Local Government Energy Audit Report

Summit High School

August 1, 2023

Prepared for:

Summit Board of Education
125 Kent Place Boulevard
Summit, New Jersey 07901

Prepared by:

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Disclaimer

The goal of this audit report is to identify potential energy efficiency opportunities and help prioritize specific measures for implementation. 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 reviewed the energy conservation measures and estimates of energy savings 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 material and labor costs primarily on RS Means cost manuals as well as on our experience at similar facilities. This approach is based on standard cost estimating manuals and is vendor neutral. Cost estimates include material and labor pricing associated with one for one equipment replacements. Cost estimates do not include demolition or removal of hazardous waste. The actual implementation costs for energy savings projects are anticipated to be significantly higher based on the specific conditions at your site(s). We strongly recommend that you work with your design engineer or contractor to develop actual project costs for your specific scope of work for the installation of high efficiency equipment. We encourage you to obtain multiple estimates when considering measure installations. Actual installation costs can vary widely based on selected products and installers. TRC and NJBPU do not guarantee cost estimates and shall in no event be held liable should actual installed costs vary from these material and labor estimates.

Incentive values provided in this report are estimated based on previously run state efficiency programs. Incentive levels are not guaranteed. The NJBPU reserves the right to extend, modify, or terminate programs without prior notice. Please review all available utility 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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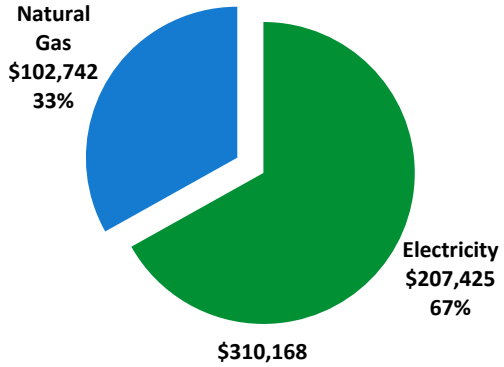
1 EXECUTIVE SUMMARY

The New Jersey Board of Public Utilities (NJBPU) has sponsored this Local Government Energy Audit (LGEA) report for Summit High School. This report provides you with information about your facility's energy use, identifies energy conservation measures (ECMs) that can reduce your energy use, and provides information and assistance to help make changes in your facility. TRC 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: $310,168 Electricity: 1,753,760 kWh Natural Gas: 97,905 Therms	
ENERGY STAR® Benchmarking Score	61 *(1-100 scale)*	Congratulations, your building performs better than the national average. This report has suggestions about how to keep your building running efficiently, further improve performance, and lower your energy bills even more.

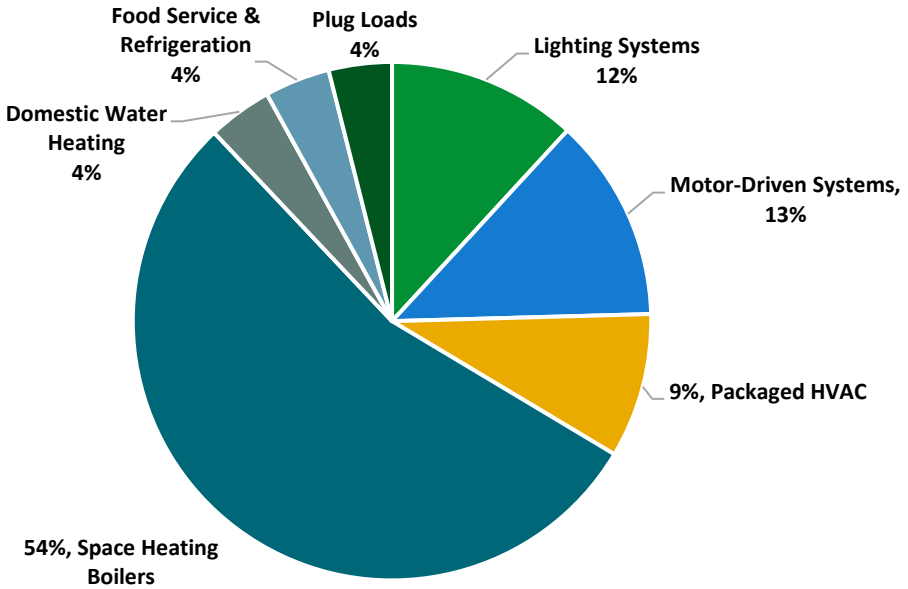


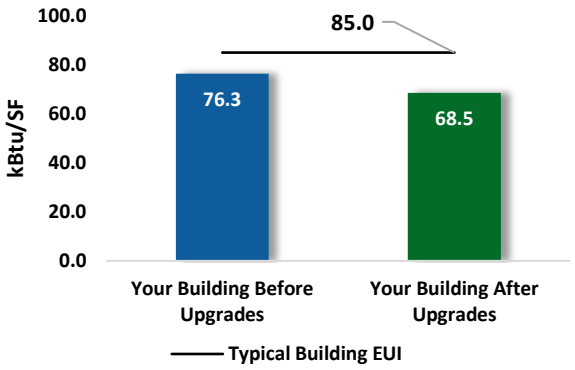
Figure 1 - Energy Use by System

POTENTIAL IMPROVEMENTS

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

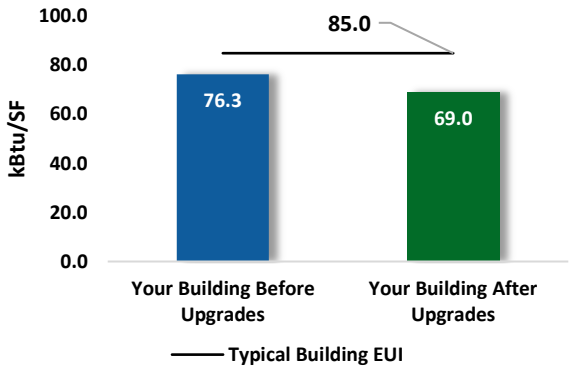
Scenario 1: Full Package (All Evaluated Measures)

Installation Cost	$435,171
Potential Rebates & Incentives[1]	$62,595
Annual Cost Savings	$53,763
Annual Energy Savings	Electricity: 447,143 kWh Natural Gas: 836 Therms
Greenhouse Gas Emission Savings	230 Tons
Simple Payback	6.9 Years
Site Energy Savings (All Utilities)	10%



Scenario 2: Cost Effective Package[2]

Installation Cost	$293,066
Potential Rebates & Incentives	$55,958
Annual Cost Savings	$51,233
Annual Energy Savings	Electricity: 428,291 kWh Natural Gas: 550 Therms
Greenhouse Gas Emission Savings	219 Tons
Simple Payback	4.6 Years
Site Energy Savings (all utilities)	10%



On-site Generation Potential

Photovoltaic	High
Combined Heat and Power	None

[1] Incentives are based on previously run state rebate programs. Contact your utility provider for current program incentives that 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	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades			**277,227**	**65.2**	**-56**	**$32,204**	**$114,711**	**$26,556**	**$88,155**	**2.7**	**272,634**
ECM 1	Install LED Fixtures	Yes	7,621	0.0	0	$901	$6,562	$600	$5,962	6.6	7,674
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	985	0.3	0	$114	$404	$60	$344	3.0	968
ECM 3	Retrofit Fixtures with LED Lamps	Yes	268,621	64.9	-56	$31,188	$107,745	$25,896	$81,849	2.6	263,991
Lighting Control Measures			**82,675**	**19.7**	**-17**	**$9,597**	**$74,424**	**$22,195**	**$52,229**	**5.4**	**81,229**
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	68,303	17.0	-14	$7,929	$57,324	$7,515	$49,809	6.3	67,109
ECM 5	Install High/Low Lighting Controls	Yes	14,371	2.7	-3	$1,668	$17,100	$14,680	$2,420	1.5	14,120
Variable Frequency Drive (VFD) Measures			**66,441**	**20.2**	**23**	**$8,105**	**$104,857**	**$7,225**	**$97,632**	**12.0**	**69,653**
ECM 6	Install VFDs on Constant Volume (CV) Fans	Yes	61,672	20.0	0	$7,294	$87,758	$6,725	$81,033	11.1	62,103
ECM 7	Install VFDs on Kitchen Hood Fan Motors	No	4,769	0.2	23	$810	$17,099	$500	$16,599	20.5	7,550
Unitary HVAC Measures			**11,232**	**12.1**	**0**	**$1,329**	**$117,701**	**$5,738**	**$111,963**	**84.3**	**11,311**
ECM 8	Install High Efficiency Air Conditioning Units	No	11,232	12.1	0	$1,329	$117,701	$5,738	$111,963	84.3	11,311
HVAC System Improvements			**2,843**	**0.0**	**80**	**$1,174**	**$13,594**	**$0**	**$13,594**	**11.6**	**12,215**
ECM 9	Implement Demand Control Ventilation (DCV)	Yes	2,843	0.0	80	$1,174	$13,594	$0	$13,594	11.6	12,215
Domestic Water Heating Upgrade			**0**	**0.0**	**48**	**$506**	**$373**	**$182**	**$191**	**0.4**	**5,640**
ECM 10	Install Low-Flow DHW Devices	Yes	0	0.0	48	$506	$373	$182	$191	0.4	5,640
Food Service & Refrigeration Measures			**6,725**	**0.5**	**5**	**$850**	**$9,511**	**$700**	**$8,811**	**10.4**	**7,379**
ECM 11	Food Service Equipment Replacement	No	0	0.0	5	$54	$1,764	$125	$1,639	30.1	608
ECM 12	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	1,114	0.1	0	$132	$1,517	$200	$1,317	10.0	1,122
ECM 13	Refrigeration Controls	No	2,850	0.0	0	$337	$5,541	$275	$5,266	15.6	2,870
ECM 14	Vending Machine Control	Yes	2,760	0.3	0	$326	$690	$100	$590	1.8	2,780
TOTALS (COST EFFECTIVE MEASURES)			**428,291**	**105.3**	**55**	**$51,233**	**$293,066**	**$55,958**	**$237,109**	**4.6**	**437,723**
TOTALS (ALL MEASURES)			**447,143**	**117.6**	**84**	**$53,763**	**$435,171**	**$62,595**	**$372,576**	**6.9**	**460,061**

* - All incentives presented in this table are included as placeholders for planning purposes and are based on previously run state rebate programs. Contact your utility provider for details on current programs.

** - 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

Utility-run energy efficiency programs and 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.

Options from Your Utility Company

Prescriptive and Custom Rebates

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 Prescriptive and Custom Rebates 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 may be required for some incentives. Contact your utility company for more details prior to project installation.

Direct Install

The Direct Install program provides turnkey installation of multiple measures through an authorized contractor. This program can provide incentives up to 70% or 80% of the cost of selected measures. A Direct Install contractor will assess and verify individual measure eligibility and perform the installation work. The Direct Install program is available to sites with an average peak demand of less than 200 kW.

Engineered Solutions

The Engineered Solutions program provides tailored energy-efficiency assistance and turnkey engineering services to municipalities, universities, schools, hospitals, and healthcare facilities (MUSH), non-profit entities, and multifamily buildings. The program provides all professional services from audit, design, construction administration, to commissioning and measurement and verification for custom whole-building energy-efficiency projects. Engineered Solutions 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.

For more details on these programs please contact your utility provider.

Options from New Jersey's Clean Energy Program

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 and Power (CHP)

The CHP program provides incentives for combined heat and power (i.e., 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.

Successor Solar Incentive Program (SuSI)

New Jersey is committed to supporting solar energy. Solar projects help the state reach the renewable goals outlined in the state's Energy Master Plan. The SuSI program is used to register and certify solar projects in New Jersey. Rebates are not available, but certified solar projects are able to earn one SREC II (Solar Renewable Energy Certificates II) for each megawatt-hour of solar electricity produced from a qualifying solar facility.

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.

Large Energy User Program (LEUP)

LEUP is designed to promote self-investment in energy efficiency. It incentivizes owners/users of buildings to upgrade or install energy conserving measures in existing buildings to help offset the capital costs associated with the project. The efficiency upgrades are customized to meet the requirements of the customers' existing facilities, while advancing the State's energy efficiency, conservation, and greenhouse gas reduction goals.

For more details on these programs please visit New Jersey's Clean Energy Program website .

2 EXISTING CONDITIONS

The New Jersey Board of Public Utilities (NJBPU) has sponsored this Local Government Energy Audit (LGEA) report for Summit High School. This report provides information on how your facility uses energy, identifies energy conservation measures (ECMs) that can reduce your energy use, and provides information and assistance to help you implement the ECMs.

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 February 8, 2023, TRC performed an energy audit at Summit High School located in Summit, New Jersey. TRC met with facility staff to review the facility operations and help focus our investigation on specific energy-using systems.

The Summit High School located at 125 Kent Place Boulevard is a four-year comprehensive public high school serving students in ninth through twelfth grades. The facility is comprised of a school building that includes typical educational, administrative, assembly, and recreation spaces. The school building is a two-story, 206,690 square foot building originally built in 1962 and expanded in 2002 to accommodate additional spaces. Spaces include classrooms, administrative offices, gymnasiums, locker rooms, weigh rooms, auditorium, library, kitchen, cafeteria, conference rooms, corridors, lobbies, restrooms, storage, and a basement mechanical space.

Facility lighting systems consist of a mix of linear fluorescent fixtures and LED lighting. The school building is 100% heated by four condensing boilers and 90% of the space is cooled by rooftop package units (RTUs), heat pumps, and window air conditioners.

Recent improvements and Facility Concerns

Over the last two years, the facility has completed a partial interior and exterior lighting retrofit and replaced most of the RTUs. Additionally, in 2022, eleven Daikin variable refrigerant volume (VRV) heat pumps were installed to serve the classrooms. The site is interested in retrofitting the remaining non-LED sources to LED sources, integrating interior lighting system to a building automation system, and replacing the older condensing units.

2.2 Building Occupancy

The school operates on a 10-month schedule. The gymnasiums, locker rooms, team and training rooms are used after classes for sports and other events. There are some Saturday activities in the gymnasium. The entire facility is shut down around 11:00 PM after the cleaning process.

During a typical day, the facility is occupied by approximately 1159 students and 190 staff. It should be noted that the energy and economic analysis for this building is based on the use of the building during the utility billing period, and that results will vary based on changes to building use patterns.

Building Name	Weekday/Weekend	Operating Schedule
Summit High School General Operating Hours	Weekday	6:00 AM - 11:00 PM
	Weekend	Sat - Gym & Media Center
Summit High School Class Hours	Weekday	7:00 AM - 3:00 PM
	Weekend	Closed

Figure 3 - Building Occupancy Schedule

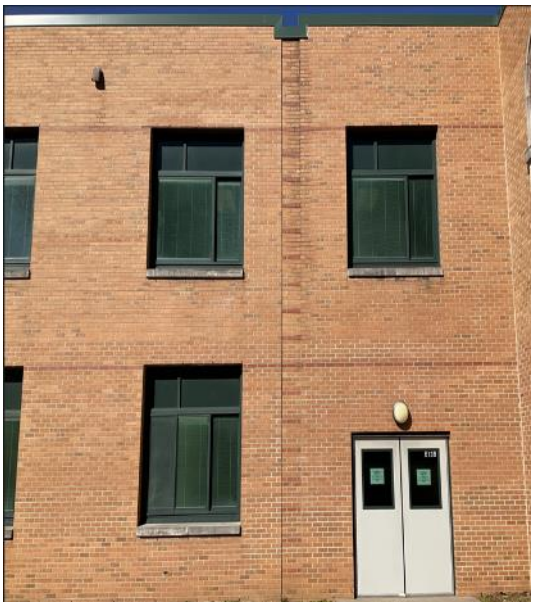
2.3 Building Envelope

Building walls are constructed of concrete masonry units (CMU) over structural steel with a brick façade, with gypsum drywall painted and CMU interior finish. The level of exterior wall insulation is unknown. The building has both flat roof sections and a gable roof section supported by steel trusses. The flat roof sections are comprised of grey and black membranes that appear in fair and good condition with poor water drainage in some areas.

The original building has a pitched roof covered with slate shingles that are in fair aging condition. The addition has a flat white rubberized roof and pitched asphalt roof sections with shingles that are in good condition. Some areas of the flat roof have poor water drainage. The new addition library section has a metal-framed gable roof that is in good condition.

Most of the windows are double paned and have aluminum frames with a thermal break. The fixed window weather seals are in good condition, showing little evidence of excessive wear. The main entrance doors are glass with aluminum frames and exit doors are mostly FRP (fiberglass-reinforced polymer) rated doors and are in good condition. Degraded window and door seals increase drafts and outside air infiltration.

New Addition



Original Building Walls

Grey Membrane Flat Roof Section

Black Membrane Flat Roof Section

Meta Frames Gable Roof Section

Windows - New Addition

Windows - Original Building

Exterior Doors

2.4 Lighting Systems

The primary interior lighting system uses 32-Watt linear fluorescent T8 lamps. There are also several LED fixtures, LED lamps, and compact fluorescent lamps (CFL). Additionally, there are a small number of incandescent and linear T12 fixtures. Fixture types include 2-lamp, 3-lamp, or 4-lamp, 2-foot or 4-foot-long troffer, recessed, surface mounted fixtures and 2-foot fixtures with U-bend linear tube lamps. Typically, T8 fluorescent lamps use electronic ballasts and T12 fluorescent lamps use magnetic ballasts.

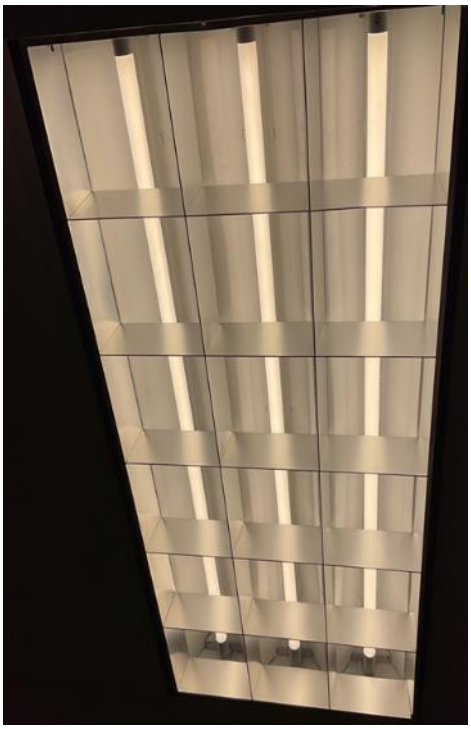
Spaces including the gymnasium, auditorium, Classroom 334, library desk areas, and weight room are lit with LED fixtures while spaces such as storage rooms, kitchen areas, some corridors, and Room 316 are illuminated with LED lamps. Building spaces including the auditorium and its corridor, cafeteria, English and Library corridors, guidance offices, library main areas and foyer, copy room, and the basement electrical room are primarily lit with CFLs. Linear tubes lamps are used in the library main area and in the boy's locker room shower area. There are incandescent lamps in spaces that include Classrooms 119, 122, 126, 228 and the auditorium corridor. A small number of linear T12 are used in storage spaces. The remaining spaces are lit with linear fluorescent T8 fixtures. All exit signs are LED.

Most fixtures are in good condition. Interior lighting levels were generally sufficient. Most lighting fixtures are controlled by manual wall switches. The gymnasiums LED fixtures have onboard occupancy sensors; while classrooms, 121 and 123, science corridor, and other small spaces have either wall or ceiling mounted occupancy sensors.

Exterior fixtures consist of wall, recessed, and pole mounted with LED fixtures, CFLs, and HID lamps that are mainly controlled by timers. Some exterior soffits have incandescent and CFL lamps that are controlled via wall switches.

Linear Fluorescent T8 Fixture

LED Tubes Fixture



LED Tubes Fixture

LED Fixtures

LED Exit Sign

Occupancy Sensor

Occupancy Sensor

U-Bend T8 Fixture

CFL Fixture

LED High Bay Fixture

Exterior Wall Mounted LED and CFL Fixtures

Exterior Recessed Fixture

Exterior Recessed

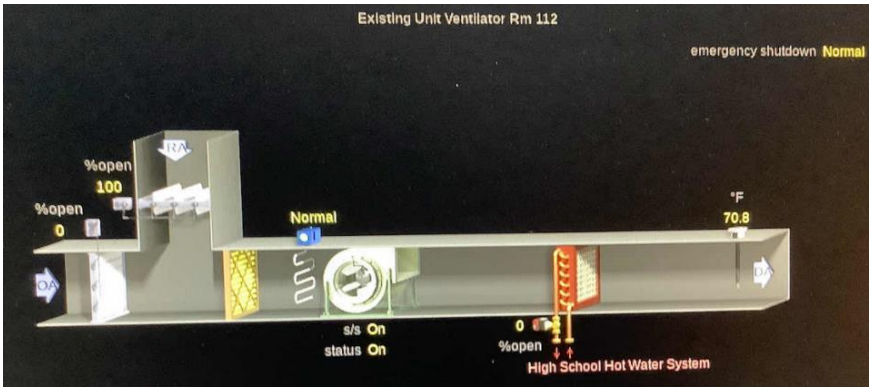
Pole Mounted Fixtures

2.5 Air Handling Systems

Unit Ventilators

Unit ventilators (UVs) are equipped with supply fan motors and digitally controlled outside air dampers and are connected to the hot water distribution system. They provide heating and ventilation to classrooms and other spaces. Most of the unit ventilators were replaced in 2006 and are in good condition. The remaining units appear in fair condition. They are all are controlled by the Automated Logic building automation system (BAS).

Typical Classroom Unit Ventilator



BAS Screenshot - Unit Ventilator

Unitary Electric HVAC Equipment

As part of the 2022 HVAC upgrade, eleven Daikin VRV heat pumps labeled as "CU" were installed to provide heating and cooling to classrooms. There are also three standard air source heat pumps. The heat pumps vary in cooling capacity between 2 tons and 14 tons and between 25 MBh to 188 MBh in heating capacity. The Daikin VRV heat pumps have heating coefficient of performance (COP) values that vary between 2.55 and 2.65. The heat pumps are in good condition and are controlled by programmable thermostats.

Additionally, 18 outdoor condensing units and seven window ACs provide cooling to classrooms and offices. The condensing units' range in capacity from 1 ton to 10 tons while the window units vary in size from 1.25 tons to 2.0 tons. The condensing units appear to be connected to above-ceiling mounted fan coil units. Thirteen of the condensing units and five of the window ACs appear in fair or poor condition and have been evaluated for replacement.

Unit	Cooling Capacity (Tons)	Cooling Efficiency (EER)	Heating Capacity (MBh)	COP Heating Efficiency (%)
Office	2.00	18.00	25.00	9.8 (HSPF)
CU-1A - Backup Classroom	12.00	14.00	162.00	2.55
CU-1B - Master Classrooms	10.00	12.50	135.00	2.65
CU-2A- Backup Classrooms	10.00	12.50	135.00	2.65
CU-2B - Master Classrooms	12.00	14.00	162.00	2.55
CU-3A - Backup Classrooms	12.00	14.00	162.00	2.55
CU-3B - Master Classrooms	12.00	14.00	162.00	2.55
CU-4A - Backup Classrooms	12.00	14.00	162.00	2.55
CU-4B – Main Classrooms	10.00	12.50	135.00	2.65
CU-1C Classroom 246	10.00	12.50	135.00	2.65
CU-5A – Backup Classroom	14.00	12.40	188.00	2.65
CU-5B – Master Classroom	12.00	14.00	162.00	2.55
Classroom	3.00	16.00	34.00	9.5 (HSPF)
Classroom	3.00	16.00	40.00	9.5 (HSPF)

Window AC & Indoor Heat Pump Evaporator

Window AC & Indoor Heat Pump Evaporator

Outdoor Condensing Unit

Outdoor Condensing Unit

Daikin VRV Heat Pumps

Daikin VRV Heat Pumps

Indoor Evaporator

Programmable Thermostat

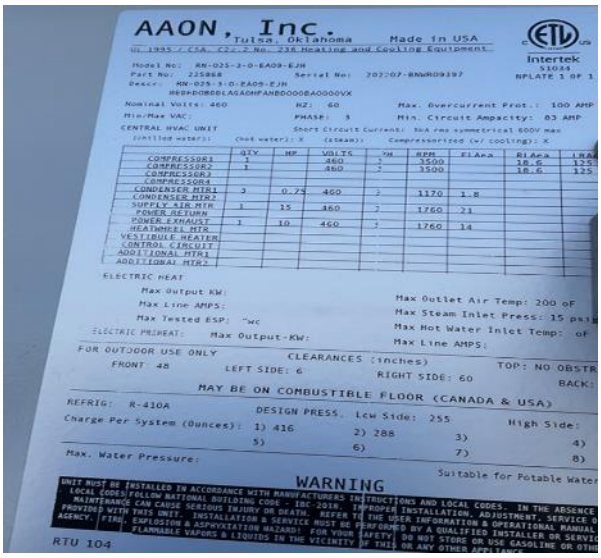
Packaged Units

Larger spaces are conditioned by 17 packaged rooftop units (RTUs) with economizers. Most RTUs were part of the building's recent HVAC upgrade. They provide cooling through direct expansion (DX) coils and are equipped with hot water coils for heating. These units vary in cooling capacity between 2 tons and 79 tons. Most of the units are variable air volume systems with both supply and return fans controlled by variable frequency drives (VFDs). They are mostly in good condition except the 7.5-ton York RTU serving the TV studio which appears in fair condition and has been evaluated for replacement. The kitchen is served by a new Captive Aire make-up air unit (MUA-1) equipped with DX coil and a gas-fired section. The unit has 320 MBh output heating capacity. The RTUs are controlled by the BAS.

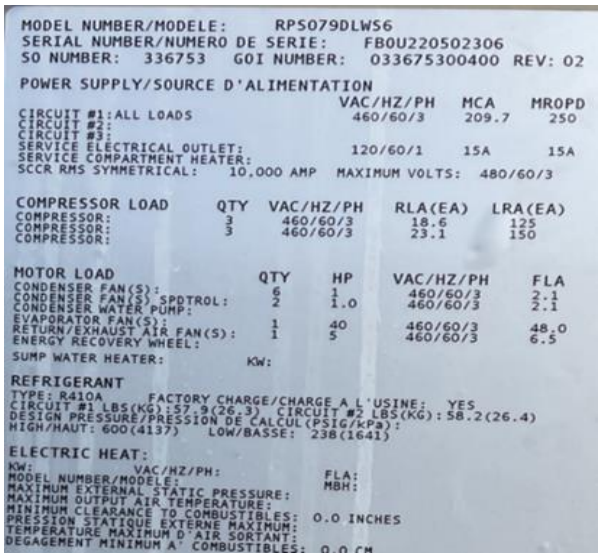
Air distribution is provided to supply air registers using ducts concealed above the ceilings. Return air grilles are located in spaces. Heated and/or cooled air is distributed through ducts to variable air volume (VAV) terminals concealed above the ceiling. The building air distribution setpoints are 72°F for cooling and 68°F for heating when occupied, and 80°F for cooling and 55°F for heating when unoccupied.

Location	Unit (ID)	Area Served	Capacity (Ton)	Condition
Roof	RTU-101	Media Center	25.00	Good
Roof	RTU-103	Auditorium/Stage	79.00	Good
Roof	RTU-105	Main Office	11.00	Good
Roof	RTU-114	Cafeteria	9.00	Good
Roof	RTU-115	Cafeteria	9.00	Good
Roof	RTU-106	Faculty Dining Room	6.00	Good
Roof	RTU-109	300 Science Classrooms	4.00	Good
Roof	RTU-102	1st Floor Area B & C	61.00	Good
Roof	RTU-111	300 Science Classrooms	3.00	Good
Roof	RTU-104	Guidance & Nurse Offices	25.00	Good
Roof	RTU-201	2nd Floor Area A	10.00	Good
Roof	RTU-112	SGI (Room 302)	3.00	Good
Roof	RTU	TV Studio	7.50	Fair
Roof	RTU-110	Chemistry (Room 310)	4.00	Good
Roof	RTU-108	Industrial Tech & Office	6.00	Good
Roof	RTU-113	Athletic Director	2.00	Good
Roof	MUA-1	Kitchen	18 Ton & (320 MBh)	Good

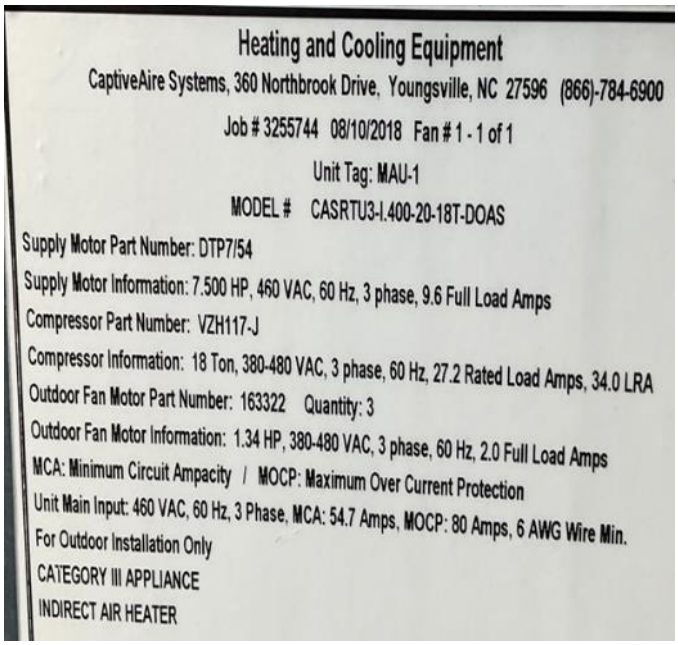
Refer to Appendix A for detailed information about each unit.



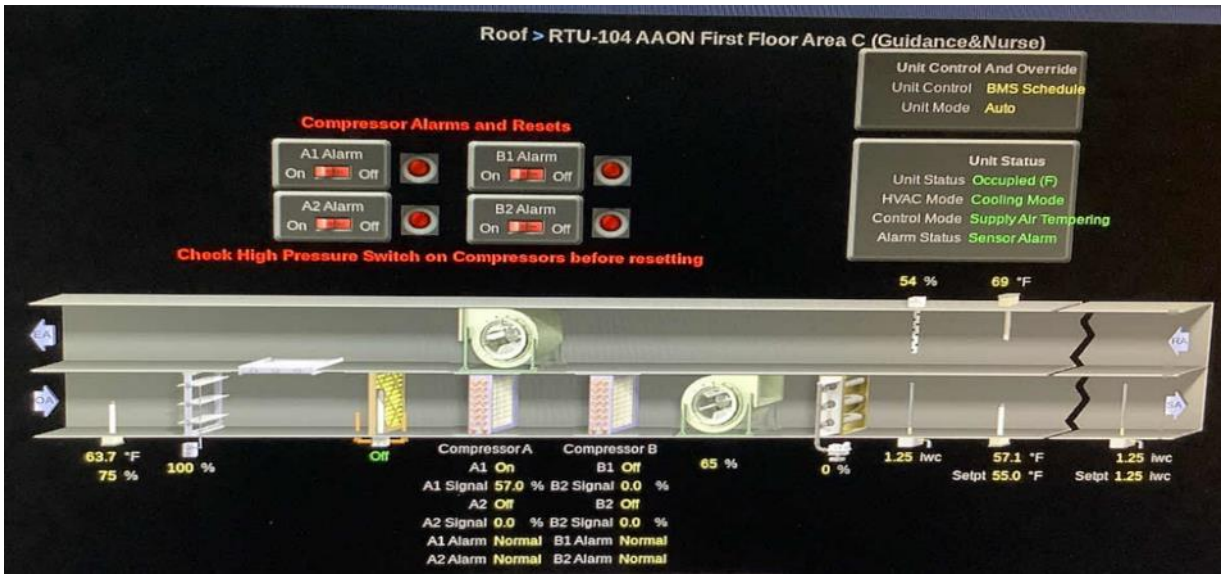
RTU-104 - Guidance and Nurse Offices



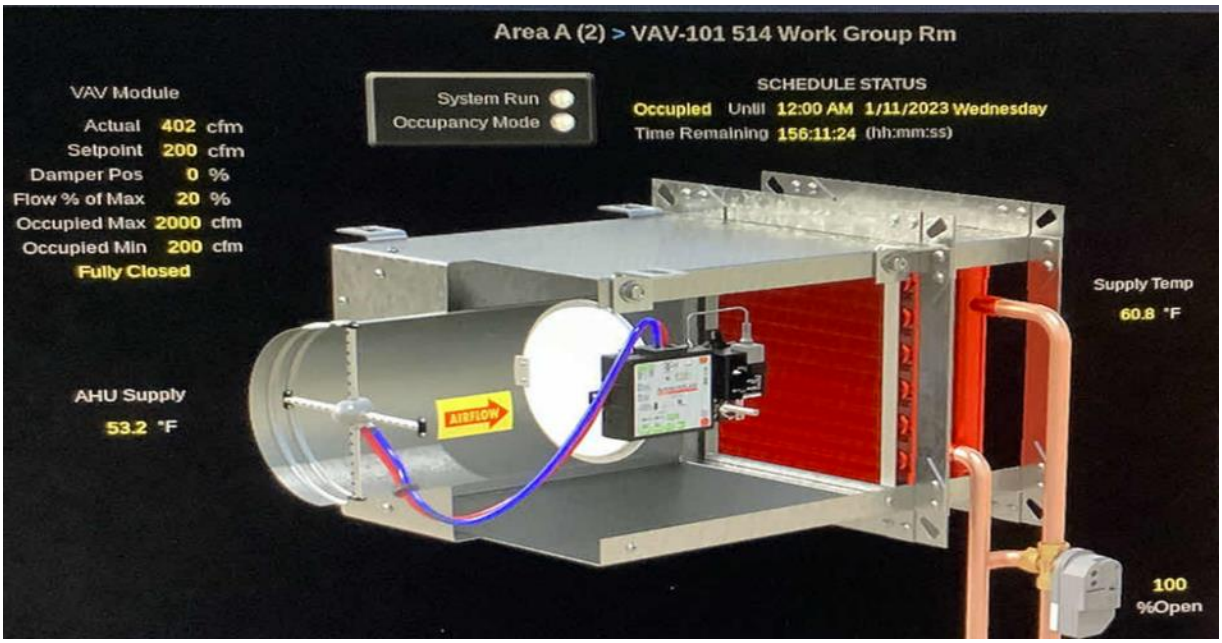
RTU-103 - Auditorium and Stage



MUA-1 – Kitchen



RTU-104 - Guidance & Nurse Offices



Typical VAV Box

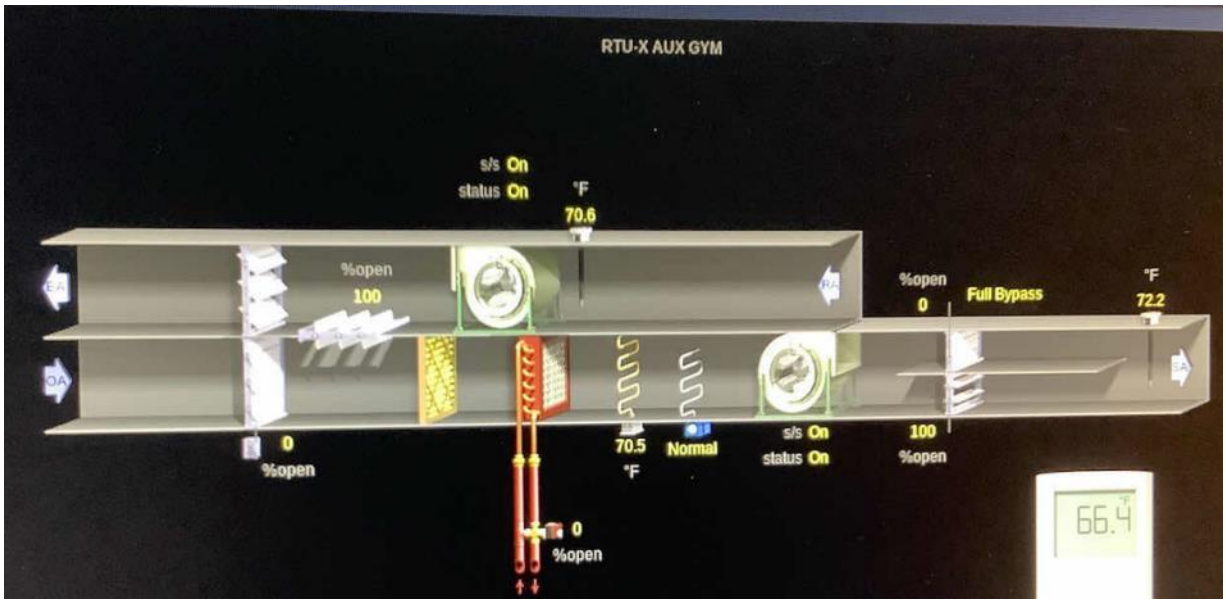
Air Handling Units (AHUs)

The gymnasium is heated by two McQuay roof mounted AHUs labeled as RTU-X and RTU-X2 and equipped with hot water coils. They each have a 5 hp supply fan motor and a 2 hp return fan motor that run at constant speed. The units appear in fair condition and are controlled by the BAS.

Air distribution is provided to supply air registers by ducts concealed above ceilings. The gymnasium heating air distribution setpoints are 68°F when occupied, and 55°F when unoccupied.

Building spaces including the kitchen serving and prep area, locker rooms, weight room, and auxiliary gym are heated and ventilated by eight ceiling mounted units labeled as heating and ventilation unit (HV). The units are equipped with hot water coils and are controlled by the BAS.

RTU-X and RTU-X2



BAS Screenshot RTU-X

2.6 Building Exhaust Air Systems

The restrooms, hallways, and other areas are exhausted by motor driven exhaust fans. Some classrooms including the science classrooms and art room have specialty exhaust fans. The kitchen has two exhaust fans which serves all the kitchen hoods. Equipment is in good condition, controlled by BAS or manual switches, depending on the system.

Typical Exhaust Fan

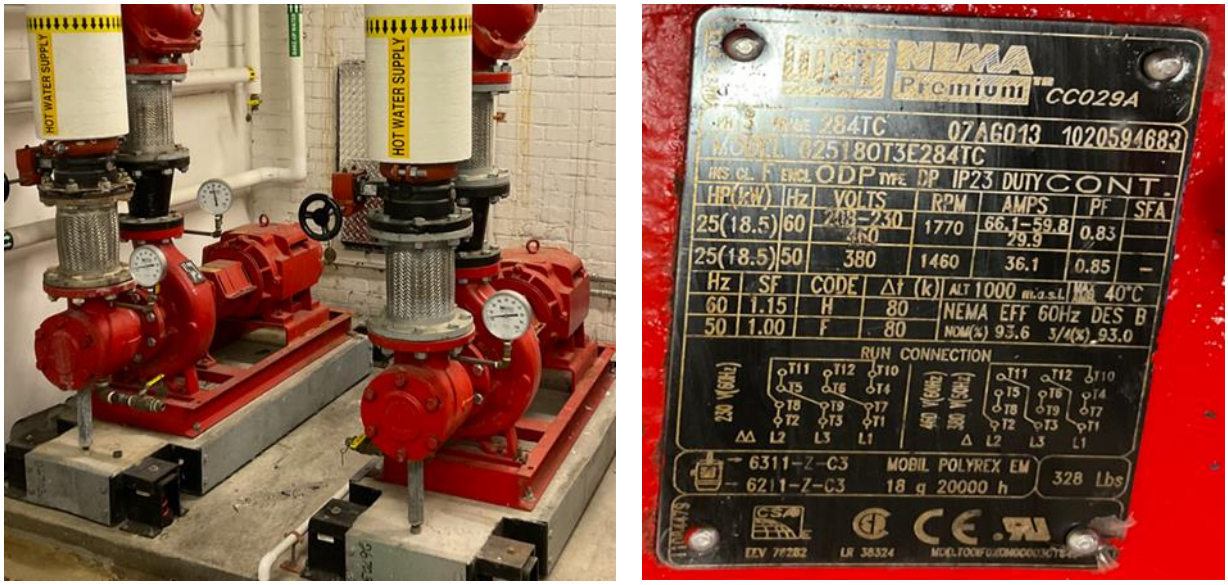
Kitchen Hood Exhaust Fan

Science Classroom Fume Hood.

2.7 Heating Hot Water Systems

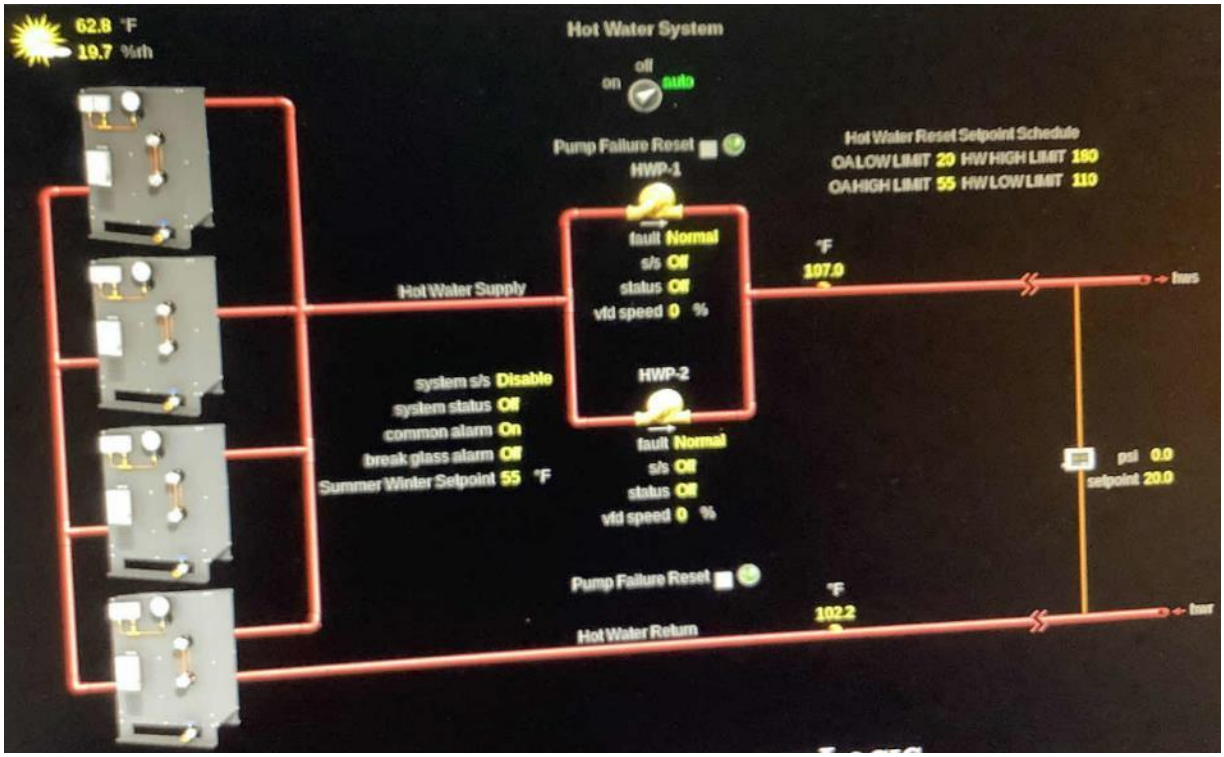
Four AERCO 2790 MBh output condensing hot water boilers serve the building's heating load. The burners are fully modulating with a nominal efficiency of 93%. The boilers are configured in an automated sequence, and they all run together to modulate the load and stage based on the outside air temperature. Installed in 2014, the boilers are in good condition. The hydronic distribution system is a two-pipe heating only system. Two, 25 hp variable speed pumps distribute heating hot water to RTUs, AHUs, UVs, FCUs, hydronic baseboards, and unit heaters.

The boilers operate based on outside air temperature. The boilers and the hot water loop are controlled by the BAS. The building occupied heating setpoint is 68°F, and the unoccupied heating setpoint is 55°F.



25 hp Variable Flow Pumps

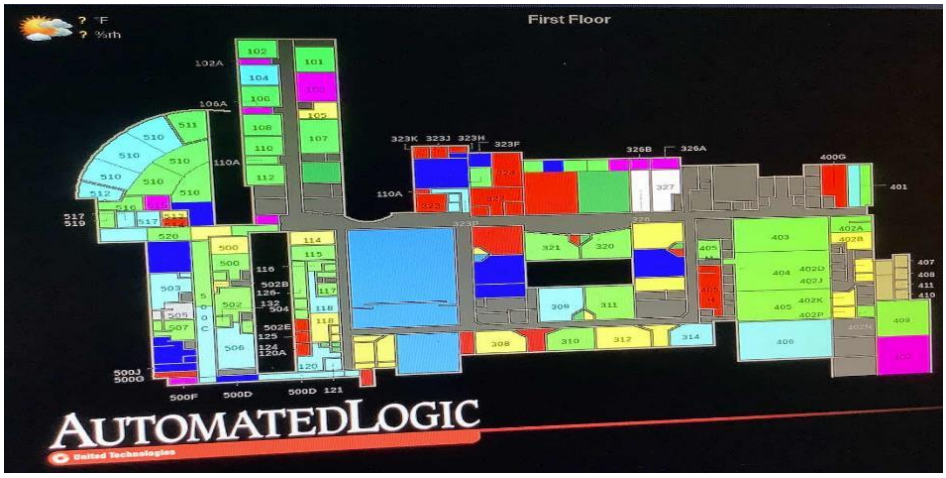
AERCO Condensing Boilers



BAS Screenshot - Hot Water Loop

2.8 Building Automation System (BAS)

An Automated Logic system controls the HVAC equipment, boilers, UVs, exhaust fans, RTUs, and AHUs. The system provides equipment scheduling control and monitors and controls space temperatures, supply air temperatures, humidity, and heating water loop temperatures.

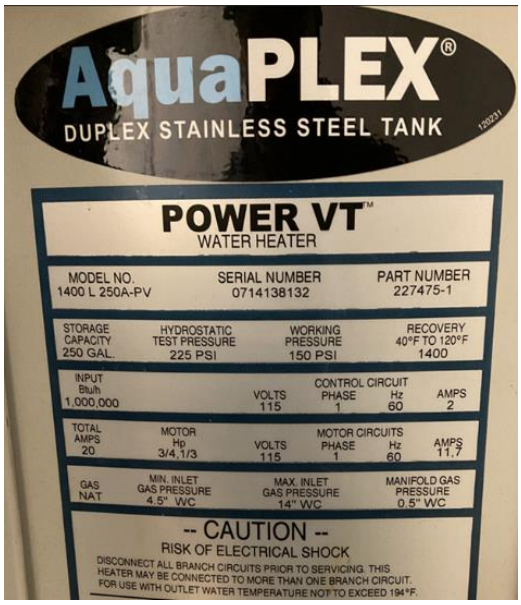


Automated Logic BAS - 1st Floor

2.9 Domestic Hot Water

Hot water is produced by a 250-gallon. 1,000 MBh gas-fired condensing storage water heater (HWH-1) with an efficiency rating of 94%. The heater is in the boiler room and in good condition. At the time of the site visit, the domestic water heaters were set at 138°F.

Three fractional horsepower circulating pumps distribute water to end users. The domestic hot water pipes are insulated, and the insulation is in good condition.



Condensing Storage Tank Water Heater

2.10 Food Service Equipment

The facility houses a commercial kitchen and a cafeteria. The cooking system consists of a mix of gas and electric equipment that is used to prepare breakfast and lunch for students. Most cooking is done using gas-fired convection ovens. Some bulk prepared foods are held in two full-size electric holding cabinets. The cooking equipment is in good condition and well maintained, except the Garland gas griddle that appears in poor condition and has been evaluated for replacement.

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

Gas-Fired Cooking Equipment

2.11 Refrigeration

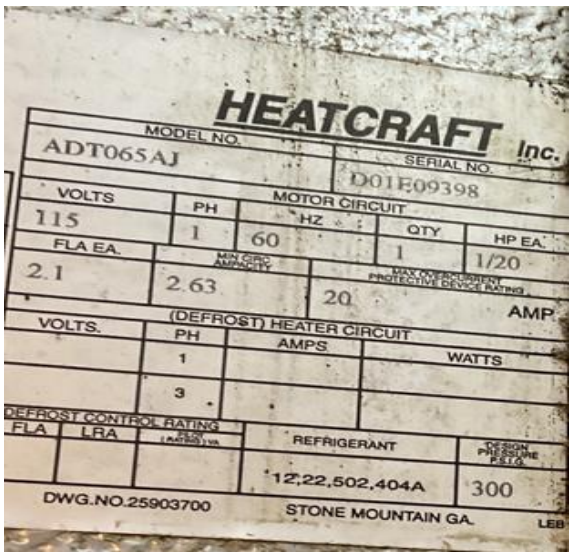
The facility has 15 commercial stand-up refrigerators with either solid or glass doors. There are also three refrigerator chests. Equipment is located in the kitchen, auxiliary gym cafe, classroom 119, and various other spaces. All equipment is standard efficiency and in good condition.

The kitchen also has two walk-in coolers, one with a single evaporator fan and another with two fans. Additionally, there is a two-fan low temperature walk-in freezer. There is one ice machine in kitchen area 2 that is in good condition.

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

Stand-Up Solid Door Refrigerators

Stand-Up Glass Door Refrigerators



Walk-In Cooler

2.12 Plug Load and Vending Machines

There are 246 computer workstations throughout the facility. Plug loads throughout the building include general café and office equipment. There are classroom typical loads such as smart projectors. Additional loads typically associated with secondary schools include a media center, TV studio, and a kiln.

There are also typical office loads such as scanner/copiers, small printers, microwaves, and mini fridges; the site also has a server closet. There are approximately four residential-style refrigerators throughout the facility that are in good condition. There are various miscellaneous plug loads throughout the building.

There are two glass fronted refrigerated vending machines and one non-refrigerated vending machine in the building. None of the vending machines are controlled.

Copier/Scanner

Residential Style Refrigerator

Refrigerated Vending Machine

Kiln

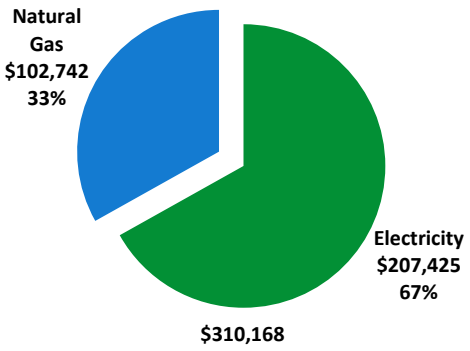
2.13 Water-Using Systems

There are several restrooms with toilets, urinals, and sinks. Faucet flow are either rated as low or rated at 2.2 gallons per minute (gpm) or higher. Toilets are rated at 2.5 gallons per flush (gpf) and urinals are rated at 2.5 gpf. The kitchen has three faucets aerators that are rated at 2.5 gpm or higher.

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	1,753,760 kWh	$207,425
Natural Gas	97,905 Therms	$102,742
Total		**$310,168**



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.

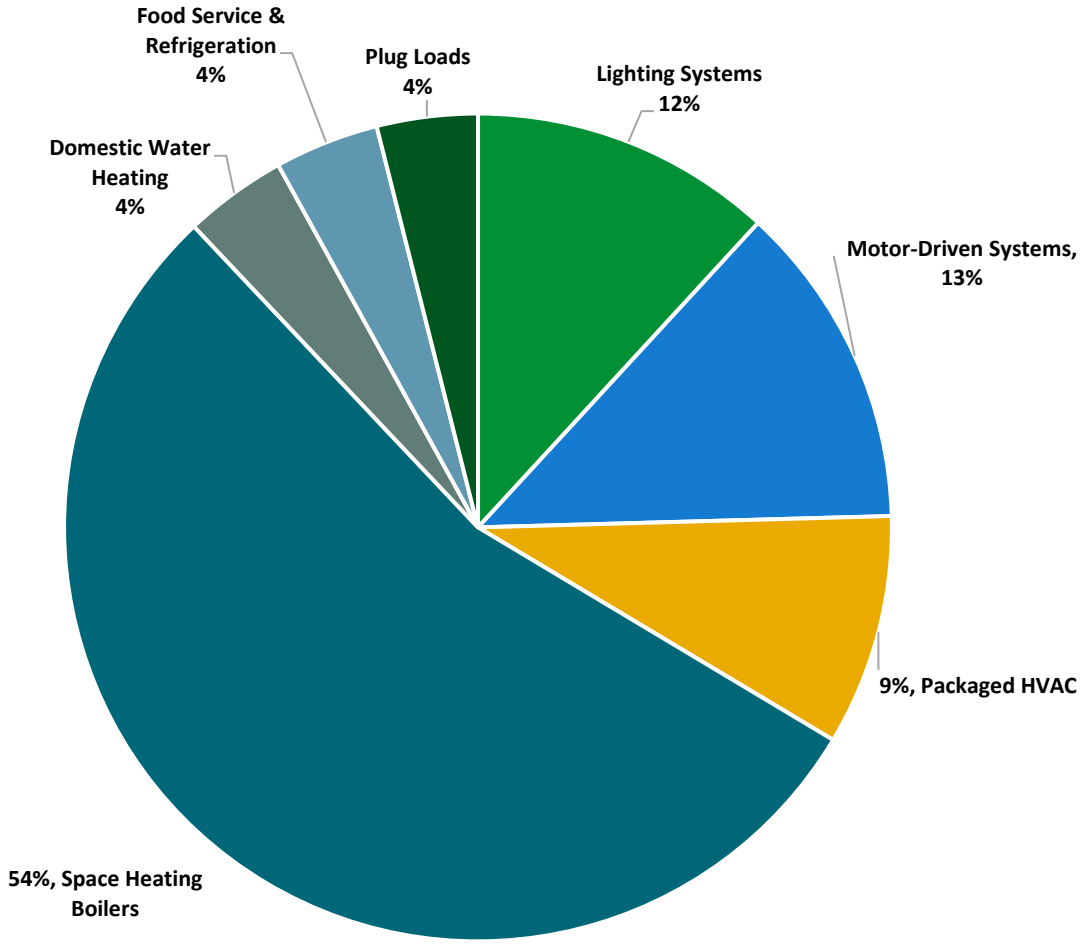
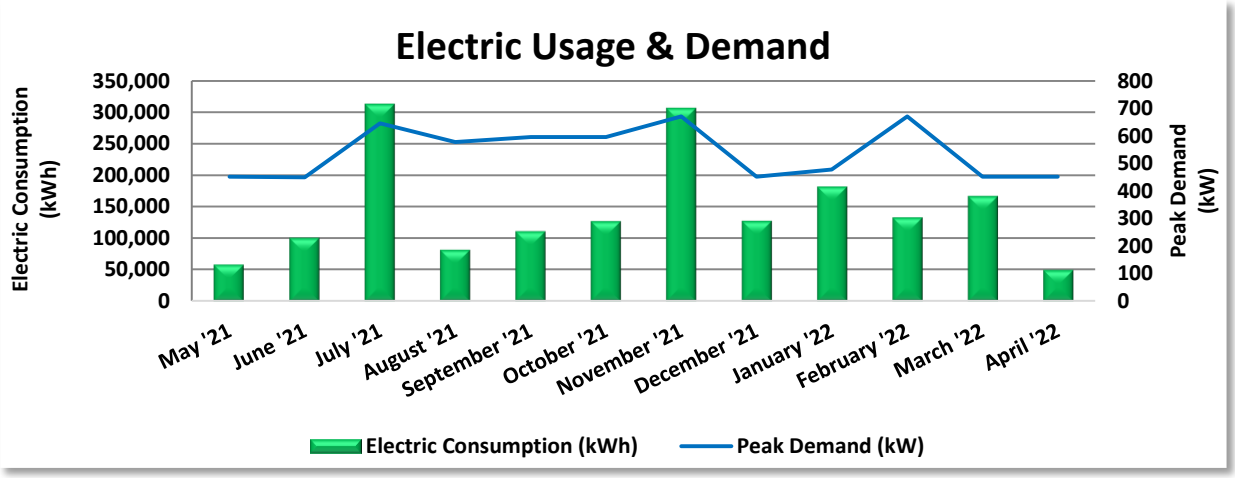


Figure 4 - Energy Balance

3.1 Electricity

JCP&L delivers electricity under General Service Secondary 3 Phase rate class.



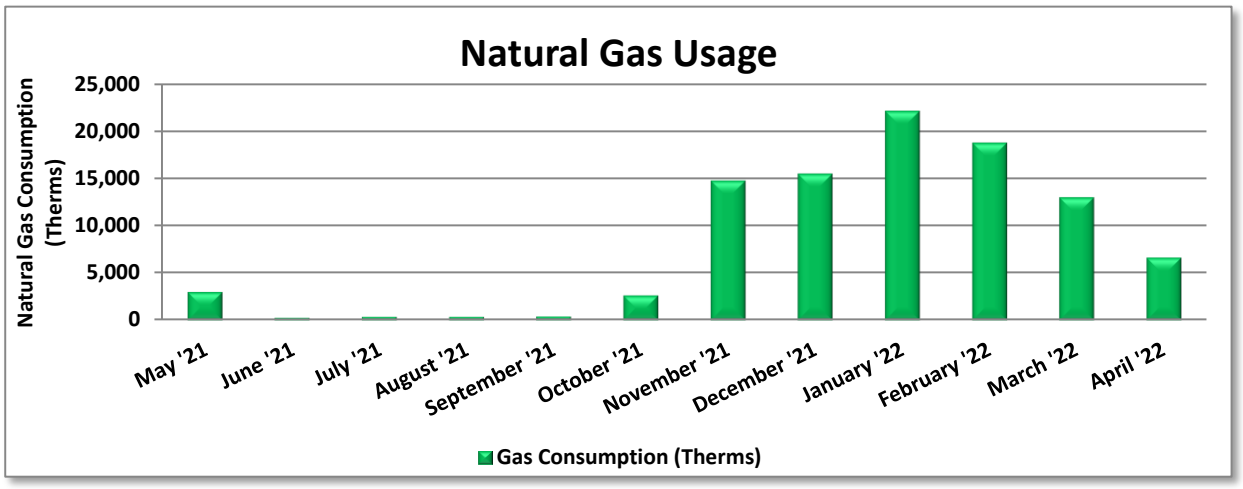
Electric Billing Data					
Period Ending	Days in Period	Electric Usage (kWh)	Demand (kW)	Demand Cost	Total Electric Cost
6/7/21	32	58,080	452	$2,929	$8,458
7/7/21	30	100,640	449	$2,911	$12,257
8/5/21	29	312,320	646	$4,216	$32,710
9/7/21	33	81,760	578	$3,767	$11,470
10/6/21	29	110,880	596	$3,614	$13,944
11/4/21	29	126,720	596	$3,712	$15,579
12/5/21	31	305,600	671	$33,223	$33,223
1/5/22	31	127,200	452	$3,262	$15,213
2/3/22	29	181,440	477	$3,449	$20,333
3/6/22	31	132,640	671	$4,876	$17,336
4/6/22	31	166,720	452	$3,260	$18,807
5/6/22	30	49,760	452	$3,260	$8,094
Totals	**365**	**1,753,760**	**671**	**$72,481**	**$207,425**
Annual	**365**	**1,753,760**	**671**	**$72,481**	**$207,425**

Notes:

- Peak demand of 671 kW occurred in November '21.
- Average demand over the past 12 months was 541 kW.
- The average electric cost over the past 12 months was $0.118/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 Large Volume Gas (LVG), with natural gas supply provided by Direct Energy, a third-party supplier.



Gas Billing Data			
Period Ending	**Days in Period**	**Natural Gas Usage (Therms)**	**Natural Gas Cost**
6/7/21	32	3,011	$1,681
7/7/21	30	274	$313
8/5/21	29	364	$357
9/7/21	33	383	$312
10/5/21	28	396	$344
11/3/21	29	2,625	$4,711
12/6/21	33	14,774	$11,949
1/6/22	31	15,506	$18,342
2/4/22	29	22,137	$23,954
3/8/22	32	18,781	$21,598
4/6/22	29	13,017	$12,350
5/6/22	30	6,636	$6,831
Totals	**365**	**97,905**	**$102,742**
Annual	**365**	**97,905**	**$102,742**

Notes:

- The average gas cost for the past 12 months is $1.049/therm, which is the blended rate used throughout the analysis.

3.3 Benchmarking

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

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

Benchmarking Score	61

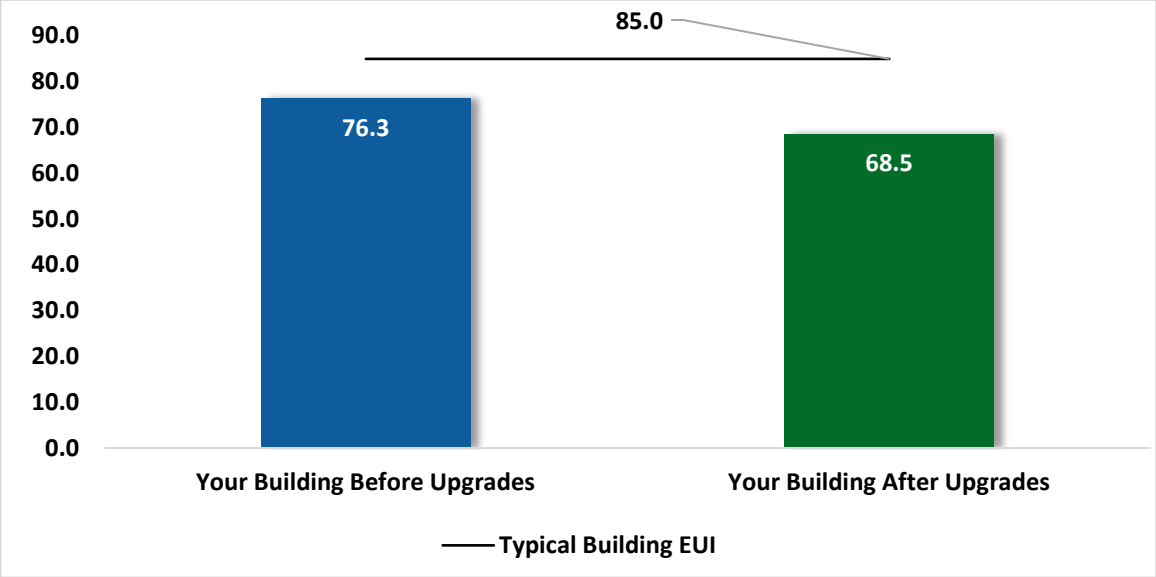


Figure 5 - Energy Use Intensity Comparison[3]

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

Energy use intensity (EUI) measures energy consumption per square foot and is the standard metric for comparing buildings' energy performance. A lower EUI means better performance and less energy consumed. Several factors can cause a building to vary from 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.

[3] Based on all evaluated ECMs

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 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.

4 Energy Conservation Measures

The goal of this audit report is to identify and evaluate potential energy efficiency improvements and provide information about the cost effectiveness of those improvements. Most energy conservation measures have received preliminary analysis of feasibility, which identifies expected ranges of savings. 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 in this report are based on the previously run state rebate program SmartStart, which has been retired. Now, all investor-owned gas and electric utility companies are offering complementary energy efficiency programs directly to their customers. Some measures and proposed upgrades may be eligible for higher incentives than those shown below. The incentives in the summary tables should be used for high-level planning purposes. To verify incentives, reach out to your utility provider or visit the NJCEP website for more information.

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

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades			**277,227**	**65.2**	**-56**	**$32,204**	**$114,711**	**$26,556**	**$88,155**	**2.7**	**272,634**
ECM 1	Install LED Fixtures	Yes	7,621	0.0	0	$901	$6,562	$600	$5,962	6.6	7,674
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	985	0.3	0	$114	$404	$60	$344	3.0	968
ECM 3	Retrofit Fixtures with LED Lamps	Yes	268,621	64.9	-56	$31,188	$107,745	$25,896	$81,849	2.6	263,991
Lighting Control Measures			**82,675**	**19.7**	**-17**	**$9,597**	**$74,424**	**$22,195**	**$52,229**	**5.4**	**81,229**
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	68,303	17.0	-14	$7,929	$57,324	$7,515	$49,809	6.3	67,109
ECM 5	Install High/Low Lighting Controls	Yes	14,371	2.7	-3	$1,668	$17,100	$14,680	$2,420	1.5	14,120
Variable Frequency Drive (VFD) Measures			**66,441**	**20.2**	**23**	**$8,105**	**$104,857**	**$7,225**	**$97,632**	**12.0**	**69,653**
ECM 6	Install VFDs on Constant Volume (CV) Fans	Yes	61,672	20.0	0	$7,294	$87,758	$6,725	$81,033	11.1	62,103
ECM 7	Install VFDs on Kitchen Hood Fan Motors	No	4,769	0.2	23	$810	$17,099	$500	$16,599	20.5	7,550
Unitary HVAC Measures			**11,232**	**12.1**	**0**	**$1,329**	**$117,701**	**$5,738**	**$111,963**	**84.3**	**11,311**
ECM 8	Install High Efficiency Air Conditioning Units	No	11,232	12.1	0	$1,329	$117,701	$5,738	$111,963	84.3	11,311
HVAC System Improvements			**2,843**	**0.0**	**80**	**$1,174**	**$13,594**	**$0**	**$13,594**	**11.6**	**12,215**
ECM 9	Implement Demand Control Ventilation (DCV)	Yes	2,843	0.0	80	$1,174	$13,594	$0	$13,594	11.6	12,215
Domestic Water Heating Upgrade			**0**	**0.0**	**48**	**$506**	**$373**	**$182**	**$191**	**0.4**	**5,640**
ECM 10	Install Low-Flow DHW Devices	Yes	0	0.0	48	$506	$373	$182	$191	0.4	5,640
Food Service & Refrigeration Measures			**6,725**	**0.5**	**5**	**$850**	**$9,511**	**$700**	**$8,811**	**10.4**	**7,379**
ECM 11	Food Service Equipment Replacement	No	0	0.0	5	$54	$1,764	$125	$1,639	30.1	608
ECM 12	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	1,114	0.1	0	$132	$1,517	$200	$1,317	10.0	1,122
ECM 13	Refrigeration Controls	No	2,850	0.0	0	$337	$5,541	$275	$5,266	15.6	2,870
ECM 14	Vending Machine Control	Yes	2,760	0.3	0	$326	$690	$100	$590	1.8	2,780
TOTALS			**447,143**	**117.6**	**84**	**$53,763**	**$435,171**	**$62,595**	**$372,576**	**6.9**	**460,061**

* - All incentives presented in this table are included as placeholders for planning purposes and are based on previously run state rebate programs. Contact your utility provider for details on current programs.

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

Figure 6 – All Evaluated ECMs

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		**277,227**	**65.2**	**-56**	**$32,204**	**$114,711**	**$26,556**	**$88,155**	**2.7**	**272,634**
ECM 1	Install LED Fixtures	7,621	0.0	0	$901	$6,562	$600	$5,962	6.6	7,674
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	985	0.3	0	$114	$404	$60	$344	3.0	968
ECM 3	Retrofit Fixtures with LED Lamps	268,621	64.9	-56	$31,188	$107,745	$25,896	$81,849	2.6	263,991
Lighting Control Measures		**82,675**	**19.7**	**-17**	**$9,597**	**$74,424**	**$22,195**	**$52,229**	**5.4**	**81,229**
ECM 4	Install Occupancy Sensor Lighting Controls	68,303	17.0	-14	$7,929	$57,324	$7,515	$49,809	6.3	67,109
ECM 5	Install High/Low Lighting Controls	14,371	2.7	-3	$1,668	$17,100	$14,680	$2,420	1.5	14,120
Variable Frequency Drive (VFD) Measures		**61,672**	**20.0**	**0**	**$7,294**	**$87,758**	**$6,725**	**$81,033**	**11.1**	**62,103**
ECM 6	Install VFDs on Constant Volume (CV) Fans	61,672	20.0	0	$7,294	$87,758	$6,725	$81,033	11.1	62,103
HVAC System Improvements		**2,843**	**0.0**	**80**	**$1,174**	**$13,594**	**$0**	**$13,594**	**11.6**	**12,215**
ECM 9	Implement Demand Control Ventilation (DCV)	2,843	0.0	80	$1,174	$13,594	$0	$13,594	11.6	12,215
Domestic Water Heating Upgrade		**0**	**0.0**	**48**	**$506**	**$373**	**$182**	**$191**	**0.4**	**5,640**
ECM 10	Install Low-Flow DHW Devices	0	0.0	48	$506	$373	$182	$191	0.4	5,640
Food Service & Refrigeration Measures		**3,874**	**0.5**	**0**	**$458**	**$2,207**	**$300**	**$1,907**	**4.2**	**3,901**
ECM 12	Refrigerator/Freezer Case Electrically Commutated Motors	1,114	0.1	0	$132	$1,517	$200	$1,317	10.0	1,122
ECM 14	Vending Machine Control	2,760	0.3	0	$326	$690	$100	$590	1.8	2,780
TOTALS		**428,291**	**105.3**	**55**	**$51,233**	**$293,066**	**$55,958**	**$237,109**	**4.6**	**437,723**

* - All incentives presented in this table are included as placeholders for planning purposes and are based on previously run state rebate programs. Contact your utility provider for details on current programs.

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

Figure 7 – 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 ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		**277,227**	**65.2**	**-56**	**$32,204**	**$114,711**	**$26,556**	**$88,155**	**2.7**	**272,634**
ECM 1	Install LED Fixtures	7,621	0.0	0	$901	$6,562	$600	$5,962	6.6	7,674
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	985	0.3	0	$114	$404	$60	$344	3.0	968
ECM 3	Retrofit Fixtures with LED Lamps	268,621	64.9	-56	$31,188	$107,745	$25,896	$81,849	2.6	263,991

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 is 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 metal halide 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: main entrance and garden exterior fixtures

ECM 2: Retrofit Fluorescent Fixtures with LED Lamps and Drivers

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

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

Affected Building Areas: storage room 221, elevator room 1, classroom 213 office, and stage

ECM 3: Retrofit Fixtures with LED Lamps

Replace fluorescent T8, CFL and incandescent lamps with LED lamps. Many LED tubes are direct replacements for existing fluorescent tubes and can be installed while leaving the fluorescent fixture ballast in place. LED lamps can be used in existing fixtures as a direct replacement for most other lighting technologies. Be sure to specify replacement lamps that are compatible with existing dimming controls,

where applicable. In some circumstances, you may need to upgrade your dimming system for optimum performance.

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, CFLs, and incandescent lamps

4.2 Lighting Controls

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Control Measures		**82,675**	**19.7**	**-17**	**$9,597**	**$74,424**	**$22,195**	**$52,229**	**5.4**	**81,229**
ECM 4	Install Occupancy Sensor Lighting Controls	68,303	17.0	-14	$7,929	$57,324	$7,515	$49,809	6.3	67,109
ECM 5	Install High/Low Lighting Controls	14,371	2.7	-3	$1,668	$17,100	$14,680	$2,420	1.5	14,120

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 that lighting controls use dual technology sensors, which reduce the possibility of lights turning off unexpectedly.

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

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

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

Affected Building Areas: offices, conference rooms, classrooms, library, restrooms, and storage rooms

ECM 5: Install High/Low Lighting Controls

Install occupancy sensors to provide dual level lighting control for lighting fixtures in spaces that are infrequently occupied but may require some level of continuous lighting for safety or security reasons.

Lighting fixtures with these controls operate at default low levels when the area is unoccupied to provide minimal lighting to meet security or safety code requirements for egress. 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 considered when selecting retrofit lamps and bulbs for the areas proposed for high/low control.

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 occupants approach the area.

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

Affected Building Areas: corridors and stairs

4.3 Variable Frequency Drives (VFD)

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Variable Frequency Drive (VFD) Measures		**66,441**	**20.2**	**23**	**$8,105**	**$104,857**	**$7,225**	**$97,632**	**12.0**	**69,653**
ECM 6	Install VFDs on Constant Volume (CV) Fans	61,672	20.0	0	$7,294	$87,758	$6,725	$81,033	11.1	62,103
ECM 7	Install VFDs on Kitchen Hood Fan Motors	4,769	0.2	23	$810	$17,099	$500	$16,599	20.5	7,550

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 inverter duty rated motor to conservatively account for the cost of an inverter duty rated motor.

ECM 6: Install VFDs on Constant Volume (CV) Fans

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

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

For air handlers with direct expansion (DX) cooling systems, the minimum air flow across the cooling coil required to prevent the coil from freezing must be determined during the final project design. The control system programming should maintain the minimum air flow whenever the compressor is operating. Prior to implementation, verify minimum fan speed in cooling mode with the manufacturer. Note that savings will vary depending on the operating characteristics of each AHU.

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

Affected Units: supply, return, and exhaust fans associated with AHUs, various RTUs, and heating & ventilation units - Refer to Appendix A for details.

ECM 7: Install VFDs on Kitchen Hood Fan Motors

We evaluated installing VFDs and sensors to control the kitchen hood fan motors. The air flow of the hood is varied based on two key inputs: temperature and smoke/cooking fumes. The VFD controls the amount of exhaust (and kitchen make-up air) based on temperature—the lower the temperature the lower the flow. If the optic sensor is triggered by smoke or cooking fumes, the speed of the fan ramps up to 100%.

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

4.4 Unitary HVAC

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Unitary HVAC Measures		**11,232**	**12.1**	**0**	**$1,329**	**$111,870**	**$5,738**	**$106,132**	**79.9**	**11,311**
ECM 8	Install High Efficiency Air Conditioning Units	11,232	12.1	0	$1,329	$111,870	$5,738	$106,132	79.9	11,311

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

ECM 8: Install High Efficiency Air Conditioning Units

We evaluated replacing standard efficiency packaged and condensing units with high efficiency packaged and condensing units. The magnitude of energy savings for this measure depends on the relative efficiency of the older unit versus the new high efficiency unit, the average cooling and heating load, and the estimated annual operating hours.

Affected Units: RTU TV studio and various condensing units – Refer to Appendix A for details.

4.5 HVAC Improvements

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
HVAC System Improvements		**2,843**	**0.0**	**80**	**$1,174**	**$13,594**	**$0**	**$13,594**	**11.6**	**12,215**
ECM 9	Implement Demand Control Ventilation (DCV)	2,843	0.0	80	$1,174	$13,594	$0	$13,594	11.6	12,215

ECM 9: Implement Demand Control Ventilation (DCV)

Demand control ventilation (DCV) is a control strategy that monitors the indoor air's carbon dioxide (CO_2) content to measure room occupancy. This data is used to regulate the amount of outdoor air provided to the space for ventilation.

Standard ventilation systems often provide outside air based on a space's estimated maximum occupancy but not actual occupancy. During low occupancy periods, the space may then be over ventilated. This wastes energy through heating and cooling the excess outside air flow. DCV reduces unnecessary outdoor air intake by regulating ventilation based on actual occupancy levels. DCV is most suited for facilities where occupancy levels vary significantly from hour to hour and day to day.

Energy savings associated with DCV are based on hours of operation, space occupancy, outside air reduction, and other factors. Energy savings results from eliminating unnecessary ventilation and space conditioning. Implementation of this measure is dependent upon having a building automation system (BAS) or other smart building control system connected to the space conditioning equipment serving the noted areas.

Affected Building Areas: gymnasium, cafeteria, theater, media center, auditorium.

4.6 Domestic Water Heating

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Domestic Water Heating Upgrade		**0**	**0.0**	**48**	**$506**	**$373**	**$182**	**$191**	**0.4**	**5,640**
ECM 10	Install Low-Flow DHW Devices	0	0.0	48	$506	$373	$182	$191	0.4	5,640

ECM 10: 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. Additional cost savings may result from reduced water usage.

4.7 Food Service & Refrigeration Measures

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Food Service & Refrigeration Measures		**6,725**	**0.5**	**5**	**$850**	**$9,511**	**$700**	**$8,811**	**10.4**	**7,379**
ECM 11	Food Service Equipment Replacement	0	0.0	5	$54	$1,764	$125	$1,639	30.1	608
ECM 12	Refrigerator/Freezer Case Electrically Commutated Motors	1,114	0.1	0	$132	$1,517	$200	$1,317	10.0	1,122
ECM 13	Refrigeration Controls	2,850	0.0	0	$337	$5,541	$275	$5,266	15.6	2,870
ECM 14	Vending Machine Control	2,760	0.3	0	$326	$690	$100	$590	1.8	2,780

ECM 11: Food Service Equipment Replacement

Buildings that use a lot of food service equipment are often among the most energy-intensive commercial buildings. Replace existing food service equipment with new, high-efficiency equipment. Consider replacing the following equipment with high efficiency or ENERGY STAR labeled versions:

Location	Quantity	Equipment Type	Manufacturer	Model
Kitchen Area 1	1	Gas Griddle (3 Feet Width)	Garland	

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

ECM 12: Refrigerator/Freezer Case Electrically Commutated Motors

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

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

ECM 13: Refrigeration Controls

We evaluated installing additional controls to optimize the operation of the walk-in coolers and freezer.

Many walk-in coolers and freezers have continuously operating electric heaters on the doors to prevent condensation formation. This measure adds a control system feature to shut off the door heaters when the humidity level is low enough that condensation will not occur if the heaters are off. This is done by measuring the ambient humidity and temperature of the store, comparing that to the dewpoint, and using pulse width modulation to control the anti-sweat door heaters.

Defrost controllers can be used to override defrost of evaporator fans when the defrost operation is not necessary, which reduces annual energy consumption. This measure is applicable to existing evaporator fans with a traditional electric de-frost mechanism.

Many walk-in coolers and freezers have evaporator fans that run continuously. The measure adds a control system feature to automatically shut off evaporator fans when not needed.

Energy savings for each of the control measures account for reduction in compressor and fan operating hours as well as reduction in the refrigeration heat load as appropriate.

ECM 14: 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.

4.8 Measures for Future Consideration

There are additional opportunities for improvement that Summit Board of Education may wish to consider. These potential upgrades typically require further analysis, involve substantial capital investment, and/or include significant system reconfiguration. These measure(s) are therefore beyond the scope of this energy audit. These measure(s) are described here to support a whole building approach to energy efficiency and sustainability.

Summit Board of Education may wish to consider the Energy Savings Improvement Program (ESIP) or other whole building approach. With interest in implementing comprehensive, largescale and/or complex system wide projects, these measures may be pursued during development of a future energy savings plan. We recommend that you work with your energy service company (ESCO) and/or design team to:

- Evaluate these measures further.
- Develop firm costs.
- Determine measure savings.
- Prepare detailed implementation plans.

Other modernization or capital improvement funds may be leveraged for these types of refurbishments. As you plan for capital upgrades, be sure to consider the energy impact of the building systems and controls being specified.

Retro-Commissioning Study

Due to the complexity of today's HVAC systems and controls, a thorough analysis and rebalance of heating, ventilation, and cooling systems should periodically be conducted. There are indications at this site that systems may not be operating correctly or as efficiently as they could be. One important tool available to building operators to ensure proper system operation is retro-commissioning.

Retro-commissioning is a common practice recommended by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) to be implemented every few years. We recommend that you contact a reputable engineering firm that specializes in energy control systems and retro-commissioning. Ask them to propose a scope of work and an outline of the procedures and processes to be implemented, including a schedule and the roles of all responsible parties.

Once goals and responsibilities are established, the objective of the investigation process is to understand how the building is currently operating, identify the issues, and determine the most cost-effective way to improve performance. The retro-commissioning agent will review building documentation, interview building occupants, and inspect and test the equipment. Information is then compiled into a report and shared with facility staff, who will select which recommendations to implement after reviewing the findings.

The implementation phase puts the selected processes into place. Typical measures may include sensor calibration, equipment schedule changes, damper linkage repair and similar relatively low-cost adjustments—although more expensive sophisticated programming and building control system upgrades may be warranted. Approved measures may be implemented by the agent, the building staff, or by subcontractors. Typically, a combination of these individuals makes up the retro-commissioning team.

After the approved measures are implemented, the team will verify that the changes are working as expected. Baseline and post-case measurements will allow building staff to monitor equipment and ensure that the benefits are maintained.

A whole building maintenance plan will extend equipment life; improve occupant comfort, health, and safety; and reduce energy and maintenance costs.

Operation and maintenance (O&M) plans enhance the operational efficiency of HVAC and other energy intensive systems and could save 5% –20% of the energy usage in your building without substantial capital investment. A successful plan includes your records of energy usage trends and costs, building equipment lists, current maintenance practices, and planned capital upgrades, and it incorporates your ideas for improved building operation. Your plan will address goals for energy-efficient operation, provide detail on how to reach the goals, and outline procedures for measuring and reporting whether goals have been achieved.

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 cannot manage what you do not measure. ENERGY STAR Portfolio Manager is an online tool that you can use to measure and track energy and water consumption, as well as greenhouse gas emissions[4]. Your account has already been established. Now you can continue to keep tabs on your energy performance every month.

Weatherization

Caulk or weather strip leaky doors and windows to reduce drafts and loss of heated or cooled air. Sealing cracks and openings can reduce heating and cooling costs, improve building durability, and create a healthier indoor environment. Materials used may include caulk, polyurethane foam, and other weather-stripping materials. There is an energy savings opportunity by reducing the uncontrolled air exchange between the outside and inside of the building. Blower door assisted comprehensive building air sealing will reduce the amount of air exchange, which will in turn reduce the load on the buildings heating and cooling equipment, providing energy savings and increased occupant comfort.

Doors and Windows

Close exterior doors and windows in heated and cooled areas. Leaving doors and windows open leads to a loss of heat during the winter and chilled air during the summer. Reducing air changes per hour can lead to increased occupant comfort as well as heating and cooling savings, especially when combined with proper HVAC controls and adequate ventilation.

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

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. Adjust exterior lighting time clock controls seasonally as needed to match your lighting requirements.

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.

Fans to Reduce Cooling Load

Install ceiling fans to supplement your cooling system. Thermostat settings can typically be increased by 4°F with no change in overall occupant comfort due to the wind chill effect of moving air.

Thermostat Schedules and Temperature Resets

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

Economizer Maintenance

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

Periodic inspection and maintenance will keep economizers working in sync with the heating and cooling system. This maintenance should be part of annual system maintenance, and it should include proper

setting of the outdoor thermostat/enthalpy control, inspection of control and damper operation, lubrication of damper connections, and adjustment of minimum damper position.

AC System Evaporator/Condenser Coil Cleaning

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

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.

Ductwork Maintenance

Duct maintenance has two primary goals: keep the ducts clean to avoid air quality problems and seal leaks to save energy. Check for cleanliness, obstructions that block airflow, water damage, and leaks. Ducts should be inspected at least every two years.

The biggest symptoms of clogged air ducts are differing temperatures throughout the building and areas with limited airflow from supply registers. If a particular air duct is clogged, then air flow will only be cut off to some rooms in the building—not all of them. The reduced airflow will make it more difficult for those areas to reach the temperature setpoint, which will cause the HVAC system to run longer to cool or heat that area properly. If you suspect clogged air ducts, ensure that all areas in front of supply registers are clear of items that may block or restrict air flow, and you should check for fire dampers or balancing dampers that have failed closed.

Duct leakage in commercial buildings can account for 5%–25% of the supply airflow. In the case of rooftop air handlers, duct leakage can occur to the outside of the building wasting conditioned air. Check ductwork for leakage. Eliminating duct leaks can improve ventilation system performance and reduce heating and cooling system operation.

Distribution system losses are dependent on-air system temperature, the size of the distribution system, and the level of insulation of the ductwork. Significant energy savings can be achieved when insulation has not been well maintained. When the insulation is missing or worn, the system efficiency can be significantly reduced. This measure saves energy by reducing heat transfer in the distribution system.

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 and efficiently. Boilers should be cleaned according to the manufacturer's instructions to remove soot and scale from the boiler tubes to improve heat transfer.

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.

Label HVAC Equipment

For improved coordination in maintenance practices, we recommend labeling or re-labeling the site HVAC equipment. Maintain continuity in labeling by following labeling conventions as indicated in the facility drawings or BAS building equipment list. Use weatherproof or heatproof labeling or stickers for permanence, but do not cover over original equipment nameplates, which should be kept clean and readable whenever possible. Besides equipment, label piping for service and direction of flow when possible. Ideally, maintain a log of HVAC equipment, including nameplate information, asset tag designation, areas served, installation year, service dates, and other pertinent information.

This investment in your equipment will enhance collaboration and communication between your staff and your contracted service providers and may help you with regulatory compliance.

Optimize HVAC Equipment Schedules

Energy management systems (BAS) typically provide advanced controls for building HVAC systems, including chillers, boilers, air handling units, rooftop units and exhaust fans. The BAS monitors and reports operational status, schedules equipment start and stop times, locks out equipment operation based on outside air or space temperature, and often optimizes damper and valve operation based on complex algorithms. These BAS features, when in proper adjustment, can improve comfort for building occupants and save substantial energy.

Know your BAS scheduling capabilities. Regularly monitor HVAC equipment operating schedules and match them to building operating hours in order to eliminate unnecessary equipment operation and save energy. Monitoring should be performed often at sites with frequently changing usage patterns – daily in some cases. We recommend using the *optimal start* feature of the BAS (if available) to optimize the building warmup sequence. Most BAS scheduling programs provide for holiday schedules, which can be used during reduced use or shutdown periods. Finally, many systems are equipped with a one-time override function, which can be used to provide additional space conditioning due to a one-time, special event. When available this override feature should be used rather than changing the base operating schedule.

Water Heater Maintenance

The lower the supply water temperature that is used for hand washing sinks, the less energy is needed to heat the water. Reducing the temperature results in energy savings and the change is often unnoticeable to users. Be sure to review the domestic water temperature requirements for sterilizers and dishwashers as you investigate reducing the supply water temperature.

Also, 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.

Refrigeration Equipment Maintenance

Preventative maintenance keeps commercial refrigeration equipment running reliably and efficiently. Commercial refrigerators and freezers are mission-critical equipment that can cost a fortune when they go down. Even when they appear to be working properly, refrigeration units can be consuming too much energy. Have walk-in refrigeration and freezer and other commercial systems serviced at least annually. This practice will allow systems to perform to their highest capabilities and will help identify system issues if they exist.

Maintaining your commercial refrigeration equipment can save between 5% and 10% on energy costs. When condenser coils are dirty, your commercial refrigerators and freezers work harder to maintain the temperature inside. Worn gaskets, hinges, door handles or faulty seals cause cold air to leak from the unit, forcing the unit to run longer and use more electricity.

Regular cleaning and maintenance also help your commercial refrigeration equipment to last longer.

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[5] or download a copy of EPA's "WaterSense at Work: Best Management Practices for Commercial and Institutional Facilities"[6] 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

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

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

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 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.

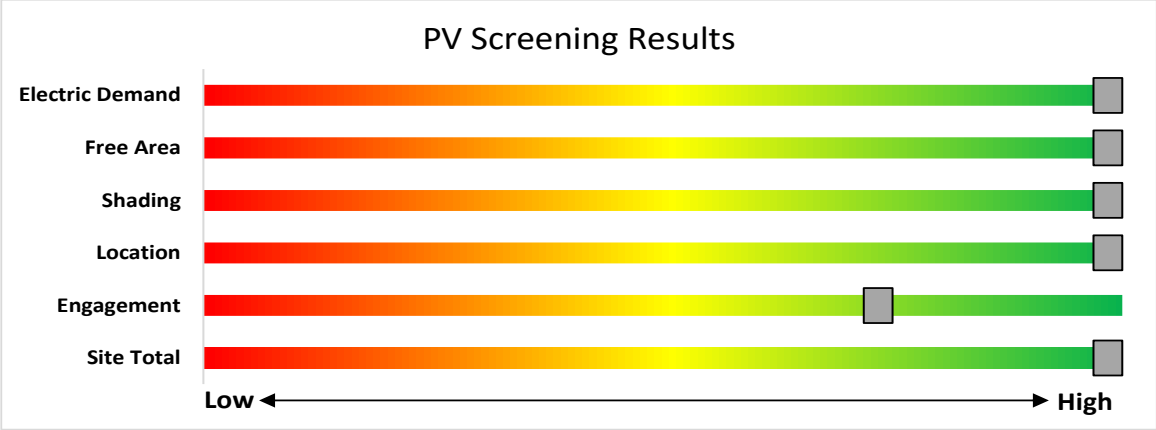
6.2 Solar Photovoltaic

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

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	541	kW DC STC
Electric Generation	644,531	kWh/yr
Displaced Cost	$76,230	/yr
Installed Cost	$1,406,600	

Figure 8 - Photovoltaic Screening

Successor Solar Incentive Program (SuSI)

The SuSI program replaces the SREC Registration Program (SRP) and the Transition Incentive (TI) program. The SuSI program is used to register and certify solar projects in New Jersey. Rebates are not available for solar projects. Solar projects may qualify to earn SREC- IIs (Solar Renewable Energy Certificates-II), however, the project owners *must* register their solar projects prior to the start of construction to establish the project's eligibility.

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:

Successor Solar Incentive Program (SuSI): https://www.njcleanenergy.com/renewable-energy/programs/susi-program

- **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

6.4 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.

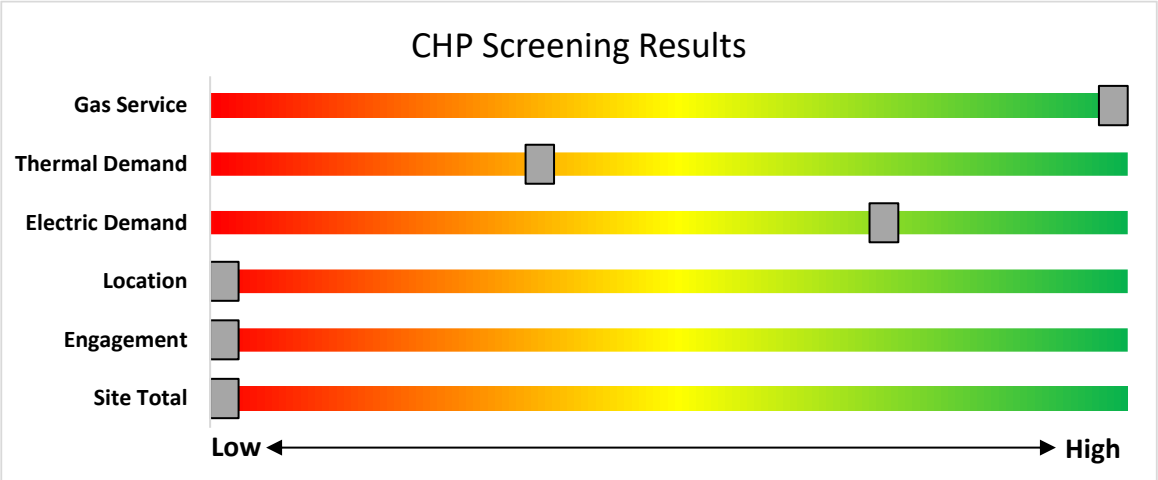


Figure 9 - Combined Heat and Power Screening

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 Electric Vehicles (EV)

All electric vehicles (EVs) have an electric motor instead of an internal combustion engine. EVs function by plugging into a charge point, taking electricity from the grid, and then storing it in rechargeable batteries. Although electricity production may contribute to air pollution, the U.S. EPA categorizes all-electric vehicles as zero-emission vehicles because they produce no direct exhaust or tailpipe emissions.

EVs are typically more expensive than similar conventional and hybrid vehicles, although some cost can be recovered through fuel savings, federal tax credit, or state incentives.

7.1 Electric Vehicle Charging

EV charging stations provide a means for electric vehicle operators to recharge their batteries at a facility. While many EV drivers charge at home, others do not have access to regular home charging, and the ability to charge at work or in public locations is critical to making EVs practical for more drivers. Charging can also be used for electric fleet vehicles, which can reduce fuel and maintenance costs for fleets that replace gas or diesel vehicles with EVs.

EV charging comes in three main types. For this assessment, the screening considers addition of Level 2 charging, which is most common at workplaces and other public locations. Depending on the site type and usage, other levels of charging power may be more appropriate.

The preliminary assessment of EV charging at the facility shows that there is medium potential for adding EV chargers to the facility's parking, based on potential costs of installation and other site factors.

The primary costs associated with installing EV charging are the charger hardware and the cost to extend power from the facility to parking spaces. This may include upgrades to electric panels to serve increased loads.

The type and size of the parking area impact the costs and feasibility of adding EV charging. Parking structure installations can be less costly than surface lot installations as power may be readily available, and equipment and wiring can be surface mounted. Parking lot installations often require trenching through concrete or asphalt surface. Large parking areas provide greater flexibility in charger siting than smaller lots.

The location and capacity of facility electric panels also impact charger installation costs. A Level 2 charger generally requires a dedicated 208-240V, 40 Amp circuit. The electric panel nearest the planned installation may not have available capacity and may need to be upgraded to serve new EV charging loads. Alternatively, chargers could be powered from a more distant panel. The distance from the panel to the location of charging stations ties directly to costs, as conduits, cables, and potential trenching costs all increase on a per-foot basis. The more charging stations planned, the more likely it is that additional electrical capacity will be needed.

Other factors to consider when planning for EV charging at a facility include who the intended users are, how long they park vehicles at the site, and whether they will need to pay for the electricity they use.

The graphic below displays the results of the EV charging assessment conducted as part of this audit. The position of each slider indicates the impact each factor has on the feasibility of installing EV charging at the site.

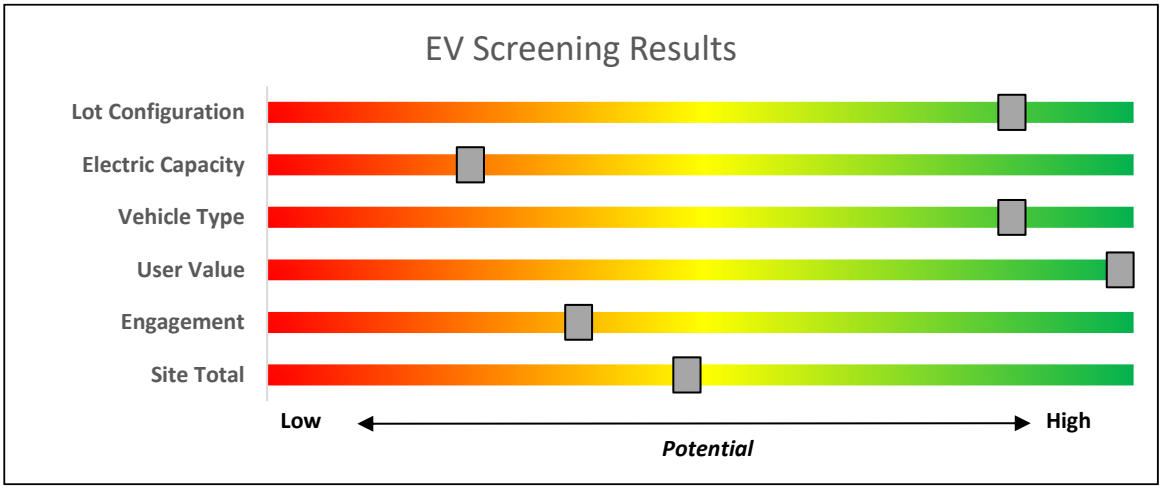


Figure 10 – EV Charger Screening

Electric Vehicle Programs Available

New Jersey is leading the way on electric vehicle (EV) adoption on the East Coast. There are several programs designed to encourage EV adoption in New Jersey, which is crucial to reaching a 100% clean energy future.

NJCEP offers a variety of EV programs for vehicles, charging stations, and fleets. Certain EV charging stations that receive electric utility service from Atlantic City Electric Company (ACE) or Public Service Electric & Gas Company (PSE&G), may be eligible for additional electric vehicle charging incentives directly from the utility. Projects may be eligible for both the incentives offered by this BPU program and incentives offered by ACE or PSE&G, up to 90% of the combined charger purchase and installation costs. Please check ACE or PSE&G program eligibility requirements before purchasing EV charging equipment, as additional conditions on types of eligible chargers may apply for utility incentives.

Both Jersey Central Power & Light (JCP&L) and Rockland Electric (RECO) have filed proposals for EV charging programs. BPU staff is currently reviewing those proposals.

For more information and to keep up to date on all EV programs please visit https://www.njcleanenergy.com/commercial-industrial/programs/electric-vehicle-programs

8 Project Funding and Incentives

Ready to improve your building's performance? New Jersey's Clean Energy Programs and Utility Energy Efficiency Programs can help. Pick the program that works best for you. This section provides an overview of currently available incentive programs in.

8.1 Utility Energy Efficiency Programs

The Clean Energy Act, signed into law by Governor Murphy in 2018, requires New Jersey's investor-owned gas and electric utilities to reduce their customers' use by set percentages over time. To help reach these targets the New Jersey Board of Public Utilities approved a comprehensive suite of energy efficiency programs to be run by the utility companies.

Prescriptive and Custom

The Prescriptive and Custom rebate program through your utility provider 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.

Equipment Examples

Lighting
Lighting Controls
HVAC Equipment
Refrigeration
Gas Heating
Gas Cooling
Commercial Kitchen Equipment
Food Service Equipment
Variable Frequency Drives
Electronically Commutate Motors
Variable Frequency Drives
Plug Loads Controls
Washers and Dryers
Agricultural
Water Heating

The Prescriptive program provides fixed incentives for specific energy efficiency measures. Prescriptive incentives vary by equipment type. The Custom program provides incentives for more unique or specialized technologies or systems that are not addressed through prescriptive incentives.

Direct Install

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

Incentives

The program pays up to 70% of the total installed cost of eligible measures.

How to Participate

To participate in Direct Install, you will work with a participating contractor. The contractor will be paid the measure incentives directly by the program, which will pass on to you in the form of reduced material and implementation costs. This means up to 70% of eligible costs are covered by the Direct Install program, subject to program rules and eligibility, while the remaining percent of the cost is paid to the contractor by the customer.

Engineered Solutions

The Engineered Solutions Program provides tailored energy-efficiency assistance and services to municipalities, universities, schools, hospitals and healthcare facilities (MUSH), non-profit entities, and multifamily buildings. Customers receive expert guided services, including investment-grade energy auditing, engineering design, installation assistance, construction administration, commissioning, and measurement and verification (M&V) services to support the implementation of cost-effective and comprehensive efficiency projects. Engineered Solutions is generally a good option for medium to large sized facilities with a peak demand over 200 kW looking to implement as many measures as possible under a single project to achieve deep energy savings. Engineered Solutions has an added benefit of addressing measures that may not qualify for other programs. Many facilities pursuing an Energy Savings Improvement Program loan also use this program. Incentives for this program are based on project scope and energy savings achieved.

For more information on any of these programs, contact your local utility provider or visit https://www.njcleanenergy.com/transition.

8.2 New Jersey's Clean Energy Programs

Save money while saving the planet! New Jersey's Clean Energy Program is a statewide program that offers incentives, programs, and services that benefit New Jersey residents, businesses, educational, non-profit, and government entities to help them save energy, money, and the environment.

Large Energy Users

The Large Energy Users Program (LEUP) is designed to foster self-directed investment in energy projects. This program is offered to New Jersey's largest energy customers that annually contribute at least $200,000 to the NJCEP aggregate of all buildings/sites. This equates to roughly $5 million in energy costs in the prior fiscal year.

Incentives

Incentives are based on the specifications below. The maximum incentive per entity is the lesser of:

- $4 million
- 75% of the total project(s) cost
- 90% of total NJCEP fund contribution in previous year
- $0.33 per projected kWh saved; $3.75 per projected Therm saved annually

How to Participate

To participate in LEUP, you will first need submit an enrollment application. This program requires all qualified and approved applicants to submit an energy plan that outlines the proposed energy efficiency work for review and approval. Applicants may submit a Draft Energy Efficiency Plan (DEEP), or a Final Energy Efficiency Plan (FEEP). Once the FEEP is approved, the proposed work can begin.

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

Combined Heat and Power

The Combined Heat & Power (CHP) program provides incentives for eligible CHP or waste heat to power (WHP) projects. Eligible CHP or WHP projects must achieve an annual system efficiency of at least 65% (lower heating value, or LHV), based on total energy input and total utilized energy output. Mechanical energy may be included in the efficiency evaluation.

Incentives

Eligible Technologies	Size (Installed Rated Capacity)[1]	Incentive ($/kW)	% of Total Cost Cap per Project[3]	$ Cap per Project[3]
Powered by non-renewable or renewable fuel source[4]	≤500 kW	$2,000	30-40%[2]	$2 million
Gas Internal Combustion Engine	>500 kW - 1 MW	$1,000		
Gas Combustion Turbine	> 1 MW - 3 MW	$550	30%	$3 million
Microturbine Fuel Cells with Heat Recovery	>3 MW	$350		
Waste Heat to Power*	<1 MW	$1,000	30%	$2 million
	> 1MW	$500		$3 million

*Waste Heat to Power: Powered by non-renewable fuel source, heat recovery or other mechanical recovery from existing equipment utilizing new electric generation equipment (e.g. steam turbine).

Check the NJCEP website for details on program availability, current incentive levels, and requirements.

How to Participate

You will work with a qualified developer or consulting firm to complete the CHP application. Once the application is approved the project can be installed. Information about the CHP program can be found at www.njcleanenergy.com/CHP.

Successor Solar Incentive Program (SuSI)

The SuSI program replaces the SREC Registration Program (SRP) and the Transition Incentive (TI) program. The program is used to register and certify 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 SREC-IIs (Solar Renewable Energy Certificates-II). SuSI consists of two sub-programs. The Administratively Determined Incentive (ADI) Program and the Competitive Solar Incentive (CSI) Program.

Administratively Determined Incentive (ADI) Program

The ADI Program provides administratively set incentives for net metered residential projects, net metered non-residential projects 5 MW or less, and all community solar projects.

After the registration is accepted, construction is complete, and a complete final as-built packet has been submitted, the project is issued a New Jersey certification number, which enables it to generate New Jersey SREC- IIs.

Market Segments	Size MW dc	Incentive Value ($/SREC II)	Public Entities Incentive Value - $20 Adder ($/SRECII)
Net Metered Residential	All types and sizes	$90	N/A
Small Net Metered Non-Residential located on Rooftop, Carport, Canopy and Floating Solar	Projects smaller than 1 MW	$100	$120
Large Net Metered Non-Residential located on Rooftop, Carport, Canopy and Floating Solar	Projects 1 MW to 5 MW	$90	$110
Small Net Metered Non-Residential Ground Mount	Projects smaller than 1 MW	$85	$105
Large Net Metered Non-Residential Ground Mount	Projects 1 MW to 5 MW	$80	$100
LMI Community Solar	Up to 5 MW	$90	N/A
Non-LMI Community Solar	Up to 5 MW	$70	N/A
Interim Subsection (t)	All types and sizes	$100	N/A

Eligible projects may generate SREC-IIs for 15 years following the commencement of commercial operations which is defined as permission to operate (PTO) from the Electric Distribution Company. After 15 years, projects may be eligible for a NJ Class I REC.

SREC-IIs will be purchased monthly by the SREC-II Program Administrator who will allocate the SREC-IIs to the Load Serving Entities (BGS Providers and Third-Party Suppliers) annually based on their market share of retail electricity sold during the relevant Energy Year.

The ADI Program online portal is now open to new registrations.

Competitive Solar Incentive Program

The Competitive Solar Incentive (CSI) Program will provide competitively set incentives for grid supply projects and net metered non-residential projects greater than 5MW (dc). The program is currently under development. For updates, please continue to check the Solar Proceedings page on the New Jersey's Clean Energy Program website.

Solar projects help the State of New Jersey reach renewable energy goals outlined in the state's Energy Master Plan.

If you are considering installing solar photovoltaics on your building, visit the following link for more information: https://njcleanenergy.com/renewable-energy/programs/susi-program.

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 into contracts to help finance building energy upgrades. Annual payments are lower than the savings projected from the energy conservation measures (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 can begin. The ESP demonstrates that the total project costs of the ECMs are offset by the energy savings over the financing term, not to exceed 15 years. The verified savings will then be used to pay for the financing.

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

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

9 PROJECT DEVELOPMENT

Energy conservation measures (ECMs) have been identified for your site, and their energy and economic analyses are provided within this LGEA report. Note that some of the identified projects may be mutually exclusive, such as replacing equipment versus upgrading motors or controls. The next steps with project development are to set goals and create a comprehensive project plan. The graphic below provides an overview of the process flow for a typical energy efficiency or renewable energy project. We recommend implementing as many ECMs as possible prior to undertaking a feasibility study for a renewable project. The cyclical nature of this process flow demonstrates the ongoing work required to continually improve building energy efficiency over time. If your building(s) scope of work is relatively simple to implement or small in scope, the measurement and verification (M&V) step may not be required. It should be noted through a typical project cycle, there will be changes in costs based on specific scopes of work, contractor selections, design considerations, construction, etc. The estimated costs provided throughout this LGEA report demonstrate the unburdened turn-key material and labor cost only. There will be contingencies and additional costs at the time of implementation. We recommend comprehensive project planning that includes the review of multiple bids for project work, incorporates potential operations and maintenance (O&M) cost savings, and maximizes your incentive potential.

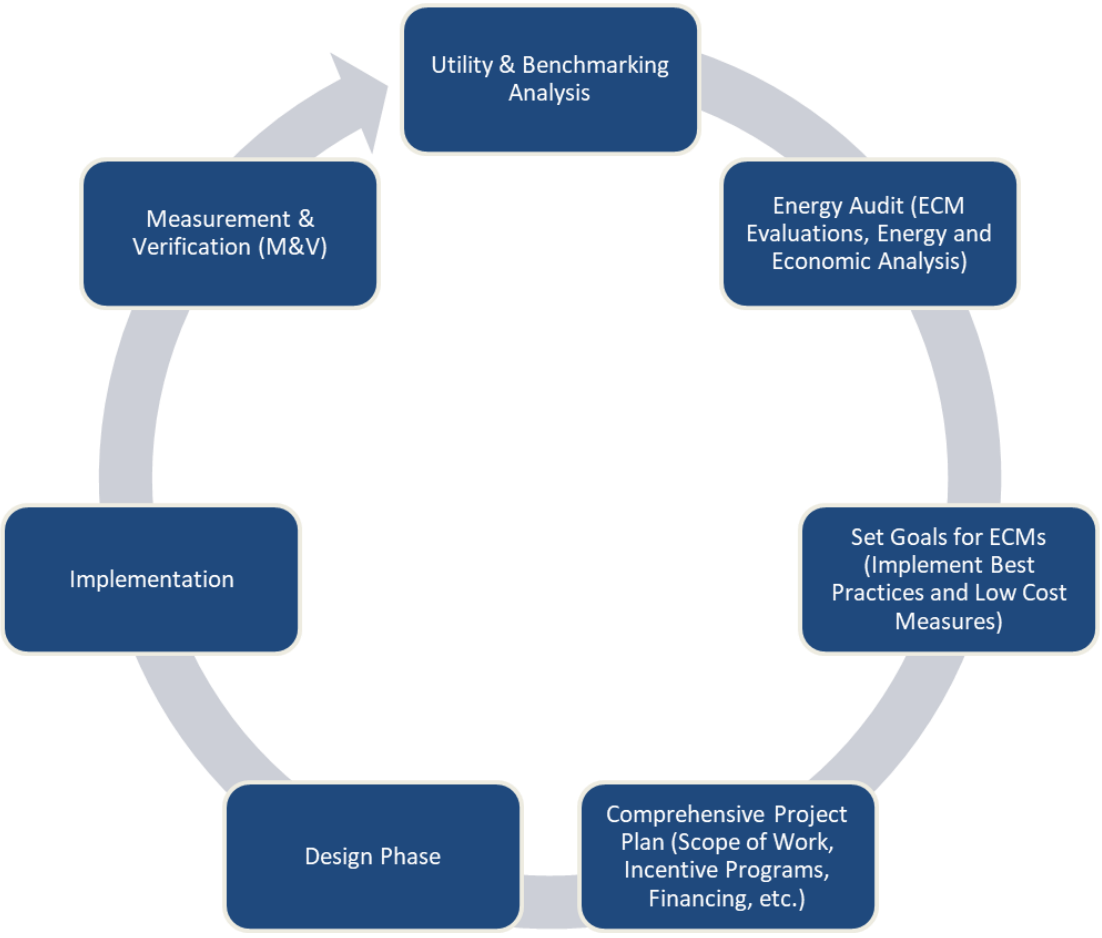


Figure 11 – Project Development Cycle

10 Energy Purchasing and Procurement Strategies

10.1 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. 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[7].

10.2 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 fluctuate monthly. The utility provides basic gas supply service 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[8].

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

[8] 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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Main Gymnasium	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
Main Gymnasium	24	LED - Fixtures: High-Bay	Occupancy Sensor	S	230	1,800		None	No	24	LED - Fixtures: High-Bay	Occupancy Sensor	230	1,800	0.0	0	0	$0	$0	$0	0.0
Room 301 B	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	2,610	0.0	142	0	$16	$55	$15	2.4
Assistant Principals Office	4	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	2,610	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,801	0.1	451	0	$52	$560	$75	9.3
Assistant Principals Office 2	3	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	2,610	3, 4	Relamp	Yes	3	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,801	0.1	338	0	$39	$487	$65	10.8
Athletic Director Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,610	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,801	0.1	241	0	$28	$189	$40	5.3
Athletic Director Office 2	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.1	362	0	$42	$226	$50	4.2
Athletic Training Office	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,610	3, 4	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,801	0.2	603	0	$70	$453	$85	5.3
Auditorium	18	Compact Fluorescent: (2) 40W Double Biaxial Plug-In Lamps	Wall Switch	S	80	2,610	3, 4	Relamp	Yes	18	LED Lamps: LED Plug-In Lamp	Occupancy Sensor	56	1,801	0.5	2,137	0	$248	$756	$71	2.8
Auditorium	36	Compact Fluorescent: (1) 26W Plug-in Lamps	Wall Switch	S	26	2,610	3, 4	Relamp	Yes	36	LED Lamps: LED Plug-In Lamp	Occupancy Sensor	18	1,801	0.4	1,404	0	$163	$990	$106	5.4
Auditorium	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
Auditorium	35	LED - Fixtures: High-Bay	Wall Switch	S	165	2,610	4	None	Yes	35	LED - Fixtures: High-Bay	Occupancy Sensor	165	1,801	1.3	5,140	-1	$597	$540	$70	0.8
Auxiliary Gym Cafeteria	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,610	3, 4	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,801	0.2	723	0	$84	$489	$95	4.7
Auxiliary Gymnasium	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
Auxiliary Gymnasium	24	LED - Fixtures: High-Bay	Occupancy Sensor	S	230	1,800		None	No	24	LED - Fixtures: High-Bay	Occupancy Sensor	230	1,800	0.0	0	0	$0	$0	$0	0.0
Basement Electrical Room	3	Compact Fluorescent: (1) 32W A19 Screw-In Lamp	Wall Switch	S	32	2,610	3, 4	Relamp	Yes	3	LED Lamps: A19 LED Lamp	Occupancy Sensor	23	1,801	0.0	139	0	$16	$168	$23	9.0
Bathroom in Athletic Trainer Office	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,480	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,480	0.0	126	0	$15	$37	$10	1.8
Bathroom in Nurses Office	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,480	3	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	3,480	0.0	189	0	$22	$55	$15	1.8
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
Boiler Room	3	LED - Fixtures: Close to Ceiling Mount	Wall Switch	S	15	1,090		None	No	3	LED - Fixtures: Close to Ceiling Mount	Wall Switch	15	1,090	0.0	0	0	$0	$0	$0	0.0
Boiler Room	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,090	3	Relamp	No	10	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,090	0.2	396	0	$46	$365	$100	5.8
Boiler room Foyer	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
Boiler room Foyer	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,610	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,801	0.1	482	0	$56	$416	$75	6.1
Boys Bath 230 Hall	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,480	3, 4	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,401	0.1	482	0	$56	$380	$65	5.6
Boys Bath Gym Corridor	4	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	S	38	3,480	4	None	Yes	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	38	2,401	0.0	180	0	$21	$270	$35	11.2

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Boys Bath Gym Corridor	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	3,480	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	3,480	0.0	111	0	$13	$72	$10	4.8
Boys Bathroom 2nd Floor 215	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,480	3, 4	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,401	0.2	804	0	$93	$453	$85	3.9
Boys Bathroom Athletic Director Corridor	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,480	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,401	0.1	321	0	$37	$343	$55	7.7
Boys Bathroom Next 112	5	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	S	38	3,480	4	None	Yes	5	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	38	2,401	0.0	225	0	$26	$270	$35	9.0
Boys Locker Room	26	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	26	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	1.2	4,702	-1	$546	$1,964	$460	2.8
Boys Locker Room Bathroom	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,480	3, 4	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,401	0.1	723	0	$84	$434	$80	4.2
Boys Locker Room Shower	10	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	S	29	2,610	4	None	Yes	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,801	0.1	258	0	$30	$270	$35	7.8
Boys Team Room	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,610	3, 4	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,801	0.2	723	0	$84	$489	$95	4.7
Boys Team Room Bathroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,480	3, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,401	0.4	1,929	0	$224	$708	$155	2.5
Cafeteria	20	Compact Fluorescent: (2) 26W Plug-in Lamps	Wall Switch	S	32	2,610	3, 4	Relamp	Yes	20	LED Lamps: LED Plug-In Lamp	Occupancy Sensor	21	1,801	0.3	1,005	0	$117	$1,040	$110	8.0
Cafeteria	4	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Cafeteria	53	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	2,610	3, 4	Relamp	Yes	53	LED - Linear Tubes: (2) 3' Lamps	Occupancy Sensor	21	1,801	1.5	5,860	-1	$680	$3,015	$670	3.4
Chemical Stock Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,090	3	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	1,090	0.1	178	0	$21	$164	$45	5.8
Classroom 101	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,610	3, 4	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,801	0.2	603	0	$70	$453	$85	5.3
Classroom 101	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.5	2,170	0	$252	$927	$215	2.8
Classroom 102	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.5	2,170	0	$252	$927	$215	2.8
Classroom 102 Office	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.1	542	0	$63	$434	$80	5.6
Classroom 103	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,610	3, 4	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,801	0.2	603	0	$70	$453	$85	5.3
Classroom 103	15	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	15	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.7	2,712	-1	$315	$1,092	$260	2.6
Classroom 104	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.5	2,170	0	$252	$927	$215	2.8
Classroom 105	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	8	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.4	1,447	0	$168	$708	$155	3.3
Classroom 106	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.5	2,170	0	$252	$927	$215	2.8
Classroom 106 Office (1)	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.1	542	0	$63	$434	$80	5.6
Classroom 107	15	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	15	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.7	2,712	-1	$315	$1,092	$260	2.6
Classroom 108	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.5	2,170	0	$252	$927	$215	2.8

	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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Classroom 109	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.1	362	0	$42	$226	$50	4.2
Classroom 109 Rear office	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	2,610	0.0	142	0	$16	$55	$15	2.4
Classroom 110	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.5	2,170	0	$252	$927	$215	2.8
Classroom 110 Office	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.1	542	0	$63	$434	$80	5.6
Classroom 111	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.5	2,170	0	$252	$927	$215	2.8
Classroom 112	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.5	2,170	0	$252	$927	$215	2.8
Classroom 113	3	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	S	38	2,610	4	None	Yes	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	38	1,801	0.0	101	0	$12	$0	$0	0.0
Classroom 113 Attendance	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,610	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,801	0.1	482	0	$56	$416	$75	6.1
Classroom 113 Attendance Rear office	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,610	3, 4	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,801	0.2	850	0	$99	$562	$115	4.5
Classroom 114	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.5	2,170	0	$252	$927	$215	2.8
Classroom 115	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.5	2,170	0	$252	$927	$215	2.8
Classroom 116	3	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	2,610	3, 4	Relamp	Yes	3	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,801	0.1	338	0	$39	$487	$65	10.8
Classroom 118/Server Room	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,610	3, 4	Relamp	Yes	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,801	0.3	1,206	0	$140	$635	$135	3.6
Classroom 119	19	Incandescent: (1) 100W A19 Screw-In Lamp	Wall Switch	S	100	2,610	3, 4	Relamp	Yes	19	LED Lamps: A19 LED Lamp	Occupancy Sensor	15	1,801	1.2	4,890	-1	$568	$867	$89	1.4
Classroom 119	10	LED Lamps: (1) 10W A19 Screw-In Lamp	Wall Switch	S	100	2,610	4	None	Yes	10	LED Lamps: (1) 10W A19 Screw-In Lamp	Occupancy Sensor	100	1,801	0.2	890	0	$103	$270	$35	2.3
Classroom 119	19	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	2,610	3, 4	Relamp	Yes	19	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,801	0.3	1,160	0	$135	$1,158	$184	7.2
Classroom 120	21	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	21	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	1.0	3,797	-1	$441	$1,690	$385	3.0
Classroom 120 Copy Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	2,610	0.0	142	0	$16	$55	$15	2.4
Classroom 120 Storage	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,000	3	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	1,000	0.0	54	0	$6	$55	$15	6.3
Classroom 121	11	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,800	3	Relamp	No	11	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,800	0.4	1,078	0	$125	$602	$165	3.5
Classroom 122	11	Halogen Incandescent: (1) 75W PAR38 Screw-In Lamp	Wall Switch	S	75	2,610	3, 4	Relamp	Yes	11	LED Lamps: PAR38 LED Lamp	Occupancy Sensor	12	1,801	0.5	2,107	0	$245	$602	$68	2.2
Classroom 122	26	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	26	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	1.2	4,702	-1	$546	$1,964	$460	2.8
Classroom 123	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	S	114	1,800	3	Relamp	No	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,800	0.1	222	0	$26	$146	$40	4.1
Classroom 124	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.1	362	0	$42	$380	$65	7.5
Classroom 126	15	Halogen Incandescent: (1) 75W PAR38 Screw-In Lamp	Wall Switch	S	75	2,610	3, 4	Relamp	Yes	15	LED Lamps: PAR38 LED Lamp	Occupancy Sensor	12	1,801	0.7	2,873	-1	$334	$723	$80	1.9

	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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Classroom 126	23	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	23	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	1.0	4,159	-1	$483	$1,800	$415	2.9
Classroom 127	11	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	11	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.5	1,989	0	$231	$872	$200	2.9
Classroom 201	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.5	2,170	0	$252	$927	$215	2.8
Classroom 203	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.5	2,170	0	$252	$927	$215	2.8
Classroom 205	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.5	2,170	0	$252	$927	$215	2.8
Classroom 206	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.5	2,170	0	$252	$927	$215	2.8
Classroom 207	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.5	2,170	0	$252	$927	$215	2.8
Classroom 208	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.5	2,170	0	$252	$927	$215	2.8
Classroom 209	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.5	2,170	0	$252	$927	$215	2.8
Classroom 210	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.5	2,170	0	$252	$927	$215	2.8
Classroom 211	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.3	1,085	0	$126	$599	$125	3.8
Classroom 212	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.5	2,170	0	$252	$927	$215	2.8
Classroom 213	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.3	1,085	0	$126	$599	$125	3.8
Classroom 215	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,610	3, 4	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,801	0.2	723	0	$84	$489	$95	4.7
Classroom 216	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.5	2,170	0	$252	$927	$215	2.8
Classroom 217	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.5	2,170	0	$252	$927	$215	2.8
Classroom 218	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.5	2,170	0	$252	$927	$215	2.8
Classroom 219	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.5	2,170	0	$252	$927	$215	2.8
Classroom 220	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.5	2,170	0	$252	$927	$215	2.8
Classroom 222	2	LED Lamps: (1) 14W PAR30 Screw-In Lamp	Wall Switch	S	14	2,610		None	No	2	LED Lamps: (1) 14W PAR30 Screw-In Lamp	Wall Switch	14	2,610	0.0	0	0	$0	$0	$0	0.0
Classroom 224	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.5	2,170	0	$252	$927	$215	2.8
Classroom 226	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.5	2,170	0	$252	$927	$215	2.8
Classroom 228	32	Incandescent: (1) 100W A19 Screw-In Lamp	Wall Switch	S	100	2,610	3, 4	Relamp	Yes	32	LED Lamps: A19 LED Lamp	Occupancy Sensor	15	1,801	2.1	8,236	-2	$956	$1,361	$137	1.3
Classroom 228	18	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,610	3, 4	Relamp	Yes	18	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,801	1.0	3,823	-1	$444	$1,855	$430	3.2
Classroom 230-232	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.7	2,893	-1	$336	$1,416	$310	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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Classroom 233	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.5	2,170	0	$252	$927	$215	2.8
Classroom 235	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.5	2,170	0	$252	$927	$215	2.8
Classroom 236	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.5	2,170	0	$252	$927	$215	2.8
Classroom 237	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.5	2,170	0	$252	$927	$215	2.8
Classroom 238	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.5	2,170	0	$252	$927	$215	2.8
Classroom 239	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.5	2,170	0	$252	$927	$215	2.8
Classroom 240	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.5	2,170	0	$252	$927	$215	2.8
Classroom 241	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.2	723	0	$84	$489	$95	4.7
Classroom 242	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.5	2,170	0	$252	$927	$215	2.8
Classroom 243	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	8	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.4	1,447	0	$168	$708	$155	3.3
Classroom 244	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.5	2,170	0	$252	$927	$215	2.8
Classroom 245	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	8	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.4	1,447	0	$168	$708	$155	3.3
Classroom 248	25	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	25	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	1.1	4,521	-1	$525	$1,909	$445	2.8
Classroom 249	14	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	14	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.6	2,532	-1	$294	$1,037	$245	2.7
Classroom 302	18	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	18	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.8	3,255	-1	$378	$1,526	$340	3.1
Classroom 303 Paper Storage	5	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,000	3	Relamp	No	5	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	1,000	0.2	272	0	$32	$274	$75	6.3
Classroom 305	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.2	723	0	$84	$489	$95	4.7
Classroom 307	18	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	18	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.8	3,255	-1	$378	$1,526	$340	3.1
Classroom 309	5	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	5	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.2	904	0	$105	$544	$110	4.1
Classroom 310	17	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	17	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.8	3,074	-1	$357	$1,471	$325	3.2
Classroom 311	18	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	18	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.8	3,255	-1	$378	$1,526	$340	3.1
Classroom 313	19	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	19	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.9	3,436	-1	$399	$1,581	$355	3.1
Classroom 314	17	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	17	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.8	3,074	-1	$357	$1,471	$325	3.2
Classroom 315	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.2	723	0	$84	$489	$95	4.7
Classroom 316	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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Classroom 316	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,610	3, 4	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,801	0.2	603	0	$70	$453	$85	5.3
Classroom 316 Foyer	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	2,610	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	2,610	0.0	83	0	$10	$72	$10	6.5
Classroom 317	18	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	18	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.8	3,255	-1	$378	$1,526	$340	3.1
Classroom 318	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.1	362	0	$42	$226	$50	4.2
Classroom 322	17	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	17	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.8	3,074	-1	$357	$1,471	$325	3.2
Classroom 324	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.1	542	0	$63	$434	$80	5.6
Classroom 324 side Room	1	LED Lamps: (1) 10W A19 Screw-In Lamp	Wall Switch	S	10	2,610		None	No	1	LED Lamps: (1) 10W A19 Screw-In Lamp	Wall Switch	10	2,610	0.0	0	0	$0	$0	$0	0.0
Classroom 324 side Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.1	362	0	$42	$380	$65	7.5
Classroom 326	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.7	2,893	-1	$336	$1,416	$310	3.3
Classroom 328	15	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	15	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.7	2,712	-1	$315	$1,092	$260	2.6
Classroom 332	15	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	15	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.7	2,712	-1	$315	$1,092	$260	2.6
Classroom 334	24	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	S	32	2,610	4	None	Yes	24	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	1,801	0.2	684	0	$79	$540	$70	5.9
Classroom 338	26	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,610	3, 4	Relamp	Yes	26	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,801	1.4	5,522	-1	$641	$2,439	$590	2.9
Classroom 403	17	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,610	3, 4	Relamp	Yes	17	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,801	0.5	2,049	0	$238	$1,161	$240	3.9
Classroom In 316	8	Compact Fluorescent: (1) 32W A19 Screw-In Lamp	Wall Switch	S	32	2,610	3, 4	Relamp	Yes	8	LED Lamps: A19 LED Lamp	Occupancy Sensor	23	1,801	0.1	370	0	$43	$408	$43	8.5
Classroom In 316	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
Classroom Office In 213	1	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	S	88	2,610	2	Relamp & Reballast	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,610	0.0	169	0	$20	$69	$10	3.0
Classroom Office In 213	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	2,610	0.0	142	0	$16	$55	$15	2.4
Classroom Office in 220	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.1	362	0	$42	$226	$50	4.2
Classroom Office in 224	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.1	362	0	$42	$226	$50	4.2
Coaches Locker 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
Coaches Locker Room	1	LED Lamps: (1) 10W A19 Screw-In Lamp	Wall Switch	S	10	2,610		None	No	1	LED Lamps: (1) 10W A19 Screw-In Lamp	Wall Switch	10	2,610	0.0	0	0	$0	$0	$0	0.0
Coaches Locker Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,610	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,610	0.0	95	0	$11	$37	$10	2.4
Coaches office in Boys Locker Room	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,610	3, 4	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,801	0.2	850	0	$99	$562	$115	4.5
Coordinator office 308	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,610	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,801	0.1	241	0	$28	$189	$40	5.3

	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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Copy Room 221	7	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,610	3, 4	Relamp	Yes	7	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,801	0.4	1,487	0	$173	$781	$175	3.5
Copy Room 221	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	2,610	3, 4	Relamp	Yes	1	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,801	0.0	113	0	$13	$72	$10	4.8
Copy Room In Main Office	4	Compact Fluorescent: (2) 13W Plug-in Lamps	Wall Switch	S	26	2,610	3, 4	Relamp	Yes	4	LED Lamps: LED Plug-In Lamp	Occupancy Sensor	18	1,801	0.0	156	0	$18	$370	$43	18.1
Copy Room In Main Office	4	Linear Fluorescent - T5: 2' T5 (14W) - 2L	Wall Switch	S	34	2,610	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 2' T5 (8W) Lamps	Occupancy Sensor	17	1,801	0.1	256	0	$30	$483	$59	14.3
Corridor Art	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
Corridor Art	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	3,480	3, 5	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	High/Low Control	15	2,401	0.0	84	0	$10	$18	$5	1.4
Corridor Art	22	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,480	3, 5	Relamp	Yes	22	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,401	0.7	3,536	-1	$410	$1,478	$895	1.4
Corridor Athletic Director	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
Corridor Athletic Director	5	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,480	3, 5	Relamp	Yes	5	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	2,401	0.2	1,206	0	$140	$499	$250	1.8
Corridor Auditorium	2	Compact Fluorescent: (2) 13W Plug-in Lamps	Wall Switch	S	26	3,480	3, 5	Relamp	Yes	2	LED Lamps: LED Plug-In Lamp	High/Low Control	18	2,401	0.0	104	0	$12	$50	$4	3.8
Corridor Auditorium	36	Compact Fluorescent: (1) 26W Spiral Plug-In Lamp	Wall Switch	S	26	3,480	3, 5	Relamp	Yes	36	LED Lamps: LED Plug-In Lamp	High/Low Control	18	2,401	0.4	1,871	0	$217	$2,250	$1,440	3.7
Corridor Auditorium	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
Corridor Auditorium	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
Corridor Auditorium	8	Incandescent: (1) 50W R20 Screw-In Lamp	Wall Switch	S	50	3,480	3, 5	Relamp	Yes	8	LED Lamps: R20 LED Lamp	High/Low Control	8	2,401	0.3	1,362	0	$158	$385	$241	0.9
Corridor Auditorium	1	LED - Fixtures: Architectural Flood/Spot Luminaire	Occupancy Sensor	S	21	2,400		None	No	1	LED - Fixtures: Architectural Flood/Spot Luminaire	Occupancy Sensor	21	2,400	0.0	0	0	$0	$0	$0	0.0
Corridor Auditorium	17	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,480	3, 5	Relamp	Yes	17	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,401	0.5	2,733	-1	$317	$1,296	$765	1.7
Corridor Auditorium	39	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	3,480	3, 5	Relamp	Yes	39	LED - Linear Tubes: (2) U-Lamp	High/Low Control	33	2,401	1.1	5,857	-1	$680	$4,401	$1,755	3.9
Corridor Boys Team Room	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	3,480	3, 5	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	High/Low Control	58	2,401	0.2	1,133	0	$131	$517	$220	2.3
Corridor English	20	Compact Fluorescent: (2) 13W Plug-in Lamps	Wall Switch	S	26	3,480	3, 5	Relamp	Yes	20	LED Lamps: LED Plug-In Lamp	High/Low Control	18	2,401	0.2	1,040	0	$121	$1,400	$740	5.5
Corridor English	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
Corridor English	36	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	3,480	3, 5	Relamp	Yes	36	LED - Linear Tubes: (2) U-Lamp	High/Low Control	33	2,401	1.0	5,406	-1	$628	$3,959	$1,620	3.7
Corridor Guidance	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
Corridor Guidance	17	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,480	3, 5	Relamp	Yes	17	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,401	0.5	2,733	-1	$317	$1,296	$765	1.7
Corridor Gym	3	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	3	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Corridor Gym	3	Halogen Incandescent: (1) 65W PAR30 Screw-In Lamp	Occupancy Sensor	S	65	2,400	3	Relamp	No	3	LED Lamps: PAR30 LED Lamp	Occupancy Sensor	9	2,400	0.1	444	0	$51	$70	$9	1.2

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Corridor Gym	10	LED Lamps: (1) 14W PAR30 Screw-In Lamp	Wall Switch	S	14	3,480	5	None	Yes	10	LED Lamps: (1) 14W PAR30 Screw-In Lamp	High/Low Control	14	2,401	0.0	166	0	$19	$0	$0	0.0
Corridor Gym	2	LED Lamps: (1) 14W R30 Screw-In Lamp	Occupancy Sensor	S	14	2,400		None	No	2	LED Lamps: (1) 14W R30 Screw-In Lamp	Occupancy Sensor	14	2,400	0.0	0	0	$0	$0	$0	0.0
Corridor Gym	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,480	3, 5	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,401	0.5	2,411	-1	$280	$1,448	$675	2.8
Corridor History	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
Corridor History	26	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,480	3, 5	Relamp	Yes	26	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,401	0.8	4,179	-1	$485	$1,849	$1,160	1.4
Corridor In 121	1	LED - Fixtures: Close to Ceiling Mount	Wall Switch	S	15	3,480		None	No	1	LED - Fixtures: Close to Ceiling Mount	Wall Switch	15	3,480	0.0	0	0	$0	$0	$0	0.0
Corridor Kitchen Area	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Corridor Kitchen Area	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,480	3, 5	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	2,401	0.2	964	0	$112	$444	$200	2.2
Corridor Main 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
Corridor Main Office	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,480	3, 5	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,401	0.2	804	0	$93	$408	$225	2.0
Corridor Science	10	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	10	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Corridor Science	15	LED Lamps: (1) 14W PAR30 Screw-In Lamp	Occupancy Sensor	S	14	2,400		None	No	15	LED Lamps: (1) 14W PAR30 Screw-In Lamp	Occupancy Sensor	14	2,400	0.0	0	0	$0	$0	$0	0.0
Corridor Science	3	LED Lamps: (1) 14W R30 Screw-In Lamp	Occupancy Sensor	S	14	2,400		None	No	3	LED Lamps: (1) 14W R30 Screw-In Lamp	Occupancy Sensor	14	2,400	0.0	0	0	$0	$0	$0	0.0
Corridor Science	59	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,480	3, 5	Relamp	Yes	59	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,401	1.8	9,484	-2	$1,101	$4,404	$2,655	1.6
Corridor Science	20	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	3,480	3, 5	Relamp	Yes	20	LED - Linear Tubes: (2) U-Lamp	High/Low Control	33	2,401	0.6	3,003	-1	$349	$2,349	$900	4.2
Custodial Office Bathroom	1	LED Lamps: (1) 10W A19 Screw-In Lamp	Wall Switch	S	10	3,480		None	No	1	LED Lamps: (1) 10W A19 Screw-In Lamp	Wall Switch	10	3,480	0.0	0	0	$0	$0	$0	0.0
Custodial Office locker Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	1,090	3	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	1,090	0.0	67	0	$8	$73	$20	6.8
Custodial Office lunch room	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,610	3, 4	Relamp	Yes	3	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,801	0.2	637	0	$74	$489	$95	5.3
E1 Staircase	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
E1 Staircase	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	3,480	3	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,480	0.0	253	0	$29	$73	$20	1.8
E15 Staircase	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
E15 Staircase	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	3,480	3	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,480	0.0	253	0	$29	$73	$20	1.8
E19 Staircase	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	3,480	3, 5	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,401	0.1	643	0	$75	$371	$180	2.6
E21 Staircase	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
E21 Staircase	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	3,480	3, 5	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,401	0.2	964	0	$112	$444	$270	1.6

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
E22 Staircase	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
E22 Staircase	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	3,480	3, 5	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,401	0.2	964	0	$112	$444	$270	1.6
E25 Staircase	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
E25 Staircase	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	1,000	3	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,000	0.1	218	0	$25	$219	$60	6.3
E3B Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,000	3	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	1,000	0.1	109	0	$13	$110	$30	6.3
Editing Room in 316	10	LED Lamps: (1) 14W R30 Screw-In Lamp	Wall Switch	S	14	2,610	4	None	Yes	10	LED Lamps: (1) 14W R30 Screw-In Lamp	Occupancy Sensor	14	1,801	0.0	125	0	$14	$270	$35	16.2
Elevator 1	1	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	S	88	2,610	2	Relamp & Reballast	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,610	0.0	169	0	$20	$69	$10	3.0
Equipment Room in Weight Room	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,610	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,801	0.1	482	0	$56	$416	$75	6.1
Exam Room in Nurses Office	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.1	542	0	$63	$434	$80	5.6
Exterior 4B	2	Compact Fluorescent: (1) 13W Plug-in Lamps	Timeclock		13	4,380	3	Relamp	No	2	LED Lamps: LED Plug-In Lamp	Timeclock	9	4,380	0.0	35	0	$4	$25	$2	5.5
Exterior Doors	4	Compact Fluorescent: (1) 23W A19 Screw-In Lamp	Timeclock		23	4,380	3	Relamp	No	4	LED Lamps: A19 LED Lamp	Timeclock	16	4,380	0.0	123	0	$15	$69	$4	4.5
Exterior Doors	2	Incandescent: (1) 100W A19 Screw-In Lamp	Wall Switch		100	4,356	3	Relamp	No	2	LED Lamps: A19 LED Lamp	Wall Switch	15	4,356	0.0	741	0	$88	$34	$2	0.4
Exterior E7 Door	6	LED - Fixtures: Downlight Surface Mount	Timeclock		35	4,380		None	No	6	LED - Fixtures: Downlight Surface Mount	Timeclock	35	4,380	0.0	0	0	$0	$0	$0	0.0
Exterior Garden Area	2	Metal Halide: (1) 150W Lamp	Timeclock		190	4,380	1	Fixture Replacement	No	2	LED - Fixtures: High-Bay	Timeclock	45	4,380	0.0	1,270	0	$150	$1,094	$100	6.6
Exterior Loading Dock	1	Compact Fluorescent: (1) 32W Spiral Plug-In Lamp	Photocell		32	4,380	3	Relamp	No	1	LED Lamps: LED Plug-In Lamp	Photocell	23	4,380	0.0	39	0	$5	$25	$5	4.3
Exterior Main Entrance	10	Metal Halide: (1) 150W Lamp	Timeclock		190	4,380	1	Fixture Replacement	No	10	LED - Fixtures: High-Bay	Timeclock	45	4,380	0.0	6,351	0	$751	$5,468	$500	6.6
Exterior Pole Lights	3	LED - Fixtures: Outdoor Pole/Arm-Mounted Area/Roadway Fixture	Timeclock		65	4,380		None	No	3	LED - Fixtures: Outdoor Pole/Arm-Mounted Area/Roadway Fixture	Timeclock	65	4,380	0.0	0	0	$0	$0	$0	0.0
Exterior Soffit	33	Compact Fluorescent: (2) 26W Biaxial Plug-In Lamps	Wall Switch		32	4,356	3	Relamp	No	33	LED Lamps: LED Plug-In Lamp	Wall Switch	21	4,356	0.0	1,581	0	$187	$825	$66	4.1
Wood-shop 401	33	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,610	3	Relamp	No	33	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,610	0.8	3,127	-1	$363	$1,205	$330	2.4
Exterior Wall	6	Compact Fluorescent: (2) 26W Biaxial Plug-In Lamps	Timeclock		32	4,380	3	Relamp	No	6	LED Lamps: LED Plug-In Lamp	Timeclock	21	4,380	0.0	289	0	$34	$150	$12	4.0
Exterior Wall	2	LED Lamps: (1) 15W PAR38 Screw-In Lamp	Timeclock		15	4,380		None	No	2	LED Lamps: (1) 15W PAR38 Screw-In Lamp	Timeclock	15	4,380	0.0	0	0	$0	$0	$0	0.0
Exterior Wall Packs	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Timeclock		13	4,380		None	No	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Timeclock	13	4,380	0.0	0	0	$0	$0	$0	0.0
Exterior Wall Packs	6	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Timeclock		9	4,380		None	No	6	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Timeclock	9	4,380	0.0	0	0	$0	$0	$0	0.0
Exterior Wall Packs	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Timeclock		24	4,380		None	No	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Timeclock	24	4,380	0.0	0	0	$0	$0	$0	0.0
Exterior Wall Packs	4	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Timeclock		54	4,380		None	No	4	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Timeclock	54	4,380	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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Exterior Wall Packs	8	LED - Fixtures: Wall Pack	Timeclock		45	4,380		None	No	8	LED - Fixtures: Wall Pack	Timeclock	45	4,380	0.0	0	0	$0	$0	$0	0.0
Faculty Bath 1 in Nurses Hall	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,480	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,480	0.0	126	0	$15	$37	$10	1.8
Faculty Bath 1 in Nurses Hall (1)	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,480	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,480	0.0	126	0	$15	$37	$10	1.8
Faculty Bath 2 in Nurses Hall (2)	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,480	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,480	0.0	126	0	$15	$37	$10	1.8
Faculty Bath Art Hall	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,480	3, 4	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,401	0.1	482	0	$56	$380	$65	5.6
Faculty Bathroom 2 Main office Corridor	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,480	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,480	0.0	126	0	$15	$37	$10	1.8
Faculty Bathroom Main office Corridor	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,480	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,480	0.0	126	0	$15	$37	$10	1.8
Faculty Ladies Bath Art Hall (1)	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,480	3, 4	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,401	0.1	482	0	$56	$380	$65	5.6
Faculty Mens Bath Second Floor	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,480	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,401	0.1	482	0	$56	$380	$65	5.6
Faculty Women's Bath	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,480	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,401	0.1	482	0	$56	$380	$65	5.6
Fan Room 2nd Floor 220 Area	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	S	29	750		None	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	750	0.0	0	0	$0	$0	$0	0.0
Girls Athletic Director	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,610	3	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,610	0.0	161	0	$19	$73	$20	2.8
Girls Athletic Director Bath	1	LED Lamps: (1) 10W A19 Screw-In Lamp	Wall Switch	S	10	3,480		None	No	1	LED Lamps: (1) 10W A19 Screw-In Lamp	Wall Switch	10	3,480	0.0	0	0	$0	$0	$0	0.0
Girls Athletic Director Bath	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	3,480	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	3,480	0.0	111	0	$13	$72	$10	4.8
Girls Bath 230 Hall	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,480	3, 4	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,401	0.1	482	0	$56	$380	$65	5.6
Girls Bath Gym Corridor	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	3,480	3, 4	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,401	0.2	1,133	0	$131	$562	$115	3.4
Girls Bath Gym Corridor	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	3,480	3, 4	Relamp	Yes	1	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	2,401	0.0	150	0	$17	$72	$10	3.6
Girls Bathroom 2nd Floor 215	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,480	3, 4	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,401	0.2	804	0	$93	$453	$85	3.9
Girls Bathroom Athletic Director Corridor	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,480	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,401	0.1	321	0	$37	$189	$40	4.0
Girls Bathroom Next 112 (1)	7	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	S	38	3,480	4	None	Yes	7	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	38	2,401	0.1	316	0	$37	$270	$35	6.4
Girls Locker Room 311 Ent	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	2,610	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	2,610	0.0	83	0	$10	$72	$10	6.5
Girls Locker room 412 Bath	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	3,480	3, 4	Relamp	Yes	1	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,401	0.1	283	0	$33	$73	$20	1.6
Girls Locker room 412 Bath 2	2	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	S	32	3,480	4	None	Yes	2	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	2,401	0.0	76	0	$9	$270	$35	26.7
Girls Locker Room 412 Entrance	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	2,610	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	2,610	0.0	83	0	$10	$72	$10	6.5
Girls Locker Room 412 Main	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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Girls Locker Room 412 Main	1	LED Lamps: (1) 36W Corn Bulb Screw-In Lamp	Wall Switch	S	36	2,610		None	No	1	LED Lamps: (1) 36W Corn Bulb Screw-In Lamp	Wall Switch	36	2,610	0.0	0	0	$0	$0	$0	0.0
Girls Locker Room 412 Main	10	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,610	3, 4	Relamp	Yes	10	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,801	0.5	2,124	0	$247	$1,000	$235	3.1
Girls Locker Room Foyer	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 Foyer	1	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	S	38	2,610		None	No	1	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	38	2,610	0.0	0	0	$0	$0	$0	0.0
Girls Locker Room Foyer	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	S	58	2,610		None	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,610	0.0	0	0	$0	$0	$0	0.0
Girls Soccer Coach Office	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,610	3	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,610	0.0	161	0	$19	$73	$20	2.8
Girls Team 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 Team Room	1	LED Lamps: (1) 10W A19 Screw-In Lamp	Wall Switch	S	10	2,610	4	None	Yes	1	LED Lamps: (1) 10W A19 Screw-In Lamp	Occupancy Sensor	10	1,801	0.0	9	0	$1	$0	$0	0.0
Girls Team Room	6	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	S	38	2,610	4	None	Yes	6	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	38	1,801	0.1	203	0	$24	$270	$35	10.0
Girls Team Room Bathroom	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	S	29	3,480		None	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,480	0.0	0	0	$0	$0	$0	0.0
Guidance Counselor Office	19	Compact Fluorescent: (2) 13W Plug-in Lamps	Wall Switch	S	26	2,610	3, 4	Relamp	Yes	19	LED Lamps: LED Plug-In Lamp	Occupancy Sensor	18	1,801	0.2	741	0	$86	$1,015	$108	10.5
Guidance Counselor Office	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	S	44	2,610		None	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	2,610	0.0	0	0	$0	$0	$0	0.0
Guidance Counselor Office	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	8	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.4	1,447	0	$168	$708	$155	3.3
Gymnasium 1 passageway	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 5	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	1,801	0.2	723	0	$84	$444	$200	2.9
Kiln Room in 122	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.1	542	0	$63	$434	$80	5.6
Kitchen 1 Office	1	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	S	38	1,090		None	No	1	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	38	1,090	0.0	0	0	$0	$0	$0	0.0
Kitchen Area 1	5	LED Lamps: (1) 10W A19 Screw-In Lamp	Wall Switch	S	10	2,610	4	None	Yes	5	LED Lamps: (1) 10W A19 Screw-In Lamp	Occupancy Sensor	10	1,801	0.0	45	0	$5	$0	$0	0.0
Kitchen Area 1	20	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	20	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.9	3,617	-1	$420	$1,365	$335	2.5
Kitchen Area 2	6	LED Lamps: (1) 10W A19 Screw-In Lamp	Wall Switch	S	10	2,610	4	None	Yes	6	LED Lamps: (1) 10W A19 Screw-In Lamp	Occupancy Sensor	10	1,801	0.0	53	0	$6	$0	$0	0.0
Kitchen Area 2	11	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	11	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.5	1,989	0	$231	$602	$165	1.9
Kitchen Area 2 Storage	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,090	3	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	1,090	0.1	178	0	$21	$164	$45	5.8
Kitchen Bathroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,480	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,480	0.0	126	0	$15	$37	$10	1.8
Kitchen In Guidance Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.1	362	0	$42	$226	$50	4.2
Kitchen Storage	1	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	S	38	1,090		None	No	1	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	38	1,090	0.0	0	0	$0	$0	$0	0.0
Lab Prep Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	2,610	0.0	142	0	$16	$55	$15	2.4

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Library Desk Area	3	Compact Fluorescent: (2) 13W Plug-in Lamps	Wall Switch	S	26	2,610	3, 4	Relamp	Yes	3	LED Lamps: LED Plug-In Lamp	Occupancy Sensor	18	1,801	0.0	117	0	$14	$75	$6	5.1
Library Desk Area	17	LED - Fixtures: Architectural Flood/Spot Luminaire	Wall Switch	S	113	2,610	4	None	Yes	17	LED - Fixtures: Architectural Flood/Spot Luminaire	Occupancy Sensor	113	1,801	0.4	1,710	0	$198	$540	$70	2.4
Library Desk Area	6	LED - Fixtures: Decorative: Other	Wall Switch	S	35	2,610	4	None	Yes	6	LED - Fixtures: Decorative: Other	Occupancy Sensor	35	1,801	0.0	187	0	$22	$270	$35	10.8
Library Desk Area	6	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	2,610	3, 4	Relamp	Yes	6	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,801	0.2	676	0	$78	$705	$95	7.8
Library Hallway	37	Compact Fluorescent: (2) 13W Plug-in Lamps	Wall Switch	S	26	3,480	3, 5	Relamp	Yes	37	LED Lamps: LED Plug-In Lamp	High/Low Control	18	2,401	0.4	1,923	0	$223	$2,275	$1,369	4.1
Library Hallway	3	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	3	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Library Hallway	23	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	3,480	3, 5	Relamp	Yes	23	LED - Linear Tubes: (2) U-Lamp	High/Low Control	33	2,401	0.6	3,454	-1	$401	$2,567	$1,035	3.8
Library Hallway	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,480	3, 5	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,401	0.1	482	0	$56	$335	$135	3.6
Library Instructional Lab	21	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,610	3, 4	Relamp	Yes	21	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,801	0.6	2,532	-1	$294	$1,307	$280	3.5
Library Multimedia Lab	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,610	3, 4	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,801	0.5	1,808	0	$210	$818	$185	3.0
Library Office	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,610	3, 4	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,801	0.2	964	0	$112	$562	$115	4.0
Library Open Area	26	Compact Fluorescent: (2) 13W Plug-in Lamps	Wall Switch	S	26	2,610	3, 4	Relamp	Yes	26	LED Lamps: LED Plug-In Lamp	Occupancy Sensor	18	1,801	0.3	1,014	0	$118	$1,190	$122	9.1
Library Open Area	19	Compact Fluorescent: (4) 26W Spiral Plug-In Lamps	Wall Switch	S	64	2,610	3, 4	Relamp	Yes	19	LED Lamps: LED Plug-In Lamp	Occupancy Sensor	46	1,801	0.4	1,760	0	$204	$1,490	$146	6.6
Library Open Area	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Library Open Area	25	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	S	15	2,610	4	None	Yes	25	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,801	0.1	323	0	$37	$540	$70	12.5
Library Open Area	47	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	2,610	3, 4	Relamp	Yes	47	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,801	0.7	2,968	-1	$345	$1,668	$340	3.9
Library Rear Kitchen Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.2	723	0	$84	$489	$95	4.7
Library Rear Kitchen Office	3	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	2,610	3, 4	Relamp	Yes	3	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,801	0.1	338	0	$39	$487	$65	10.8
Listen Room in Library	3	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	2,610	3, 4	Relamp	Yes	3	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,801	0.1	338	0	$39	$487	$65	10.8
Main 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
Main Office	30	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,610	3, 4	Relamp	Yes	30	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,801	0.9	3,617	-1	$420	$1,635	$370	3.0
Main Office Ent Foyer	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,610	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,610	0.0	95	0	$11	$37	$10	2.4
Media Center Library Foyer	36	Compact Fluorescent: (2) 13W Plug-in Lamps	Wall Switch	S	26	2,610	3, 4	Relamp	Yes	36	LED Lamps: LED Plug-In Lamp	Occupancy Sensor	18	1,801	0.4	1,404	0	$163	$1,710	$177	9.4
Music Director Office	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	S	29	2,610	4	None	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,801	0.0	77	0	$9	$0	$0	0.0
Music Director Office Rear Storage	4	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	S	38	1,090	4	None	Yes	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	38	752	0.0	56	0	$7	$270	$0	41.2

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Music Director Office Storage	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	S	29	1,090		None	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,090	0.0	0	0	$0	$0	$0	0.0
Music Director Office Storage	2	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	S	58	1,090		None	No	2	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	1,090	0.0	0	0	$0	$0	$0	0.0
Music Director Office Storage	2	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	1,090	3	Relamp	No	2	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	1,090	0.0	70	0	$8	$145	$20	15.5
Music office in Classroom 334	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.1	362	0	$42	$226	$50	4.2
Nurses Office	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.3	1,085	0	$126	$599	$125	3.8
Office -In 322	5	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	5	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.2	904	0	$105	$544	$110	4.1
Office 1 In Guidance	4	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	2,610	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,801	0.1	451	0	$52	$560	$75	9.3
Office 1 Nurses Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.1	362	0	$42	$226	$50	4.2
Office 1 Weight Room	2	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	S	38	2,610	4	None	Yes	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	38	1,801	0.0	68	0	$8	$116	$20	12.2
Office 10 In Guidance	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	2,610	0.0	142	0	$16	$55	$15	2.4
Office 11 In Guidance	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	2,610	0.0	142	0	$16	$55	$15	2.4
Office 12 In Guidance	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.2	723	0	$84	$489	$95	4.7
Office 15 In Guidance	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	2,610	0.0	142	0	$16	$55	$15	2.4
Office 15 In Guidance	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	2,610	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	2,610	0.0	83	0	$10	$72	$10	6.5
Office 2 In Guidance	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,610	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,801	0.1	241	0	$28	$189	$40	5.3
Office 2 Weight Room	2	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	S	38	2,610	4	None	Yes	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	38	1,801	0.0	68	0	$8	$116	$20	12.2
Office 3 In Guidance (1)	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,610	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,801	0.1	241	0	$28	$189	$40	5.3
Office 4 In Guidance (2)	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,610	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,801	0.1	241	0	$28	$189	$40	5.3
Office 5 In Guidance	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,610	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,801	0.1	241	0	$28	$189	$40	5.3
Office 6/In Guidance	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,610	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,801	0.1	482	0	$56	$416	$75	6.1
Office 7 In Guidance	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,610	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,801	0.1	482	0	$56	$416	$75	6.1
Office 8 In Guidance	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.1	362	0	$42	$380	$65	7.5
Office 9 In Guidance	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.1	362	0	$42	$380	$65	7.5
Office Between 312	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.1	542	0	$63	$434	$80	5.6
Office in 105	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	2,610	0.0	142	0	$16	$55	$15	2.4

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Office in 126	1	LED Lamps: (1) 10W A19 Screw-In Lamp	Wall Switch	S	10	2,610		None	No	1	LED Lamps: (1) 10W A19 Screw-In Lamp	Wall Switch	10	2,610	0.0	0	0	$0	$0	$0	0.0
Office in 126	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.1	362	0	$42	$226	$50	4.2
Office in 127	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	2,610	0.0	142	0	$16	$55	$15	2.4
Office in 403	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.1	362	0	$42	$226	$50	4.2
Old Main Staircase	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch		114	3,480	3, 5	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	High/Low Control	58	2,401	0.1	566	0	$66	$371	$110	4.0
Old Main Staircase	6	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch		62	3,480	3, 5	Relamp	Yes	6	LED - Linear Tubes: (2) U-Lamp	High/Low Control	33	2,401	0.2	901	0	$105	$660	$270	3.7
Physics office	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.1	362	0	$42	$226	$50	4.2
Pottery Room in 122	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,610	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,801	0.1	241	0	$28	$189	$40	5.3
Principals Confrence Room	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.3	1,085	0	$126	$599	$125	3.8
Principals Office	6	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	2,610	3, 4	Relamp	Yes	6	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,801	0.2	676	0	$78	$705	$95	7.8
Rodrigo Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,610	3, 4	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,801	0.1	425	0	$49	$262	$60	4.1
Sound Room In 228	2	LED - Fixtures: Ambient 1x4 Fixture	Wall Switch	S	28	2,610	4	None	Yes	2	LED - Fixtures: Ambient 1x4 Fixture	Occupancy Sensor	28	1,801	0.0	50	0	$6	$116	$20	16.6
Sprinkler Room In Library	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,090	3	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,090	0.0	79	0	$9	$73	$20	5.8
Stage	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	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
Stage	1	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	S	88	1,000	2	Relamp & Reballast	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,000	0.0	65	0	$8	$69	$10	7.8
Stage	13	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,000	3	Relamp	No	13	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,000	0.3	472	0	$55	$475	$130	6.3
Stock room In 126	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,000	3	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,000	0.0	73	0	$8	$73	$20	6.3
Storage 1 across 117	1	LED Lamps: (1) 10W A19 Screw-In Lamp	Wall Switch	S	10	1,000		None	No	1	LED Lamps: (1) 10W A19 Screw-In Lamp	Wall Switch	10	1,000	0.0	0	0	$0	$0	$0	0.0
Storage 117	3	LED Lamps: (1) 16W R40 Screw-In Lamp	Wall Switch	S	16	1,000		None	No	3	LED Lamps: (1) 16W R40 Screw-In Lamp	Wall Switch	16	1,000	0.0	0	0	$0	$0	$0	0.0
Storage 2 across 117	1	LED Lamps: (1) 10W A19 Screw-In Lamp	Wall Switch	S	10	1,000		None	No	1	LED Lamps: (1) 10W A19 Screw-In Lamp	Wall Switch	10	1,000	0.0	0	0	$0	$0	$0	0.0
Storage 2 in. 121	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,000	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,000	0.0	36	0	$4	$37	$10	6.3
Storage 2 In 122	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,000	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,000	0.0	36	0	$4	$37	$10	6.3
Storage 2 in 228 (1)	2	LED Lamps: (1) 10W A19 Screw-In Lamp	Wall Switch	S	10	1,000		None	No	2	LED Lamps: (1) 10W A19 Screw-In Lamp	Wall Switch	10	1,000	0.0	0	0	$0	$0	$0	0.0
Storage 2 in 403	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,000	3	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	1,000	0.0	54	0	$6	$55	$15	6.3

	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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Storage 221	1	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	S	88	1,000	2	Relamp & Reballast	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,000	0.0	65	0	$8	$69	$10	7.8
Storage 221	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,000	3	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,000	0.0	73	0	$8	$73	$20	6.3
Storage 234	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,000	3	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,000	0.1	145	0	$17	$146	$40	6.3
Storage 309	3	LED Lamps: (1) 10W A19 Screw-In Lamp	Wall Switch	S	10	1,000		None	No	3	LED Lamps: (1) 10W A19 Screw-In Lamp	Wall Switch	10	1,000	0.0	0	0	$0	$0	$0	0.0
Storage 309	4	LED - Fixtures: Downlight Surface Mount	Wall Switch	S	13	1,000		None	No	4	LED - Fixtures: Downlight Surface Mount	Wall Switch	13	1,000	0.0	0	0	$0	$0	$0	0.0
Storage 316 Closet	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	1,000	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	1,000	0.0	32	0	$4	$72	$10	16.9
Storage 404	1	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	S	38	1,000		None	No	1	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	38	1,000	0.0	0	0	$0	$0	$0	0.0
Storage 405	1	LED Lamps: (1) 10W A19 Screw-In Lamp	Wall Switch	S	10	1,000		None	No	1	LED Lamps: (1) 10W A19 Screw-In Lamp	Wall Switch	10	1,000	0.0	0	0	$0	$0	$0	0.0
Storage Art corridor	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,000	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,000	0.0	36	0	$4	$37	$10	6.3
Storage Closet in 121	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,000	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,000	0.0	36	0	$4	$37	$10	6.3
Storage Closet in 127	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,000	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,000	0.0	36	0	$4	$37	$10	6.3
Storage In 126	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,000	3	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,000	0.0	73	0	$8	$73	$20	6.3
Storage in 228	2	LED Lamps: (1) 10W A19 Screw-In Lamp	Wall Switch	S	10	1,000		None	No	2	LED Lamps: (1) 10W A19 Screw-In Lamp	Wall Switch	10	1,000	0.0	0	0	$0	$0	$0	0.0
Storage in 403	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,000	3	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,000	0.0	73	0	$8	$73	$20	6.3
Storage in Classroom 334	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,000	3	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,000	0.0	73	0	$8	$73	$20	6.3
Storage in Main Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,000	3	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,000	0.0	73	0	$8	$73	$20	6.3
Storage next Auditorium	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	1,000	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	1,000	0.0	32	0	$4	$72	$10	16.9
Storage Next to 334	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,000	3	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	1,000	0.0	54	0	$6	$55	$15	6.3
Storage Room 2 in Boiler room (1)	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
Storage Room 2 in Boiler room (1)	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,000	3	Relamp	No	7	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,000	0.2	254	0	$29	$256	$70	6.3
Storage Room in 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
Storage Room in Boiler room	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,000	3	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,000	0.1	218	0	$25	$219	$60	6.3
Teachers Lounge	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
Teachers Lounge	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,610	3, 4	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,801	0.5	2,170	0	$252	$927	$215	2.8
Weight 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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Weight Room	31	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	S	38	2,610	4	None	Yes	31	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	38	1,801	0.3	1,048	0	$122	$540	$70	3.9
Wood-shop 401	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
Wood-shop 401	1	Linear Fluorescent - T12HO: 8' T12HO (110W) - 2L	Wall Switch	S	252	2,610	2	Relamp & Reballast	No	1	LED - Linear Tubes: (2) 8' Lamps	Wall Switch	72	2,610	0.1	517	0	$60	$129	$20	1.8

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?	Manufacturer	Model	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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Roof	RTU-X - Aux Gym	1	Supply Fan	5.0	86.0%	No	McQuay	RDS800CYY	W	2,760	6	No	89.5%	Yes	1	1.5	4,805	0	$568	$5,028	$900	7.3
Roof	RTU-X - Aux Gym	1	Return Fan	2.0	82.0%	No	McQuay	RDS800CYY	W	2,760	6	No	86.5%	Yes	1	0.6	2,060	0	$244	$4,182	$100	16.8
Roof	RTU-101- Media Center	1	Supply Fan	15.0	91.0%	No	AAON	RN-025-3-0	W	2,760	6	No	93.0%	Yes	1	4.4	13,220	0	$1,564	$9,177	$1,200	5.1
Roof	RTU-101- Media Center	1	Exhaust Fan	10.0	91.0%	No	AAON	RN-025-3-0	W	2,760	6	No	91.7%	Yes	1	3.0	8,601	0	$1,017	$6,697	$1,100	5.5
Roof	RTU-103 - Stage/Auditorium	1	Supply Fan	40.0	93.0%	Yes	Daikin	RPS079DLWS6	W	2,760		No	93.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	RTU-103 - Stage/Auditorium	1	Exhaust Fan	5.0	89.5%	Yes	Daikin	RPS079DLWS7	W	2,760		No	89.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	RTU-105 - Main Office	1	Supply Fan	5.0	89.5%	Yes	AAON	RN-011-3-0	W	2,760		No	89.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	RTU-105 - Main Office	1	Exhaust Fan	3.0	89.5%	Yes	AAON	RN-011-3-0	W	2,760		No	89.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	RTU-114 - Cafeteria	1	Supply Fan	6.0	91.0%	Yes	Trane	OABD108D4D1B	W	2,760		No	91.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	RTU-114 - Cafeteria	1	Exhaust Fan	5.9	91.0%	Yes	Trane	OABD108D4D1B	W	2,760		No	91.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	RTU-115 - Cafeteria	1	Supply Fan	6.0	91.0%	Yes	Trane	OABD108D4D1B	W	2,760		No	91.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	RTU-115 - Cafeteria	1	Exhaust Fan	5.9	91.0%	Yes	Trane	OABD108D4D1B	W	2,760		No	91.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	RTU-106 - Faculty Dining	1	Supply Fan	5.0	89.5%	No	Daikin	DPS006AHCW4D	W	2,760	6	No	89.5%	Yes	1	1.4	4,313	0	$510	$5,028	$900	8.1
Roof	RTU-106 - Faculty Dining	1	Exhaust Fan	1.5	84.0%	No	Daikin	DPS006AHCW4D	W	2,760	6	No	86.5%	Yes	1	0.5	1,450	0	$172	$3,887	$75	22.2
Roof	RTU-109 - 300 Science Chemistry	1	Supply Fan	2.0	84.0%	Yes	AAON	RQ-004-8-V	W	2,760		No	84.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	RTU-111 - 300 Science Classrooms	1	Supply Fan	1.0	84.0%	No	AAON	RQ-003-3-V	W	2,760	6	No	85.5%	Yes	1	0.3	948	0	$112	$3,508	$75	30.6
Roof	RTU-102 - 1st Floor Areas B & C	1	Supply Fan	30.0	93.0%	Yes	Daikin	RPS061DSWS6	W	2,760		No	93.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	RTU-102 - 1st Floor Areas B & C	1	Exhaust Fan	7.5	89.5%	Yes	Daikin	RPS061DSWS6	W	2,760		No	89.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	RTU-X2 - Aux Gym	1	Supply Fan	5.0	86.0%	No	McQuay	RDS800CYY	W	2,760	6	No	89.5%	Yes	1	1.5	4,805	0	$568	$5,028	$900	7.3
Roof	RTU-X2 - Aux Gym	1	Return Fan	2.0	82.0%	No	McQuay	RDS800CYY	W	2,760	6	No	86.5%	Yes	1	0.6	2,060	0	$244	$4,182	$100	16.8

		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?	Manufacturer	Model	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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Classrooms	Unit Ventilators - Classrooms	50	Fan Coil Unit	0.3	65.0%	No			W	2,760		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Boiler Room Foyer	Wood Shop Tools	1	Air Compressor	0.3	65.0%	No			W	600		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Storage Room 126	Wood Shop Tools	1	Air Compressor	0.3	65.0%	No			W	660		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Various Spaces	8	Exhaust Fan	0.2	65.0%	No			W	2,760		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Various Spaces	5	Exhaust Fan	0.3	65.0%	No			W	2,760		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
3	Various Spaces	35	Exhaust Fan	0.3	65.0%	No			W	2,760		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Various Spaces	3	Exhaust Fan	0.5	70.0%	No			W	2,760		No	70.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Gymnasium	6	Exhaust Fan	0.8	70.0%	No			W	2,760		No	70.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Science Classrooms	17	Exhaust Fan	0.8	70.0%	No			W	2,760		No	70.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Science Classrooms	2	Exhaust Fan	3.0	84.0%	No			W	2,760	6	No	88.5%	Yes	2	1.9	6,020	0	$712	$9,841	$400	13.3
Boiler Room	DHW Circulation Pump - (HWR-1 & 2)	2	DHW Circulation Pump	0.1	65.0%	No			W	8,760		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Boiler Room	Hydronic Heating System (HWP1 & P2)	2	Heating Hot Water Pump	25.0	93.6%	Yes			W	1,970		No	93.6%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Kitchen Hood	3	Kitchen Hood Exhaust Fan	2.0	84.0%	No			W	1,000	7	No	86.5%	Yes	3	0.1	3,064	12	$486	$12,545	$300	25.2
Boiler Room	DHW System -HWH-1	1	Combustion Air Fan	0.8	70.0%	No			W	2,745		No	70.0%	No		0.0	0	0	$0	$0	$0	0.0
Boiler Room	DHW Circulation Pump	1	DHW Circulation Pump	0.3	65.0%	No			W	8,760		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Basement Electrical Room	Sump Pump	1	Other	0.5	70.0%	No			W	400		No	70.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	RTU-104 - Guidance & Nurse Offices	1	Supply Fan	15.0	91.7%	Yes			W	2,760		No	91.7%	No		0.0	0	0	$0	$0	$0	0.0
Roof	RTU-104 - Guidance & Nurse Offices	1	Exhaust Fan	10.0	93.6%	Yes			W	2,760		No	93.6%	No		0.0	0	0	$0	$0	$0	0.0
Roof	RTU-201 - 2nd Floor Area A	1	Supply Fan	5.0	89.5%	Yes			W	2,760		No	89.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	RTU-201 - 2nd Floor Area A	1	Return Fan	3.0	89.5%	Yes			W	2,760		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?	Manufacturer	Model	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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Roof	RTU-112 - SGI (Room 302)	1	Supply Fan	1.0	84.0%	No			W	2,760	6	No	85.5%	Yes	1	0.3	948	0	$112	$3,508	$75	30.6
Roof	RTU TV Studio	1	Supply Fan	3.0	89.5%	Yes			W	2,760		No	89.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	RTU-110 - Chemistry - Room 310	1	Supply Fan	2.0	84.0%	Yes	AAON	RQ-004-8-V	W	2,760		No	84.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	RTU-108 - Industrial Tech & Offices	1	Supply Fan	2.0	84.0%	Yes	AAON	RQ-004-8-V	W	2,760		No	84.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	RTU-113 - Athletic Director	1	Supply Fan	0.5	70.0%	No	AAON	RN-002-9-V	W	2,760		No	70.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Kitchen	1	Exhaust Fan	0.8	70.0%	No			W	2,760		No	70.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	KEF-1 - Kitchen	1	Kitchen Hood Exhaust Fan	3.0	84.0%	No			W	1,000	7	No	89.5%	Yes	1	0.1	1,705	12	$325	$4,555	$200	13.4
Roof	KEF-2 - Kitchen	1	Exhaust Fan	1.0	84.0%	No			W	2,760	6	No	85.5%	Yes	1	0.3	948	0	$112	$3,508	$75	30.6
Roof	MAU-1 - Kitchen	1	Supply Fan	7.5	89.9%	Yes	Captive Air	CASRTU3-1	W	2,760		No	89.9%	No		0.0	0	0	$0	$0	$0	0.0
Various Spaces	Cabinet Heaters	24	Fan Coil Unit	0.3	65.0%	No			W	2,760		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
First Floor	AH-2 & 3 - CU-2 & 3	2	Supply Fan	0.5	70.0%	No			W	2,760		No	70.0%	No		0.0	0	0	$0	$0	$0	0.0
Kitchen	HV-1 & HV-X - Kitchen Serving & Prep	2	Supply Fan	0.8	70.0%	No			W	2,760		No	70.0%	No		0.0	0	0	$0	$0	$0	0.0
Locker Rooms	HV-3 & 4 Girls Team Room & Locker Room	2	Supply Fan	1.0	84.0%	No			W	2,760	6	No	85.5%	Yes	2	0.6	1,896	0	$224	$7,015	$150	30.6
Weigh Room	HV-10 - Weight Room	1	Supply Fan	1.0	84.0%	No			W	2,760	6	No	85.5%	Yes	1	0.3	948	0	$112	$3,508	$75	30.6
Gymnasium	HV-8, 9, X - Gymnasium	3	Supply Fan	3.0	86.0%	No			W	2,760	6	No	89.5%	Yes	3	2.7	8,649	0	$1,023	$13,664	$600	12.8
Roof	Split Systems	30	Supply Fan	1.0	85.0%	No			W	2,760		No	85.0%	No		0.0	0	0	$0	$0	$0	0.0

Packaged 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)	Cooling Mode Efficiency (SEER/IEER/ EER)	Heating Mode Efficiency	Manufacturer	Model	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/IEER/ EER)	Heating Mode Efficiency	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Roof	CU-2 - Science Classroom	1	Split-System	5.00		13.00		Daikin	DX13SA060AE	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	CU-3 - Science Classroom	1	Split-System	10.00		11.20		Daikin	DX11TA1203AA	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	Science Classrooms	8	Split-System	4.00		10.30		TempStar	CAC048HAA	B	8	Yes	8	Split-System	4.00		16.00		6.6	6,189	0	$732	$59,319	$3,360	76.4
Roof	Science Classroom	3	Split-System	4.00		10.50		TempStar	CA5548VHD2	B	8	Yes	3	Split-System	4.00		16.00		2.4	2,197	0	$260	$22,245	$1,260	80.8
Roof	Science Classroom	2	Split-System	4.00		11.00		American Standard	2A7C0048A300	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	Office	1	Split-System	1.00		16.00		Misubishi	PUY-A12N	W		No							0.0	0	0	$0	$0	$0	0.0
Court Yard	Office	1	Split-System Air-Source HP	2.00	25.00	18.00	9.8 HSPF	Misubishi		W		No							0.0	0	0	$0	$0	$0	0.0
Roof	RTU-101- Media Center	1	Package Unit	25.00	348.75	12.00		AAON	RN-025-3-0	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	RTU-103 - Stage/Auditorium	1	Package Unit	79.00	1,102.05	12.00		Daikin	RPS079DLWS7	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	RTU-105 - Main Office	1	Package Unit	11.00	153.45	12.00		AAON	RN-011-3-0	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	RTU-114 - Cafeteria	1	Package Unit	9.00	125.55	12.00		Trane	OABD108D4D1B	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	RTU-115 - Cafeteria	1	Package Unit	9.00	125.55	12.00		Trane	OABD108D4D1B	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	RTU-106 - Faculty Dining	1	Package Unit	6.00	83.70	12.00		Daikin	DPS006AHCW	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	RTU-109 - 300 Science Classrooms	1	Package Unit	4.00	55.80	12.00		AAON	RQ-004-8-V	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	RTU-102 - 1st Floor Areas B & C	1	Package Unit	61.00	850.95	12.00		Daikin	RPS061DSWS6	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	RTU-111 - 300 Science Classrooms	1	Package Unit	3.00	41.85	12.00		AAON	RQ-003-3-V	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	CU-2A - Classrooms - Backup	1	Split-System Air-Source HP	10.00	135.00	12.50	2.65 COP	Daikin	REYQ120XAYDB	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	CU-2B - Classrooms - Main	1	Split-System Air-Source HP	12.00	162.00	14.00	2.55 COP	Daikin	REYQ144XAYDB	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	CU-1C - Classroom 246	1	Split-System Air-Source HP	10.00	135.00	12.50	2.65 COP	Daikin	REYQ120XAYDB	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	CU-5A - Classroom - Backup	1	Split-System Air-Source HP	14.00	188.00	12.40	2.65 COP	Daikin	REYQ168XAYDB	W		No							0.0	0	0	$0	$0	$0	0.0

		Existing Conditions									Proposed Conditions								Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (MBh)	Cooling Mode Efficiency (SEER/IEER/ EER)	Heating Mode Efficiency	Manufacturer	Model	Remaining Useful Life	ECM #	Install High Efficiency System?	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (kBtu/hr)	Cooling Mode Efficiency (SEER/EER)	Heating Mode Efficiency	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Roof	CU-5B- Classroom - Main	1	Split-System Air-Source HP	12.00	162.00	14.00	2.55 COP	Daikin	REYQ144XAYDB	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	CU-1A - Classroom - Backup	1	Split-System Air-Source HP	12.00	162.00	14.00	2.55 COP	Daikin	REYQ144XAYDB	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	CU-1B- Classroom - Main	1	Split-System Air-Source HP	10.00	135.00	12.50	2.65 COP	Daikin	REYQ120XAYDB	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	CU-3A - Classroom - Backup	1	Split-System Air-Source HP	12.00	162.00	14.00	2.55 COP	Daikin	REYQ144XAYDB	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	CU-3B- Classroom - Main	1	Split-System Air-Source HP	12.00	162.00	14.00	2.55 COP	Daikin	REYQ144XAYDB	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	CU-4A - Classroom - Backup	1	Split-System Air-Source HP	12.00	162.00	14.00	2.55 COP	Daikin	REYQ144XAYDB	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	CU-4B- Classroom - Main	1	Split-System Air-Source HP	10.00	135.00	12.50	2.65 COP	Daikin	REYQ120XAYDB	W		No							0.0	0	0	$0	$0	$0	0.0
Classroom 105	Classroom 105	1	Through-The-Wall AC	2.00		10.50				B	8	Yes	1	Through-The-Wall AC	2.00		12.00		0.1	133	0	$16	$1,582	$0	100.5
Classrooms	Classrooms	3	Window AC	2.00		10.10				B	8	Yes	3	Window AC	2.00		12.00		0.6	526	0	$62	$4,746	$0	76.3
Classrooms	Classrooms	2	Window AC	1.25		10.10				W		No							0.0	0	0	$0	$0	$0	0.0
Classroom	Classroom	2	Window AC	2.10		9.40				B	8	Yes	2	Window AC	2.10		12.00		0.6	541	0	$64	$3,344	$0	52.2
Roof	RTU-104 - Guidance & Nurse Offices	1	Package Unit	25.00		12.00		AAON	RN-025-3-0	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	High School	1	Split-System Air-Source HP	3.00	34.00	16.00	9.5 HSPF	Fijitsu	AOU36RLXB	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	RTU-201 - 2nd Floor Area A	1	Package Unit	10.00		12.00		Daikin	DPS010AHM	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	High School	1	Split-System	1.00		10.30		Misubishi	PU12EK	B	8	Yes	1	Split-System	1.00		16.00		0.2	193	0	$23	$3,428	$105	145.2
Roof	RTU-112 - SGI (Room 302)	1	Package Unit	3.00		12.00		AAON	RQ-003-3-0	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	Science Classroom	1	Split-System	4.00		11.00		Trane	2TTA03048	B	8	Yes	1	Split-System	4.00		16.00		0.7	635	0	$75	$7,415	$420	93.1
Roof	RTU TV Studio	1	Package Unit	7.50		11.00		York	J07ZHC00S4	B	8	Yes	1	Package Unit	7.50		14.00		0.9	817	0	$97	$9,791	$593	95.2
Roof	RTU-110 - Chemistry - Room 310	1	Package Unit	4.00		12.00		AAON	RQ-004-8-V	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	RTU-108 - Industrial Tech & Offices	1	Package Unit	6.00		12.00		AAON	RN-006-3-0	W		No							0.0	0	0	$0	$0	$0	0.0

		Existing Conditions									Proposed Conditions								Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (MBh)	Cooling Mode Efficiency (SEER/IEER/ EER)	Heating Mode Efficiency	Manufacturer	Model	Remaining Useful Life	ECM #	Install High Efficiency System?	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (kBtu/hr)	Cooling Mode Efficiency (SEER/EER)	Heating Mode Efficiency	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Roof	RTU-113 - Athletic Director	1	Package Unit	2.00		12.00		AAON	RN-002-9-V	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	MAU-1 - Kitchen	1	Package Unit	18.00	320.00	12.00	0.8 AFUE	Captive Air	CASRTU3-1	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	High School	1	Split-System Air-Source HP	3.00	40.00	16.00	9.5 HSPF	Daikin	RZQ36PVJU8	W		No							0.0	0	0	$0	$0	$0	0.0

Space Heating Boiler 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)	Manufacturer	Model	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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Boiler Room	Hydronic Heating System	4	Condensing Hot Water Boiler	2,790	AERCO	BMK-3000	W		No						0.0	0	0	$0	$0	$0	0.0

Demand Control Ventilation Recommendations

		Recommendation Inputs					Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Affected	ECM #	Number of Zones	Cooling Capacity of Controlled System (Tons)	Electric Heating Capacity of Controlled System (kBtu/hr)	Output Heating Capacity of Controlled System (MBh)	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Roof	RTU-101- Media Center	9	3.00	25.00	0.00	558.00	0.0	583	21	$292	$4,078	$0	13.9
Roof	RTU-103 - Stage/Auditorium	9	3.00	79.00	0.00	976.50	0.0	1,841	37	$609	$4,078	$0	6.7
Roof	RTU-114 - Cafeteria	9	2.00	9.00	0.00	279.00	0.0	210	11	$137	$2,719	$0	19.9
Roof	RTU-115 - Cafeteria	9	2.00	9.00	0.00	279.00	0.0	210	11	$137	$2,719	$0	19.9

DHW Inventory & Recommendations

		Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Manufacturer	Model	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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Boiler Room	Domestic Hot Water System -HWH-1	1	Storage Tank Water Heater (> 50 Gal)	Power VT	1400 250A-PV	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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen	10	3	Faucet Aerator (Kitchen)	2.50	1.50	0.0	0	2	$18	$22	$6	0.9
Restrooms	10	49	Faucet Aerator (Lavatory)	2.20	0.50	0.0	0	46	$488	$351	$176	0.4

Walk-In Cooler/Freezer Inventory & Recommendations

	Existing Conditions				Proposed Conditions				Energy Impact & Financial Analysis						
Location	Cooler/ Freezer Quantity	Case Type/Temperature	Manufacturer	Model	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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen	1	Cooler (35F to 55F)	Bohn	ADT065AJ	12, 13	Yes	No	Yes	0.0	560	0	$66	$1,977	$115	28.1
Kitchen	1	Cooler (35F to 55F)	Bohn		12, 13	Yes	No	Yes	0.1	1,004	0	$119	$2,281	$155	17.9
Kitchen	1	Low Temp Freezer (-35F to -5F)	Bohn		12, 13	Yes	Yes	Yes	0.1	2,401	0	$284	$2,799	$205	9.1

Commercial Refrigerator/Freezer Inventory & Recommendations

	Existing Conditions					Proposed Conditions		Energy Impact & Financial Analysis						
Location	Quantity	Refrigerator/ Freezer Type	Manufacturer	Model	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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Classroom 119	2	Stand-Up Refrigerator, Solid Door (31 - 50 cu. ft.)	Continental	2R	Yes		No	0.0	0	0	$0	$0	$0	0.0
Classroom 119	1	Stand-Up Refrigerator, Glass Door (31 - 50 cu. ft.)	Continental	2F	Yes		No	0.0	0	0	$0	$0	$0	0.0
Various Spaces	4	Stand-Up Refrigerator, Glass Door (16 - 30 cu. ft.)	Various Makers	Various Models	No		No	0.0	0	0	$0	$0	$0	0.0
Aux Gym Café	1	Stand-Up Refrigerator, Solid Door (≤15 cu. ft.)			No		No	0.0	0	0	$0	$0	$0	0.0
Aux Gym Café	1	Stand-Up Refrigerator, Glass Door (31 - 50 cu. ft.)	TRUE	GDM-37	No		No	0.0	0	0	$0	$0	$0	0.0
Kitchen Area 1	3	Stand-Up Refrigerator, Solid Door (16 - 30 cu. ft.)	Continental/Hoshizaki	1RT/CR1S-HS	No		No	0.0	0	0	$0	$0	$0	0.0
Kitchen Area 1	1	Stand-Up Refrigerator, Solid Door (16 - 30 cu. ft.)	Turbo Air	M3RF19-2-N	Yes		No	0.0	0	0	$0	$0	$0	0.0
Kitchen Area 1	1	Stand-Up Refrigerator, Solid Door (16 - 30 cu. ft.)	Continental	1RF	No		No	0.0	0	0	$0	$0	$0	0.0
Kitchen Area 1	1	Stand-Up Refrigerator, Solid Door (31 - 50 cu. ft.)	REFCON		No		No	0.0	0	0	$0	$0	$0	0.0
Various Spaces	3	Refrigerator Chest			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	Manufacturer	Model	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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen Area 2	1	Self-Contained Unit (≥175 lbs/day), Batch	Blueair	BLUI-250A	Yes		No	0.0	0	0	$0	$0	$0	0.0

Cooking Equipment Inventory & Recommendations

	Existing Conditions					Proposed Conditions		Energy Impact & Financial Analysis						
Location	Quantity	Equipment Type	Manufacturer	Model	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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Classroom 119	5	Electric Combination Oven/Steam Cooker (<15 Pans)	BlueStar	SGV68U53UC	Yes		No	0.0	0	0	$0	$0	$0	0.0
Kitchen Area 1	1	Gas Griddle (3 Feet Width)	Garland		No	11	Yes	0.0	0	5	$54	$1,764	$125	30.1
Kitchen Area 1	1	Insulated Food Holding Cabinet (Full Size)	Metro	C5HLE008081	Yes		No	0.0	0	0	$0	$0	$0	0.0
Kitchen Area 1	1	Electric Convection Oven (Half Size)			Yes		No	0.0	0	0	$0	$0	$0	0.0
Kitchen Area 1	1	Gas Combination Oven/Steam Cooker (<15 Pans)	Cleveland	24CG10.2	Yes		No	0.0	0	0	$0	$0	$0	0.0
Kitchen Area 1	1	Gas Combination Oven/Steam Cooker (<15 Pans)	Garland		Yes		No	0.0	0	0	$0	$0	$0	0.0
Kitchen Area 1	1	Gas Convection Oven (Full Size)	Blodgett		Yes		No	0.0	0	0	$0	$0	$0	0.0
Kitchen Area 1	1	Gas Convection Oven (Full Size)	Garland	ZEPHAIRE	Yes		No	0.0	0	0	$0	$0	$0	0.0
Kitchen Area 1	1	Insulated Food Holding Cabinet (Full Size)	Alto-Shaam	1000-UP	Yes		No	0.0	0	0	$0	$0	$0	0.0

Plug Load Inventory

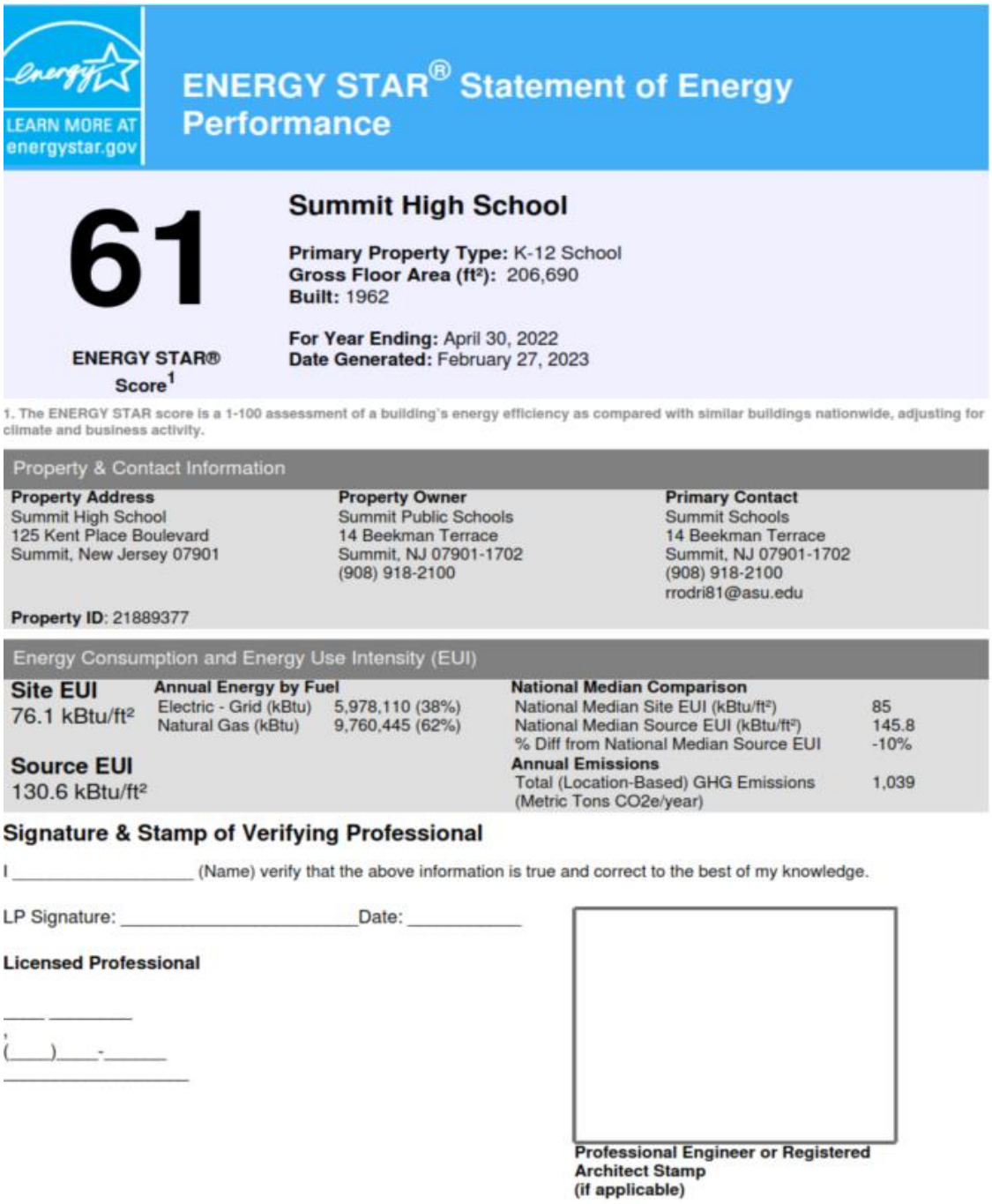
	Existing Conditions					
Location	Quantity	Equipment Description	Energy Rate (W)	ENERGY STAR Qualified?	Manufacturer	Model
Summit High School	28	Coffee Machine	800	No		
Summit High School	2	Dehumidifier	240	No		
Summit High School	246	Desktop	270	No		
Summit High School	7	Dishwasher (Undercounter)	175	No		
Summit High School	2	Electric Space Heater	800	No		
Summit High School	44	Fan (Large)	600	No		
Summit High School	1	Kiln	9,984	No		
Summit High School	34	Microwave	1,000	No		
Summit High School	44	Various Misc Plug Load	1,000	No		
Summit High School	4	Paper Shredder	125	No		
Summit High School	39	Printer (Medium/Small)	144	No		
Summit High School	12	Printer/Copier (Large)	600	No		
Summit High School	70	Projector	244	No		
Summit High School	1	Refrigerator (Large)	650	No		
Summit High School	31	Refrigerator (Mini)	212	No		
Summit High School	4	Refrigerator (Residential)	440	No		
Summit High School	65	Speakers (Large)	250	No		
Summit High School	15	Television	144	No		
Summit High School	3	Toaster	800	No		
Summit High School	2	Water Cooler	192	No		
Summit High School	1	Server	3,000	No		
Summit High School	2	Electric Wheel Chair Lift	2,000	No		
Summit High School	2	Kiln	30,000	No		

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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Corridor Science	2	Glass Fronted Refrigerated	14	Yes	0.3	2,418	0	$286	$460	$100	1.3
Teachers Lounge	1	Non-Refrigerated	14	Yes	0.0	343	0	$41	$230	$0	5.7

APPENDIX B: ENERGY STAR STATEMENT OF ENERGY PERFORMANCE

Energy use intensity (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.



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ENERGY STAR® Statement of Energy Performance

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ENERGY STAR® Score[1]

Summit High School

Primary Property Type: K-12 School
Gross Floor Area (ft²): 206,690
Built: 1962

For Year Ending: April 30, 2022
Date Generated: February 27, 2023

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
Summit High School 125 Kent Place Boulevard Summit, New Jersey 07901	Summit Public Schools 14 Beekman Terrace Summit, NJ 07901-1702 (908) 918-2100	Summit Schools 14 Beekman Terrace Summit, NJ 07901-1702 (908) 918-2100 rrodri81@asu.edu

Property ID: 21889377

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
76.1 kBtu/ft²

Source EUI
130.6 kBtu/ft²

Annual Energy by Fuel		
Electric - Grid (kBtu)	5,978,110	(38%)
Natural Gas (kBtu)	9,760,445	(62%)

National Median Comparison	
National Median Site EUI (kBtu/ft²)	85
National Median Source EUI (kBtu/ft²)	145.8
% Diff from National Median Source EUI	-10%
Annual Emissions	
Total (Location-Based) GHG Emissions (Metric Tons CO2e/year)	1,039

Signature & Stamp of Verifying Professional

I _____ (Name) verify that the above information is true and correct to the best of my knowledge.

LP Signature: _____ Date: _____

Licensed Professional

____ _____
,
(___)___-_____
_____

Professional Engineer or Registered Architect 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 gas* 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 (II)	*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 $1/8^{th}$ 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.