Local Government Energy Audit Report

Burnet Middle School

April 19, 2019

Prepared for:

Union Township Public Schools
1000 Caldwell Avenue
Union, NJ 07083

Prepared by:

TRC Energy Services
900 Route 9 North
Woodbridge, NJ 07095

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 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. Please review all available program incentives and eligibility requirements prior to selecting and installing any energy conservation measures.

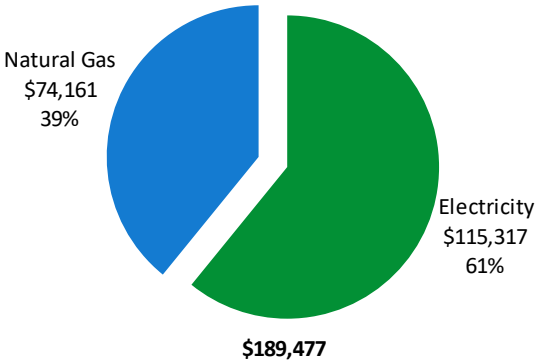
The customer and their respective contractor(s) are responsible to implement energy conservation measures in complete conformance with all applicable local, state and federal requirements.

Table of Contents

1 EXECUTIVE SUMMARY

The New Jersey Board of Public Utilities (NJBPU) has sponsored this Local Government Energy Audit (LGEA) report for Burnet Middle 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: $189,477 Electricity: 715,577 kWh Natural Gas: 79,535 Therms	
ENERGY STAR® Benchmarking Score	63 *(1-100 scale)*	Your building performs at the national average. This report has suggestions about how to keep your building running efficiently, further improve performance and lower your energy bills even more.

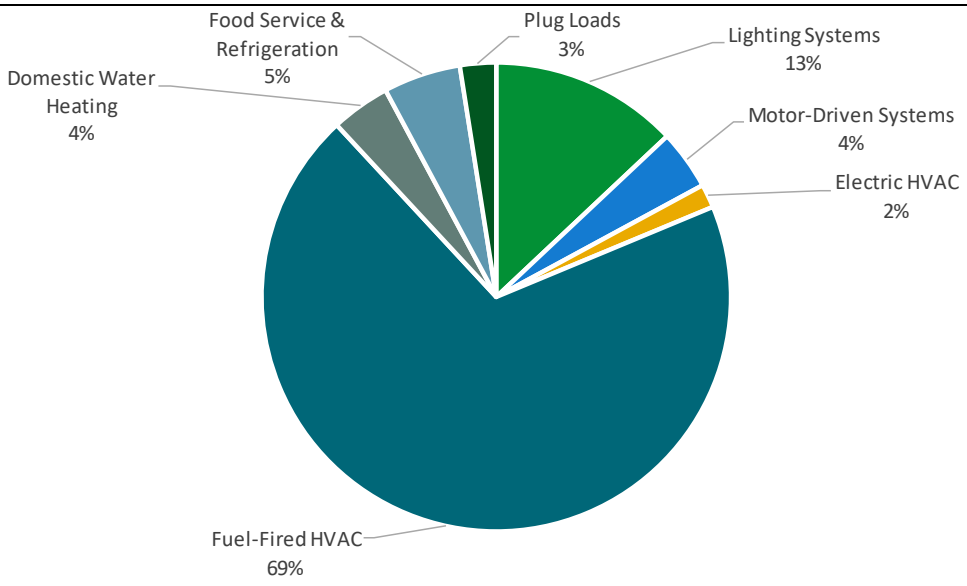


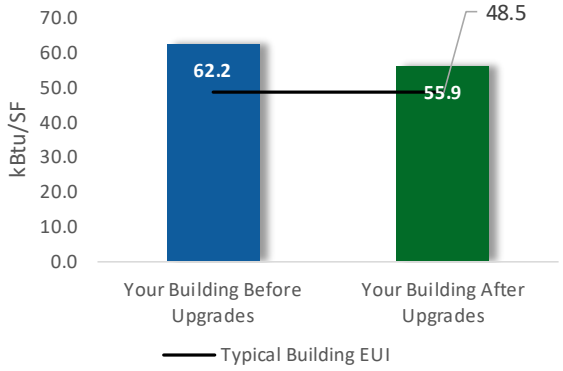
Figure 1 - Energy Use by System

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.

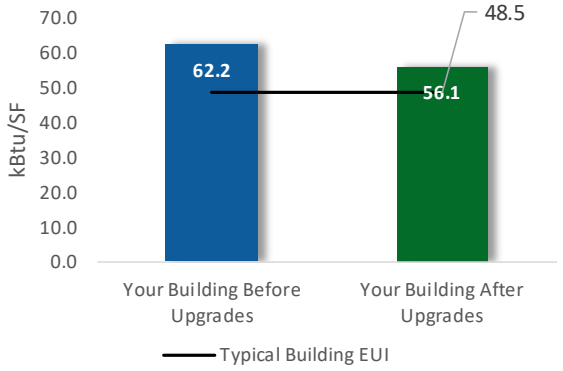
Scenario 1: Full Package (all evaluated measures)

Installation Cost	$309,303
Potential Rebates & Incentives[1]	$33,888
Annual Cost Savings	$51,455
Annual Energy Savings	Electricity: 322,637 kWh
Greenhouse Gas Emission Savings	159 Tons
Simple Payback	5.4 Years
Site Energy Savings (all utilities)	10%



Scenario 2: Cost Effective Package[2]

Installation Cost	$201,728
Potential Rebates & Incentives	$32,900
Annual Cost Savings	$50,554
Annual Energy Savings	Electricity: 317,043 kWh
Greenhouse Gas Emission Savings	156 Tons
Simple Payback	3.3 Years
Site Energy Savings (all utilities)	10%



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	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		**232,756**	**53.4**	**-48**	**$37,066**	**$555,989**	**$110,938**	**$25,025**	**$85,913**	**2.3**	**228,818**
ECM 1	Install LED Fixtures	62,707	13.9	-12	$9,994	$149,905	$46,112	$8,840	$37,272	3.7	61,743
ECM 2	Retrofit Fixtures with LED Lamps	165,713	39.2	-35	$26,382	$395,729	$61,567	$16,185	$45,382	1.7	162,815
ECM 3	Install LED Exit Signs	4,336	0.3	-1	$690	$10,355	$3,259	$0	$3,259	4.7	4,260
Lighting Control Measures		**48,864**	**11.6**	**-10**	**$7,779**	**$62,234**	**$57,258**	**$5,180**	**$52,078**	**6.7**	**48,009**
ECM 4	Install Occupancy Sensor Lighting Controls	39,246	9.3	-8	$6,248	$49,984	$41,658	$5,180	$36,478	5.8	38,560
ECM 5	Install High/Low Lighting Controls	9,618	2.2	-2	$1,531	$12,250	$15,600	$0	$15,600	10.2	9,450
Motor Upgrades		**1,878**	**0.5**	**0**	**$303**	**$4,539**	**$6,568**	**$0**	**$6,568**	**21.7**	**1,891**
	Premium Efficiency Motors	1,878	0.5	0	$303	$4,539	$6,568	$0	$6,568	21.7	1,891
Variable Frequency Drive (VFD) Measures		**25,868**	**8.3**	**0**	**$4,169**	**$62,529**	**$22,126**	**$2,320**	**$19,806**	**4.8**	**26,048**
ECM 6	Install VFDs on Constant Volume (CV) Fans	25,868	8.3	0	$4,169	$62,529	$22,126	$2,320	$19,806	4.8	26,048
Electric Unitary HVAC Measures		**3,716**	**5.1**	**0**	**$599**	**$8,984**	**$101,007**	**$988**	**$100,019**	**167.0**	**3,742**
	Install High Efficiency Air Conditioning Units	3,716	5.1	0	$599	$8,984	$101,007	$988	$100,019	167.0	3,742
Food Service & Refrigeration Measures		**9,555**	**1.1**	**0**	**$1,540**	**$17,424**	**$11,406**	**$375**	**$11,031**	**7.2**	**9,622**
ECM 7	Refrigerator/Freezer Case Electrically Commutated Motors	1,581	0.2	0	$255	$3,822	$1,820	$0	$1,820	7.1	1,592
ECM 8	Replace Refrigeration Equipment	6,362	0.7	0	$1,025	$12,303	$9,356	$375	$8,981	8.8	6,407
ECM 9	Vending Machine Control	1,612	0.2	0	$260	$1,299	$230	$0	$230	0.9	1,623
TOTALS		**322,637**	**80.0**	**-58**	**$51,455**	**$711,699**	**$309,303**	**$33,888**	**$275,416**	**5.4**	**318,131**

* - 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

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 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 Fixtures with LED Lamps	x		x
ECM 3	Install LED Exit Signs	x		x
ECM 4	Install Occupancy Sensor Lighting Controls			x
ECM 5	Install High/Low Lighting Controls	x		x
ECM 6	Install VFDs on Constant Volume (CV) HVAC	x		x
ECM 7	Refrigerator/Freezer Case Electrically Commutated Motors	x		x
ECM 8	Replace Refrigeration Equipment	x		x
ECM 9	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 Burnet Middle 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 Energy Services (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 23, 2018, TRC performed an energy audit at Burnet Middle School located in Union, NJ. TRC met with Raymond E. Mason Jr. to review the facility operations and help focus our investigation on specific energy-using systems.

Burnet Middle School is a two-story, 167,163 square foot building built in 1957. Spaces include: classrooms, gymnasium, auditorium, offices, cafeteria, corridors, stairwells, offices, a commercial kitchen, and basement mechanical space.

2.2 Building Occupancy

The facility is occupied year-round, from September through June. Typical weekday occupancy is 978 students and 135 staff.

Building Name	Weekday/Weekend	Operating Schedule
Burnett Middle School	Weekday	7:00 AM - 12:00 AM
	Weekend	7:00 AM - 4:00 PM

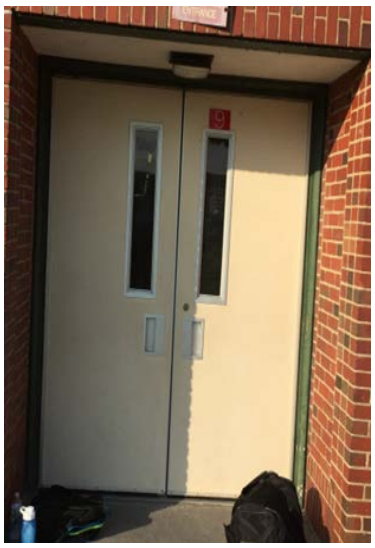
Figure 4 - Building Occupancy Schedule

2.3 Building Envelope

Building walls are concrete block over structural steel with a brick facade. The roof is flat and covered with slag and in fair condition. Some areas of the roof are leaking and need to be repaired.

Most of the windows are double glazed and have aluminum frames. The glass-to-frame seals are in good condition. The operable window weather seals are in fair condition, showing signs of wear. Exterior doors have aluminum frames and are in good condition. Some exit doors are constructed of wood and are in fair condition. Overall, the building envelope appears to be in fair condition.

Flat Slag Roof & Building façade



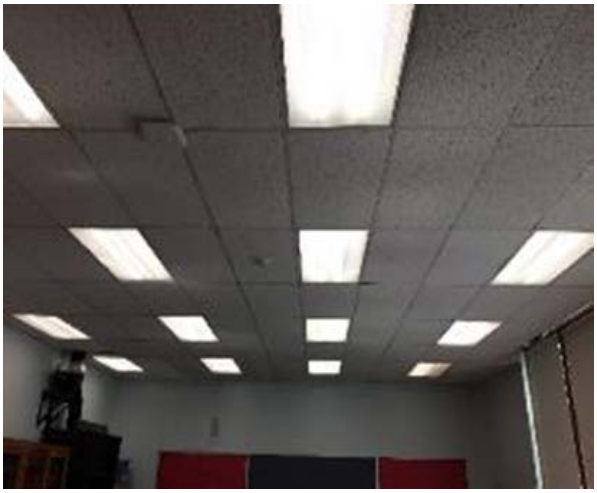
Typical Windows and Doors

2.1 Lighting Systems

The primary interior lighting system uses 32-Watt linear fluorescent T8 lamps. Additionally, there are some compact fluorescent lamps (CFL), incandescent, and LED general purpose lamps. Typically, T8 fluorescent lamps use electronic ballasts.

Fixture types include 2- 3- or 4-lamp, 2- or 4-foot long troffers, recessed, surface mounted fixtures and 2-foot fixtures with U-bend lamps. Most fixtures are in good condition.

The gymnasium and auditorium fixtures have 400-Watt metal halide lamps and are manually controlled. Most exit signs are either LED (2-Watt) or CFL (16-Watt) units. Interior lighting levels were generally sufficient. Lighting fixtures in spaces are controlled by wall switches. Exterior fixtures include LED wall packs and 175-Watt and 150-Watt metal halide fixtures. Exterior light fixtures are controlled by a time clock.



Typical Fluorescent T8 Fixtures

Gym Metal Halide & LED Exit Sign

Typical Exterior Fixtures

2.2 Air Handling Systems

Unit Ventilators

Unit ventilators have supply fan motors, pneumatically controlled outside air dampers and fan coil valves that operate with a pneumatic control system. They have steam coils for heating. They appear to be original to the building and appear to be in fair operating condition.

Packaged Units

The auditorium and room 149 are served with packaged air conditioning (AC) units controlled by room thermostats. The units have a 12.5-ton and 4-ton cooling capacity respectively. The auditorium unit also contains a 210 MBh gas-fired burner heating section. The packaged units are in good condition and well maintained.

Air Conditioners

Classrooms and offices use window air conditioning (AC) units. These vary in capacity between 0.71 and 1.5 tons. Different units are in various conditions, and older units have been evaluated for replacement. The units are controlled by programmable thermostats located in the respective areas. Additionally, cooling is provided by split system ACs in some spaces such as the music room, multi-purpose room, and rooms 130, 140 and 261. They all appear in good condition except the two Trane units serving the multipurpose room.

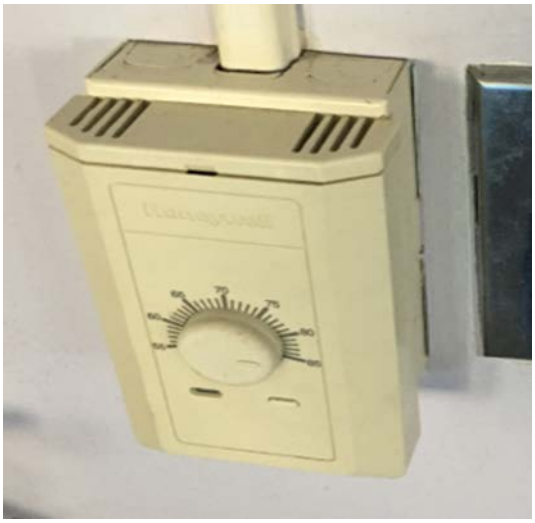
Direct Expansion Cooling System

2.3 Heating (Steam) Systems

Two 5,187 MBh Unilux steam boilers serve the building heating load which were installed in 2013 are in good condition. The burners are fully-modulating with a nominal efficiency of 83% and are required under high load conditions.

The steam distribution system serves the building heating terminals including unit ventilators (in classrooms), radiators (in the hallways), and the air handlers (for larger spaces). There are two 3 hp boiler feed water pumps in the mechanical room. The heating system uses pneumatic controls. A 2 hp air compressor located in the boiler room serves the pneumatic system. The unit ventilators were observed to be old. Temperatures in all spaces are controlled with thermostats.

Steam Boiler & Unit Ventilator



Air Compressor & Local Thermostat

Fresh air is supplied to various spaces by three 5 hp constant speed fans located in fan rooms. The units appear to be original to the building.

Mammoth AHU & Ventilation Fan

2.4 Domestic Hot Water

Hot water is produced with one 250 MBh and one 199 MBh gas-fired storage tank water heater. The larger unit has an efficiency of 82% and has a storage capacity of 200 gallons. The smaller unit has an efficiency of 80% and has a storage capacity of 100 gallons. At the time of the site visit, the domestic water heaters were set at 140°F. Two 1/3 hp circulation pumps distribute water to end uses. The circulation pumps operate continuously.

Domestic Hot Water System

Storage Tank Water Temperature Indicator

2.5 Food Service Equipment

The kitchen has gas equipment that is used to prepare lunches for students. Most cooking is done using a convection oven. Bulk prepared foods are held in several electric holding cabinets. Most equipment is high efficiency and is in good condition.

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

Convection Oven & Mixer

Other Kitchen Equipment

2.6 Refrigeration

The kitchen has several stand-up freezers and refrigerators with either solid or glass doors. There is a freezer chest as well as many refrigerator chests. Most equipment is standard efficiency and in good condition.

The walk-in refrigerator has an estimated 0.5 ton compressor and a two fan evaporator. The walk-in medium temperature freezer has a 0.75 ton compressor and a four fan evaporator. Both units are located in the kitchen. There is also one commercial ice making machine.

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

Refrigeration System

2.7 Plug Load & Vending Machines

The utility bill analysis indicates that plug loads consume approximately 2.5% of total building energy use. This is lower than a typical building.

The building operators seem to already be doing a great job managing the electrical plug loads. This report makes additional suggestions for ECMs in this area as well as Energy Efficient Best Practices.

There are approximately 193 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 items for the kitchen staff. These vary in condition and efficiency.

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

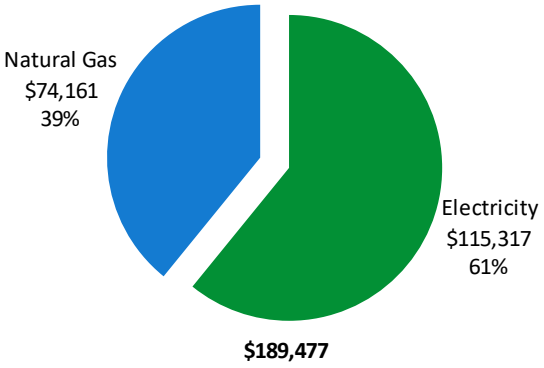
2.8 Water-Using Systems

Faucet flow rates are at 2.2 gallons per minute (gpm) or higher. Toilets are rated at 1.6 gallons per flush (gpf) and urinals are rated at 1.0 gpf.

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	715,577 kWh	$115,317
Natural Gas	79,535 Therms	$74,161
Total		**$189,477**



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.

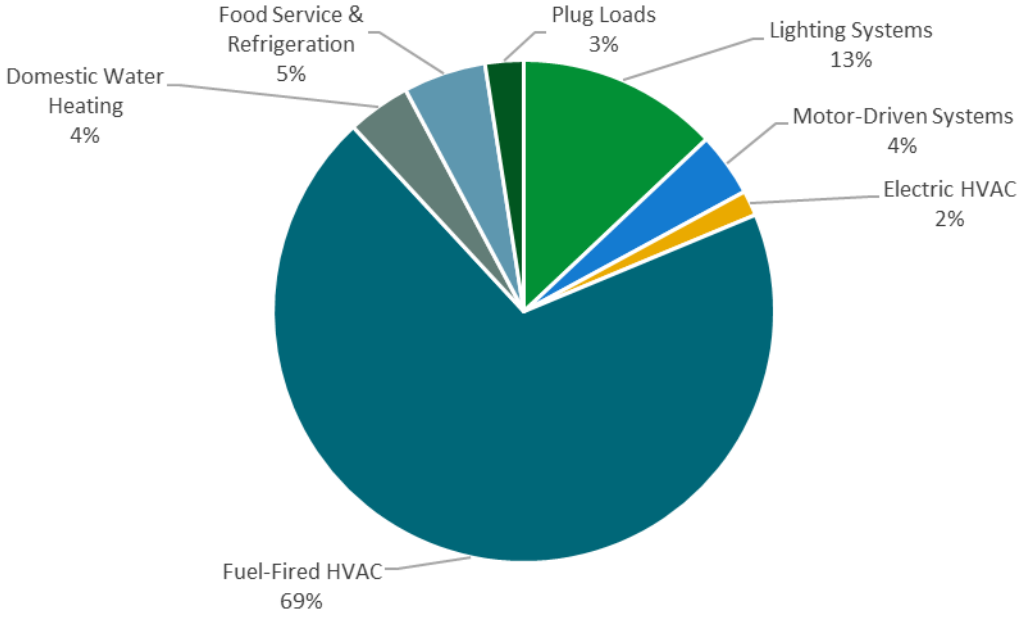
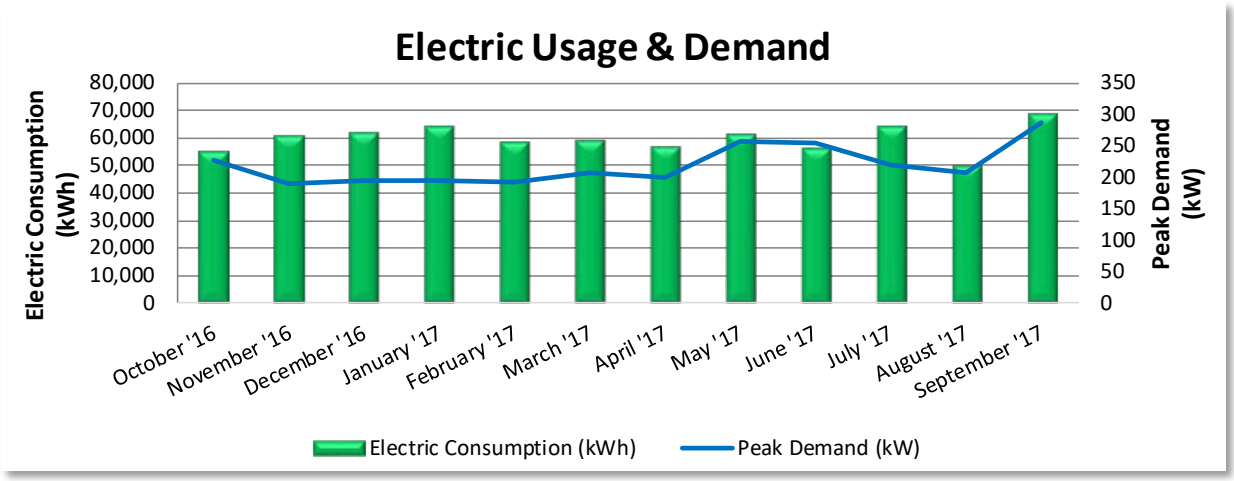


Figure 5 - Energy Balance

3.1 Electricity

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



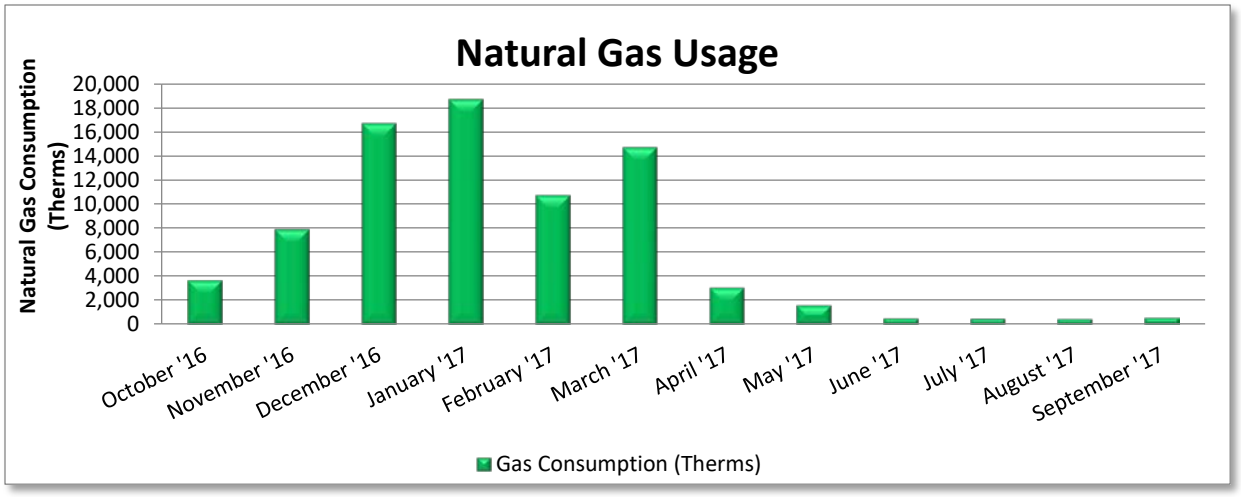
Electric Billing Data					
Period Ending	**Days in Period**	**Electric Usage (kWh)**	**Demand (kW)**	**Demand Cost**	**Total Electric Cost**
11/10/16	30	55,270	226	$843	$8,847
12/13/16	33	61,006	190	$708	$9,547
1/13/17	31	62,135	195	$727	$9,772
2/13/17	31	63,952	196	$728	$10,027
3/15/17	30	58,491	193	$723	$9,482
4/13/17	29	59,217	207	$778	$9,641
5/15/17	32	56,932	199	$751	$9,282
6/14/17	30	61,130	256	$964	$10,583
7/14/17	30	56,323	256	$963	$10,021
8/14/17	31	64,067	220	$827	$10,453
9/13/17	30	50,152	208	$787	$8,737
10/12/17	29	68,862	286	$1,058	$9,241
Totals	**366**	**717,537**	**286**	**$9,857**	**$115,633**
Annual	**365**	**715,577**	**286**	**$9,830**	**$115,317**

Notes:

- Peak electric usage occurred in September 2017.
- The average electric cost over the past 12 months was $0.161/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.

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	30	3,687	$7,484
12/2/16	31	7,927	$16,677
1/1/17	30	16,746	$12,868
2/1/17	31	18,746	$11,714
3/1/17	28	10,764	$8,926
4/1/17	31	14,749	$8,138
5/1/17	30	3,081	$1,902
6/1/17	31	1,608	$956
7/1/17	30	504	$445
8/1/17	31	480	$1,581
9/1/17	31	462	$1,597
10/1/17	30	562	$1,670
Totals	**364**	**79,317**	**$73,958**
Annual	**365**	**79,535**	**$74,161**

Notes:

- The average gas cost for the past 12 months is $0.932/therm, which is the blended rate used throughout the analysis.

3.3 Benchmarking

Your building was benchmarked using the United States Environmental Protection Agency's (EPA) *Portfolio Manager®* software. Benchmarking compares your building's energy use to that of similar buildings across the country, 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	**63**

This report contains suggestions about how to improve building performance and reduce energy costs.

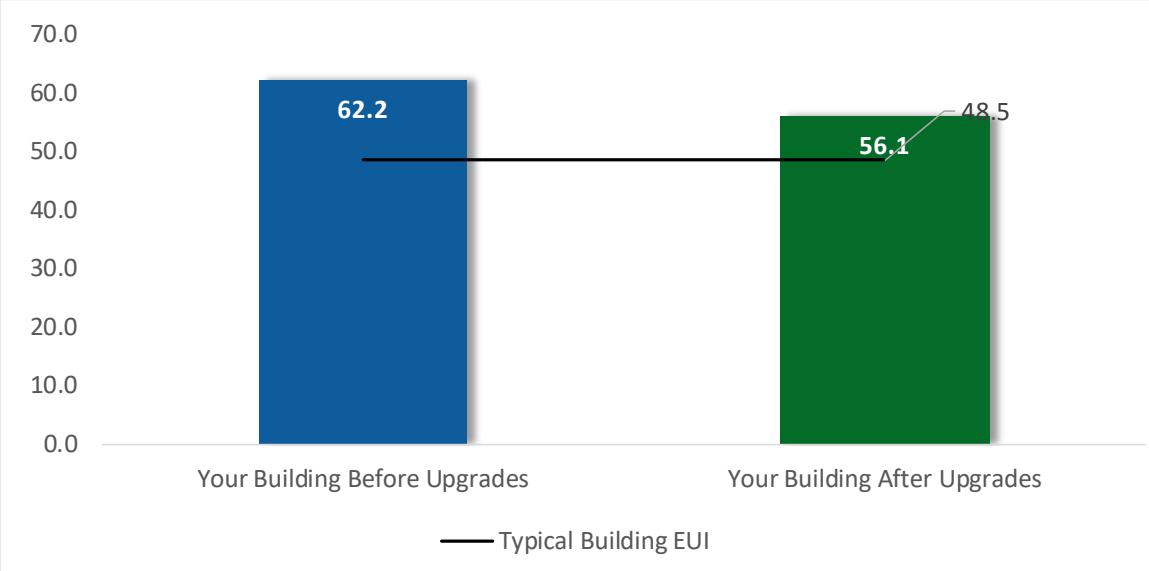


Figure 6 - Energy Use Intensity Comparison

Your building performs at the national average. This report has suggestions about how to keep your building running efficiently, further improve performance, and lower your energy bills even more.

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. Several factors can cause as 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]

[3] https://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/earn-recognition/energy-star-certification/how-app-1.

4 ENERGY CONSERVATION MEASURES

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 Clean Energy Program Protocols to Measure Resource Savings*, which is approved by the NJBPU. 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.

Appendix A: Equipment Inventory & Recommendations provides a detailed list of the locations and recommended upgrades for each energy conservation measure.

#	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		**232,756**	**53.4**	**-48**	**$37,066**	**$110,938**	**$25,025**	**$85,913**	**2.3**	**228,818**
ECM 1	Install LED Fixtures	62,707	13.9	-12	$9,994	$46,112	$8,840	$37,272	3.7	61,743
ECM 2	Retrofit Fixtures with LED Lamps	165,713	39.2	-35	$26,382	$61,567	$16,185	$45,382	1.7	162,815
ECM 3	Install LED Exit Signs	4,336	0.3	-1	$690	$3,259	$0	$3,259	4.7	4,260
Lighting Control Measures		**48,864**	**11.6**	**-10**	**$7,779**	**$57,258**	**$5,180**	**$52,078**	**6.7**	**48,009**
ECM 4	Install Occupancy Sensor Lighting Controls	39,246	9.3	-8	$6,248	$41,658	$5,180	$36,478	5.8	38,560
ECM 5	Install High/Low Lighting Controls	9,618	2.2	-2	$1,531	$15,600	$0	$15,600	10.2	9,450
Motor Upgrades		**1,878**	**0.5**	**0**	**$303**	**$6,568**	**$0**	**$6,568**	**21.7**	**1,891**
	Premium Efficiency Motors	1,878	0.5	0	$303	$6,568	$0	$6,568	21.7	1,891
Variable Frequency Drive (VFD) Measures		**25,868**	**8.3**	**0**	**$4,169**	**$22,126**	**$2,320**	**$19,806**	**4.8**	**26,048**
ECM 6	Install VFDs on Constant Volume (CV) Fans	25,868	8.3	0	$4,169	$22,126	$2,320	$19,806	4.8	26,048
Electric Unitary HVAC Measures		**3,716**	**5.1**	**0**	**$599**	**$101,007**	**$988**	**$100,019**	**167.0**	**3,742**
	Install High Efficiency Air Conditioning Units	3,716	5.1	0	$599	$101,007	$988	$100,019	167.0	3,742
Food Service & Refrigeration Measures		**9,555**	**1.1**	**0**	**$1,540**	**$11,406**	**$375**	**$11,031**	**7.2**	**9,622**
ECM 7	Refrigerator/Freezer Case Electrically Commutated Motors	1,581	0.2	0	$255	$1,820	$0	$1,820	7.1	1,592
ECM 8	Replace Refrigeration Equipment	6,362	0.7	0	$1,025	$9,356	$375	$8,981	8.8	6,407
ECM 9	Vending Machine Control	1,612	0.2	0	$260	$230	$0	$230	0.9	1,623
TOTALS		**322,637**	**80.0**	**-58**	**$51,455**	**$309,303**	**$33,888**	**$275,416**	**5.4**	**318,131**

* - 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		**232,756**	**53.4**	**-48**	**$37,066**	**$110,938**	**$25,025**	**$85,913**	**2.3**	**228,818**
ECM 1	Install LED Fixtures	62,707	13.9	-12	$9,994	$46,112	$8,840	$37,272	3.7	61,743
ECM 2	Retrofit Fixtures with LED Lamps	165,713	39.2	-35	$26,382	$61,567	$16,185	$45,382	1.7	162,815
ECM 3	Install LED Exit Signs	4,336	0.3	-1	$690	$3,259	$0	$3,259	4.7	4,260
Lighting Control Measures		**48,864**	**11.6**	**-10**	**$7,779**	**$57,258**	**$5,180**	**$52,078**	**6.7**	**48,009**
ECM 4	Install Occupancy Sensor Lighting Controls	39,246	9.3	-8	$6,248	$41,658	$5,180	$36,478	5.8	38,560
ECM 5	Install High/Low Lighting Controls	9,618	2.2	-2	$1,531	$15,600	$0	$15,600	10.2	9,450
Variable Frequency Drive (VFD) Measures		**25,868**	**8.3**	**0**	**$4,169**	**$22,126**	**$2,320**	**$19,806**	**4.8**	**26,048**
ECM 6	Install VFDs on Constant Volume (CV) Fans	25,868	8.3	0	$4,169	$22,126	$2,320	$19,806	4.8	26,048
Food Service & Refrigeration Measures		**9,555**	**1.1**	**0**	**$1,540**	**$11,406**	**$375**	**$11,031**	**7.2**	**9,622**
ECM 7	Refrigerator/Freezer Case Electrically Commutated Motors	1,581	0.2	0	$255	$1,820	$0	$1,820	7.1	1,592
ECM 8	Replace Refrigeration Equipment	6,362	0.7	0	$1,025	$9,356	$375	$8,981	8.8	6,407
ECM 9	Vending Machine Control	1,612	0.2	0	$260	$230	$0	$230	0.9	1,623
TOTALS		**317,043**	**74.4**	**-58**	**$50,554**	**$201,728**	**$32,900**	**$168,828**	**3.3**	**312,498**

* - 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		**232,756**	**53.4**	**-48**	**$37,066**	**$110,938**	**$25,025**	**$85,913**	**2.3**	**228,818**
ECM 1	Install LED Fixtures	62,707	13.9	-12	$9,994	$46,112	$8,840	$37,272	3.7	61,743
ECM 2	Retrofit Fixtures with LED Lamps	165,713	39.2	-35	$26,382	$61,567	$16,185	$45,382	1.7	162,815
ECM 3	Install LED Exit Signs	4,336	0.3	-1	$690	$3,259	$0	$3,259	4.7	4,260

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 fixtures containing HID lamps 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 retrofitted 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: Gymnasium, auditorium, 2nd floor hallway, exterior wallpack fixtures

ECM 2: Retrofit Fixtures with LED Lamps

Replace fluorescent T8 and CFLs 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 with T8 tubes and CFL

ECM 3: Install LED Exit Signs

Replace compact fluorescent exit signs with LED exit signs. LED exit signs require virtually no maintenance and have a life expectancy of at least 20 years. This measure saves energy by installing LED fixtures, which use less power than other technologies with an equivalent lighting output. Maintenance savings and improved reliability may also be achieved, as the longer-lasting LED lamps will not need to be replaced as often as the existing lamps.

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		**48,864**	**11.6**	**-10**	**$7,779**	**$57,258**	**$5,180**	**$52,078**	**6.7**	**48,009**
ECM 4	Install Occupancy Sensor Lighting Controls	39,246	9.3	-8	$6,248	$41,658	$5,180	$36,478	5.8	38,560
ECM 5	Install High/Low Lighting Controls	9,618	2.2	-2	$1,531	$15,600	$0	$15,600	10.2	9,450

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, conference rooms, classrooms, gymnasium, library, 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

4.3 Motors

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Motor Upgrades		**1,878**	**0.5**	**0**	**$303**	**$6,568**	**$0**	**$6,568**	**21.7**	**1,891**
	Premium Efficiency Motors	1,878	0.5	0	$303	$6,568	$0	$6,568	21.7	1,891

Premium Efficiency Motors

Replace standard efficiency motors with IHP 2014 efficiency motors. This evaluation assumes that existing motors will be replaced with motors of equivalent size and type. In some cases, additional savings may be possible by downsizing motors to better meet the motor's current load requirements.

Affected motors: The following motors were evaluated for replacement.

Location	Area(s)/System(s) Served	Motor Quantity	Motor Application	HP Per Motor	Additional Motor Description
Room 149	Room 149	1	Supply Fan	3.0	
Boiler room	Air combustor	1	Process Pump	5.0	
Fan room	Hallways	2	Supply Fan	5.0	
Fan room	Fan room	1	Supply Fan	5.0	
Fan room	Fan room	1	Supply Fan	5.0	

Location	Area(s)/System(s) Served	Motor Quantity	Motor Application	HP Per Motor	Additional Motor Description
Gymnasium	Gymnasium	2	Supply Fan	3.0	

Savings are based on the difference between baseline and proposed efficiencies and the assumed annual operating hours. The base case motor energy consumption is estimated using the efficiencies found on nameplates or estimated based on the age of the motor and our best estimates of motor run hours. Efficiencies of proposed motor upgrades are obtained from the current *New Jersey's Clean Energy Program Protocols to Measure Resource Savings*.

The simple payback period of the measure exceeds the expected useful life of the replacement equipment. Therefore, this measure is not recommended based on energy savings alone.

4.4 Variable Frequency Drives (VFD)

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Variable Frequency Drive (VFD) Measures		**25,868**	**8.3**	**0**	**$4,169**	**$22,126**	**$2,320**	**$19,806**	**4.8**	**26,048**
ECM 6	Install VFDs on Constant Volume (CV) Fans	25,868	8.3	0	$4,169	$22,126	$2,320	$19,806	4.8	26,048

Variable frequency drives control motors for fans, pumps, and process equipment based on the actual output required of the driven equipment. Energy savings result from more efficient control of motor energy usage when equipment operates at partial load. The magnitude of energy savings depends on the estimated amount of time that the motor would operate at partial load. For equipment with proposed VFDs, we have included replacing the controlled motor with a new motor —unless the existing motor meets or exceeds IHP 2014 standards—to conservatively account for the cost of an inverter duty rated motor. The savings and cost associated with the new motor are presented with the Premium Efficiency Motor measures. If the proposed VFD measure is not selected for implementation the motor replacement should be reevaluated.

ECM 6 Install VFDs on Constant Volume (CV) Fans

Install VFDs to control constant volume fan motor speeds. This converts a constant-volume, single-zone air handling system into a variable-air-volume (VAV) system. A separate VFD is usually required to control the return fan motor or dedicated exhaust fan motor, if the air handler has one.

Zone thermostats signal the VFD to adjust fan speed to maintain the appropriate temperature in the zone, while maintaining a constant supply air temperature.

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

Energy savings result from reducing the fan speed (and power) when conditions allow for reduced air flow.

Affected air handlers: AHU 1, AHU 2 and Gymnasium

4.5 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		**3,716**	**5.1**	**0**	**$599**	**$101,007**	**$988**	**$100,019**	**167.0**	**3,742**
	Install High Efficiency Air Conditioning Units	3,716	5.1	0	$599	$101,007	$988	$100,019	167.0	3,742

Replacing the unitary HVAC units has a long payback period and may not be justifiable based simply on energy considerations. However, most of the units at this facility are nearing or have reached the end of their normal useful life. Typically, the marginal cost of purchasing a high efficiency unit can be justified by the marginal savings from the improved efficiency. When the window AC units and the packaged unit serving the auditorium is eventually replaced, consider purchasing equipment that exceeds the minimum efficiency required by building codes.

Install High Efficiency Air Conditioning Units

Replace standard efficiency packaged and windows air conditioning units with high efficiency packaged and windows 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.

4.6 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		**9,555**	**1.1**	**0**	**$1,540**	**$11,406**	**$375**	**$11,031**	**7.2**	**9,622**
ECM 7	Refrigerator/Freezer Case Electrically Commutated Motors	1,581	0.2	0	$255	$1,820	$0	$1,820	7.1	1,592
ECM 8	Replace Refrigeration Equipment	6,362	0.7	0	$1,025	$9,356	$375	$8,981	8.8	6,407
ECM 9	Vending Machine Control	1,612	0.2	0	$260	$230	$0	$230	0.9	1,623

ECM 7 Refrigerator/Freezer Case Electrically Commutated Motors

Replace shaded pole or permanent split capacitor (PSC) motors with electronically commutated (EC) motors in walk-in coolers and freezers. Fractional horsepower EC motors are significantly more efficient than mechanically commutated, brushed motors, particularly at low speeds or partial load. By using variable-speed technology, EC motors can optimize fan usage. Because these motors are brushless and use DC power, losses due to friction and phase shifting are eliminated.

Savings for this measure consider both the increased efficiency of the motor as well as the reduction in refrigeration load due to motor heat loss.

ECM 8 Replace Refrigeration Equipment

Replace existing commercial freezer with new ENERGY STAR® rated equipment. The energy savings associated with this measure come from reduced energy usage, due to more efficient technology, and reduced run times.

ECM 9 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.

Economizer Maintenance

Economizers can significantly reduce cooling system load. A malfunctioning economizer can increase the amount of heating and mechanical cooling required by introducing excess amounts of cold or hot outside air. Common economizer malfunctions include broken outdoor thermostat or enthalpy control, or dampers that are stuck or improperly adjusted.

Periodic inspection and maintenance will keep economizers working in sync with the heating and cooling system. This maintenance should be part of annual system maintenance, and it should include proper setting of the outdoor thermostat/enthalpy control, inspection of control and damper operation, lubrication of damper connections, and adjustment of minimum damper position.

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.

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.

Furnace Maintenance

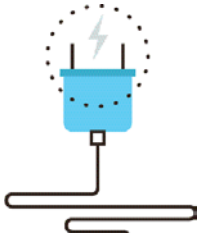
Preventative maintenance can extend the life of the system, maintain energy efficiency, and ensure safe operation. Following the manufacturer's instructions, a yearly tune-up should: check for gas / carbon monoxide leaks; change the air and fuel filters; check components for cracks, corrosion, dirt, or debris build-up; ensure the ignition system is working properly; test and adjust operation and safety controls; inspect electrical connections; and lubricate motors and bearings.

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.

[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.

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.

[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 is converted to alternating current (AC) through an inverter. The inverter is then connected to the building's electrical distribution system.

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

The amount of free area, ease of installation (location), and the lack of shading elements contribute to the 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.

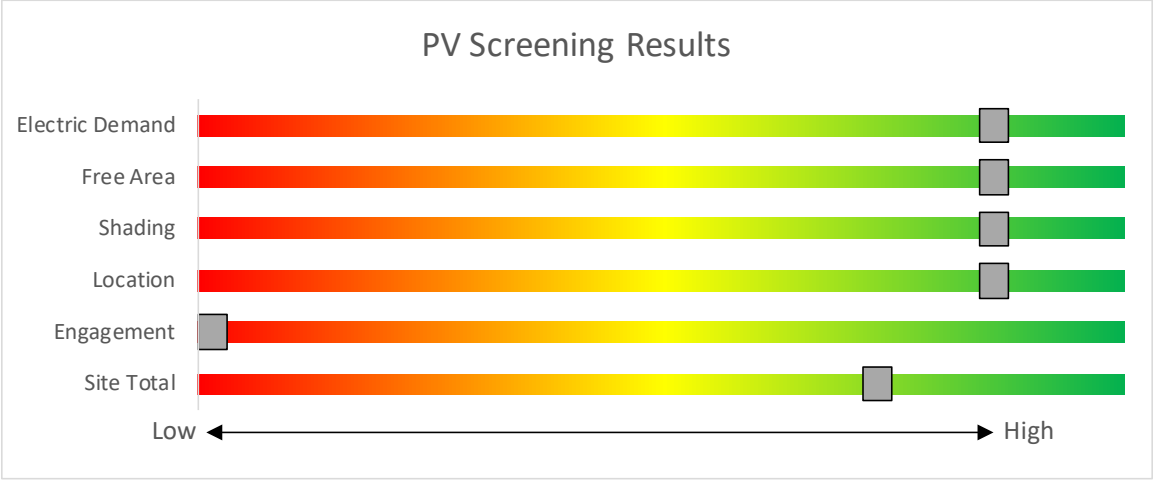


Figure 9 - Photovoltaic Screening

Solar Renewable Energy Certificate (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 low 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. The lack of gas service, 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.

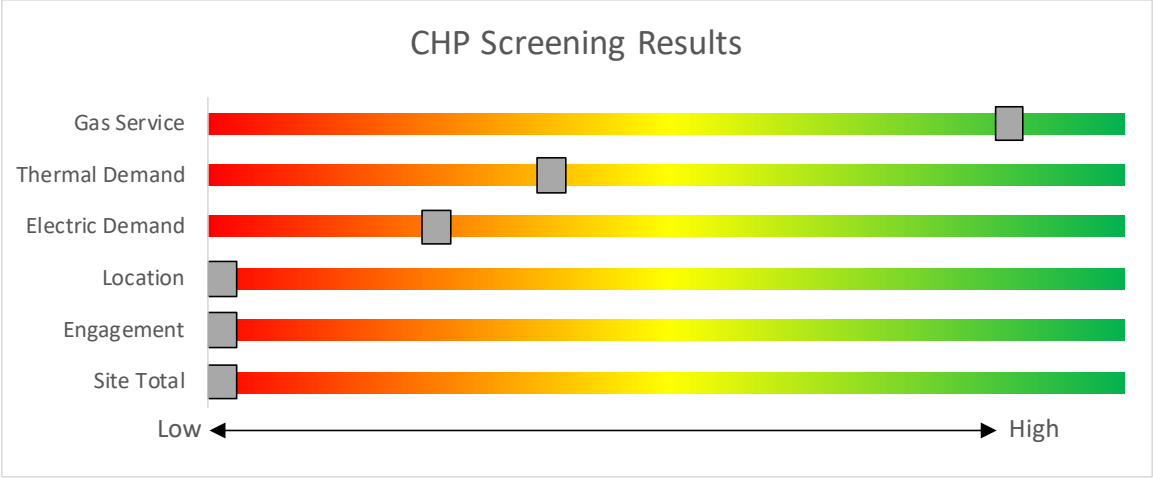


Figure 10 - Combined Heat and Power Screening

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 in 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 efficiency equipment based on market trends and new technologies.

Equipment with Prescriptive Incentives Currently Available:

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

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 Pay for Performance - Existing Buildings

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 that results in at least 15% source energy savings, and lighting cannot make up the majority of the savings. P4P is a generally a good option for medium-to-large sized facilities looking to implement as many measures as possible under a single project to achieve deep energy savings. This program has an added benefit of addressing measures that may not qualify for other programs. Many facilities pursuing an Energy Savings Improvement Program loan also use this program.

The scope of work presented in this audit report does not quite meet the requirements of the current P4P program. However, due to the size of the facility and existing conditions, should additional measures be identified at a later point in time, for example through further evaluation or the Energy Savings Improvement Program process, this facility could potentially meet the requirements necessary to participate in the P4P program.

Incentives

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

How to Participate

Contact one of the pre-approved consultants and contractors ("Partners"). Under direct contract to you, they will help further evaluate the measures identified in this report through development of the energy reduction plan), assist you in implementing selected measures, and verify actual savings one year after the installation. Your Partner will also help you apply for incentives.

Approval of the final scope of work is required by the program prior to installation. Installation can be done by the contractor of your choice (some P4P Partners are also contractors) or by internal staff, but the Partner remains involved throughout construction to ensure compliance with the program requirements.

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

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
Boiler Room	11	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2	Relamp	No	11	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,816	0.3	1,124	0	$179	$402	$110	1.6
Boiler Room	1	Exit Signs: LED - 2 W Lamp	None	S	6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Compressor Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,816	0.1	307	0	$49	$110	$30	1.6
Compressor Room	1	Linear Fluorescent - T8: 2' T8 (17W) - 1L	Wall Switch	S	22	2,816	2	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,816	0.0	15	0	$2	$33	$6	10.8
Kitchen	14	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,816	2, 4	Relamp	Yes	14	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,943	0.7	3,208	-1	$511	$1,562	$350	2.4
Kitchen	1	Exit Signs: Fluorescent	None	S	16	8,760	3	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.0	96	0	$15	$72	$0	4.7
Assembly	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,816	0.0	102	0	$16	$37	$10	1.6
Office	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,816	2	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,816	0.0	173	0	$28	$73	$20	1.9
Kitchen Hood	4	Incandescent: Screw in	Wall Switch	S	65	2,816	2	Relamp	No	4	LED Screw-In Lamps: Incandescent lamp replacement	Wall Switch	9	2,816	0.2	694	0	$110	$69	$4	0.6
Kitchen Lounge	4	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	S	58	2,816		None	No	4	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,816	0.0	0	0	$0	$0	$0	0.0
Kitchen Lounge	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	S	17	2,816		None	No	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,816	0.0	0	0	$0	$0	$0	0.0
Cafeteria	66	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	66	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	2.0	8,585	-2	$1,367	$3,760	$835	2.1
Cafeteria	3	Exit Signs: Fluorescent	None	S	16	8,760	3	Fixture Replacement	No	3	LED Exit Signs: 2 W Lamp	None	6	8,760	0.0	289	0	$46	$217	$0	4.7
3rd Floor Hallway	45	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	2,816	2, 5	Relamp	Yes	45	LED - Linear Tubes: (1) 4' Lamp	High/Low Control	15	1,943	0.7	3,066	-1	$488	$2,222	$225	4.1
4th Floor Hallway	2	Exit Signs: LED - 2 W Lamp	None	S	6	8,760		None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Room 301	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.6	2,601	-1	$414	$1,270	$270	2.4
Room 302	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.4	1,561	0	$248	$978	$190	3.2
Room 304	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.4	1,561	0	$248	$978	$190	3.2
Girls restroom	4	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	2,816	2, 4	Relamp	Yes	4	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,943	0.1	273	0	$43	$343	$55	6.6
Room 303	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.6	2,601	-1	$414	$1,270	$270	2.4
Storage Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,840	2	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,840	0.0	134	0	$21	$73	$20	2.5
Room 305	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.4	1,561	0	$248	$978	$190	3.2
Boys Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	2,816	2	Relamp	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,816	0.0	54	0	$9	$18	$5	1.5
Room 307	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.6	2,601	-1	$414	$1,270	$270	2.4
Room 310	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.6	2,601	-1	$414	$1,270	$270	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
Room 309	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,816	0.0	204	0	$33	$73	$20	1.6
Room 311	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.6	2,601	-1	$414	$1,270	$270	2.4
Room 212	1	Compact Fluorescent: 4 pin	Wall Switch	S	39	2,816	2	Relamp	No	1	LED Screw-In Lamps: Plug-in	Wall Switch	27	2,816	0.0	37	0	$6	$27	$0	4.6
Stairwells	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2	Relamp	No	8	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,816	0.2	818	0	$130	$292	$80	1.6
Stairwells	8	Exit Signs: Fluorescent	None	S	16	8,760	3	Fixture Replacement	No	8	LED Exit Signs: 2 W Lamp	None	6	8,760	0.1	771	0	$123	$579	$0	4.7
2nd floor hallway	44	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 5	Relamp	Yes	44	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,943	1.3	5,723	-1	$911	$3,007	$440	2.8
2nd floor hallway	6	Exit Signs: LED - 2 W Lamp	None	S	6	8,760		None	No	6	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
2nd floor hallway	151	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	2,816	2, 5	Relamp	Yes	151	LED - Linear Tubes: (1) 4' Lamp	High/Low Control	15	1,943	2.4	10,288	-2	$1,638	$7,757	$755	4.3
2nd floor hallway	7	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,816	2, 5	Relamp	Yes	7	LED - Linear Tubes: (4) 4' Lamps	High/Low Control	58	1,943	0.4	1,604	0	$255	$711	$140	2.2
Room 201	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.4	1,561	0	$248	$978	$190	3.2
Room 202	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.5	2,081	0	$331	$1,124	$230	2.7
Room 202A	2	Compact Fluorescent: 4 pin	Wall Switch	S	39	2,816	2	Relamp	No	2	LED Screw-In Lamps: Plug-in	Wall Switch	27	2,816	0.0	74	0	$12	$54	$0	4.6
Restroom	1	Compact Fluorescent: 4 pin	Wall Switch	S	39	2,816	2	Relamp	No	1	LED Screw-In Lamps: Plug-in	Wall Switch	27	2,816	0.0	37	0	$6	$27	$0	4.6
Storage	2	Compact Fluorescent: 4 pin	Wall Switch	S	39	1,840	2	Relamp	No	2	LED Screw-In Lamps: Plug-in	Wall Switch	27	1,840	0.0	49	0	$8	$54	$0	7.0
Room 203	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.4	1,561	0	$248	$978	$190	3.2
Fan Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,816	0.0	102	0	$16	$37	$10	1.6
Room 204	2	Exit Signs: LED - 2 W Lamp	None	S	6	8,760		None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Room 204	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.2	1,041	0	$166	$562	$115	2.7
Room 204	1	Exit Signs: Fluorescent	None	S	16	8,760	3	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.0	96	0	$15	$72	$0	4.7
Room 205	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.4	1,561	0	$248	$978	$190	3.2
Room 207	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.4	1,561	0	$248	$978	$190	3.2
Room 209	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.4	1,561	0	$248	$978	$190	3.2
Boys Restroom	4	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	2,816	2, 4	Relamp	Yes	4	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,943	0.1	273	0	$43	$343	$55	6.6
Custodian	1	Exit Signs: Fluorescent	None	S	16	8,760	3	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.0	96	0	$15	$72	$0	4.7
Room 208	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.4	1,561	0	$248	$978	$190	3.2

	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
Room 211	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.4	1,561	0	$248	$978	$190	3.2
Room 213	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.4	1,561	0	$248	$978	$190	3.2
Room 210	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.5	2,081	0	$331	$1,124	$230	2.7
Room 215	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.4	1,561	0	$248	$978	$190	3.2
Stairwell	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,816	0.1	409	0	$65	$146	$40	1.6
Stairwell exit	1	Exit Signs: Fluorescent	None	S	16	8,760	3	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.0	96	0	$15	$72	$0	4.7
Room 217	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.5	2,081	0	$331	$1,124	$230	2.7
Storage	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,840	2, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,270	0.1	340	0	$54	$262	$40	4.1
Room 219	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.4	1,561	0	$248	$978	$190	3.2
Stiarwell exit	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,816	0.1	409	0	$65	$146	$40	1.6
Stiarwell exit	1	Exit Signs: Fluorescent	None	S	16	8,760	3	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.0	96	0	$15	$72	$0	4.7
Room 221	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.3	1,171	0	$186	$599	$125	2.5
Storage Room	2	Compact Fluorescent: 4 pin	Wall Switch	S	39	1,840	2	Relamp	No	2	LED Screw-In Lamps: Plug-in	Wall Switch	27	1,840	0.0	49	0	$8	$54	$0	7.0
Room 218	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.2	1,041	0	$166	$562	$115	2.7
Room 223	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.2	1,041	0	$166	$562	$115	2.7
Room 225	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.4	1,561	0	$248	$708	$155	2.2
Room 220	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.2	1,041	0	$166	$562	$115	2.7
Room 227	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	520	0	$83	$416	$75	4.1
Room 227	1	Compact Fluorescent: 4 pin	Wall Switch	S	39	2,816	2, 4	Relamp	Yes	1	LED Screw-In Lamps: Plug-in	Occupancy Sensor	27	1,943	0.0	63	0	$10	$27	$0	2.7
Room 229	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.2	1,041	0	$166	$562	$115	2.7
Room 224	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.2	1,041	0	$166	$562	$115	2.7
Room 231	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.2	1,041	0	$166	$562	$115	2.7
Room 333	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.3	1,171	0	$186	$599	$125	2.5
Stairwell 5	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,816	0.1	409	0	$65	$146	$40	1.6
Stairwell 5	1	Exit Signs: Fluorescent	None	S	16	8,760	3	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.0	96	0	$15	$72	$0	4.7

	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
Room 237	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.2	780	0	$124	$489	$95	3.2
Room 239	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.2	780	0	$124	$489	$95	3.2
Room 241	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.2	1,041	0	$166	$562	$115	2.7
Stair 6	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,816	0.1	409	0	$65	$146	$40	1.6
Stair 6	1	Exit Signs: Fluorescent	None	S	16	8,760	3	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.0	96	0	$15	$72	$0	4.7
Room 226	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,816	2, 4	Relamp	Yes	1	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,943	0.1	229	0	$36	$343	$55	7.9
Room 228	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	520	0	$83	$416	$75	4.1
Room 212	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.2	650	0	$104	$453	$85	3.6
Room 214	4	LED - Linear Tubes: Panel	Wall Switch	S	50	2,816	4	None	Yes	4	LED - Linear Tubes: Panel	Occupancy Sensor	50	1,943	0.0	192	0	$31	$270	$35	7.7
Room 216	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.0	130	0	$21	$307	$45	12.6
Gym 1	3	Exit Signs: Fluorescent	None	S	16	8,760	3	Fixture Replacement	No	3	LED Exit Signs: 2 W Lamp	None	6	8,760	0.0	289	0	$46	$217	$0	4.7
2nd floor hallway	16	Metal Halide: (1) 250W Lamp	Wall Switch	S	295	2,816	1, 5	Fixture Replacement	Yes	16	LED - Fixtures: Stairwell/Passageway Lighting	High/Low Control	75	1,943	2.8	12,056	-3	$1,919	$5,367	$1,600	2.0
Gym office	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,816	0.0	102	0	$16	$37	$10	1.6
Girls lockeroom	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2	Relamp	No	8	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,816	0.2	818	0	$130	$292	$80	1.6
Storage room	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,840	2	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,840	0.1	200	0	$32	$110	$30	2.5
Room 245	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.5	2,081	0	$331	$1,124	$230	2.7
Room 247	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.4	1,561	0	$248	$978	$190	3.2
Room 249	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.4	1,561	0	$248	$978	$190	3.2
Room 236	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,816	0.0	102	0	$16	$37	$10	1.6
Room 251	11	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	11	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.3	1,431	0	$228	$672	$145	2.3
Room 238	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.4	1,561	0	$248	$978	$190	3.2
Stair 7	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,816	0.1	409	0	$65	$146	$40	1.6
Stair 7	1	Exit Signs: Fluorescent	None	S	16	8,760	3	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.0	96	0	$15	$72	$0	4.7
Custodian	1	Compact Fluorescent: 4 pin	Wall Switch	S	39	1,840	2	Relamp	No	1	LED Screw-In Lamps: Plug-in	Wall Switch	27	1,840	0.0	24	0	$4	$27	$0	7.2
Room 240	4	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	2,816	2, 4	Relamp	Yes	4	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,943	0.1	273	0	$43	$343	$55	6.6

	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
Room 266	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.4	1,561	0	$248	$978	$190	3.2
Room 257	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	520	0	$83	$416	$75	4.1
Room 242	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	520	0	$83	$416	$75	4.1
Room 244	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.2	1,041	0	$166	$562	$115	2.7
Fan Room	1	Incandescent: Screw in	Wall Switch	S	65	520	2	Relamp	No	1	LED Screw-In Lamps: Incandescent lamp replacement	Wall Switch	9	520	0.0	32	0	$5	$17	$1	3.2
Room 249	45	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	45	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	1.4	5,853	-1	$932	$2,453	$555	2.0
Room 249	1	Compact Fluorescent: 4 pin	Wall Switch	S	39	2,816	2, 4	Relamp	Yes	1	LED Screw-In Lamps: Plug-in	Occupancy Sensor	27	1,943	0.0	62	0	$10	$27	$0	2.7
Room 249	6	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	2,816	2	Relamp	No	6	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,816	0.1	325	0	$52	$110	$30	1.5
Room 261	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2	Relamp	No	8	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,816	0.2	818	0	$130	$292	$80	1.6
Room 263	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.4	1,561	0	$248	$978	$190	3.2
Room 265	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.4	1,561	0	$248	$978	$190	3.2
Room 250	2	Compact Fluorescent: 4 pin	Wall Switch	S	39	2,816	2	Relamp	No	2	LED Screw-In Lamps: Plug-in	Wall Switch	27	2,816	0.0	72	0	$12	$54	$0	4.7
Room 250	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,816	0.0	204	0	$33	$73	$20	1.6
Stair 9	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,816	0.1	409	0	$65	$146	$40	1.6
Stair 9	1	Exit Signs: Fluorescent	None	S	16	8,760	3	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.0	96	0	$15	$72	$0	4.7
Storage Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,840	2	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,840	0.0	134	0	$21	$73	$20	2.5
Room 248	10	Compact Fluorescent: 4 pin	Wall Switch	S	39	2,816	2, 4	Relamp	Yes	10	LED Screw-In Lamps: Plug-in	Occupancy Sensor	27	1,943	0.1	625	0	$99	$542	$35	5.1
Room 248	1	Incandescent: Screw in	Wall Switch	S	65	2,816	2, 4	Relamp	Yes	1	LED Screw-In Lamps: Incandescent lamp replacement	Occupancy Sensor	9	1,943	0.0	182	0	$29	$17	$1	0.6
1st floor hallway	23	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	S	58	2,816	5	None	Yes	23	LED - Linear Tubes: (4) 4' Lamps	High/Low Control	58	1,943	0.3	1,281	0	$204	$800	$0	3.9
1st floor hallway	6	Exit Signs: LED - 2 W Lamp	None	S	6	8,760		None	No	6	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
1st floor hallway	34	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	2,816	2, 5	Relamp	Yes	34	LED - Linear Tubes: (1) 4' Lamp	High/Low Control	15	1,943	0.5	2,316	0	$369	$1,821	$170	4.5
1st floor hallway	8	Exit Signs: Fluorescent	None	S	16	8,760	3	Fixture Replacement	No	8	LED Exit Signs: 2 W Lamp	None	6	8,760	0.1	771	0	$123	$579	$0	4.7
1st floor hallway	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 5	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,943	0.4	1,561	0	$248	$838	$120	2.9
1st floor hallway	2	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	2,816	2	Relamp	No	2	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	2,816	0.0	170	0	$27	$98	$18	2.9
1st floor hallway	2	LED - Linear Tubes: Panel	Wall Switch	S	50	2,816		None	No	2	LED - Linear Tubes: Panel	Wall Switch	50	2,816	0.0	0	0	$0	$0	$0	0.0

	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
1st floor hallway	146	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	2,816	2, 5	Relamp	Yes	146	LED - Linear Tubes: (1) 4' Lamp	High/Low Control	15	1,943	2.3	9,947	-2	$1,584	$7,466	$730	4.3
Main lobby	6	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	S	58	2,816		None	No	6	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,816	0.0	0	0	$0	$0	$0	0.0
Main lobby	4	Exit Signs: LED - 2 W Lamp	None	S	6	8,760		None	No	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Main lobby	4	LED Screw-In Lamps: screw in	Wall Switch	S	11	2,816		None	No	4	LED Screw-In Lamps: screw in	Wall Switch	11	2,816	0.0	0	0	$0	$0	$0	0.0
Room 101	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.4	1,561	0	$248	$978	$190	3.2
Room 102	13	Compact Fluorescent: 4 pin	Wall Switch	S	39	2,816	2, 4	Relamp	Yes	13	LED Screw-In Lamps: Plug-in	Occupancy Sensor	27	1,943	0.2	812	0	$129	$893	$70	6.4
Room 102	1	Exit Signs: Fluorescent	None	S	16	8,760	3	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.0	96	0	$15	$72	$0	4.7
Room 102	2	Incandescent: Screw in	Wall Switch	S	65	2,816	2	Relamp	No	2	LED Screw-In Lamps: Incandescent lamp replacement	Wall Switch	9	2,816	0.1	347	0	$55	$34	$2	0.6
Room 103	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.4	1,561	0	$248	$978	$190	3.2
Room 105	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.4	1,561	0	$248	$978	$190	3.2
Custodian's closet	1	Compact Fluorescent: 4 pin	Wall Switch	S	39	1,840	2	Relamp	No	1	LED Screw-In Lamps: Plug-in	Wall Switch	27	1,840	0.0	24	0	$4	$27	$0	7.2
Girls restroom	3	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	S	58	2,816		None	No	3	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,816	0.0	0	0	$0	$0	$0	0.0
Room 107	11	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2	Relamp	No	11	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,816	0.3	1,124	0	$179	$402	$110	1.6
Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	520	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	520	0.0	19	0	$3	$37	$10	8.8
Room 109	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.5	2,341	0	$373	$1,197	$250	2.5
Room 108	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,816	0.0	204	0	$33	$73	$20	1.6
Room 108	1	Compact Fluorescent: 4 pin	Wall Switch	S	39	2,816	2	Relamp	No	1	LED Screw-In Lamps: Plug-in	Wall Switch	27	2,816	0.0	36	0	$6	$27	$0	4.7
Nurse office	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2	Relamp	No	10	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,816	0.2	1,022	0	$163	$365	$100	1.6
Room 108 A	4	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	2,816	2, 4	Relamp	Yes	4	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	1,943	0.1	439	0	$70	$465	$71	5.6
Room111	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.2	1,041	0	$166	$562	$115	2.7
Room111	3	Compact Fluorescent: 4 pin	Wall Switch	S	39	2,816	2, 4	Relamp	Yes	3	LED Screw-In Lamps: Plug-in	Occupancy Sensor	27	1,943	0.0	187	0	$30	$82	$0	2.7
Stair 13	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,816	0.1	409	0	$65	$146	$40	1.6
Stair 13	1	Exit Signs: Fluorescent	None	S	16	8,760	3	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.0	96	0	$15	$72	$0	4.7
Room 112	1	LED Screw-In Lamps: screw in	Wall Switch	S	11	2,816		None	No	1	LED Screw-In Lamps: screw in	Wall Switch	11	2,816	0.0	0	0	$0	$0	$0	0.0
Room 113	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.4	1,561	0	$248	$978	$190	3.2

	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
Room 115	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,816	0.0	102	0	$16	$37	$10	1.6
Room 117	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.5	2,341	0	$373	$1,197	$250	2.5
Room 119	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.4	1,561	0	$248	$978	$190	3.2
Room 121	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.3	1,301	0	$207	$635	$135	2.4
Girls restroom	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,816	2, 4	Relamp	Yes	3	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,943	0.2	687	0	$109	$489	$95	3.6
Room122	6	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,816	2, 4	Relamp	Yes	6	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,943	0.3	1,375	0	$219	$708	$155	2.5
Room 123	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.5	1,951	0	$311	$1,088	$220	2.8
Room 124	23	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	23	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.7	2,992	-1	$476	$1,380	$300	2.3
Room 124	42	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,816	2, 4	Relamp	Yes	42	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,943	2.2	9,625	-2	$1,532	$3,607	$910	1.8
Room 124	2	Exit Signs: Fluorescent	None	S	16	8,760	3	Fixture Replacement	No	2	LED Exit Signs: 2 W Lamp	None	6	8,760	0.0	193	0	$31	$145	$0	4.7
Room 124	1	Exit Signs: LED - 2 W Lamp	None	S	6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Room 125	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.2	1,041	0	$166	$562	$115	2.7
Room 127	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.2	1,041	0	$166	$562	$115	2.7
Room 127	1	Exit Signs: Fluorescent	None	S	16	8,760	3	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.0	96	0	$15	$72	$0	4.7
Room 127	1	Exit Signs: LED - 2 W Lamp	None	S	6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Room 130	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.2	650	0	$104	$453	$85	3.6
Boys Restroom	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,816	2, 4	Relamp	Yes	3	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,943	0.2	687	0	$109	$489	$95	3.6
Room 129	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.2	780	0	$124	$489	$95	3.2
Room 131	11	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	11	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.3	1,431	0	$228	$672	$145	2.3
Room 133	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.2	780	0	$124	$489	$95	3.2
Room 135	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.2	780	0	$124	$489	$95	3.2
Room 137	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.2	780	0	$124	$489	$95	3.2
Room 136	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.1	520	0	$83	$416	$75	4.1
Room 134	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,816	0.0	102	0	$16	$37	$10	1.6
Room 116	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,816	0.0	102	0	$16	$37	$10	1.6

	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
Room 118	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.2	1,041	0	$166	$562	$115	2.7
Room 139	13	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	13	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.4	1,691	0	$269	$1,015	$200	3.0
Storage Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,840	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,840	0.0	67	0	$11	$37	$10	2.5
Storage Room	20	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	S	58	1,840	4	None	Yes	20	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,270	0.3	728	0	$116	$540	$0	4.7
Storage	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,840	2	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,840	0.1	200	0	$32	$110	$30	2.5
Room 140	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,816	2, 4	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,943	0.5	2,341	0	$373	$1,197	$250	2.5
Storage	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	7	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.2	910	0	$145	$372	$70	2.1
Security office	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	0.2	650	0	$104	$453	$85	3.6
Boys Restroom	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	S	29	2,816		None	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,816	0.0	0	0	$0	$0	$0	0.0
Custodian	1	Compact Fluorescent: 4 pin	Wall Switch	S	39	1,840	2	Relamp	No	1	LED Screw-In Lamps: Plug-in	Wall Switch	27	1,840	0.0	24	0	$4	$27	$0	7.0
Exit 14	2	Compact Fluorescent: 4 pin	Wall Switch	S	39	2,816	2	Relamp	No	2	LED Screw-In Lamps: Plug-in	Wall Switch	27	2,816	0.0	74	0	$12	$54	$0	4.6
Exit 8	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,816	0.0	204	0	$33	$73	$20	1.6
Storage Room	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,840	2, 4	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,270	0.2	425	0	$68	$299	$50	3.7
Fan Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	520	2	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	520	0.1	57	0	$9	$110	$30	8.8
Room 149	42	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	42	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	1.3	5,463	-1	$870	$2,074	$490	1.8
Room 151	4	Compact Fluorescent: 4 pin	Wall Switch	S	39	2,816	2	Relamp	No	4	LED Screw-In Lamps: Plug-in	Wall Switch	27	2,816	0.0	149	0	$24	$109	$0	4.6
Room 151	1	Exit Signs: Fluorescent	None	S	16	8,760	3	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.0	96	0	$15	$72	$0	4.7
Room 151	64	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2, 4	Relamp	Yes	64	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,943	1.9	8,324	-2	$1,325	$3,417	$780	2.0
Main Storage	45	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,840	2, 4	Relamp	Yes	45	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,270	1.4	3,824	-1	$609	$2,453	$450	3.3
Room 149	1	Exit Signs: Fluorescent	None	S	16	8,760	3	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.0	96	0	$15	$72	$0	4.7
Room 150	15	Compact Fluorescent: 4 pin	Wall Switch	S	39	2,816	2, 4	Relamp	Yes	15	LED Screw-In Lamps: Plug-in	Occupancy Sensor	27	1,943	0.2	946	0	$151	$948	$70	5.8
Room 148	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,816	0.0	204	0	$33	$73	$20	1.6
Gym 2 office	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,816	0.0	102	0	$16	$37	$10	1.6
Gym 2	24	Metal Halide: (1) 400W Lamp	Wall Switch	S	458	2,816	1, 4	Fixture Replacement	Yes	24	LED - Fixtures: High-Bay	Occupancy Sensor	146	1,943	6.2	26,560	-6	$4,228	$19,137	$3,670	3.7
Gym 2	3	Exit Signs: Fluorescent	None	S	16	8,760	3	Fixture Replacement	No	3	LED Exit Signs: 2 W Lamp	None	6	8,760	0.0	289	0	$46	$217	$0	4.7

	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	1	Exit Signs: LED - 2 W Lamp	None	S	6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Locker Room	14	Compact Fluorescent: 4 pin	Wall Switch	S	39	2,816	2, 4	Relamp	Yes	14	LED Screw-In Lamps: Plug-in	Occupancy Sensor	27	1,943	0.2	883	0	$141	$921	$70	6.0
Locker Room	2	Incandescent: Screw in	Wall Switch	S	65	2,816	2	Relamp	No	2	LED Screw-In Lamps: Incandescent lamp replacement	Wall Switch	9	2,816	0.1	347	0	$55	$34	$2	0.6
Auditorium	3	Exit Signs: LED - 2 W Lamp	None	S	6	8,760		None	No	3	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Auditorium	2	Exit Signs: Fluorescent	None	S	16	8,760	3	Fixture Replacement	No	2	LED Exit Signs: 2 W Lamp	None	6	8,760	0.0	193	0	$31	$145	$0	4.7
Auditorium	10	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	2,816	2	Relamp	No	10	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,816	0.1	496	0	$79	$325	$60	3.4
Auditorium	10	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	S	44	2,816		None	No	10	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	2,816	0.0	0	0	$0	$0	$0	0.0
Auditorium Stage	24	Metal Halide: (1) 400W Lamp	Wall Switch	S	458	2,816	1	Fixture Replacement	No	24	LED - Fixtures: High-Bay	Wall Switch	146	2,816	5.4	23,195	-5	$3,693	$18,597	$3,600	4.1
Auditorium Stage	1	Exit Signs: Fluorescent	None	S	16	8,760	3	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.0	96	0	$15	$72	$0	4.7
Auditorium Stage	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,816	0.0	102	0	$16	$37	$10	1.6
Dressing Room	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,816	2	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,816	0.1	409	0	$65	$146	$40	1.6
Dressing Room	1	Exit Signs: Fluorescent	None	S	16	8,760	3	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.0	96	0	$15	$72	$0	4.7
Dressing Room	1	Compact Fluorescent: 4 pin	Wall Switch	S	39	2,816	2	Relamp	No	1	LED Screw-In Lamps: Plug-in	Wall Switch	27	2,816	0.0	37	0	$6	$27	$0	4.6
Custodians office	6	Exit Signs: LED - 2 W Lamp	None	S	6	8,760		None	No	6	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Wallpack	7	LED - Fixtures: exterior	Occupancy Sensor	S	40	4,380		None	No	7	LED - Fixtures: exterior	Occupancy Sensor	40	4,380	0.0	0	0	$0	$0	$0	0.0
Wallpack	10	LED - Fixtures: exterior	Occupancy Sensor	S	65	4,380		None	No	10	LED - Fixtures: exterior	Occupancy Sensor	65	4,380	0.0	0	0	$0	$0	$0	0.0
Wallpack	2	LED - Fixtures: exterior	Occupancy Sensor	S	11	4,380		None	No	2	LED - Fixtures: exterior	Occupancy Sensor	11	4,380	0.0	0	0	$0	$0	$0	0.0
Wallpack	3	Metal Halide: (1) 175W Lamp	Occupancy Sensor	S	215	4,380	1	Fixture Replacement	No	3	LED - Fixtures: Outdoor Porch Wall Mount	Occupancy Sensor	53	4,380	0.2	2,129	0	$343	$1,481	$15	4.3
Wallpack	1	LED - Fixtures: exterior	Occupancy Sensor	S	18	4,380		None	No	1	LED - Fixtures: exterior	Occupancy Sensor	18	4,380	0.0	0	0	$0	$0	$0	0.0
Wallpack	3	LED - Fixtures: exterior	Occupancy Sensor	S	9	4,380		None	No	3	LED - Fixtures: exterior	Occupancy Sensor	9	4,380	0.0	0	0	$0	$0	$0	0.0
Recessed	2	LED - Fixtures: exterior	Occupancy Sensor	S	11	4,380		None	No	2	LED - Fixtures: exterior	Occupancy Sensor	11	4,380	0.0	0	0	$0	$0	$0	0.0
Wallpack	5	Metal Halide: (1) 150W Lamp	Occupancy Sensor	S	190	4,380	1	Fixture Replacement	No	5	LED - Fixtures: Outdoor Porch Wall Mount	Occupancy Sensor	40	4,380	0.4	3,285	0	$529	$2,469	$25	4.6

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
Ceiling	AHU 1	1	Supply Fan	2.0	86.5%	No	W	2,745		No	86.5%	No		0.0	0	0	$0	$0	$0	0.0
Ceiling	AHU 2	1	Supply Fan	2.0	86.5%	No	W	2,745		No	86.5%	No		0.0	0	0	$0	$0	$0	0.0
Classrooms	Classrooms	60	Supply Fan	0.3	60.0%	No	W	920		No	60.0%	No		0.0	0	0	$0	$0	$0	0.0
Room 149	Room 149	1	Supply Fan	3.0	89.5%	No	W	2,745	NR, 6	Yes	89.5%	Yes	1	0.9	2,574	0	$415	$3,812	$240	8.6
Roof	Kitchen	1	Exhaust Fan	0.5	60.0%	No	W	1,320		No	60.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Gym	1	Exhaust Fan	0.3	60.0%	No	W	1,320		No	60.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	2nd floor hallway	1	Exhaust Fan	0.3	60.0%	No	W	1,320		No	60.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Dishwasher room	1	Exhaust Fan	0.3	60.0%	No	W	1,320		No	60.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Cafeteria	1	Exhaust Fan	0.3	60.0%	No	W	1,320		No	60.0%	No		0.0	0	0	$0	$0	$0	0.0
Boiler room	Air combustor	1	Process Pump	5.0	85.5%	No	B	2,745	NR	Yes	86.5%	No		0.0	104	0	$17	$711	$0	42.5
Boiler room	Condensate	2	Condensate Pump	0.8	60.0%	No	W	2,745		No	60.0%	No		0.0	0	0	$0	$0	$0	0.0
Boiler room	Feed water pump	2	Process Pump	3.0	85.5%	No	W	2,745		No	85.5%	No		0.0	0	0	$0	$0	$0	0.0
Compressor room	Air compressor	2	Air Compressor	2.0	84.0%	No	W	800		No	84.0%	No		0.0	0	0	$0	$0	$0	0.0
Boiler room	Sum pump	2	Process Pump	1.0	82.5%	No	W	2,745		No	82.5%	No		0.0	0	0	$0	$0	$0	0.0
Boiler room	Booster pump - DHW	2	Process Pump	0.2	60.0%	No	W	2,745		No	60.0%	No		0.0	0	0	$0	$0	$0	0.0
Fan room	Hallways	2	Supply Fan	5.0	82.0%	No	B	2,745	NR, 6	Yes	89.5%	Yes	2	3.2	10,777	0	$1,737	$8,394	$800	4.4
Room 139	Room 139	1	Exhaust Fan	0.3	60.0%	No	W	1,320		No	60.0%	No		0.0	0	0	$0	$0	$0	0.0
Room 140	Room 140	1	Exhaust Fan	0.3	60.0%	No	W	1,320		No	60.0%	No		0.0	0	0	$0	$0	$0	0.0
Fan room	Fan room	1	Supply Fan	5.0	85.5%	No	B	2,745	NR, 6	Yes	89.5%	Yes	1	1.5	4,852	0	$782	$4,076	$400	4.7
Fan room	Fan room	1	Supply Fan	5.0	89.5%	No	W	2,745	NR, 6	Yes	89.5%	Yes	1	1.4	4,290	0	$691	$4,076	$400	5.3

		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
Recycling	Recycling	1	Process Pump	7.5	91.7%	No	W	3,391		No	91.7%	No		0.0	0	0	$0	$0	$0	0.0
Gymnasium	Gymnasium	2	Supply Fan	3.0	89.5%	No	W	2,745	NR, 6	Yes	89.5%	Yes	2	1.7	5,148	0	$830	$7,625	$480	8.6

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
Roof	Room 204 , Music room	2	Split-System AC	2.50		N		No							0.0	0	0	$0	$0	$0	0.0
Ground room	Multi purpose	2	Split-System AC	5.00		B		No							0.0	0	0	$0	$0	$0	0.0
Ground room	Room 130	1	Split-System AC	2.00		W		No							0.0	0	0	$0	$0	$0	0.0
Ground room	Room 140	1	Split-System AC	2.50		W		No							0.0	0	0	$0	$0	$0	0.0
Ground room	Room 149	1	Split-System AC	4.00		W		No							0.0	0	0	$0	$0	$0	0.0
Roof	Room 261	1	Split-System AC	2.00		W		No							0.0	0	0	$0	$0	$0	0.0
Room	Auditorium - ACCU 1	1	Packaged AC	30.00		B	NR	Yes	1	Packaged AC	30.00		12.00		2.5	1,560	0	$251	$66,479	$0	264.5
Room 301	Room 301	1	Window AC	1.50		W		No							0.0	0	0	$0	$0	$0	0.0
Room 302	Room 302	1	Window AC	1.50		W		No							0.0	0	0	$0	$0	$0	0.0
Room 303	Room 303	1	Window AC	1.50		W		No							0.0	0	0	$0	$0	$0	0.0
Room 305	Room 305	1	Window AC	1.50		B	NR	Yes	1	Window AC	1.50		12.00		0.1	78	0	$13	$1,633	$0	130.5
Room 307	Room 307	1	Window AC	1.50		W		No							0.0	0	0	$0	$0	$0	0.0
Room 310	Room 310	1	Window AC	1.50		W		No							0.0	0	0	$0	$0	$0	0.0
Room 205	Room 205	1	Window AC	1.50		W		No							0.0	0	0	$0	$0	$0	0.0
Room 211	Room 211	1	Window AC	1.50		B	NR	Yes	1	Window AC	1.50		12.00		0.1	78	0	$13	$1,633	$0	130.5
Room 213	Room 213	1	Window AC	1.50		W		No							0.0	0	0	$0	$0	$0	0.0
Room 210	Room 210	1	Window AC	1.50		B	NR	Yes	1	Window AC	1.50		12.00		0.1	78	0	$13	$1,633	$0	130.5
Room 217	Room 217	1	Window AC	1.50		W		No							0.0	0	0	$0	$0	$0	0.0
Rppm 219	Rppm 219	1	Window AC	1.50		B	NR	Yes	1	Window AC	1.50		12.00		0.1	78	0	$13	$1,633	$0	130.5
Room 218	Room 218	1	Window AC	1.50		W		No							0.0	0	0	$0	$0	$0	0.0

		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
Room 223	Room 223	1	Window AC	1.50		W		No							0.0	0	0	$0	$0	$0	0.0
Room 225	Room 225	1	Window AC	1.50		W		No							0.0	0	0	$0	$0	$0	0.0
Room 229	Room 229	1	Window AC	1.50		W		No							0.0	0	0	$0	$0	$0	0.0
Room 228	Room 228	1	Window AC	0.42		W		No							0.0	0	0	$0	$0	$0	0.0
Room 214	Room 214	1	Window AC	1.50		B	NR	Yes	1	Window AC	1.50		12.00		0.1	78	0	$13	$1,633	$0	130.5
Room 245	Room 245	1	Window AC	1.50		B	NR	Yes	1	Window AC	1.50		12.00		0.1	78	0	$13	$1,633	$0	130.5
Room 242	Room 242	1	Window AC	1.50		W		No							0.0	0	0	$0	$0	$0	0.0
Room 265	Room 265	1	Window AC	1.50		W		No							0.0	0	0	$0	$0	$0	0.0
Room 109	Room 109	2	Window AC	1.50		W		No							0.0	0	0	$0	$0	$0	0.0
Room 108	Room 108	1	Window AC	1.50		B	NR	Yes	1	Window AC	1.50		12.00		0.1	78	0	$13	$1,633	$0	130.5
Room 111	Room 111	2	Window AC	1.50		B	NR	Yes	1	Window AC	1.50		12.00		0.9	854	0	$138	$1,633	$0	11.9
Room 121	Room 121	1	Window AC	1.50		W		No							0.0	0	0	$0	$0	$0	0.0
Rom 122	Rom 122	1	Window AC	1.50		B	NR	Yes	1	Window AC	1.50		12.00		0.1	78	0	$13	$1,633	$0	130.5
Room 129	Room 129	1	Window AC	1.50		W		No							0.0	0	0	$0	$0	$0	0.0
Room 131	Room 131	1	Window AC	1.50		W		No							0.0	0	0	$0	$0	$0	0.0
Room 136	Room 136	1	Window AC	1.50		B	NR	Yes	1	Window AC	1.50		12.00		0.1	78	0	$13	$1,633	$0	130.5
Room 139	Room 139	1	Window AC	1.50		W		No							0.0	0	0	$0	$0	$0	0.0
Fan Room	Auditorium	1	Packaged AC	12.50		B	NR	Yes	1	Packaged AC	12.50		14.00		0.9	567	0	$91	$17,423	$988	179.7
Room 151	Room 151	1	Window AC	1.50		W		No							0.0	0	0	$0	$0	$0	0.0
Room 149	Room 149	1	Packaged AC	4.00		W		No							0.0	0	0	$0	$0	$0	0.0

		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
Custodian office	Custodian office	1	Window AC	0.71		B	NR	Yes	1	Window AC	0.71		12.00		0.0	36	0	$6	$773	$0	133.6

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	School	2	Forced Draft Steam Boiler	5,187.00	W		No						0.0	0	0	$0	$0	$0	0.0
Fan Room	Auditorium	1	Furnace	211.50	W		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 room	School	1	Storage Tank Water Heater (> 50 Gal)	W		No						0.0	0	0	$0	$0	$0	0.0
Kitchen	Kitchen	1	Storage Tank Water Heater (> 50 Gal)	W		No						0.0	0	0	$0	$0	$0	0.0

Walk-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 Evaporator Fan Control?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen	1	Cooler (35F to 55F)	7	Yes	No	No	0.1	527	0	$85	$607	$0	7.1
Main Storage	1	Medium Temp Freezer (0F to 30F)	7	Yes	No	No	0.1	1,054	0	$170	$1,213	$0	7.1

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	2	Stand-Up Freezer, Solid Door (>50 cu. ft.)	Yes		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	1	Stand-Up Freezer, Solid Door (>50 cu. ft.)	Yes		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	1	Stand-Up Freezer, Solid Door (31 - 50 cu. ft.)	No	8	Yes	0.2	1,841	0	$297	$2,441	$300	7.2
Kitchen	1	Stand-Up Refrigerator, Glass Door (16 - 30 cu. ft.)	Yes		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	1	Refrigerator Chest	Yes		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	1	Stand-Up Refrigerator, Solid Door (31 - 50 cu. ft.)	Yes		No	0.0	0	0	$0	$0	$0	0.0

Commercial Ice Maker Inventory & Recommendations

	Existing Conditions			Proposed Conditions		Energy Impact & Financial Analysis						
Location	Quantity	Ice Maker 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	Self-Contained Unit (≥175 lbs/day), Batch	No	8	Yes	0.5	4,521	0	$729	$6,916	$75	9.4

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	2	Gas Convection Oven (Half Size)	Yes		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	2	Gas Steamer	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 Griddle (≤2 Feet Width)	Yes		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	3	Insulated Food Holding Cabinet (1/2 Size)	Yes		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	2	Insulated Food Holding Cabinet (1/2 Size)	No		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?**
Kitchen	1	Planetary mixer	2.2	Yes
Art room	1	Kiln	9,984.0	Yes
Burnett middle school	6	Small freezer	100.0	Yes
Burnett middle school	8	Refrigerators	60.0	Yes
Burnett middle school	10	Microwave	900.0	Yes
Burnett middle school	5	Toaster	1,200.0	Yes
Burnett middle school	3	Wall flat TV	120.0	Yes
Burnett middle school	33	Printer	60.0	Yes
Burnett middle school	193	Desktop computer	145.0	Yes
Burnett middle school	1	Coffee machine	400.0	Yes
Burnett middle school	26	Old TV - CRT	120.0	Yes
Burnett middle school	2	Electric range	3,000.0	Yes
Burnett middle school	1	Washing machine	900.0	Yes
Burnett middle school	2	Dryer	1,500.0	Yes
Burnett middle school	6	Copy machine	220.0	Yes

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
Kitchen lounge	1	Refrigerated	9	Yes	0.2	1,612	0	$260	$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

63

ENERGY STAR® Score[1]

Burnet Middle

Primary Property Type: K-12 School
Gross Floor Area (ft²): 167,163
Built: 1957

For Year Ending: September 30, 2017
Date Generated: November 13, 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
Burnet Middle 1000 Caldwell Avenue Union, New Jersey 07083	_____ , (____)____-_____	____ _____ , (____)____-_____ _____

Property ID: 6455034

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
62.2 kBtu/ft²

Source EUI
90.9 kBtu/ft²

Annual Energy by Fuel

Natural Gas (kBtu)	7,947,449 (76%)
Electric - Grid (kBtu)	2,448,236 (24%)

National Median Comparison

National Median Site EUI (kBtu/ft²)	71.2
National Median Source EUI (kBtu/ft²)	104.1
% Diff from National Median Source EUI	-13%

Annual Emissions

Greenhouse Gas Emissions (Metric Tons CO2e/year)	670

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.