Local Government Energy Audit Report

Burlington Township High School - Main Building

August 29, 2019

Prepared for:

Burlington Township Board of Education
610 Fountain Avenue
Burlington, NJ 08016

Prepared by:

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Disclaimer

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

TRC Companies Inc. (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.

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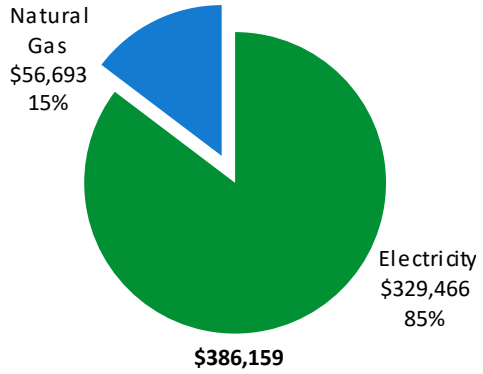
1 EXECUTIVE SUMMARY

The New Jersey Board of Public Utilities (NJBPU) has sponsored this Local Government Energy Audit (LGEA) report for Burlington Township High School - Main Building. 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 Companies Inc. (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 to help protect our environment by reducing statewide energy consumption.

BUILDING PERFORMANCE REPORT

Annual Utilities	Costs: $386,159 Electricity: 2,290,379 kWh Natural Gas: 70,830 Therms	
ENERGY STAR® Benchmarking Score	17 *(1-100 scale)*	This building performs at or below the national average. This report contains suggestions about how to improve building performance and reduce energy costs.

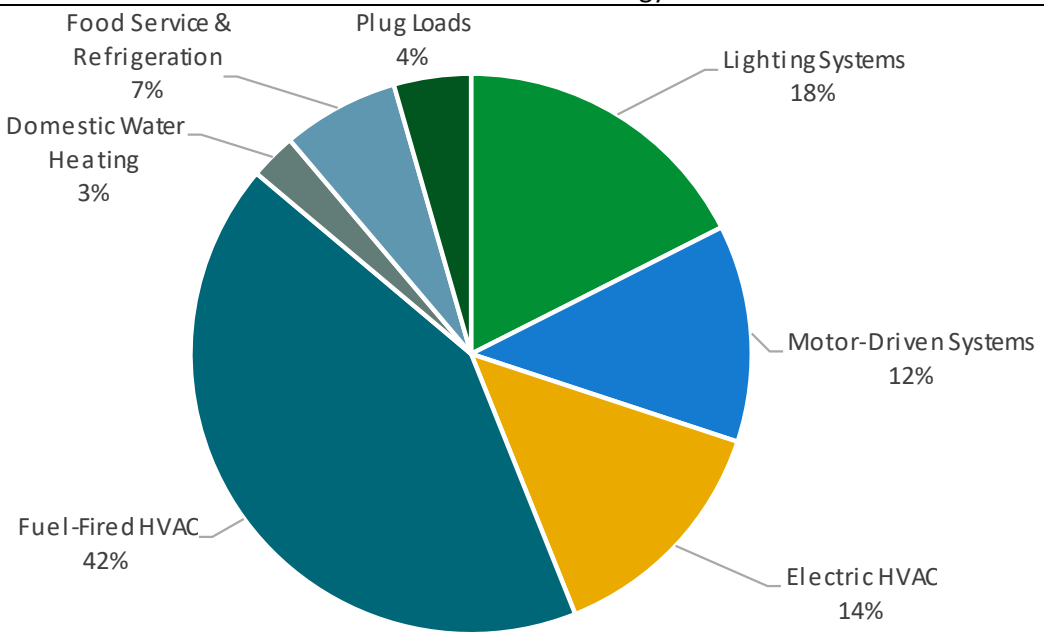


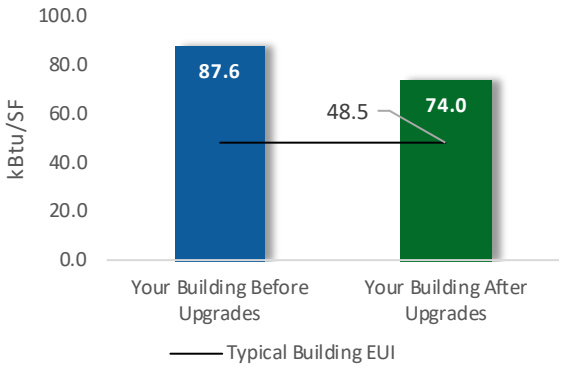
Figure 1 - Energy Use by System

POTENTIAL IMPROVEMENTS

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

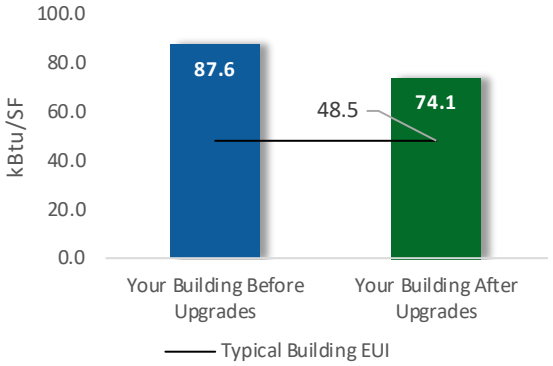
Scenario 1: Full Package (all evaluated measures)

Installation Cost	$512,244
Potential Rebates & Incentives[1]	$45,389
Annual Cost Savings	$98,585
Annual Energy Savings	Electricity: 686,291 kWh
Greenhouse Gas Emission Savings	345 Tons
Simple Payback	4.7 Years
Site Energy Savings (all utilities)	16%



Scenario 2: Cost Effective Package[2]

Installation Cost	$451,638
Potential Rebates & Incentives	$42,479
Annual Cost Savings	$97,627
Annual Energy Savings	Electricity: 680,058 kWh
Greenhouse Gas Emission Savings	341 Tons
Simple Payback	4.2 Years
Site Energy Savings (all utilities)	15%



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		**507,279**	**124.9**	**-88**	**$72,266**	**$1,083,988**	**$231,354**	**$22,394**	**$208,960**	**2.9**	**500,511**
ECM 1	Install LED Fixtures	67,268	7.7	0	$9,676	$145,145	$52,335	$530	$51,805	5.4	67,738
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	12,086	3.3	-3	$1,718	$25,775	$5,915	$900	$5,015	2.9	11,875
ECM 3	Retrofit Fixtures with LED Lamps	427,925	114.0	-86	$60,871	$913,068	$173,104	$20,964	$152,140	2.5	420,898
Lighting Control Measures		**58,664**	**16.0**	**-12**	**$8,340**	**$66,724**	**$73,399**	**$7,745**	**$65,654**	**7.9**	**57,638**
ECM 4	Install Occupancy Sensor Lighting Controls	51,347	14.0	-11	$7,300	$58,402	$63,724	$7,745	$55,979	7.7	50,449
ECM 5	Install High/Low Lighting Controls	7,316	2.0	-2	$1,040	$8,322	$9,675	$0	$9,675	9.3	7,189
Motor Upgrades		**2,134**	**0.6**	**0**	**$307**	**$4,605**	**$8,652**	**$0**	**$8,652**	**28.2**	**2,149**
ECM 6	Premium Efficiency Motors	2,134	0.6	0	$307	$4,605	$8,652	$0	$8,652	28.2	2,149
Variable Frequency Drive (VFD) Measures		**77,815**	**22.0**	**0**	**$11,193**	**$167,902**	**$60,475**	**$3,240**	**$57,235**	**5.1**	**78,359**
ECM 7	Install VFDs on Constant Volume (CV) Fans	33,368	11.6	0	$4,800	$71,999	$22,705	$3,240	$19,465	4.1	33,602
ECM 8	Install VFDs on Chilled Water Pumps	12,445	4.3	0	$1,790	$26,854	$10,303	$0	$10,303	5.8	12,532
ECM 9	Install VFDs on Heating Water Pumps	32,001	6.1	0	$4,603	$69,049	$27,467	$0	$27,467	6.0	32,225
Electric Unitary HVAC Measures		**4,098**	**1.9**	**0**	**$589**	**$8,842**	**$50,118**	**$2,510**	**$47,608**	**80.8**	**4,127**
ECM 10	Install High Efficiency Air Conditioning Units	3,548	1.8	0	$510	$7,656	$36,220	$2,105	$34,115	66.8	3,573
ECM 11	Install High Efficiency Heat Pumps	550	0.2	0	$79	$1,186	$13,898	$405	$13,493	170.6	554
Electric Chiller Replacement		**32,735**	**36.6**	**0**	**$4,709**	**$94,177**	**$85,318**	**$9,000**	**$76,318**	**16.2**	**32,964**
ECM 12	Install High Efficiency Chillers	32,735	36.6	0	$4,709	$94,177	$85,318	$9,000	$76,318	16.2	32,964
Gas Heating (HVAC/Process) Replacement		**0**	**0.0**	**8**	**$62**	**$1,231**	**$1,835**	**$400**	**$1,435**	**23.3**	**901**
ECM 13	Install High Efficiency Furnaces	0	0.0	8	$62	$1,231	$1,835	$400	$1,435	23.3	901
Domestic Water Heating Upgrade		**0**	**0.0**	**76**	**$605**	**$6,052**	**$402**	**$0**	**$402**	**0.7**	**8,853**
ECM 14	Install Low-Flow DHW Devices	0	0.0	76	$605	$6,052	$402	$0	$402	0.7	8,853
Food Service & Refrigeration Measures		**3,566**	**0.4**	**0**	**$513**	**$2,565**	**$690**	**$100**	**$590**	**1.2**	**3,591**
ECM 15	Vending Machine Control	3,566	0.4	0	$513	$2,565	$690	$100	$590	1.2	3,591
TOTALS (COST EFFECTIVE MEASURES)		**680,058**	**199.9**	**-25**	**$97,627**	**$1,421,408**	**$451,638**	**$42,479**	**$409,159**	**4.2**	**681,916**
TOTALS (ALL MEASURES)		**686,291**	**202.4**	**-17**	**$98,585**	**$1,436,086**	**$512,244**	**$45,389**	**$466,854**	**4.7**	**689,093**

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

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

Figure 2 – Evaluated Energy Improvements

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

1.1 Planning Your Project

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

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

Pick Your Installation Approach

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

The potential ECMs identified for this building may 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		
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	X		
ECM 3	Retrofit Fixtures with LED Lamps	X		
ECM 4	Install Occupancy Sensor Lighting Controls	X		
ECM 5	Install High/Low Lighting Controls			
ECM 6	Premium Efficiency Motors	X		
ECM 7	Install VFDs on Constant Volume (CV) HVAC	X		
ECM 8	Install VFDs on Chilled Water Pumps			
ECM 9	Install VFDs on Hot Water Pumps			
ECM 10	Install High Efficiency Electric AC	X		
ECM 11	Install High Efficiency Heat Pumps	X		
ECM 12	Install High Efficiency Chillers	X		
ECM 13	Install High Efficiency Furnaces	X		
ECM 14	Install Low-Flow Domestic Hot Water Devices			
ECM 15	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 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 Burlington Township High School - Main Building. This report provides information on how your facility uses energy, identifies energy conservation measures (ECMs) that can reduce your energy use, and provides information and assistance to help you implement the ECMs. This report also contains valuable information on financial incentives from New Jersey's Clean Energy Program (NJCEP) for implementing ECMs.

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

2.1 Site Overview

On April 2, 2019, TRC performed an energy audit at Burlington Township High School - Main Building located in Burlington, New Jersey. TRC met with facility staff to review the facility operations and help focus our investigation on specific energy-using systems.

Burlington Township High School - Main Building is a one-story, 170,000 square foot building built in 1964 and received additions/renovations in 1985, 1999, 2001; with the most recent renovation in 2017. Spaces include: classrooms, gymnasium, exercise room, offices, cafeteria, corridors, a commercial kitchen, boiler rooms, attic mechanical spaces, and a performing arts center (PAC).

Recent improvements include: the facility has replaced all CRT monitors with new, more efficient flat panel LCD monitors. The site is interested in a new EMS that is easier and more user friendly.

2.2 Building Occupancy

The facility is occupied year-round, with most activities taking place from September through June. Typical weekday occupancy during the school year is 100 staff and 900 students. The facility is in operation from 5:30 AM to 11:30 PM, Monday through Friday for school, after school programs, and custodial services. There is no weekend use.

While summer activity at the school is minimal, the facility remains on the same occupancy schedule for space conditioning for staff and programs that may be occurring throughout the summer.

Building Name	Weekday/Weekend	Operating Schedule
High School - Main Bldg	Weekday	5:30 AM - 11:30 PM
	Weekend	Closed

Figure 4 - Building Occupancy Schedule

2.3 Building Envelope

Building exterior walls are either brick or decorative concrete masonry unit (CMUs) construction with a gypsum drywall interior finish. The actual thickness of insulation in the exterior walls is unknown but varies throughout the additions.

Most of the roof is comprised of composite shingles on a pitched roof. The pitched roofs were constructed over the existing flat roofs as part of a past roofing project implemented by the school district. A portion of the roof is constructed of a built-up roof with a gray color stone covering near the PAC where the rooftop HVAC equipment is located. Most other HVAC systems are located within the pitched roofing sections.

Most of the windows are double glazed and have vinyl frames. However, there are aluminum-framed windows, single-pane windows, and glass block windows in a few areas. The glass-to-frame seals are in good condition. The operable window weather seals appear in good condition, showing little evidence of excessive wear. There are window blinds in the classrooms and offices. Exterior doors have aluminum frames and look to be in good condition.

Brick exterior walls, aluminum framed windows and doors

Glass block windows

Built-up flat roof

Pitched roof w/composite shingles

2.4 Lighting Systems

The primary interior lighting system uses 32-Watt linear fluorescent T8 lamps. There are also a few 40-Watt T12 fixtures and compact fluorescent lamps (CFL). Additionally, there are some LED fixtures located throughout the facility, including some LED tube lamp replacements. Incandescent lamps are mainly found in the PAC, primarily for theatrical lighting. Typically, T8 fluorescent lamps use electronic ballasts and T12 fluorescent lamps use magnetic ballasts.

The most common fixture types include 1-lamp, 2-lamp, 3-lamp, 4-lamp, and 6-lamp, 2-foot or 4-foot long recessed and surface mounted fixtures. Two-lamp, 4-foot fixtures are the most common type.

The fitness center, wrestling room, weight room, and gymnasium are primarily lit with high bay LED fixtures. Lighting in most of these spaces is controlled with occupancy sensors while the gymnasium lighting is manually controlled. All exit signs are LED.

Most fixtures are in good condition. Interior lighting levels were generally sufficient.

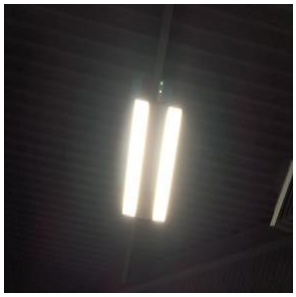
Common recessed T8 fixtures

Typical surface mounted 2-lamp, 4-foot T8 fixture

Wrestling room high-bay LED fixtures

PAC LED recessed can lighting & LED exit signs

Most lighting fixtures are controlled manually and the remainder, less than 2% of the fixtures, by occupancy sensors.



High-bay fixture with onboard occupancy sensor

Cafeteria occupancy sensor

Exterior fixtures include wall packs, canopy lights, and pole mounted fixtures with high intensity discharge (HID), LED, incandescent, and liner fluorescent lamps.

Exterior fixtures are photocell controlled.

The athletic field is illuminated with flood lights with high intensity discharge (HID) lamps and are manually controlled.

Typical canopy fixtures

LED wall pack

Metal Halide wall packs

Pole mounted parking lot fixtures

2.5 Air Handling Systems

Unit Ventilators & Fan Coil Units

Heating-only unit ventilators located in the conditioned space and cooling-only fan coils located in the attic are used to condition most classrooms, faculty rooms, and offices in the A, B, C, and M Wings of the facility. The cooling-only fan coil units were installed in 2015. The unit ventilators in classrooms M8 and M10 have DX cooling. The heating-only unit ventilators are original to the building and appear to be in fair operating condition.

Air Handling Units (AHU)

There are fourteen air-handling units (AHU) serving areas in the PAC, cafeteria, main gym, auxiliary gym, gym penthouse, A Wing, and media center.

The seven AHUs serving the PAC are fed chilled water from the McQuay air-cooled chiller and heating hot water from the central boiler plant. The rest of the AHUs receive chilled water from the two air-cooled Daikin chillers and heating hot water from the central boiler plant.

Packaged Units

The PAC hallway is conditioned by a 5 ton, 10.5 EER packaged roof top unit (RTU) with gas heat and DX cooling and is equipped with an economizer. The C15 Server Room is served by a single packaged AC cooling only unit with an estimated efficiency of 10.8 EER.

The trainer's room, trainer's office, and kitchen serving room are all conditioned with split-system air-source heat pumps. These heat pumps range in cooling capacity from 0.75 tons to 5.75 tons with efficiencies ranging from 10.2 EER to 15 EER.

The D Wing is conditioned by a conventional water-source heat pump system. The heat pumps are located in the attic space of the D Wing attic which is utilized as a plenum. The heat pumps range from 1.25 tons to 3.5 tons of cooling with an efficiency range of 13 to 15 EER. The heat pumps are ducted into the D Wing spaces but have an open plenum return and outside air intakes. Hot water is provided via two Aerco KC series gas-fired boilers and a shell and tube heat exchanger located in the D Wing boiler room. The pumps for the heat pump loop, condenser water loop, and hot water loop are also located in the D Wing boiler room. The condenser water loop utilizes a plate and frame heat exchanger. Heat rejection for the heat pump loop is provided by a Baltimore Air Coil cooling tower.

Air Conditioners

Portions of the A Wing, the Main Office, Music Rooms A15 & A17, cafeteria, kitchen, and the PAC control room are served by split system AC units. These systems range in cooling capacity from 0.71 tons to 30 tons with efficiencies from 9.7 EER to 12 EER.

Tech Room C15 (a server room) has two window air conditioning (AC) units that serve as back up cooling in the event that the packaged AC unit goes down. Transportation, M5, and the A Wing faculty room all have window AC units. These vary in capacity between 18,000 BTUh and 24,000 BTUh. The units are in good condition. They range in efficiency between 9.7 EER to 9.8 EER.

Refer to Appendix A for detailed information about each unit.

Main Office unit ventilator

PAC hallway RTU

D Wing heat pump

D Wing cooling tower for Heat Pump heat rejection

2.6 Heating Hot Water Systems

Except for the D Wing, which utilizes heat pumps for space conditioning, five Aerco 2,000 MBh condensing hot water boilers serve the building heating load. The burners are fully modulating with an efficiency range of 86% to 92%. The boilers are configured in an automated control scheme. Multiple boilers are required under high load conditions. Manufactured in 2000, they appear well maintained and in good condition.

The boilers serve a primary only distribution system with two constant speed 20 hp heating hot water pumps operating in lead/lag fashion.

The manufacturer's boiler controls include an outside air reset algorithm that resets boiler supply water temperature based on the outside ambient temperature. At the time of the inspection, the hot water supply temperature setpoint was 130°F with an outside air temperature of 70°F.

Aerco Benchmark 2.0 boilers

Backside of boilers and supply/return lines

Benchmark 2.0 control panel showing current setpoint

Benchmark 2.0 control panel showing high setpoint

2.7 Chilled Water Systems

The chiller plant consists of two variable speed 200-ton, Daikin, R-134a, air-cooled screw chillers (Chiller 1 and Chiller 2) and a single constant speed 100-ton McQuay, R-22, air-cooled reciprocating chiller (C-1). The Daikin chillers serve most of the facility, while the McQuay chiller serves the PAC.

The Daikin chillers are configured in a primary-secondary distribution loop with two 15 hp variable flow primary pumps and two 20 hp variable flow secondary pumps. Both the primary and secondary pumps are controlled by variable frequency drives (VFD). The C Wing of the building includes a VFD controlled 7.5 hp booster pump for the chilled water loop. The Daikin chiller plant supplies chilled water to the various air handlers and fan coil units serving the A, B, and C Wings, the gymnasium, and media center. The Daikin chillers and associated equipment were installed in 2015 and are in great condition.

The McQuay chiller is configured with a primary distribution loop consisting of two 10 hp constant speed pumps (P-1 and P-2). The McQuay chiller supplies chilled water to the seven air handlers serving the PAC stage, audience area, and lobby. The PAC chiller plant is old but appears well maintained

McQuay air-cooled chiller (PAC)

Daikin air-cooled chillers

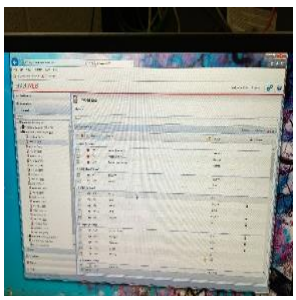
PAC chilled water pumps

Secondary chilled water pumps (Daikin)

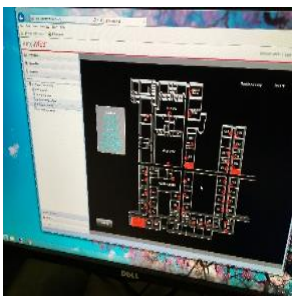
2.8 Building Energy Management Systems (EMS)

A Delta Controls EMS controls most of the HVAC equipment, the boilers, chillers, air handlers, package units, and fan coil units. The EMS has the capability to provide equipment with scheduling control, monitors and controls space temperatures, supply air temperatures, humidity, heating water loop temperatures and chilled water loop temperatures. Space temperature setpoints are heat to 68°F and cool to 73°F.

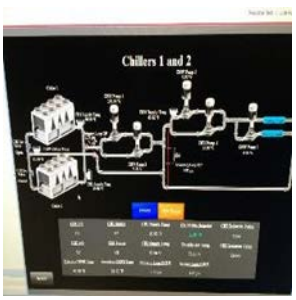
The site staff expressed an interest in replacing the EMS with an up to date system that has a more user-friendly front end.



Screen shot of the Delta Controls enteliWEB frontend



Screen shot of the Delta Controls enteliWEB frontend



Delta Controls enteliWEB: Chillers

Delta Controls enteliWEB: AHU-9

2.9 Domestic Hot Water

Except for the dressing room and bathrooms in the PAC, the facilities hot water is produced by two 1,000 MBh gas-fired boilers with a rated efficiency of 93% and one 1,060 MBh gas-fired boilers with a rated efficiency of 96.4% with two, approximately 100 gallon storage tanks. The PAC restrooms and dressing room hot water is produced by an 80 gallon, 12kW electric water heater.

At the time of the site visit, the domestic hot water boilers were showing outlet temperatures of 148°F, 137°F, and 138°F.

Two 1/6 hp in-line circulation pumps distribute water to end uses. The domestic hot water pipes are mostly insulated, and the insulation is in good condition.

Aerco KC Series 1,000 MBh boilers

A.O. Smith 12 kW electric water heater (PAC)

Aerco Innovation 1060 control panel

Aerco Innovation 1060 nameplate

2.10 Food Service Equipment

The kitchen has a mix of gas and electric equipment that is used to prepare meals for students and staff. Most cooking is done using gas-fired convection ovens. Bulk prepared foods are held in several electric holding cabinets. Equipment is in good condition.

The dishwasher is a low temperature, rack type unit.

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

Electric holding cabinet

Gas fired convection ovens

Dishwasher

Dishwasher wash tank temp and belt speed

2.11 Refrigeration

The kitchen has several stand-up refrigerators mostly with solid doors. There are three refrigerated vertical open display cases and two freezer chests. All equipment is in good condition.

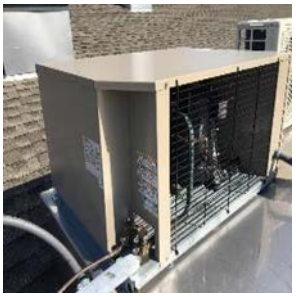
The walk-in refrigerator has an estimated 0.87-ton compressor located on the roof and a two-fan evaporator. The walk-in freezers have approximately 1.47-ton compressors located on the roof and a two-fan evaporator.

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

Refrigerated vertical open display cases

Double door stand-up refrigerator

Reach-in chest freezer



Walk in freezer condensing unit

2.12 Plug Load & Vending Machines

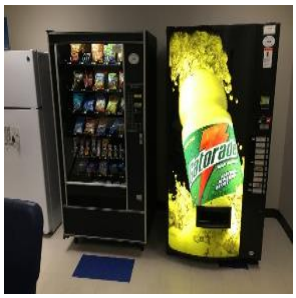
The utility bill analysis indicates that plug loads consume approximately 4% of total building energy use. This is lower than a typical building.

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

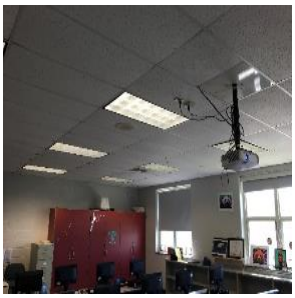
There are 298 computer work stations throughout the facility. Plug loads throughout the building include general office equipment as well as a few residential style dishwashers, electric clothes dryers, and washing machines. There are classroom typical loads such as projectors and fans.

There are several residential style refrigerators, both full size and mini, throughout the building that are used to store perishables. These vary in condition and efficiency.

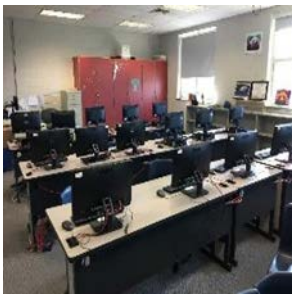
There are two refrigerated beverage vending machines and 1 non-refrigerated vending machines. Vending machines are not equipped with occupancy-based controls.



Non-refrigerated and refrigerated vending machines



Typical classroom projector



Computer work stations

Desktop printer

2.13 Water-Using Systems

There are 31 restrooms with toilets, urinals, and sinks. Faucet flow rates are at 1.5 gallons per minute (gpm) or higher. There are 11 drinking fountains spread throughout the facility.

Boys locker room sinks

Faculty room sink

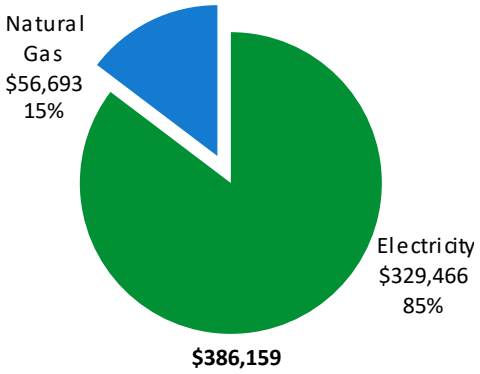
Drinking fountain

Typical urinals

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	2,290,379 kWh	$329,466
Natural Gas	70,830 Therms	$56,693
Total		**$386,159**



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.

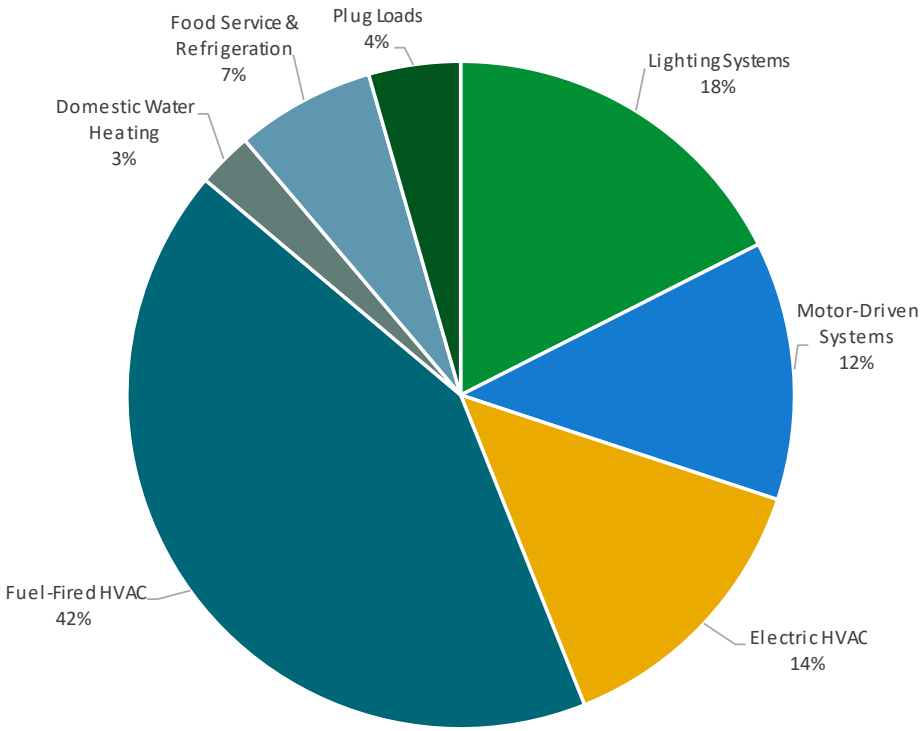
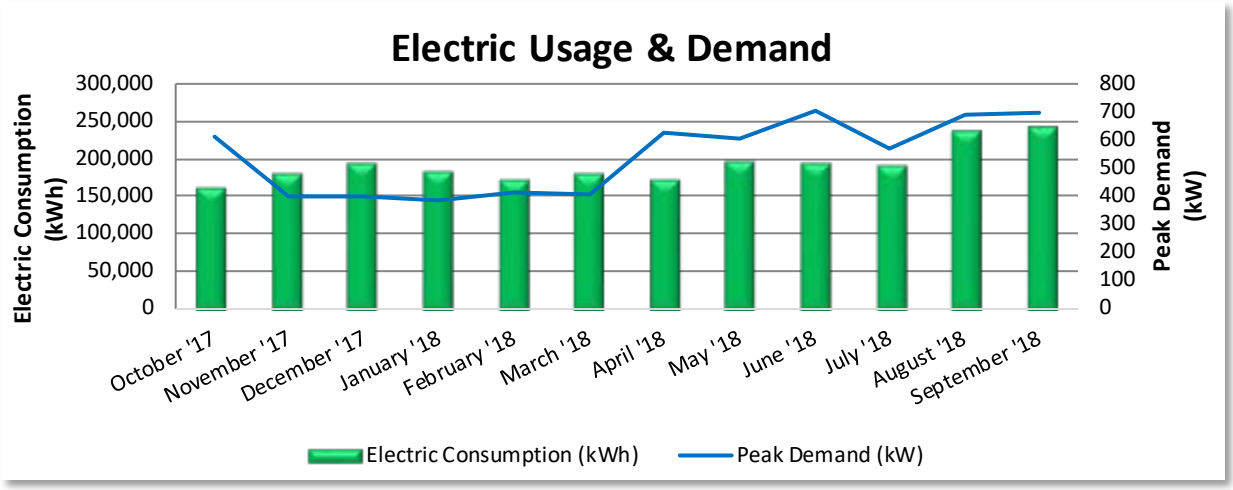


Figure 5 - Energy Balance

3.1 Electricity

PSE&G delivers electricity under rate class LVG, with electric production provided by Direct Energy Business, LLC, a third-party supplier.



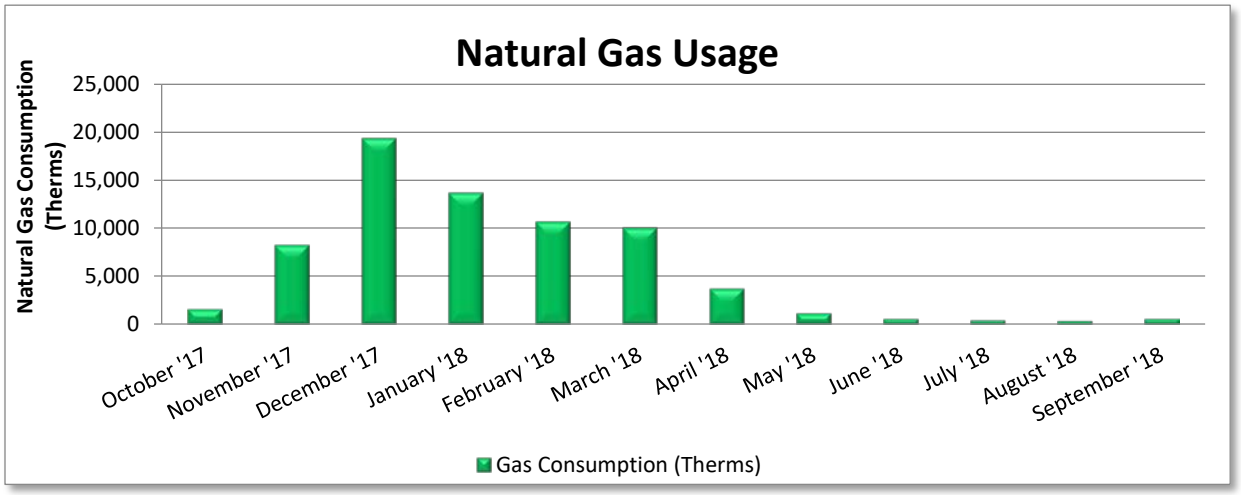
Electric Billing Data					
Period Ending	**Days in Period**	**Electric Usage (kWh)**	**Demand (kW)**	**Demand Cost**	**Total Electric Cost**
11/3/17	28	161,228	610	$2,334	$17,499
12/6/17	33	179,329	398	$1,523	$18,349
1/8/18	33	193,080	400	$1,531	$19,579
2/6/18	29	180,564	386	$1,473	$18,455
3/8/18	30	169,632	411	$1,574	$17,485
4/9/18	32	178,126	404	$1,526	$18,239
5/8/18	29	171,447	625	$2,236	$18,894
6/7/18	30	194,591	608	$7,341	$27,354
7/9/18	32	191,303	708	$8,548	$44,470
8/7/18	29	190,642	570	$6,888	$25,912
9/6/18	30	233,805	690	$8,331	$32,314
10/5/18	29	240,357	695	$2,486	$70,013
Totals	**364**	**2,284,104**	**708**	**$45,791**	**$328,563**
Annual	**365**	**2,290,379**	**708**	**$45,917**	**$329,466**

Notes:

- Peak demand of 708 kW occurred in June 2018.
- The average electric cost over the past 12 months was $0.144/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

PSE&G delivers natural gas under rate class BGSS, with natural gas supply provided by Direct Energy Business, LLC, a third-party supplier.



Gas Billing Data			
Period Ending	**Days in Period**	**Natural Gas Usage (Therms)**	**Natural Gas Cost**
11/3/17	28	1,603	$3,007
12/6/17	33	8,285	$7,293
1/8/18	33	19,387	$15,480
2/6/18	29	13,716	$11,475
3/8/18	30	10,706	$9,530
4/10/18	33	10,094	$5,476
5/8/18	28	3,755	$2,098
6/7/18	30	1,176	$732
7/9/18	32	557	$403
8/7/18	29	424	$332
9/6/18	30	376	$306
10/5/18	29	559	$404
Totals	**364**	**70,636**	**$56,538**
Annual	**365**	**70,830**	**$56,693**

Notes:

- The average gas cost for the past 12 months is $0.800/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 county, while neutralizing variations due to location, occupancy and operating hours. Some building types can be scored with a 1-100 ranking of a building's energy performance relative to the national building market. A score of 50 represents the national average and a score of 100 is best.

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

Benchmarking Score	17

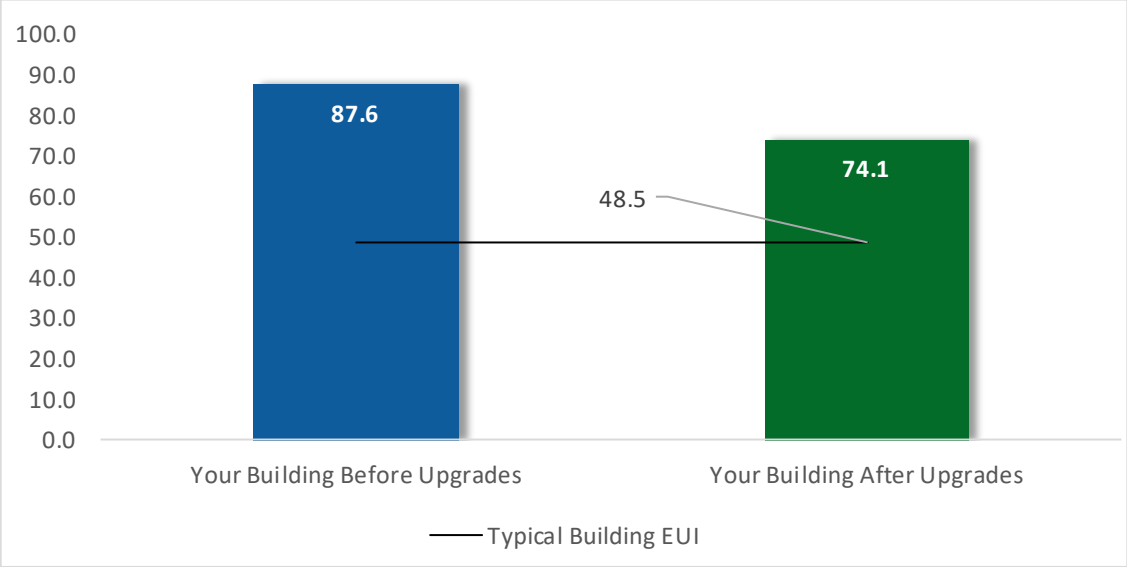


Figure 6 - Energy Use Intensity Comparison

This building performs below the national average. This report contains suggestions about how to improve building performance and reduce energy costs.

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

Tracking Your Energy Performance

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

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

Free online training is available to help you use ENERGY STAR® Portfolio Manager® to track your building's performance at: https://www.energystar.gov/buildings/training.

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

[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's 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 ($)	Lifetime Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		**507,279**	**124.9**	**-88**	**$72,266**	**$1,083,988**	**$231,354**	**$22,394**	**$208,960**	**2.9**	**500,511**
ECM 1	Install LED Fixtures	67,268	7.7	0	$9,676	$145,145	$52,335	$530	$51,805	5.4	67,738
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	12,086	3.3	-3	$1,718	$25,775	$5,915	$900	$5,015	2.9	11,875
ECM 3	Retrofit Fixtures with LED Lamps	427,925	114.0	-86	$60,871	$913,068	$173,104	$20,964	$152,140	2.5	420,898
Lighting Control Measures		**58,664**	**16.0**	**-12**	**$8,340**	**$66,724**	**$73,399**	**$7,745**	**$65,654**	**7.9**	**57,638**
ECM 4	Install Occupancy Sensor Lighting Controls	51,347	14.0	-11	$7,300	$58,402	$63,724	$7,745	$55,979	7.7	50,449
ECM 5	Install High/Low Lighting Controls	7,316	2.0	-2	$1,040	$8,322	$9,675	$0	$9,675	9.3	7,189
Motor Upgrades		**2,134**	**0.6**	**0**	**$307**	**$4,605**	**$8,652**	**$0**	**$8,652**	**28.2**	**2,149**
ECM 6	Premium Efficiency Motors	2,134	0.6	0	$307	$4,605	$8,652	$0	$8,652	28.2	2,149
Variable Frequency Drive (VFD) Measures		**77,815**	**22.0**	**0**	**$11,193**	**$167,902**	**$60,475**	**$3,240**	**$57,235**	**5.1**	**78,359**
ECM 7	Install VFDs on Constant Volume (CV) Fans	33,368	11.6	0	$4,800	$71,999	$22,705	$3,240	$19,465	4.1	33,602
ECM 8	Install VFDs on Chilled Water Pumps	12,445	4.3	0	$1,790	$26,854	$10,303	$0	$10,303	5.8	12,532
ECM 9	Install VFDs on Heating Water Pumps	32,001	6.1	0	$4,603	$69,049	$27,467	$0	$27,467	6.0	32,225
Electric Unitary HVAC Measures		**4,098**	**1.9**	**0**	**$589**	**$8,842**	**$50,118**	**$2,510**	**$47,608**	**80.8**	**4,127**
ECM 10	Install High Efficiency Air Conditioning Units	3,548	1.8	0	$510	$7,656	$36,220	$2,105	$34,115	66.8	3,573
ECM 11	Install High Efficiency Heat Pumps	550	0.2	0	$79	$1,186	$13,898	$405	$13,493	170.6	554
Electric Chiller Replacement		**32,735**	**36.6**	**0**	**$4,709**	**$94,177**	**$85,318**	**$9,000**	**$76,318**	**16.2**	**32,964**
ECM 12	Install High Efficiency Chillers	32,735	36.6	0	$4,709	$94,177	$85,318	$9,000	$76,318	16.2	32,964
Gas Heating (HVAC/Process) Replacement		**0**	**0.0**	**8**	**$62**	**$1,231**	**$1,835**	**$400**	**$1,435**	**23.3**	**901**
ECM 13	Install High Efficiency Furnaces	0	0.0	8	$62	$1,231	$1,835	$400	$1,435	23.3	901
Domestic Water Heating Upgrade		**0**	**0.0**	**76**	**$605**	**$6,052**	**$402**	**$0**	**$402**	**0.7**	**8,853**
ECM 14	Install Low-Flow DHW Devices	0	0.0	76	$605	$6,052	$402	$0	$402	0.7	8,853
Food Service & Refrigeration Measures		**3,566**	**0.4**	**0**	**$513**	**$2,565**	**$690**	**$100**	**$590**	**1.2**	**3,591**
ECM 15	Vending Machine Control	3,566	0.4	0	$513	$2,565	$690	$100	$590	1.2	3,591
TOTALS (COST EFFECTIVE MEASURES)		**680,058**	**199.9**	**-25**	**$97,627**	**$1,421,408**	**$451,638**	**$42,479**	**$409,159**	**4.2**	**681,916**
TOTALS (ALL MEASURES)		**686,291**	**202.4**	**-17**	**$98,585**	**$1,436,086**	**$512,244**	**$45,389**	**$466,854**	**4.7**	**689,093**

* - 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		**507,279**	**124.9**	**-88**	**$72,266**	**$231,354**	**$22,394**	**$208,960**	**2.9**	**500,511**
ECM 1	Install LED Fixtures	67,268	7.7	0	$9,676	$52,335	$530	$51,805	5.4	67,738
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	12,086	3.3	-3	$1,718	$5,915	$900	$5,015	2.9	11,875
ECM 3	Retrofit Fixtures with LED Lamps	427,925	114.0	-86	$60,871	$173,104	$20,964	$152,140	2.5	420,898
Lighting Control Measures		**58,664**	**16.0**	**-12**	**$8,340**	**$73,399**	**$7,745**	**$65,654**	**7.9**	**57,638**
ECM 4	Install Occupancy Sensor Lighting Controls	51,347	14.0	-11	$7,300	$63,724	$7,745	$55,979	7.7	50,449
ECM 5	Install High/Low Lighting Controls	7,316	2.0	-2	$1,040	$9,675	$0	$9,675	9.3	7,189
Variable Frequency Drive (VFD) Measures		**77,815**	**22.0**	**0**	**$11,193**	**$60,475**	**$3,240**	**$57,235**	**5.1**	**78,359**
ECM 7	Install VFDs on Constant Volume (CV) Fans	33,368	11.6	0	$4,800	$22,705	$3,240	$19,465	4.1	33,602
ECM 8	Install VFDs on Chilled Water Pumps	12,445	4.3	0	$1,790	$10,303	$0	$10,303	5.8	12,532
ECM 9	Install VFDs on Heating Water Pumps	32,001	6.1	0	$4,603	$27,467	$0	$27,467	6.0	32,225
Electric Chiller Replacement		**32,735**	**36.6**	**0**	**$4,709**	**$85,318**	**$9,000**	**$76,318**	**16.2**	**32,964**
ECM 12	Install High Efficiency Chillers	32,735	36.6	0	$4,709	$85,318	$9,000	$76,318	16.2	32,964
Domestic Water Heating Upgrade		**0**	**0.0**	**76**	**$605**	**$402**	**$0**	**$402**	**0.7**	**8,853**
ECM 14	Install Low-Flow DHW Devices	0	0.0	76	$605	$402	$0	$402	0.7	8,853
Food Service & Refrigeration Measures		**3,566**	**0.4**	**0**	**$513**	**$690**	**$100**	**$590**	**1.2**	**3,591**
ECM 15	Vending Machine Control	3,566	0.4	0	$513	$690	$100	$590	1.2	3,591
TOTALS		**680,058**	**199.9**	**-25**	**$97,627**	**$451,638**	**$42,479**	**$409,159**	**4.2**	**681,916**

* - 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		**507,279**	**124.9**	**-88**	**$72,266**	**$231,354**	**$22,394**	**$208,960**	**2.9**	**500,511**
ECM 1	Install LED Fixtures	67,268	7.7	0	$9,676	$52,335	$530	$51,805	5.4	67,738
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	12,086	3.3	-3	$1,718	$5,915	$900	$5,015	2.9	11,875
ECM 3	Retrofit Fixtures with LED Lamps	427,925	114.0	-86	$60,871	$173,104	$20,964	$152,140	2.5	420,898

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

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: exterior wall pack fixtures and sports field lighting

ECM 2: Retrofit Fluorescent Fixtures with LED Lamps and Drivers

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

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

Affected building areas: A, B, C, & M wing attic mechanical spaces, B1 storage

ECM 3: Retrofit Fixtures with LED Lamps

Replace fluorescent lamps with LED lamps. Many LED tubes are direct replacements for existing fluorescent tubes and can be installed while leaving the fluorescent fixture ballast in place. LED lamps can be used in existing fixtures as a direct replacement for most other lighting technologies, including in many cases for stage and theatrical lighting.

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; incandescent and compact fluorescent lamps throughout

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		**58,664**	**16.0**	**-12**	**$8,340**	**$73,399**	**$7,745**	**$65,654**	**7.9**	**57,638**
ECM 4	Install Occupancy Sensor Lighting Controls	51,347	14.0	-11	$7,300	$63,724	$7,745	$55,979	7.7	50,449
ECM 5	Install High/Low Lighting Controls	7,316	2.0	-2	$1,040	$9,675	$0	$9,675	9.3	7,189

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, faculty rooms, classrooms, locker rooms, 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.

The controller lowers the light level by dimming the fixture output. Therefore, the controlled fixtures need to have a dimmable ballast or driver. This will need to be taken into account when selecting retrofit lamps and bulbs for the areas proposed for high/low control.

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

Affected building areas: hallways

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

4.3 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		**2,134**	**0.6**	**0**	**$307**	**$8,652**	**$0**	**$8,652**	**28.2**	**2,149**
ECM 6	Premium Efficiency Motors	2,134	0.6	0	$307	$8,652	$0	$8,652	28.2	2,149

ECM 6: Premium Efficiency Motors

The replacement of standard efficiency motors with IHP 2014 efficiency motors was evaluated 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:

Location	Area(s)/System(s) Served	Motor Quantity	Motor Application	HP Per Motor	Additional Motor Description
above Aux Gym	AHU-B-3	1	Supply Fan	3.0	AHU SF motor
Aux Gym Penthouse	AHU-B-4	1	Supply Fan	3.0	AHU SF motor
Attic	A15 & A17	1	Supply Fan	3.0	AHU SF motor
Cafeteria Attic	Kitchen MUA	1	Supply Fan	3.0	
Stage	Left Audience Area	1	Supply Fan	10.0	AH-2
Stage	Left Audience Area	1	Return Fan	7.5	AH-2
Stage	Right Audience Area	1	Supply Fan	10.0	AH-1
Stage	Right Audience Area	1	Return Fan	7.5	AH-1

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*.

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		**77,815**	**22.0**	**0**	**$11,193**	**$60,475**	**$3,240**	**$57,235**	**5.1**	**78,359**
ECM 7	Install VFDs on Constant Volume (CV) Fans	33,368	11.6	0	$4,800	$22,705	$3,240	$19,465	4.1	33,602
ECM 8	Install VFDs on Chilled Water Pumps	12,445	4.3	0	$1,790	$10,303	$0	$10,303	5.8	12,532
ECM 9	Install VFDs on Heating Water Pumps	32,001	6.1	0	$4,603	$27,467	$0	$27,467	6.0	32,225

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.

ECM 7: 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.

VAV system controls should not raise the supply air temperature at the expense of the fan power. A common mistake is to reset the supply air temperature to achieve chiller energy savings, which can lead to additional air flow requirements. Supply air temperature should be kept low (e.g. 55°F) until the minimum fan speed (typically about 50%) is met. At this point, it is efficient to raise the supply air temperature as the load decreases, but not such that additional air flow and thus fan energy is required.

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

Affected air handlers: AHU-MG1, AHU-MG2, PAC lobby AHU, and Media Center AHU

ECM 8: Install VFDs on Chilled Water Pumps

Install VFDs to control the two chilled water pumps associated with the PAC chiller. Two-way valves must serve the chilled water coils being served and the chilled water loop must have a differential pressure sensor installed. If three-way valves or a bypass leg are used in the chilled water distribution they will need to be modified when this measure is implemented. As the chilled water valves close, the differential pressure increases, and the VFD modulates the pump speed to maintain a differential pressure setpoint.

For systems with variable chilled water flow through the chiller, the minimum flow to prevent the chiller from tripping off will need to be determined during the final project design. The control system should be programmed to maintain the minimum flow through the chiller and to prevent pump cavitation.

Energy savings result from reducing the pump motor speed (and power) as chilled water valves close. The magnitude of energy savings is based on the estimated amount of time that the system operates at reduced loads.

ECM 9: Install VFDs on Heating Water Pumps

Install variable frequency drives (VFD) to control heating water pumps. Two-way valves must serve the hot water coils and the hot water loop must have a differential pressure sensor installed. If three-way valves or a bypass leg are used in the hot water distribution, they will need to be modified when this measure is implemented. As the hot water valves close, the differential pressure increases and the VFD modulates the pump speed to maintain a differential pressure setpoint.

Energy savings result from reducing pump motor speed (and power) as hot water valves close. The magnitude of energy savings is based on the estimated amount of time that the system will operate at reduced load.

Affected pumps: D wing boiler room HHWR pump and A wing boiler room HHWR pump

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		**4,098**	**1.9**	**0**	**$589**	**$50,118**	**$2,510**	**$47,608**	**80.8**	**4,127**
ECM 10	Install High Efficiency Air Conditioning Units	3,548	1.8	0	$510	$36,220	$2,105	$34,115	66.8	3,573
ECM 11	Install High Efficiency Heat Pumps	550	0.2	0	$79	$13,898	$405	$13,493	170.6	554

Replacing the unitary HVAC units has a long payback period and may not be justifiable based simply on energy considerations. However, these units 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 AC and heat pump units are eventually replaced, consider purchasing equipment that exceeds the minimum efficiency required by building codes.

ECM 10: Install High Efficiency Air Conditioning Units

The replacement of standard efficiency packaged air conditioning units with high efficiency packaged air conditioning units was evaluated. 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.

ECM 11: Install High Efficiency Heat Pumps

The replacement of standard efficiency heat pumps with high efficiency heat pumps was evaluated. A higher EER or SEER rating indicates a more efficient cooling system and a higher HSPF rating indicates more efficient heating mode. The magnitude of energy savings for this measure depends on the relative efficiency of the older unit versus the new high efficiency unit, the average heating and cooling loads, and the estimated annual operating hours.

4.6 Electric Chillers

#	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 Chiller Replacement		**32,735**	**36.6**	**0**	**$4,709**	**$85,318**	**$9,000**	**$76,318**	**16.2**	**32,964**
ECM 12	Install High Efficiency Chillers	32,735	36.6	0	$4,709	$85,318	$9,000	$76,318	16.2	32,964

ECM 12: Install High Efficiency Chillers

Replace older inefficient electric chillers with new high efficiency chillers. The type of chiller to be installed depends on the magnitude of the cooling load and variability of the cooling load profile, for example:

- Positive displacement chillers are usually under 600 tons of cooling capacity and centrifugal chillers generally start at 150 tons of cooling capacity.
- Constant speed chillers should be used to meet cooling loads with little or no variation while variable speed chillers are more efficient for variable cooling load profiles.
- Water cooled chillers are more efficient than air cooled chillers but require cooling towers and additional pumps to circulate the cooling water.
- In any given size range, variable speed chillers tend to have better partial load efficiency, but worse full load efficiency, than constant speed chillers.

Energy savings result from the improvement in chiller efficiency and matching the right type of chiller to the cooling load. The energy savings are calculated based on the cooling capacity of the new chiller, the improvement in efficiency compared with the base case equipment, the cooling load profile, and the estimated annual operating hours of the chiller before and after the upgrade.

For the purposes of this analysis, we evaluated the replacement of chillers on a one-for-one basis with equipment of the same capacity. We recommend that you work with your design team to select chillers that are sized appropriately for the cooling load at this facility. In some cases, the plant energy use can be reduced by selecting multiple chillers that match the facility load profile rather than one or two large chillers. This can also improve the chiller plant reliability through increased redundancy. Energy savings are maximized by proper selection of new equipment based on the cooling load profile.

Affected chiller: McQuay (PAC) constant speed chiller

4.7 Gas-Fired Heating

#	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)
Gas Heating (HVAC/Process) Replacement		**0**	**0.0**	**8**	**$62**	**$1,835**	**$400**	**$1,435**	**23.3**	**901**
ECM 13	Install High Efficiency Furnaces	0	0.0	8	$62	$1,835	$400	$1,435	23.3	901

ECM 13: Install High Efficiency Furnaces

We evaluated the replacement of standard efficiency furnaces with condensing furnaces. Improved combustion technology and heat exchanger design optimize heat recovery from the combustion gases which can significantly improve furnace efficiency. Savings result from improved system efficiency.

Note: these units produce acidic condensate that requires proper drainage.

4.8 Domestic Water Heating

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Domestic Water Heating Upgrade		**0**	**0.0**	**76**	**$605**	**$402**	**$0**	**$402**	**0.7**	**8,853**
ECM 14	Install Low-Flow DHW Devices	0	0.0	76	$605	$402	$0	$402	0.7	8,853

ECM 14: Install Low-Flow DHW Devices

Install low-flow devices to reduce overall hot water demand. The following low flow devices are recommended to reduce hot water usage:

Device	Flow Rate
Faucet aerators (lavatory)	0.5 gpm
Faucet aerator (kitchen)	1.5 gpm
Showerhead	2.0 gpm
Pre-rinse spray valve (kitchen)	1.28 gpm

Low-flow devices reduce the overall water flow from the fixture, while still providing adequate pressure for washing. Pre-rinse spray valves (PRSVs) — often used in commercial and institutional kitchens— remove food waste from dishes prior to dishwashing.

Additional cost savings may result from reduced water usage.

4.9 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		**3,566**	**0.4**	**0**	**$513**	**$690**	**$100**	**$590**	**1.2**	**3,591**
ECM 15	Vending Machine Control	3,566	0.4	0	$513	$690	$100	$590	1.2	3,591

ECM 15: 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.

4.10 Additional Measures for Future Consideration

Retro-Commissioning Study & HVAC Improvements

An upgrade of the Energy Management System (EMS) would likely increase the efficiency of the building HVAC system operation. Retro-commissioning is a common practice recommended by the American Society of Heating Refrigeration and Energy (ASHRAE) to be revisited every couple of years.

Due to the complexity and integrated nature of your HVAC systems and controls, it is likely for systems to be operating incorrectly or not as efficiently as they could be. Retro-commissioning studies reveal hidden deficiencies and highlight operational & maintenance (O & M) issues while they expose hidden control system problems. There are valuable benefits to retro-commissioning in existing buildings.

Retro-commissioning is a detailed and specialized process that reviews how an HVAC system is controlled and designed to operate. Applying retro-commissioning to existing facilities includes planning, discovering root causes of inefficiencies, development of a cost-effective project delivery and a focus on optimizing value to the building owner. The study typically includes functional system testing and data collection in various modes, including heating vs. cooling, occupied vs. unoccupied, and under varying outside air and space temperatures. This is a systematic process to ensure that the building energy systems perform interactively according to the original design intent and the current operational needs of the facility.

We recommend that an engineering firm who specializes in energy control systems and retro-commissioning be contacted to obtain pricing for a detailed evaluation and implementation. Facility operations personnel typically work with the engineers to develop goals and objectives. During on site testing, the qualified personnel conducting the study often makes any no/low-cost improvements as identified. Corrective actions or EMS hardware improvement which require the purchase of material are evaluated for cost effectiveness and presented to facility personnel along with an implementation plan.

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.

Lighting Maintenance

Clean lamps, reflectors and lenses of dirt, dust, oil, and smoke buildup every six to twelve months. Light levels decrease over time due to lamp aging, lamp and ballast failure, and buildup of dirt and dust. Together, this can reduce total light output by up to 60% while still drawing full power.

In addition to routine cleaning, developing a maintenance schedule can ensure that maintenance is performed regularly, and it can reduce the overall cost of fixture re-lamping and re-ballasting. Group re-lamping and re-ballasting maintains lighting levels and minimizes the number of site visits by a lighting technician or contractor, decreasing the overall cost of maintenance.

Lighting Controls

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

Motor Maintenance

Motors have many moving parts. As these parts degrade over time, the efficiency of the motor is reduced. Routine maintenance prevents damage to motor components. Routine maintenance should include cleaning surfaces and ventilation openings on motors to prevent overheating, lubricating moving parts to reduce friction, inspecting belts and pulleys for wear and to ensure they are at proper alignment and tension, and cleaning and lubricating bearings. Consult a licensed technician to assess these and other motor maintenance strategies.

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

Thermostat Schedules and Temperature Resets

Use thermostat setback temperatures and schedules to reduce heating and cooling energy use during periods of low or no occupancy. Thermostats should be programmed for a setback of 5°F-10°F during low occupancy hours (reduce heating setpoints and increase cooling setpoints). Cooling load can be reduced by increasing the facility's occupied setpoint temperature. In general, during the cooling season, thermostats should be set as high as possible without sacrificing occupant comfort.

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.

Chiller Maintenance

Service chillers regularly to keep them operating properly. Chillers are responsible for a substantial portion of a commercial building's overall energy usage and when they do not work well, there is usually a noticeable increase in energy bills and increased occupant complaints. Regular diagnostics and service can save five to ten percent of the cost of operating your chiller. If you already have a maintenance contract in place, your existing service company should be able to provide these services.

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.

HVAC Filter Cleaning and Replacement

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

Duct Sealing

Duct leakage in commercial buildings can account for five to twenty-five percent of the supply airflow. In the case of rooftop air handlers, duct leakage can occur to the outside of the building wasting conditioned air. Eliminating duct leaks can improve ventilation system performance and reduce heating and cooling system operation.

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

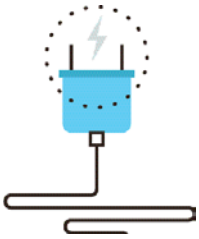
Preventative maintenance can extend the life of the system, maintain energy efficiency, and ensure safe operation. Following the manufacturer's instructions, a yearly tune-up should: check for gas / carbon monoxide leaks; change the air and fuel filters; check components for cracks, corrosion, dirt, 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

Computer Monitor Replacement

ENERGY STAR® labeled computer monitors can be up to 25% more efficient than standard monitors. ENERGY STAR® rated monitors have power consumption requirements for different operating modes such as on, idle, and sleep.

Computer Power Management Software

Many computers consume power during nights, weekends, and holidays. Screen savers are commonly confused as a power management strategy. This contributes to avoidable, excessive electrical energy consumption. There are innovative power management software packages available that are designed to deliver significant energy saving and provide ongoing tracking measurements. A central power management platform helps enforce energy savings policies as well as identify and eliminate underutilized devices

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, 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.

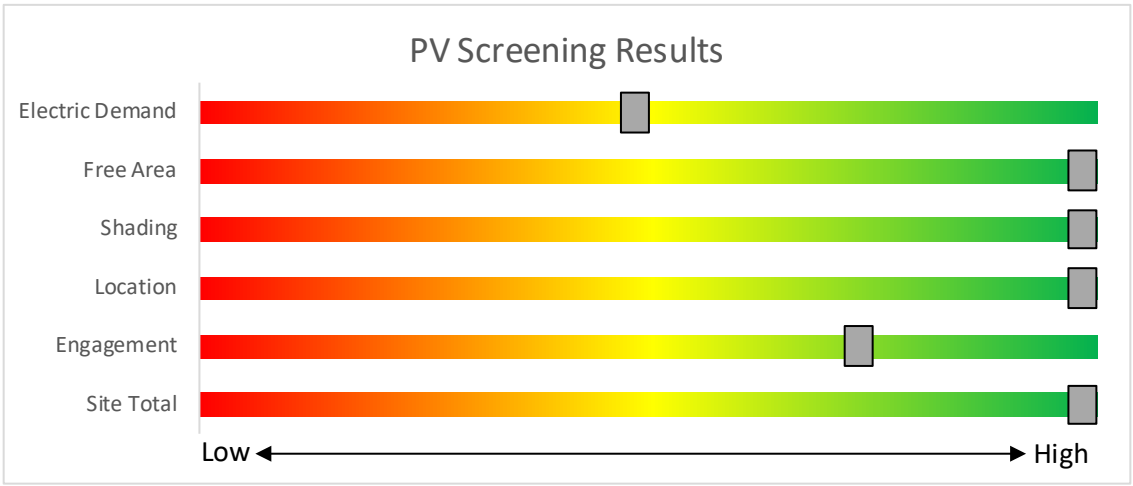
6.1 Solar Photovoltaic

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.



Potential	High	
System Potential	400	kW DC STC
Electric Generation	476,549	kWh/yr
Displaced Cost	$68,550	/yr
Installed Cost	$1,040,000	

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.

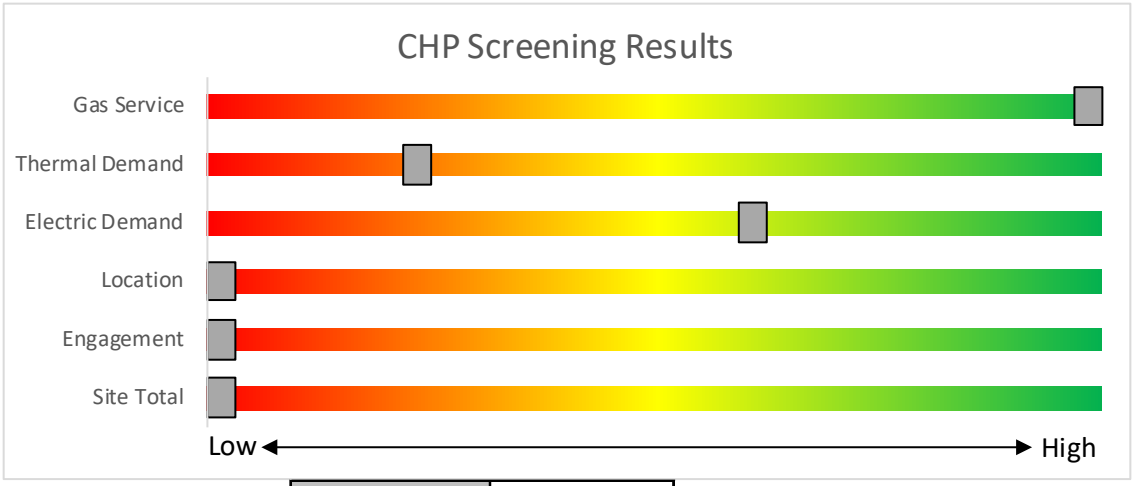
CHP systems typically produce a portion of the electric power used on-site, with the balance of electric power needs supplied by the local utility company. The heat is used to supplement (or replace) existing boilers and provide space heating and/or domestic hot water heating. Waste heat can also be 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 no potential for installing a cost-effective CHP system.

Based on a preliminary analysis, the facility does not appear to meet the minimum requirements for a cost-effective CHP installation. The 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.



Potential	None	
System Type	None	
System Potential	300	kW
Electric Generation	2,124,600	kWh/yr
Thermal Generation	10,205,162	MBtu/yr
Displaced Cost	$209,371	/yr
Installed Cost	$1,477,000	

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 from 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-efficient 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 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 description 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.

7.3 SREC Registration Program

The SREC (Solar Renewable Energy Certificate) Registration Program (SRP) is used to register the intent to install solar projects in New Jersey. Rebates are not available for solar projects, but owners of solar projects *must* register their projects 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. SRECs 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 SRECs 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
Awing attic	16	Linear Fluorescent - T12: 4' T12 (40W) - 4L	Wall Switch	S	160	2,400	2, 4	Relamp & Reballast	Yes	16	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	1.4	5,068	-1	$721	$2,434	$390	2.8
Kwing attic	13	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	S	80	2,400	2, 4	Relamp & Reballast	Yes	13	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.6	2,059	0	$293	$1,434	$200	4.2
Mwing attic	14	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	S	80	2,400	2, 4	Relamp & Reballast	Yes	14	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.6	2,217	0	$315	$1,503	$210	4.1
Cwing attic	20	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	S	80	2,400	2, 4	Relamp & Reballast	Yes	20	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.9	3,167	-1	$450	$1,915	$270	3.7
Gym penthouse	4	Incandescent: screw-in	Wall Switch	S	60	2,400	3, 4	Relamp	Yes	4	LED Lamps: LED lamps	Occupancy Sensor	10	1,656	0.2	564	0	$80	$339	$39	3.7
Gym penthouse	1	LED Lamps: screw-in	Wall Switch	S	10	2,400	4	None	Yes	1	LED Lamps: screw-in	Occupancy Sensor	10	1,656	0.0	8	0	$1	$0	$0	0.0
Aux gym penthouse	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	222	0	$32	$343	$20	10.2
Bwing attic	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	S	29	2,400	4	None	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.0	47	0	$7	$270	$35	34.8
Bwing attic	10	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	S	80	2,400	2, 4	Relamp & Reballast	Yes	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,584	0	$225	$958	$135	3.7
Attic above A15+A17	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.2	554	0	$79	$453	$85	4.7
Stairs above A15+A17	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,400	0.0	87	0	$12	$37	$10	2.1
Dwing boiler room	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3	Relamp	No	9	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,400	0.2	784	0	$111	$329	$90	2.1
Dwing boiler room	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Dwing attic	24	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	24	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.7	2,660	-1	$378	$1,416	$310	2.9
Elec room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,400	0.0	87	0	$12	$37	$10	2.1
Tech room server C13	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3	Relamp	No	16	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,400	0.4	1,394	0	$198	$584	$160	2.1
Tech room office C15	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,330	0	$189	$708	$155	2.9
Awing boiler room	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3	Relamp	No	18	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,400	0.4	1,568	0	$223	$657	$180	2.1
Awing boiler room	2	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Attic above kitcen	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	S	29	2,400	4	None	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.0	95	0	$13	$270	$0	20.0
Attic above canteen	8	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	S	29	2,400	4	None	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	190	0	$27	$270	$35	8.7
Transportation office	11	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	11	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.3	1,219	0	$173	$672	$145	3.0
Transportation office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	222	0	$32	$73	$20	1.7
Transportation RR	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,656	0.0	112	0	$16	$335	$12	20.2
Transportation elec closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,400	0.0	87	0	$12	$37	$10	2.1

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Maintenance workshop	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	222	0	$32	$343	$55	9.1
Maintenance workshop	44	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	44	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
CR A9	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	3	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	2,400	0.0	131	0	$19	$55	$15	2.1
CR A11+A13	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.5	1,774	0	$252	$1,124	$230	3.5
CR A11+A13	27	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	27	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
CR A11+A13	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.0	111	0	$16	$37	$10	1.7
A15+A17 Hallway	27	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	3, 5	Relamp	Yes	27	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	1,656	1.2	4,490	-1	$638	$2,604	$405	3.4
A15+A17 Hallway	4	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
A15+A17 Hallway	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	2,400	3, 5	Relamp	Yes	1	LED - Linear Tubes: (2) 2' Lamps	High/Low Control	17	1,656	0.0	56	0	$8	$33	$6	3.3
A15	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.0	111	0	$16	$37	$10	1.7
A15	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.1	391	0	$56	$416	$75	6.1
A15 Office	18	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	3, 4	Relamp	Yes	18	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.8	2,993	-1	$426	$1,526	$340	2.8
A15 Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
A15 storage 1	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	222	0	$32	$343	$20	10.2
A15 storage 1 boys RR	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	222	0	$32	$343	$20	10.2
A15 storage 1 girls RR	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	222	0	$32	$343	$20	10.2
A17	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,330	0	$189	$708	$155	2.9
A17	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
A17	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	2,400	3, 4	Relamp	Yes	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,656	0.0	56	0	$8	$33	$6	3.3
A17 office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	222	0	$32	$343	$55	9.1
A17 storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	222	0	$32	$189	$20	5.4
Boys RR	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	S	114	1,656	3	Relamp	No	3	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.1	306	0	$44	$219	$60	3.7
Janitor closet	1	Compact Fluorescent: screw-in	Wall Switch	S	18	2,400	3	Relamp	No	1	LED Lamps: LED lamps	Wall Switch	13	2,400	0.0	13	0	$2	$17	$1	8.6
Girls RR	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	S	114	1,656	3	Relamp	No	3	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.1	306	0	$44	$219	$60	3.7
Faculty room	5	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	S	29	2,400	4	None	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.0	119	0	$17	$270	$35	13.9

	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
Faculty room RR	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	2,400	3	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,400	0.0	42	0	$6	$33	$6	4.4
CR A5	24	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	24	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.7	2,660	-1	$378	$1,416	$310	2.9
CR A5 kiln room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,400	0.0	87	0	$12	$37	$10	2.1
CR A5 wet storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	222	0	$32	$189	$20	5.4
CR A5 locker room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	222	0	$32	$189	$20	5.4
CR A8	21	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	21	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.6	2,328	0	$331	$1,307	$280	3.1
CR A6	21	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	21	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.6	2,328	0	$331	$1,307	$280	3.1
CR A6	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
CR A3	24	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	24	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.7	2,660	-1	$378	$1,416	$310	2.9
CR A1	24	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	24	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.7	2,660	-1	$378	$1,416	$310	2.9
CR A1 storage	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	443	0	$63	$416	$40	6.0
CR A4	21	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	21	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.6	2,328	0	$331	$1,307	$280	3.1
CR A2	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.5	1,995	0	$284	$1,197	$250	3.3
CST 1	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	222	0	$32	$189	$20	5.4
CST 2	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	222	0	$32	$189	$20	5.4
Student cordinator	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	443	0	$63	$416	$75	5.4
3 little office hall	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 5	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,656	0.1	222	0	$32	$298	$20	8.8
CR M2	27	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	27	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.8	2,993	-1	$426	$1,526	$340	2.8
CR M4	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.5	1,995	0	$284	$1,197	$250	3.3
CR M6	21	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	21	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.6	2,328	0	$331	$1,307	$280	3.1
Stage craft	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	S	29	1,656		None	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.0	0	0	$0	$0	$0	0.0
Stage craft	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.5	1,995	0	$284	$1,197	$250	3.3
Stage craft	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Green room	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
Green room	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	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
Women's room	4	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	2,400	3, 4	Relamp	Yes	4	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	1,656	0.1	374	0	$53	$465	$71	7.4
Women's makeup room	35	Incandescent: screw-in	Wall Switch	S	60	2,400	3, 4	Relamp	Yes	35	LED Lamps: LED lamps	Occupancy Sensor	9	1,656	1.4	4,970	-1	$707	$1,413	$140	1.8
Women's RR	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	2,400	3	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	2,400	0.0	73	0	$10	$49	$9	3.9
Women's RR	1	Incandescent: screw-in	Wall Switch	S	60	2,400	3	Relamp	No	1	LED Lamps: LED lamps	Wall Switch	9	2,400	0.0	135	0	$19	$17	$1	0.8
Women's Shower	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Men's design room	4	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	2,400	3, 4	Relamp	Yes	4	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	1,656	0.1	374	0	$53	$465	$36	8.1
Men's design room	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Men's make-up room	35	Incandescent: screw-in	Wall Switch	S	60	2,400	3, 4	Relamp	Yes	35	LED Lamps: LED lamps	Occupancy Sensor	9	1,656	1.4	4,970	-1	$707	$1,413	$140	1.8
Men's RR	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	2,400	3	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	2,400	0.0	73	0	$10	$49	$9	3.9
Men's shower	1	Incandescent: screw-in	Wall Switch	S	60	2,400	3	Relamp	No	1	LED Lamps: LED lamps	Wall Switch	9	2,400	0.0	135	0	$19	$17	$1	0.8
108 office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	222	0	$32	$189	$40	4.7
PAC hallway	6	LED Lamps: recessed can	Wall Switch	S	40	2,400	5	None	Yes	6	LED Lamps: recessed can	High/Low Control	40	1,656	0.1	196	0	$28	$225	$0	8.1
PAC hallway	4	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
PAC hallway	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 5	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,656	0.5	1,663	0	$236	$998	$150	3.6
PAC hallway	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 5	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,656	0.0	111	0	$16	$37	$10	1.7
PAC hallway exit	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Stage electrical room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,400	0.0	174	0	$25	$73	$20	2.1
Stage alt room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	222	0	$32	$189	$40	4.7
PAC control room	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
PAC control room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,400	0.0	174	0	$25	$73	$20	2.1
PAC control room	1	Halogen Incandescent: track light	Wall Switch	S	50	2,400	3	Relamp	No	1	LED - Fixtures: LED - Fixtures	Wall Switch	8	2,400	0.0	112	0	$16	$60	$0	3.8
Media above control room	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	333	0	$47	$380	$65	6.7
PAC auditorium	14	LED Lamps: recessed cans	Wall Switch	S	40	2,400	4	None	Yes	14	LED Lamps: recessed cans	Occupancy Sensor	40	1,656	0.1	458	0	$65	$540	$70	7.2
PAC auditorium	5	Incandescent: screw-in	Wall Switch	S	60	2,400	3, 4	Relamp	Yes	5	LED Lamps: LED lamps	Occupancy Sensor	9	1,656	0.2	710	0	$101	$356	$40	3.1
PAC auditorium	24	Incandescent: wall pack uplights	Wall Switch	S	900	2,400	3, 4	Relamp	Yes	24	LED Lamps: LED - Fixtures	Occupancy Sensor	135	1,656	13.9	51,122	-11	$7,268	$21,660	$70	3.0

	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
Main office hallway	2	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	2,400	3, 5	Relamp	Yes	2	LED - Linear Tubes: (3) 2' Lamps	High/Low Control	26	1,656	0.1	187	0	$27	$323	$18	11.5
Main office side room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,400	0.0	87	0	$12	$37	$10	2.1
Main office restroom	3	LED Lamps: screw-in	Wall Switch	S	60	2,400	4	None	Yes	3	LED Lamps: screw-in	Occupancy Sensor	60	1,656	0.0	147	0	$21	$270	$35	11.2
Attendance office	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	3, 4	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.2	665	0	$95	$489	$95	4.2
school resource	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
Guidance office	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	3, 4	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	499	0	$71	$434	$80	5.0
Guidance office	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,656	0.0	112	0	$16	$65	$12	3.3
Ms Hayes office	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,656	0.0	112	0	$16	$181	$32	9.3
Mrs Webb office	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,656	0.0	112	0	$16	$181	$32	9.3
Guidance office	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	3, 4	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.2	781	0	$111	$562	$115	4.0
Mr Scott office	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.1	391	0	$56	$416	$75	6.1
Mrs George office	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	3, 4	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.2	781	0	$111	$562	$115	4.0
A-DH office	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.1	391	0	$56	$416	$75	6.1
Conference room	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.1	391	0	$56	$416	$75	6.1
M8 comp lab	21	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	2,400	3, 4	Relamp	Yes	21	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,656	0.3	1,179	0	$168	$1,223	$196	6.1
M10 comp lab	21	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	21	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.6	2,328	0	$331	$1,307	$280	3.1
M9	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.5	1,995	0	$284	$1,197	$250	3.3
M7	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.5	1,995	0	$284	$1,197	$250	3.3
M5	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.5	1,995	0	$284	$1,197	$250	3.3
M Hall storage	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	2,400	3, 5	Relamp	Yes	3	LED - Linear Tubes: (1) 4' Lamp	High/Low Control	15	1,656	0.0	174	0	$25	$280	$15	10.7
Girls RR	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,656	3	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	271	0	$38	$164	$45	3.1
Custodial closet	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	2,400	3	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,400	0.0	42	0	$6	$33	$6	4.4
Boys RR	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,656	3	Relamp	No	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	361	0	$51	$219	$60	3.1
Nurses office	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	3, 4	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.2	665	0	$95	$489	$95	4.2
Nurses office	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,656	0.0	112	0	$16	$65	$12	3.3

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Nurses waiting room	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	3, 4	Relamp	Yes	1	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.0	166	0	$24	$325	$50	11.6
Nurses clean room	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	3, 4	Relamp	Yes	1	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.0	166	0	$24	$325	$50	11.6
Nurses storage	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	2,400	3	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,400	0.0	42	0	$6	$33	$6	4.4
Nurses RR	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	2,400	3	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,400	0.0	42	0	$6	$33	$6	4.4
Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	222	0	$32	$189	$20	5.4
B2	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.5	1,995	0	$284	$1,197	$250	3.3
B1	28	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	28	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.8	3,104	-1	$441	$1,562	$350	2.7
B1 storage	2	Linear Fluorescent - T12: 4' T12 (40W) - 1L	Wall Switch	S	34	2,400	2	Relamp & Reballast	No	2	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,400	0.0	103	0	$15	$101	$10	6.2
B3	24	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	24	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.7	2,660	-1	$378	$1,416	$310	2.9
B4	27	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	27	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.8	2,993	-1	$426	$1,526	$340	2.8
B4 prep room	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.2	887	0	$126	$562	$115	3.5
B6	27	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	27	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.8	2,993	-1	$426	$1,526	$340	2.8
B5 library/media center	60	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	60	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	1.8	6,651	-1	$946	$3,541	$775	2.9
B5 storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	222	0	$32	$189	$20	5.4
B5 office	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.2	887	0	$126	$562	$115	3.5
school store	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.3	998	0	$142	$599	$125	3.3
AD pffoce	6	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	3, 4	Relamp	Yes	6	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.3	1,172	0	$167	$708	$155	3.3
B8	30	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	30	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.9	3,326	-1	$473	$1,905	$405	3.2
B8 prep room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.0	111	0	$16	$37	$10	1.7
B8 prep room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	222	0	$32	$343	$55	9.1
B10	12	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	S	29	2,400	4	None	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	285	0	$40	$270	$35	5.8
Trainer storage	5	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	2,400	3, 4	Relamp	Yes	5	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,656	0.1	290	0	$41	$361	$25	8.1
Athlete trainers	16	Compact Fluorescent: recessed can	Wall Switch	S	56	2,400	3, 4	Relamp	Yes	16	LED - Fixtures: Retrofit kit	Occupancy Sensor	30	1,656	0.4	1,491	0	$212	$1,388	$70	6.2
Office	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.6	2,217	0	$315	$1,270	$270	3.2
Office	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	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
Wrestling room	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	S	29	1,656		None	No	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.0	0	0	$0	$0	$0	0.0
Weight room	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	S	29	1,656		None	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.0	0	0	$0	$0	$0	0.0
Aux gym penthouse	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.5	1,774	0	$252	$1,124	$230	3.5
Boys locker room	5	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	2,400	3, 4	Relamp	Yes	5	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,656	0.1	281	0	$40	$433	$30	10.1
Boys coach's office	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
coachs's room RR	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	2,400	3	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,400	0.0	42	0	$6	$33	$6	4.4
Fitness center gym	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	S	29	1,656		None	No	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.0	0	0	$0	$0	$0	0.0
Fitness center gym	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Fitness center storage 1	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	222	0	$32	$189	$20	5.4
Fitness center hall to locker room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 5	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,656	0.1	222	0	$32	$298	$20	8.8
Fitness center storage 2	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	222	0	$32	$189	$20	5.4
Girls coach's office	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
Girl's aux locker room	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	7	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.2	776	0	$110	$526	$105	3.8
Girl's aux locker room	16	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	2,400	3, 4	Relamp	Yes	16	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,656	0.2	898	0	$128	$1,060	$166	7.0
Girl's aux locker room	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Girls coach's office	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	7	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.2	776	0	$110	$526	$105	3.8
Girls coach's RR	1	Compact Fluorescent: pin-based	Wall Switch	S	36	2,400	3	Relamp	No	1	LED Lamps: LED Lamps	Wall Switch	19	2,400	0.0	45	0	$6	$17	$1	2.5
Girls locker room	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.6	2,217	0	$315	$1,270	$270	3.2
Girls locker room	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Girls locker room	6	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	2,400	3, 4	Relamp	Yes	6	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,656	0.1	337	0	$48	$465	$71	8.2
Main gym	16	LED - Fixtures: LED fixtures	Wall Switch	S	60	2,400	4	None	Yes	16	LED - Fixtures: LED fixtures	Occupancy Sensor	60	1,656	0.2	786	0	$112	$540	$70	4.2
Main gym	1	Incandescent: scoreboard	Wall Switch	S	250	2,400	3	Relamp	No	1	LED Lamps: LED - Fixtures	Wall Switch	38	2,400	0.2	561	0	$80	$440	$0	5.5
Main gym	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,656	0.0	112	0	$16	$65	$12	3.3
Main gym	4	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Main gym storage1	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	2,400	3	Relamp	No	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,400	0.0	84	0	$12	$65	$12	4.4

	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
Main gym storage2	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	2,400	3	Relamp	No	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,400	0.0	84	0	$12	$65	$12	4.4
Main gym storage2	1	LED Lamps: screw-in	Wall Switch	S	9	2,400		None	No	1	LED Lamps: screw-in	Wall Switch	9	2,400	0.0	0	0	$0	$0	$0	0.0
Boys coach's office	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	7	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.2	776	0	$110	$526	$105	3.8
Boys coach's RR	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	2,400	3	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,400	0.0	42	0	$6	$33	$6	4.4
Boys main gym locker room	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.5	1,995	0	$284	$1,197	$250	3.3
Boys main gym locker room	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Boys main gym locker room	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,656	0.0	112	0	$16	$65	$12	3.3
Boys locker room custodial closet	1	LED Lamps: screw-in	Wall Switch	S	60	2,400		None	No	1	LED Lamps: screw-in	Wall Switch	60	2,400	0.0	0	0	$0	$0	$0	0.0
E wing women's RR	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,400	0.0	87	0	$12	$37	$10	2.1
E wing women's RR	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	2,400	3	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,400	0.0	42	0	$6	$33	$6	4.4
Ewing men's RR	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	2,400	3	Relamp	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	2,400	0.0	46	0	$7	$18	$5	2.0
Ewing men's RR	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	2,400	3	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,400	0.0	42	0	$6	$33	$6	4.4
Kitchen	47	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	S	29	2,400	4	None	Yes	47	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.3	1,115	0	$159	$1,080	$140	5.9
Kitchen	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	7	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.2	776	0	$110	$526	$105	3.8
Kitchen	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	S	17	2,400	4	None	Yes	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,656	0.0	14	0	$2	$270	$35	118.8
Kitchen vent hood	8	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	8	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Kitchen office	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	S	29	2,400		None	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,400	0.0	0	0	$0	$0	$0	0.0
Kitchen custodial closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	1,656	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.0	60	0	$9	$37	$10	3.1
Kitchen dry storage	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	S	29	2,400	4	None	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.0	95	0	$13	$270	$0	20.0
Kitchen locker	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	S	29	2,400		None	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,400	0.0	0	0	$0	$0	$0	0.0
Kitchen RR	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	S	17	1,656		None	No	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,656	0.0	0	0	$0	$0	$0	0.0
Cafeteria	6	LED - Linear Tubes: (1) 8' Lamp	Wall Switch	S	36	2,400	4	None	Yes	6	LED - Linear Tubes: (1) 8' Lamp	Occupancy Sensor	36	1,656	0.0	177	0	$25	$270	$35	9.4
Cafeteria	6	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	6	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Cafeteria	11	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	S	29	2,400	4	None	Yes	11	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	261	0	$37	$270	$35	6.3
Cafeteria	59	LED - Fixtures: spot light	Wall Switch	S	20	2,400	4	None	Yes	59	LED - Fixtures: spot light	Occupancy Sensor	20	1,656	0.3	966	0	$137	$1,080	$140	6.8

	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
C20	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.5	1,995	0	$284	$1,197	$250	3.3
C18	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.5	1,995	0	$284	$1,197	$250	3.3
C11	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.5	1,995	0	$284	$1,197	$250	3.3
C16	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.5	1,995	0	$284	$1,197	$250	3.3
Faculty room	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.3	998	0	$142	$599	$125	3.3
C14	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.5	1,995	0	$284	$1,197	$250	3.3
C9	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.5	1,995	0	$284	$1,197	$250	3.3
VP office	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.1	391	0	$56	$416	$75	6.1
VP office	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.1	391	0	$56	$416	$75	6.1
C7	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.5	1,995	0	$284	$1,197	$250	3.3
C12	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.5	1,995	0	$284	$1,197	$250	3.3
C5	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.3	998	0	$142	$599	$125	3.3
C10	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.5	1,995	0	$284	$1,197	$250	3.3
C8	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.5	1,995	0	$284	$1,197	$250	3.3
C3	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.5	1,995	0	$284	$1,197	$250	3.3
C1	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.5	1,995	0	$284	$1,197	$250	3.3
C6	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.5	1,995	0	$284	$1,197	$250	3.3
C4	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.4	1,330	0	$189	$708	$155	2.9
Faculty room	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	1,656	3	Relamp	No	7	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.2	421	0	$60	$256	$70	3.1
Faculty men's room	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	S	17	1,656		None	No	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,656	0.0	0	0	$0	$0	$0	0.0
Faculty women's room	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	S	17	1,656		None	No	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,656	0.0	0	0	$0	$0	$0	0.0
Custodial closet	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	222	0	$32	$189	$20	5.4
M/W RR	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	S	17	1,656		None	No	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,656	0.0	0	0	$0	$0	$0	0.0
C20	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.5	1,995	0	$284	$1,197	$250	3.3
M/W RR	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	S	17	1,656		None	No	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,656	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
D2	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	3, 4	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.5	1,995	0	$284	$927	$215	2.5
D4	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	3, 4	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.5	1,995	0	$284	$927	$215	2.5
D1	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	3, 4	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.5	1,995	0	$284	$927	$215	2.5
D3	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	3, 4	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.5	1,995	0	$284	$927	$215	2.5
D6	9	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	S	29	2,400	4	None	Yes	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	214	0	$30	$270	$35	7.7
D5	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	3, 4	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.5	1,995	0	$284	$927	$215	2.5
D7	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	3, 4	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.5	1,995	0	$284	$927	$215	2.5
D8	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	3, 4	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.5	1,995	0	$284	$927	$215	2.5
D10	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	3, 4	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.5	1,995	0	$284	$927	$215	2.5
VP office	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	3, 4	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	499	0	$71	$434	$80	5.0
VP office	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.1	333	0	$47	$380	$65	6.7
Boys RR	4	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	2,400	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,656	0.1	225	0	$32	$400	$59	10.7
Boys RR	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	222	0	$32	$343	$55	9.1
Girls RR	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	222	0	$32	$343	$55	9.1
Girls RR	5	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	2,400	3, 4	Relamp	Yes	5	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,656	0.1	281	0	$40	$433	$65	9.2
Coset	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,400	0.0	87	0	$12	$37	$10	2.1
D12	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	3, 4	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.5	1,995	0	$284	$927	$215	2.5
D9	15	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	3, 4	Relamp	Yes	15	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.7	2,494	-1	$355	$1,362	$295	3.0
D9 prep room	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.2	665	0	$95	$489	$95	4.2
D11	15	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	3, 4	Relamp	Yes	15	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.7	2,494	-1	$355	$1,362	$295	3.0
D14	15	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	3, 4	Relamp	Yes	15	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.7	2,494	-1	$355	$1,362	$295	3.0
D14 prep room	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	3, 4	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.3	998	0	$142	$599	$125	3.3
D16	15	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	3, 4	Relamp	Yes	15	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.7	2,494	-1	$355	$1,362	$295	3.0
D18	15	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	3, 4	Relamp	Yes	15	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.7	2,494	-1	$355	$1,362	$295	3.0
D13	15	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	3, 4	Relamp	Yes	15	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.7	2,494	-1	$355	$1,362	$295	3.0

	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
D20	15	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	3, 4	Relamp	Yes	15	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.7	2,494	-1	$355	$1,362	$295	3.0
Janitor closet	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,400	0.1	348	0	$50	$146	$40	2.1
Dwing	25	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	3, 4	Relamp	Yes	25	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	1.1	4,157	-1	$591	$1,909	$445	2.5
Dwing hallway	4	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Dwing hallway	23	Compact Fluorescent: pin based	Wall Switch	S	56	2,400	3, 5	Relamp	Yes	23	LED Lamps: LED Lamps	High/Low Control	38	1,656	0.5	1,808	0	$257	$1,296	$23	5.0
Dwing hallway	16	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	2,400	3, 5	Relamp	Yes	16	LED - Linear Tubes: (1) 4' Lamp	High/Low Control	15	1,656	0.3	929	0	$132	$967	$80	6.7
CD front breezeway	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	3, 4	Relamp	Yes	8	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.4	1,330	0	$189	$708	$155	2.9
CD front breezeway	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Cwing hallway	30	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	3, 5	Relamp	Yes	30	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	1,656	1.4	4,988	-1	$709	$2,768	$450	3.3
Cwing hallway	4	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
CD middle breezeway	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	3, 4	Relamp	Yes	8	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.4	1,330	0	$189	$708	$155	2.9
CD middle breezeway	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Bwing hallway	21	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	3, 5	Relamp	Yes	21	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	1,656	1.0	3,492	-1	$496	$2,050	$315	3.5
Bwing hallway	4	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Bwing hallway	6	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	S	29	2,400	5	None	Yes	6	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,656	0.0	142	0	$20	$225	$0	11.1
Bwing hallway	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 5	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,656	0.1	222	0	$32	$73	$20	1.7
Mwing	6	Linear Fluorescent - T8: 4' T8 (32W) - 6L	Wall Switch	S	176	2,400	3, 4	Relamp	Yes	6	LED - Linear Tubes: (6) 4' Lamps	Occupancy Sensor	87	1,656	0.5	1,837	0	$261	$927	$215	2.7
Mwing hallway	5	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	5	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Mwing hallway	20	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	3, 5	Relamp	Yes	20	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	1,656	0.9	3,326	-1	$473	$1,995	$300	3.6
Main entry	4	Linear Fluorescent - T8: 4' T8 (32W) - 6L	Wall Switch	S	176	2,400	3, 4	Relamp	Yes	4	LED - Linear Tubes: (6) 4' Lamps	Occupancy Sensor	87	1,656	0.3	1,225	0	$174	$708	$155	3.2
Foyer	2	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Awing hallway	31	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	3, 5	Relamp	Yes	31	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	1,656	1.4	5,155	-1	$733	$2,823	$465	3.2
Awing hallway	4	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Ewing hallway	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	3, 5	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	1,656	0.5	1,995	0	$284	$1,107	$180	3.3
Ewing hallway	2	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	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
Ewing hallway	4	LED Lamps: recessed cans	Wall Switch	S	40	2,400	5	None	Yes	4	LED Lamps: recessed cans	High/Low Control	40	1,656	0.0	131	0	$19	$225	$0	12.1
Ewing hallway	13	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	S	29	2,400	5	None	Yes	13	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,656	0.1	309	0	$44	$450	$0	10.3
Display cabinet	11	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	2,400	3, 4	Relamp	Yes	11	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,656	0.2	639	0	$91	$471	$90	4.2
Ewing breezeway	5	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	S	17	2,400		None	No	5	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,400	0.0	0	0	$0	$0	$0	0.0
HS Barn	32	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Photocell		62	4,380	3	Relamp	No	32	LED - Linear Tubes: (2) 4' Lamps	Photocell	29	4,380	0.5	4,625	0	$665	$1,168	$320	1.3
Field lights	76	Metal Halide: (1) 150W Lamp	Photocell		190	4,380	1	Fixture Replacement	No	76	LED - Fixtures: Porch (Wall Mounted)	Photocell	57	4,380	5.1	44,273	0	$6,369	$37,523	$380	5.8
Bldg lights	4	LED - Fixtures: downlights	Photocell		60	4,380		None	No	4	LED - Fixtures: downlights	Photocell	60	4,380	0.0	0	0	$0	$0	$0	0.0
Bldg lights	13	LED - Fixtures: dome fixture	Photocell		90	4,380		None	No	13	LED - Fixtures: dome fixture	Photocell	90	4,380	0.0	0	0	$0	$0	$0	0.0
Bldg lights	21	Incandescent: Canopy fixture	Photocell		180	4,380	3	Relamp	No	21	LED Lamps: LED - Fixtures	Photocell	27	4,380	1.6	14,073	0	$2,024	$6,930	$0	3.4
Bldg lights	24	Metal Halide: Wall fixture	Photocell		250	4,380	1	Fixture Replacement	No	24	LED - Fixtures: Porch (Wall Mounted)	Photocell	75	4,380	2.1	18,396	0	$2,646	$11,850	$120	4.4
Bldg lights	6	High-Pressure Sodium: Wall pack	Photocell		250	4,380	1	Fixture Replacement	No	6	LED - Fixtures: Porch (Wall Mounted)	Photocell	75	4,380	0.5	4,599	0	$662	$2,962	$30	4.4
Bldg lights	18	LED - Fixtures: Canopy fixture	Photocell		60	4,380		None	No	18	LED - Fixtures: Canopy fixture	Photocell	60	4,380	0.0	0	0	$0	$0	$0	0.0
PAC area	4	LED - Fixtures: loading doc	Photocell		120	4,380		None	No	4	LED - Fixtures: loading doc	Photocell	120	4,380	0.0	0	0	$0	$0	$0	0.0
PAC area	6	LED - Fixtures: Downlight Recessed	Photocell		60	4,380		None	No	6	LED - Fixtures: Downlight Recessed	Photocell	60	4,380	0.0	0	0	$0	$0	$0	0.0
PAC area	1	LED - Fixtures: wall fixture	Photocell		90	4,380		None	No	1	LED - Fixtures: wall fixture	Photocell	90	4,380	0.0	0	0	$0	$0	$0	0.0

Motor Inventory & Recommendations

		Existing Conditions							Proposed Conditions					Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	Motor Quantity	Motor Application	HP Per Motor	Full Load Efficiency	VFD Control?	Remaining Useful Life	Annual Operating Hours	ECM #	Install High Efficiency Motors?	Full Load Efficiency	Install VFDs?	Number of VFDs	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
A Wing Attic	AHU B-6 / B-5 AB/All	2	Supply Fan	5.0	89.5%	No	W	2,700		No	89.5%	No		0.0	0	0	$0	$0	$0	0.0
A Wing Attic	Cooling loop for wings A, B, C, Gym, & MC	1	Chilled Water Pump	15.0	93.0%	Yes	W	1,696		No	93.0%	No		0.0	0	0	$0	$0	$0	0.0
A Wing Attic	Cooling loop for wings A, B, C, Gym, & MC	1	Chilled Water Pump	15.0	93.0%	Yes	W	1,696		No	93.0%	No		0.0	0	0	$0	$0	$0	0.0
A Wing Attic	Cooling loop for wings A, B, C, Gym, & MC	1	Chilled Water Pump	20.0	91.0%	Yes	W	1,696		No	91.0%	No		0.0	0	0	$0	$0	$0	0.0
A Wing Attic	Cooling loop for wings A, B, C, Gym, & MC	1	Chilled Water Pump	20.0	91.0%	Yes	W	1,696		No	91.0%	No		0.0	0	0	$0	$0	$0	0.0
A, B, & C Wing Attics	Fan Coil Units	36	Supply Fan	0.8	81.8%	No	W	2,700		No	81.8%	No		0.0	0	0	$0	$0	$0	0.0
A, B, & C Wing Attics	Fan Coil Units	8	Supply Fan	0.5	76.2%	No	W	2,700		No	76.2%	No		0.0	0	0	$0	$0	$0	0.0
M Wing Attic	Main Office	1	Supply Fan	1.5	84.0%	No	W	2,700		No	84.0%	No		0.0	0	0	$0	$0	$0	0.0
C Wing Attic	CHW loop booster	1	Chilled Water Pump	7.5	88.5%	Yes	W	3,391		No	88.5%	No		0.0	0	0	$0	$0	$0	0.0
C Wing Attic	Faculty Room	2	Supply Fan	0.3	69.5%	No		2,700		No	69.5%	No		0.0	0	0	$0	$0	$0	0.0
B Wing Attic	Media Center	1	Supply Fan	7.5	91.0%	No		2,700	7	No	91.0%	Yes	1	2.1	6,225	0	$895	$4,738	$600	4.6
Above Gym	AHU-MG1	1	Supply Fan	15.0	93.0%	No	W	2,700	7	No	93.0%	Yes	1	4.3	12,183	0	$1,752	$7,041	$1,200	3.3
Above Gym	AHU-MG2	1	Supply Fan	15.0	93.0%	No	W	2,700	7	No	93.0%	Yes	1	4.3	12,183	0	$1,752	$7,041	$1,200	3.3
Above Gym	Unit heater	1	Supply Fan	0.0	60.0%	No	W	2,700		No	60.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	HRU-B-1	1	Supply Fan	2.0	86.5%	No		2,700		No	86.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	HRU-B-1	1	Exhaust Fan	1.5	86.5%	No		2,745		No	86.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	HRU-B-2	1	Supply Fan	1.5	86.5%	No		2,700		No	86.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	HRU-B-2	1	Exhaust Fan	1.5	86.5%	No		2,745		No	86.5%	No		0.0	0	0	$0	$0	$0	0.0
above Aux Gym	AHU-B-3	1	Supply Fan	3.0	86.6%	No	W	2,700	6	Yes	89.5%	No		0.0	170	0	$24	$876	$0	35.9
Aux Gym Penthouse	AHU-B-4	1	Supply Fan	3.0	86.6%	No	W	2,700	6	Yes	89.5%	No		0.0	170	0	$24	$876	$0	35.9

		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
Attic	A15 & A17	1	Supply Fan	3.0	86.6%	No		2,700	6	Yes	89.5%	No		0.0	170	0	$24	$876	$0	35.9
Attic	HRU-1	1	Supply Fan	1.5	86.5%	No		2,700		No	86.5%	No		0.0	0	0	$0	$0	$0	0.0
Attic	HRU-1	1	Exhaust Fan	1.5	86.5%	No		2,745		No	86.5%	No		0.0	0	0	$0	$0	$0	0.0
Attic	Attic space above A15 + A17	1	Supply Fan	0.1	60.0%	No		2,700		No	60.0%	No		0.0	0	0	$0	$0	$0	0.0
D Wing Boiler Rm	Heat pump supply	2	Heating Hot Water Pump	1.5	84.0%	No		1,373		No	84.0%	No		0.0	0	0	$0	$0	$0	0.0
D Wing Boiler Rm	Heat pump return	2	Heating Hot Water Pump	10.0	91.7%	No		1,696	9	No	91.7%	Yes	2	1.9	10,345	0	$1,488	$10,303	$0	6.9
D Wing Boiler Rm	Heat pump condenser	2	Condenser Water Pump	7.5	88.5%	No		3,391		No	88.5%	No		0.0	0	0	$0	$0	$0	0.0
D Wing Boiler Rm	Unit heaters for Boiler rm	2	Supply Fan	0.1	60.0%	No		2,700		No	60.0%	No		0.0	0	0	$0	$0	$0	0.0
D Wing Attic	Heat recovery SF	3	Supply Fan	2.0	86.5%	No	B	2,700		No	86.5%	No		0.0	0	0	$0	$0	$0	0.0
D Wing Attic	Heat recovery RF	3	Exhaust Fan	2.0	86.5%	No	B	2,745		No	86.5%	No		0.0	0	0	$0	$0	$0	0.0
D Wing Attic	Heat recovery SF	1	Supply Fan	2.0	86.5%	No	B	2,700		No	86.5%	No		0.0	0	0	$0	$0	$0	0.0
D Wing Attic	Heat recovery RF	1	Exhaust Fan	1.5	86.5%	No	B	2,745		No	86.5%	No		0.0	0	0	$0	$0	$0	0.0
Tech Room	Server room AHU	1	Supply Fan	2.0	86.5%	No		8,760		No	86.5%	No		0.0	0	0	$0	$0	$0	0.0
D Wing Attic	Heat recovery SF	1	Supply Fan	1.5	86.5%	No	B	2,700		No	86.5%	No		0.0	0	0	$0	$0	$0	0.0
D Wing Attic	Heat recovery RF	1	Exhaust Fan	1.5	86.5%	No	B	2,745		No	86.5%	No		0.0	0	0	$0	$0	$0	0.0
A Wing Boiler Rm	Heating water return pmp	2	Heating Hot Water Pump	20.0	91.0%	No		1,696	9	No	93.0%	Yes	2	4.2	21,656	0	$3,115	$17,164	$0	5.5
A Wing Boiler Rm	PAC Chiller	2	Chilled Water Pump	10.0	85.5%	No	B	1,696	8	No	91.7%	Yes	2	4.3	12,445	0	$1,790	$10,303	$0	5.8
A Wing Boiler Rm	DHW	1	Other	0.2	68.5%	No		2,745		No	68.5%	No		0.0	0	0	$0	$0	$0	0.0
A Wing Boiler Rm	Air compressor	1	Air Compressor	2.0	86.5%	No		2,190		No	86.5%	No		0.0	0	0	$0	$0	$0	0.0
Kitchen Attic	Cafeteria AHU	2	Supply Fan	5.0	89.5%	Yes		2,700		No	89.5%	No		0.0	0	0	$0	$0	$0	0.0

		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
Kitchen Attic	Attic exhaust fan	1	Exhaust Fan	0.2	69.5%	Yes	W	2,745		No	69.5%	No		0.0	0	0	$0	$0	$0	0.0
Cafeteria Attic	Kitchen MUA	1	Supply Fan	3.0	86.6%	No	W	2,700	6	Yes	88.5%	No		0.0	112	0	$16	$1,073	$0	66.4
Cafeteria Attic	Cafeteria	2	Supply Fan	7.5	91.0%	Yes	W	2,700		No	91.0%	No		0.0	0	0	$0	$0	$0	0.0
Cafeteria Attic	Attic exhaust fan	1	Exhaust Fan	0.2	69.5%	Yes	W	2,745		No	69.5%	No		0.0	0	0	$0	$0	$0	0.0
Cafeteria Attic	Kitchen	1	Supply Fan	5.0	89.5%	Yes		2,700		No	89.5%	No		0.0	0	0	$0	$0	$0	0.0
Stage Craft	Stage Left	1	Supply Fan	1.5	86.5%	No		2,700		No	86.5%	No		0.0	0	0	$0	$0	$0	0.0
Stage Craft	Stage Craft	1	Supply Fan	1.5	86.5%	No		2,700		No	86.5%	No		0.0	0	0	$0	$0	$0	0.0
Stage Craft	Stage Craft	1	Supply Fan	1.5	86.5%	No		2,700		No	86.5%	No		0.0	0	0	$0	$0	$0	0.0
Stage Electrical	Stage Right	1	Supply Fan	1.5	86.5%	No		2,700		No	86.5%	No		0.0	0	0	$0	$0	$0	0.0
Stage Electrical	Stage Electrical Rm	1	Supply Fan	0.2	69.5%	No		2,700		No	69.5%	No		0.0	0	0	$0	$0	$0	0.0
Stage	Left Audience Area	1	Supply Fan	10.0	89.5%	Yes		2,700	6	Yes	91.7%	No		0.1	405	0	$58	$1,344	$0	23.1
Stage	Left Audience Area	1	Return Fan	7.5	88.5%	Yes		2,700	6	Yes	91.0%	No		0.1	352	0	$51	$1,131	$0	22.4
Above Control Rm	PAC Lobby	1	Supply Fan	3.0	86.5%	No		2,700	7	No	89.5%	Yes	1	0.9	2,778	0	$400	$3,884	$240	9.1
Stage	Right Audience Area	1	Supply Fan	10.0	89.5%	Yes		2,700	6	Yes	91.7%	No		0.1	405	0	$58	$1,344	$0	23.1
Stage	Right Audience Area	1	Return Fan	7.5	88.5%	Yes		2,700	6	Yes	91.0%	No		0.1	352	0	$51	$1,131	$0	22.4
Kitchen	Cooking area	1	Kitchen Hood Exhaust Fan	2.0	86.5%	Yes		5,250		No	86.5%	No		0.0	0	0	$0	$0	$0	0.0
Kitchen	Dishwasher	1	Kitchen Hood Exhaust Fan	0.5	78.2%	No		5,250		No	78.2%	No		0.0	0	0	$0	$0	$0	0.0

Electric HVAC Inventory & Recommendations

		Existing Conditions					Proposed Conditions								Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (MBh)	Remaining Useful Life	ECM #	Install High Efficiency System?	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (MBh)	Cooling Mode Efficiency (SEER/EER)	Heating Mode Efficiency (COP)	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Roof	AHU-B-6 & AHU-B-5	2	Split-System AC	6.00		W		No							0.0	0	0	$0	$0	$0	0.0
Roof	Main Office	1	Split-System AC	7.50		B		No							0.0	0	0	$0	$0	$0	0.0
C Wing Attic	Faculty Room	1	Electric Resistance Heat		13.65	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	Music Room A15 & 17	1	Split-System AC	20.00		B	10	Yes	1	Split-System AC	20.00		10.50		0.9	1,885	0	$271	$23,815	$1,580	82.0
B Wing	Trainers Room	1	Split-System Air-Source HP	5.75	77.00	W		No							0.0	0	0	$0	$0	$0	0.0
Faculty Room	Faculty Room	1	Window AC	1.50		W		No							0.0	0	0	$0	$0	$0	0.0
D Wing Attic	D Wing	4	Water Source HP	1.25	15.00	B	11	Yes	4	Water Source HP	1.25	15.00	14.00	4.80	0.2	550	0	$79	$13,898	$405	170.6
D Wing Attic	D Wing Classrooms	20	Water Source HP	3.50	42.00	B		No							0.0	0	0	$0	$0	$0	0.0
Tech Room C15	Server Room	1	Packaged AC	3.00		W		No							0.0	0	0	$0	$0	$0	0.0
Tech Room C13	backup cooling for server room	2	Window AC	1.50		W		No							0.0	0	0	$0	$0	$0	0.0
Attic above Kitchen	Cafeteria old dining rm	1	Split-System AC	20.00		W		No							0.0	0	0	$0	$0	$0	0.0
Attic above Cafeteria	Cafeteria	1	Split-System AC	30.00		W		No							0.0	0	0	$0	$0	$0	0.0
Attic above Cafeteria	Kitchen	1	Split-System AC	10.00		W		No							0.0	0	0	$0	$0	$0	0.0
Roof PAC	Control Room	1	Split-System AC	0.71		B	10	Yes	1	Split-System AC	0.71		14.00		0.1	234	0	$34	$1,060	$65	29.5
Roof Kitchen	Kitchen Server Rm	1	Split-System Air-Source HP	0.75	9.80	W		No							0.0	0	0	$0	$0	$0	0.0
PAC Hallway Roof	PAC Hallway	1	Packaged AC	5.00		B	10	Yes	1	Packaged AC	5.00		14.00		0.7	1,429	0	$205	$11,345	$460	53.0
Athletic Trainer Office	Tranier office	3	Split-System Air-Source HP	2.00	26.50	W		No							0.0	0	0	$0	$0	$0	0.0
Transportation	Transportation	1	Window AC	1.50		W		No							0.0	0	0	$0	$0	$0	0.0
Room M5	M5	1	Window AC	1.50		W		No							0.0	0	0	$0	$0	$0	0.0

Electric Chiller Inventory & Recommendations

		Existing Conditions				Proposed Conditions								Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	Chiller Quantity	System Type	Cooling Capacity per Unit (Tons)	Remaining Useful Life	ECM #	Install High Efficiency Chillers?	Chiller Quantity	System Type	Constant/ Variable Speed	Cooling Capacity (Tons)	Full Load Efficiency (kW/Ton)	IPLV Efficiency (kW/Ton)	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
Exterior	PAC	1	Air-Cooled Reciprocating Chiller	100.00	B	12	Yes	1	Air-Cooled Centrifugal Chiller	Variable	100.00	1.24	0.74	36.6	32,735	0	$4,709	$85,318	$9,000	16.2
Exterior	Rest of Bldg HS & Kitchen	2	Air-Cooled Screw Chiller	200.00	W		No							0.0	0	0	$0	$0	$0	0.0

Fuel Heating Inventory & Recommendations

		Existing Conditions				Proposed Conditions							Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Output Capacity per Unit (MBh)	Remaining Useful Life	ECM #	Install High Efficiency System?	System Quantity	System Type	Output Capacity per Unit (MBh)	Heating Efficiency	Heating Efficiency Units	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
D Wing Boiler Rm	D Wing Heat Pumps	2	Non-Condensing Hot Water Boiler	930.00	W		No						0.0	0	0	$0	$0	$0	0.0
A Wing Boiler Rm	Whole Bldg	5	Condensing Hot Water Boiler	######	W		No						0.0	0	0	$0	$0	$0	0.0
Attic above Cafeteria	Kitchen MUA	1	Furnace	244.69	W		No						0.0	0	0	$0	$0	$0	0.0
PAC Hallway Roof	PAC Hallway	1	Furnace	81.00	B	13	Yes	1	Furnace	81.00	95.00%	AFUE	0.0	0	8	$62	$1,835	$400	23.3

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
A Wing Boiler Room	Whole Bldg	2	Boiler	B		No						0.0	0	0	$0	$0	$0	0.0
A Wing Boiler Room	Whole Bldg	1	Boiler	W		No						0.0	0	0	$0	$0	$0	0.0
above PAC cntrl room	PAC Dressing and Rest rooms	1	Storage Tank Water Heater (> 50 Gal)	W		No						0.0	0	0	$0	$0	$0	0.0

Low-Flow Device Recommendations

	Recommedation Inputs					Energy Impact & Financial Analysis						
Location	ECM #	Device Quantity	Device Type	Existing Flow Rate (gpm)	Proposed Flow Rate (gpm)	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Various	14	31	Faucet Aerator (Lavatory)	1.60	0.50	0.0	0	35	$282	$222	$0	0.8
Various	14	21	Faucet Aerator (Lavatory)	2.00	0.50	0.0	0	33	$261	$151	$0	0.6
Nurses office RR	14	1	Faucet Aerator (Lavatory)	3.50	0.50	0.0	0	3	$25	$7	$0	0.3
B Wing Storage	14	3	Faucet Aerator (Kitchen)	3.00	1.50	0.0	0	5	$37	$22	$0	0.6

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
Walk-in freezer	1	Medium Temp Freezer (0F to 30F)		No	No	No	0.0	0	0	$0	$0	$0	0.0
Walk-in freezer	1	Medium Temp Freezer (0F to 30F)		No	No	No	0.0	0	0	$0	$0	$0	0.0
Walk-in cooler	1	Cooler (35F to 55F)		No	No	No	0.0	0	0	$0	$0	$0	0.0

Commercial Refrigerator/Freezer Inventory & Recommendations

	Existing Conditions			Proposed Conditions		Energy Impact & Financial Analysis						
Location	Quantity	Refrigerator/ Freezer Type	ENERGY STAR Qualified?	ECM #	Install ENERGY STAR Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen	3	Stand-Up Refrigerator, Glass Door (≤15 cu. ft.)	No		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	3	Stand-Up Refrigerator, Solid Door (16 - 30 cu. ft.)	Yes		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	3	Stand-Up Refrigerator, Solid Door (31 - 50 cu. ft.)	Yes		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	1	Stand-Up Refrigerator, Glass Door (≤15 cu. ft.)	No		No	0.0	0	0	$0	$0	$0	0.0
school store	1	Stand-Up Refrigerator, Glass Door (≤15 cu. ft.)	No		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), Continuous	No		No	0.0	0	0	$0	$0	$0	0.0

Novelty Cooler Inventory & Recommendations

	Existing Conditions		Proposed Conditions		Energy Impact & Financial Analysis						
Location	Quantity	Cooler Description	ECM #	Install Automatic Shutoff Control?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
cateteria	2	Ice cream novelity reach in cooler		No	0.00	0	0	$0	$0	$0	0.0

Cooking Equipment Inventory & Recommendations

	Existing Conditions			Proposed Conditions		Energy Impact & Financial Analysis						
Location	Quantity	Equipment Type	High Efficiency Equipement?	ECM #	Install High Efficiency Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen	2	Insulated Food Holding Cabinet (1/2 Size)	Yes		No	0.0	0	0	FALSE	$0	$0	#DIV/0!
Kitchen	3	Insulated Food Holding Cabinet (Full Size)	Yes		No	0.0	0	0	FALSE	$0	$0	#DIV/0!
Kitchen	1	Gas Steamer	No		No	0.0	0	0	FALSE	$0	$0	#DIV/0!
Kitchen	4	Gas Convection Oven (Full Size)	Yes		No	0.0	0	0	FALSE	$0	$0	#DIV/0!
Kitchen	2	Gas Convection Oven (Full Size)	No		No	0.0	0	0	FALSE	$0	$0	#DIV/0!
Kitchen	1	Gas Griddle (3 Feet Width)	No		No	0.0	0	0	FALSE	$0	$0	#DIV/0!

Plug Load Inventory

	Existing Conditions			
Location	Quantity	Equipment Description	Energy Rate (W)	ENERGY STAR Qualified?
classrooms	298	Desktop computer	200.0	
classrooms	78	desk printer	50.0	
Offices	7	Photocopier	500.0	
classrooms	57	projector	300.0	
classrooms	9	LCD TV	150.0	
Various	23	Microwave	1,000.0	
Various	17	mini-fridge	150.0	
faculty rm/various	4	coffee maker	800.0	
faculty rm/various	9	Refrigerator	350.0	
faculty rm/various	5	watercooler	200.0	
cafeteria	1	ice machine	1,300.0	
Offices	2	paper shredder	400.0	
halls	11	drinking fountain (water)	200.0	
PAC	1	BIG projector	750.0	
classrooms	2	dishwasher	500.0	
classrooms	3	electric clothes dryer	3,000.0	
classrooms	3	clothes washer	1,200.0	
classrooms	6	electric oven/stove	1,750.0	
art	1	kiln	23,600.0	

Vending Machine Inventory & Recommendations

	Existing Conditions		Proposed Conditions		Energy Impact & Financial Analysis						
Location	Quantity	Vending Machine Type	ECM #	Install Controls?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Faculty Room	1	Refrigerated	15	Yes	0.2	1,612	0	$232	$230	$50	0.8
C-wing Faculty Room	1	Refrigerated	15	Yes	0.2	1,612	0	$232	$230	$50	0.8
C-wing Faculty Room	1	Non-Refrigerated	15	Yes	0.0	343	0	$49	$230	$0	4.7

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

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ENERGY STAR® Score[1]

Burlington Township High School - Main Building

Primary Property Type: K-12 School
Gross Floor Area (ft²): 170,000
Built: 1964

For Year Ending: September 30, 2018
Date Generated: May 02, 2019

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
Burlington Township High School - Main Building 610 Fountain Avenue Burlington, New Jersey 08016	Burlington Township Board of Education 710 Jacksonville Road PO Box 428 Burlington, NJ 08016 (____)____-_____	Nicholas Bice 710 Jacksonville Road PO Box 428 Burlington, NJ 08016 6093873955 AHubbard@trccompanies.com

Property ID: 6787987

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
87.2 kBtu/ft²

Source EUI
171.4 kBtu/ft²

Annual Energy by Fuel	
Natural Gas (kBtu)	7,058,337 (48%)
Electric - Grid (kBtu)	7,760,828 (52%)

National Median Comparison	
National Median Site EUI (kBtu/ft²)	61.3
National Median Source EUI (kBtu/ft²)	120.5
% Diff from National Median Source EUI	42%
Annual Emissions	
Greenhouse Gas Emissions (Metric Tons CO2e/year)	1,161

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 fiscal savings associated with measures. 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	*British thermal unit*: a unit of energy equal to the amount of heat required to increase the temperature of one pound of water by one-degree Fahrenheit.
CHP	*Combined heat and power*. Also referred to as cogeneration.
COP	*Coefficient of performance*: a measure of efficiency in terms of useful energy delivered divided by total energy input.
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.
DCV	*Demand control ventilation*: a control strategy to limit the amount of outside air introduced to the conditioned space based on actual occupancy need.
US DOE	*United States Department of Energy*
EC Motor	*Electronically commutated motor*
ECM	*Energy conservation measure*
EER	*Energy efficiency ratio*: a measure of efficiency in terms of cooling energy provided divided by electric input.
EUI	*Energy Use Intensity:* measures energy consumption per square foot and is a standard metric for comparing buildings' energy performance.
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 the operation of energy use systems. Unlike conservation, which involves some reduction of service, energy efficiency provides energy reductions without sacrifice of service.
ENERGY STAR®	ENERGY STAR® is the government-backed symbol for energy efficiency. The ENERGY STAR® program is managed by the EPA.
EPA	*United States Environmental Protection Agency*
Generation	The process of generating electric power from sources of primary energy (e.g., natural gas, the sun, oil).
GHG	*Greenhouse gases:* gases that are transparent to solar (short-wave) radiation but opaque to long-wave (infrared) radiation, thus preventing long-wave radiant energy from leaving Earth's atmosphere. The net effect is a trapping of absorbed radiation and a tendency to warm the planet's surface.
gpf	*Gallons per flush*

gpm	*Gallon per minute*
HID	*High intensity discharge:* high-output lighting lamps such as high-pressure sodium, metal halide, and mercury vapor.
hp	*Horsepower*
HPS	*High-pressure sodium*: a type of HID lamp.
HSPF	*Heating seasonal performance factor:* a measure of efficiency typically applied to heat pumps. Heating energy provided divided by seasonal energy input.
HVAC	*Heating, ventilating, and air conditioning*
IHP 2014	US DOE Integral Horsepower rule. The current ruling regarding required electric motor efficiency.
IPLV	*Integrated part load value:* a measure of the part load efficiency usually applied to chillers.
kBtu	One thousand British thermal units
kW	*Kilowatt*: equal to 1,000 Watts.
kWh	*Kilowatt-hour*: 1,000 Watts of power expended over one hour.
LED	*Light emitting diode*: a high-efficiency source of light with a long lamp life.
LGEA	*Local Government Energy Audit*
Load	The total power a building or system is using 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.
MH	*Metal halide*: a type of HID lamp.
MBh	*Thousand Btu per hour*
MBtu	*One thousand British thermal units*
MMBtu	*One million British thermal units*
MV	*Mercury Vapor:* a type of HID lamp.
NJBPU	*New Jersey Board of Public Utilities*
NJCEP	*New Jersey's Clean Energy Program:* NJCEP is a statewide program that offers financial incentives, programs and services for New Jersey residents, business owners and local governments to help them save energy, money and the environment.
psig	Pounds per square inch gauge
Plug Load	Refers to the amount of power used in a space by products that are powered by means of an ordinary AC plug.
PV	*Photovoltaic:* refers to an electronic device capable of converting incident light directly into electricity (direct current).

SEER	*Seasonal energy efficiency ratio:* a measure of efficiency in terms of annual cooling energy provided divided by total electric input.
SEP	*Statement of energy performance:* a summary document from the ENERGY STAR® Portfolio Manager®.
Simple Payback	The amount of time needed to recoup the funds expended in an investment or to reach the break-even point between investment and savings.
SREC	*Solar renewable energy credit*: a credit you can earn from the state for energy produced from a photovoltaic array.
T5, T8, T12	A reference to a linear lamp diameter. The number represents increments of 1/8th of an inch.
Temperature Setpoint	The temperature at which a temperature regulating device (thermostat, for example) has been set.
therm	100,000 Btu. Typically used as a measure of natural gas consumption.
tons	A unit of cooling capacity equal to 12,000 Btu/hr.
Turnkey	Provision of a complete product or service that is ready for immediate use
VAV	*Variable air volume*
VFD	*Variable frequency drive*: a controller used to vary the speed of an electric motor.
WaterSense™	The symbol for water efficiency. The WaterSense™ program is managed by the EPA.
Watt (W)	Unit of power commonly used to measure electricity use.