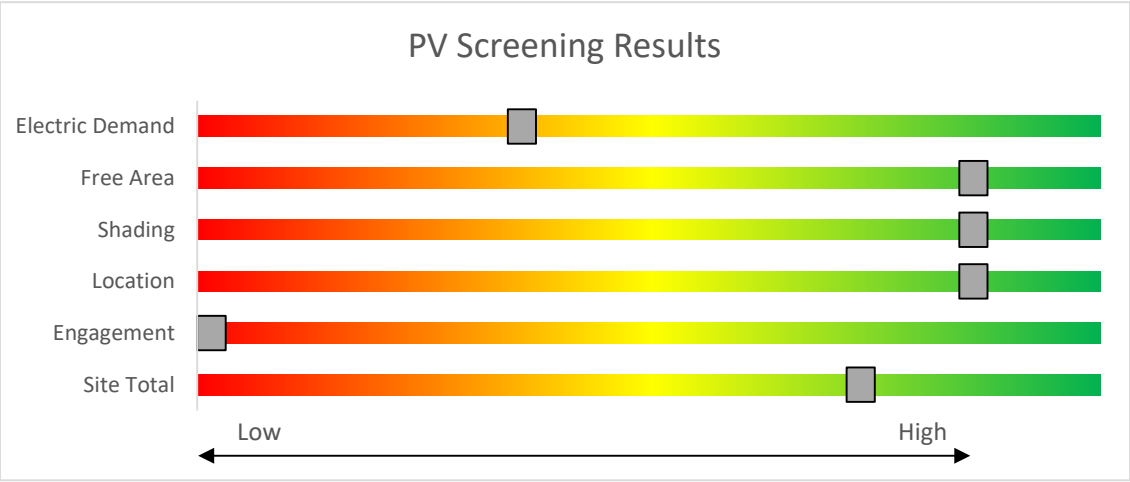


Figure 9 - Photovoltaic Screening

Solar Renewable Energy Credit (SREC) Registration Program (SRP)

Rebates are not available for solar projects, but owners of solar projects MUST register their projects in the SREC Registration Program before starting construction. Once your PV system is up and running, you periodically earn credits, which can then be sold on the open market for up to 15 years.

If you are considering installing solar photovoltaics on your building, visit www.njcleanenergy.com/srec for more information about the SREC Registration Program.

Get more information about solar power in New Jersey or find a qualified solar installer who can help you decide if solar is right for your building:

- **Basic Info on Solar PV in NJ**: www.njcleanenergy.com/whysolar
- **NJ Solar Market FAQs**: www.njcleanenergy.com/renewable-energy/program-updates-and-background-information/solar-transition/solar-market-faqs
- **Approved Solar Installers in the NJ Market**: 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) generates electricity at the facility and puts waste heat energy to good use. Common types of CHP systems are reciprocating engines, microturbines, fuel cells, backpressure steam turbines, and (at large facilities) gas turbines.

CHP systems typically produce a portion of the electric power used on-site, with the balance of electric power needs supplied by the local utility company. The heat is used to supplement (or replace) existing boilers and provide space heating and/or domestic hot water heating. Waste heat can also be routed through absorption chillers for space cooling.

The key criteria used for screening is the amount of time that the CHP system would operate at full load and the facility's ability to use the recovered heat. Facilities with a continuous need 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 no potential for installing a cost-effective CHP system.

Based on a preliminary analysis, the facility does not appear to meet the minimum requirements for a cost-effective CHP installation. Low or infrequent thermal load, and lack of space for siting the equipment are the most significant factors contributing to the lack of CHP potential.

The graphic below displays the results of the CHP potential screening conducted as a part of this audit. The position of each slider indicates the potential (potential increases to the right) that each factor contributes to the overall site potential.

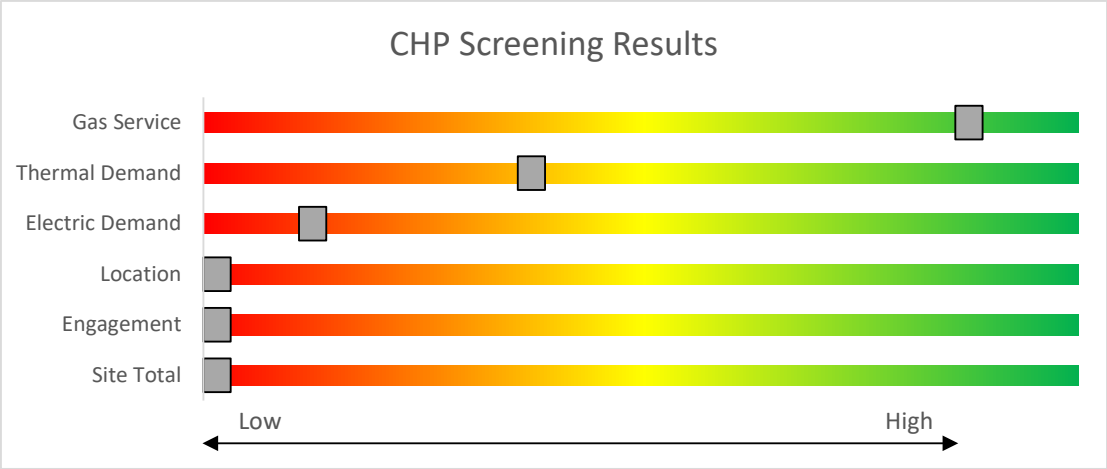


Figure 10 - Combined Heat and Power Screening

Find a qualified firm that specializes in commercial CHP cost assessment and installation: http://www.njcleanenergy.com/commercial-industrial/programs/nj-smartstart-buildings/tools-and-resources/tradeally/approved_vendorsearch/.

7 PROJECT FUNDING AND INCENTIVES

Ready to improve your building's performance? New Jersey's Clean Energy Programs can help. Pick the program that works best for you. Incentive programs that may apply to this facility are identified in the Executive Summary. This section provides an overview of currently available New Jersey's Clean Energy Programs.

	SmartStart *Flexibility to install at your own pace*	**Direct Install** *Turnkey installation*	**Pay for Performance** *Whole building upgrades*
Who should use it?	Buildings installing individual measures or small group of measures.	Small to mid-size facilities that can bundle multiple measures together. Average peak demand should be below 200 kW. Not suitable for significant building shell issues.	Mid to large size facilities looking to implement as many measures as possible at one time. Peak demand should be over 200 kW.
How does it work?	Use in-house staff or your preferred contractor.	Pre-approved contractors pass savings along to you via reduced material and labor costs.	Whole-building approach to energy upgrades designed to reduce energy use by at least 15%. The more you save, the higher the incentives.
What are the Incentives?	Fixed incentives for specific energy efficiency measures.	Incentives pay up to 70% of eligible costs, up to $125,000 per project. You pay the remaining 30% directly to the contractor.	Up to 25% of installation cost, calculated based on level of energy savings per square foot.
How do I participate?	Submit an application for the specific equipment to be installed.	Contact a participating contractor in your region.	Contact a pre-qualified Partner to develop your Energy Reduction Plan and set your energy savings targets.
Take the next step by visiting **www.njcleanenergy.com** for program details, applications, and to contact a qualified contractor.			

7.1 SmartStart

SmartStart offers incentives for installing prescriptive and custom energy efficiency measures at your facility. This program provides an effective mechanism for securing incentives for energy efficiency measures installed individually or as part of a package of energy upgrades. This program serves most common equipment types and sizes.

SmartStart routinely adds, removes, or modifies incentives from year-to-year for various energy efficienct 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

Incentives

The SmartStart Prescriptive program provides fixed incentives for specific energy efficiency measures. Prescriptive incentives vary by equipment type.

SmartStart Custom provides incentives for more unique or specialized technologies or systems that are not addressed through prescriptive incentives. Custom incentives are calculated at $0.16/kWh and $1.60/therm based on estimated annual savings. Incentives are 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

Submit an application for the specific equipment to be installed. Many applications are designed as rebates, although others require application approval prior to installation. You can work with your preferred contractor or use internal staff to install measures.

Visit www.njcleanenergy.com/SSB for a detailed program description, instructions for applying, and applications.

7.2 Direct Install

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

Incentives

The program pays up to 70% of the total installed cost of eligible measures, up to $125,000 per project. Each entity is limited to incentives up to $250,000 per fiscal year.

How to Participate

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

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

7.3 Energy Savings Improvement Program

The Energy Savings Improvement Program (ESIP) serves New Jersey's government agencies by financing energy projects. 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. Annual payments are lower than the savings projected from the ECMs, ensuring that ESIP projects are cash flow positive for the life of the contract.

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 described above can also be used to help further reduce the total project cost of eligible measures.

How to Participate

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 used 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. Carefully consider all alternatives to develop an approach that best meets your needs. A detailed program descriptions and application can be found at: www.njcleanenergy.com/ESIP.

ESIP is a program delivered directly by the NJBPU and is not an NJCEP incentive program. As mentioned above, you can use NJCEP incentive programs to help further reduce costs when developing the energy savings plan. Refer to the ESIP guidelines at the link above for further information and guidance on next steps.

7.4 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 prior to the start of construction 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 Renewable Portfolio Standard. Purchasing SRECs can help them meet those requirements. As SRECs are traded in a competitive market, the price may vary significantly. The actual price of an SREC during a trading period fluctuates depending on supply and demand.

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

8 Energy Purchasing and Procurement Strategies

8.1 Retail Electric Supply Options

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 already buys electricity from a third-party supplier, review and compare prices at the end of each contract year.

A list of licensed third-party electric suppliers is available at the NJBPU website[8].

8.2 Retail Natural Gas Supply Options

The natural gas market in New Jersey is also deregulated. Most customers that remain with the utility for natural gas service pay rates that are market-based and that fluctuate monthly. 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 typically depends on whether a customer prefers 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 does not already purchase natural gas from a third-party supplier, consider shopping for a reduced rate from third-party natural gas suppliers. If your facility already purchases natural gas from a third-party supplier, review and compare prices at the end of each contract year.

A list of licensed third-party natural gas suppliers is available at the NJBPU website[9].

[8] www.state.nj.us/bpu/commercial/shopping.html.

[9] 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	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	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
Roof	4	Halogen Incandescent: Halogen	Wall Switch		90	2,534	3	Relamp	No	4	LED Screw-In Lamps: Screw-In LED Replacement	Wall Switch	14	2,534	0.2	776	0	$128	$121	$4	0.9
Attic Rm	3	Compact Fluorescent: 4-pin, 2 lamps	Wall Switch		26	2,534	3	Relamp	No	3	LED Screw-In Lamps: Pin-Type Replacement	Wall Switch	18	2,534	0.0	65	0	$11	$163	$0	15.3
Elec Closet	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	2,534	3	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,534	0.0	184	0	$30	$73	$20	1.8
Boiler Rm	8	Linear Fluorescent - T5HO: 4' T5HO (54W) - 2L	Wall Switch		117	2,534	3	Relamp	No	8	LED - Linear Tubes: (2) 4' T5HO (25W) Lamps	Wall Switch	51	2,534	0.4	1,472	0	$241	$457	$0	1.9
Boiler Rm	1	Exit Signs: LED - 2 W Lamp	None		6	876		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	876	0.0	0	0	$0	$0	$0	0.0
Main Elec Rm	4	Linear Fluorescent - T5HO: 4' T5HO (54W) - 2L	Wall Switch		117	2,534	3	Relamp	No	4	LED - Linear Tubes: (2) 4' T5HO (25W) Lamps	Wall Switch	51	2,534	0.2	736	0	$120	$228	$0	1.9
Storage	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	2,534	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,534	0.0	92	0	$15	$37	$10	1.8
Custodian Office	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	2,534	3, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,749	0.4	1,405	0	$230	$708	$155	2.4
Custodian Office	2	Exit Signs: LED - 2 W Lamp	None		6	876		None	No	2	Exit Signs: LED - 2 W Lamp	None	6	876	0.0	0	0	$0	$0	$0	0.0
Gym Storage Rm	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	2,534	3	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,534	0.0	184	0	$30	$73	$20	1.8
Basement Stair	1	Incandescent: Screw in	Wall Switch		65	2,534	3	Relamp	No	1	LED Screw-In Lamps: Screw in	Wall Switch	10	2,534	0.0	154	0	$25	$17	$1	0.6
Stairwell 1	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	2,534	3	Relamp	No	5	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,534	0.1	460	0	$75	$183	$50	1.8
Main Hallway	16	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch		114	2,534	3, 5	Relamp	Yes	16	LED - Linear Tubes: (4) 4' Lamps	High/Low Control	58	1,749	0.9	3,300	-1	$539	$1,768	$320	2.7
Main Hallway	4	Exit Signs: LED - 2 W Lamp	None		6	876		None	No	4	Exit Signs: LED - 2 W Lamp	None	6	876	0.0	0	0	$0	$0	$0	0.0
1st Floor Hallway	44	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch		32	2,534	3, 5	Relamp	Yes	44	LED - Linear Tubes: (1) 4' Lamp	High/Low Control	15	1,749	0.7	2,698	-1	$441	$2,693	$220	5.6
1st Floor Hallway	3	Exit Signs: LED - 2 W Lamp	None		6	876		None	No	3	Exit Signs: LED - 2 W Lamp	None	6	876	0.0	0	0	$0	$0	$0	0.0
Stairwell 2	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	2,534	3	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,534	0.1	276	0	$45	$110	$30	1.8
Stairwell 2	1	Exit Signs: LED - 2 W Lamp	None		6	876		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	876	0.0	0	0	$0	$0	$0	0.0
Rm 101	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	2,534	3, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,749	0.4	1,405	0	$230	$708	$155	2.4
Rm 102	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	2,534	3, 4	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,749	0.5	2,107	0	$344	$927	$215	2.1
RM 102	1	Compact Fluorescent: 4-pin, 3 lamps	Wall Switch		39	2,534	3	Relamp	No	1	LED Screw-In Lamps: Pin-Type Replacement	Wall Switch	27	2,534	0.0	33	0	$5	$82	$0	15.3
Rm 103	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	2,534	3, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,749	0.4	1,405	0	$230	$708	$155	2.4
Rm 103	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch		26	2,534	3	Relamp	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,534	0.0	32	0	$5	$18	$5	2.5
Rm 103	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch		33	2,534	3	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,534	0.0	45	0	$7	$33	$6	3.6
Rm 104	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	2,534	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,749	0.1	468	0	$77	$416	$75	4.5

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	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
Exit A	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	2,534	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,534	0.0	92	0	$15	$37	$10	1.8
Men's Rest	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	2,534	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,534	0.0	92	0	$15	$37	$10	1.8
Custodian Closet	1	Compact Fluorescent: 4-pin, 2 lamps	Wall Switch		26	400	3	Relamp	No	1	LED Screw-In Lamps: Pin-Type Replacement	Wall Switch	18	400	0.0	3	0	$1	$54	$0	96.9
Women's Rest	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	2,534	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,534	0.0	92	0	$15	$37	$10	1.8
Rm 105	11	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	2,534	3, 4	Relamp	Yes	11	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,749	0.3	1,288	0	$210	$672	$145	2.5
Rm 105	1	Incandescent: Screw in	Wall Switch		65	2,534	3	Relamp	No	1	LED Screw-In Lamps: Screw in	Wall Switch	10	2,534	0.0	154	0	$25	$17	$1	0.6
Rm 107	12	Compact Fluorescent: 4-pin, 2 lamps	Wall Switch		26	2,534	3, 4	Relamp	Yes	12	LED Screw-In Lamps: Pin-Type Replacement	Occupancy Sensor	18	1,749	0.1	450	0	$73	$922	$35	12.1
Rm 109	12	Compact Fluorescent: 4-pin, 2 lamps	Wall Switch		26	2,534	3, 4	Relamp	Yes	12	LED Screw-In Lamps: Pin-Type Replacement	Occupancy Sensor	18	1,749	0.1	450	0	$73	$922	$35	12.1
Boys Rest	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	2,534	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,749	0.1	468	0	$77	$416	$75	4.5
Closet	1	Compact Fluorescent: 4-pin, 2 lamps	Wall Switch		26	400	3	Relamp	No	1	LED Screw-In Lamps: Pin-Type Replacement	Wall Switch	18	400	0.0	3	0	$1	$54	$0	96.9
Girls Rest	1	Compact Fluorescent: 4-pin, 2 lamps	Wall Switch		26	2,534	3	Relamp	No	1	LED Screw-In Lamps: Pin-Type Replacement	Wall Switch	18	2,534	0.0	22	0	$4	$54	$0	15.3
Girls Rest	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	2,534	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,749	0.1	468	0	$77	$416	$75	4.5
Main Office	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	2,534	3, 4	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,749	0.2	936	0	$153	$562	$115	2.9
Closet	1	Compact Fluorescent: 4-pin, 2 lamps	Wall Switch		26	400	3	Relamp	No	1	LED Screw-In Lamps: Pin-Type Replacement	Wall Switch	18	400	0.0	3	0	$1	$54	$0	96.9
Main Office	3	Compact Fluorescent: 4-pin, 2 lamps	Wall Switch		26	2,534	3	Relamp	No	3	LED Screw-In Lamps: Pin-Type Replacement	Wall Switch	18	2,534	0.0	65	0	$11	$163	$0	15.3
Principal's Office	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	2,534	3, 4	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,749	0.2	702	0	$115	$489	$95	3.4
Supply Rm	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	2,534	3	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,534	0.0	184	0	$30	$73	$20	1.8
Rm 112	12	Compact Fluorescent: 4-pin, 2 lamps	Wall Switch		26	2,534	3, 4	Relamp	Yes	12	LED Screw-In Lamps: Pin-Type Replacement	Occupancy Sensor	18	1,749	0.1	450	0	$73	$922	$35	12.1
Rm 112	1	Exit Signs: LED - 2 W Lamp	None		6	876		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	876	0.0	0	0	$0	$0	$0	0.0
Girls Rest	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	2,534	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,534	0.0	92	0	$15	$37	$10	1.8
Girls Rest	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	2,534	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,749	0.1	468	0	$77	$416	$75	4.5
Rm 113	12	Compact Fluorescent: 4-pin, 2 lamps	Wall Switch		26	2,534	3, 4	Relamp	Yes	12	LED Screw-In Lamps: Pin-Type Replacement	Occupancy Sensor	18	1,749	0.1	450	0	$73	$922	$35	12.1
Stairwell 4	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	2,534	3	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,534	0.1	368	0	$60	$146	$40	1.8
Rm 114	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	2,534	3, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,749	0.4	1,405	0	$230	$708	$155	2.4
Rm 115	17	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	2,534	3, 4	Relamp	Yes	17	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,749	0.5	1,990	0	$325	$891	$205	2.1

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	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
Storage Rm	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	500	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.0	18	0	$3	$37	$10	8.9
Custodial	1	Compact Fluorescent: 4-pin, 2 lamps	Wall Switch		26	2,534	3	Relamp	No	1	LED Screw-In Lamps: Pin-Type Replacement	Wall Switch	18	2,534	0.0	22	0	$4	$54	$0	15.3
Rm 116	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	2,534	3, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,749	0.4	1,405	0	$230	$708	$155	2.4
Rm 117	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	2,534	3, 4	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,749	0.5	1,756	0	$287	$818	$185	2.2
Rm 117	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch		114	2,534	3	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,534	0.0	156	0	$26	$73	$20	2.1
Stairwell 3	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	2,534	3	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,534	0.1	368	0	$60	$146	$40	1.8
2nd Floor Hallway	86	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch		32	2,534	3, 5	Relamp	Yes	86	LED - Linear Tubes: (1) 4' Lamp	High/Low Control	15	1,749	1.4	5,273	-1	$862	$5,350	$430	5.7
2nd Floor Hallway	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch		93	2,534	3	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	2,534	0.0	138	0	$23	$55	$15	1.8
2nd Floor Hallway	6	Exit Signs: LED - 2 W Lamp	None		6	876		None	No	6	Exit Signs: LED - 2 W Lamp	None	6	876	0.0	0	0	$0	$0	$0	0.0
Rm 201	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	2,534	3, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,749	0.4	1,405	0	$230	$708	$155	2.4
Rm 202	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	2,534	3, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,749	0.4	1,405	0	$230	$708	$155	2.4
Rm 203	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	2,534	3, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,749	0.4	1,405	0	$230	$708	$155	2.4
Rm 204	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	2,534	3, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,749	0.4	1,405	0	$230	$708	$155	2.4
Rm 206	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch		114	2,534	3, 4	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,749	0.1	412	0	$67	$416	$75	5.1
Boys Rest	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	2,534	3	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,534	0.0	184	0	$30	$73	$20	1.8
Custodial Closet	2	Compact Fluorescent: 4-pin, 2 lamps	Wall Switch		26	400	3	Relamp	No	2	LED Screw-In Lamps: Pin-Type Replacement	Wall Switch	18	400	0.0	7	0	$1	$109	$0	96.9
Girls Rest	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	2,534	3	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,534	0.0	184	0	$30	$73	$20	1.8
Rm 205	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	2,534	3, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,749	0.4	1,405	0	$230	$708	$155	2.4
Rm 207	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	2,534	3, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,749	0.4	1,405	0	$230	$708	$155	2.4
Rm 208	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	2,534	3, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,749	0.4	1,405	0	$230	$708	$155	2.4
Rm 209	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	2,534	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,534	0.0	92	0	$15	$37	$10	1.8
Rm 209	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch		114	2,534	3, 4	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,749	0.1	412	0	$67	$416	$75	5.1
Rm 209	1	Compact Fluorescent: 4-pin, 2 lamps	Wall Switch		26	2,534	3	Relamp	No	1	LED Screw-In Lamps: Pin-Type Replacement	Wall Switch	18	2,534	0.0	22	0	$4	$54	$0	15.3
Closet	1	Compact Fluorescent: 4-pin, 2 lamps	Wall Switch		26	400	3	Relamp	No	1	LED Screw-In Lamps: Pin-Type Replacement	Wall Switch	18	400	0.0	3	0	$1	$54	$0	96.9
Rm 210	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	2,534	3, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,749	0.4	1,405	0	$230	$708	$155	2.4

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	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
Rm 211	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	2,534	3, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,749	0.4	1,405	0	$230	$708	$155	2.4
Storage Rm	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	500	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.0	18	0	$3	$37	$10	8.9
Rm 212	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	2,534	3, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,749	0.4	1,405	0	$230	$708	$155	2.4
Rm 213	1	Compact Fluorescent: 4-pin, 2 lamps	Wall Switch		26	2,534	3	Relamp	No	1	LED Screw-In Lamps: Pin-Type Replacement	Wall Switch	18	2,534	0.0	22	0	$4	$54	$0	15.3
Rm 213	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	2,534	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,749	0.1	468	0	$77	$416	$75	4.5
Rm 214	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	2,534	3, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,749	0.4	1,405	0	$230	$708	$155	2.4
Rm 215	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	2,534	3, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,749	0.4	1,405	0	$230	$708	$155	2.4
Closet	2	Compact Fluorescent: 4-pin, 2 lamps	Wall Switch		26	400	3	Relamp	No	2	LED Screw-In Lamps: Pin-Type Replacement	Wall Switch	18	400	0.0	7	0	$1	$109	$0	96.9
Boys Rest	3	LED - Linear Tubes: (2) 2' Lamps	Wall Switch		17	2,534		None	No	3	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,534	0.0	0	0	$0	$0	$0	0.0
Rm 216	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	2,534	3, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,749	0.4	1,405	0	$230	$708	$155	2.4
Rm 217	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	2,534	3, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,749	0.4	1,405	0	$230	$708	$155	2.4
Girls Rest	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	2,534	3, 4	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,749	0.1	351	0	$57	$380	$65	5.5
Rm 218	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	2,534	3, 4	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,749	0.5	1,873	0	$306	$854	$195	2.2
Audit Stage	18	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch		88	2,534	2	Relamp & Reballast	No	18	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,534	0.8	2,961	-1	$484	$1,238	$180	2.2
Audit Stage	2	Exit Signs: LED - 2 W Lamp	None		6	876		None	No	2	Exit Signs: LED - 2 W Lamp	None	6	876	0.0	0	0	$0	$0	$0	0.0
Audit Stage	3	Compact Fluorescent: 4-pin, 3 lamps	Wall Switch		39	2,534	3	Relamp	No	3	LED Screw-In Lamps: Pin-Type Replacement	Wall Switch	27	2,534	0.0	98	0	$16	$245	$0	15.3
Audit Stage	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	2,534	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,534	0.0	92	0	$15	$37	$10	1.8
Audit Stage	180	Incandescent: Screw in	Wall Switch		65	2,534	3	Relamp	No	180	LED Screw-In Lamps: Screw in	Wall Switch	10	2,534	7.2	27,725	-6	$4,530	$3,101	$180	0.6
Auditorium	25	Metal Halide: (1) 70W Lamp	Wall Switch		95	2,534	1, 4	Fixture Replacement	Yes	25	LED - Fixtures: Ceiling Mount	Occupancy Sensor	29	1,749	1.4	5,251	-1	$858	$7,967	$320	8.9
Auditorium	4	Exit Signs: LED - 2 W Lamp	None		6	876		None	No	4	Exit Signs: LED - 2 W Lamp	None	6	876	0.0	0	0	$0	$0	$0	0.0
Auditorium	8	Incandescent: Screw in	Wall Switch		390	2,534	3, 4	Relamp	Yes	8	LED Screw-In Lamps: Screw in	Occupancy Sensor	59	1,749	2.0	7,798	-2	$1,274	$408	$43	0.3
Cafeteria	22	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	2,534	3, 4	Relamp	Yes	22	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,749	0.7	2,575	-1	$421	$1,343	$290	2.5
Cafeteria	2	Exit Signs: LED - 2 W Lamp	None		6	876		None	No	2	Exit Signs: LED - 2 W Lamp	None	6	876	0.0	0	0	$0	$0	$0	0.0
Kitchen	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	2,534	3, 4	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,749	0.1	351	0	$57	$380	$65	5.5
Gym	16	Metal Halide: Screw in	Wall Switch		250	2,534	1, 4	Fixture Replacement	Yes	16	LED - Fixtures: Ceiling Mount	Occupancy Sensor	75	1,749	2.3	8,843	-2	$1,445	$5,023	$195	3.3

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Gym	2	Exit Signs: LED - 2 W Lamp	None		6	876		None	No	2	Exit Signs: LED - 2 W Lamp	None	6	876	0.0	0	0	$0	$0	$0	0.0
Storage Rm	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	500	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.0	18	0	$3	$37	$10	8.9
Storage Rm	1	Compact Fluorescent: 4-pin, 2 lamps	Wall Switch		26	500	3	Relamp	No	1	LED Screw-In Lamps: Pin-Type Replacement	Wall Switch	18	500	0.0	4	0	$1	$54	$0	77.6
Gym Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	2,534	3	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,534	0.0	184	0	$30	$73	$20	1.8
Closet	1	Compact Fluorescent: 4-pin, 2 lamps	Wall Switch		26	400	3	Relamp	No	1	LED Screw-In Lamps: Pin-Type Replacement	Wall Switch	18	400	0.0	3	0	$1	$54	$0	96.9
Storage	1	Incandescent: Screw in	Wall Switch		65	500	3	Relamp	No	1	LED Screw-In Lamps: Screw in	Wall Switch	10	500	0.0	30	0	$5	$17	$1	3.3
Recessed	2	Metal Halide: Screw in	Wall Switch		100	4,380	1	Fixture Replacement	No	2	LED - Fixtures: Ceiling Mount	Wall Switch	30	4,380	0.1	613	0	$102	$594	$20	5.7
Wall Pack	4	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Timeclock		25	4,380		None	No	4	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Timeclock	25	4,380	0.0	0	0	$0	$0	$0	0.0
Wall Pack	2	Metal Halide: Screw in	Wall Switch		70	4,380	1	Fixture Replacement	No	2	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	21	4,380	0.0	429	0	$71	$1,932	$200	24.4
Wall Pack	5	LED - Fixtures: Corner Bulb	Wall Switch		55	4,380		None	No	5	LED - Fixtures: Corner Bulb	Wall Switch	55	4,380	0.0	0	0	$0	$0	$0	0.0
Front Entrance	3	LED Screw-In Lamps: Screw in	Wall Switch		18	4,380		None	No	3	LED Screw-In Lamps: Screw in	Wall Switch	18	4,380	0.0	0	0	$0	$0	$0	0.0
Wall Pack	5	Metal Halide: Screw in	Wall Switch		400	4,380	1	Fixture Replacement	No	5	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	120	4,380	0.7	6,132	0	$1,015	$4,830	$500	4.3
Wall Pack	3	Metal Halide: Screw in	Wall Switch		250	4,380	1	Fixture Replacement	No	3	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	75	4,380	0.3	2,300	0	$381	$2,898	$300	6.8
Wall Pack	1	High-Pressure Sodium: (1) 70W Lamp	Wall Switch		95	4,380	1	Fixture Replacement	No	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	29	4,380	0.0	291	0	$48	$966	$100	18.0

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?	Remaining Useful Life	Annual Operating Hours	ECM #	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	Kitchen	1	Kitchen Hood Exhaust Fan	0.5	75.0%	No		1,600		No	75.0%	No		0.0	0	26	$0	$0	$0	0.0
Roof	Restrooms	2	Exhaust Fan	0.3	60.0%	No		2,745		No	60.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Restrooms	3	Exhaust Fan	0.2	60.0%	No		2,745		No	60.0%	No		0.0	0	0	$0	$0	$0	0.0
Boiler Rm	Air Combust.	2	Combustion Air Fan	1.5	84.0%	No		2,745		No	84.0%	No		0.0	0	0	$0	$0	$0	0.0
Boiler Rm	Air Compressor	1	Air Compressor	1.0	82.5%	No		1,200		No	82.5%	No		0.0	0	0	$0	$0	$0	0.0
Boiler Rm	Sump Pump	1	Process Pump	2.0	78.5%	No		2,745		No	78.5%	No		0.0	0	0	$0	$0	$0	0.0
Boiler Rm	Feed Water Pump	2	Boiler Feed Water Pump	0.5	75.0%	No		2,745		No	75.0%	No		0.0	0	0	$0	$0	$0	0.0
Kitchen	Kitchen	1	Exhaust Fan	0.3	60.0%	No		2,745		No	60.0%	No		0.0	0	0	$0	$0	$0	0.0
Cafeteria	Cafeteria	1	Exhaust Fan	0.5	75.0%	No		2,745		No	75.0%	No		0.0	0	0	$0	$0	$0	0.0
School	Uni Vents	27	Supply Fan	0.3	60.0%	No		2,745		No	60.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Auditorium	5	Supply Fan	1.5	84.0%	No		2,745		No	84.0%	No		0.0	0	0	$0	$0	$0	0.0

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 (MBh)	Remaining Useful Life	ECM #	Install High Efficiency System?	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (MBh)	Cooling Mode Efficiency (SEER/EER)	Heating Mode Efficiency (COP)	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
Rm 117	Building	1	Window AC	1.50				No							0.0	0	0	$0	$0	$0	0.0
Rm 203	Building	1	Window AC	1.50				No							0.0	0	0	$0	$0	$0	0.0
Rm 204	Building	1	Window AC	1.50				No							0.0	0	0	$0	$0	$0	0.0
Rm 205	Building	1	Window AC	1.50				No							0.0	0	0	$0	$0	$0	0.0
Rm 207	Building	2	Window AC	1.50				No							0.0	0	0	$0	$0	$0	0.0
Rm 208	Building	1	Window AC	1.50				No							0.0	0	0	$0	$0	$0	0.0
Rm 209	Building	1	Window AC	0.83				No							0.0	0	0	$0	$0	$0	0.0
Rm 210	Building	1	Window AC	1.50				No							0.0	0	0	$0	$0	$0	0.0
Rm 212	Building	1	Window AC	1.50				No							0.0	0	0	$0	$0	$0	0.0
Rm 213	Building	1	Window AC	0.83				No							0.0	0	0	$0	$0	$0	0.0
Rm 214	Building	1	Window AC	1.50				No							0.0	0	0	$0	$0	$0	0.0
Rm 216	Building	1	Window AC	0.83				No							0.0	0	0	$0	$0	$0	0.0
Rm 217	Building	1	Window AC	0.83				No							0.0	0	0	$0	$0	$0	0.0
Rm 218	Building	2	Window AC	0.83				No							0.0	0	0	$0	$0	$0	0.0
Cafeteria	Building	2	Split-System AC	2.50		W		No							0.0	0	0	$0	$0	$0	0.0
Roof	Auditorium	5	Packaged AC	5.00				No							0.0	0	0	$0	$0	$0	0.0
Custodian Office	Building	1	Window AC	1.50			NR	Yes	1	Window AC	1.00		12.00		0.4	315	0	$52	$1,089	$0	20.9
Rm 101	Building	1	Window AC	1.50				No							0.0	0	0	$0	$0	$0	0.0
Rm 102	Building	2	Window AC	1.50				No							0.0	0	0	$0	$0	$0	0.0
Rm 104	Building	1	Window AC	1.50			NR	Yes	1	Window AC	1.00		12.00		0.4	315	0	$52	$1,089	$0	20.9

		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)	Remaining Useful Life	ECM #	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)	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
Rm 105	Building	1	Window AC	1.50				No							0.0	0	0	$0	$0	$0	0.0
Rm 107	Building	1	Window AC	1.50				No							0.0	0	0	$0	$0	$0	0.0
Rm 109	Building	1	Window AC	1.92			NR	Yes	1	Window AC	1.00		12.00		0.7	512	0	$85	$1,089	$0	12.8
Main Office	Building	1	Window AC	0.83			NR	Yes	1	Window AC	1.00		12.00		0.0	0	0	$0	$1,089	$0	0.0
Principal Office	Building	1	Window AC	1.50				No							0.0	0	0	$0	$0	$0	0.0
Rm 112	Building	1	Window AC	1.50				No							0.0	0	0	$0	$0	$0	0.0
Rm114	Building	1	Window AC	1.50				No							0.0	0	0	$0	$0	$0	0.0
Rm 115	Building	1	Window AC	1.50				No							0.0	0	0	$0	$0	$0	0.0

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)	Remaining Useful Life	ECM #	Install High Efficiency System?	System Quantity	System Type	Output Capacity per Unit (MBh)	Heating Efficiency	Heating Efficiency Units	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Boiler Room	Heating System	2	Forced Draft Steam Boiler	######	W		No						0.0	0	0	$0	$0	$0	0.0
Roof	Package Unit Furnace	5	Furnace	78.00			No						0.0	0	0	$0	$0	$0	0.0

DHW Inventory & Recommendations

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

Reach-In Cooler/Freezer Inventory & Recommendations

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

Commercial Refrigerator/Freezer Inventory & Recommendations

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

Cooking Equipment Inventory & Recommendations

	Existing Conditions			Proposed Conditions		Energy Impact & Financial Analysis						
Location	Quantity	Equipment Type	High Efficiency Equipement?	ECM #	Install High Efficiency Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen	1	Insulated Food Holding Cabinet (Full Size)	Yes		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	1	Gas Combination Oven/Steam Cooker (<15 Pans)	Yes		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	1	Gas Convection Oven (Half Size)	Yes		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	3	Gas Combination Oven/Steam Cooker (<15 Pans)	Yes		No	0.0	0	0	$0	$0	$0	0.0

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?	ECM #	Install ENERGY STAR Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Payback w/ Incentives in Years
Kitchen	1	Door Type (High Temp)	Electric	N/A	Yes		No	0.0	0	0	$0	$0	$0	0.0

Plug Load Inventory

	Existing Conditions			
Location	Quantity	Equipment Description	Energy Rate (W)	ENERGY STAR Qualified?
Various	3	Refrigerator	500.0	
Various	5	Microwave	1,200.0	
Various	2	Toaster	1,200.0	
Various	121	Computer	400.0	
Various	13	Printer	50.0	
Various	23	Small Fridge	300.0	
Various	4	Copy Machine	2,000.0	
Various	5	Coffee Machine	1,500.0	
Various	3	Water Cooler	250.0	

Vending Machine Inventory & Recommendations

	Existing Conditions		Proposed Conditions		Energy Impact & Financial Analysis						
Location	Quantity	Vending Machine Type	ECM #	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
Teachers Lounge	1	Non-Refrigerated	N/A	No	0.0	0	0	$0	$0	$0	0.0
Teachers Lounge	1	Refrigerated	6	Yes	0.2	1,612	0	$267	$230	$0	0.9

APPENDIX B: ENERGY STAR® STATEMENT OF ENERGY PERFORMANCE

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.

LEARN MORE AT energystar.gov

ENERGY STAR® Statement of Energy Performance

36

ENERGY STAR® Score[1]

Livingston

Primary Property Type: K-12 School
Gross Floor Area (ft²): 48,600
Built: 1926

For Year Ending: September 30, 2017
Date Generated: November 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
Livingston 960 Midland Boulevard Union, New Jersey 07083	_____ , (___)___-_____	___ _____ , (___)___-_____ _____

Property ID: 6455068

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
93.3 kBtu/ft²

Source EUI
135.3 kBtu/ft²

Annual Energy by Fuel

Natural Gas (kBtu)	3,495,747 (77%)
Electric - Grid (kBtu)	1,037,555 (23%)

National Median Comparison

National Median Site EUI (kBtu/ft²)	81.8
National Median Source EUI (kBtu/ft²)	118.6
% Diff from National Median Source EUI	14%

Annual Emissions

Greenhouse Gas Emissions (Metric Tons CO2e/year)	291

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)

APPENDIX C: GLOSSARY

TERM	DEFINITION
Blended Rate	Used to calculate financial savings. The blended rate is calculated by dividing the amount of your bill by the total energy use. For example, if your bill is $22,217.22, and you used 266,400 kilowatt-hours, your blended rate is 8.3 cents per kilowatt-hour.
BTU	A British thermal unit is the amount of heat required to increase the temperature of one pound water by one-degree Fahrenheit. Commonly used to measure natural gas consumption.
Demand Response	Demand response reduces or shifts electricity usage at or among participating buildings/sites during peak energy use periods in response to time-based rates or other forms of financial incentives.
Energy Efficiency	Reducing the amount of energy necessary to provide comfort and service to a building/area. Achieved through the installation of new equipment and/or optimizing energy management systems.
Generation	The process of generating electric power from sources of primary energy (e.g., natural gas, the sun, oil).
HVAC	Heating, ventilation, and air conditioning.
kW	Kilowatt. Equal to 1,000 Watts.
Load	The total amount of power used by a building system at any given time.
Measure	A single activity, or installation of a single type of equipment, that is implemented in a building system to reduce total energy consumption.
MMBtu	One million British thermal units.
psig	Pounds per square inch.
Plug Load	Refers to the amount of energy used in a space by products that are powered by means of an ordinary AC plug.
Simple Payback	The amount of time needed to recoup the funds expended in an investment, or to reach the break-even point.
Temperature Setpoint	The temperature at which a temperature regulating device (thermostat, for example) has been set.
Turnkey	Provision of a complete product or service that is ready for immediate use
Watt (W)	Unit of power commonly used to measure electricity use.