Local Government Energy Audit Report

Rumson Fairhaven High School

April 26, 2023

Prepared for:

Rumson Fairhaven Regional HS
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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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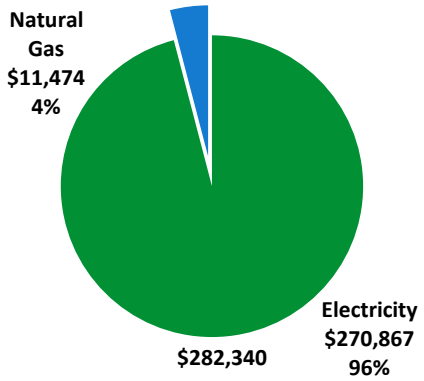
1 EXECUTIVE SUMMARY

The New Jersey Board of Public Utilities (NJBPU) has sponsored this Local Government Energy Audit (LGEA) report for Rumson Fairhaven 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: $282,340 Electricity: 2,206,520 kWh Natural Gas: 6,434 Therms	
ENERGY STAR® Benchmarking Score	67 *(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.

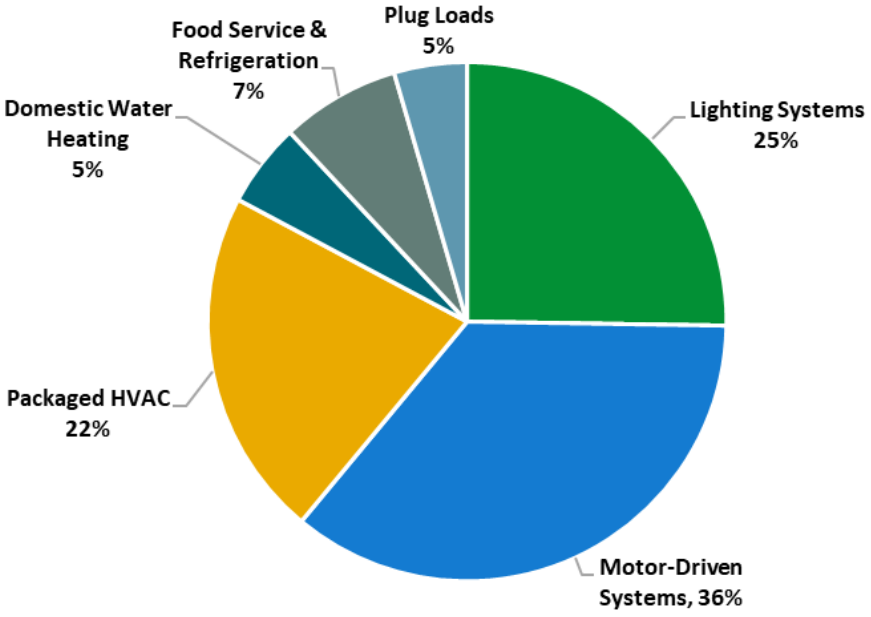


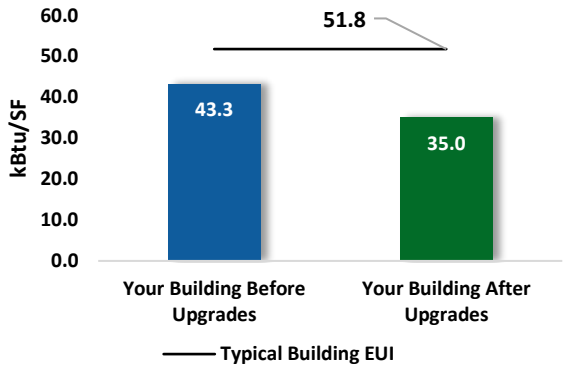
Figure 1 - Energy Use by System

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.

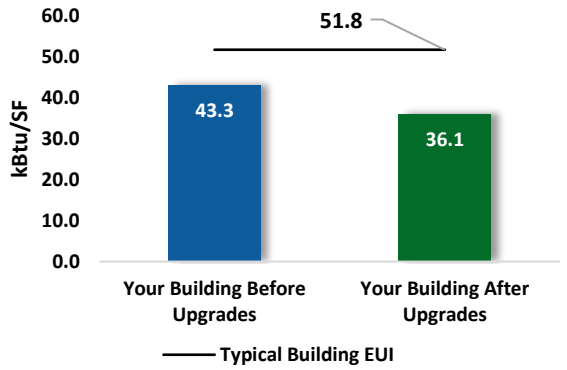
Scenario 1: Full Package (All Evaluated Measures)

Installation Cost	$1,173,170
Potential Rebates & Incentives[1]	$66,590
Annual Cost Savings	$54,792
Annual Energy Savings	Electricity: 434,898 kWh Natural Gas: 788 Therms
Greenhouse Gas Emission Savings	224 Tons
Simple Payback	20.2 Years
Site Energy Savings (All Utilities)	19%



Scenario 2: Cost Effective Package[2]

Installation Cost	$197,788
Potential Rebates & Incentives	$29,363
Annual Cost Savings	$47,352
Annual Energy Savings	Electricity: 377,015 kWh Natural Gas: 600 Therms
Greenhouse Gas Emission Savings	193 Tons
Simple Payback	3.6 Years
Site Energy Savings (all utilities)	16%



On-site Generation Potential

Photovoltaic	See Additional Scope
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			**236,184**	**38.0**	**0**	**$28,993**	**$60,483**	**$14,760**	**$45,723**	**1.6**	**237,835**
ECM 1	Install LED Fixtures	Yes	5,256	0.0	0	$645	$3,429	$450	$2,979	4.6	5,293
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	2,266	0.4	0	$278	$788	$106	$682	2.5	2,282
ECM 3	Retrofit Fixtures with LED Lamps	Yes	228,662	37.5	0	$28,070	$56,265	$14,204	$42,061	1.5	230,261
Lighting Control Measures			**2,738**	**0.5**	**0**	**$336**	**$1,890**	**$245**	**$1,645**	**4.9**	**2,757**
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	2,738	0.5	0	$336	$1,890	$245	$1,645	4.9	2,757
Variable Frequency Drive (VFD) Measures			**99,678**	**31.7**	**0**	**$12,236**	**$124,845**	**$13,300**	**$111,545**	**9.1**	**100,375**
ECM 5	Install VFDs on Constant Volume (CV) Fans	Yes	99,678	31.7	0	$12,236	$124,845	$13,300	$111,545	9.1	100,375
Unitary HVAC Measures			**57,883**	**63.6**	**0**	**$7,106**	**$966,092**	**$36,727**	**$929,365**	**130.8**	**58,288**
ECM 6	Install High Efficiency Heat Pumps	No	57,883	63.6	0	$7,106	$966,092	$36,727	$929,365	130.8	58,288
HVAC System Improvements			**0**	**0.0**	**22**	**$390**	**$2,824**	**$424**	**$2,400**	**6.2**	**2,558**
ECM 7	Install Pipe Insulation	Yes	0	0.0	22	$390	$2,824	$424	$2,400	6.2	2,558
Domestic Water Heating Upgrade			**9,036**	**0.0**	**38**	**$1,790**	**$767**	**$379**	**$388**	**0.2**	**13,570**
ECM 8	Install Low-Flow DHW Devices	Yes	9,036	0.0	38	$1,790	$767	$379	$388	0.2	13,570
Food Service & Refrigeration Measures			**4,760**	**0.3**	**19**	**$919**	**$12,319**	**$755**	**$11,564**	**12.6**	**6,994**
ECM 9	Food Service Equipment Replacement	No	0	0.0	19	$335	$9,290	$500	$8,790	26.2	2,200
ECM 10	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	983	0.1	0	$121	$607	$80	$527	4.4	990
ECM 11	Refrigeration Controls	Yes	2,165	0.0	0	$266	$2,193	$125	$2,068	7.8	2,180
ECM 12	Vending Machine Control	Yes	1,612	0.2	0	$198	$230	$50	$180	0.9	1,623
Custom Measures			**24,619**	**0.0**	**0**	**$3,022**	**$3,950**	**$0**	**$3,950**	**1.3**	**24,791**
ECM 13	Replace Electric Water Heater with Heat Pump Water Heater	Yes	24,619	0.0	0	$3,022	$3,950	$0	$3,950	1.3	24,791
TOTALS (COST EFFECTIVE MEASURES)			**377,015**	**70.5**	**60**	**$47,352**	**$197,788**	**$29,363**	**$168,425**	**3.6**	**386,680**
TOTALS (ALL MEASURES)			**434,898**	**134.1**	**79**	**$54,792**	**$1,173,170**	**$66,590**	**$1,106,580**	**20.2**	**447,168**

* - 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 Rumson Fairhaven 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

The Rumson-Fair Haven Regional High School located at 74 Ridge Road is a regional, 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 180,000 square foot building originally built in 1936 and expanded in 1995 to accommodate additional spaces. Spaces include classrooms, administrative offices, gymnasiums, locker rooms, training rooms, auditorium, library, kitchen, cafeteria, conference rooms, corridors, lobbies, restrooms, storage, and mechanical spaces. Apart from the high school building, the facility also has a 7,500 square foot Pole Barn and a 1,375 square foot Concession Stand.

Facility lighting systems consist of a mix of linear fluorescent fixtures, LED lighting and compact fluorescent lamps (CFLs). The school building is 100% heated and cooled by geothermal water source heat pumps and rooftop units (RTUs).

Facility concerns include water source heat pumps that are operating near the end of their useful service life.

Recent improvements and Facility Concerns

Over the last two years, the facility has completed a partial interior lighting retrofit and replaced the library water source heat pumps with new RTUs and air source heat pumps.

2.2 Building Occupancy

The school operates on a 12-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 1500 students and 150 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
Rumson Fairhaven Regional HS - General Operating Hours	Weekday	6:00 AM - 11:00 PM
	Saturday	7:00 AM - 2:00 PM
Rumson Fairhaven Regional HS - General Classes Hours	Weekday	7:45 AM - 2:40 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 areas and pitched roof sections supported by steel trusses. The original building has a pitched roof covered with slate shingles that are in aging fair condition. The addition has a flat white rubber roof and pitched asphalt roof sections with shingles that are in good condition. Some areas of the flat roof have poor water drainage.

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

School Building Walls

School Building flat & pitched roof Sections.

Concession Stand & Pole Barn

Windows – School Building

Main entrance & Exterior doors – School Building

2.4 Lighting Systems

The primary interior lighting systems use either 32-Watt linear fluorescent T8 lamps or LED fixtures and lamps. Additionally, there are several compact fluorescent lamps (CFL) linear T5 lamps and some incandescent and T12 lamps. Typically, T5 and T8 fluorescent lamps use electronic ballasts and T12 fluorescent lamps use magnetic ballasts. Fixture types include 2- 3- 4 or 6-lamp, 2- or 4-foot-long troffer, recessed, surface mounted fixtures and 2-foot fixtures with U-bend linear tube lamps.

Lighting in many spaces including hallways, stairs, lobbies, entrances, upper library, some offices, and classrooms have been retrofit with LED sources. The auditorium, gymnasium and fitness room are lit with high output linear T5 while a small number of linear T12 lamps provide illumination for custodial closets and storage areas. Compact fluorescent lamps (CFLs) are used in the cafeteria, auditorium lobby and a very few additional fixtures. Incandescent lighting is limited, mainly in closets and for the kitchen hood area. The remaining spaces are lit with linear fluorescent T8 fixtures. All exit signs are LED.

Most fixtures are in fair condition. Interior lighting levels were generally sufficient. Most lighting fixtures in the classrooms and offices are controlled by occupancy sensors while some are controlled by manual wall switch. The lights in the hallway and lobbies are controlled by the building automation system (BAS) system.

The Concession Stand and Pole Barn are mostly illuminated with 32-Watt linear fluorescent T8 lamps.

Exterior fixtures include LED wall packs, pole lighting fixtures with LED retrofit “corn” bulbs, compact fluorescent lamps (CFLs), and canopy fixtures with fluorescent lamps. Fixtures are controlled by timers.

Linear Fluorescent T8 & T5HO

2-Foot Long T8, U-Shape Fluorescent & LED Fixtures

LED & Recessed Can CFL Fixtures

Wall Mounted Occupancy Sensors & Switches.



Pole Fixture w/ LED Corn Bulb & LED pole fixtures



LED Wall Mounted Fixtures

Unitary Electric HVAC Equipment

The IT closet is cooled by a 1.5 Ton ductless mini split air conditioner (AC) that is in good condition. The 3rd floor elevator room, media center, and girl locker room office are heated and cooled using air source heat pumps. These vary from 11 MBh to 161 MBh in heating capacity cooling capacities ranging from 0.75 Tons to 12 Tons. The elevator room unit appears in fair condition and has been evaluated for replacement. The units serving the media center were recently installed. The unitary electric HVAC equipment is controlled by programmable thermostats.

Media Center Heat Pumps & Programmable Thermostat

Unitary Heating Equipment

The high school's main entrance and stairwells, the Pole Barn, the Concession Stand bathroom and a handful of other restrooms are heated by electric resistance heaters that range in capacity between 3 kW and 5 kW. The units are in good condition. Equipment is controlled by a manual dial thermostat.

Electric resistance heaters

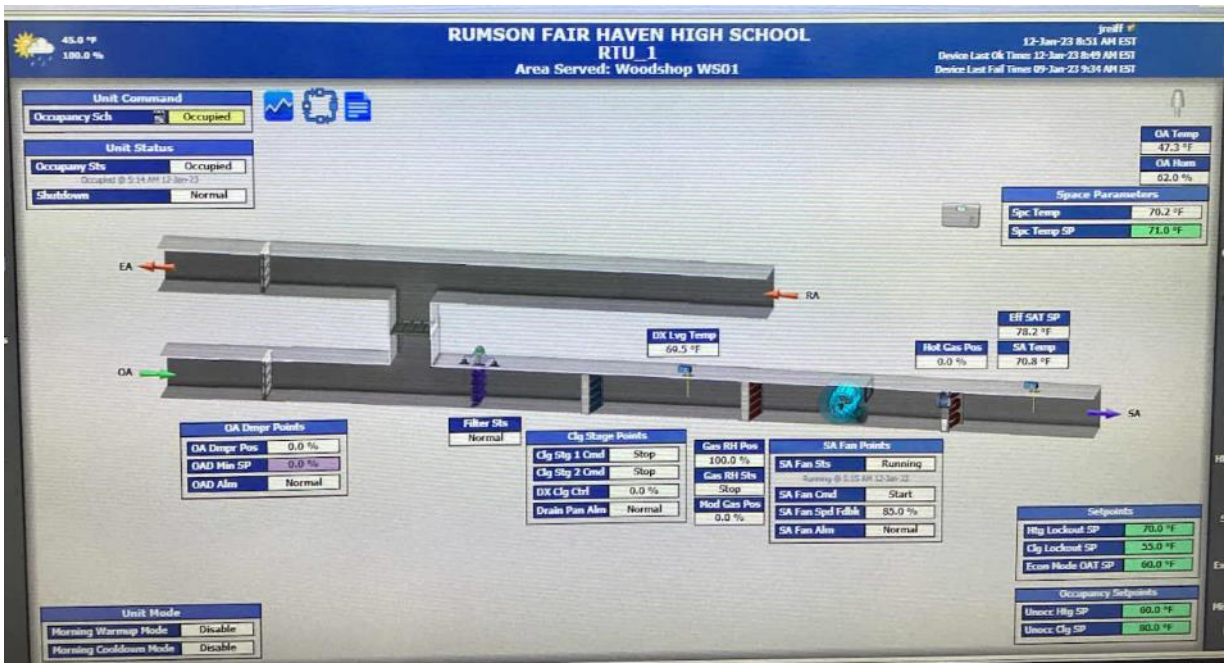
Packaged Units

Heating and cooling for larger occupied areas including media center, woodshop, laboratories, and room 606 are provided by six roof mounted packaged units (RTUs) connected to ducted distribution systems. They are furnished with direct expansion coils for cooling and equipped with gas-fired furnace sections for heating. Units are also equipped with economizers to regulate outside air intake. The units vary between 4 tons and 10 tons in cooling capacity and have heating capacities ranging between 49 MBh and 320 MBh. Some of the fans are equipped with variable frequency drives (VFDs).

They are in good working condition and controlled by the BAS.

Unit ID	Area Served	Cooling Capacity (tons)	Supply Fan(hp)	Exhaust Fan (hp)	Condition
RTU-606	Room 606	5	3.0		Good
MUA-1	Lab 601,608 & 609	10	5.0		Good
RTU-210	Media Center	10	3.0		Good
DOAS-1	Media Center	4	2.0	1.0	Good
RTU-1	Woodshop	10	3.0		Good
RTU-420	Girl's Locker Room	9	2.0		Good

Package roof top units (RTUs)



BAS Screenshot - RTU-1

Building General Exhaust Air Systems

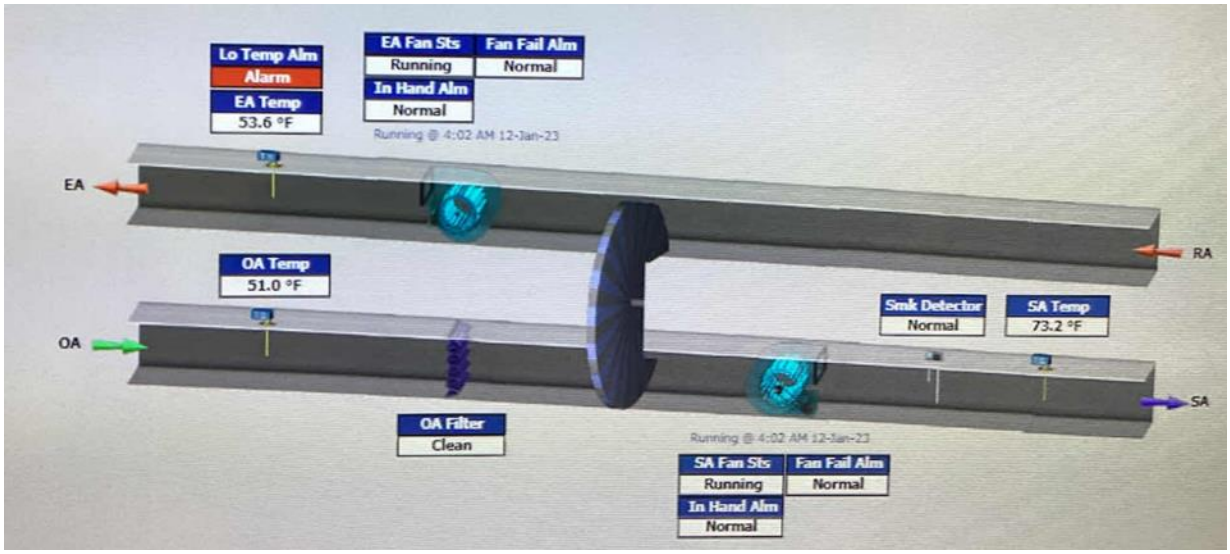
The restrooms are exhausted by motor driven roof mounted exhaust fans. Some classrooms including science rooms have specialty exhaust and fume-hood exhaust fans. There are also general exhaust fans throughout the building which exhaust corridors and miscellaneous rooms. Equipment is in good condition and is controlled by manual switches.

General exhaust fan & Classroom Fume Hood (EF-1).

Heat Recovery Units (HRUs)

The high school building uses 14 SEMCO series (FV) heat recovery units or energy recovery ventilators, labeled as “HRU”. These outdoor air pre-conditioners are designed to reduce the energy required to heat or cool outdoor air. They are equipped with varying sizes of constant speed supply and exhaust fans. The units are 19 years old and appear in fair condition. They are controlled by the BAS.

Typical HRU - HRU-9



BAS Screenshot - HRU-14

Location	Unit ID	Supply Fan (hp)	Exhaust Fan (hp)
Roof	HRU-1	1.5	1.5
Roof	HRU-2	1.5	1.5
Roof	HRU-3	0.8	0.8
Roof	HRU-4	5.0	5.0
Roof	HRU-5	5.0	7.5
Roof	HRU-6	0.8	0.8
Roof	HRU-7	5.0	5.0
Roof	HRU-8	10	10
Roof	HRU-9	7.5	7.5
Roof	HRU-10	1.5	1.5
Roof	HRU-11	3.0	3.0
Roof	HRU-12	3.0	3.0
Roof	HRU-13	5.0	5.0
Roof	HRU-14	1.5	1.5

2.6 Geothermal Water Source Heat Pumps

The building is mainly heated and cooled by 132 geothermal water source heat pumps (WSHPs) that use the relatively constant temperature of the earth as the heat exchanger medium as opposed to using the outside air temperature differential, like an air source heat pump.

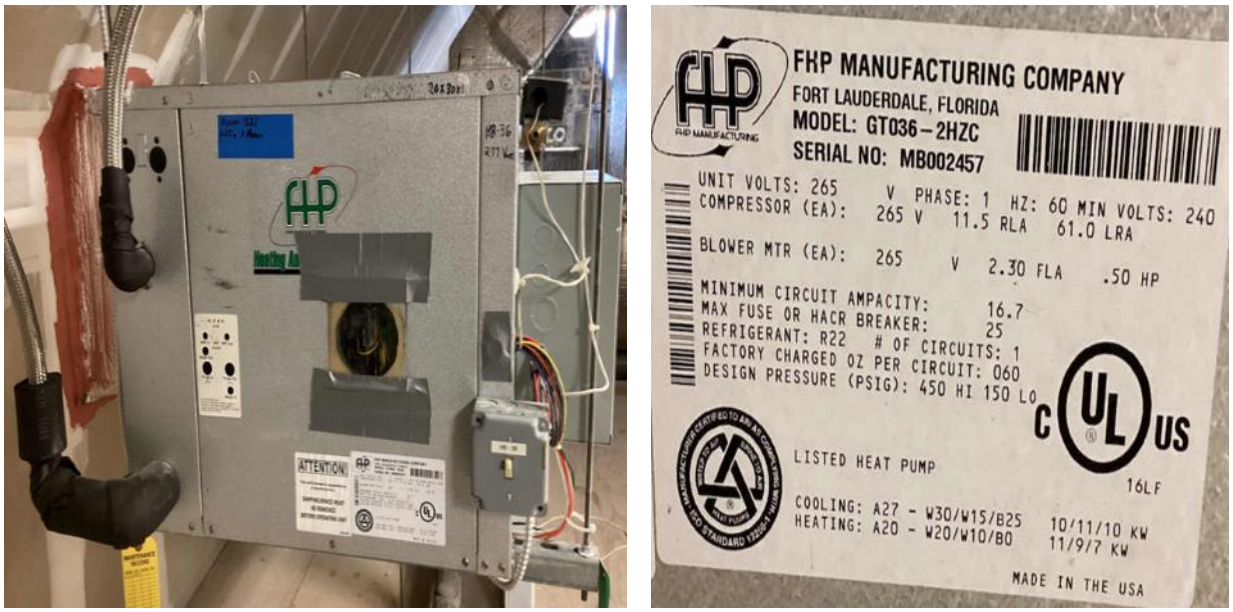
There are 117 FHP WSHPs equipped with compressors that use R22 refrigerant, and 15 Geo Excel WSHPs that use R410A refrigerant. The WSHPs vary in cooling capacities between 1.5 to 10 Tons and heating capacities between 13 to 174 MBh. They are equipped with blower motors that vary in size between 0.1 to 5 hp. The units are 19 years old and have reached the end of their useful life. They have been evaluated for replacement. The WSHPs are controlled by the BAS.

During the cooling mode, the WSHP unit's refrigerant-to-water heat exchanger acts as a condenser and its refrigerant-to-air coil acts as an evaporator. The reversing valve is energized for cooling.

During the heating mode, the WSHP unit's refrigerant-to-water heat exchanger acts as an evaporator and its refrigerant to air coil acts as a condenser. The reversing valve is deenergized for heating.

Condenser water from a well is circulated to WSHP units by two 100 hp variable flow base mounted pumps (P1A & P2B) located in pump room 417. The pumps are configured in an automated lead-lag control scheme.

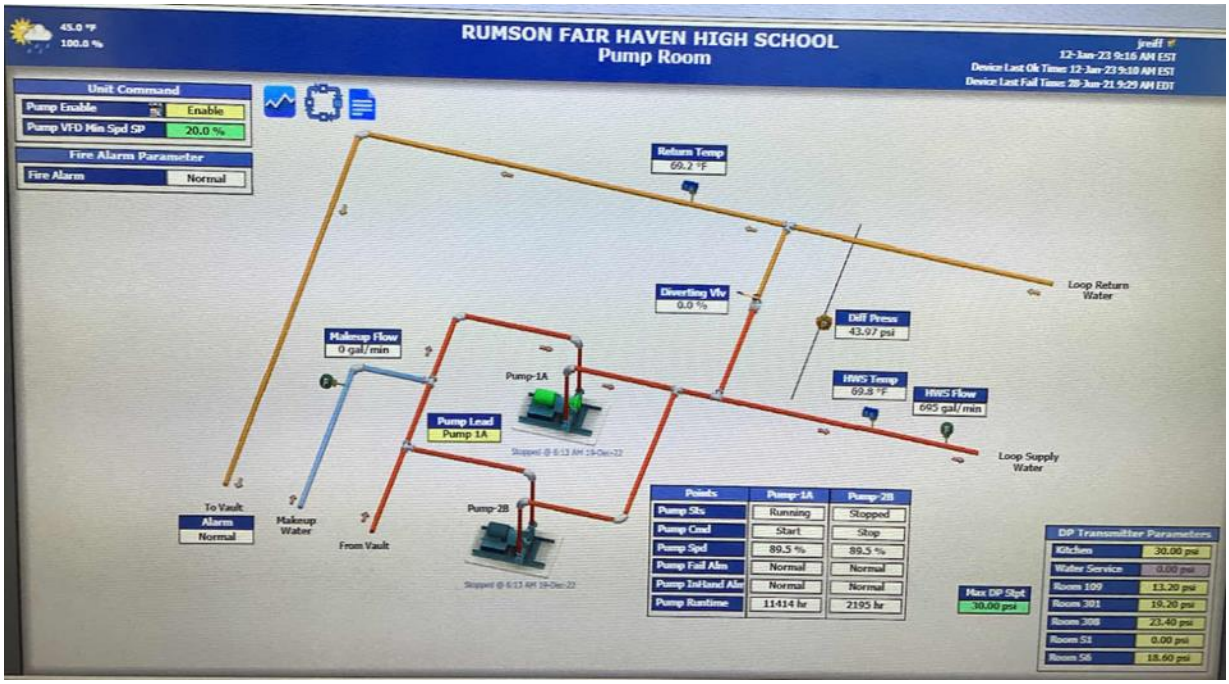
At the time of the audit, the building condenser water loop supply and return temperature were respectively 69.8°F and 69.2°F with an outside air temperature of 45°F. The space cooling and heating temperature setpoints are 72°F and 75°F respectively when occupied, and 64°F and 78°F respectively when unoccupied.



Typical FHP WSHP

BAS Screenshot - Typical WSHP

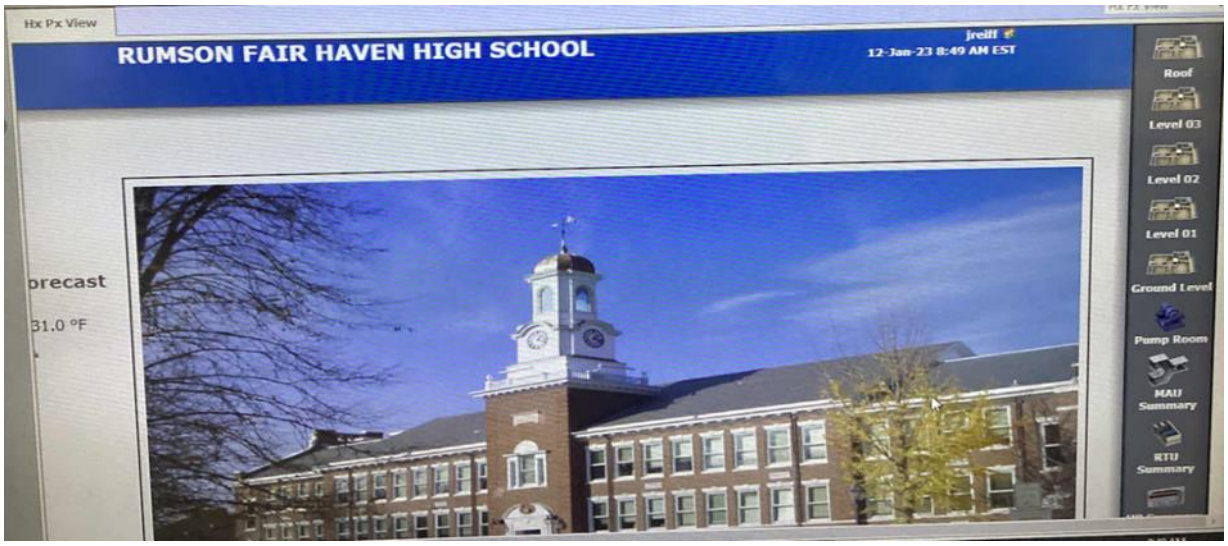
Variable Flow Condenser Water Pumps



BAS Screenshot - Condenser Water Loop

2.7 Building Automation System (BAS)

A Niagara BAS installed in 2004 controls the HVAC equipment, the heat recovery units (HRUs), the WSHPs, the package units, and some interior lights. The BAS provides equipment scheduling control, monitors and controls space temperatures, supply air temperatures, humidity, and condenser water loop temperatures.



Main Screen - BAS Controls

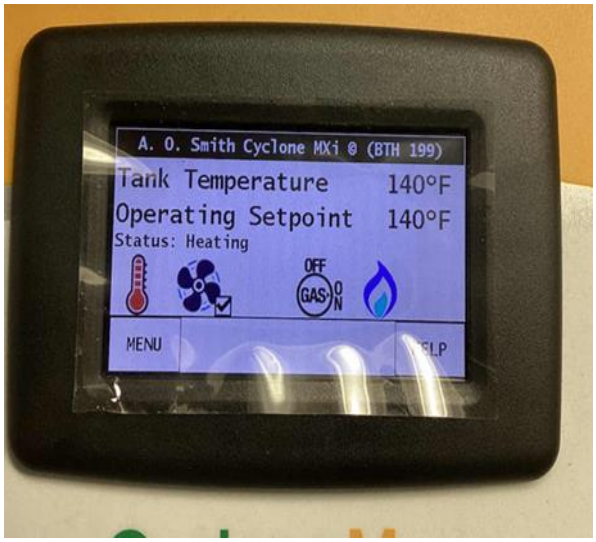
2.8 Domestic Hot Water

Domestic hot water is produced by three storage tank water heaters. Two 100 gallon 199 MBh condensing water heaters with an efficiency rating of 97% are located in the custodial closet and serve most of the high school's domestic hot water needs. At the time of the audit both the tank temperature and operating setpoint temperature were 140°F. The high school senior section is served by a 100-gallon 18 kW electric water heater located in the storage room. The heaters are in good condition. Two fractional horsepower pumps circulate water to the end users.

The condensing storage tank water heaters domestic hot water pipes are not insulated, and the insulation is in poor condition.

The concession stand has a dedicated 60-gallon 199 MBh storage tank water heater with an efficiency rating of 80%. The high temperature dishwasher has a 45-kW booster water heater.

Condensing Storage Tank Water Heaters



Touch Screen (Condensing Water Heater) & Booster Water Heater

2.9 Food Service Equipment

The kitchen has a mix of gas and electric equipment that is used to prepare breakfasts and lunches for students. Most cooking is done using a gas-fired oven. Bulk prepared foods are held in two electric holding cabinets. Equipment is not high efficiency and is in fair condition.

The main kitchen dishwasher is a non-ENERGY STAR high temperature, rack type unit. A 45-kW booster is connected.

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

Oven, fryer & dishwasher

2.10 Refrigeration

The kitchen has five stand-up refrigerators and one stand-up freezer with solid doors. There are six refrigerator chests. Most equipment is standard efficiency and in fair condition.

The walk-in medium temperature freezer has a 0.32-ton compressor located outside the kitchen and a 2-fan evaporator.

There two self-contained ice machines located in the ice room and in room 609. They are not ENERGY STAR rated equipment.

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

Stand up refrigerators & walk in freezer.

Evaporator fans, freezer & refrigerator temperatures

2.11 Plug Load and Vending Machines

There are approximately 168 desktops throughout the facility. Plug loads include general café and office equipment. There are school typical loads such as smart boards, projectors, scanner/copier, small printer, microwaves, min-fridges, television, and laptops. Workshops and STEM classrooms have plug loads that include pottery equipment, 3D printers, and wood shop equipment.

There are several residential style refrigerators, and these vary in condition and efficiency.

There is one refrigerated beverage vending machine and handful of ice machines. The vending machine is not equipped with occupancy-based controls.

Scanner/Copier & Residential Refrigerator

2.12 Water-Using Systems

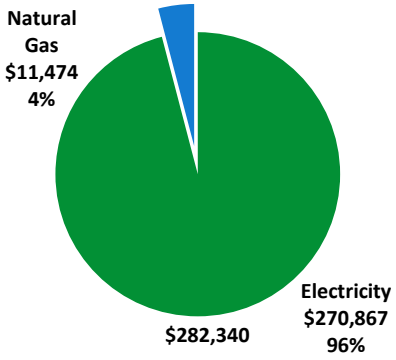
There are several restrooms with sinks, toilets and/or urinals. Faucet flow rates are at 2.2 gallons per minute (gpm) or higher. Some restrooms have low flow devices. Girl's and boy's locker rooms are used frequently and have showerheads that are equipped with low flow devices.

Lavatory & Kitchen Sinks

3 Energy Use and Costs

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

Utility Summary		
Fuel	**Usage**	**Cost**
Electricity	2,206,520 kWh	$270,867
Natural Gas	6,434 Therms	$11,474
Total		**$282,340**



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.

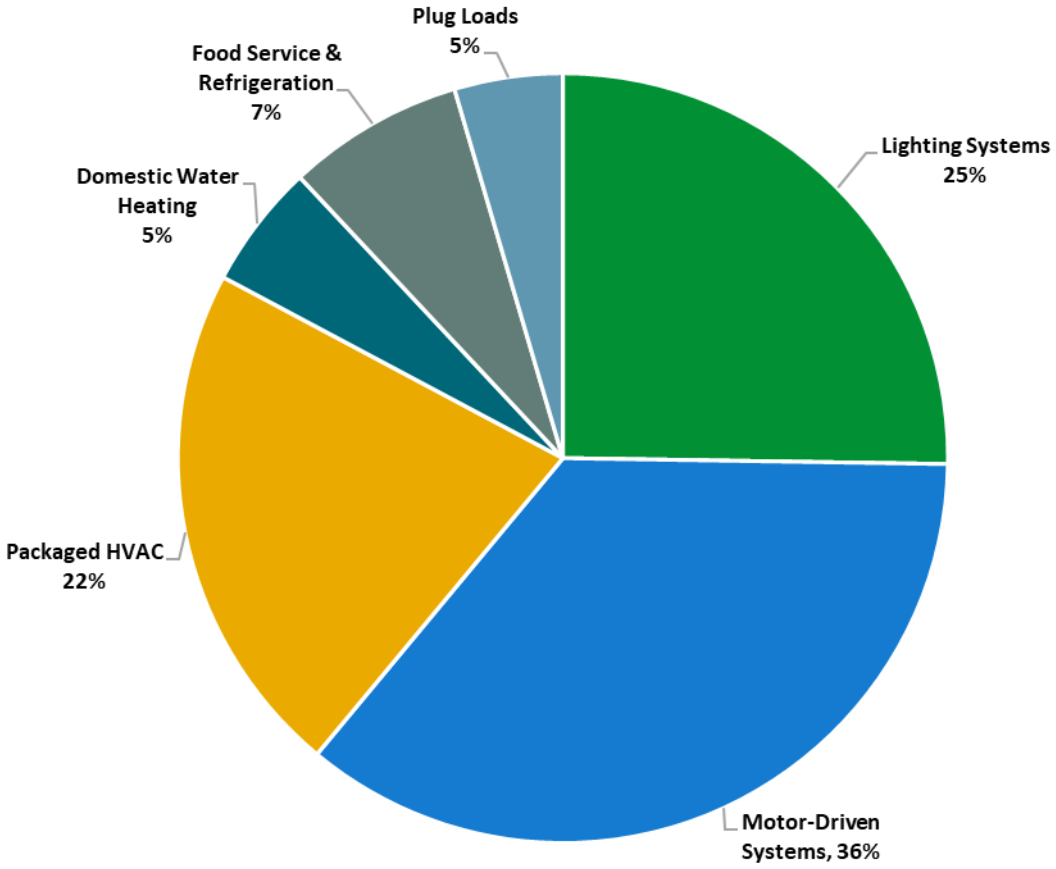
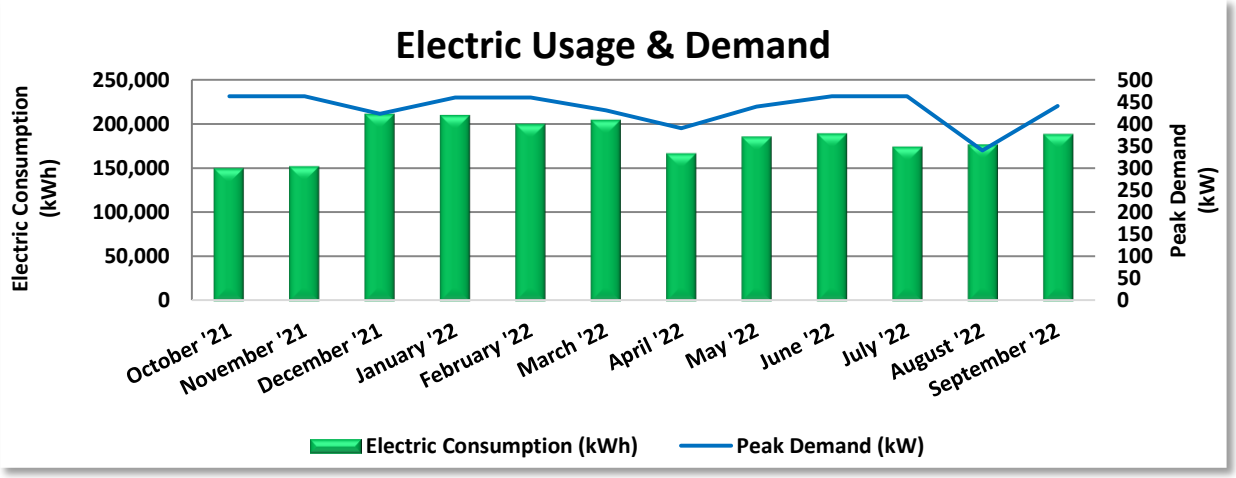


Figure 4 - Energy Balance

3.1 Electricity

JCP&L delivers electricity under rate class General Service Secondary 3 Phase, with electric production provided by EDF Energy, a third-party supplier.



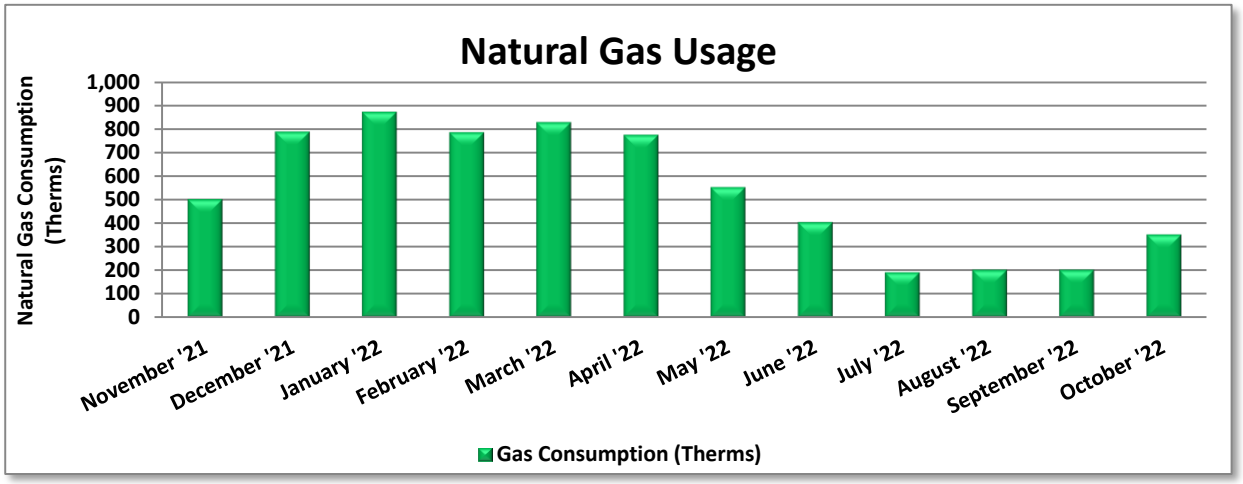
Electric Billing Data					
Period Ending	Days in Period	Electric Usage (kWh)	Demand (kW)	Demand Cost	Total Electric Cost
11/5/21	31	150,000	463	$3,665	$16,300
12/3/21	28	152,000	463	$3,665	$16,517
1/4/22	32	211,120	423	$3,120	$22,651
2/2/22	29	209,520	460	$3,396	$22,779
3/3/22	29	199,520	460	$3,396	$21,857
4/4/22	32	204,400	431	$3,181	$22,092
5/4/22	30	166,560	390	$2,880	$18,305
6/3/22	30	185,520	440	$3,482	$20,672
7/5/22	32	188,960	463	$3,665	$21,172
8/4/22	30	174,080	463	$3,665	$19,800
9/2/22	29	176,520	340	$2,694	$32,365
10/5/22	33	188,320	441	$3,252	$36,356
Totals	**365**	**2,206,520**	**463**	**$40,062**	**$270,867**
Annual	**365**	**2,206,520**	**463**	**$40,062**	**$270,867**

Notes:

- Peak demand of 463 kW occurred in October '21 and at other times.
- Average demand over the past 12 months was 436 kW.
- The average electric cost over the past 12 months was $0.123/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.
- Heat pumps provide most of the heating and cooling at this facility, therefore, electricity use is relatively constant through the calendar year.

3.2 Natural Gas

NJ Natural Gas delivers natural gas under Monthly 057M rate class.



Gas Billing Data			
Period Ending	**Days in Period**	**Natural Gas Usage (Therms)**	**Natural Gas Cost**
11/16/21	29	500	$848
12/17/21	31	785	$1,281
1/20/22	34	870	$1,300
2/18/22	29	784	$1,287
3/21/22	31	826	$1,299
4/21/22	31	772	$1,229
5/19/22	28	550	$1,028
6/20/22	32	402	$902
7/20/22	30	190	$538
8/17/22	28	201	$566
9/19/22	33	201	$587
10/18/22	29	351	$610
Totals	**365**	**6,434**	**$11,474**
Annual	**365**	**6,434**	**$11,474**

Notes:

- The average gas cost for the past 12 months is $1.783/therm, which is the blended rate used throughout the analysis.
- Gas use is seasonally higher in the colder months due to limited gas heating. Domestic hot water and cooking contribute to a relatively high baseline of gas use across the calendar year.

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	67

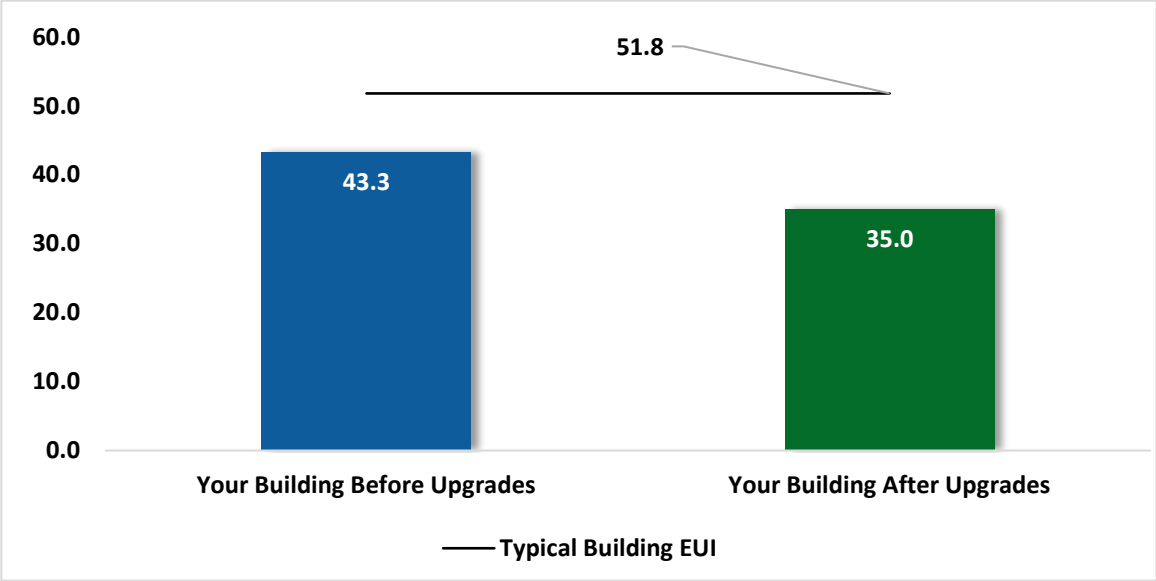


Figure 5 - Energy Use Intensity Comparison[3]

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			**236,184**	**38.0**	**0**	**$28,993**	**$60,483**	**$14,760**	**$45,723**	**1.6**	**237,835**
ECM 1	Install LED Fixtures	Yes	5,256	0.0	0	$645	$3,429	$450	$2,979	4.6	5,293
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	2,266	0.4	0	$278	$788	$106	$682	2.5	2,282
ECM 3	Retrofit Fixtures with LED Lamps	Yes	228,662	37.5	0	$28,070	$56,265	$14,204	$42,061	1.5	230,261
Lighting Control Measures			**2,738**	**0.5**	**0**	**$336**	**$1,890**	**$245**	**$1,645**	**4.9**	**2,757**
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	2,738	0.5	0	$336	$1,890	$245	$1,645	4.9	2,757
Variable Frequency Drive (VFD) Measures			**99,678**	**31.7**	**0**	**$12,236**	**$124,845**	**$13,300**	**$111,545**	**9.1**	**100,375**
ECM 5	Install VFDs on Constant Volume (CV) Fans	Yes	99,678	31.7	0	$12,236	$124,845	$13,300	$111,545	9.1	100,375
Unitary HVAC Measures			**57,883**	**63.6**	**0**	**$7,106**	**$966,092**	**$36,727**	**$929,365**	**130.8**	**58,288**
ECM 6	Install High Efficiency Heat Pumps	No	57,883	63.6	0	$7,106	$966,092	$36,727	$929,365	130.8	58,288
HVAC System Improvements			**0**	**0.0**	**22**	**$390**	**$2,824**	**$424**	**$2,400**	**6.2**	**2,558**
ECM 7	Install Pipe Insulation	Yes	0	0.0	22	$390	$2,824	$424	$2,400	6.2	2,558
Domestic Water Heating Upgrade			**9,036**	**0.0**	**38**	**$1,790**	**$767**	**$379**	**$388**	**0.2**	**13,570**
ECM 8	Install Low-Flow DHW Devices	Yes	9,036	0.0	38	$1,790	$767	$379	$388	0.2	13,570
Food Service & Refrigeration Measures			**4,760**	**0.3**	**19**	**$919**	**$12,319**	**$755**	**$11,564**	**12.6**	**6,994**
ECM 9	Food Service Equipment Replacement	No	0	0.0	19	$335	$9,290	$500	$8,790	26.2	2,200
ECM 10	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	983	0.1	0	$121	$607	$80	$527	4.4	990
ECM 11	Refrigeration Controls	Yes	2,165	0.0	0	$266	$2,193	$125	$2,068	7.8	2,180
ECM 12	Vending Machine Control	Yes	1,612	0.2	0	$198	$230	$50	$180	0.9	1,623
Custom Measures			**24,619**	**0.0**	**0**	**$3,022**	**$3,950**	**$0**	**$3,950**	**1.3**	**24,791**
ECM 13	Replace Electric Water Heater with Heat Pump Water Heater	Yes	24,619	0.0	0	$3,022	$3,950	$0	$3,950	1.3	24,791
TOTALS			**434,898**	**134.1**	**79**	**$54,792**	**$1,173,170**	**$66,590**	**$1,106,580**	**20.2**	**447,168**

* - 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		**236,184**	**38.0**	**0**	**$28,993**	**$60,483**	**$14,760**	**$45,723**	**1.6**	**237,835**
ECM 1	Install LED Fixtures	5,256	0.0	0	$645	$3,429	$450	$2,979	4.6	5,293
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	2,266	0.4	0	$278	$788	$106	$682	2.5	2,282
ECM 3	Retrofit Fixtures with LED Lamps	228,662	37.5	0	$28,070	$56,265	$14,204	$42,061	1.5	230,261
Lighting Control Measures		**2,738**	**0.5**	**0**	**$336**	**$1,890**	**$245**	**$1,645**	**4.9**	**2,757**
ECM 4	Install Occupancy Sensor Lighting Controls	2,738	0.5	0	$336	$1,890	$245	$1,645	4.9	2,757
Variable Frequency Drive (VFD) Measures		**99,678**	**31.7**	**0**	**$12,236**	**$124,845**	**$13,300**	**$111,545**	**9.1**	**100,375**
ECM 5	Install VFDs on Constant Volume (CV) Fans	99,678	31.7	0	$12,236	$124,845	$13,300	$111,545	9.1	100,375
HVAC System Improvements		**0**	**0.0**	**22**	**$390**	**$2,824**	**$424**	**$2,400**	**6.2**	**2,558**
ECM 7	Install Pipe Insulation	0	0.0	22	$390	$2,824	$424	$2,400	6.2	2,558
Domestic Water Heating Upgrade		**9,036**	**0.0**	**38**	**$1,790**	**$767**	**$379**	**$388**	**0.2**	**13,570**
ECM 8	Install Low-Flow DHW Devices	9,036	0.0	38	$1,790	$767	$379	$388	0.2	13,570
Food Service & Refrigeration Measures		**4,760**	**0.3**	**0**	**$584**	**$3,029**	**$255**	**$2,774**	**4.7**	**4,793**
ECM 10	Refrigerator/Freezer Case Electrically Commutated Motors	983	0.1	0	$121	$607	$80	$527	4.4	990
ECM 11	Refrigeration Controls	2,165	0.0	0	$266	$2,193	$125	$2,068	7.8	2,180
ECM 12	Vending Machine Control	1,612	0.2	0	$198	$230	$50	$180	0.9	1,623
Custom Measures		**24,619**	**0.0**	**0**	**$3,022**	**$3,950**	**$0**	**$3,950**	**1.3**	**24,791**
ECM 13	Replace Electric Water Heater with Heat Pump Water Heater	24,619	0.0	0	$3,022	$3,950	$0	$3,950	1.3	24,791
TOTALS		**377,015**	**70.5**	**60**	**$47,352**	**$197,788**	**$29,363**	**$168,425**	**3.6**	**386,680**

* - 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		**236,184**	**38.0**	**0**	**$28,993**	**$60,483**	**$14,760**	**$45,723**	**1.6**	**237,835**
ECM 1	Install LED Fixtures	5,256	0.0	0	$645	$3,429	$450	$2,979	4.6	5,293
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	2,266	0.4	0	$278	$788	$106	$682	2.5	2,282
ECM 3	Retrofit Fixtures with LED Lamps	228,662	37.5	0	$28,070	$56,265	$14,204	$42,061	1.5	230,261

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 fixture(s).

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

Affected Building Areas: exterior fixtures.

ECM 2: Retrofit Fluorescent Fixtures with LED Lamps and Drivers

Retrofit fluorescent T12 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: maintenance shop and custodial storages.

ECM 3: Retrofit Fixtures with LED Lamps

Replace fluorescent T5HO, T8, CFLs, 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, T5HO in auditorium and gymnasium, CFLs in various spaces and incandescent lamps in small spaces.

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		**2,738**	**0.5**	**0**	**$336**	**$1,890**	**$245**	**$1,645**	**4.9**	**2,757**
ECM 4	Install Occupancy Sensor Lighting Controls	2,738	0.5	0	$336	$1,890	$245	$1,645	4.9	2,757

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: High School fitness area, senior building bathrooms, senior building slop sink, concession stand bathrooms.

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		**99,677**	**31.7**	**0**	**$12,236**	**$124,845**	**$13,300**	**$111,545**	**9.1**	**100,374**
ECM 5	Install VFDs on Constant Volume (CV) Fans	99,677	31.7	0	$12,236	$124,845	$13,300	$111,545	9.1	100,374

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 5: 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 Air Handlers: RTU-1, RTU-210, HRUs & some exhaust fans.

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		**57,883**	**63.6**	**0**	**$7,106**	**$966,092**	**$36,727**	**$929,365**	**130.8**	**58,288**
ECM 6	Install High Efficiency Heat Pumps	57,883	63.6	0	$7,106	$966,092	$36,727	$929,365	130.8	58,288

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 6: Install High Efficiency Heat Pumps

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

Affected Units: all water source heat pumps and the IT closet air source heat pump.

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		**0**	**0.0**	**22**	**$390**	**$2,824**	**$424**	**$2,400**	**6.2**	**2,558**
ECM 7	Install Pipe Insulation	0	0.0	22	$390	$2,824	$424	$2,400	6.2	2,558

ECM 7: Install Pipe Insulation

Install insulation on domestic hot water system piping. Distribution system losses are dependent on system fluid temperature, the size of the distribution system, and the level of insulation of the piping. Significant energy savings can be achieved when insulation has not been well maintained. When the insulation is exposed to water, when the insulation has been removed from some areas of the pipe, or when valves have not been properly insulated system efficiency can be significantly reduced. This measure saves energy by reducing heat transfer in the distribution system.

Affected Systems: condensing storage tank water heaters domestic hot water piping.

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		**9,036**	**0.0**	**38**	**$1,790**	**$767**	**$379**	**$388**	**0.2**	**13,570**
ECM 8	Install Low-Flow DHW Devices	9,036	0.0	38	$1,790	$767	$379	$388	0.2	13,570

ECM 8: Install Low-Flow DHW Devices

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

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

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

Additional cost savings may result from reduced water usage.

4.7 Food Service and Refrigeration

#	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		**4,760**	**0.3**	**19**	**$919**	**$12,319**	**$755**	**$11,564**	**12.6**	**6,994**
ECM 9	Food Service Equipment Replacement	0	0.0	19	$335	$9,290	$500	$8,790	26.2	2,200
ECM 10	Refrigerator/Freezer Case Electrically Commutated Motors	983	0.1	0	$121	$607	$80	$527	4.4	990
ECM 11	Refrigeration Controls	2,165	0.0	0	$266	$2,193	$125	$2,068	7.8	2,180
ECM 12	Vending Machine Control	1,612	0.2	0	$198	$230	$50	$180	0.9	1,623

ECM 9: 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	1	Gas Convection Oven (Full Size)		

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

ECM 10: Refrigerator/Freezer Case Electrically Commutated Motors

Replace shaded pole or permanent split capacitor (PSC) motors with electronically commutated (EC) motors in walk-in coolers. 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 11: Refrigeration Controls

Install additional controls to optimize the operation of walk-in cooler.

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 12: 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 Custom 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)
Custom Measures		**24,619**	**0.0**	**0**	**$3,022**	**$3,950**	**$0**	**$3,950**	**1.3**	**24,791**
ECM 13	Replace Electric Water Heater with Heat Pump Water Heater	24,619	0.0	0	$3,022	$3,950	$0	$3,950	1.3	24,791

ECM 13: Replace Electric Water Heater with Heat Pump Water Heater

A typical electric water heater uses electric resistance coils to heat water at a coefficient of performance (COP) of 1. Air source heat pump water heaters (HPWH) use a refrigeration cycle to transfer heat from the surrounding air to the domestic water. The typical average COP for a HPWH is about 2.5, so they require significantly less electricity to produce the same amount of hot water as a traditional electric water heater. There are two types of HPWH, those integrated with the heat pump and storage tank in the same unit, and those that are split into two sections (with the storage tank separate from the heat pump). The following addresses integrated HPWH.

HPWH reject cold air. As such, they need to be installed in an unconditioned space of about 750 cubic feet with good ventilation. Ideal locations are garages, large enclosed, unconditioned storage areas, or areas with excess heat such as a furnace or boiler room.[4] The HPWH will also produce condensate so accommodations for draining the condensate need to be provided.

Most HPWH operate effectively down to an air temperature of 40 °F. Below that temperature, an electric resistance booster heater is typically required to achieve full heating capacity. It is critical that the HPWH controls are set up so that the electric resistance heat only engages when the air temperature is too cold for the HPWH to extract heat from it. HPWHs have a slow recovery. During periods of high demand, the electric resistance heating element, if enabled, may be energized to maintain set point, thus reducing the overall efficiency of the unit. It is recommended that a careful analysis of the hot water demand be conducted to determine if the application makes economic sense, and the HPWH heating capacity and storage are properly sized.

HPWH operate most effectively when the temperature difference between the incoming and outgoing water is high. Generally, this means that cold make-up water should be piped to the bottom of the tank and return water should be piped to the top of the tank in order to maintain stratification within the storage tank. Water should be drawn from the bottom of the tank to be heated. If there is a DHW recirculation pump, it should only be operated during high hot water demand periods.

4.9

[4] https://basc.pnnl.gov/code-compliance/heat-pump-water-heaters-code-compliance-brief#:~:text=HPWH%20must%20have%20unrestricted%20airflow,depending%20on%20size%20of%20system

4.10 Measures for Future Consideration

There are additional opportunities for improvement that Rumson Fairhaven Regional HS 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.

Rumson Fairhaven Regional HS 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.

5 Energy Efficient Best Practices

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

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[5] . 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.

[5] 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.

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 five and ten percent 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[6] or download a copy of EPA's "WaterSense at Work: Best Management Practices for Commercial and Institutional Facilities"[7] to get ideas for creating a water management plan and best practices for a wide range of water using systems.

Water conservation devices that do not reduce hot water consumption will not provide energy savings at the site level, but they may significantly affect your water and sewer usage costs. Any reduction in water use does however ultimately reduce grid-level electricity use since a significant amount of electricity is used to deliver water from reservoirs to end users.

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

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

Procurement Strategies

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

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

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

6 On-site Generation

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

Preliminary screenings were performed to determine if an on-site generation measure could be a cost-effective solution for your facility. Before deciding to install an on-site generation system, we recommend conducting a feasibility study to analyze existing energy profiles, siting, interconnection, and the costs associated with the generation project including interconnection costs, departing load charges, and any additional special facilities charges.

6.1 Solar Photovoltaic

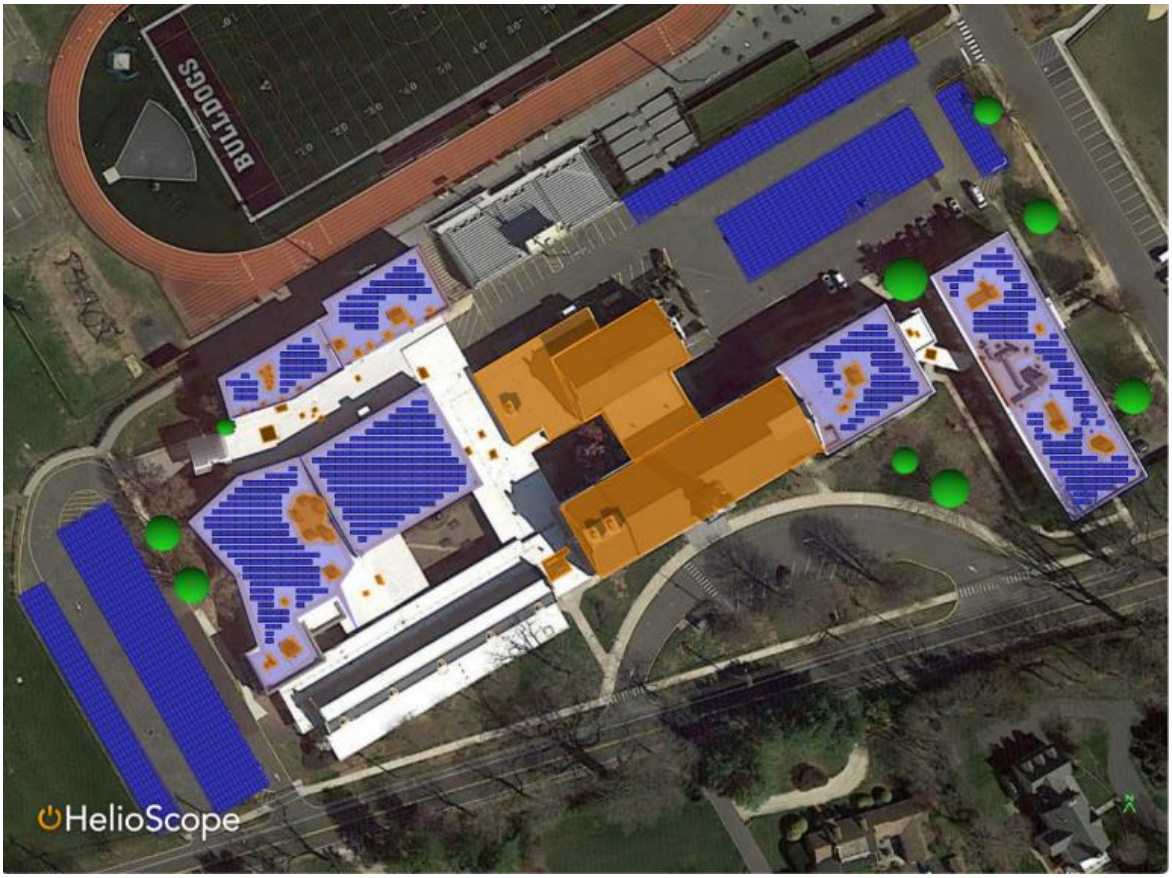
Photovoltaic (PV) panels convert sunlight into electricity. Individual panels are combined into an array that produces direct current (DC) electricity. The DC current is converted to alternating current (AC) through an inverter. The inverter is then connected to the building's electrical distribution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

Methodology

Helioscope software was used to develop a conceptual PV design and Energy Toolbase software was used to develop the annual energy usage and project cost savings. For this analysis we considered the parking lot and rooftop areas. We assumed 10 degrees tilt angle for PV modules to maximize generation during summer months.

Please refer to the images below for possible locations to install a PV system



Proposed PV Module

Findings

Solar PV Equipment Description

Solar Panels: (2,216) LG Electronics LG400Q1C-46

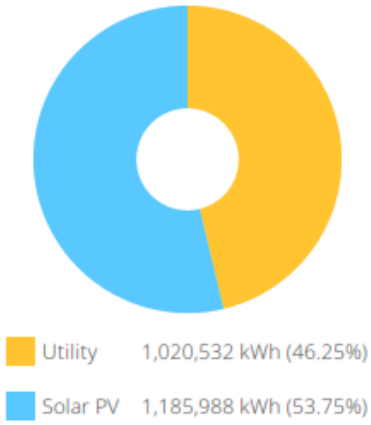
Inverters: (48) Fronius USA Fronius Symo 15.0-3 (480V)

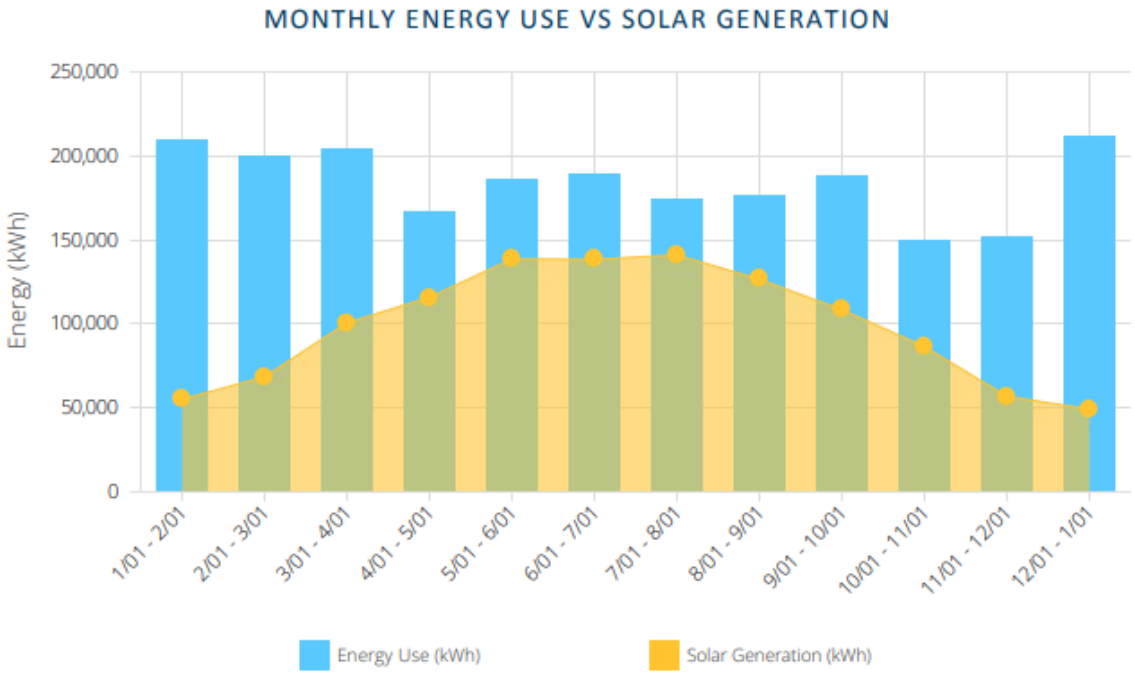
Annual Estimated Generation: 1,389,025 kWh

Solar PV System Cost: $4,697,061

Solar PV System Rating Power Rating: 886,400 W-DC or 868,672 W-AC-CEC

Energy Consumption Mix





Please refer to Appendix D-1 “PV Analysis” for the Energy Toolbase report for additional information.

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

6.2 Combined Heat and Power

Combined heat and power (CHP) generates electricity at the facility and puts waste heat energy to good use. Common types of CHP systems are reciprocating engines, microturbines, fuel cells, backpressure steam turbines, and (at large facilities) gas turbines.

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

The key criteria used for screening is the amount of time that the CHP system would operate at full load and the facility's ability to use the recovered heat. Facilities with a continuous need for large quantities of waste heat are the best candidates for CHP.

A preliminary screening based on heating and electrical demand, siting, and interconnection shows that the facility has no potential for installing a cost-effective CHP system.

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

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

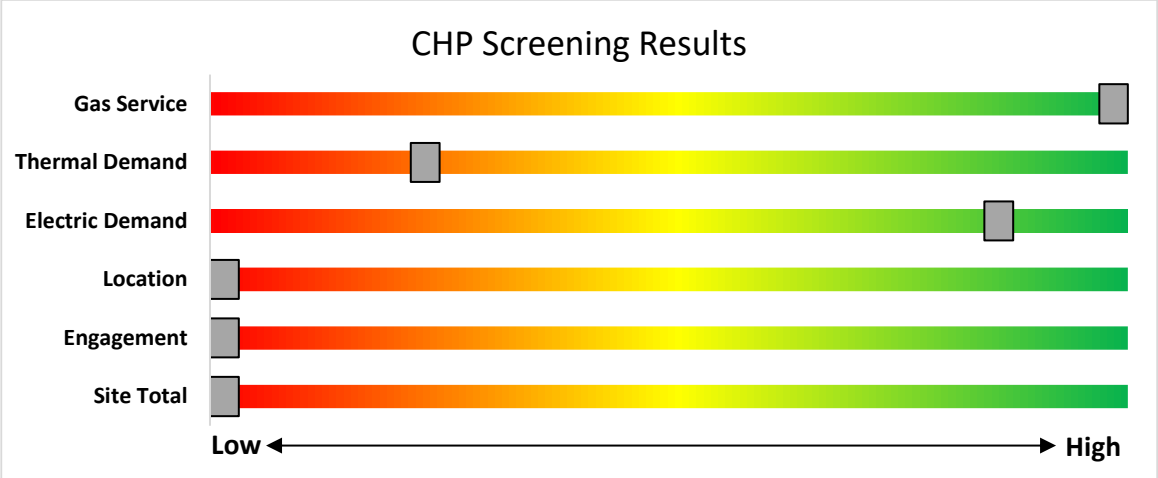


Figure 8 - Combined Heat and Power Screening

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.

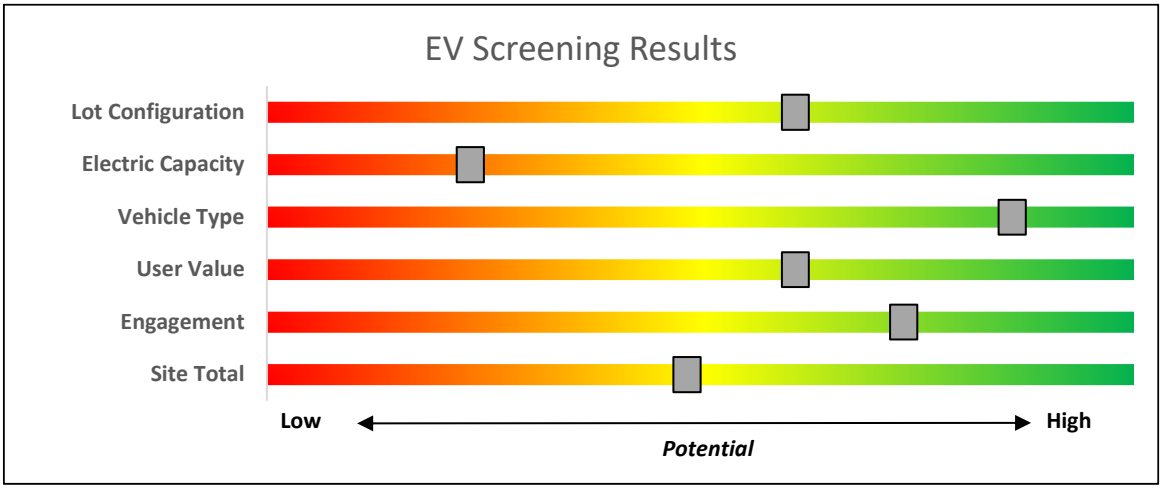


Figure 9 – EV Charger Screening

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.

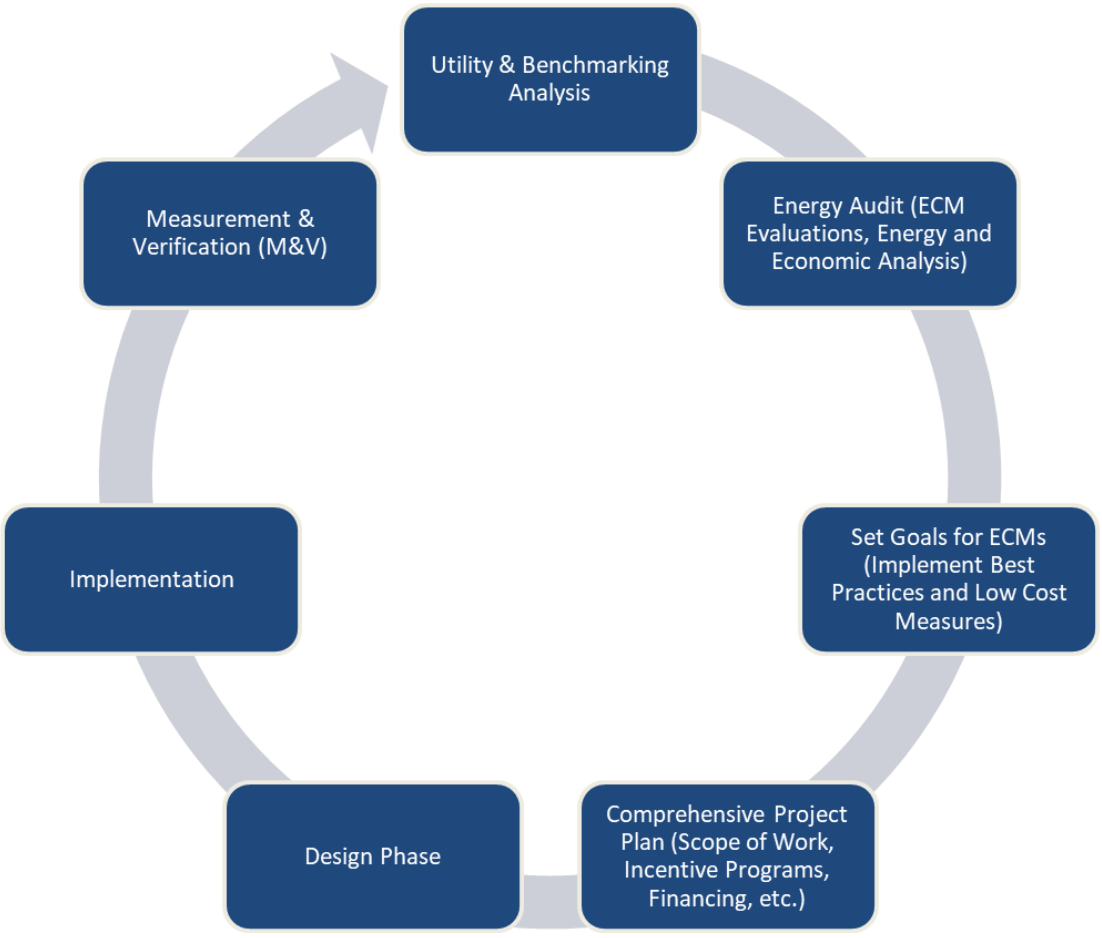


Figure 10 – Project Development Cycle

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[8].

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[9].

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

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

APPENDIX A: EQUIPMENT INVENTORY & RECOMMENDATIONS

Lighting Inventory & Recommendations

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
HS - 1st Floor 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
HS - 1st Floor Hallway	25	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Other	S	114	4,940	3	Relamp	No	25	LED - Linear Tubes: (4) 4' Lamps	Other	58	4,940	1.0	6,639	0	$815	$1,826	$500	1.6
HS - 1st Elevator lobby	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Other	S	32	4,940	3, 4	Relamp	Yes	2	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	3,409	0.0	209	0	$26	$153	$30	4.8
HS - 1st Floor Elevator Lobby	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
HS - 1st Floor Elevator Lobby	7	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Other	S	93	4,940	3	Relamp	No	7	LED - Linear Tubes: (3) 4' Lamps	Other	44	4,940	0.2	1,643	0	$202	$383	$105	1.4
HS - 1st Floor Female Bath	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	3,301	3	Relamp	No	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,301	0.2	941	0	$116	$329	$90	2.1
HS - 1st Floor Flag Closet	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	1,000	3	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,000	0.0	63	0	$8	$73	$20	6.8
HS - 1st Floor Men Bath	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	4,940	3	Relamp	No	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	4,940	0.1	782	0	$96	$183	$50	1.4
HS - 2nd Floor Custodial Closet	1	Incandescent: (4) 25W G19 Screw-In Lamps	Occupancy Sensor	S	100	1,000	3	Relamp	No	1	LED Lamps: LED Lamps	Occupancy Sensor	15	1,000	0.1	82	0	$10	$69	$4	6.5
HS - 2nd Floor Elevator Lobby	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Other	S	93	4,940	3	Relamp	No	4	LED - Linear Tubes: (3) 4' Lamps	Other	44	4,940	0.1	939	0	$115	$219	$60	1.4
HS - 2nd Floor Hallway	4	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
HS - 2nd Floor Hallway	24	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Other	S	114	4,940	3	Relamp	No	24	LED - Linear Tubes: (4) 4' Lamps	Other	58	4,940	1.0	6,374	0	$782	$1,753	$480	1.6
HS - 2nd Floor Male Bath	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	4,940	3	Relamp	No	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	4,940	0.1	939	0	$115	$219	$60	1.4
HS - 2nd Floor Senior Storage Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,000	3	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,000	0.1	143	0	$18	$164	$45	6.8
HS - 2nd Floor Teachers Bath	1	Incandescent: (4) 25W G19 Screw-In Lamps	Occupancy Sensor	S	100	4,940	3	Relamp	No	1	LED Lamps: LED Lamps	Occupancy Sensor	15	4,940	0.1	403	0	$49	$69	$4	1.3
HS - 2nd Floor Women Bath	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	4,940	3	Relamp	No	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	4,940	0.1	939	0	$115	$219	$60	1.4
HS - 3rd Floor 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
HS - 3rd Floor Hallway	29	LED - Fixtures: Ambient - 6' - Direct/Indirect Fixture	Other	S	36	4,940		None	No	29	LED - Fixtures: Ambient - 6' - Direct/Indirect Fixture	Other	36	4,940	0.0	0	0	$0	$0	$0	0.0
HS - Room 307	15	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	3,301		None	No	15	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	3,301	0.0	0	0	$0	$0	$0	0.0
HS - Room 315	1	Incandescent: (6) 25W A Lamps	Occupancy Sensor	S	150	4,940	3	Relamp	No	1	LED Lamps: LED Lamps	Occupancy Sensor	23	4,940	0.1	602	0	$74	$103	$6	1.3
HS - Room 315	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	4,940	3	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	4,940	0.1	626	0	$77	$146	$40	1.4
HS - 3rd Floor Attic	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
HS - 3rd Floor Attic	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	4,940	3	Relamp	No	18	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	4,940	0.4	2,817	0	$346	$657	$180	1.4
HS - 3rd Floor Attic Foyer	2	Linear Fluorescent - T8: 2' T8 (17W) - 4L	Occupancy Sensor	S	63	4,940	3	Relamp	No	2	LED - Linear Tubes: (4) 2' Lamps	Occupancy Sensor	34	4,940	0.0	275	0	$34	$130	$24	3.1
HS - 3rd Floor Attic Foyer	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	4,940	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	4,940	0.0	156	0	$19	$37	$10	1.4

	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
HS - 3rd Floor Attic Foyer	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	4,940	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	4,940	0.0	156	0	$19	$37	$10	1.4
HS - 3rd Floor Elevator Lobby	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Other	S	93	4,940	3	Relamp	No	4	LED - Linear Tubes: (3) 4' Lamps	Other	44	4,940	0.1	939	0	$115	$219	$60	1.4
HS - 3rd Floor Men bath	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Occupancy Sensor	S	33	4,940	3	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	4,940	0.0	76	0	$9	$33	$6	2.8
HS - 3rd Floor Men bath	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	4,940	3	Relamp	No	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	4,940	0.1	782	0	$96	$183	$50	1.4
HS - 3rd Floor Storage	3	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	1,000		None	No	3	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	1,000	0.0	0	0	$0	$0	$0	0.0
HS - 3rd Floor Women bath	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	4,940	3	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	4,940	0.1	939	0	$115	$219	$60	1.4
HS - 400 Lobby	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
HS - 400 Lobby	7	LED - Fixtures: Ambient - 6' - Direct/Indirect Fixture	Other	S	36	4,940		None	No	7	LED - Fixtures: Ambient - 6' - Direct/Indirect Fixture	Other	36	4,940	0.0	0	0	$0	$0	$0	0.0
HS - 400 West Wing 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
HS - 400 West Wing Hallway	23	LED - Fixtures: Ambient - 8' - Direct/Indirect Fixture	Other	S	40	4,940		None	No	23	LED - Fixtures: Ambient - 8' - Direct/Indirect Fixture	Other	40	4,940	0.0	0	0	$0	$0	$0	0.0
HS - 400 Wing All Gender Bath	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	4,940	3	Relamp	No	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	4,940	0.0	83	0	$10	$18	$5	1.3
HS - 400 Wing Attic on Roof	13	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	4,940	3	Relamp	No	13	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	4,940	0.3	2,034	0	$250	$475	$130	1.4
HS - 400 Wing Custodial Closet	1	Linear Fluorescent - T8: 2' T8 (17W) - 4L	Occupancy Sensor	S	63	1,000	3	Relamp	No	1	LED - Linear Tubes: (4) 2' Lamps	Occupancy Sensor	34	1,000	0.0	28	0	$3	$65	$12	15.5
HS - 400 Wing Custodial Closet	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	S	114	1,000	3	Relamp	No	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,000	0.1	108	0	$13	$146	$40	8.0
HS - 400 Wing Female Bath	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	4,940	3	Relamp	No	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	4,940	0.1	939	0	$115	$219	$60	1.4
HS - 400 Wing Men Bath	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	4,940	3	Relamp	No	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	4,940	0.1	939	0	$115	$219	$60	1.4
HS - 400 Wing Slop Sink	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	4,940	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	4,940	0.0	156	0	$19	$37	$10	1.4
HS - 400 Wing Utility Closet	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	1,000	3	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,000	0.0	63	0	$8	$73	$20	6.8
HS - 500 Hallway	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
HS - 500 Hallway	22	LED - Fixtures: Ambient - 6' - Indirect/Direct Fixture	Other	S	36	4,940		None	No	22	LED - Fixtures: Ambient - 6' - Indirect/Direct Fixture	Other	36	4,940	0.0	0	0	$0	$0	$0	0.0
HS - 500 Hallway	2	LED - Fixtures: Ambient - 8' - Direct/Indirect Fixture	Other	S	40	4,940		None	No	2	LED - Fixtures: Ambient - 8' - Direct/Indirect Fixture	Other	40	4,940	0.0	0	0	$0	$0	$0	0.0
HS - 600 Hallway	2	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
HS - 600 Hallway	12	LED - Fixtures: Ambient - 6' - Direct/Indirect Fixture	Other	S	36	4,940		None	No	12	LED - Fixtures: Ambient - 6' - Direct/Indirect Fixture	Other	36	4,940	0.0	0	0	$0	$0	$0	0.0
HS - 600 Stair A	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
HS - 600 Stair A	3	LED - Fixtures: Ambient - 4' - Direct/Indirect Fixture	Other		32	4,940		None	No	3	LED - Fixtures: Ambient - 4' - Direct/Indirect Fixture	Other	32	4,940	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
HS - 600 Stair B	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
HS - 600 Stair B	3	LED - Fixtures: Ambient - 4' - Direct/Indirect Fixture	Other		32	4,940		None	No	3	LED - Fixtures: Ambient - 4' - Direct/Indirect Fixture	Other	32	4,940	0.0	0	0	$0	$0	$0	0.0
HS - 6th Floor Supply Closet	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,000	3	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,000	0.1	143	0	$18	$164	$45	6.8
HS - Auditorium	5	Exit Signs: LED - 2 W Lamp	Occupancy Sensor		6	8,760		None	No	5	Exit Signs: LED - 2 W Lamp	Occupancy Sensor	6	8,760	0.0	0	0	$0	$0	$0	0.0
HS - Auditorium	53	LED - Fixtures: Downlight Recessed	Occupancy Sensor	S	10	4,940		None	No	53	LED - Fixtures: Downlight Recessed	Occupancy Sensor	10	4,940	0.0	0	0	$0	$0	$0	0.0
HS - Auditorium	10	Linear Fluorescent - T5HO: 4' T5HO (54W) - 6L	Occupancy Sensor	S	358	4,940	3	Relamp	No	10	LED - Linear Tubes: (6) 4' T5HO (25W) Lamps	Occupancy Sensor	153	4,940	1.5	9,722	0	$1,193	$1,242	$300	0.8
HS - Auditorium Attic	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	4,940	3	Relamp	No	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	4,940	0.3	1,878	0	$231	$438	$120	1.4
HS - Auditorium Lobby	8	Compact Fluorescent: (2) 26W Plug-In Lamps	Other	S	52	4,940	3	Relamp	No	8	LED Lamps: LED Lamps	Other	37	4,940	0.1	569	0	$70	$200	$16	2.6
HS - Auditorium Lobby	19	Compact Fluorescent: (2) 26W Plug-In Lamps	Other	S	52	4,940	3	Relamp	No	19	LED Lamps: LED Lamps	Other	37	4,940	0.2	1,352	0	$166	$475	$38	2.6
HS - Auditorium Lobby	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
HS - Auditorium Lobby	32	LED - Linear Tubes: (1) 2' Lamp	Other	S	9	4,940		None	No	32	LED - Linear Tubes: (1) 2' Lamp	Other	9	4,940	0.0	0	0	$0	$0	$0	0.0
HS - Back Gym Hallway	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
HS - Back Gym Hallway	11	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Other	S	114	4,940	3	Relamp	No	11	LED - Linear Tubes: (4) 4' Lamps	Other	58	4,940	0.4	2,921	0	$359	$803	$220	1.6
HS - Basement Restroom	1	LED Lamps: (3) 8W A19 Screw-In Lamps	Occupancy Sensor	S	24	4,940		None	No	1	LED Lamps: (3) 8W A19 Screw-In Lamps	Occupancy Sensor	24	4,940	0.0	0	0	$0	$0	$0	0.0
HS - Basement Restroom	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Occupancy Sensor	S	62	4,940	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	4,940	0.0	138	0	$17	$72	$10	3.7
HS - Basement Restroom Foyer	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	4,940	3	Relamp	No	2	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	4,940	0.0	166	0	$20	$37	$10	1.3
HS - Basement Storage	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	1,000	3	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,000	0.1	143	0	$18	$164	$45	6.8
HS - Basement Walkthrough	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	4,940	3	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	4,940	0.1	939	0	$115	$219	$60	1.4
HS - Basement Walkthrough	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	4,940	3	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	4,940	0.0	235	0	$29	$55	$15	1.4
HS - Booster Club Closet	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	1,000	3	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,000	0.1	95	0	$12	$110	$30	6.8
HS - Boys Locker Room Storage	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	1,000	3	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	1,000	0.0	54	0	$7	$73	$20	8.0
HS - Boys Shower Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	4,940	3	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	4,940	0.0	266	0	$33	$73	$20	1.6
HS - Breezeway Hallway	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
HS -Breezeway Hallway	6	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Other	S	114	4,940	3	Relamp	No	6	LED - Linear Tubes: (4) 4' Lamps	Other	58	4,940	0.2	1,593	0	$196	$438	$120	1.6
HS - Cafeteria	24	Compact Fluorescent: (3) 40W Double Biaxial Plug-In Lamps	Occupancy Sensor	S	120	4,940	3	Relamp	No	24	LED Lamps: LED Lamps	Occupancy Sensor	84	4,940	0.6	4,097	0	$503	$972	$72	1.8

	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
HS - Cafeteria	26	Compact Fluorescent: (2) 26W Plug-In Lamps	Occupancy Sensor	S	52	4,940	3	Relamp	No	26	LED Lamps: LED Lamps	Occupancy Sensor	37	4,940	0.3	1,850	0	$227	$650	$52	2.6
HS - Cafeteria	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
HS - Cafeteria	18	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	4,940	3	Relamp	No	18	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	4,940	0.6	4,225	0	$519	$986	$270	1.4
HS - Cafeteria Hallway	2	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
HS - Cafeteria Hallway	31	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Other	S	114	4,940	3	Relamp	No	31	LED - Linear Tubes: (4) 4' Lamps	Other	58	4,940	1.2	8,233	0	$1,011	$2,264	$620	1.6
HS - Canopy HID	1	Metal Halide: (1) 175W Lamp	Occupancy Sensor		215	4,380	1	Fixture Replacement	No	1	LED - Fixtures: Fuel Pump Canopy	Occupancy Sensor	65	4,380	0.0	657	0	$81	$383	$100	3.5
HS - Corridor Small Locker Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	4,940	3	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	4,940	0.1	469	0	$58	$110	$30	1.4
HS - Custodial Storage Area	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	1,000	3	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,000	0.1	190	0	$23	$219	$60	6.8
HS - Custodial Storage Area	3	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Occupancy Sensor	S	88	1,000	2	Relamp & Reballast	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,000	0.1	170	0	$21	$206	$30	8.5
HS - Custodial supply room	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	1,000	3	Relamp	No	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,000	0.2	285	0	$35	$329	$90	6.8
HS - Custodial Suppy Room	6	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	S	114	1,000	3	Relamp	No	6	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,000	0.2	323	0	$40	$438	$120	8.0
HS - Custodial Suppy Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	1,000	3	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,000	0.1	95	0	$12	$110	$30	6.8
HS - Custodial Suppy Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	S	114	1,000	3	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,000	0.0	54	0	$7	$73	$20	8.0
HS - Dishwasher Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	4,940	3	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	4,940	0.1	469	0	$58	$110	$30	1.4
HS - Display case next to 101	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	4,940	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	4,940	0.0	156	0	$19	$37	$10	1.4
HS - East Stair	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
HS - East Stair	6	LED - Fixtures: Ambient - 4' - Direct/Indirect Fixture	Other		32	4,940		None	No	6	LED - Fixtures: Ambient - 4' - Direct/Indirect Fixture	Other	32	4,940	0.0	0	0	$0	$0	$0	0.0
HS - East Wing Wall Pack	8	Compact Fluorescent: (2) 26W Plug-In Lamps	Timeclock	S	52	4,380	3	Relamp	No	8	LED Lamps: LED Lamps	Timeclock	37	4,380	0.1	505	0	$62	$200	$16	3.0
HS - East Wing Wall Pack	7	Metal Halide: (1) 175W Lamp	Timeclock	S	215	4,380	1	Fixture Replacement	No	7	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Timeclock	65	4,380	0.0	4,599	0	$565	$3,047	$350	4.8
HS - Electrical Room 111	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	4,940	3	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	4,940	0.1	469	0	$58	$110	$30	1.4
HS - Exterior LED Pole	15	LED Lamps: (1) 1W Corn Bulb Screw-In Lamps	Timeclock		40	4,380		None	No	15	LED Lamps: (1) 1W Corn Bulb Screw-In Lamps	Timeclock	40	4,380	0.0	0	0	$0	$0	$0	0.0
HS - Exterior Canopy	3	Compact Fluorescent: (2) 26W Plug-In Lamps	Timeclock		52	4,380	3	Relamp	No	3	LED Lamps: LED Lamps	Timeclock	37	4,380	0.0	197	0	$24	$75	$6	2.9
HS - Exterior East Pole	1	LED - Fixtures: Cobrahead Pole Mount	Timeclock		45	4,380		None	No	1	LED - Fixtures: Cobrahead Pole Mount	Timeclock	45	4,380	0.0	0	0	$0	$0	$0	0.0
HS - Exterior East Pole	1	LED - Fixtures: Cobrahead Pole Mount	Timeclock		90	4,380		None	No	1	LED - Fixtures: Cobrahead Pole Mount	Timeclock	90	4,380	0.0	0	0	$0	$0	$0	0.0
HS - Fitness Area	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

Location	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
	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
HS - Fitness Area	1	Incandescent: (1) 65W A19 Screw-In Lamp	Occupancy Sensor	S	65	3,301	3	Relamp	No	1	LED Lamps: LED Lamps	Occupancy Sensor	10	3,301	0.0	174	0	$21	$17	$1	0.8
HS - Fitness Area	16	Linear Fluorescent - T5HO: 4' T5HO (54W) - 4L	Occupancy Sensor	S	234	4,940	3, 4	Relamp	Yes	16	LED - Linear Tubes: (4) 4' T5HO (25W) Lamps	Occupancy Sensor	102	3,409	1.9	12,415	0	$1,524	$2,229	$390	1.2
HS - Fitness Center Staircase	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Other		62	4,940	3	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Other	29	4,940	0.0	313	0	$38	$73	$20	1.4
HS - Fitness Center Staircase	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Other		114	4,940	3	Relamp	No	2	LED - Linear Tubes: (4) 4' Lamps	Other	58	4,940	0.1	531	0	$65	$146	$40	1.6
HS - Girls Locker Room Entrance	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
HS - Girls Locker Room Entrance	1	LED - Fixtures: Ambient - 8' - Direct Fixture	Occupancy Sensor	S	40	3,301		None	No	1	LED - Fixtures: Ambient - 8' - Direct Fixture	Occupancy Sensor	40	3,301	0.0	0	0	$0	$0	$0	0.0
HS - Girls Locker Room Restroom	5	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	3,301		None	No	5	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	3,301	0.0	0	0	$0	$0	$0	0.0
HS - Girls Shower Room	1	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	3,301		None	No	1	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	3,301	0.0	0	0	$0	$0	$0	0.0
HS - Girls Shower Room	3	LED - Fixtures: Downlight Recessed	Occupancy Sensor	S	10	3,301		None	No	3	LED - Fixtures: Downlight Recessed	Occupancy Sensor	10	3,301	0.0	0	0	$0	$0	$0	0.0
HS - Gym Boys Locker Room Storage	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	S	114	4,940	3	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	4,940	0.0	266	0	$33	$73	$20	1.6
HS - Gym Boys Locker Room Storage	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	S	114	4,940	3	Relamp	No	3	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	4,940	0.1	797	0	$98	$219	$60	1.6
HS - Gym Storage	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	S	114	1,000	3	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,000	0.0	54	0	$7	$73	$20	8.0
HS - Gymnasium	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
HS - Gymnasium	30	Linear Fluorescent - T5HO: 4' T5HO (54W) - 6L	Occupancy Sensor	S	358	4,940	3	Relamp	No	30	LED - Linear Tubes: (6) 4' T5HO (25W) Lamps	Occupancy Sensor	153	4,940	4.4	29,166	0	$3,580	$3,725	$900	0.8
HS - Gymnasium Boys Locker Restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 4L	Occupancy Sensor	S	63	4,940	3	Relamp	No	1	LED - Linear Tubes: (4) 2' Lamps	Occupancy Sensor	34	4,940	0.0	138	0	$17	$65	$12	3.1
HS - Gymnasium Boys Locker Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	S	114	4,940	3	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	4,940	0.0	266	0	$33	$73	$20	1.6
HS - Gymnasium Boys Locker Room	14	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	S	114	4,940	3	Relamp	No	14	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	4,940	0.6	3,718	0	$456	$1,022	$280	1.6
HS - Gymnasium Boys Locker Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	4,940	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	4,940	0.0	156	0	$19	$37	$10	1.4
HS - Gymnasium Girls Locker Room	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
HS - Gymnasium Girls Locker Room	28	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	3,301		None	No	28	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	3,301	0.0	0	0	$0	$0	$0	0.0
HS - Ice Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	4,940	3	Relamp	No	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	4,940	0.0	83	0	$10	$18	$5	1.3
HS - Ice Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	4,940	3	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	4,940	0.0	313	0	$38	$73	$20	1.4
HS - Kitchen	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
HS - Kitchen	14	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	S	114	4,940	3	Relamp	No	14	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	4,940	0.6	3,718	0	$456	$1,022	$280	1.6
HS - Kitchen Hood	6	Incandescent: (1) 65W A19 Screw-In Lamp	Occupancy Sensor	S	65	4,940	3	Relamp	No	6	LED Lamps: LED Lamps	Occupancy Sensor	10	4,940	0.2	1,565	0	$192	$103	$6	0.5

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
HS - Kitchen Office	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	4,940	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	4,940	0.0	156	0	$19	$37	$10	1.4
HS - Library Stairs	11	LED - Fixtures: Decorative: Other	Other		5	4,940		None	No	11	LED - Fixtures: Decorative: Other	Other	5	4,940	0.0	0	0	$0	$0	$0	0.0
HS - Library Stairs	5	LED - Fixtures: Downlight Recessed	Other		20	4,940		None	No	5	LED - Fixtures: Downlight Recessed	Other	20	4,940	0.0	0	0	$0	$0	$0	0.0
HS - Lower Library	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
HS - Lower Library	50	LED - Fixtures: Ambient - 2' - Indirect/Direct Fixture	Occupancy Sensor	S	7	3,301		None	No	50	LED - Fixtures: Ambient - 2' - Indirect/Direct Fixture	Occupancy Sensor	7	3,301	0.0	0	0	$0	$0	$0	0.0
HS - Lower Library	7	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	3,301		None	No	7	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	3,301	0.0	0	0	$0	$0	$0	0.0
HS - Lower Library Kitchen	2	LED - Fixtures: Ambient - 2' - Indirect/Direct Fixture	Occupancy Sensor	S	7	3,301		None	No	2	LED - Fixtures: Ambient - 2' - Indirect/Direct Fixture	Occupancy Sensor	7	3,301	0.0	0	0	$0	$0	$0	0.0
HS - Main School Entrance	1	Incandescent: (10) 40W Candelabra Screw-In Lamps	Occupancy Sensor	S	400	4,940	3	Relamp	No	1	LED Lamps: LED Lamps	Occupancy Sensor	60	4,940	0.2	1,612	0	$198	$242	$10	1.2
HS - Main School Entrance	4	LED Lamps: (1) 5.5W Plug-In Lamp	Occupancy Sensor	S	6	4,940		None	No	4	LED Lamps: (1) 5.5W Plug-In Lamp	Occupancy Sensor	6	4,940	0.0	0	0	$0	$0	$0	0.0
HS - Main School Entrance	2	LED - Fixtures: Ambient - 4' - Direct Fixture	Occupancy Sensor	S	32	4,940		None	No	2	LED - Fixtures: Ambient - 4' - Direct Fixture	Occupancy Sensor	32	4,940	0.0	0	0	$0	$0	$0	0.0
HS - Maintenance Shop	3	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Occupancy Sensor	S	88	4,940	2	Relamp & Reballast	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	4,940	0.1	839	0	$103	$206	$30	1.7
HS - Maintenance Shop	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	4,940	3	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	4,940	0.1	939	0	$115	$219	$60	1.4
HS - Maintenance Shop	20	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	4,940	3	Relamp	No	20	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	4,940	0.7	4,695	0	$576	$1,095	$300	1.4
HS - Maintenance Shop	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	S	114	4,940	3	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	4,940	0.0	266	0	$33	$73	$20	1.6
HS - Middle 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
HS - Middle Staircase	4	LED - Fixtures: Ambient - 4' - Direct/Indirect Fixture	Other		32	4,940		None	No	4	LED - Fixtures: Ambient - 4' - Direct/Indirect Fixture	Other	32	4,940	0.0	0	0	$0	$0	$0	0.0
HS - Office - Boys Locker Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	S	114	4,940	3	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	4,940	0.0	266	0	$33	$73	$20	1.6
HS - Office - IT	4	Compact Fluorescent: (2) 40W Biax Lamps	Occupancy Sensor	S	80	3,301	3	Relamp	No	4	LED Lamps: LED Lamps	Occupancy Sensor	56	3,301	0.1	304	0	$37	$108	$8	2.7
HS - Office - Training	6	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Occupancy Sensor	S	62	4,940	3	Relamp	No	6	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	4,940	0.1	825	0	$101	$435	$60	3.7
HS - Office Boys Locker Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	S	114	4,940	3	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	4,940	0.0	266	0	$33	$73	$20	1.6
HS - Pump Room 417	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	4,940	3	Relamp	No	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	4,940	0.1	782	0	$96	$183	$50	1.4
HS - Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	S	114	4,940	3	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	4,940	0.0	266	0	$33	$73	$20	1.6
HS - Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	S	114	4,940	3	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	4,940	0.0	266	0	$33	$73	$20	1.6
HS - Female Bath 2nd fl Senior Building	1	LED Lamps: (2) 5.5W A19 Screw-In Lamps	Occupancy Sensor	S	6	4,940		None	No	1	LED Lamps: (2) 5.5W A19 Screw-In Lamps	Occupancy Sensor	6	4,940	0.0	0	0	$0	$0	$0	0.0
HS - Female Bath 2nd fl Senior Building	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	4,940	3	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	4,940	0.1	469	0	$58	$110	$30	1.4

	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
HS - Restroom - Female Auditorium lobby	1	LED Lamps: (4) 5.5W Plug-In Lamps	Occupancy Sensor	S	6	4,940		None	No	1	LED Lamps: (4) 5.5W Plug-In Lamps	Occupancy Sensor	6	4,940	0.0	0	0	$0	$0	$0	0.0
HS - Restroom - Female Auditorium lobby	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Occupancy Sensor	S	33	4,940	3	Relamp	No	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	4,940	0.0	152	0	$19	$65	$12	2.8
HS - Male Bath 2nd Fl Senior Building	1	LED Lamps: (1) 5.5W A19 Screw-In Lamp	Occupancy Sensor	S	6	4,940		None	No	1	LED Lamps: (1) 5.5W A19 Screw-In Lamp	Occupancy Sensor	6	4,940	0.0	0	0	$0	$0	$0	0.0
HS - Male Bath 2nd Fl Senior Building	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	4,940	3	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	4,940	0.1	469	0	$58	$110	$30	1.4
HS - Restroom 420E	1	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	3,301		None	No	1	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	3,301	0.0	0	0	$0	$0	$0	0.0
HS - Room 101	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	4,940	3	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	4,940	0.4	2,817	0	$346	$657	$180	1.4
HS - Room 102	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	4,940	3	Relamp	No	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	4,940	0.6	3,756	0	$461	$876	$240	1.4
HS - Room 103	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	4,940	3	Relamp	No	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	4,940	0.6	3,756	0	$461	$876	$240	1.4
HS - Room 104 / auto bay	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	S	114	3,301	3	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	3,301	0.0	177	0	$22	$73	$20	2.4
HS - Room 104 / auto bay	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	3,301	3	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,301	0.4	1,882	0	$231	$657	$180	2.1
HS - Room 105	27	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	3,301	3	Relamp	No	27	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,301	1.0	4,235	0	$520	$1,479	$405	2.1
HS - Room 106	14	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	3,301		None	No	14	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	3,301	0.0	0	0	$0	$0	$0	0.0
HS - Room 107	15	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	3,301	3	Relamp	No	15	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,301	0.5	2,353	0	$289	$822	$225	2.1
HS - Room 109	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	4,940	3	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	4,940	0.1	469	0	$58	$110	$30	1.4
HS - Room 112	2	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Occupancy Sensor	S	62	4,940	3	Relamp	No	2	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	4,940	0.0	275	0	$34	$145	$20	3.7
HS - Room 114	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	4,940	3	Relamp	No	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	4,940	0.3	2,113	0	$259	$493	$135	1.4
HS - Room 114	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Occupancy Sensor	S	62	4,940	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	4,940	0.0	138	0	$17	$72	$10	3.7
HS - Room 114 bath	1	Linear Fluorescent - T12: 2' T12 (20W) - 2L	Occupancy Sensor	S	50	4,940	2	Relamp & Reballast	No	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	4,940	0.0	156	0	$19	$65	$6	3.1
HS - Room 201	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	4,940	3	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	4,940	0.4	2,817	0	$346	$657	$180	1.4
HS - Room 202	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	4,940	3	Relamp	No	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	4,940	0.3	2,113	0	$259	$493	$135	1.4
HS - Room 203	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	4,940	3	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	4,940	0.4	2,817	0	$346	$657	$180	1.4
HS - Room 204	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	4,940	3	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	4,940	0.4	2,817	0	$346	$657	$180	1.4
HS - Room 205	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	4,940	3	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	4,940	0.4	2,817	0	$346	$657	$180	1.4
HS - Room 206	4	Linear Fluorescent - T8: 2' T8 (17W) - 4L	Occupancy Sensor	S	63	3,301	3	Relamp	No	4	LED - Linear Tubes: (4) 2' Lamps	Occupancy Sensor	34	3,301	0.1	368	0	$45	$260	$48	4.7
HS - Room 206	15	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	S	114	4,940	3	Relamp	No	15	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	4,940	0.6	3,984	0	$489	$1,095	$300	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
HS - Room 207	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	4,940	3	Relamp	No	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	4,940	0.1	939	0	$115	$219	$60	1.4
HS - Room 208	10	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	4,940	3	Relamp	No	10	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	4,940	0.4	2,347	0	$288	$548	$150	1.4
HS - Room 209	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	3,301	3	Relamp	No	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,301	0.2	941	0	$116	$329	$90	2.1
HS - Room 211	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	4,940	3	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	4,940	0.4	2,817	0	$346	$657	$180	1.4
HS - Room 212 # 1	2	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	3,301		None	No	2	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	3,301	0.0	0	0	$0	$0	$0	0.0
HS - Room 212- #2	2	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	4,940		None	No	2	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	4,940	0.0	0	0	$0	$0	$0	0.0
HS - Room 212 - 212C	2	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	4,940		None	No	2	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	4,940	0.0	0	0	$0	$0	$0	0.0
HS - Room 212 - 212E	2	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	4,940		None	No	2	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	4,940	0.0	0	0	$0	$0	$0	0.0
HS - Room 212 - Bathroom	1	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	3,301		None	No	1	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	3,301	0.0	0	0	$0	$0	$0	0.0
HS - Room 212 - Kitchen	2	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	4,940		None	No	2	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	4,940	0.0	0	0	$0	$0	$0	0.0
HS - Room 212- 212 F	2	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	4,940		None	No	2	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	4,940	0.0	0	0	$0	$0	$0	0.0
HS - Room 212- 212D	2	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	4,940		None	No	2	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	4,940	0.0	0	0	$0	$0	$0	0.0
HS - Room 212- 212G	2	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	4,940		None	No	2	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	4,940	0.0	0	0	$0	$0	$0	0.0
HS - Room 212- 214A	2	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	4,940		None	No	2	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	4,940	0.0	0	0	$0	$0	$0	0.0
HS - Room 212- 214B	4	Compact Fluorescent: (1) 13W A15 Screw-In Lamp	Occupancy Sensor	S	13	4,940	3	Relamp	No	4	LED Lamps: LED Lamps	Occupancy Sensor	9	4,940	0.0	76	0	$9	$50	$4	4.9
HS - Room 212- 214B	2	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	4,940		None	No	2	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	4,940	0.0	0	0	$0	$0	$0	0.0
HS - Room 212- 214C	2	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	4,940		None	No	2	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	4,940	0.0	0	0	$0	$0	$0	0.0
HS - Room 212- 214F	1	LED - Fixtures: Ambient - 4' - Indirect/Direct Fixture	Occupancy Sensor	S	32	3,301		None	No	1	LED - Fixtures: Ambient - 4' - Indirect/Direct Fixture	Occupancy Sensor	32	3,301	0.0	0	0	$0	$0	$0	0.0
HS - Room 212- Entrance	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
HS - Room 212- Entrance	8	LED - Fixtures: Ambient - 2' - Indirect/Direct Fixture	Occupancy Sensor	S	7	4,940		None	No	8	LED - Fixtures: Ambient - 2' - Indirect/Direct Fixture	Occupancy Sensor	7	4,940	0.0	0	0	$0	$0	$0	0.0
HS - Room 212- Entrance	1	LED - Fixtures: Ambient - 6' - Indirect/Direct Fixture	Occupancy Sensor	S	36	4,940		None	No	1	LED - Fixtures: Ambient - 6' - Indirect/Direct Fixture	Occupancy Sensor	36	4,940	0.0	0	0	$0	$0	$0	0.0
HS - Room 212- Entrance	2	LED - Fixtures: Ambient - 4' - Indirect/Direct Fixture	Occupancy Sensor	S	32	4,940		None	No	2	LED - Fixtures: Ambient - 4' - Indirect/Direct Fixture	Occupancy Sensor	32	4,940	0.0	0	0	$0	$0	$0	0.0
HS - Room 212 Hallway	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
HS - Room 212 Hallway	4	LED - Fixtures: Ambient - 2' - Indirect/Direct Fixture	Other	S	7	4,940		None	No	4	LED - Fixtures: Ambient - 2' - Indirect/Direct Fixture	Other	7	4,940	0.0	0	0	$0	$0	$0	0.0
HS - Room 212 Hallway	9	LED - Fixtures: Ambient - 6' - Indirect/Direct Fixture	Other	S	36	4,940		None	No	9	LED - Fixtures: Ambient - 6' - Indirect/Direct Fixture	Other	36	4,940	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
HS - Room 213	7	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	4,940	3	Relamp	No	7	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	4,940	0.2	1,643	0	$202	$383	$105	1.4
HS - Room 215 Hallway	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Other	S	114	4,940	3	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Other	58	4,940	0.0	266	0	$33	$73	$20	1.6
HS - Room 215 Hallway	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Other	S	62	4,940	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Other	33	4,940	0.0	138	0	$17	$72	$10	3.7
HS - Room 215 IT	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	3,301	3	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,301	0.1	314	0	$39	$110	$30	2.1
HS - Room 215 Main area	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	3,301	3	Relamp	No	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,301	0.2	941	0	$116	$329	$90	2.1
HS - Room 215 Marianne Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	3,301	3	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,301	0.1	314	0	$39	$110	$30	2.1
HS - Room 215 Men Bath	1	LED Lamps: (3) 15.5W A19 Screw-In Lamps	Occupancy Sensor	S	47	4,940		None	No	1	LED Lamps: (3) 15.5W A19 Screw-In Lamps	Occupancy Sensor	47	4,940	0.0	0	0	$0	$0	$0	0.0
HS - Room 215 Principle Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	4,940	3	Relamp	No	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	4,940	0.1	939	0	$115	$219	$60	1.4
HS - Room 215 Supply Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	1,000	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,000	0.0	32	0	$4	$37	$10	6.8
HS - Room 215 Women Bathroom	1	LED Lamps: (2) 15.5W A19 Screw-In Lamps	Occupancy Sensor	S	31	4,940		None	No	1	LED Lamps: (2) 15.5W A19 Screw-In Lamps	Occupancy Sensor	31	4,940	0.0	0	0	$0	$0	$0	0.0
HS - Room 217	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	4,940	3	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	4,940	0.1	704	0	$86	$164	$45	1.4
HS - Room 301	15	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	3,301		None	No	15	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	3,301	0.0	0	0	$0	$0	$0	0.0
HS - Room 302	15	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	3,301		None	No	15	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	3,301	0.0	0	0	$0	$0	$0	0.0
HS - Room 303	15	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	3,301		None	No	15	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	3,301	0.0	0	0	$0	$0	$0	0.0
HS - Room 304	15	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	3,301		None	No	15	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	3,301	0.0	0	0	$0	$0	$0	0.0
HS - Room 305	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	3,301	3	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,301	0.1	627	0	$77	$219	$60	2.1
HS - Room 306	15	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	3,301		None	No	15	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	3,301	0.0	0	0	$0	$0	$0	0.0
HS - Room 308	9	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	3,301		None	No	9	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	3,301	0.0	0	0	$0	$0	$0	0.0
HS - Room 309	12	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	3,301		None	No	12	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	3,301	0.0	0	0	$0	$0	$0	0.0
HS - Room 311	12	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	3,301		None	No	12	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	3,301	0.0	0	0	$0	$0	$0	0.0
HS - Room 312	8	LED - Fixtures: Ambient - 6' - Indirect/Direct Fixture	Occupancy Sensor	S	36	3,301		None	No	8	LED - Fixtures: Ambient - 6' - Indirect/Direct Fixture	Occupancy Sensor	36	3,301	0.0	0	0	$0	$0	$0	0.0
HS - Room 312	20	LED - Fixtures: Downlight Pendant	Occupancy Sensor	S	7	3,301		None	No	20	LED - Fixtures: Downlight Pendant	Occupancy Sensor	7	3,301	0.0	0	0	$0	$0	$0	0.0
HS - Room 313	6	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	3,301		None	No	6	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	3,301	0.0	0	0	$0	$0	$0	0.0
HS - Room 314	15	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	3,301		None	No	15	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	3,301	0.0	0	0	$0	$0	$0	0.0
HS - Room 316	15	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	3,301		None	No	15	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	3,301	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
HS - Room 317	9	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	3,301		None	No	9	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	3,301	0.0	0	0	$0	$0	$0	0.0
HS - Room 319	12	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	3,301		None	No	12	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	3,301	0.0	0	0	$0	$0	$0	0.0
HS - Room 321	12	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	3,301		None	No	12	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	3,301	0.0	0	0	$0	$0	$0	0.0
HS - Room 401	12	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	4,940		None	No	12	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	4,940	0.0	0	0	$0	$0	$0	0.0
HS - Room 402	10	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	4,940		None	No	10	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	4,940	0.0	0	0	$0	$0	$0	0.0
HS - Room 402 Kitchen	4	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	4,940		None	No	4	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	4,940	0.0	0	0	$0	$0	$0	0.0
HS - Room 403	12	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	4,940		None	No	12	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	4,940	0.0	0	0	$0	$0	$0	0.0
HS - Room 404	12	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	4,940		None	No	12	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	4,940	0.0	0	0	$0	$0	$0	0.0
HS - Room 405	12	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	4,940		None	No	12	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	4,940	0.0	0	0	$0	$0	$0	0.0
HS - Room 406	12	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	4,940		None	No	12	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	4,940	0.0	0	0	$0	$0	$0	0.0
HS - Room 407	12	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	4,940		None	No	12	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	4,940	0.0	0	0	$0	$0	$0	0.0
HS - Room 408	12	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	4,940		None	No	12	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	4,940	0.0	0	0	$0	$0	$0	0.0
HS - Room 409	12	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	4,940		None	No	12	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	4,940	0.0	0	0	$0	$0	$0	0.0
HS - Room 410	12	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	4,940		None	No	12	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	4,940	0.0	0	0	$0	$0	$0	0.0
HS - Room 411	12	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	4,940		None	No	12	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	4,940	0.0	0	0	$0	$0	$0	0.0
HS - Room 412	11	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	4,940		None	No	11	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	4,940	0.0	0	0	$0	$0	$0	0.0
HS - Room 413	12	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	4,940		None	No	12	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	4,940	0.0	0	0	$0	$0	$0	0.0
HS - Room 414	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	4,940	3	Relamp	No	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	4,940	0.1	939	0	$115	$219	$60	1.4
HS - Room 414 Bath	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	S	32	3,301	3	Relamp	No	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	3,301	0.0	55	0	$7	$18	$5	1.9
HS - Room 415	15	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	4,940		None	No	15	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	4,940	0.0	0	0	$0	$0	$0	0.0
HS - Room 415 storage	2	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Occupancy Sensor	S	62	1,000	3	Relamp	No	2	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,000	0.0	56	0	$7	$145	$20	18.3
HS - Room 420D	6	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	3,301		None	No	6	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	3,301	0.0	0	0	$0	$0	$0	0.0
HS - Room 421	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	4,940	3	Relamp	No	18	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	4,940	0.4	2,817	0	$346	$657	$180	1.4
HS - Room 423	38	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	4,940	3	Relamp	No	38	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	4,940	0.9	5,947	0	$730	$1,388	$380	1.4
HS - Room 423 office	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	S	114	4,940	3	Relamp	No	3	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	4,940	0.1	797	0	$98	$219	$60	1.6

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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
HS - Room 429	8	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	S	114	4,940	3	Relamp	No	8	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	4,940	0.3	2,125	0	$261	$584	$160	1.6
HS - Room 501	17	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	3,301		None	No	17	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	3,301	0.0	0	0	$0	$0	$0	0.0
HS - Room 502	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
HS - Room 502	16	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	4,940		None	No	16	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	4,940	0.0	0	0	$0	$0	$0	0.0
HS - Room 503	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
HS - Room 503	21	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	4,940	3	Relamp	No	21	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	4,940	0.7	4,930	0	$605	$1,150	$315	1.4
HS - Room 504	6	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	4,940		None	No	6	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	4,940	0.0	0	0	$0	$0	$0	0.0
HS - Room 505	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	4,940	3	Relamp	No	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	4,940	0.1	939	0	$115	$219	$60	1.4
HS - Room 506	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	4,940	3	Relamp	No	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	4,940	0.1	939	0	$115	$219	$60	1.4
HS - Room 507	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	4,940	3	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	4,940	0.1	626	0	$77	$146	$40	1.4
HS - Room 508	3	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Occupancy Sensor	S	88	4,940	2	Relamp & Reballast	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	4,940	0.1	839	0	$103	$206	$30	1.7
HS - Room 508	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	4,940	3	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	4,940	0.1	939	0	$115	$219	$60	1.4
HS - Room 509	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
HS - Room 509	26	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	3,301		None	No	26	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	3,301	0.0	0	0	$0	$0	$0	0.0
HS - Room 509A	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
HS - Room 509A	4	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	3,301		None	No	4	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	3,301	0.0	0	0	$0	$0	$0	0.0
HS - Room 510	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
HS - Room 510	19	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	3,301		None	No	19	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	3,301	0.0	0	0	$0	$0	$0	0.0
HS - Room 511	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
HS - Room 511	16	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	3,301		None	No	16	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	3,301	0.0	0	0	$0	$0	$0	0.0
HS - Room 512 Superintendent Office	5	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	4,940		None	No	5	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	4,940	0.0	0	0	$0	$0	$0	0.0
HS - Room 512 Superintendent Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	4,940	3	Relamp	No	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	4,940	0.1	939	0	$115	$219	$60	1.4
HS - Room 601	24	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	3,301		None	No	24	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	3,301	0.0	0	0	$0	$0	$0	0.0
HS - Room 602	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	4,940	3	Relamp	No	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	4,940	0.1	939	0	$115	$219	$60	1.4
HS - Room 603 / prep 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

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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
HS - Room 603 / prep room	27	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	3,301		None	No	27	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	3,301	0.0	0	0	$0	$0	$0	0.0
HS - Room 604	1	U-Bend Fluorescent - T12: U T12 (40W) - 2L	Occupancy Sensor	S	88	4,940	2	Relamp & Reballast	No	1	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	4,940	0.0	261	0	$32	$105	$10	3.0
HS - Room 604	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	S	114	4,940	3	Relamp	No	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	4,940	0.1	531	0	$65	$146	$40	1.6
HS - Room 605	10	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	4,940	3	Relamp	No	10	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	4,940	0.4	2,347	0	$288	$548	$150	1.4
HS - Room 606	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
HS - Room 606	18	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	3,301		None	No	18	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	3,301	0.0	0	0	$0	$0	$0	0.0
HS - Room 607 / prep room	33	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	4,940		None	No	33	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	4,940	0.0	0	0	$0	$0	$0	0.0
HS - Room 608	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
HS - Room 608	21	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	3,301		None	No	21	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	3,301	0.0	0	0	$0	$0	$0	0.0
HS - Room 609 / prep 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
HS - Room 609 / prep room	25	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	32	3,301		None	No	25	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	3,301	0.0	0	0	$0	$0	$0	0.0
HS - Senior Building Custodial Closet	1	LED Lamps: (1) 5.5W A19 Screw-In Lamp	Occupancy Sensor	S	6	1,000		None	No	1	LED Lamps: (1) 5.5W A19 Screw-In Lamp	Occupancy Sensor	6	1,000	0.0	0	0	$0	$0	$0	0.0
HS - Senior Building Elevator	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	None	S	32	4,784	3	Relamp	No	2	LED - Linear Tubes: (1) 4' Lamp	None	15	4,784	0.0	161	0	$20	$37	$10	1.3
HS - Senior Building Elevator Machine Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	4,940	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	4,940	0.0	156	0	$19	$37	$10	1.4
HS - Senior Building Female Bath	1	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	S	32	4,940	4	None	Yes	1	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	32	3,409	0.0	47	0	$6	$0	$0	0.0
HS - Senior Building Female Bath	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,409	0.1	398	0	$49	$343	$55	5.9
HS - Senior Building Male Bath	1	LED Lamps: (1) 5.5W A19 Screw-In Lamp	Wall Switch	S	6	4,940	4	None	Yes	1	LED Lamps: (1) 5.5W A19 Screw-In Lamp	Occupancy Sensor	6	3,409	0.0	8	0	$1	$0	$0	0.0
HS - Senior Building Male Bath	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 4	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,409	0.1	597	0	$73	$380	$65	4.3
HS - Senior Building Slop Sink	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 4	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,409	0.0	199	0	$24	$307	$45	10.7
HS - Small Locker Room	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	4,940	3	Relamp	No	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	4,940	0.1	782	0	$96	$183	$50	1.4
HS - Storage Girl Locker Room	3	LED - Fixtures: Ambient - 4' - Direct Fixture	Occupancy Sensor	S	32	3,301		None	No	3	LED - Fixtures: Ambient - 4' - Direct Fixture	Occupancy Sensor	32	3,301	0.0	0	0	$0	$0	$0	0.0
HS - Supply 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	190	0	$23	$219	$60	6.8
HS - Supply Room	5	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	1,000	3	Relamp	No	5	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	1,000	0.2	269	0	$33	$365	$100	8.0
HS - Upper Library	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
HS - Upper Library	5	LED - Fixtures: LED-A8ID-36W-1L-HC-SM-HW	Occupancy Sensor	S	36	3,301		None	No	5	LED - Fixtures: LED-A8ID-36W-1L-HC-SM-HW	Occupancy Sensor	36	3,301	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
HS - Upper Library	9	LED - Fixtures: Ambient - 4' - Indirect/Direct Fixture	Occupancy Sensor	S	32	3,301		None	No	9	LED - Fixtures: Ambient - 4' - Indirect/Direct Fixture	Occupancy Sensor	32	3,301	0.0	0	0	$0	$0	$0	0.0
HS - Upper Library	4	LED - Fixtures: Decorative: Other	Occupancy Sensor	S	28	3,301		None	No	4	LED - Fixtures: Decorative: Other	Occupancy Sensor	28	3,301	0.0	0	0	$0	$0	$0	0.0
HS - Upper Library	6	LED - Fixtures: Decorative: Other	Occupancy Sensor	S	34	3,301		None	No	6	LED - Fixtures: Decorative: Other	Occupancy Sensor	34	3,301	0.0	0	0	$0	$0	$0	0.0
HS - Upper Library	21	LED Lamps: (1) 10W MR16 Plug-In Lamp	Occupancy Sensor	S	10	3,301		None	No	21	LED Lamps: (1) 10W MR16 Plug-In Lamp	Occupancy Sensor	10	3,301	0.0	0	0	$0	$0	$0	0.0
HS - Upper Library	10	LED Lamps: (1) 10W PAR16 Screw-In Lamp	Occupancy Sensor	S	10	3,301		None	No	10	LED Lamps: (1) 10W PAR16 Screw-In Lamp	Occupancy Sensor	10	3,301	0.0	0	0	$0	$0	$0	0.0
HS - West Gym Hallway	4	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
HS - West Gym Hallway	14	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Other	S	114	4,940	3	Relamp	No	14	LED - Linear Tubes: (4) 4' Lamps	Other	58	4,940	0.6	3,718	0	$456	$1,022	$280	1.6
HS - West 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
HS - West Staircase	4	LED - Fixtures: Ambient - 4' - Direct/Indirect Fixture	Occupancy Sensor		32	3,301		None	No	4	LED - Fixtures: Ambient - 4' - Direct/Indirect Fixture	Occupancy Sensor	32	3,301	0.0	0	0	$0	$0	$0	0.0
HS - West Wing Parking Lot	8	LED - Fixtures: Cobrahead Pole Mount	Timeclock	S	60	4,380		None	No	8	LED - Fixtures: Cobrahead Pole Mount	Timeclock	60	4,380	0.0	0	0	$0	$0	$0	0.0
HS - West Wing Wall Pack	10	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Timeclock	S	45	4,380		None	No	10	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Timeclock	45	4,380	0.0	0	0	$0	$0	$0	0.0
HS - Wood Shop 01	24	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3	Relamp	No	24	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,940	0.6	3,756	0	$461	$876	$240	1.4
HS - WS02	5	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	64	3,301		None	No	5	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	64	3,301	0.0	0	0	$0	$0	$0	0.0
HS - WS03	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	3,301	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,301	0.0	105	0	$13	$37	$10	2.1
Concession Stand Exterior Can	12	Compact Fluorescent: (1) 26W Plug-In Lamp	Timeclock		26	4,380	3	Relamp	No	12	LED Lamps: LED Lamps	Timeclock	9	4,380	0.0	894	0	$110	$150	$12	1.3
Concession Stand Exterior Pole	1	LED - Fixtures: Outdoor Pole/Arm-Mounted Decorative Fixture	Timeclock		80	4,380		None	No	1	LED - Fixtures: Outdoor Pole/Arm-Mounted Decorative Fixture	Timeclock	80	4,380	0.0	0	0	$0	$0	$0	0.0
Concession Stand Exterior Pole	1	LED - Fixtures: Outdoor Pole/Arm-Mounted Decorative Fixture	Timeclock		40	4,380		None	No	1	LED - Fixtures: Outdoor Pole/Arm-Mounted Decorative Fixture	Timeclock	40	4,380	0.0	0	0	$0	$0	$0	0.0
Concession Stand Exterior Short Pole	7	LED - Fixtures: Downlight Recessed	Timeclock		30	4,380		None	No	7	LED - Fixtures: Downlight Recessed	Timeclock	30	4,380	0.0	0	0	$0	$0	$0	0.0
Concession Stand Exterior Wall Packs	4	LED Lamps: (1) 5.5W Plug-In Lamp	Timeclock		6	4,380		None	No	4	LED Lamps: (1) 5.5W Plug-In Lamp	Timeclock	6	4,380	0.0	0	0	$0	$0	$0	0.0
Concession Stand Main Area	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	350	3	Relamp	No	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	350	0.2	100	0	$12	$329	$90	19.5
Concession Stand Main Area	2	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Occupancy Sensor	S	62	350	3	Relamp	No	2	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	350	0.0	19	0	$2	$145	$20	52.2
Concession Stand Men's Bathroom	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	400	3	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	400	0.1	51	0	$6	$146	$40	17.0
Concession Stand Utility Closet	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	1,000	3	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,000	0.0	63	0	$8	$73	$20	6.8
Concession Stand Women's Bathroom	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	400	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	276	0.1	64	0	$8	$416	$75	43.1
Pole Barn Exterior Wall Packs	11	LED Lamps: (1) 5.5W Plug-In Lamp	Timeclock		6	4,380		None	No	11	LED Lamps: (1) 5.5W Plug-In Lamp	Timeclock	6	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
Pole Barn Main Area	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
Pole Barn Main Area	14	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Timeclock	S	62	4,940	3	Relamp	No	14	LED - Linear Tubes: (2) 4' Lamps	Timeclock	29	4,940	0.3	2,191	0	$269	$511	$140	1.4
Pole Barn Parking Lot Pole	9	LED - Fixtures: Cobrahead Pole Mount	Timeclock		30	4,380		None	No	9	LED - Fixtures: Cobrahead Pole Mount	Timeclock	30	4,380	0.0	0	0	$0	$0	$0	0.0
Pole Barn Parking Lot Pole	6	LED - Fixtures: Cobrahead Pole Mount	Timeclock		40	4,380		None	No	6	LED - Fixtures: Cobrahead Pole Mount	Timeclock	40	4,380	0.0	0	0	$0	$0	$0	0.0
HS - Exterior LED Pole	15	LED Lamps: (1) 40W Corn Bulb Screw-In Lamps	Timeclock		40	3,380		None	No	15	LED Lamps: (1) 40W Corn Bulb Screw-In Lamps	Timeclock	40	3,380	0.0	0	0	$0	$0	$0	0.0
HS - Exterior Canopy	3	Compact Fluorescent: (2) 26W Plug-In Lamps	Timeclock		52	3,380		None	No	3	Compact Fluorescent: (2) 26W Plug-In Lamps	Timeclock	52	3,380	0.0	0	0	$0	$0	$0	0.0
HS - Exterior East Pole	1	LED - Fixtures: Cobrahead Pole Mount	Timeclock		40	3,380		None	No	1	LED - Fixtures: Cobrahead Pole Mount	Timeclock	40	3,380	0.0	0	0	$0	$0	$0	0.0
HS - Exterior East Pole	1	LED - Fixtures: Cobrahead Pole Mount	Timeclock		40	3,380		None	No	1	LED - Fixtures: Cobrahead Pole Mount	Timeclock	40	3,380	0.0	0	0	$0	$0	$0	0.0

Motor Inventory & Recommendations

		Existing Conditions									Proposed Conditions					Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	Motor Quantity	Motor Application	HP Per Motor	Full Load Efficiency	VFD Control?	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
Custodial Storage Area	Compressed Air System - Maintenance	2	Air Compressor	5.0	87.5%	No			W	390		No	87.5%	No		0.0	0	0	$0	$0	$0	0.0
Pump Room 417	Condensar Pump	2	Condenser Water Pump	100.0	95.4%	Yes			W	4,380		No	95.4%	No		0.0	0	0	$0	$0	$0	0.0
500-600 Roof Area	EF-1 - Science Classroom Fume Hood	1	Exhaust Fan	7.5	89.5%	Yes			W	3,000		No	89.5%	No		0.0	0	0	$0	$0	$0	0.0
500-600 Roof Area	Exhaust Fan	1	Exhaust Fan	0.3	65.0%	No			W	2,745		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
500-600 Roof Area	Exhaust Fan	1	Exhaust Fan	0.3	65.0%	No			W	2,745		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof 400 wing	Exhaust Fan	1	Exhaust Fan	0.3	65.0%	No			W	2,745		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Custodial supply room	DHW Circulating Pumps - HS Building	2	DHW Circulation Pump	0.3	65.0%	No			W	6,000		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Various Locations	WSHP - Various Spaces	21	Supply Fan	0.5	65.0%	No			W	3,000		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Various Locations	WSHP - Various Spaces	7	Supply Fan	0.5	65.0%	No			W	3,000		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Various Locations	WSHP - Various Spaces	4	Supply Fan	0.1	65.0%	No			W	3,000		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Various Locations	WSHP - Various Spaces	2	Supply Fan	0.1	65.0%	No			W	3,000		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Various Locations	WSHP - Various Spaces	7	Supply Fan	0.3	65.0%	No			W	3,000		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Various Locations	WSHP - Various Spaces	8	Supply Fan	0.3	65.0%	No			W	3,000		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Various Locations	WSHP - Various Spaces	2	Supply Fan	0.3	65.0%	No			W	3,000		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Various Locations	WSHP - Various Spaces	11	Supply Fan	0.3	65.0%	No			W	3,000		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Various Locations	WSHP - Various Spaces	3	Supply Fan	0.3	65.0%	No			W	3,000		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Various Locations	WSHP - Various Spaces	12	Supply Fan	0.5	70.0%	No			W	3,000		No	70.0%	No		0.0	0	0	$0	$0	$0	0.0
Various Locations	WSHP - Various Spaces	17	Supply Fan	0.5	70.0%	No			W	3,000		No	70.0%	No		0.0	0	0	$0	$0	$0	0.0
Various Locations	WSHP - Various Spaces	2	Supply Fan	0.5	70.0%	No			W	3,000		No	70.0%	No		0.0	0	0	$0	$0	$0	0.0
Various Locations	WSHP - Various Spaces	4	Supply Fan	0.5	70.0%	No			W	3,000		No	70.0%	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
Various Locations	WSHP - Various Spaces	3	Supply Fan	0.8	70.0%	No			W	3,000		No	70.0%	No		0.0	0	0	$0	$0	$0	0.0
Various Locations	WSHP - Various Spaces	8	Supply Fan	0.8	70.0%	No			W	3,000		No	70.0%	No		0.0	0	0	$0	$0	$0	0.0
Various Locations	WSHP - Various Spaces	1	Supply Fan	0.8	70.0%	No			W	3,000		No	70.0%	No		0.0	0	0	$0	$0	$0	0.0
Various Locations	WSHP - Various Spaces	5	Supply Fan	0.8	70.0%	No			W	3,000		No	70.0%	No		0.0	0	0	$0	$0	$0	0.0
Various Locations	WSHP - Various Spaces	2	Supply Fan	1.5	84.0%	No			W	3,000		No	84.0%	No		0.0	0	0	$0	$0	$0	0.0
Various Locations	WSHP - Various Spaces	3	Supply Fan	3.0	86.0%	No			W	3,000		No	86.0%	No		0.0	0	0	$0	$0	$0	0.0
Various Locations	WSHP - Various Spaces	5	Supply Fan	5.0	89.5%	No			W	3,000		No	89.5%	No		0.0	0	0	$0	$0	$0	0.0
Various Locations	WSHP - Various Spaces	2	Supply Fan	3.0	89.5%	No			W	3,000		No	89.5%	No		0.0	0	0	$0	$0	$0	0.0
Various Locations	WSHP - Various Spaces	3	Supply Fan	1.5	84.0%	No			W	3,000		No	84.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	HR-1 - Rumson RHS	1	Exhaust Fan	1.5	84.0%	No	Semco	FV2000V-6RN4AB	W	3,000	5	No	86.5%	Yes	1	0.5	1,577	0	$194	$3,887	$75	19.7
Roof	HR-1 - Rumson RHS	1	Supply Fan	1.5	84.0%	No	Semco	FV2000V-6RN4AB	W	3,000	5	No	86.5%	Yes	1	0.4	1,577	0	$194	$3,887	$75	19.7
Roof	HR-2 - Rumson RHS	1	Exhaust Fan	1.5	84.0%	No	Semco	FV2000V-6RN4AB	W	3,000	5	No	86.5%	Yes	1	0.5	1,577	0	$194	$3,887	$75	19.7
Roof	HR-2 - Rumson RHS	1	Supply Fan	1.5	84.0%	No	Semco	FV2000V-6RN4AB	W	3,000	5	No	86.5%	Yes	1	0.4	1,577	0	$194	$3,887	$75	19.7
Roof	HR-3 - Rumson RHS	1	Exhaust Fan	0.8	70.0%	No	Semco	FV-1000HS	W	3,000		No	70.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	HR-3 - Rumson RHS	1	Supply Fan	0.8	70.0%	No	Semco	FV-1000HS	W	3,000		No	70.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	HR-4 - Rumons RHS	1	Exhaust Fan	5.0	89.5%	No	Semco	FV-7500V-6RN4AA	W	3,000	5	No	89.5%	Yes	1	1.5	4,689	0	$576	$5,028	$900	7.2
Roof	HR-4 - Rumson RHS	1	Supply Fan	5.0	89.5%	No	Semco	FV-7500V-6RN4AA	W	3,000	5	No	89.5%	Yes	1	1.4	4,689	0	$576	$5,028	$900	7.2
Roof	HR-5 - Rumson RHS	1	Exhaust Fan	7.5	91.7%	No	Semco	FV7500V-6RN4AA	W	3,000	5	No	91.7%	Yes	1	2.2	6,864	0	$843	$5,945	$1,000	5.9
Roof	HR-5 - Rumson RHS	1	Supply Fan	5.0	89.5%	No	Semco	FV7500V-6RN4AA	W	3,000	5	No	89.5%	Yes	1	1.4	4,689	0	$576	$5,028	$900	7.2
Roof	HR-6 - Rumons RHS	1	Exhaust Fan	0.8	70.0%	No	Semco	FV1000V-6RN4AB	W	3,000		No	70.0%	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	HR-6 - Rumson RHS	1	Supply Fan	0.8	70.0%	No	Semco	FV1000V-6RN4AB	W	3,000		No	70.0%	No		0.0	0	0	$0	$0	$0	0.0
Attic	HR-7 - Rumson RHS	1	Exhaust Fan	5.0	89.5%	No	Semco	FV7500H-6RN4AA	W	3,000	5	No	89.5%	Yes	1	1.5	4,689	0	$576	$5,028	$900	7.2
Attic	HR-7 - Rumson RHS	1	Supply Fan	5.0	89.5%	No	Semco	FV7500H-6RN4AA	W	3,000	5	No	89.5%	Yes	1	1.4	4,689	0	$576	$5,028	$900	7.2
Attic	HR-8 - Rumson RHS	1	Exhaust Fan	10.0	91.7%	No	Semco	FV7500H-6NN4AA	W	3,000	5	No	91.7%	Yes	1	3.0	9,152	0	$1,123	$6,697	$1,100	5.0
Attic	HR-8 - Rumson RHS	1	Supply Fan	10.0	91.7%	No	Semco	FV7500H-6NN4AA	W	3,000	5	No	91.7%	Yes	1	2.9	9,152	0	$1,123	$6,697	$1,100	5.0
Roof	HR-9 - Rumson RHS	1	Exhaust Fan	7.5	91.7%	No	Semco	FV7500H-6NN4AA	W	3,000	5	No	91.7%	Yes	1	2.2	6,864	0	$843	$5,945	$1,000	5.9
Roof	HR-9 - Rumson RHS	1	Supply Fan	7.5	91.7%	No	Semco	FV7500H-6NN4AA	W	3,000	5	No	91.7%	Yes	1	2.1	6,864	0	$843	$5,945	$1,000	5.9
Roof	HR-10 - Rumson RHS	1	Exhaust Fan	1.5	84.0%	No	Semco	FV7500H-6NN4AA	W	3,000	5	No	86.5%	Yes	1	0.5	1,577	0	$194	$3,887	$75	19.7
Roof	HR-10 - Rumson RHS	1	Supply Fan	1.5	84.0%	No	Semco	FV7500H-6NN4AA	W	3,000	5	No	86.5%	Yes	1	0.4	1,577	0	$194	$3,887	$75	19.7
Roof	HR-11 - Rumson RHS	1	Exhaust Fan	3.0	86.0%	No	Semco	FV5000V-6RN4AB	W	3,000	5	No	89.5%	Yes	1	0.9	3,134	0	$385	$4,555	$200	11.3
Roof	HR-11 - Rumson RHS	1	Supply Fan	3.0	86.0%	No	Semco	FV5000V-6RN4AB	W	3,000	5	No	89.5%	Yes	1	0.9	3,134	0	$385	$4,555	$200	11.3
Roof	HR-12 - Rumson RHS	1	Exhaust Fan	3.0	86.0%	No	Semco	FV3000V-6RN4AB	W	3,000	5	No	89.5%	Yes	1	0.9	3,134	0	$385	$4,555	$200	11.3
Roof	HR-12 - Rumson RHS	1	Supply Fan	3.0	86.0%	No	Semco	FV3000V-6RN4AB	W	3,000	5	No	89.5%	Yes	1	0.9	3,134	0	$385	$4,555	$200	11.3
Roof	HR-13 - Rumson RHS	1	Exhaust Fan	5.0	89.5%	No	Semco	FV7500H-6RN4AA	W	3,000	5	No	89.5%	Yes	1	1.5	4,689	0	$576	$5,028	$900	7.2
Roof	HR-13 - Rumson RHS	1	Supply Fan	5.0	89.5%	No	Semco	FV7500H-6RN4AA	W	3,000	5	No	89.5%	Yes	1	1.4	4,689	0	$576	$5,028	$900	7.2
Roof	HR-14 - Rumson RHS	1	Exhaust Fan	1.5	84.0%	No	Semco	FV3000V-6RN4AB	W	3,000	5	No	86.5%	Yes	1	0.5	1,577	0	$194	$3,887	$75	19.7
Roof	HR-14 - Rumson RHS	1	Supply Fan	1.5	84.0%	No	Semco	FV3000V-6RN4AB	W	3,000	5	No	86.5%	Yes	1	0.4	1,577	0	$194	$3,887	$75	19.7
Roof	MUA-1 - Lb 601,608,609	1	Supply Fan	5.0	89.5%	Yes	VALENT	PVG400	W	3,000		No	89.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	RTU-210 - Media Center	1	Supply Fan	3.0	86.0%	No	AAON	RN01030EA193KB	W	0	5	No	89.5%	Yes	1	0.9	0	0	$0	$4,555	$200	0.0
Roof	DOAS-1 - Media Center	1	Supply Fan	2.0	86.5%	Yes	AAON	RQ0043VEA1931B	W	0		No	86.5%	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	DOAS-1 - Media Center	1	Exhaust Fan	1.0	84.0%	No	AAON	RQ0043VEA1931B	W	0		No	84.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	RTU-420 - Girls Locker Room	1	Supply Fan	2.0	86.5%	Yes	AAON	RN00930EB093F9	W	3,000		No	86.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	RTU-606 - Room 606	1	Supply Fan	3.0	89.5%	Yes	VALENT	PVG100	W	3,000		No	89.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	RTU-1 - Woodshop	1	Supply Fan	3.0	89.5%	No	VALENT	PVG150	W	3,000	5	No	89.5%	Yes	1	0.9	2,813	0	$345	$4,555	$200	12.6
Woodshop	Dust Collector	1	Other	3.0	86.5%	No			W	780		No	86.5%	No		0.0	0	0	$0	$0	$0	0.0
Woodshop	Dust Collector	1	Other	0.5	70.0%	No			W	780		No	70.0%	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
Various Locations	WSHP - Various Spaces	21	Water Source HP	0.80	13.00	12.70	3.8 COP	FHP MANUFACTURING	G010-2HZC	W	6	Yes	21	Water Source HP	0.80	13.00	14.00	4.8 COP	3.3	2,636	0	$324	$64,615	$756	197.4
Various Locations	WSHP - Various Spaces	7	Water Source HP	0.80	13.00	12.80	3.8 COP	FHP MANUFACTURING	GT010-2VTC	W	6	Yes	7	Water Source HP	0.80	13.00	14.00	4.8 COP	1.1	866	0	$106	$21,538	$252	200.2
Various Locations	WSHP - Various Spaces	4	Water Source HP	1.50	16.00	14.50	4 COP	FHP MANUFACTURING	GT018-2HVC	W	6	Yes	4	Water Source HP	1.50	16.00	15.00	4.5 COP	0.1	310	0	$38	$15,809	$408	404.5
Various Locations	WSHP - Various Spaces	2	Water Source HP	1.50	16.00	14.50	4 COP	FHP MANUFACTURING	GT018-2VTC	W	6	Yes	2	Water Source HP	1.50	16.00	15.00	4.5 COP	0.0	155	0	$19	$7,904	$204	404.5
Various Locations	WSHP - Various Spaces	7	Water Source HP	2.00	28.00	12.90	3.7 COP	FHP MANUFACTURING	GT024-2HZC	W	6	Yes	7	Water Source HP	2.00	28.00	15.00	4.5 COP	2.2	1,927	0	$237	$32,041	$952	131.4
Various Locations	WSHP - Various Spaces	8	Water Source HP	2.50	33.00	12.00	4.4 COP	FHP MANUFACTURING	GT030-2VTC	W	6	Yes	8	Water Source HP	2.50	33.00	15.00	4.5 COP	2.0	1,395	0	$171	$52,560	$1,360	298.9
Various Locations	WSHP - Various Spaces	2	Water Source HP	2.50	33.00	12.00	4.4 COP	FHP MANUFACTURING	GT030-2HZC	W	6	Yes	2	Water Source HP	2.50	33.00	15.00	4.5 COP	0.5	349	0	$43	$13,140	$340	298.9
Various Locations	WSHP - Various Spaces	11	Water Source HP	3.00	40.00	13.30	4.1 COP	FHP MANUFACTURING	GT036-2HZC	W	6	Yes	11	Water Source HP	3.00	40.00	15.00	4.5 COP	2.5	2,410	0	$296	$80,983	$2,244	266.1
Various Locations	WSHP - Various Spaces	3	Water Source HP	3.00	40.00	13.30	4.1 COP	FHP MANUFACTURING	GT036-2VTC	W	6	Yes	3	Water Source HP	3.00	40.00	15.00	4.5 COP	0.7	657	0	$81	$22,086	$612	266.1
Various Locations	WSHP - Various Spaces	12	Water Source HP	3.50	48.00	13.40	4.2 COP	FHP MANUFACTURING	GT042-4HZC	W	6	Yes	12	Water Source HP	3.50	48.00	15.00	4.5 COP	3.3	2,543	0	$312	$95,847	$2,856	297.8
Various Locations	WSHP - Various Spaces	17	Water Source HP	3.50	48.00	13.40	4.2 COP	FHP MANUFACTURING	GT042-4VTC	W	6	Yes	17	Water Source HP	3.50	48.00	15.00	4.5 COP	4.7	3,603	0	$442	$135,784	$4,046	297.8
Various Locations	WSHP - Various Spaces	2	Water Source HP	4.00	58.00	12.50	4.1 COP	FHP MANUFACTURING	GT048-4VTC	W	6	Yes	2	Water Source HP	4.00	58.00	15.00	4.5 COP	0.9	753	0	$92	$17,225	$544	180.6
Various Locations	WSHP - Various Spaces	4	Water Source HP	4.00	58.00	12.50	4.1 COP	FHP MANUFACTURING	GT048-4HZC	W	6	Yes	4	Water Source HP	4.00	58.00	15.00	4.5 COP	1.9	1,505	0	$185	$34,450	$1,088	180.6
Various Locations	WSHP - Various Spaces	3	Water Source HP	5.10	77.00	11.40	3.6 COP	FHP MANUFACTURING	GT062-4HZC	W	6	Yes	3	Water Source HP	5.10	77.00	15.00	4.5 COP	3.3	3,040	0	$373	$29,705	$1,040	76.8
Various Locations	WSHP - Various Spaces	8	Water Source HP	5.10	77.00	11.40	3.6 COP	FHP MANUFACTURING	GT062-4VTC	W	6	Yes	8	Water Source HP	5.10	77.00	15.00	4.5 COP	8.8	8,107	0	$995	$79,213	$2,774	76.8
Various Locations	WSHP - Various Spaces	1	Water Source HP	5.80	82.00	11.40	3.7 COP	FHP MANUFACTURING	GT070-4HZC	W	6	Yes	1	Water Source HP	5.80	82.00	15.00	4.5 COP	0.9	1,017	0	$125	$10,173	$522	77.3
Various Locations	WSHP - Various Spaces	5	Water Source HP	5.80	82.00	11.40	3.7 COP	FHP MANUFACTURING	GT070-4VTC	W	6	Yes	5	Water Source HP	5.80	82.00	15.00	4.5 COP	4.6	5,085	0	$624	$50,867	$2,610	77.3
Various Locations	WSHP - Various Spaces	2	Water Source HP	8.00	106.00	12.00	3.8 COP	GEO EXCEL	EM096-4HZC	W	6	Yes	2	Water Source HP	8.00	106.00	15.00	4.5 COP	1.8	2,232	0	$274	$22,917	$1,440	78.4
Various Locations	WSHP - Various Spaces	3	Water Source HP	10.00	142.00	12.20	4.1 COP	GEO EXCEL	EM120-4HZC	W	6	Yes	3	Water Source HP	10.00	142.00	15.00	4.5 COP	3.2	3,006	0	$369	$35,549	$2,700	89.0
Various Locations	WSHP - Various Spaces	5	Water Source HP	10.00	142.00	12.20	4.1 COP	GEO EXCEL	EM120-4VTC	W	6	Yes	5	Water Source HP	10.00	142.00	15.00	4.5 COP	5.4	5,010	0	$615	$59,248	$4,500	89.0

		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
Various Locations	WSHP - Various Spaces	2	Water Source HP	11.60	174.00	10.50	3.4 COP	GEO EXCEL	EM140-4HZC	W	6	Yes	2	Water Source HP	11.60	174.00	15.00	4.5 COP	5.7	6,053	0	$743	$31,030	$2,088	39.0
Various Locations	WSHP - Various Spaces	3	Water Source HP	12.00	173.00	12.30	3.9 COP	GEO EXCEL	EM144-4VTC	W	6	Yes	3	Water Source HP	12.00	173.00	15.00	4.5 COP	5.1	4,497	0	$552	$49,294	$3,240	83.4
Roof	RTU-606 - Room 606	1	Package Unit	5.00	80.00	12.00	0.8 AFUE	VALENT	PVG100	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	MUA-1 - Lab 601, 608, 609	1	Package Unit	10.00	320.00	12.00	0.8 AFUE	VALENT	PVG400	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	RTU-210 - Media Center	1	Package Unit	10.00	120.00	12.00	0.8 AFUE	AAON	RN01030EA193KB	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	DOAS-1 - Media Center	1	Package Unit	4.00	49.00	12.00	0.816666666666667 AFUE	AAON	RQ004	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	RTU-1 - Woodshop	1	Package Unit	10.00	120.00	12.00	0.8 AFUE	VALENT	PVG151			No							0.0	0	0	$0	$0	$0	0.0
Roof	RTU-420 - Girls Locker Room	1	Package Unit	9.00	156.00	12.00	0.8 AFUE	AAON	RN00930EB093F9	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	3rd Floor Elevator Room	1	Split-System Air-Source HP	1.50	23.00	16.00	5.5 HSPF	MITSUBISHI	PUZA18NHA3	B	6	Yes	1	Split-System Air-Source HP	1.50	23.00	15.50	8.5 HSPF	1.5	727	0	$89	$4,113	$150	44.4
Ground Floor	IT Closet	1	Split-System	1.50		18.50		MITSUBISHI	PUYA18NKA7	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	Media Center	1	Ductless Mini-Split HP	0.75	11.00	13.65	8.5 HSPF	LG	LUU097HV	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	Media Center	1	Ductless Mini-Split HP	2.00	26.00	13.50	8.5 HSPF	LG	LMU240HV	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	Girl Locker Room Office	1	Ductless Mini-Split HP	1.50	18.00	12.50	8.5 HSPF	LG	LUU189HV	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	Media Center	1	Ductless Mini-Split HP	12.00	162.00	12.50	8.5 HSPF	LG	ARUM144DTE5	W		No							0.0	0	0	$0	$0	$0	0.0
2nd Floor senior storage	Senior Storage	2	Electric Resistance Heat		17.06		1 COP	Qmark	MUH0571	W		No							0.0	0	0	$0	$0	$0	0.0
400 Wing - All gender bath	All Gender Bath	1	Electric Resistance Heat		2.56		1 COP			W		No							0.0	0	0	$0	$0	$0	0.0
400 Wing -Custodial Closet	Custodial Closet	1	Electric Resistance Heat		17.06		1 COP	Qmark	MUH0571	W		No							0.0	0	0	$0	$0	$0	0.0
600 Stair A	600 Stair A	1	Electric Resistance Heat		17.06		1 COP			W		No							0.0	0	0	$0	$0	$0	0.0
600 Stair B	600 Stair B	1	Electric Resistance Heat		17.06		1 COP			W		No							0.0	0	0	$0	$0	$0	0.0
6th Floor Supply Closet	Supply Closet	2	Electric Resistance Heat		17.06		1 COP	Qmark	MUH0571	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
Auditorium Attic	Auditorium Attic	2	Electric Resistance Heat		17.06		1 COP	Qmark	MUH0571	W		No							0.0	0	0	$0	$0	$0	0.0
Custodial Supply Room	Custodial Supply Room	2	Electric Resistance Heat		17.06		1 COP	Qmark	MUH0571	W		No							0.0	0	0	$0	$0	$0	0.0
East Stair	East Stair	1	Electric Resistance Heat		17.06		1 COP			W		No							0.0	0	0	$0	$0	$0	0.0
Electrical Room 111	Electrical Room 111	1	Electric Resistance Heat		17.06		1 COP	Qmark	MUH0571	W		No							0.0	0	0	$0	$0	$0	0.0
Main School Entrance	Main School Entrance	2	Electric Resistance Heat		17.06		1 COP			W		No							0.0	0	0	$0	$0	$0	0.0
Middle Staircase	Middle Staircase	1	Electric Resistance Heat		17.06		1 COP			W		No							0.0	0	0	$0	$0	$0	0.0
Pump Room 417	Pump Room 417	1	Electric Resistance Heat		17.06		1 COP	Qmark	MUH0571	W		No							0.0	0	0	$0	$0	$0	0.0
Room 104 / Auto Bay	Room 104 / Auto Bay	1	Electric Resistance Heat		17.06		1 COP	Qmark	MUH0571	W		No							0.0	0	0	$0	$0	$0	0.0
Room 508	Room 508	1	Electric Resistance Heat		17.06		1 COP			W		No							0.0	0	0	$0	$0	$0	0.0
West Staircase	West Staircase	1	Electric Resistance Heat		17.06		1 COP			W		No							0.0	0	0	$0	$0	$0	0.0
Concession Stand - Men's Bathroom	Men's Bathroom	1	Electric Resistance Heat		5.12		1 COP			W		No							0.0	0	0	$0	$0	$0	0.0
Concession Stand - Pantry	Pantry	1	Electric Resistance Heat		10.24		1 COP	Qmark	MUH0321	W		No							0.0	0	0	$0	$0	$0	0.0
Concession Stand - Utility Closet	Utility Closet	1	Electric Resistance Heat		10.24		1 COP	Qmark		W		No							0.0	0	0	$0	$0	$0	0.0
Concession Stand - Women's Bathroom	Women's Bathroom	1	Electric Resistance Heat		5.12		1 COP			W		No							0.0	0	0	$0	$0	$0	0.0
Concession Stand - Utility Closet	Main Area	1	Electric Resistance Heat		10.24		1 COP			W		No							0.0	0	0	$0	$0	$0	0.0
Pole Barn	Pole Barn	2	Electric Resistance Heat		17.06		2 COP			W		No							0.0	0	0	$0	$0	$0	0.0

Pipe Insulation Recommendations

		Recommendation Inputs			Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Affected	ECM #	Length of Uninsulated Pipe (ft)	Pipe Diameter (in)	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
Custodial Supply Room	DHW	7	12	1.50	0.0	0	8	$137	$160	$24	1.0
Custodial Supply Room	DHW	7	200	2.00	0.0	0	14	$252	$2,664	$400	9.0

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
Concession Stand - Utility Closet	Concession Stand	1	Storage Tank Water Heater (> 50 Gal)	Bradford White	EF60T125E3NA2	W		No						0.0	0	0	$0	$0	$0	0.0
HS - Senior Storage Room	Senior Building	1	Storage Tank Water Heater (> 50 Gal)	Vaughn	S100A4184803-2	W		No						0.0	0	0	$0	$0	$0	0.0
HS - Custodial Supply Room	High School	2	Storage Tank Water Heater (> 50 Gal)	AO SMITH	BTH-199 300	W		No						0.0	0	0	$0	$0	$0	0.0
Dishwasher Room	Booster Water Heater	1	Booster Water Heater			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
Lower Library kitchen	8	1	Faucet Aerator (Kitchen)	2.20	1.50	0.0	0	0	$7	$7	$2	0.7
Room 402 Kitchen	8	2	Faucet Aerator (Kitchen)	2.20	1.50	0.0	0	1	$14	$14	$4	0.7
Science Classrooms	8	65	Faucet Aerator (Lavatory)	2.20	0.50	0.0	9,036	0	$1,109	$466	$233	0.2
Restrooms	8	39	Faucet Aerator (Lavatory)	2.20	0.50	0.0	0	37	$660	$280	$140	0.2

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
HS - Kitchen	1	Low Temp Freezer (-35F to -5F)	BALLY	TEZA015H8HS2DB	10, 11	Yes	Yes	Yes	0.2	3,148	0	$386	$2,799	$205	6.7

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
HS-Kitchen	2	Refrigerator Chest	Turbo Air	TOM-40SB-N	No		No	0.0	0	0	$0	$0	$0	0.0
HS-Kitchen	2	Refrigerator Chest	BEVERAGE-AIR	SM58HC-W	Yes		No	0.0	0	0	$0	$0	$0	0.0
HS-Kitchen	2	Refrigerator Chest			No		No	0.0	0	0	$0	$0	$0	0.0
HS-Kitchen	1	Stand-Up Freezer, Solid Door (>50 cu. ft.)	TRAULSEN	AHT232NUT-HHS	No		No	0.0	0	0	$0	$0	$0	0.0
HS-Kitchen	2	Stand-Up Refrigerator, Solid Door (≤15 cu. ft.)	IMBERA	VR06CBMAD	Yes		No	0.0	0	0	$0	$0	$0	0.0
HS-Kitchen	1	Stand-Up Refrigerator, Solid Door (>50 cu. ft.)	TRAULSEN	RDT332NUT-HHS	No		No	0.0	0	0	$0	$0	$0	0.0
HS-Kitchen	2	Stand-Up Refrigerator, Solid Door (>50 cu. ft.)	TRAULSEN	AHT232NUT-HHS	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
HS - Ice Room	1	Self-Contained Unit (≥175 lbs/day), Batch	HOSHIKAKI	KM-520MAJ	No		No	0.0	0	0	$0	$0	$0	0.0
HS - Room 609	1	Self-Contained Unit (≥175 lbs/day), Batch	HOSHIKAKI		No		No	0.0	0	0	$0	$0	$0	0.0

Cooking Equipment Inventory & Recommendations

	Existing Conditions					Proposed Conditions		Energy Impact & Financial Analysis						
Location	Quantity	Equipment Type	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
Kitchen	1	Gas Combination Oven/Steam Cooker (<15 Pans)	Vulcan		Yes		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	1	Electric Combination Oven/Steam Cooker (<15 Pans)			Yes		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	1	Gas Convection Oven (Full Size)			No	9	Yes	0.0	0	19	$335	$9,290	$500	26.2
Kitchen	1	Electric Fryer	Frymaster		Yes		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	2	Gas Fryer	Vulcan		Yes		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	2	Insulated Food Holding Cabinet (3/4 Size)			Yes		No	0.0	0	0	$0	$0	$0	0.0

Dishwasher Inventory & Recommendations

	Existing Conditions							Proposed Conditions		Energy Impact & Financial Analysis						
Location	Quantity	Dishwasher Type	Manufacturer	Model	Water Heater Fuel Type	Booster Heater Fuel Type	ENERGY STAR Qualified?	ECM #	Install ENERGY STAR Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Payback w/ Incentives in Years
Lower Library Kitchen	1	Under Counter (High Temp)	GE	GDT2255SL0SS	Natural Gas	N/A	No		No	0.0	0	0	$0	$0	$0	0.0
Room 402 Kitchen	1	Under Counter (High Temp)	BOSCH		Natural Gas	N/A	No		No	0.0	0	0	$0	$0	$0	0.0
Room 609 / Prep Room	1	Under Counter (High Temp)	MAYTAG	MDB4949SHZ	Electric	N/A	No		No	0.0	0	0	$0	$0	$0	0.0
Dishwasher Room	1	Door Type (High Temp)	Hubart	CRS66A	Electric	N/A	No		No	0.0	0	0	$0	$0	$0	0.0

Plug Load Inventory

	Existing Conditions					
Location	Quantity	Equipment Description	Energy Rate (W)	ENERGY STAR Qualified?	Manufacturer	Model
Room 402 - Kitchen	1	Clothes Dryer	5,000	No		
Custodial Supply Room	1	Clothes Washer	900	No		
Room 402 - Kitchen	1	Clothes Washer	900	No		
3rd Fl Room 315	1	Coffee Machine	900	No		
Kitchen	1	Coffee Machine	900	No		
Office - Boys Locker Room	1	Coffee Machine	900	No		
Room 212 - Kitchen	1	Coffee Machine	900	No		
Room 305	1	Coffee Machine	900	No		
Room 402 Kitchen	1	Coffee Machine	900	No		
Room 414	1	Coffee Machine	900	No		
Room 507	1	Coffee Machine	900	No		
Room 602	1	Coffee Machine	900	No		
Room 603 / prep room	1	Coffee Machine	900	No		
Room 607 / prep room	1	Coffee Machine	900	No		
High School	168	Desktop	105	No		
Room 605	1	Fan Ceiling	50	No		
High School	15	Microwave	1,000	No		
Room 212 Hallway	1	Paper Shredder	150	No		
Room 402	1	Paper Shredder	150	No		
Room 507	1	Paper Shredder	150	No		
Office - Boys Locker Room	1	Printer (Medium/Small)	200	No		
Room 213	1	Printer (Medium/Small)	200	No		
Room 402	1	Printer (Medium/Small)	200	No		
Room 414	1	Printer (Medium/Small)	200	No		
Room 504	1	Printer (Medium/Small)	200	No		
Room 605	1	Printer (Medium/Small)	200	No		
3rd Fl Room 315	1	Printer/Copier (Large)	600	No		
Office - Training	1	Printer/Copier (Large)	600	No		
Room 209	1	Printer/Copier (Large)	600	No		
Room 212 Hallway	1	Printer/Copier (Large)	600	No		
Room 215 Main area	1	Printer/Copier (Large)	600	No		
Room 506	1	Printer/Copier (Large)	600	No		
Room 512 Superintendent office	1	Printer/Copier (Large)	600	No		
Room 602	1	Printer/Copier (Large)	600	No		
High School	52	Projector	200	No		

	Existing Conditions					
Location	**Quantity**	**Equipment Description**	**Energy Rate (W)**	**ENERGY STAR Qualified?**	**Manufacturer**	**Model**
Room 402 Kitchen	1	Refrigerator (Large)	199	No		
Maintenance shop	1	Refrigerator (Mini)	126	No		
Office Boys Locker Room	1	Refrigerator (Mini)	126	No		
Room 112	1	Refrigerator (Mini)	126	No		
Room 114	1	Refrigerator (Mini)	126	No		
Room 207	1	Refrigerator (Mini)	126	No		
Room 215 Marianne office	1	Refrigerator (Mini)	126	No		
Room 305	1	Refrigerator (Mini)	126	No		
Room 420D	1	Refrigerator (Mini)	126	No		
Room 506	1	Refrigerator (Mini)	126	No		
3rd Fl Room 315	1	Refrigerator (Residential)	172	No		
Custodial Suppy Room	1	Refrigerator (Residential)	172	No		
Lower Library kitchen	1	Refrigerator (Residential)	172	No		
Room 112	1	Refrigerator (Residential)	172	No		
Room 212 - Kitchen	1	Refrigerator (Residential)	172	No		
Room 509A	1	Refrigerator (Residential)	172	No		
Room 602	1	Refrigerator (Residential)	172	No		
Room 607 / prep room	1	Refrigerator (Residential)	172	No		
Room 401	1	Smart Board	316	No		
Room 404	1	Smart Board	316	No		
High School	30	Television	130	No		
3rd Fl Room 315	1	Toaster	850	No		
1 st Floor Hallway	1	Water Fountain	92	No		
2nd Floor Hallway	1	Water Fountain	92	No		
3 rd Floor Hallway	1	Water Fountain	92	No		
400 West Wing Hallway	1	Water Fountain	92	No		
500 Hallway	1	Water Fountain	92	No		
600 Hallway	1	Water Fountain	92	No		
Auditorium Lobby	1	Water Fountain	92	No		
Room 215 Main area	1	Water Fountain	92	No		
Concession Stand - Main Area	4	Coffee Machine	1,500	No		
Concession Stand - Pantry	1	Refrigerator (Residential)	780	No		
Concession Stand - Pantry	1	Refrigerator (Residential)	780	No		
Various Spaces	33	Misc Plug Load	400	No		
Various Spaces	3	Server Closet	2,000	No		

	Existing Conditions					
Location	Quantity	Equipment Description	Energy Rate (W)	ENERGY STAR Qualified?	Manufacturer	Model
Maintenance Shop	1	Air Purifier	400	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
3rd Floor Room 315	1	Refrigerated	12	Yes	0.2	1,612	0	$198	$230	$50	0.9

Custom (High Level) Measure Analysis

Electric Tank Water Heater to HPWH

NOTE: HPWH calculation should not be used for existing water heaters with a storage capacity greater than 120 gal.

Existing Conditions						Proposed Conditions				Energy Impact & Financial Analysis										
Description	Area(s)/System(s) Served	SF of Area Served	Fuel Type	Input Capacity per Unit (kW)	Tank Capacity per Unit (Gal)	Description	COP	Tank Capacity per Unit (Gal)	Estimated Unit Cost	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Base Incentives	Enhanced Incentives	Total Incentives	Total Net Cost	Payback w/o Incentives in Years	Payback w/ Incentives in Years
Storage Tank Water Heater (>50 Gal)	Senior Building	20,000	Electric	18.0	100	Heat Pump Water Heater	2.5	100	$3,949.52	0.00	24,619	0	$3,022	$3,950	$0	$0	$0	$3,950	1.31	1.31
			Electric																	
			Electric																	

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]

Rumson-Fairhaven Regional High School (Campus)

Primary Property Type: K-12 School
Gross Floor Area (ft²): 188,875
Built: 1936

For Year Ending: September 30, 2022
Date Generated: March 09, 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
Rumson-Fairhaven Regional High School (Campus) 74 Ridge Road Rumson, New Jersey 07760	Rumson-Fairhaven Regional High School 74 Ridge Road Rumson, NJ 07760 (732) 639-2029	Robert Romano 74 Ridge Road Rumson, NJ 07760 (732) 639-2029 rromano@rumsonfairhaven.org

Property ID: 24399074

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
43.2 kBtu/ft²

Source EUI
115.1 kBtu/ft²

Annual Energy by Fuel	
Natural Gas (kBtu)	642,087 (8%)
Electric - Grid (kBtu)	7,524,378 (92%)

National Median Comparison	
National Median Site EUI (kBtu/ft²)	51.8
National Median Source EUI (kBtu/ft²)	137.8
% Diff from National Median Source EUI	-16%
Annual Emissions	
Total (Location-Based) GHG Emissions (Metric Tons CO2e/year)	690

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.

APPENDIX D: PV ANALYSIS

Rumson Fairhaven High School

Rumson Fairhaven High School

74 Ridge Rd
Rumson NJ 07760

(415) 271-8105
chuangxia@trccompanies.com

1 ABOUT US

ADAM GERZA
VP, Business Development

YULIA KRIVCHENKOVA
Manager, Utility Rates

MATTHEW CIMO
Western Regional Manager

OUR HISTORY

Energy Toolbase is an industry-leading software platform that specializes in modeling and proposing the economics of solar and energy storage projects. Our SaaS product is used by over 1,000 distributed energy organizations worldwide to accurately, objectively and transparently analyze their projects. In September of 2019, ETB merged with Pason Power, which specializes in designing, controlling and monitoring advanced energy storage systems. The newly combined company is backed by our parent, Pason Systems Inc. (TSX - PSI).

OUR MISSION

Our mission is to simplify complexity and to enable solar and energy storage developers to deploy projects more efficiently. We provide a cohesive suite of project modeling, energy storage control and asset monitoring products for solar + storage developers. We are a customer centric organization that takes great pride in the service we provide to our customers. Since our company's founding in 2014 our products have been guided by the same three core principles of: Accuracy, Objectivity, and Transparency.

PV SYSTEM DETAILS

GENERAL INFORMATION

Facility: Rumson-Fair Haven High school
Address: 74 Ridge Rd Rumson NJ 07760

SOLAR PV EQUIPMENT DESCRIPTION

Solar Panels: (2216) LG Electronics LG400Q1C-A6
Inverters: (48) Fronius USA Fronius Symo 15.0-3 (480V)

SOLAR PV EQUIPMENT TYPICAL LIFESPAN

Solar Panels: Greater than 30 Years
Inverters: 10 Years

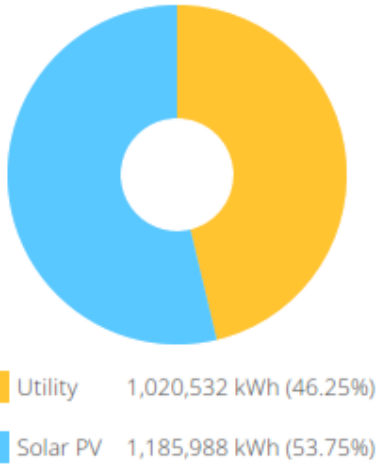
Solar PV System Cost and Incentives	
Solar PV System Cost	$4,697,061
Net Solar PV System Cost	**$4,697,061**

SOLAR PV SYSTEM RATING

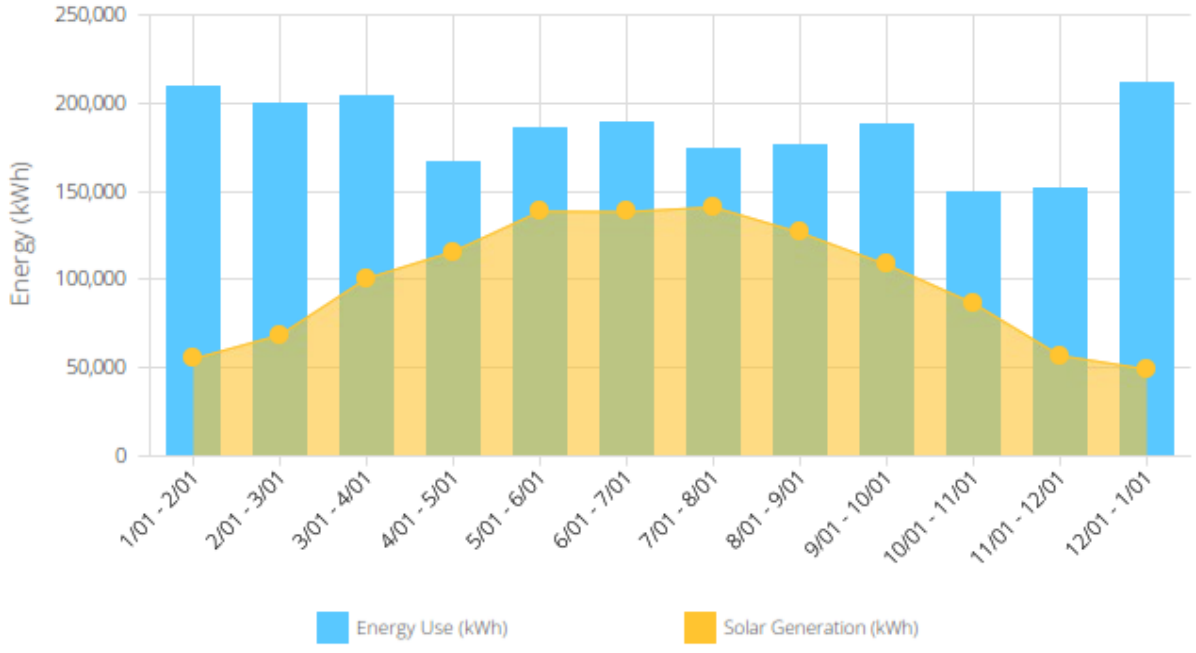
Power Rating: 886,400 W-DC
Power Rating: 868,672 W-AC-CEC

ENERGY CONSUMPTION MIX

Annual Energy Use: 2,206,520 kWh



MONTHLY ENERGY USE VS SOLAR GENERATION



UTILITY RATES

The table below shows the rates associated with your current utility rate schedule (GS). Your estimated electric bills after solar are shown on the following page.

Customer Charges				Energy Charges				Demand Charges			
Season	Charge Type	Rate Type	GS	Season	Charge Type	Rate Type	GS	Season	Charge Type	Rate Type	GS
W	Flat Rate	per billing period	$11.13	W	T < 1,000 kw	Import	$0.15486	W	10 kw < T	Import	$6.17
S	Flat Rate	per billing period	$11.13	W	1,000 kw < T	Import	$0.10474	S	10 kw < T	Import	$6.63
				S	T < 1,000 kw	Import	$0.15879				
				S	1,000 kw < T	Import	$0.10424				

CURRENT ELECTRIC BILL

The table below shows your annual electricity costs based on the most current utility rates and your previous 12 months of electrical usage.

RATE SCHEDULE: JCP&L - GS

Time Periods	Energy Use (kWh)	Max Demand (kW)	Charges			
Bill Ranges & Seasons	Total	NC / Max	Other	Energy	Demand	Total
1/1/2022 - 2/1/2022 W	209,520	470	$11	$21,994	$2,838	$24,844
2/1/2022 - 3/1/2022 W	199,520	470	$11	$20,947	$2,838	$23,796
3/1/2022 - 4/1/2022 W	204,400	405	$11	$21,458	$2,437	$23,906
4/1/2022 - 5/1/2022 W	166,560	400	$11	$17,495	$2,406	$19,912
5/1/2022 - 6/1/2022 W	185,520	450	$11	$19,481	$2,715	$22,207
6/1/2022 - 7/1/2022 S	188,960	473	$11	$19,751	$3,070	$22,832
7/1/2022 - 8/1/2022 S	174,080	473	$11	$18,200	$3,070	$21,281
8/1/2022 - 9/1/2022 S	176,520	350	$11	$18,455	$2,254	$20,720
9/1/2022 - 10/1/2022 S	188,320	451	$11	$19,685	$2,924	$22,620
10/1/2021 - 11/1/2021 W	150,000	473	$11	$15,761	$2,857	$18,628
11/1/2021 - 12/1/2021 W	152,000	473	$11	$15,970	$2,857	$18,838
12/1/2021 - 1/1/2022 W	211,120	433	$11	$22,162	$2,610	$24,783
Total	2,206,520	-	$134	$231,359	$32,875	$264,368

4.1.5 NEW ELECTRIC BILL

RATE SCHEDULE: JCP&L - GS

Time Periods	Energy Use (kWh)	Max Demand (kW)	Charges			
Bill Ranges & Seasons	Total	NC / Max	Other	Energy	Demand	Total
1/1/2022 - 2/1/2022 W	154,434	452	$11	$16,225	$2,727	$18,963
2/1/2022 - 3/1/2022 W	130,947	390	$11	$13,765	$2,345	$16,121
3/1/2022 - 4/1/2022 W	103,732	334	$11	$10,915	$1,999	$12,925
4/1/2022 - 5/1/2022 W	50,686	373	$11	$5,359	$2,240	$7,610
5/1/2022 - 6/1/2022 W	46,895	419	$11	$4,962	$2,524	$7,496
6/1/2022 - 7/1/2022 S	50,567	424	$11	$5,326	$2,745	$8,082
7/1/2022 - 8/1/2022 S	33,043	427	$11	$3,499	$2,765	$6,275
8/1/2022 - 9/1/2022 S	49,916	327	$11	$5,258	$2,102	$7,371
9/1/2022 - 10/1/2022 S	79,879	401	$11	$8,381	$2,592	$10,984
10/1/2021 - 11/1/2021 W	63,460	378	$11	$6,697	$2,271	$8,978
11/1/2021 - 12/1/2021 W	95,087	346	$11	$10,009	$2,073	$12,093
12/1/2021 - 1/1/2022 W	161,885	395	$11	$17,005	$2,375	$19,392
Total	1,020,531	-	$134	$107,399	$28,757	$136,290

ANNUAL ELECTRICITY SAVINGS: $128,078

7 ENVIRONMENTAL BENEFITS

OVER THE NEXT 20 YEARS, YOUR SYSTEM WILL DO MORE THAN JUST SAVE YOU MONEY. ACCORDING TO THE EPA'S GREENHOUSE GAS EQUIVALENCIES CALCULATOR (SOURCE), YOUR SOLAR PV SYSTEM WILL HAVE THE IMPACT OF REDUCING:

18,580

tons of CO2 Offset

42,246,869

Miles Driven By Cars

278,707

Trees Planted