



Local Government Energy Audit Report

Princeton Day School

April 27, 2023

Prepared for:

Princeton Day School

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Princeton, New Jersey 08540

Prepared by:

TRC

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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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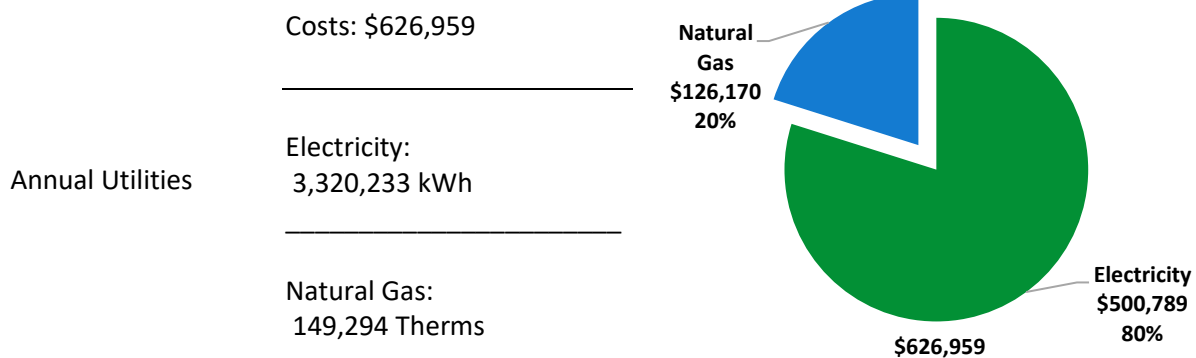
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1 EXECUTIVE SUMMARY

The New Jersey Board of Public Utilities (NJBPB) has sponsored this Local Government Energy Audit (LGEA) report for Princeton Day 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



ENERGY STAR®
Benchmarking Score

20
(1-100 scale)

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

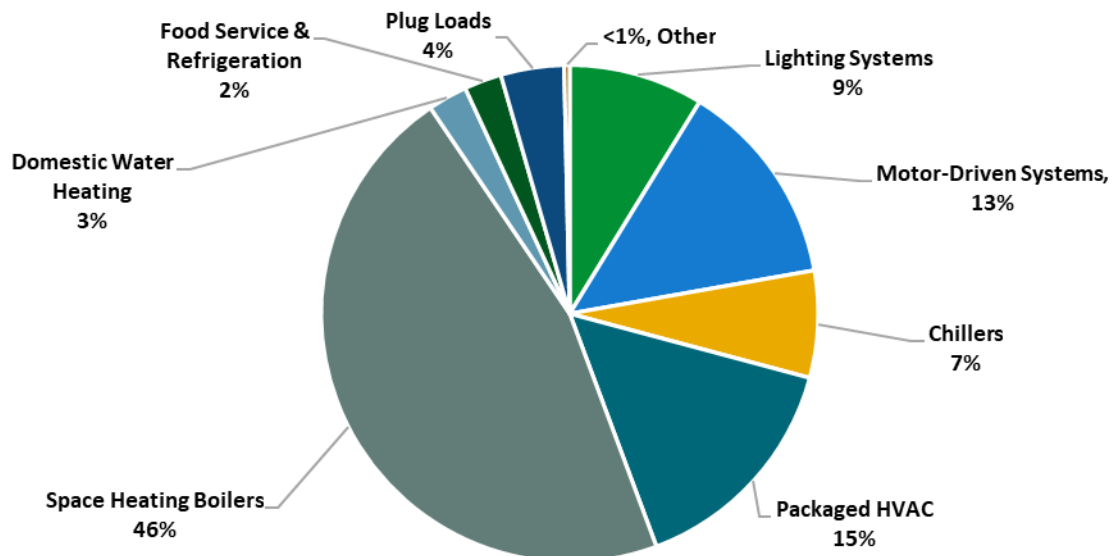


Figure 1 - Energy Use by System

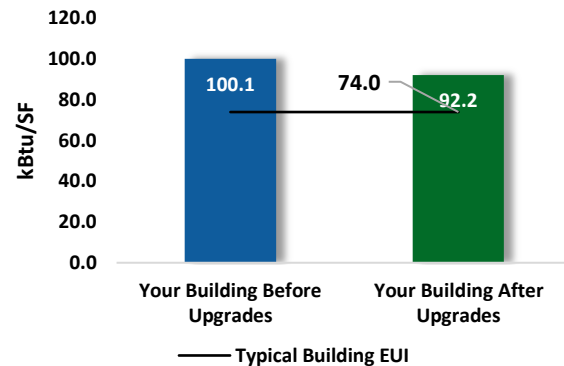
POTENTIAL IMPROVEMENTS



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

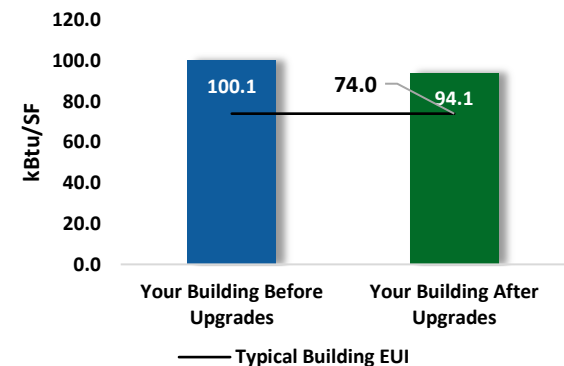
Scenario 1: Full Package (All Evaluated Measures)

| | |
|---|---|
| Installation Cost | \$636,550 |
| Potential Rebates & Incentives ¹ | \$78,245 |
| Annual Cost Savings | \$84,014 |
| Annual Energy Savings | Electricity: 544,273 kWh Natural Gas: 2,274 Therms |
| Greenhouse Gas Emission Savings | 287 Tons |
| Simple Payback | 6.6 Years |
| Site Energy Savings (All Utilities) | 8% |



Scenario 2: Cost Effective Package²

| | |
|-------------------------------------|--|
| Installation Cost | \$264,500 |
| Potential Rebates & Incentives | \$58,440 |
| Annual Cost Savings | \$70,241 |
| Annual Energy Savings | Electricity: 465,350 kWh Natural Gas: 62 Therms |
| Greenhouse Gas Emission Savings | 235 Tons |
| Simple Payback | 2.9 Years |
| Site Energy Savings (all utilities) | 6% |



On-site Generation Potential

| | |
|-------------------------|------|
| Photovoltaic | High |
| Combined Heat and Power | None |

¹ Incentives are based on previously run state rebate programs. Contact your utility provider for current program incentives that may apply.

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

| # | Energy Conservation Measure | Cost Effective? | Annual Electric Savings (kWh) | Peak Demand Savings (kW) | Annual Fuel Savings (MMBtu) | Annual Energy Cost Savings (\$) | Estimated M&L Cost (\$) | Estimated Incentive (\$)* | Estimated Net M&L Cost (\$) | Simple Payback Period (yrs)** | CO ₂ e Emissions Reduction (lbs) |
|--|--|-----------------|-------------------------------|--------------------------|-----------------------------|---------------------------------|-------------------------|---------------------------|-----------------------------|-------------------------------|---|
| Lighting Upgrades | | | 249,728 | 42.4 | -52 | \$37,230 | \$78,800 | \$17,972 | \$60,828 | 1.6 | 245,431 |
| ECM 1 | Retrofit Fluorescent Fixtures with LED Lamps and Drivers | Yes | 5,117 | 2.1 | -1 | \$763 | \$2,774 | \$415 | \$2,359 | 3.1 | 5,028 |
| ECM 2 | Retrofit Fixtures with LED Lamps | Yes | 244,611 | 40.3 | -51 | \$36,467 | \$76,026 | \$17,557 | \$58,469 | 1.6 | 240,403 |
| Lighting Control Measures | | | 111,392 | 16.8 | -23 | \$16,604 | \$86,534 | \$27,110 | \$59,424 | 3.6 | 109,444 |
| ECM 3 | Install Occupancy Sensor Lighting Controls | Yes | 84,532 | 13.0 | -18 | \$12,601 | \$58,184 | \$7,380 | \$50,804 | 4.0 | 83,054 |
| ECM 4 | Install High/Low Lighting Controls | Yes | 26,860 | 3.8 | -6 | \$4,004 | \$28,350 | \$19,730 | \$8,620 | 2.2 | 26,390 |
| Variable Frequency Drive (VFD) Measures | | | 97,532 | 29.6 | 0 | \$14,711 | \$87,980 | \$12,700 | \$75,280 | 5.1 | 98,213 |
| ECM 5 | Install VFDs on Constant Volume (CV) Fans | Yes | 97,532 | 29.6 | 0 | \$14,711 | \$87,980 | \$12,700 | \$75,280 | 5.1 | 98,213 |
| Unitary HVAC Measures | | | 95,337 | 47.7 | 24 | \$14,582 | \$366,714 | \$19,305 | \$347,409 | 23.8 | 98,810 |
| ECM 6 | Install High Efficiency Air Conditioning Units | No | 95,337 | 47.7 | 24 | \$14,582 | \$366,714 | \$19,305 | \$347,409 | 23.8 | 98,810 |
| Gas Heating (HVAC/Process) Replacement | | | 0 | 0.0 | 22 | \$188 | \$2,639 | \$500 | \$2,139 | 11.4 | 2,602 |
| ECM 7 | Install High Efficiency Furnaces | No | 0 | 0.0 | 22 | \$188 | \$2,639 | \$500 | \$2,139 | 11.4 | 2,602 |
| HVAC System Improvements | | | 0 | 0.0 | 62 | \$526 | \$1,343 | \$166 | \$1,177 | 2.2 | 7,289 |
| ECM 8 | Install Pipe Insulation | Yes | 0 | 0.0 | 62 | \$526 | \$1,343 | \$166 | \$1,177 | 2.2 | 7,289 |
| Domestic Water Heating Upgrade | | | 0 | 0.0 | 19 | \$159 | \$883 | \$212 | \$671 | 4.2 | 2,208 |
| ECM 9 | Install Low-Flow DHW Devices | Yes | 0 | 0.0 | 19 | \$159 | \$883 | \$212 | \$671 | 4.2 | 2,208 |
| Food Service & Refrigeration Measures | | | 3,620 | 0.3 | 0 | \$546 | \$4,415 | \$280 | \$4,135 | 7.6 | 3,646 |
| ECM 10 | Refrigerator/Freezer Case Electrically Commutated Motors | Yes | 393 | 0.0 | 0 | \$59 | \$607 | \$80 | \$527 | 8.9 | 396 |
| ECM 11 | Refrigeration Controls | Yes | 1,273 | 0.0 | 0 | \$192 | \$3,348 | \$150 | \$3,198 | 16.7 | 1,282 |
| ECM 12 | Vending Machine Control | Yes | 1,954 | 0.2 | 0 | \$295 | \$460 | \$50 | \$410 | 1.4 | 1,968 |
| Custom Measures | | | -13,336 | 0.0 | 175 | -\$533 | \$7,241 | \$0 | \$7,241 | -13.6 | 7,061 |
| ECM 13 | Replace Electric Water Heater with Heat Pump Water Heater | Yes | 3,077 | 0.0 | 0 | \$464 | \$4,545 | \$0 | \$4,545 | 9.8 | 3,099 |
| ECM 14 | Replace Gas Fired Water Heater with Heat Pump Water Heater | No | -16,413 | 0.0 | 175 | -\$997 | \$2,696 | \$0 | \$2,696 | -2.7 | 3,963 |
| TOTALS (COST EFFECTIVE MEASURES) | | | 465,350 | 89.1 | 6 | \$70,241 | \$264,500 | \$58,440 | \$206,060 | 2.9 | 469,330 |
| TOTALS (ALL MEASURES) | | | 544,273 | 136.8 | 227 | \$84,014 | \$636,550 | \$78,245 | \$558,305 | 6.6 | 574,705 |

* - 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).

*** - Negative payback explained in section 4.9

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 (NJBP) has sponsored this Local Government Energy Audit (LGEA) report for Princeton Day School. This report provides information on how your facility uses energy, identifies energy conservation measures (ECMs) that can reduce your energy use, and provides information and assistance to help you implement the ECMs.

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

2.1 Site Overview

On December 30, 2023, TRC performed an energy audit at Princeton Day School located in Princeton, New Jersey. TRC met with facility staff to review the facility operations and help focus our investigation on specific energy-using systems.

Princeton Day School is a multi-story, 262,194 square foot building built in 1964 with subsequent additions. The facility also includes three outbuildings: a grounds building, maintenance building, and carriage house.

Spaces include classrooms, three gymnasiums, two auditoriums, offices, a cafeteria, corridors, stairwells, workshops, STEAM classrooms, three libraries, a commercial kitchen, and mechanical rooms.

2.2 Building Occupancy

The school is fully occupied from September through June. Typical weekday occupancy is 215 staff and 965 students. Summer occupancy includes summer programs and continuing maintenance activities.

| Building Name | Weekday/Weekend | Operating Schedule |
|--------------------|-----------------|--------------------|
| Main Building | Weekday | 6:30 AM - 11:30 PM |
| | Weekend | Varied |
| Carriage House | Weekday | Varied |
| | Weekend | Varied |
| Grounds Building | Weekday | 6:30 AM - 5:00 PM |
| | Weekend | Varied |
| Maintenance Garage | Weekday | Varied |
| | Weekend | Varied |

Figure 3 - Building Occupancy Schedule

2.3 Building Envelope

The facility is comprised of several different buildings connected to each other. Exterior walls are mainly block/brick over structural steel. The roofs are typically a steel truss system with concrete or metal decking covered with slate shingles or asphalt shingles.

Roof encloses semi-conditioned space (e.g., a space that is not intentionally heated but escaping heat from HVAC equipment caused the space to be conditioned.). The thermal barrier is between this space and the conditioned space below.



Building Façade



Roof Surfaces



Interior Structural System



Carriage House



Grounds Building



Maintenance Building

Most of the windows are double glazed and have aluminum frames with a thermal break. The glass-to-frame seals are in fair condition. The operable window weather seals are in fair condition, showing little evidence of excessive wear. Exterior doors have aluminum frames and are in fair condition with undamaged door seals. Degraded window and door seals increase drafts and outside air infiltration.



Windows



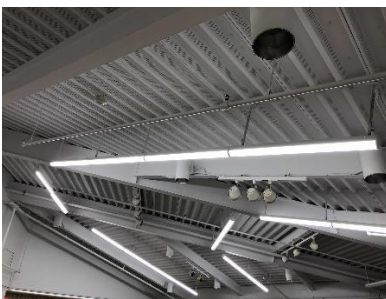
Exterior doors

2.4 Lighting Systems

The primary interior lighting system uses 32-Watt linear fluorescent T8 lamps. There are also several 34-Watt T12 fixtures. Fixture types include 2-lamp, 3-lamp, or 4-lamp, 4-foot-long recessed troffers, or surface mounted fixtures and 2-foot fixtures with U-bend tube lamps. Typically, T8 fluorescent lamps use electronic ballasts and T12 fluorescent lamps use less efficient magnetic ballasts.

The school has several linear LED fixtures throughout the corridors and classrooms. Additionally, there are some compact fluorescent lamps (CFL), incandescent, and LED lamps.

Gymnasium fixtures have manually controlled high bay linear fluorescent lamps. Auditorium fixtures have recessed can fixtures with LED lamps and are manually controlled. All exit signs are LED. Most fixtures are in fair condition. Interior lighting levels were generally sufficient.



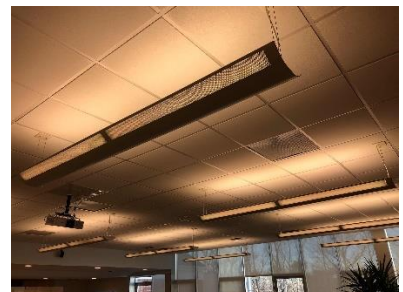
Linear LED Fluorescent Pendant Mount Fixtures



Linear Fluorescent Pendant Mount Fixtures



Recessed Fixtures with LED Lamps



Classroom Pendant and Surface Mount Linear Fluorescent Fixtures



Recessed Can Lamps.



Linear LED Fixtures



CFL Spiral Medium Base Lamps

Most lighting fixtures are controlled by occupancy sensors and the remainder by manual controls. While controls vary by section most classrooms have dimmer controls with sensors and manual controls in offices or corridors.



Manual Lighting Controls

Exterior fixtures include wall packs, floodlights, canopy lights with LED lamps, canopy and recessed can fixtures with CFLs. The pole mounted flood fixtures incorporate LED lamps.

Exterior light fixtures are controlled by a time clock, switch, or photocell, depending on the fixture.



Wall Mount and Floodlight Fixtures

The site has pole-mounted fixtures throughout the complex with LED corn comb lamps and LED pole light fixtures. They are controlled by timeclocks out of the main building.



Pole \ Mounted Fixture



Pole Mounted Fixture



Wall Mounted Fixture

2.5 Air Handling Systems

Unit Ventilators

Unit ventilators are equipped with supply fan motors and electronically outside air dampers and fan coil valves connected to the hot water distribution system. They provide heating and ventilation to classrooms. This system is original to the building and appears to be in fair operating condition.



Unit Ventilator in Classroom



Ceiling Above Classroom



Unit Ventilator in Classroom

Unitary Electric HVAC Equipment

Server rooms use ductless mini split AC/HP units for cooling. These vary in capacity between 1 ton and 3 tons. The condition of the units varies for poor to good. They range in efficiency between 9.4 EER to 16 EER.



Ductless Mini Split Systems

Unitary Heating Equipment

Corridors are heated by electric resistance heaters. These vary in capacity between 3 kW and 5 kW. The units are in good condition. Equipment is controlled by thermostats.



Electric Resistance Fan Coil Units

Packaged Units

Sections of the building are served by packaged roof top units (RTUs). There are six gas-fired burner units ranging in size from 354 MBh to 450 MBh. These units are equipped with economizers that are in fair condition.

The cooling capacity ranges from 8.5 tons to 75 tons with EERs ranging from 8.3 to 11.2.



Packaged Roof Top Units (RTUs)

Air Handling Units (AHUs)

Most of the building is conditioned with air handling units (AHUs). Most of the units are connected to the boilers for heating and the chiller for cooling. Many of the units have outdoor condensing units for cooling while still being connected to the hot water distribution system.

It should be noted that reducing temperature setpoints to 68°F during the heating season and increasing this setpoint to 72°F during the cooling season will provide energy savings at no cost.

The HVAC system is controlled by the facility BAS.



Air Handling Units

2.6 Heating Hot Water Systems

Three Aerco 3,000 MBh hot water boilers serve the building heating load and most of the domestic hot water needs. The burners are fully modulating with a nominal efficiency of 87%. The boilers are configured in an automated control scheme. Multiple boilers are required under high load conditions. Installed in 2010, they are in fair condition. There is a water treatment contract in place and other equipment is serviced by in-house staff. The hydronic distribution system is a four-pipe heating and cooling system. A heat exchanger is connected to the loop to meet domestic hot water needs.

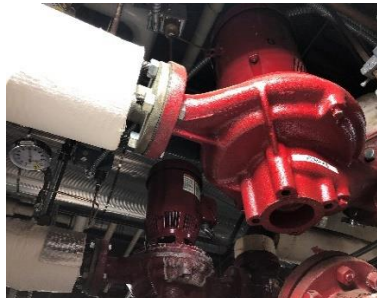
The boilers are configured in a constant flow primary distribution with two, 30 hp VFD controlled hot water pumps operating with an automated control scheme. Additional circulation pumps maintain hot water for specific sections of the building. The boilers provide hot water to fin tube radiators, unit ventilators, fan coil units, AHUs, and RTUs throughout the building.

A second boiler system consisting of two, 4,088 MBH hot water boilers serve heating loads with an 80% efficiency. Boilers operate in a lead lag configuration. Facility staff indicated boilers are oversized for demand.

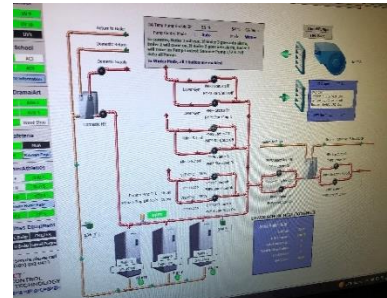
There are 83 feet of pipe throughout the building with no insulation. See ECM 8 – Install Pipe Insulation.



Hot Water Boilers



Heating Hot Water Pumps



BMS Hot Water Diagram



Hot Water Boilers



Forced Draft Fan



Heating Hot Water Pumps

2.7 Chilled Water Systems

The chiller plant consists of a 450-ton, McQuay, R-134a, air-cooled scroll chiller. The chilled water is distributed by two, 60 hp constant flow pumps. The chiller supplies chilled water to air handlers and rooftop units throughout the complex.



Chiller



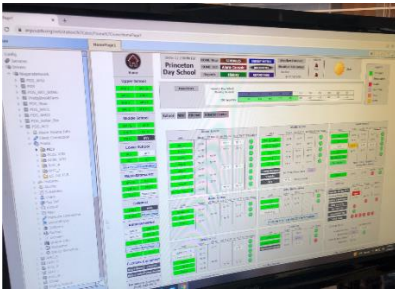
Chilled Water Pump



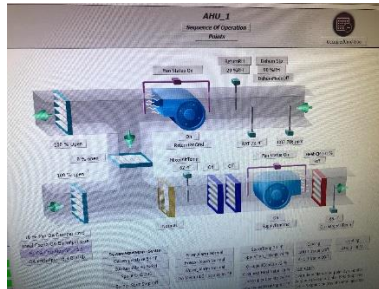
Chiller

2.8 Building Automation System (BAS)

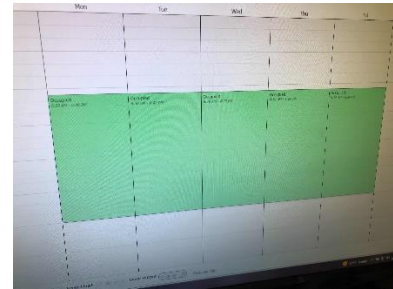
A Niagara 4.12 BAS controls the HVAC equipment, the boilers, the chillers, the air handlers, the package units. The BAS provides equipment scheduling control and monitors and controls space temperatures, supply air temperatures, humidity, heating water loop temperatures, and chilled water loop temperatures.



BAS Controls



System Diagram

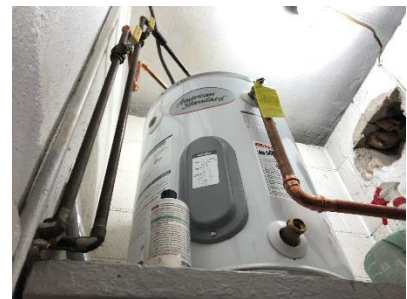


Schedule

2.9 Domestic Hot Water

Hot water is produced by a 60 gallon, 120 MBh, gas-fired storage water heater, 19-gallon, 1.5 kW electric storage water heater, 6-gallon, 2 kW electric storage water heater, 119-gallon, 9 kW electric storage water heater, and 30-kW booster water heater.

Most of the hot water is produced by a heat exchanger using hot water from the space heating boiler. Three fractional hp circulation pumps distribute water to end uses. The circulation pumps operate continuously. The domestic hot water pipes are insulated, and the insulation is in fair condition.



Hot Water Storage Heater and Heat Exchanger

2.10 Food Service Equipment

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

The dishwasher is a non-ENERGY STAR high temperature, rack type unit with a 30-kW hot water booster.

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



Conveyor oven, rack oven, and dishwasher

2.11 Refrigeration

The kitchen has several stand-up refrigerators with solid doors. There are several refrigerator chests. Most equipment is standard and in fair condition.

The walk-in refrigerator has an estimated 0.76-ton compressor located above the unit and a two-fan evaporator. The walk-in medium temperature freezer has a 0.89-ton compressor located above the unit and a two-fan evaporator.

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



Stand-up Refrigerators

2.12 Plug Load and Vending Machines

You may wish to consider paying particular attention to minimizing your plug load usage. This report makes suggestions for ECMs in this area as well as energy efficient best practices.

There are 106 computer workstations and 1,101 laptops throughout the facility. Plug loads include general cafe and office equipment. There are classroom typical loads such as smartboards, projectors, and fans.

Workshops and STEAM classrooms have plug loads that include kilns, laser cutters, advanced A&V equipment, welders, 3D printers, and wood shop equipment.

There are several residential-style refrigerators and mini refrigerators throughout the building. These vary in condition and efficiency. There is one refrigerated beverage vending machines and one non-refrigerated vending machines. Vending machines are not equipped with occupancy-based controls.



Kiln



Laser Cutters



2.13 Water-Using Systems

There are 34 restrooms with toilets and sinks. Faucet flow rates are at 0.5 gallons per minute (gpm) or higher. There are four restrooms with showers and showerheads are rated at 2.5 gpm. Girl's and boy's locker rooms are frequently used. The locker room showerheads are rated at 2.5 gpm.



Lavatory Sinks



Kitchen Sink

2.14 On-Site Generation

Princeton Day School has an emergency generator that, in the event of a power outage, serves critical services (lighting, elevator, heating-boiler and pumps) and is only used for emergency needs.

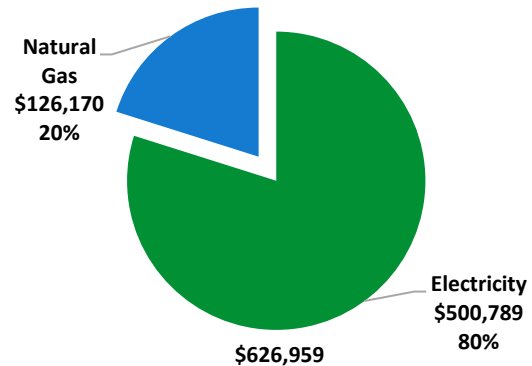


Gas-fired Generator

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 | 3,320,233 kWh | \$500,789 |
| Natural Gas | 149,294 Therms | \$126,170 |
| Total | | \$626,959 |



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.

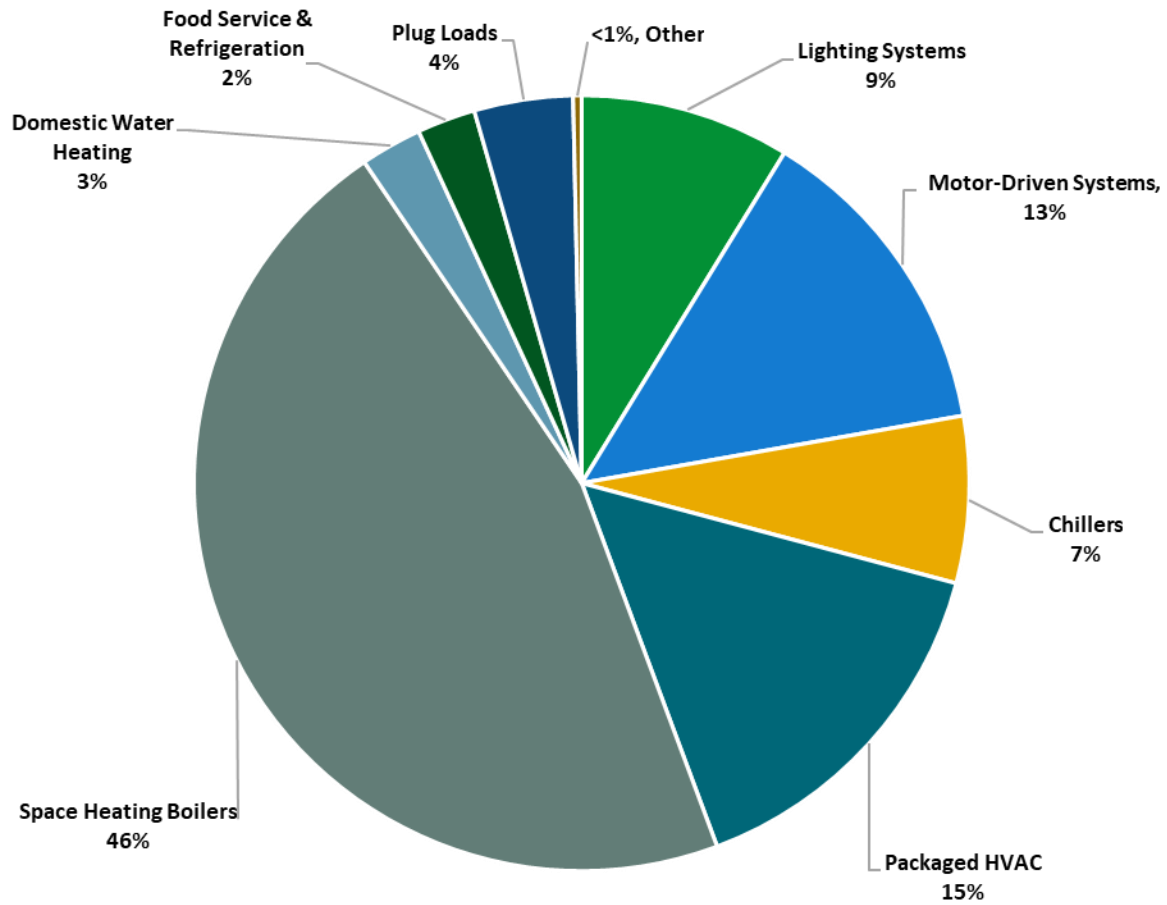
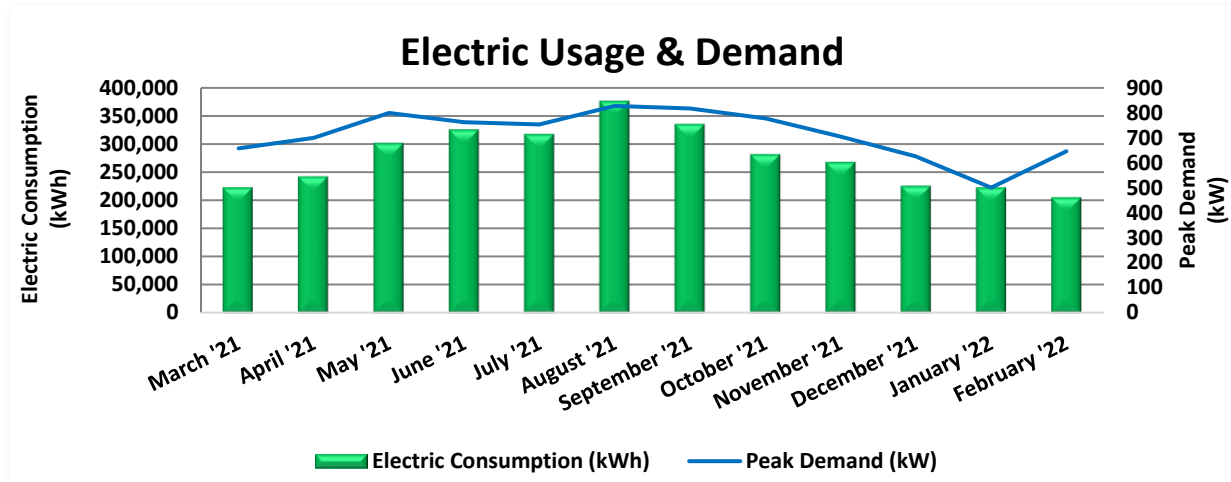


Figure 4 - Energy Balance

3.1 Electricity

PSE&G delivers electricity under Large Power & Lighting Secondary rate class.



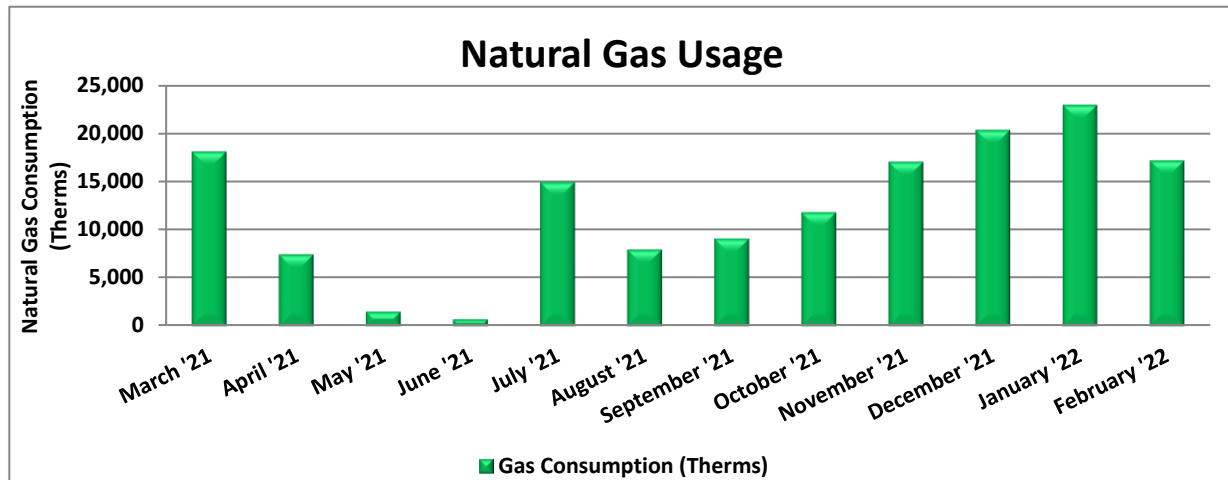
| Electric Billing Data | | | | | |
|-----------------------|----------------|----------------------|-------------|-----------------|---------------------|
| Period Ending | Days in Period | Electric Usage (kWh) | Demand (kW) | Demand Cost | Total Electric Cost |
| 4/14/21 | 30 | 222,870 | 658 | \$2,475 | \$32,396 |
| 5/13/21 | 29 | 242,281 | 700 | \$2,648 | \$34,863 |
| 6/14/21 | 32 | 301,261 | 800 | \$10,239 | \$50,810 |
| 7/14/21 | 30 | 324,721 | 762 | \$9,758 | \$52,011 |
| 8/12/21 | 29 | 316,851 | 754 | \$9,657 | \$50,889 |
| 9/13/21 | 32 | 375,618 | 827 | \$10,590 | \$59,166 |
| 10/12/21 | 29 | 334,582 | 818 | \$3,097 | \$46,571 |
| 11/10/21 | 29 | 281,389 | 778 | \$2,946 | \$40,104 |
| 12/13/21 | 33 | 267,554 | 705 | \$2,671 | \$38,438 |
| 1/13/22 | 31 | 225,297 | 625 | \$2,368 | \$32,884 |
| 2/11/22 | 29 | 222,786 | 500 | \$1,894 | \$32,031 |
| 3/15/22 | 32 | 205,025 | 646 | \$2,447 | \$30,626 |
| Totals | 365 | 3,320,233 | 827 | \$60,791 | \$500,789 |
| Annual | 365 | 3,320,233 | 827 | \$60,791 | \$500,789 |

Notes:

- Peak demand of 827 kW occurred in August 2021.
- Average demand over the past 12 months was 714 kW.
- The average electric cost over the past 12 months was \$0.151/kWh, which is the blended rate that includes energy supply, distribution, demand, and other charges. This report uses this blended rate to estimate energy cost savings.

3.2 Natural Gas

PSE&G delivers natural gas under rate class Large Volume Gas, with natural gas supply provided by UGI, a third-party supplier.



| Gas Billing Data | | | |
|------------------|----------------|----------------------------|------------------|
| Period Ending | Days in Period | Natural Gas Usage (Therms) | Natural Gas Cost |
| 4/13/21 | 29 | 18,125 | \$13,555 |
| 5/12/21 | 29 | 7,461 | \$5,716 |
| 6/11/21 | 30 | 1,537 | \$1,344 |
| 7/13/21 | 32 | 741 | \$832 |
| 8/13/21 | 31 | 14,970 | \$10,036 |
| 9/13/21 | 31 | 7,980 | \$5,514 |
| 10/12/21 | 29 | 9,090 | \$6,560 |
| 11/9/21 | 28 | 11,815 | \$11,814 |
| 12/10/21 | 31 | 17,055 | \$15,786 |
| 1/12/22 | 33 | 20,362 | \$18,283 |
| 2/11/22 | 30 | 22,970 | \$20,548 |
| 3/15/22 | 32 | 17,189 | \$16,181 |
| Totals | 365 | 149,294 | \$126,170 |
| Annual | 365 | 149,294 | \$126,170 |

Notes:

- The average gas cost for the past 12 months is \$0.845/therm, which is the blended rate used throughout the analysis. Customer is billed by estimates for several months in a row, then an actual reading. The estimates are on the low side. When an actual reading is done it appears to be a spike.

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 | 20 |
|---------------------------|-----------|

While this building looks like it is performing below the national average, it should be noted that Portfolio Manager does not make a distinction between public and private schools. The Princeton Day School Campus operations and buildings are different than most public schools. This report contains suggestions about how to improve building performance and reduce energy costs.

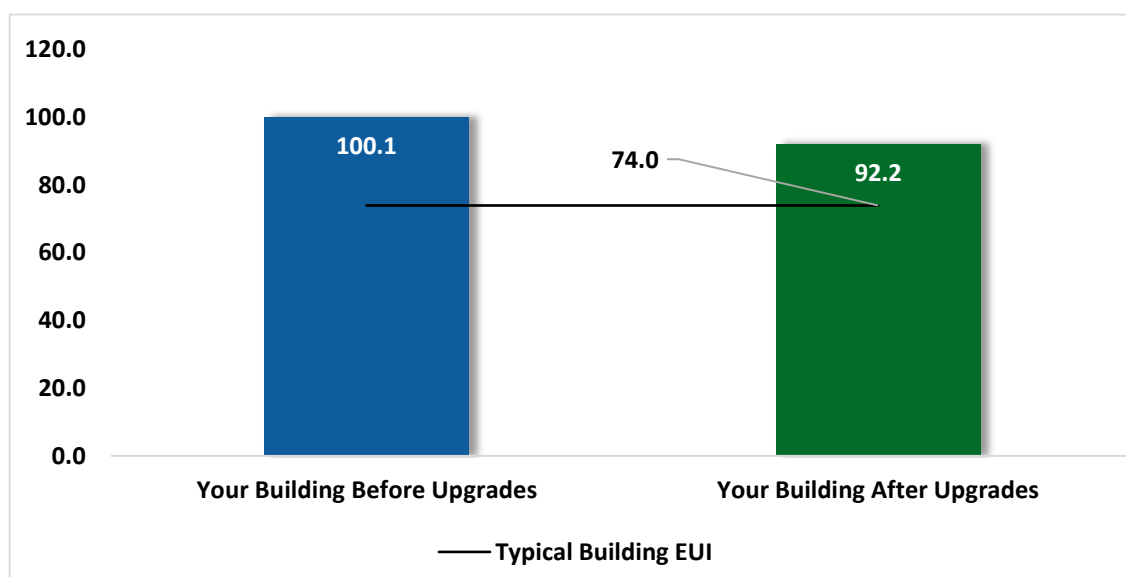


Figure 5 - Energy Use Intensity Comparison³

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 ₂ e Emissions Reduction (lbs) |
|--|--|-----------------|-------------------------------|--------------------------|-----------------------------|---------------------------------|-------------------------|---------------------------|-----------------------------|-------------------------------|---|
| Lighting Upgrades | | | 249,728 | 42.4 | -52 | \$37,230 | \$78,800 | \$17,972 | \$60,828 | 1.6 | 245,431 |
| ECM 1 | Retrofit Fluorescent Fixtures with LED Lamps and Drivers | Yes | 5,117 | 2.1 | -1 | \$763 | \$2,774 | \$415 | \$2,359 | 3.1 | 5,028 |
| ECM 2 | Retrofit Fixtures with LED Lamps | Yes | 244,611 | 40.3 | -51 | \$36,467 | \$76,026 | \$17,557 | \$58,469 | 1.6 | 240,403 |
| Lighting Control Measures | | | 111,392 | 16.8 | -23 | \$16,604 | \$86,534 | \$27,110 | \$59,424 | 3.6 | 109,444 |
| ECM 3 | Install Occupancy Sensor Lighting Controls | Yes | 84,532 | 13.0 | -18 | \$12,601 | \$58,184 | \$7,380 | \$50,804 | 4.0 | 83,054 |
| ECM 4 | Install High/Low Lighting Controls | Yes | 26,860 | 3.8 | -6 | \$4,004 | \$28,350 | \$19,730 | \$8,620 | 2.2 | 26,390 |
| Variable Frequency Drive (VFD) Measures | | | 97,532 | 29.6 | 0 | \$14,711 | \$87,980 | \$12,700 | \$75,280 | 5.1 | 98,213 |
| ECM 5 | Install VFDs on Constant Volume (CV) Fans | Yes | 97,532 | 29.6 | 0 | \$14,711 | \$87,980 | \$12,700 | \$75,280 | 5.1 | 98,213 |
| Unitary HVAC Measures | | | 95,337 | 47.7 | 24 | \$14,582 | \$366,714 | \$19,305 | \$347,409 | 23.8 | 98,810 |
| ECM 6 | Install High Efficiency Air Conditioning Units | No | 95,337 | 47.7 | 24 | \$14,582 | \$366,714 | \$19,305 | \$347,409 | 23.8 | 98,810 |
| Gas Heating (HVAC/Process) Replacement | | | 0 | 0.0 | 22 | \$188 | \$2,639 | \$500 | \$2,139 | 11.4 | 2,602 |
| ECM 7 | Install High Efficiency Furnaces | No | 0 | 0.0 | 22 | \$188 | \$2,639 | \$500 | \$2,139 | 11.4 | 2,602 |
| HVAC System Improvements | | | 0 | 0.0 | 62 | \$526 | \$1,343 | \$166 | \$1,177 | 2.2 | 7,289 |
| ECM 8 | Install Pipe Insulation | Yes | 0 | 0.0 | 62 | \$526 | \$1,343 | \$166 | \$1,177 | 2.2 | 7,289 |
| Domestic Water Heating Upgrade | | | 0 | 0.0 | 19 | \$159 | \$883 | \$212 | \$671 | 4.2 | 2,208 |
| ECM 9 | Install Low-Flow DHW Devices | Yes | 0 | 0.0 | 19 | \$159 | \$883 | \$212 | \$671 | 4.2 | 2,208 |
| Food Service & Refrigeration Measures | | | 3,620 | 0.3 | 0 | \$546 | \$4,415 | \$280 | \$4,135 | 7.6 | 3,646 |
| ECM 10 | Refrigerator/Freezer Case Electrically Commutated Motors | Yes | 393 | 0.0 | 0 | \$59 | \$607 | \$80 | \$527 | 8.9 | 396 |
| ECM 11 | Refrigeration Controls | Yes | 1,273 | 0.0 | 0 | \$192 | \$3,348 | \$150 | \$3,198 | 16.7 | 1,282 |
| ECM 12 | Vending Machine Control | Yes | 1,954 | 0.2 | 0 | \$295 | \$460 | \$50 | \$410 | 1.4 | 1,968 |
| Custom Measures | | | -13,336 | 0.0 | 175 | -\$533 | \$7,241 | \$0 | \$7,241 | -13.6 | 7,061 |
| ECM 13 | Replace Electric Water Heater with Heat Pump Water Heater | Yes | 3,077 | 0.0 | 0 | \$464 | \$4,545 | \$0 | \$4,545 | 9.8 | 3,099 |
| ECM 14 | Replace Gas Fired Water Heater with Heat Pump Water Heater | No | -16,413 | 0.0 | 175 | -\$997 | \$2,696 | \$0 | \$2,696 | -2.7 | 3,963 |
| TOTALS | | | 544,273 | 136.8 | 227 | \$84,014 | \$636,550 | \$78,245 | \$558,305 | 6.6 | 574,705 |

* - 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).

*** - Negative payback explained in section 4.9

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 ₂ e Emissions Reduction (lbs) |
|--|---|-------------------------------|--------------------------|-----------------------------|---------------------------------|-------------------------|---------------------------|-----------------------------|-------------------------------|---|
| Lighting Upgrades | | 249,728 | 42.4 | -52 | \$37,230 | \$78,800 | \$17,972 | \$60,828 | 1.6 | 245,431 |
| ECM 1 | Retrofit Fluorescent Fixtures with LED Lamps and Drivers | 5,117 | 2.1 | -1 | \$763 | \$2,774 | \$415 | \$2,359 | 3.1 | 5,028 |
| ECM 2 | Retrofit Fixtures with LED Lamps | 244,611 | 40.3 | -51 | \$36,467 | \$76,026 | \$17,557 | \$58,469 | 1.6 | 240,403 |
| Lighting Control Measures | | 111,392 | 16.8 | -23 | \$16,604 | \$86,534 | \$27,110 | \$59,424 | 3.6 | 109,444 |
| ECM 3 | Install Occupancy Sensor Lighting Controls | 84,532 | 13.0 | -18 | \$12,601 | \$58,184 | \$7,380 | \$50,804 | 4.0 | 83,054 |
| ECM 4 | Install High/Low Lighting Controls | 26,860 | 3.8 | -6 | \$4,004 | \$28,350 | \$19,730 | \$8,620 | 2.2 | 26,390 |
| Variable Frequency Drive (VFD) Measures | | 97,532 | 29.6 | 0 | \$14,711 | \$87,980 | \$12,700 | \$75,280 | 5.1 | 98,213 |
| ECM 5 | Install VFDs on Constant Volume (CV) Fans | 97,532 | 29.6 | 0 | \$14,711 | \$87,980 | \$12,700 | \$75,280 | 5.1 | 98,213 |
| HVAC System Improvements | | 0 | 0.0 | 62 | \$526 | \$1,343 | \$166 | \$1,177 | 2.2 | 7,289 |
| ECM 8 | Install Pipe Insulation | 0 | 0.0 | 62 | \$526 | \$1,343 | \$166 | \$1,177 | 2.2 | 7,289 |
| Domestic Water Heating Upgrade | | 0 | 0.0 | 19 | \$159 | \$883 | \$212 | \$671 | 4.2 | 2,208 |
| ECM 9 | Install Low-Flow DHW Devices | 0 | 0.0 | 19 | \$159 | \$883 | \$212 | \$671 | 4.2 | 2,208 |
| Food Service & Refrigeration Measures | | 3,620 | 0.3 | 0 | \$546 | \$4,415 | \$280 | \$4,135 | 7.6 | 3,646 |
| ECM 10 | Refrigerator/Freezer Case Electrically Commutated Motors | 393 | 0.0 | 0 | \$59 | \$607 | \$80 | \$527 | 8.9 | 396 |
| ECM 11 | Refrigeration Controls | 1,273 | 0.0 | 0 | \$192 | \$3,348 | \$150 | \$3,198 | 16.7 | 1,282 |
| ECM 12 | Vending Machine Control | 1,954 | 0.2 | 0 | \$295 | \$460 | \$50 | \$410 | 1.4 | 1,968 |
| Custom Measures | | 3,077 | 0.0 | 0 | \$464 | \$4,545 | \$0 | \$4,545 | 9.8 | 3,099 |
| ECM 13 | Replace Electric Water Heater with Heat Pump Water Heater | 3,077 | 0.0 | 0 | \$464 | \$4,545 | \$0 | \$4,545 | 9.8 | 3,099 |
| TOTALS | | 465,350 | 89.1 | 6 | \$70,241 | \$264,500 | \$58,440 | \$206,060 | 2.9 | 469,330 |

* - 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 ₂ e Emissions Reduction (lbs) |
|--------------------------|--|-------------------------------|--------------------------|-----------------------------|---------------------------------|-------------------------|---------------------------|-----------------------------|-------------------------------|---|
| Lighting Upgrades | | 249,728 | 42.4 | -52 | \$37,230 | \$78,800 | \$17,972 | \$60,828 | 1.6 | 245,431 |
| ECM 1 | Retrofit Fluorescent Fixtures with LED Lamps and Drivers | 5,117 | 2.1 | -1 | \$763 | \$2,774 | \$415 | \$2,359 | 3.1 | 5,028 |
| ECM 2 | Retrofit Fixtures with LED Lamps | 244,611 | 40.3 | -51 | \$36,467 | \$76,026 | \$17,557 | \$58,469 | 1.6 | 240,403 |

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: Retrofit Fluorescent Fixtures with LED Lamps and Drivers

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

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

Affected Building Areas: all areas with fluorescent fixtures with T12 tubes

ECM 2: Retrofit Fixtures with LED Lamps

Replace fluorescent, HID, CFL, or incandescent lamps with LED lamps. Many LED tubes are direct replacements for existing fluorescent tubes and can be installed while leaving the fluorescent fixture ballast in place. LED lamps can be used in existing fixtures as a direct replacement for most other lighting technologies. 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, HID, CFL, or incandescent lamps

4.2 Lighting Controls

| # | Energy Conservation Measure | Annual Electric Savings (kWh) | Peak Demand Savings (kW) | Annual Fuel Savings (MMBtu) | Annual Energy Cost Savings (\$) | Estimated M&L Cost (\$) | Estimated Incentive (\$)* | Estimated Net M&L Cost (\$) | Simple Payback Period (yrs)** | CO ₂ e Emissions Reduction (lbs) |
|----------------------------------|--|-------------------------------|--------------------------|-----------------------------|---------------------------------|-------------------------|---------------------------|-----------------------------|-------------------------------|---|
| Lighting Control Measures | | 111,392 | 16.8 | -23 | \$16,604 | \$86,534 | \$27,110 | \$59,424 | 3.6 | 109,444 |
| ECM 3 | Install Occupancy Sensor Lighting Controls | 84,532 | 13.0 | -18 | \$12,601 | \$58,184 | \$7,380 | \$50,804 | 4.0 | 83,054 |
| ECM 4 | Install High/Low Lighting Controls | 26,860 | 3.8 | -6 | \$4,004 | \$28,350 | \$19,730 | \$8,620 | 2.2 | 26,390 |

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 3: Install Occupancy Sensor Lighting Controls

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

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

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

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

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

ECM 4: Install High/Low Lighting Controls

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

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

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

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

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

Affected Building Areas: hallways and stairwells

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 ₂ e Emissions Reduction (lbs) |
|--|---|-------------------------------|--------------------------|-----------------------------|---------------------------------|-------------------------|---------------------------|-----------------------------|-------------------------------|---|
| Variable Frequency Drive (VFD) Measures | | 97,532 | 29.6 | 0 | \$14,711 | \$87,980 | \$12,700 | \$75,280 | 5.1 | 98,213 |
| ECM 5 | Install VFDs on Constant Volume (CV) Fans | 97,532 | 29.6 | 0 | \$14,711 | \$87,980 | \$12,700 | \$75,280 | 5.1 | 98,213 |

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: rooftop packaged units and air handling units

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 ₂ e Emissions Reduction (lbs) |
|------------------------------|--|-------------------------------|--------------------------|-----------------------------|---------------------------------|-------------------------|---------------------------|-----------------------------|-------------------------------|---|
| Unitary HVAC Measures | | 95,337 | 47.7 | 24 | \$14,582 | \$366,714 | \$19,305 | \$347,409 | 23.8 | 98,810 |
| ECM 6 | Install High Efficiency Air Conditioning Units | 95,337 | 47.7 | 24 | \$14,582 | \$366,714 | \$19,305 | \$347,409 | 23.8 | 98,810 |

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 packaged RTU, split system, and furnaces are eventually replaced, consider purchasing equipment that exceeds the minimum efficiency required by building codes.

ECM 6: Install High Efficiency Air Conditioning Units

We evaluated replacing standard efficiency packaged air conditioning units with high efficiency packaged air conditioning units. Some of the replacement units will incorporate efficient gas furnaces. The magnitude of energy savings for this measure depends on the relative efficiency of the older unit versus the new high efficiency unit, the average cooling and heating load, and the estimated annual operating hours.

Affected Units: RTUs and split systems

4.5 Gas-Fired 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 ₂ e Emissions Reduction (lbs) |
|-------|--|-------------------------------|--------------------------|-----------------------------|---------------------------------|-------------------------|---------------------------|-----------------------------|-------------------------------|---|
| | Gas Heating (HVAC/Process) Replacement | 0 | 0.0 | 22 | \$188 | \$2,639 | \$500 | \$2,139 | 11.4 | 2,602 |
| ECM 7 | Install High Efficiency Furnaces | 0 | 0.0 | 22 | \$188 | \$2,639 | \$500 | \$2,139 | 11.4 | 2,602 |

ECM 7: Install High Efficiency Furnaces

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

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

Affected Units: Carriage House

4.6 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 ₂ e Emissions Reduction (lbs) |
|-------|-----------------------------|-------------------------------|--------------------------|-----------------------------|---------------------------------|-------------------------|---------------------------|-----------------------------|-------------------------------|---|
| | HVAC System Improvements | 0 | 0.0 | 62 | \$526 | \$1,343 | \$166 | \$1,177 | 2.2 | 7,289 |
| ECM 8 | Install Pipe Insulation | 0 | 0.0 | 62 | \$526 | \$1,343 | \$166 | \$1,177 | 2.2 | 7,289 |

ECM 8: Install Pipe Insulation

Install insulation on heating 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: hot water piping

4.7 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 ₂ e Emissions Reduction (lbs) |
|-------|---------------------------------------|-------------------------------|--------------------------|-----------------------------|---------------------------------|-------------------------|---------------------------|-----------------------------|-------------------------------|---|
| | Domestic Water Heating Upgrade | 0 | 0.0 | 19 | \$159 | \$883 | \$212 | \$671 | 4.2 | 2,208 |
| ECM 9 | Install Low-Flow DHW Devices | 0 | 0.0 | 19 | \$159 | \$883 | \$212 | \$671 | 4.2 | 2,208 |

ECM 9: Install Low-Flow DHW Devices

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

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

Low-flow devices reduce the overall water flow from the fixture, while still providing adequate pressure for washing. Additional cost savings may result from reduced water usage.

4.8 Food Service & Refrigeration Measures

| # | Energy Conservation Measure | Annual Electric Savings (kWh) | Peak Demand Savings (kW) | Annual Fuel Savings (MMBtu) | Annual Energy Cost Savings (\$) | Estimated M&L Cost (\$) | Estimated Incentive (\$)* | Estimated Net M&L Cost (\$) | Simple Payback Period (yrs)** | CO ₂ e Emissions Reduction (lbs) |
|--------|--|-------------------------------|--------------------------|-----------------------------|---------------------------------|-------------------------|---------------------------|-----------------------------|-------------------------------|---|
| | Food Service & Refrigeration Measures | 3,620 | 0.3 | 0 | \$546 | \$4,415 | \$280 | \$4,135 | 7.6 | 3,646 |
| ECM 10 | Refrigerator/Freezer Case Electrically Commutated Motors | 393 | 0.0 | 0 | \$59 | \$607 | \$80 | \$527 | 8.9 | 396 |
| ECM 11 | Refrigeration Controls | 1,273 | 0.0 | 0 | \$192 | \$3,348 | \$150 | \$3,198 | 16.7 | 1,282 |
| ECM 12 | Vending Machine Control | 1,954 | 0.2 | 0 | \$295 | \$460 | \$50 | \$410 | 1.4 | 1,968 |

ECM 10: Refrigerator/Freezer Case Electrically Commutated Motors

Replace shaded pole or permanent split capacitor (PSC) motors with electronically commutated (EC) motors in walk-ins. 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 coolers and freezers.

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.

4.9 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 ₂ e Emissions Reduction (lbs) |
|------------------------|--|-------------------------------|--------------------------|-----------------------------|---------------------------------|-------------------------|---------------------------|-----------------------------|-------------------------------|---|
| Custom Measures | | -13,336 | 0.0 | 175 | -\$533 | \$7,241 | \$0 | \$7,241 | -13.6 | 7,061 |
| ECM 13 | Replace Electric Water Heater with Heat Pump Water Heater | 3,077 | 0.0 | 0 | \$464 | \$4,545 | \$0 | \$4,545 | 9.8 | 3,099 |
| ECM 14 | Replace Gas Fired Water Heater with Heat Pump Water Heater | -16,413 | 0.0 | 175 | -\$997 | \$2,696 | \$0 | \$2,696 | -2.7 | 3,963 |

CM 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.

ECM 14: Replace Gas Fired Water Heater with Heat Pump Water Heater

A gas fired water heater uses a burner to heat water. Air source heat pump water heaters (HPWH) use a refrigeration cycle to transfer heat from the surrounding air to the domestic water. Water heater efficiency is rated by the uniform energy factor (UEF). For a relative comparison of water heater UEFs, the criteria for certifying a water heater in the ENERGY STAR program are provided below. These values indicate that HPWH heaters are significantly more efficient than gas fired water heaters.

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 measure considers an integrated HPWH.

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>

ENERGY STAR Uniform Energy Factor (UEF) Criteria for Certified Water Heaters *

| Water Heater Type | Minimum UEF | Other |
|-------------------------|-------------|-------------------------------|
| Integrated HPWH | 3.3 | |
| Integrated HPWH | 2.2 | 120 Volt, 15 Amp circuit |
| Split System HPWH | 2.2 | |
| Gas Fired Storage | 0.64 | ≤ 55-gal, Medium Draw Pattern |
| Gas Fired Storage | 0.68 | ≤ 55-gal, High Draw Pattern |
| Gas Fired Storage | 0.78 | > 55-gal, Medium Draw Pattern |
| Gas Fired Storage | 0.80 | > 55-gal, High Draw Pattern |
| Gas Fired Storage | 0.80 | Residential Duty |
| Gas Fired Instantaneous | 0.87 | |

* Note: Uniform Energy Factor (UEF): The newest measure of water heater overall efficiency. The higher the UEF value is, the more efficient the water heater. UEF is determined by the Department of Energy's test method outlined in 10 CFR Part 430, Subpart B, Appendix E.⁵

HPWH reject cold air. As such, they need to be installed in an unconditioned space of about 750 cubic feet with good ventilation⁶. Ideal locations are garages, large enclosed, unconditioned storage areas, or areas with excess heat such as a furnace or boiler room. 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.

Switching from a gas fired water heater to a HPWH has the potential to reduce the sites overall greenhouse gas emissions. If the electricity for the HPWH is provided by an on-site photovoltaic (PV)

⁵ https://www.energy.gov/sites/prod/files/2014/06/f17/rwh_tp_final_rule.pdf

⁶ <https://basc.pnnl.gov/code-compliance/heat-pump-water-heaters-code-compliance-brief#:~:text=HPWH%20must%20have%20unrestricted%20airflow,depending%20on%20size%20of%20system>

system, then there are essentially no greenhouse gas (GHG) emissions. A 2016 study conducted at Cornell⁷ calculated the kg of methane (CH₄) and carbon dioxide (CO₂) produced per GJ of water heated. The study compared HPWH to gas and electric fired, storage and tankless water heaters. The study also considered electricity produced from natural gas and coal fired electric plants. In all cases the study found that HPWHs produced less methane than all of the other water heaters. The study also found that HPWH produced less carbon dioxide than electric resistance water heaters but more carbon dioxide than tankless gas water heaters and about the same amount of carbon dioxide as storage gas water heaters. The summary tables provide the reduction in CO₂ equivalent emissions based on the typical New Jersey electric utility.

This measure has a negative simple payback due to the relative cost of electricity to natural gas. At this site the cost per Btu for natural gas is significantly lower than for electricity. Therefore, even though this measure will result in a net energy savings in terms of Btu at this site it will increase the overall cost for providing domestic hot water.

4.10 Measures for Future Consideration

There are additional opportunities for improvement that Princeton Day School 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.

Princeton Day School 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.

Window Replacements

Energy efficient windows are an important consideration when improving the building envelope. The heat transfer through the glass panes is responsible for a significant portion of the facility's heating and cooling energy consumption. We recommend replacing single-pane windows with double-pane windows, and we recommend models that are gas-filled with low-e coatings to reduce heat loss. Windows should be selected with low U-factors to maximize energy savings. The U-factor is the rate at which the window conducts non-solar heat flow and is a key indicator of performance. The lower the U-factor, the higher the efficiency of the window. Window frames and sashes should be efficient as well. If metal frames are specified or required by code, the frame extrusions should have a thermal break to reduce conduction

⁷ [Greenhouse gas emissions from domestic hot water: Heat pumps compared to most commonly used systems. Bongghi Hong, Robert W. Howarth. Department of Ecology and Evolutionary Biology, Cornell University. Energy Science and Engineering 2016.](#)

through the frame. As part of the installation, the window frames should be properly sealed with caulk materials to ensure the mitigation of air infiltration. Building envelopes that limit air infiltration and that have adequate fenestrations play a key role in optimizing heating and cooling efficiency, controlling moisture, and providing occupant comfort. Window system replacement is an expensive upgrade that generally involves architectural elements. We recommend this as a measure for further study.

Install High Efficiency Energy Recovery Units (ERUs)

HVAC energy consumption in typical commercial buildings may account for 40% – 60% of the facility's energy use. Areas with high outdoor air requirements are even more energy intensive. Some of the facility types that require a higher amount of outdoor air for ventilation, which then needs to be conditioned, include swimming pools, laboratories, commercial kitchens, hospitals, and wood/metal shops. These facilities have the potential for significant energy savings by installing energy recovery units (ERU). Other applications that may have significant potential include theaters, fitness centers, and gymnasiums.

An ERU is a type of air-to-air heat exchanger that recovers energy from the exhaust air. An ERU heat exchanger transfers both sensible and latent heat⁸. One common type is a rotary enthalpy wheel. An enthalpy wheel improves the heating and cooling efficiency of an air handler or package unit by transferring energy from the exhaust air to the incoming outside air to precondition the outdoor air before it reaches the heating/cooling coil. Additional benefits for installing ERUs include reduced summer peak electrical demand, enhanced humidity control, continued operating savings, and the potential to downsize the heating and cooling capacity in comparison to traditional HVAC units. ERUs are the most cost effective on systems that use 100% outside air.

⁸ Sensible heat refers to the amount of energy needed to increase or decrease the temperature of a substance. like air, independent of phase changes, Latent heat is the heat that results from an increase or decrease in the amount of moisture held by the air. Specifically, it's the amount of energy needed to cause a phase change.

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 emissions⁹. Your account has already been established. Now you can continue to keep tabs on your energy performance every month.

Lighting Maintenance



- Clean lamps, reflectors and lenses of dirt, dust, oil, and smoke buildup every six to twelve months. Light levels decrease over time due to lamp aging, lamp and ballast failure, and buildup of dirt and dust. Together, this can reduce total light output by up to 60% while still drawing full power.
- In addition to routine cleaning, developing a maintenance schedule can ensure that maintenance is performed regularly, and it can reduce the overall cost of fixture re-lamping and re-ballasting. Group re-lamping and re-ballasting maintains lighting levels and minimizes the number of site visits by a lighting technician or contractor, decreasing the overall cost of maintenance.

Lighting Controls

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

⁹ <https://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/use-portfolio-manager>.

Motor Short Cycling Reduction

Frequent stopping and starting of motors places substantial stress on rotors and other parts. This leads to wear and tear, lower efficiency, and higher maintenance costs. Adjust the load on the motor to limit the amount of unnecessary stopping and starting to improve motor performance.

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.

Destratification Fans

For areas with high ceilings, destratification fans balance the air temperature from floor to ceiling. They help reduce the recovery time needed to warm the space after nightly temperature setbacks, and they will increase occupants' the comfort level.

Areas with high ceilings require the heating system to heat a larger volume of space than that which is occupied. As the warm air rises, the warmest space is at the ceiling level, rather than floor level. Higher temperatures at the ceiling accelerate heat loss through the roof, which requires additional energy consumption by the heating equipment to compensate for this accelerated heat transfer.

Economizer Maintenance

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

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

Chiller Maintenance

Service chillers regularly to keep them operating properly. Chillers are responsible for a substantial portion of a commercial building's overall energy usage, and when they do not work well, there is usually a noticeable increase in energy bills and increased occupant complaints. Regular diagnostics and service can save 5% to 10% of the cost of operating your chiller. If you already have a maintenance contract in place, your existing service company should be able to provide these services.

AC System Evaporator/Condenser Coil Cleaning

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

HVAC Filter Cleaning and Replacement

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

Ductwork Maintenance

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

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

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

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

Boiler Maintenance

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

Furnace Maintenance

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

Water Heater Maintenance

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

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

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

Refrigeration Equipment Maintenance

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

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

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

Computer Power Management Software

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

Water Conservation



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

For more information regarding water conservation go to the EPA's WaterSense website¹⁰ or download a copy of EPA's "WaterSense at Work: Best Management Practices for Commercial and Institutional Facilities"¹¹ 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.

¹⁰ <https://www.epa.gov/watersense>.

¹¹ <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.

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

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

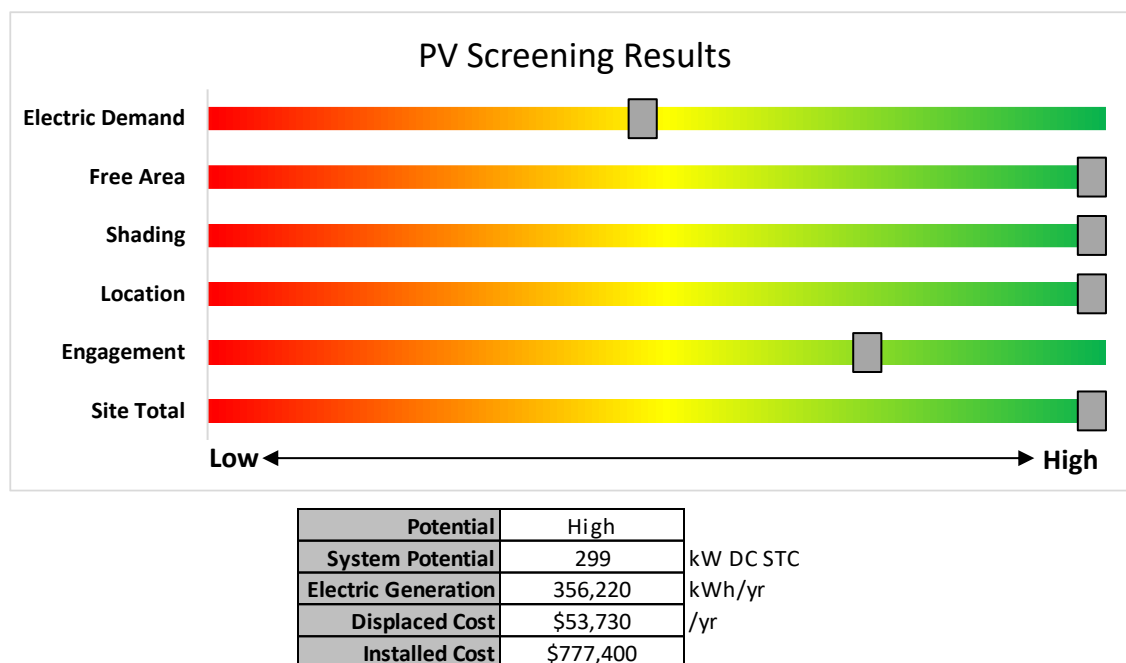


Figure 8 - Photovoltaic Screening

Successor Solar Incentive Program (SuSI)

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

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

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

- **Basic Info on Solar PV in NJ:** www.njcleanenergy.com/whysolar
- **NJ Solar Market FAQs:** www.njcleanenergy.com/renewable-energy/program-updates-and-background-information/solar-transition/solar-market-faqs.
- **Approved Solar Installers in the NJ Market:** www.njcleanenergy.com/commercial-industrial/programs/nj-smartstart-buildings/tools-and-resources/tradeally/approved_vendorsearch/?id=60&start=1

6.2 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 lack of gas service, low or infrequent thermal load, and lack of space for siting the equipment are the most significant factors contributing to the lack of CHP potential.

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

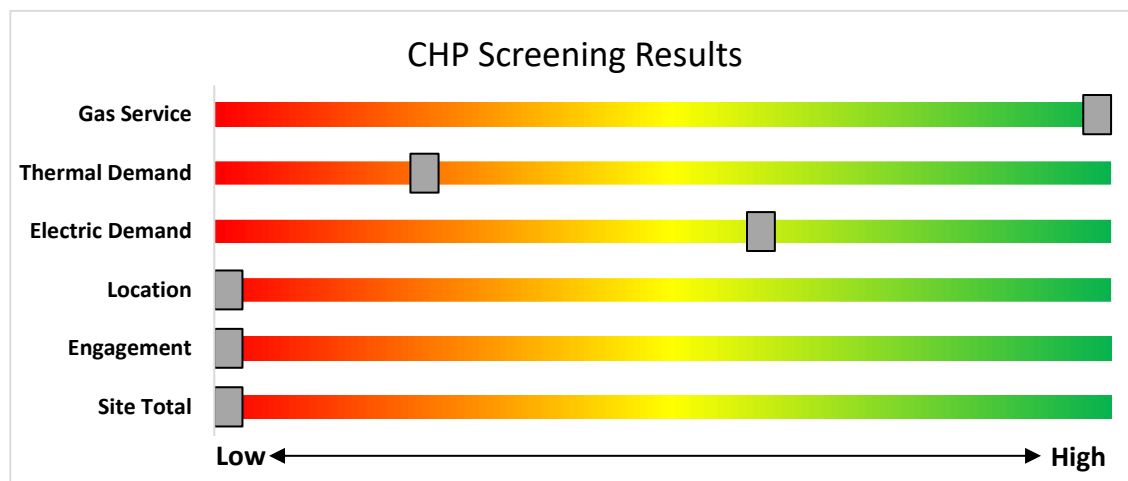


Figure 9 - Combined Heat and Power Screening

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

7 ELECTRIC VEHICLES (EV)

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

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

7.1 Electric Vehicle Charging

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

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

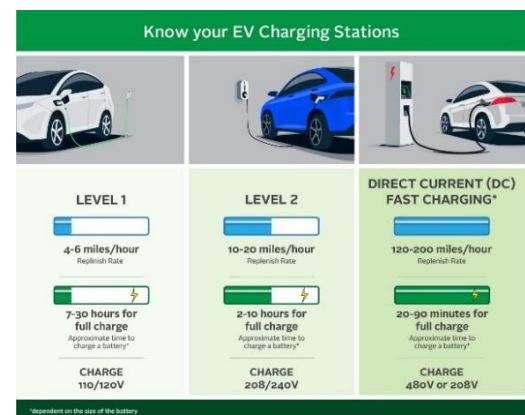
The preliminary assessment of EV charging at the facility shows that there is high potential for adding EV chargers to the facility's parking, based on potential costs of installation and other site factors.

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

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

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

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



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

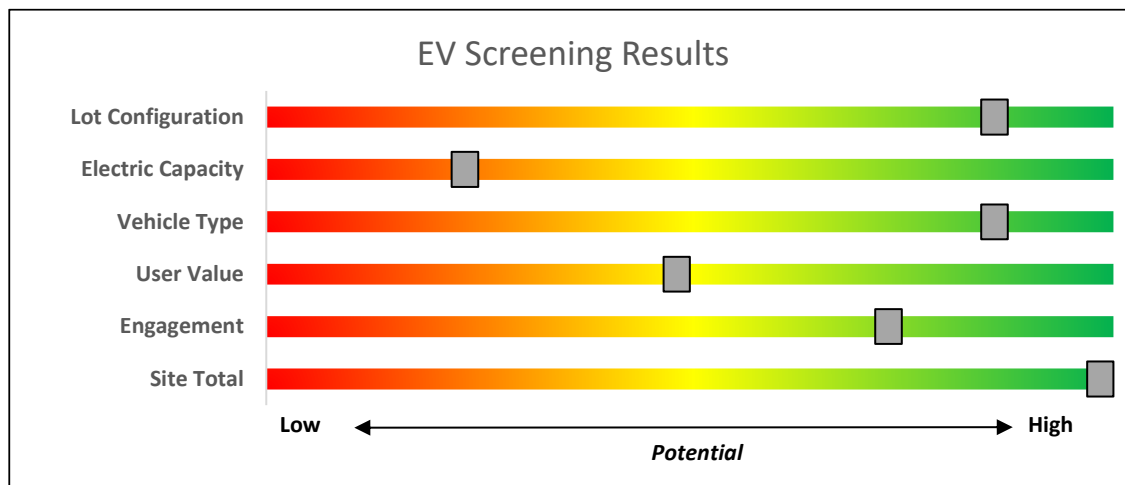


Figure 10 – EV Charger Screening

Electric Vehicle Programs Available

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

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

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

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

8 PROJECT FUNDING AND INCENTIVES

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










Program areas to be served by the Utilities:

- Existing Buildings (residential, commercial, industrial, government)
- Efficient Products
 - HVAC
 - Appliance Rebates
 - Appliance Recycling

Proposed New Programs & Features:

- Dedicated multi-family program
- More financing options
- Quick home energy check-ups



Program areas staying with NJCEP:

- New Construction (residential, commercial, industrial, government)
- Large Energy Users
- Combined Heat & Power & Fuel Cells
- State Facilities
- Local Government Energy Audits
- Energy Savings Improvement Program
- Solar & Community Solar

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 (FEED). Once the FEED 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 | >3 MW | \$350 | | | | |
| Fuel Cells with Heat Recovery | | | | | | |
| | | | | | | |
| Waste Heat to Power* | <1 MW | \$1,000 | 30% | \$2 million | | |
| | > 1MW | \$500 | | \$3 million | | |

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

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

How to Participate

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

Successor Solar Incentive Program (SuSI)

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

Administratively Determined Incentive (ADI) Program

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

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

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

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

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

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

Competitive Solar Incentive Program

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

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

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

Energy Savings Improvement Program

The Energy Savings Improvement Program (ESIP) serves New Jersey's government agencies by financing energy projects. An ESIP is a type of performance contract, whereby school districts, counties, municipalities, housing authorities, and other public and state entities enter into contracts to help finance building energy upgrades. Annual payments are lower than the savings projected from the energy conservation measures (ECMs), ensuring that ESIP projects are cash flow positive for the life of the contract.

ESIP provides government agencies in New Jersey with a flexible tool to improve and reduce energy usage with minimal expenditure of new financial resources. NJCEP incentive programs described above can also be used to help further reduce the total project cost of eligible measures.

How to Participate

This LGEA report is the first step to participating in ESIP. Next, you will need to select an approach for implementing the desired ECMs:

- (1) Use an energy services company or "ESCO."
- (2) Use independent engineers and other specialists, or your own qualified staff, to provide and manage the requirements of the program through bonds or lease obligations.
- (3) Use a hybrid approach of the two options described above where the ESCO is used for some services and independent engineers, or other specialists or qualified staff, are used to deliver other requirements of the program.

After adopting a resolution with a chosen implementation approach, the development of the energy savings plan can begin. The ESP demonstrates that the total project costs of the ECMs are offset by the energy savings over the financing term, not to exceed 15 years. The verified savings will then be used to pay for the financing.

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

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

9 PROJECT DEVELOPMENT

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

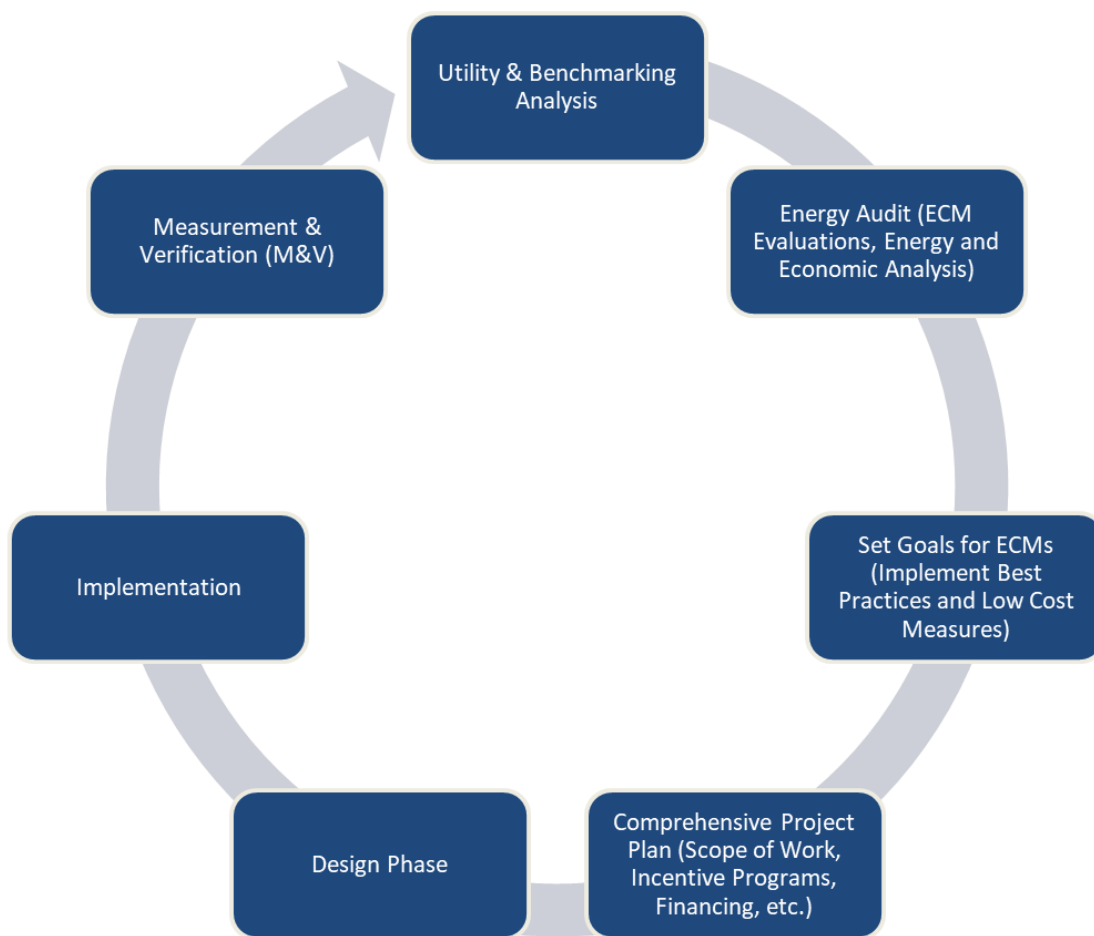


Figure 11 – Project Development Cycle

10 ENERGY PURCHASING AND PROCUREMENT STRATEGIES

10.1 Retail Electric Supply Options

Energy deregulation in New Jersey has increased energy buyers' options by separating the function of electricity distribution from that of electricity supply. Though you may choose a different company from which to buy your electric power, responsibility for your facility's interconnection to the grid and repair to local power distribution will still reside with the traditional utility company serving your region.

If your facility is not purchasing electricity from a third-party supplier, consider shopping for a reduced rate from third-party electric suppliers. If your facility already buys electricity from a third-party supplier, review and compare prices at the end of each contract year.

A list of licensed third-party electric suppliers is available at the NJBPU website¹².

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 website¹³.

¹² www.state.nj.us/bpu/commercial/shopping.html.

¹³ 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 | |
| Maintenance Garage - Exterior 1 | 1 | LED Lamps: PAR30 Screw-In Lamps | Photocell | | 12 | 4,380 | | None | No | 1 | LED Lamps: PAR30 Screw-In Lamps | Photocell | 12 | 4,380 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 | |
| Maintenance Garage - Garage 1 | 1 | LED Lamps: PAR30 Screw-In Lamps | Wall Switch | S | 12 | 1,500 | | None | No | 1 | LED Lamps: PAR30 Screw-In Lamps | Wall Switch | 12 | 1,500 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 | |
| Maintenance Garage - Garage 1 | 2 | LED - Linear Tubes: (2) 8' Lamps | Wall Switch | S | 72 | 1,500 | 4 | None | Yes | 2 | LED - Linear Tubes: (2) 8' Lamps | High/Low Control | 72 | 1,035 | 0.0 | 74 | 0 | \$11 | \$0 | \$0 | 0.0 | |
| Maintenance Garage - Garage 1 | 3 | Linear Fluorescent - T12: 8' T12 (75W) - 2L | Wall Switch | S | 158 | 1,500 | 1, 4 | Relamp & Reballast | Yes | 3 | LED - Linear Tubes: (2) 8' Lamps | High/Low Control | 72 | 1,035 | 0.2 | 536 | 0 | \$80 | \$611 | \$165 | 5.6 | |
| Carriage House - Classroom 1 | 1 | Exit Signs: LED - 2 W Lamp | None | | 6 | 8,760 | | None | No | 1 | Exit Signs: LED - 2 W Lamp | None | 6 | 8,760 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 | |
| Carriage House - Classroom 1 | 9 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 2,000 | 2, 3 | Relamp | Yes | 9 | LED - Linear Tubes: (4) 4' Lamps | Occupancy Sensor | 58 | 1,380 | 0.5 | 1,465 | 0 | \$218 | \$927 | \$215 | 3.3 | |
| Carriage House - Exterior 1 | 2 | LED Lamps: A-19 Lamps | Photocell | | 10 | 4,380 | | None | No | 2 | LED Lamps: A-19 Lamps | Photocell | 10 | 4,380 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 | |
| Carriage House - Office - Enclosed | 6 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 2,000 | 2, 3 | Relamp | Yes | 6 | LED - Linear Tubes: (4) 4' Lamps | Occupancy Sensor | 58 | 1,380 | 0.3 | 977 | 0 | \$146 | \$708 | \$155 | 3.8 | |
| Carriage House - Mechanical 1 | 1 | Incandescent: A-23 Lamps | Wall Switch | S | 150 | 100 | 2 | Relamp | No | 1 | LED Lamps: LED Lamp | Wall Switch | 23 | 100 | 0.1 | 14 | 0 | \$2 | \$17 | \$1 | 7.8 | |
| Grounds Building - Exterior 1 | 1 | Compact Fluorescent: (1) 23W Spiral Plug-In Lamp | Photocell | | 23 | 4,380 | 2 | Relamp | No | 1 | LED Lamps: (1) A-lamp | Photocell | 10 | 4,380 | 0.0 | 57 | 0 | \$9 | \$17 | \$1 | 1.9 | |
| Grounds Building - Exterior 1 | 2 | LED Lamps: (1) 10W A19 Screw-In Lamp | Photocell | | 10 | 4,380 | | None | No | 2 | LED Lamps: (1) 10W A19 Screw-In Lamp | Photocell | 10 | 4,380 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 | |
| Grounds Building - Garage 1 | 1 | LED - Fixtures: Ambient - 4' - Direct Fixture | Wall Switch | S | 30 | 1,000 | | None | No | 1 | LED - Fixtures: Ambient - 4' - Direct Fixture | Wall Switch | 30 | 1,000 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 | |
| Grounds Building - Garage 1 | 1 | LED - Linear Tubes: (2) 8' Lamps | Wall Switch | S | 72 | 1,000 | | None | No | 1 | LED - Linear Tubes: (2) 8' Lamps | Wall Switch | 72 | 1,000 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 | |
| Grounds Building - Garage 1 | 6 | Linear Fluorescent - T12HO: 8' T12HO (110W) - 2L | Wall Switch | S | 252 | 1,000 | 1, 3 | Relamp & Reballast | Yes | 6 | LED - Linear Tubes: (2) 8' Lamps | Occupancy Sensor | 72 | 690 | 0.9 | 1,335 | 0 | \$199 | \$1,042 | \$155 | 4.5 | |
| Grounds Building - Garage 2 | 1 | LED - Fixtures: Ambient - 4' - Direct Fixture | Wall Switch | S | 30 | 1,000 | | None | No | 1 | LED - Fixtures: Ambient - 4' - Direct Fixture | Wall Switch | 30 | 1,000 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 | |
| Grounds Building - Garage 2 | 1 | LED - Linear Tubes: (2) 8' Lamps | Wall Switch | S | 72 | 1,000 | | None | No | 1 | LED - Linear Tubes: (2) 8' Lamps | Wall Switch | 72 | 1,000 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 | |
| Grounds Building - Garage 2 | 5 | Linear Fluorescent - T12HO: 8' T12HO (110W) - 2L | Wall Switch | S | 252 | 1,000 | 1, 3 | Relamp & Reballast | Yes | 5 | LED - Linear Tubes: (2) 8' Lamps | Occupancy Sensor | 72 | 690 | 0.7 | 1,113 | 0 | \$166 | \$913 | \$135 | 4.7 | |
| Grounds Building - Garage 2 | 1 | Linear Fluorescent - T12HO: 8' T12HO (110W) - 2L | Wall Switch | S | 252 | 1,000 | 1 | Relamp & Reballast | No | 1 | LED - Linear Tubes: (2) 8' Lamps | Wall Switch | 72 | 1,000 | 0.1 | 198 | 0 | \$30 | \$129 | \$20 | 3.7 | |
| School - Gymnasium lower gym | 3 | Exit Signs: LED - 2 W Lamp | None | | 6 | 8,760 | | None | No | 3 | Exit Signs: LED - 2 W Lamp | None | 6 | 8,760 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 | |
| School - Gymnasium lower gym | 30 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Occupancy Sensor | S | 114 | 3,006 | 2 | Relamp | No | 30 | LED - Linear Tubes: (4) 4' Lamps | Occupancy Sensor | 58 | 3,006 | 1.2 | 5,554 | -1 | \$828 | \$2,191 | \$600 | 1.9 | |
| School - Office - Enclosed 1 | 1 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | S | 29 | 4,356 | | None | No | 1 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | 29 | 4,356 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 | |
| School - Restroom - Unisex 1 | 1 | LED Lamps: (1) 12W A19 Screw-In Lamp | Wall Switch | S | 12 | 4,356 | | None | No | 1 | LED Lamps: (1) 12W A19 Screw-In Lamp | Wall Switch | 12 | 4,356 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 | |
| School - Restroom - Unisex 1 | 1 | LED Lamps: (1) 36W Corn Bulb Screw-In Lamp | Wall Switch | S | 36 | 4,356 | | None | No | 1 | LED Lamps: (1) 36W Corn Bulb Screw-In Lamp | Wall Switch | 36 | 4,356 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 | |
| School - Storage Kitchen | 1 | LED - Fixtures: Ambient 2x2 Fixture | Wall Switch | S | 30 | 4,356 | | None | No | 1 | LED - Fixtures: Ambient 2x2 Fixture | Wall Switch | 30 | 4,356 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 | |
| School - Storage Kitchen | 5 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Occupancy Sensor | S | 62 | 3,006 | 2 | Relamp | No | 5 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.1 | 546 | 0 | \$81 | \$183 | \$50 | 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 |
| School - Storage lower gym | 4 | Linear Fluorescent - T12: 8' T12 (75W) - 2L | Wall Switch | S | 158 | 4,356 | 1, 3 | Relamp & Reballast | Yes | 4 | LED - Linear Tubes: (2) 8' Lamps | Occupancy Sensor | 72 | 3,006 | 0.3 | 2,076 | 0 | \$309 | \$785 | \$80 | 2.3 |
| School - Gymnasium Upper | 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 |
| School - Gymnasium Upper | 13 | Linear Fluorescent - T8: 4' T8 (32W) - 6L | Occupancy Sensor | S | 176 | 3,006 | 2 | Relamp | No | 13 | LED - Linear Tubes: (6) 4' Lamps | Occupancy Sensor | 87 | 3,006 | 0.8 | 3,825 | -1 | \$570 | \$1,424 | \$390 | 1.8 |
| School - Gymnasium Upper | 5 | Linear Fluorescent - T8: 4' T8 (32W) - 6L | Occupancy Sensor | S | 176 | 3,006 | 2 | Relamp | No | 5 | LED - Linear Tubes: (6) 4' Lamps | Occupancy Sensor | 87 | 3,006 | 0.3 | 1,471 | 0 | \$219 | \$548 | \$150 | 1.8 |
| School - Storage upper gym | 3 | Compact Fluorescent: (1) 23W Spiral Plug-In Lamp | Wall Switch | S | 23 | 4,356 | 2, 3 | Relamp | Yes | 3 | LED Lamps: (1) A-lamp | Occupancy Sensor | 17 | 3,006 | 0.0 | 162 | 0 | \$24 | \$168 | \$3 | 6.8 |
| School - Storage upper gym | 1 | Compact Fluorescent: (1) 55W Spiral Plug-In Lamp | Wall Switch | S | 55 | 4,356 | 2 | Relamp | No | 1 | LED Lamps: (1)A-lamp | Wall Switch | 38 | 4,356 | 0.0 | 81 | 0 | \$12 | \$17 | \$1 | 1.3 |
| School - Storage upper gym | 2 | LED Lamps: (1) 12W A23 Screw-In Lamp | Wall Switch | S | 12 | 4,356 | 3 | None | Yes | 2 | LED Lamps: (1) 12W A23 Screw-In Lamp | Occupancy Sensor | 12 | 3,006 | 0.0 | 36 | 0 | \$5 | \$116 | \$0 | 21.8 |
| School - Stairs 1 | 1 | Exit Signs: LED - 2 W Lamp | None | | 6 | 8,760 | | None | No | 1 | Exit Signs: LED - 2 W Lamp | None | 6 | 8,760 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| School - Stairs 1 | 2 | LED - Fixtures: Ambient 2x2 Fixture | Wall Switch | S | 30 | 4,356 | 3 | None | Yes | 2 | LED - Fixtures: Ambient 2x2 Fixture | Occupancy Sensor | 30 | 3,006 | 0.0 | 89 | 0 | \$13 | \$116 | \$20 | 7.2 |
| School - Stairs 1 | 1 | LED - Fixtures: Ambient - 4' - Direct Fixture | Wall Switch | S | 30 | 4,356 | | None | No | 1 | LED - Fixtures: Ambient - 4' - Direct Fixture | Wall Switch | 30 | 4,356 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Classroom 101 | 8 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | S | 29 | 4,356 | 3 | None | Yes | 8 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.1 | 345 | 0 | \$51 | \$270 | \$35 | 4.6 |
| Classroom 102 | 8 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | S | 29 | 4,356 | 3 | None | Yes | 8 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.1 | 345 | 0 | \$51 | \$270 | \$35 | 4.6 |
| Classroom 103 | 8 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | S | 29 | 4,356 | 3 | None | Yes | 8 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.1 | 345 | 0 | \$51 | \$270 | \$35 | 4.6 |
| Classroom 104 | 8 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | S | 29 | 4,356 | 3 | None | Yes | 8 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.1 | 345 | 0 | \$51 | \$270 | \$35 | 4.6 |
| Classroom 104 (1) | 8 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | S | 29 | 4,356 | 3 | None | Yes | 8 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.1 | 345 | 0 | \$51 | \$270 | \$35 | 4.6 |
| Classroom 105 | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 1L | None | S | 32 | 4,356 | 2 | Relamp | No | 1 | LED - Linear Tubes: (1) 4' Lamp | None | 15 | 4,356 | 0.0 | 84 | 0 | \$12 | \$18 | \$5 | 1.1 |
| Classroom 105 | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | None | S | 62 | 4,356 | 2 | Relamp | No | 1 | LED - Linear Tubes: (2) 4' Lamps | None | 29 | 4,356 | 0.0 | 158 | 0 | \$24 | \$37 | \$10 | 1.1 |
| Classroom 110 | 8 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | S | 29 | 4,356 | 3 | None | Yes | 8 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.1 | 345 | 0 | \$51 | \$270 | \$35 | 4.6 |
| Classroom 112 | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 2 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.1 | 402 | 0 | \$60 | \$189 | \$40 | 2.5 |
| Classroom 113 | 10 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 10 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.3 | 2,012 | 0 | \$300 | \$635 | \$135 | 1.7 |
| Classroom 114 | 8 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 8 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.2 | 1,610 | 0 | \$240 | \$562 | \$115 | 1.9 |
| Classroom 115 | 8 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 8 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.2 | 1,610 | 0 | \$240 | \$562 | \$115 | 1.9 |
| Classroom 116 | 5 | Exit Signs: LED - 2 W Lamp | None | | 6 | 8,760 | | None | No | 5 | Exit Signs: LED - 2 W Lamp | None | 6 | 8,760 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Classroom 116 | 16 | LED - Fixtures: Ambient - 4' - Direct Fixture | Wall Switch | S | 20 | 4,356 | 3 | None | Yes | 16 | LED - Fixtures: Ambient - 4' - Direct Fixture | Occupancy Sensor | 20 | 3,006 | 0.1 | 475 | 0 | \$71 | \$270 | \$35 | 3.3 |
| Classroom 116 | 1 | LED Lamps: (1) 15W PAR38 Screw-In Lamp | Wall Switch | S | 15 | 4,356 | | None | No | 1 | LED Lamps: (1) 15W PAR38 Screw-In Lamp | Wall Switch | 15 | 4,356 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |

| Existing Conditions | | | | | | | Proposed Conditions | | | | | | | Energy Impact & Financial Analysis | | | | | | | |
|------------------------|------------------|---|------------------|-------------|-------------------|------------------------|---------------------|------------------------|---------------|------------------|--------------------------------------|------------------|-------------------|------------------------------------|-----------------------|--------------------------|----------------------------|----------------------------------|-------------------------|------------------|---------------------------------------|
| Location | Fixture Quantity | Fixture Description | Control System | Light Level | Watts per Fixture | Annual Operating Hours | ECM # | Fixture Recommendation | Add Controls? | Fixture Quantity | Fixture Description | Control System | Watts per Fixture | Annual Operating Hours | Total Peak kW Savings | Total Annual kWh Savings | Total Annual MMBtu Savings | Total Annual Energy Cost Savings | Estimated M&L Cost (\$) | Total Incentives | Simple Payback w/ Incentives in Years |
| Classroom 116 | 10 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | S | 29 | 4,356 | 3 | None | Yes | 10 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.1 | 431 | 0 | \$64 | \$270 | \$35 | 3.7 |
| Classroom 117 | 18 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 18 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.5 | 3,622 | -1 | \$540 | \$927 | \$215 | 1.3 |
| Classroom 118 | 18 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 18 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.5 | 3,622 | -1 | \$540 | \$927 | \$215 | 1.3 |
| Classroom 119 | 18 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 18 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.5 | 3,622 | -1 | \$540 | \$927 | \$215 | 1.3 |
| Classroom 120 | 8 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | S | 29 | 4,356 | 3 | None | Yes | 8 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.1 | 345 | 0 | \$51 | \$270 | \$35 | 4.6 |
| Classroom 121 | 8 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | S | 29 | 4,356 | 3 | None | Yes | 8 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.1 | 345 | 0 | \$51 | \$270 | \$35 | 4.6 |
| Classroom 122 | 8 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | S | 29 | 4,356 | 3 | None | Yes | 8 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.1 | 345 | 0 | \$51 | \$270 | \$35 | 4.6 |
| Classroom 123 | 8 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | S | 29 | 4,356 | 3 | None | Yes | 8 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.1 | 345 | 0 | \$51 | \$270 | \$35 | 4.6 |
| Classroom 124 | 8 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | S | 29 | 4,356 | 3 | None | Yes | 8 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.1 | 345 | 0 | \$51 | \$270 | \$35 | 4.6 |
| Classroom 125 | 8 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | S | 29 | 4,356 | 3 | None | Yes | 8 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.1 | 345 | 0 | \$51 | \$270 | \$35 | 4.6 |
| Classroom 144 Ceramics | 1 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | S | 29 | 4,356 | | None | No | 1 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | 29 | 4,356 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Classroom 144 Ceramics | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 1L | Wall Switch | S | 32 | 4,356 | 2 | Relamp | No | 1 | LED - Linear Tubes: (1) 4' Lamp | Wall Switch | 15 | 4,356 | 0.0 | 84 | 0 | \$12 | \$18 | \$5 | 1.1 |
| Classroom 144 Ceramics | 8 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 4,356 | 2, 3 | Relamp | Yes | 8 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.4 | 2,414 | -1 | \$360 | \$708 | \$155 | 1.5 |
| Classroom 151 | 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 |
| Classroom 151 | 14 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 4,356 | 2, 3 | Relamp | Yes | 14 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.6 | 4,225 | -1 | \$630 | \$1,037 | \$245 | 1.3 |
| Classroom 151 | 14 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 4,356 | 2, 3 | Relamp | Yes | 14 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.6 | 4,225 | -1 | \$630 | \$1,037 | \$245 | 1.3 |
| Classroom 152 | 2 | Exit Signs: LED - 2 W Lamp | None | | 6 | 8,760 | | None | No | 2 | Exit Signs: LED - 2 W Lamp | None | 6 | 8,760 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Classroom 152 | 5 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 4,356 | 2, 3 | Relamp | Yes | 5 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.2 | 1,509 | 0 | \$225 | \$544 | \$110 | 1.9 |
| Classroom 152 | 11 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 4,356 | 2, 3 | Relamp | Yes | 11 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.5 | 3,320 | -1 | \$495 | \$872 | \$200 | 1.4 |
| Classroom 165 | 4 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Occupancy Sensor | S | 62 | 3,006 | 2 | Relamp | No | 4 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | 33 | 3,006 | 0.1 | 384 | 0 | \$57 | \$290 | \$40 | 4.4 |
| Classroom 166 | 3 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Occupancy Sensor | S | 62 | 3,006 | 2 | Relamp | No | 3 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | 33 | 3,006 | 0.1 | 288 | 0 | \$43 | \$217 | \$30 | 4.4 |
| Classroom 167 | 3 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Occupancy Sensor | S | 62 | 3,006 | 2 | Relamp | No | 3 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | 33 | 3,006 | 0.1 | 288 | 0 | \$43 | \$217 | \$30 | 4.4 |
| Classroom 168 | 3 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Occupancy Sensor | S | 62 | 3,006 | 2 | Relamp | No | 3 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | 33 | 3,006 | 0.1 | 288 | 0 | \$43 | \$217 | \$30 | 4.4 |
| Classroom 170 | 32 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 4,356 | 2, 3 | Relamp | Yes | 32 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 1.5 | 9,658 | -2 | \$1,440 | \$2,293 | \$550 | 1.2 |
| Classroom 171 | 1 | LED Lamps: (1) 10W A19 Screw-In Lamp | Wall Switch | S | 10 | 4,356 | | None | No | 1 | LED Lamps: (1) 10W A19 Screw-In Lamp | Wall Switch | 10 | 4,356 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |

| Existing Conditions | | | | | | | Proposed Conditions | | | | | | | Energy Impact & Financial Analysis | | | | | | | |
|---------------------------|------------------|--|------------------|-------------|-------------------|------------------------|---------------------|------------------------|---------------|------------------|---|------------------|-------------------|------------------------------------|-----------------------|--------------------------|----------------------------|----------------------------------|-------------------------|------------------|---------------------------------------|
| Location | Fixture Quantity | Fixture Description | Control System | Light Level | Watts per Fixture | Annual Operating Hours | ECM # | Fixture Recommendation | Add Controls? | Fixture Quantity | Fixture Description | Control System | Watts per Fixture | Annual Operating Hours | Total Peak kW Savings | Total Annual kWh Savings | Total Annual MMBtu Savings | Total Annual Energy Cost Savings | Estimated M&L Cost (\$) | Total Incentives | Simple Payback w/ Incentives in Years |
| Classroom 171 | 17 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 17 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.5 | 3,420 | -1 | \$510 | \$891 | \$205 | 1.3 |
| Classroom 175 | 2 | Exit Signs: LED - 2 W Lamp | None | | 6 | 8,760 | | None | No | 2 | Exit Signs: LED - 2 W Lamp | None | 6 | 8,760 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Classroom 175 | 24 | LED - Linear Tubes: (3) 4' Lamps | Wall Switch | S | 44 | 4,356 | 3 | None | Yes | 24 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.2 | 1,551 | 0 | \$231 | \$540 | \$70 | 2.0 |
| Classroom 176 | 11 | LED - Linear Tubes: (3) 4' Lamps | Wall Switch | S | 44 | 4,356 | 3 | None | Yes | 11 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.1 | 711 | 0 | \$106 | \$270 | \$35 | 2.2 |
| Classroom 195 | 10 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 4,356 | 2, 3 | Relamp | Yes | 10 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.5 | 3,018 | -1 | \$450 | \$818 | \$185 | 1.4 |
| Classroom Changing Rm | 1 | LED - Linear Tubes: (2) 4' Lamps | None | S | 29 | 4,356 | | None | No | 1 | LED - Linear Tubes: (2) 4' Lamps | None | 29 | 4,356 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Classroom Changing Rm | 2 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Occupancy Sensor | S | 62 | 3,006 | 2 | Relamp | No | 2 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | 33 | 3,006 | 0.0 | 192 | 0 | \$29 | \$145 | \$20 | 4.4 |
| Classroom MS Art 139 | 2 | Compact Fluorescent: (2) 26W Biaxial Plug-In Lamps | Wall Switch | S | 52 | 4,356 | 2, 3 | Relamp | Yes | 2 | LED Lamps: GX23 (Plug-In) Lamps | Occupancy Sensor | 37 | 3,006 | 0.0 | 254 | 0 | \$38 | \$166 | \$24 | 3.8 |
| Classroom MS Art 139 | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 2 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.1 | 402 | 0 | \$60 | \$189 | \$40 | 2.5 |
| Classroom MS Art 139 | 49 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 49 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 1.5 | 9,859 | -2 | \$1,470 | \$2,599 | \$595 | 1.4 |
| Classroom MS Library STEM | 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 |
| Classroom MS Library STEM | 5 | LED - Fixtures: Ambient - 8' - Direct Fixture | Wall Switch | S | 50 | 4,356 | 3 | None | Yes | 5 | LED - Fixtures: Ambient - 8' - Direct Fixture | Occupancy Sensor | 50 | 3,006 | 0.1 | 371 | 0 | \$55 | \$270 | \$35 | 4.2 |
| Computer Lab Media 140 | 6 | Compact Fluorescent: (2) 40W Biaxial Plug-In Lamps | Wall Switch | S | 80 | 4,356 | 2, 3 | Relamp | Yes | 6 | LED Lamps: PL-L (BiAx) Lamps | Occupancy Sensor | 56 | 3,006 | 0.2 | 1,189 | 0 | \$177 | \$432 | \$47 | 2.2 |
| Computer Lab Media 140 | 3 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 4,356 | 2, 3 | Relamp | Yes | 3 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.1 | 905 | 0 | \$135 | \$434 | \$80 | 2.6 |
| Computer Lab Media 140 | 3 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 3 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | 33 | 3,006 | 0.1 | 564 | 0 | \$84 | \$487 | \$65 | 5.0 |
| Computer Lab MS Library 1 | 4 | LED - Fixtures: Ceiling Mount | Wall Switch | S | 18 | 4,356 | 3 | None | Yes | 4 | LED - Fixtures: Ceiling Mount | Occupancy Sensor | 18 | 3,006 | 0.0 | 107 | 0 | \$16 | \$270 | \$35 | 14.7 |
| Conference MS Library | 4 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Occupancy Sensor | S | 62 | 3,006 | 2 | Relamp | No | 4 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | 33 | 3,006 | 0.1 | 384 | 0 | \$57 | \$290 | \$40 | 4.4 |
| Corridor 5th Grade | 2 | Exit Signs: LED - 2 W Lamp | None | | 6 | 8,760 | | None | No | 2 | Exit Signs: LED - 2 W Lamp | None | 6 | 8,760 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Corridor 5th Grade | 8 | U-Bend Fluorescent - T8: U T8 (32W) - 3L | Wall Switch | S | 92 | 4,356 | 2, 4 | Relamp | Yes | 8 | LED - Linear Tubes: (3) U-Lamp | High/Low Control | 50 | 3,006 | 0.3 | 2,217 | 0 | \$331 | \$1,095 | \$345 | 2.3 |
| Corridor 5th Grade | 2 | U-Bend Fluorescent - T8: U T8 (32W) - 3L | None | S | 92 | 8,760 | 2, 4 | Relamp | Yes | 2 | LED - Linear Tubes: (3) U-Lamp | High/Low Control | 50 | 6,044 | 0.1 | 1,115 | 0 | \$166 | \$442 | \$100 | 2.1 |
| Corridor Amin | 14 | Compact Fluorescent: (1) 26W Biaxial Plug-In Lamp | Wall Switch | S | 26 | 4,356 | 2, 4 | Relamp | Yes | 14 | LED Lamps: GX23 (Plug-In) Lamps | High/Low Control | 19 | 3,006 | 0.1 | 865 | 0 | \$129 | \$400 | \$239 | 1.2 |
| Corridor Amin | 4 | Exit Signs: LED - 2 W Lamp | None | | 6 | 8,760 | | None | No | 4 | Exit Signs: LED - 2 W Lamp | None | 6 | 8,760 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Corridor Amin | 10 | LED Lamps: (1) 10W A19 Screw-In Lamp | Wall Switch | S | 10 | 4,356 | 4 | None | Yes | 10 | LED Lamps: (1) 10W A19 Screw-In Lamp | High/Low Control | 10 | 3,006 | 0.0 | 149 | 0 | \$22 | \$225 | \$225 | 0.0 |
| Corridor Art Wing & MS | 9 | Exit Signs: LED - 2 W Lamp | None | | 6 | 8,760 | | None | No | 9 | Exit Signs: LED - 2 W Lamp | None | 6 | 8,760 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Corridor Art Wing & MS | 3 | LED Lamps: (1) 10W A19 Screw-In Lamp | Wall Switch | S | 10 | 8,760 | 4 | None | Yes | 3 | LED Lamps: (1) 10W A19 Screw-In Lamp | High/Low Control | 10 | 6,044 | 0.0 | 90 | 0 | \$13 | \$225 | \$105 | 9.0 |

| | 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 | |
| Corridor Art Wing & MS | 7 | LED Lamps: (1) 10W A19 Screw-In Lamp | Wall Switch | S | 10 | 4,356 | 4 | None | Yes | 7 | LED Lamps: (1) 10W A19 Screw-In Lamp | High/Low Control | 10 | 3,006 | 0.0 | 104 | 0 | \$15 | \$225 | \$225 | 0.0 | |
| Corridor Art Wing & MS | 12 | LED Lamps: (1) 12W BR30 Screw-In Lamp | Wall Switch | S | 12 | 4,356 | 4 | None | Yes | 12 | LED Lamps: (1) 12W BR30 Screw-In Lamp | High/Low Control | 12 | 3,006 | 0.0 | 214 | 0 | \$32 | \$225 | \$225 | 0.0 | |
| Corridor Art Wing & MS | 1 | LED Lamps: (1) 12W BR30 Screw-In Lamp | Wall Switch | S | 12 | 4,356 | | None | No | 1 | LED Lamps: (1) 12W BR30 Screw-In Lamp | Wall Switch | 12 | 4,356 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 | |
| Corridor Art Wing & MS | 5 | LED Lamps: (1) 12W BR30 Screw-In Lamp | Wall Switch | S | 12 | 8,760 | 4 | None | Yes | 5 | LED Lamps: (1) 12W BR30 Screw-In Lamp | High/Low Control | 12 | 6,044 | 0.0 | 179 | 0 | \$27 | \$225 | \$175 | 1.9 | |
| Corridor Art Wing & MS | 41 | LED - Fixtures: Ceiling Mount | Wall Switch | S | 15 | 4,356 | 4 | None | Yes | 41 | LED - Fixtures: Ceiling Mount | High/Low Control | 15 | 3,006 | 0.1 | 914 | 0 | \$136 | \$225 | \$225 | 0.0 | |
| Corridor Art Wing & MS | 16 | LED - Fixtures: Ceiling Mount | Wall Switch | S | 15 | 8,760 | 4 | None | Yes | 16 | LED - Fixtures: Ceiling Mount | High/Low Control | 15 | 6,044 | 0.1 | 717 | 0 | \$107 | \$225 | \$225 | 0.0 | |
| Corridor Art Wing & MS | 3 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 4,356 | 2, 4 | Relamp | Yes | 3 | LED - Linear Tubes: (4) 4' Lamps | High/Low Control | 58 | 3,006 | 0.2 | 1,063 | 0 | \$159 | \$444 | \$165 | 1.8 | |
| Corridor Art Wing & MS | 5 | U-Bend Fluorescent - T8: U T8 (32W) - 3L | Wall Switch | S | 92 | 8,760 | 2, 4 | Relamp | Yes | 5 | LED - Linear Tubes: (3) U-Lamp | High/Low Control | 50 | 6,044 | 0.2 | 2,787 | -1 | \$415 | \$768 | \$250 | 1.2 | |
| Corridor Art Wing & MS | 1 | Metal Halide: (1) 250W Lamp | Wall Switch | S | 295 | 100 | 2 | Relamp | No | 1 | LED Lamps - E39: ≤125 W Lamp | Wall Switch | 75 | 100 | 0.2 | 24 | 0 | \$4 | \$238 | \$50 | 52.1 | |
| Corridor Lower Gym | 4 | Compact Fluorescent: (1) 26W Biaxial Plug-In Lamp | Wall Switch | S | 26 | 4,356 | 2, 4 | Relamp | Yes | 4 | LED Lamps: GX23 (Plug-In) Lamps | High/Low Control | 19 | 3,006 | 0.0 | 247 | 0 | \$37 | \$275 | \$144 | 3.6 | |
| Corridor Lower Gym | 5 | Exit Signs: LED - 2 W Lamp | None | | 6 | 8,760 | | None | No | 5 | Exit Signs: LED - 2 W Lamp | None | 6 | 8,760 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 | |
| Corridor Lower Gym | 10 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 4,356 | 2, 4 | Relamp | Yes | 10 | LED - Linear Tubes: (3) 4' Lamps | High/Low Control | 44 | 3,006 | 0.5 | 3,018 | -1 | \$450 | \$773 | \$375 | 0.9 | |
| Corridor LS | 4 | Exit Signs: LED - 2 W Lamp | None | | 6 | 8,760 | | None | No | 4 | Exit Signs: LED - 2 W Lamp | None | 6 | 8,760 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 | |
| Corridor LS | 15 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 4 | Relamp | Yes | 15 | LED - Linear Tubes: (2) U-Lamp | High/Low Control | 33 | 3,006 | 0.4 | 2,820 | -1 | \$420 | \$1,537 | \$600 | 2.2 | |
| Corridor LS | 1 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | None | S | 62 | 8,760 | 2 | Relamp | No | 1 | LED - Linear Tubes: (2) U-Lamp | None | 33 | 8,760 | 0.0 | 279 | 0 | \$42 | \$72 | \$10 | 1.5 | |
| Corridor MS | 2 | Exit Signs: LED - 2 W Lamp | None | | 6 | 8,760 | | None | No | 2 | Exit Signs: LED - 2 W Lamp | None | 6 | 8,760 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 | |
| Corridor MS | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 4,356 | 2, 4 | Relamp | Yes | 2 | LED - Linear Tubes: (3) 4' Lamps | High/Low Control | 44 | 3,006 | 0.1 | 604 | 0 | \$90 | \$335 | \$100 | 2.6 | |
| Corridor MS | 11 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 4 | Relamp | Yes | 11 | LED - Linear Tubes: (2) U-Lamp | High/Low Control | 33 | 3,006 | 0.3 | 2,068 | 0 | \$308 | \$1,022 | \$335 | 2.2 | |
| Corridor MS | 4 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | None | S | 62 | 8,760 | 2, 4 | Relamp | Yes | 4 | LED - Linear Tubes: (2) U-Lamp | High/Low Control | 33 | 6,044 | 0.1 | 1,512 | 0 | \$225 | \$515 | \$180 | 1.5 | |
| Corridor Music MS | 4 | Exit Signs: LED - 2 W Lamp | None | | 6 | 8,760 | | None | No | 4 | Exit Signs: LED - 2 W Lamp | None | 6 | 8,760 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 | |
| Corridor Music MS | 6 | LED Lamps: (1) 10W PAR20 Screw-In Lamp | Wall Switch | S | 10 | 4,356 | 4 | None | Yes | 6 | LED Lamps: (1) 10W PAR20 Screw-In Lamp | High/Low Control | 10 | 3,006 | 0.0 | 89 | 0 | \$13 | \$225 | \$210 | 1.1 | |
| Corridor Music MS | 12 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 4 | Relamp | Yes | 12 | LED - Linear Tubes: (2) 4' Lamps | High/Low Control | 29 | 3,006 | 0.4 | 2,414 | -1 | \$360 | \$663 | \$345 | 0.9 | |
| Corridor Music MS | 4 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 4,356 | 2, 4 | Relamp | Yes | 4 | LED - Linear Tubes: (4) 4' Lamps | High/Low Control | 58 | 3,006 | 0.2 | 1,418 | 0 | \$211 | \$517 | \$220 | 1.4 | |
| Corridor Music MS | 2 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 4 | Relamp | Yes | 2 | LED - Linear Tubes: (2) U-Lamp | High/Low Control | 33 | 3,006 | 0.1 | 376 | 0 | \$56 | \$370 | \$90 | 5.0 | |
| Corridor Music MS | 3 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 4 | Relamp | Yes | 3 | LED - Linear Tubes: (2) U-Lamp | High/Low Control | 33 | 3,006 | 0.1 | 564 | 0 | \$84 | \$442 | \$135 | 3.7 | |

| | Existing Conditions | | | | | | Proposed Conditions | | | | | | | | Energy Impact & Financial Analysis | | | | | | |
|-------------------|---------------------|--|----------------|-------------|-------------------|------------------------|---------------------|------------------------|---------------|------------------|--|------------------|-------------------|------------------------|------------------------------------|--------------------------|----------------------------|----------------------------------|-------------------------|------------------|---------------------------------------|
| Location | Fixture Quantity | Fixture Description | Control System | Light Level | Watts per Fixture | Annual Operating Hours | ECM # | Fixture Recommendation | Add Controls? | Fixture Quantity | Fixture Description | Control System | Watts per Fixture | Annual Operating Hours | Total Peak kW Savings | Total Annual kWh Savings | Total Annual MMBtu Savings | Total Annual Energy Cost Savings | Estimated M&L Cost (\$) | Total Incentives | Simple Payback w/ Incentives in Years |
| Corridor Music MS | 1 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Wall Switch | S | 62 | 8,760 | 2, 4 | Relamp | Yes | 1 | LED - Linear Tubes: (2) U-Lamp | High/Low Control | 33 | 6,044 | 0.0 | 378 | 0 | \$56 | \$72 | \$10 | 1.1 |
| Corridor PH | 4 | LED - Fixtures: Downlight Recessed | Wall Switch | S | 15 | 4,356 | 4 | None | Yes | 4 | LED - Fixtures: Downlight Recessed | High/Low Control | 15 | 3,006 | 0.0 | 89 | 0 | \$13 | \$225 | \$140 | 6.4 |
| Corridor PH | 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 |
| Corridor PH | 5 | LED Lamps: (1) 30W Corn Bulb Screw-In Lamp | Wall Switch | S | 30 | 4,356 | 4 | None | Yes | 5 | LED Lamps: (1) 30W Corn Bulb Screw-In Lamp | High/Low Control | 30 | 3,006 | 0.0 | 223 | 0 | \$33 | \$225 | \$175 | 1.5 |
| Corridor PH | 5 | LED Lamps: (1) 15W PAR30 Screw-In Lamp | Wall Switch | S | 15 | 4,356 | 4 | None | Yes | 5 | LED Lamps: (1) 15W PAR30 Screw-In Lamp | High/Low Control | 15 | 3,006 | 0.0 | 111 | 0 | \$17 | \$225 | \$175 | 3.0 |
| Corridor PH | 3 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | S | 29 | 4,356 | 4 | None | Yes | 3 | LED - Linear Tubes: (2) 4' Lamps | High/Low Control | 29 | 3,006 | 0.0 | 129 | 0 | \$19 | \$225 | \$105 | 6.2 |
| Corridor PH | 3 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | S | 29 | 4,356 | 4 | None | Yes | 3 | LED - Linear Tubes: (2) 4' Lamps | High/Low Control | 29 | 3,006 | 0.0 | 129 | 0 | \$19 | \$225 | \$105 | 6.2 |
| Corridor PH | 10 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | S | 29 | 4,356 | 4 | None | Yes | 10 | LED - Linear Tubes: (2) 4' Lamps | High/Low Control | 29 | 3,006 | 0.1 | 431 | 0 | \$64 | \$225 | \$225 | 0.0 |
| Corridor Set Shop | 5 | Exit Signs: LED - 2 W Lamp | None | | 6 | 8,760 | | None | No | 5 | Exit Signs: LED - 2 W Lamp | None | 6 | 8,760 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Corridor Set Shop | 5 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 4,356 | 2, 4 | Relamp | Yes | 5 | LED - Linear Tubes: (3) 4' Lamps | High/Low Control | 44 | 3,006 | 0.2 | 1,509 | 0 | \$225 | \$499 | \$250 | 1.1 |
| Corridor Set Shop | 3 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 4,356 | 2, 4 | Relamp | Yes | 3 | LED - Linear Tubes: (3) 4' Lamps | High/Low Control | 44 | 3,006 | 0.1 | 905 | 0 | \$135 | \$389 | \$150 | 1.8 |
| Corridor Set Shop | 13 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 4,356 | 2, 4 | Relamp | Yes | 13 | LED - Linear Tubes: (3) 4' Lamps | High/Low Control | 44 | 3,006 | 0.6 | 3,923 | -1 | \$585 | \$937 | \$420 | 0.9 |
| Corridor Set Shop | 7 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 4,356 | 2, 4 | Relamp | Yes | 7 | LED - Linear Tubes: (3) 4' Lamps | High/Low Control | 44 | 3,006 | 0.3 | 2,113 | 0 | \$315 | \$608 | \$330 | 0.9 |
| Corridor Sports | 9 | Exit Signs: LED - 2 W Lamp | None | | 6 | 8,760 | | None | No | 9 | Exit Signs: LED - 2 W Lamp | None | 6 | 8,760 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Corridor Sports | 3 | LED - Linear Tubes: (2) U-Lamp | Wall Switch | S | 33 | 4,356 | 4 | None | Yes | 3 | LED - Linear Tubes: (2) U-Lamp | High/Low Control | 33 | 3,006 | 0.0 | 147 | 0 | \$22 | \$225 | \$105 | 5.5 |
| Corridor Sports | 7 | LED - Linear Tubes: (2) U-Lamp | None | S | 33 | 8,760 | 4 | None | Yes | 7 | LED - Linear Tubes: (2) U-Lamp | High/Low Control | 33 | 6,044 | 0.1 | 690 | 0 | \$103 | \$225 | \$225 | 0.0 |
| Corridor Sports | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 4 | Relamp | Yes | 1 | LED - Linear Tubes: (2) 4' Lamps | High/Low Control | 29 | 3,006 | 0.0 | 201 | 0 | \$30 | \$37 | \$10 | 0.9 |
| Corridor Sports | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 4 | Relamp | Yes | 1 | LED - Linear Tubes: (2) 4' Lamps | High/Low Control | 29 | 3,006 | 0.0 | 201 | 0 | \$30 | \$37 | \$10 | 0.9 |
| Corridor Sports | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 4,356 | 2, 4 | Relamp | Yes | 2 | LED - Linear Tubes: (3) 4' Lamps | High/Low Control | 44 | 3,006 | 0.1 | 604 | 0 | \$90 | \$335 | \$100 | 2.6 |
| Corridor Sports | 4 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 4,356 | 2, 4 | Relamp | Yes | 4 | LED - Linear Tubes: (3) 4' Lamps | High/Low Control | 44 | 3,006 | 0.2 | 1,207 | 0 | \$180 | \$444 | \$200 | 1.4 |
| Corridor Sports | 9 | LED - Linear Tubes: (2) U-Lamp | Wall Switch | S | 33 | 4,356 | 4 | None | Yes | 9 | LED - Linear Tubes: (2) U-Lamp | High/Low Control | 33 | 3,006 | 0.1 | 441 | 0 | \$66 | \$225 | \$225 | 0.0 |
| Corridor Sports | 9 | LED - Linear Tubes: (2) U-Lamp | Wall Switch | S | 33 | 4,356 | 4 | None | Yes | 9 | LED - Linear Tubes: (2) U-Lamp | High/Low Control | 33 | 3,006 | 0.1 | 441 | 0 | \$66 | \$225 | \$225 | 0.0 |
| Corridor Sports | 6 | LED - Linear Tubes: (2) U-Lamp | Wall Switch | S | 33 | 4,356 | 4 | None | Yes | 6 | LED - Linear Tubes: (2) U-Lamp | High/Low Control | 33 | 3,006 | 0.0 | 294 | 0 | \$44 | \$225 | \$210 | 0.3 |
| Corridor Sports | 3 | LED - Linear Tubes: (2) U-Lamp | Wall Switch | S | 33 | 4,356 | 4 | None | Yes | 3 | LED - Linear Tubes: (2) U-Lamp | High/Low Control | 33 | 3,006 | 0.0 | 147 | 0 | \$22 | \$225 | \$105 | 5.5 |
| Corridor Sports | 3 | LED - Linear Tubes: (2) U-Lamp | Wall Switch | S | 33 | 4,356 | 4 | None | Yes | 3 | LED - Linear Tubes: (2) U-Lamp | High/Low Control | 33 | 3,006 | 0.0 | 147 | 0 | \$22 | \$225 | \$105 | 5.5 |

| 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 |
| Corridor Sports | 6 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 4 | Relamp | Yes | 6 | LED - Linear Tubes: (2) U-Lamp | High/Low Control | 33 | 3,006 | 0.2 | 1,128 | 0 | \$168 | \$660 | \$270 | 2.3 |
| Dining Area 1 Snack | 5 | Compact Fluorescent: (1) 26W Biaxial Plug-In Lamp | Wall Switch | S | 26 | 4,356 | 2, 3 | Relamp | Yes | 5 | LED Lamps: GX23 (Plug-In) Lamps | Occupancy Sensor | 19 | 3,006 | 0.0 | 309 | 0 | \$46 | \$333 | \$40 | 6.4 |
| Dining Area 1 Snack | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 2 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.1 | 402 | 0 | \$60 | \$189 | \$40 | 2.5 |
| Dining Area Break Rm | 2 | LED - Fixtures: Ambient 2x4 Fixture | Occupancy Sensor | S | 30 | 3,006 | | None | No | 2 | LED - Fixtures: Ambient 2x4 Fixture | Occupancy Sensor | 30 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Electrical Room 1 | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 500 | 2 | Relamp | No | 1 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | 29 | 500 | 0.0 | 18 | 0 | \$3 | \$37 | \$10 | 9.8 |
| Electrical Room 144 | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 500 | 2 | Relamp | No | 2 | LED - Linear Tubes: (4) 4' Lamps | Wall Switch | 58 | 500 | 0.1 | 62 | 0 | \$9 | \$146 | \$40 | 11.6 |
| Electrical Room 174 | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 500 | 2 | Relamp | No | 2 | LED - Linear Tubes: (4) 4' Lamps | Wall Switch | 58 | 500 | 0.1 | 62 | 0 | \$9 | \$146 | \$40 | 11.6 |
| Electrical Room 3 | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 500 | 2 | Relamp | No | 2 | LED - Linear Tubes: (4) 4' Lamps | Wall Switch | 58 | 500 | 0.1 | 62 | 0 | \$9 | \$146 | \$40 | 11.6 |
| Electrical Room MS Art | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 500 | 2 | Relamp | No | 1 | LED - Linear Tubes: (4) 4' Lamps | Wall Switch | 58 | 500 | 0.0 | 31 | 0 | \$5 | \$73 | \$20 | 11.6 |
| Electrical Room PH | 1 | LED - Fixtures: Downlight Recessed | Wall Switch | S | 15 | 500 | | None | No | 1 | LED - Fixtures: Downlight Recessed | Wall Switch | 15 | 500 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Elevator 4 | 1 | Compact Fluorescent: (1) 26W Biaxial Plug-In Lamp | Wall Switch | S | 26 | 500 | 2 | Relamp | No | 1 | LED Lamps: GX23 (Plug-In) Lamps | Wall Switch | 19 | 500 | 0.0 | 4 | 0 | \$1 | \$13 | \$1 | 20.0 |
| Exterior 2 | 4 | Compact Fluorescent: (1) 13W Biaxial Plug-In Lamp | Timeclock | | 13 | 4,380 | 2 | Relamp | No | 4 | LED Lamps: GX23 (Plug-In) Lamps | Timeclock | 10 | 4,380 | 0.0 | 53 | 0 | \$8 | \$54 | \$4 | 6.3 |
| Exterior 2 | 23 | Compact Fluorescent: (1) 26W Biaxial Plug-In Lamp | Photocell | | 26 | 4,380 | 2 | Relamp | No | 23 | LED Lamps: GX23 (Plug-In) Lamps | Photocell | 19 | 4,380 | 0.0 | 705 | 0 | \$106 | \$288 | \$23 | 2.5 |
| Exterior 2 | 2 | Compact Fluorescent: (2) 26W Biaxial Plug-In Lamps | Wall Switch | | 52 | 4,356 | 2 | Relamp | No | 2 | LED Lamps: GX23 (Plug-In) Lamps | Wall Switch | 37 | 4,356 | 0.0 | 131 | 0 | \$20 | \$50 | \$4 | 2.3 |
| Exterior 2 | 1 | LED - Fixtures: Landscape/Accent Flood and Spot Luminaires | Timeclock | | 70 | 4,380 | | None | No | 1 | LED - Fixtures: Landscape/Accent Flood and Spot Luminaires | Timeclock | 70 | 4,380 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Exterior 2 | 2 | LED Lamps: (1) 10W A19 Screw-In Lamp | Timeclock | | 10 | 4,380 | | None | No | 2 | LED Lamps: (1) 10W A19 Screw-In Lamp | Timeclock | 10 | 4,380 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Exterior 2 | 14 | LED Lamps: (1) 18W A19 Screw-In Lamp | Timeclock | | 18 | 4,380 | | None | No | 14 | LED Lamps: (1) 18W A19 Screw-In Lamp | Timeclock | 18 | 4,380 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Exterior 2 | 2 | LED Lamps: (1) 6W A19 Screw-In Lamp | Timeclock | | 6 | 4,380 | | None | No | 2 | LED Lamps: (1) 6W A19 Screw-In Lamp | Timeclock | 6 | 4,380 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Exterior 2 | 10 | LED Lamps: (1) 6W Biax Lamps | Timeclock | | 6 | 4,380 | | None | No | 10 | LED Lamps: (1) 6W Biax Lamps | Timeclock | 6 | 4,380 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Exterior 2 | 3 | LED Lamps: (1) 30W Corn Bulb Screw-In Lamp | Timeclock | | 30 | 4,380 | | None | No | 3 | LED Lamps: (1) 30W Corn Bulb Screw-In Lamp | Timeclock | 30 | 4,380 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Exterior 2 | 7 | LED Lamps: (1) 30W Corn Bulb Screw-In Lamp | Timeclock | | 30 | 4,380 | | None | No | 7 | LED Lamps: (1) 30W Corn Bulb Screw-In Lamp | Timeclock | 30 | 4,380 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Exterior 2 | 2 | LED Lamps: (1) 30W Corn Bulb Screw-In Lamp | Timeclock | | 30 | 4,380 | | None | No | 2 | LED Lamps: (1) 30W Corn Bulb Screw-In Lamp | Timeclock | 30 | 4,380 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Exterior 2 | 15 | LED - Fixtures: Ceiling Mount | Timeclock | | 18 | 4,380 | | None | No | 15 | LED - Fixtures: Ceiling Mount | Timeclock | 18 | 4,380 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Exterior 2 | 2 | LED Lamps: (2) 12W PAR30 Screw-In Lamps | Timeclock | | 24 | 4,380 | | None | No | 2 | LED Lamps: (2) 12W PAR30 Screw-In Lamps | Timeclock | 24 | 4,380 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Exterior 2 | 2 | Metal Halide: (1) 250W Lamp | Timeclock | | 295 | 4,380 | 2 | Relamp | No | 2 | LED Lamps - E39: ≤125 W Lamp | Timeclock | 75 | 4,380 | 0.0 | 1,927 | 0 | \$291 | \$476 | \$100 | 1.3 |

| Existing Conditions | | | | | | | Proposed Conditions | | | | | | | | Energy Impact & Financial Analysis | | | | | | |
|---------------------|------------------|--|----------------|-------------|-------------------|------------------------|---------------------|------------------------|---------------|------------------|---|------------------|-------------------|------------------------|------------------------------------|--------------------------|----------------------------|----------------------------------|-------------------------|------------------|---------------------------------------|
| Location | Fixture Quantity | Fixture Description | Control System | Light Level | Watts per Fixture | Annual Operating Hours | ECM # | Fixture Recommendation | Add Controls? | Fixture Quantity | Fixture Description | Control System | Watts per Fixture | Annual Operating Hours | Total Peak kW Savings | Total Annual kWh Savings | Total Annual MMBtu Savings | Total Annual Energy Cost Savings | Estimated M&L Cost (\$) | Total Incentives | Simple Payback w/ Incentives in Years |
| Janitorial 147 | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 500 | 2 | Relamp | No | 1 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | 29 | 500 | 0.0 | 18 | 0 | \$3 | \$37 | \$10 | 9.8 |
| Janitorial 187 | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 500 | 2 | Relamp | No | 1 | LED - Linear Tubes: (4) 4' Lamps | Wall Switch | 58 | 500 | 0.0 | 31 | 0 | \$5 | \$73 | \$20 | 11.6 |
| Janitorial 2 | 1 | Compact Fluorescent: (1) 55W Spiral Plug-In Lamp | Wall Switch | S | 55 | 500 | 2 | Relamp | No | 1 | LED Lamps: (1) A- Lamp | Wall Switch | 38 | 500 | 0.0 | 9 | 0 | \$1 | \$17 | \$1 | 11.6 |
| Janitorial 4 | 1 | LED Lamps: (1) 10W A19 Screw-In Lamp | Wall Switch | S | 10 | 500 | | None | No | 1 | LED Lamps: (1) 10W A19 Screw-In Lamp | Wall Switch | 10 | 500 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Janitorial 5 | 1 | LED - Fixtures: Ambient - 4' - Direct Fixture | Wall Switch | S | 20 | 500 | | None | No | 1 | LED - Fixtures: Ambient - 4' - Direct Fixture | Wall Switch | 20 | 500 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Janitorial 5 | 1 | LED Lamps: (1) 30W Corn Bulb Screw-In Lamp | Wall Switch | S | 30 | 500 | | None | No | 1 | LED Lamps: (1) 30W Corn Bulb Screw-In Lamp | Wall Switch | 30 | 500 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Janitorial 5 | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 500 | 2 | Relamp | No | 1 | LED - Linear Tubes: (4) 4' Lamps | Wall Switch | 58 | 500 | 0.0 | 31 | 0 | \$5 | \$73 | \$20 | 11.6 |
| Kitchen 1 | 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 |
| Kitchen 1 | 4 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 4 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.1 | 805 | 0 | \$120 | \$416 | \$75 | 2.8 |
| Kitchen 1 | 14 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 4,356 | 2, 3 | Relamp | Yes | 14 | LED - Linear Tubes: (4) 4' Lamps | Occupancy Sensor | 58 | 3,006 | 0.7 | 4,963 | -1 | \$740 | \$1,292 | \$315 | 1.3 |
| Kitchen 178 | 6 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | S | 29 | 4,356 | 3 | None | Yes | 6 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.0 | 258 | 0 | \$39 | \$270 | \$35 | 6.1 |
| Library MS | 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 |
| Library MS | 4 | LED - Fixtures: Ambient - 4' - Direct Fixture | Wall Switch | S | 20 | 4,356 | 3 | None | Yes | 4 | LED - Fixtures: Ambient - 4' - Direct Fixture | Occupancy Sensor | 20 | 3,006 | 0.0 | 119 | 0 | \$18 | \$270 | \$35 | 13.3 |
| Library MS | 18 | LED - Fixtures: Ambient - 8' - Direct Fixture | Wall Switch | S | 40 | 4,356 | 3 | None | Yes | 18 | LED - Fixtures: Ambient - 8' - Direct Fixture | Occupancy Sensor | 40 | 3,006 | 0.2 | 1,069 | 0 | \$159 | \$270 | \$35 | 1.5 |
| Library MS | 1 | LED - Fixtures: Ceiling Mount | Wall Switch | S | 15 | 4,356 | | None | No | 1 | LED - Fixtures: Ceiling Mount | Wall Switch | 15 | 4,356 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Library MS | 16 | LED - Fixtures: Ceiling Mount | Wall Switch | S | 18 | 4,356 | 3 | None | Yes | 16 | LED - Fixtures: Ceiling Mount | Occupancy Sensor | 18 | 3,006 | 0.1 | 428 | 0 | \$64 | \$270 | \$35 | 3.7 |
| Library MS | 3 | LED - Fixtures: Linear Strip | Wall Switch | S | 60 | 4,356 | 3 | None | Yes | 3 | LED - Fixtures: Linear Strip | Occupancy Sensor | 60 | 3,006 | 0.0 | 267 | 0 | \$40 | \$270 | \$35 | 5.9 |
| Locker Room 126 | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 4,356 | 2, 3 | Relamp | Yes | 2 | LED - Linear Tubes: (4) 4' Lamps | Occupancy Sensor | 58 | 3,006 | 0.1 | 709 | 0 | \$106 | \$262 | \$60 | 1.9 |
| Locker Room 187 | 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 |
| Locker Room 187 | 9 | LED Lamps: (1) 12W BR30 Screw-In Lamp | Wall Switch | S | 12 | 4,356 | 3 | None | Yes | 9 | LED Lamps: (1) 12W BR30 Screw-In Lamp | Occupancy Sensor | 12 | 3,006 | 0.0 | 160 | 0 | \$24 | \$270 | \$35 | 9.8 |
| Locker Room 187 | 2 | LED Lamps: (1) 12W BR30 Screw-In Lamp | Wall Switch | S | 12 | 4,356 | 3 | None | Yes | 2 | LED Lamps: (1) 12W BR30 Screw-In Lamp | Occupancy Sensor | 12 | 3,006 | 0.0 | 36 | 0 | \$5 | \$116 | \$20 | 18.1 |
| Locker Room 187 | 6 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 6 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.2 | 1,207 | 0 | \$180 | \$489 | \$95 | 2.2 |
| Locker Room 187 | 14 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 4,356 | 2, 3 | Relamp | Yes | 14 | LED - Linear Tubes: (4) 4' Lamps | Occupancy Sensor | 58 | 3,006 | 0.7 | 4,963 | -1 | \$740 | \$1,292 | \$315 | 1.3 |
| Locker Room 192 | 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 |
| Locker Room 192 | 2 | LED - Fixtures: Ambient - 4' - Direct Fixture | Wall Switch | S | 20 | 4,356 | 3 | None | Yes | 2 | LED - Fixtures: Ambient - 4' - Direct Fixture | Occupancy Sensor | 20 | 3,006 | 0.0 | 59 | 0 | \$9 | \$116 | \$20 | 10.8 |

| 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 |
| Locker Room 192 | 9 | LED Lamps: (1) 12W BR30 Screw-In Lamp | Wall Switch | S | 12 | 4,356 | 3 | None | Yes | 9 | LED Lamps: (1) 12W BR30 Screw-In Lamp | Occupancy Sensor | 12 | 3,006 | 0.0 | 160 | 0 | \$24 | \$270 | \$35 | 9.8 |
| Locker Room 192 | 2 | LED Lamps: (1) 12W BR30 Screw-In Lamp | Wall Switch | S | 12 | 4,356 | 3 | None | Yes | 2 | LED Lamps: (1) 12W BR30 Screw-In Lamp | Occupancy Sensor | 12 | 3,006 | 0.0 | 36 | 0 | \$5 | \$116 | \$20 | 18.1 |
| Locker Room 192 | 3 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 3 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.1 | 604 | 0 | \$90 | \$380 | \$65 | 3.5 |
| Locker Room 192 | 15 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 4,356 | 2, 3 | Relamp | Yes | 15 | LED - Linear Tubes: (4) 4' Lamps | Occupancy Sensor | 58 | 3,006 | 0.8 | 5,317 | -1 | \$793 | \$1,365 | \$335 | 1.3 |
| Locker Room 194 | 6 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Occupancy Sensor | S | 62 | 3,006 | 2 | Relamp | No | 6 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | 33 | 3,006 | 0.1 | 575 | 0 | \$86 | \$435 | \$60 | 4.4 |
| Locker Room Facility | 2 | LED - Fixtures: Ambient 1x4 Fixture | Occupancy Sensor | S | 30 | 3,006 | | None | No | 2 | LED - Fixtures: Ambient 1x4 Fixture | Occupancy Sensor | 30 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Locker Room Female Coach | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Occupancy Sensor | S | 93 | 3,006 | 2 | Relamp | No | 2 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.1 | 327 | 0 | \$49 | \$110 | \$30 | 1.6 |
| Locker Room Female Coach (1) | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Occupancy Sensor | S | 93 | 3,006 | 2 | Relamp | No | 2 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.1 | 327 | 0 | \$49 | \$110 | \$30 | 1.6 |
| Locker Room Male Coach | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Occupancy Sensor | S | 93 | 3,006 | 2 | Relamp | No | 2 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.1 | 327 | 0 | \$49 | \$110 | \$30 | 1.6 |
| Locker Room Male Coach (2) | 2 | LED Lamps: (1) 12W BR30 Screw-In Lamp | Wall Switch | S | 12 | 4,356 | 3 | None | Yes | 2 | LED Lamps: (1) 12W BR30 Screw-In Lamp | Occupancy Sensor | 12 | 3,006 | 0.0 | 36 | 0 | \$5 | \$116 | \$20 | 18.1 |
| Locker Room Male Coach (2) | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Occupancy Sensor | S | 93 | 3,006 | 2 | Relamp | No | 2 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.1 | 327 | 0 | \$49 | \$110 | \$30 | 1.6 |
| Maintenance Storage | 4 | LED - Fixtures: Ambient - 3' - Direct Fixture | Wall Switch | S | 20 | 4,356 | 3 | None | Yes | 4 | LED - Fixtures: Ambient - 3' - Direct Fixture | Occupancy Sensor | 20 | 3,006 | 0.0 | 119 | 0 | \$18 | \$270 | \$0 | 15.2 |
| Mechanical 110 | 2 | LED Lamps: (1) 10W A19 Screw-In Lamp | Wall Switch | S | 10 | 500 | 3 | None | Yes | 2 | LED Lamps: (1) 10W A19 Screw-In Lamp | Occupancy Sensor | 10 | 345 | 0.0 | 3 | 0 | \$1 | \$116 | \$20 | 188.9 |
| Mechanical 110 | 1 | LED Lamps: (1) 12W PAR30 Screw-In Lamp | Wall Switch | S | 12 | 500 | | None | No | 1 | LED Lamps: (1) 12W PAR30 Screw-In Lamp | Wall Switch | 12 | 500 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical 5 dust collector | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 500 | 2 | Relamp | No | 2 | LED - Linear Tubes: (4) 4' Lamps | Wall Switch | 58 | 500 | 0.1 | 62 | 0 | \$9 | \$146 | \$40 | 11.6 |
| Mechanical Maintenance | 10 | LED Lamps: (1) 10W A19 Screw-In Lamp | Wall Switch | S | 10 | 500 | | None | No | 10 | LED Lamps: (1) 10W A19 Screw-In Lamp | Wall Switch | 10 | 500 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical MS Boys | 7 | LED Lamps: (1) 10W A19 Screw-In Lamp | Wall Switch | S | 10 | 500 | 3 | None | Yes | 7 | LED Lamps: (1) 10W A19 Screw-In Lamp | Occupancy Sensor | 10 | 345 | 0.0 | 12 | 0 | \$2 | \$0 | \$0 | 0.0 |
| Mechanical MS Boys | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 500 | 2, 3 | Relamp | Yes | 2 | LED - Linear Tubes: (4) 4' Lamps | Occupancy Sensor | 58 | 345 | 0.1 | 81 | 0 | \$12 | \$416 | \$75 | 28.1 |
| Mechanical next to Lower Gym | 2 | Compact Fluorescent: (1) 55W Screw-In Lamp | Wall Switch | S | 55 | 500 | 2 | Relamp | No | 2 | LED Lamps: (1) A-Lamp | Wall Switch | 38 | 500 | 0.0 | 19 | 0 | \$3 | \$34 | \$2 | 11.6 |
| Mechanical next to Lower Gym | 1 | LED Lamps: (1) 30W Corn Bulb Screw-In Lamp | Wall Switch | S | 30 | 500 | | None | No | 1 | LED Lamps: (1) 30W Corn Bulb Screw-In Lamp | Wall Switch | 30 | 500 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical school Store | 5 | LED Lamps: (1) 10W A19 Screw-In Lamp | Wall Switch | S | 10 | 500 | | None | No | 5 | LED Lamps: (1) 10W A19 Screw-In Lamp | Wall Switch | 10 | 500 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical school Store | 6 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 500 | 2 | Relamp | No | 6 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | 29 | 500 | 0.1 | 109 | 0 | \$16 | \$219 | \$60 | 9.8 |
| Office - Enclosed 106 Copy Rm | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 4,356 | 2, 3 | Relamp | Yes | 2 | LED - Linear Tubes: (4) 4' Lamps | Occupancy Sensor | 58 | 3,006 | 0.1 | 709 | 0 | \$106 | \$262 | \$60 | 1.9 |
| Office - Enclosed 107 | 4 | LED - Fixtures: Ambient 2x2 Fixture | Wall Switch | S | 25 | 4,356 | 3 | None | Yes | 4 | LED - Fixtures: Ambient 2x2 Fixture | Occupancy Sensor | 25 | 3,006 | 0.0 | 149 | 0 | \$22 | \$270 | \$35 | 10.6 |
| Office - Enclosed 108 | 4 | LED - Fixtures: Ambient 2x2 Fixture | Wall Switch | S | 25 | 4,356 | 3 | None | Yes | 4 | LED - Fixtures: Ambient 2x2 Fixture | Occupancy Sensor | 25 | 3,006 | 0.0 | 149 | 0 | \$22 | \$270 | \$35 | 10.6 |

| 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 |
| Office - Enclosed 111 | 8 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 8 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.2 | 1,610 | 0 | \$240 | \$562 | \$115 | 1.9 |
| Office - Enclosed 119 | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | | None | No | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | 62 | 4,356 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Office - Enclosed 119 | 8 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 8 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.2 | 1,610 | 0 | \$240 | \$562 | \$115 | 1.9 |
| Office - Enclosed 127 | 4 | LED - Fixtures: Ambient 2x2 Fixture | Wall Switch | S | 30 | 4,356 | 3 | None | Yes | 4 | LED - Fixtures: Ambient 2x2 Fixture | Occupancy Sensor | 30 | 3,006 | 0.0 | 178 | 0 | \$27 | \$270 | \$35 | 8.8 |
| Office - Enclosed 128 | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 2 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.1 | 402 | 0 | \$60 | \$189 | \$40 | 2.5 |
| Office - Enclosed 144 | 3 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 3 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | 33 | 3,006 | 0.1 | 564 | 0 | \$84 | \$487 | \$65 | 5.0 |
| Office - Enclosed 147 | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 4,356 | 2, 3 | Relamp | Yes | 2 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.1 | 604 | 0 | \$90 | \$226 | \$50 | 2.0 |
| Office - Enclosed 151 | 2 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Occupancy Sensor | S | 62 | 3,006 | 2 | Relamp | No | 2 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | 33 | 3,006 | 0.0 | 192 | 0 | \$29 | \$145 | \$20 | 4.4 |
| Office - Enclosed 152 | 2 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 2 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | 33 | 3,006 | 0.1 | 376 | 0 | \$56 | \$261 | \$40 | 3.9 |
| Office - Enclosed 155 | 2 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | S | 29 | 4,356 | 3 | None | Yes | 2 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.0 | 86 | 0 | \$13 | \$116 | \$20 | 7.5 |
| Office - Enclosed 170 | 2 | LED - Fixtures: Ambient 2x4 Fixture | Wall Switch | S | 30 | 4,356 | 3 | None | Yes | 2 | LED - Fixtures: Ambient 2x4 Fixture | Occupancy Sensor | 30 | 3,006 | 0.0 | 89 | 0 | \$13 | \$116 | \$20 | 7.2 |
| Office - Enclosed 172 | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Occupancy Sensor | S | 93 | 3,006 | 2 | Relamp | No | 2 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.1 | 327 | 0 | \$49 | \$110 | \$30 | 1.6 |
| Office - Enclosed 172 | 4 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Occupancy Sensor | S | 62 | 3,006 | 2 | Relamp | No | 4 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | 33 | 3,006 | 0.1 | 384 | 0 | \$57 | \$290 | \$40 | 4.4 |
| Office - Enclosed 173 | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Occupancy Sensor | S | 93 | 3,006 | 2 | Relamp | No | 2 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.1 | 327 | 0 | \$49 | \$110 | \$30 | 1.6 |
| Office - Enclosed 173 | 4 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Occupancy Sensor | S | 62 | 3,006 | 2 | Relamp | No | 4 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | 33 | 3,006 | 0.1 | 384 | 0 | \$57 | \$290 | \$40 | 4.4 |
| Office - Enclosed 174 | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 4,356 | 2 | Relamp | No | 1 | LED - Linear Tubes: (3) 4' Lamps | Wall Switch | 44 | 4,356 | 0.0 | 237 | 0 | \$35 | \$55 | \$15 | 1.1 |
| Office - Enclosed 174 | 3 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 3 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | 33 | 3,006 | 0.1 | 564 | 0 | \$84 | \$487 | \$65 | 5.0 |
| Office - Enclosed 175A | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Occupancy Sensor | S | 93 | 3,006 | 2 | Relamp | No | 2 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.1 | 327 | 0 | \$49 | \$110 | \$30 | 1.6 |
| Office - Enclosed 177 | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Occupancy Sensor | S | 93 | 3,006 | 2 | Relamp | No | 2 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.1 | 327 | 0 | \$49 | \$110 | \$30 | 1.6 |
| Office - Enclosed 187 | 2 | LED - Linear Tubes: (4) 2' Lamps | Occupancy Sensor | S | 34 | 3,006 | | None | No | 2 | LED - Linear Tubes: (4) 2' Lamps | Occupancy Sensor | 34 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Office - Enclosed 187 | 1 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | S | 44 | 3,006 | | None | No | 1 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Office - Enclosed 193 | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 4,356 | 2, 3 | Relamp | Yes | 2 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.1 | 604 | 0 | \$90 | \$226 | \$50 | 2.0 |
| Office - Enclosed 197 | 3 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Occupancy Sensor | S | 93 | 3,006 | 2 | Relamp | No | 3 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.1 | 491 | 0 | \$73 | \$164 | \$45 | 1.6 |
| Office - Enclosed 197 | 2 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Occupancy Sensor | S | 62 | 3,006 | 2 | Relamp | No | 2 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | 33 | 3,006 | 0.0 | 192 | 0 | \$29 | \$145 | \$20 | 4.4 |
| Office - Enclosed 198 | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Occupancy Sensor | S | 93 | 3,006 | 2 | Relamp | No | 2 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.1 | 327 | 0 | \$49 | \$110 | \$30 | 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 |
| Office - Enclosed 199 | 3 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Occupancy Sensor | S | 93 | 3,006 | 2 | Relamp | No | 3 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.1 | 491 | 0 | \$73 | \$164 | \$45 | 1.6 |
| Office - Enclosed 199 | 1 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2 | Relamp | No | 1 | LED - Linear Tubes: (2) U-Lamp | Wall Switch | 33 | 4,356 | 0.0 | 139 | 0 | \$21 | \$72 | \$10 | 3.0 |
| Office - Enclosed 33 | 1 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | S | 33 | 3,006 | | None | No | 1 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | 33 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Office - Enclosed 34 | 2 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | S | 29 | 4,356 | 3 | None | Yes | 2 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.0 | 86 | 0 | \$13 | \$116 | \$20 | 7.5 |
| Office - Enclosed 35 | 2 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | S | 29 | 4,356 | 3 | None | Yes | 2 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.0 | 86 | 0 | \$13 | \$116 | \$20 | 7.5 |
| Office - Enclosed Amin 10 | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 4,356 | 2, 3 | Relamp | Yes | 2 | LED - Linear Tubes: (4) 4' Lamps | Occupancy Sensor | 58 | 3,006 | 0.1 | 709 | 0 | \$106 | \$262 | \$60 | 1.9 |
| Office - Enclosed Amin 11 | 3 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 4,356 | 2, 3 | Relamp | Yes | 3 | LED - Linear Tubes: (4) 4' Lamps | Occupancy Sensor | 58 | 3,006 | 0.2 | 1,063 | 0 | \$159 | \$489 | \$95 | 2.5 |
| Office - Enclosed Amin 12 | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 4,356 | 2, 3 | Relamp | Yes | 2 | LED - Linear Tubes: (4) 4' Lamps | Occupancy Sensor | 58 | 3,006 | 0.1 | 709 | 0 | \$106 | \$262 | \$60 | 1.9 |
| Office - Enclosed Athletic Trainer | 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 |
| Office - Enclosed Athletic Trainer | 8 | LED - Fixtures: Ambient - 8' - Direct Fixture | Wall Switch | S | 45 | 4,356 | 3 | None | Yes | 8 | LED - Fixtures: Ambient - 8' - Direct Fixture | Occupancy Sensor | 45 | 3,006 | 0.1 | 535 | 0 | \$80 | \$270 | \$35 | 2.9 |
| Office - Enclosed Athletic Trainer | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 4,356 | 2, 3 | Relamp | Yes | 2 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.1 | 604 | 0 | \$90 | \$226 | \$50 | 2.0 |
| Office - Enclosed Library 3 | 4 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Occupancy Sensor | S | 62 | 3,006 | 2 | Relamp | No | 4 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | 33 | 3,006 | 0.1 | 384 | 0 | \$57 | \$290 | \$40 | 4.4 |
| Office - Enclosed Library 4 | 4 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 4 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | 33 | 3,006 | 0.1 | 752 | 0 | \$112 | \$560 | \$75 | 4.3 |
| Office - Enclosed LS | 3 | LED - Linear Tubes: (4) 4' Lamps | Wall Switch | S | 58 | 4,356 | 3 | None | Yes | 3 | LED - Linear Tubes: (4) 4' Lamps | Occupancy Sensor | 58 | 3,006 | 0.0 | 258 | 0 | \$39 | \$270 | \$35 | 6.1 |
| Office - Enclosed Male Coach | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Occupancy Sensor | S | 93 | 3,006 | 2 | Relamp | No | 1 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.0 | 164 | 0 | \$24 | \$55 | \$15 | 1.6 |
| Office - Enclosed Male Coach | 2 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Occupancy Sensor | S | 62 | 3,006 | 2 | Relamp | No | 2 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | 33 | 3,006 | 0.0 | 192 | 0 | \$29 | \$145 | \$20 | 4.4 |
| Office - Enclosed Math | 6 | Linear Fluorescent - T5HO: 4' T5HO (54W) - 2L | Wall Switch | S | 117 | 4,356 | 2, 3 | Relamp | Yes | 6 | LED - Linear Tubes: (2) 4' T5HO (25W) Lamps | Occupancy Sensor | 51 | 3,006 | 0.4 | 2,352 | 0 | \$351 | \$612 | \$95 | 1.5 |
| Office - Enclosed MS | 3 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 3 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.1 | 604 | 0 | \$90 | \$380 | \$65 | 3.5 |
| Office - Enclosed MS 2 | 4 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 4 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.1 | 805 | 0 | \$120 | \$416 | \$75 | 2.8 |
| Office - Enclosed MS Library | 2 | LED - Fixtures: Ambient - 4' - Direct Fixture | Occupancy Sensor | S | 20 | 3,006 | | None | No | 2 | LED - Fixtures: Ambient - 4' - Direct Fixture | Occupancy Sensor | 20 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Office - Enclosed School Counselor | 2 | U-Bend Fluorescent - T8: U T8 (32W) - 3L | Wall Switch | S | 92 | 4,356 | 2, 3 | Relamp | Yes | 2 | LED - Linear Tubes: (3) U-Lamp | Occupancy Sensor | 50 | 3,006 | 0.1 | 554 | 0 | \$83 | \$333 | \$50 | 3.4 |
| Office - Enclosed Trainers Office | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 4,356 | 2, 3 | Relamp | Yes | 2 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.1 | 604 | 0 | \$90 | \$226 | \$50 | 2.0 |
| Office - Enclosed Trainers Office | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 4,356 | 2 | Relamp | No | 1 | LED - Linear Tubes: (3) 4' Lamps | Wall Switch | 44 | 4,356 | 0.0 | 237 | 0 | \$35 | \$55 | \$15 | 1.1 |
| Office - Open Plan 1 | 2 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 2 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | 33 | 3,006 | 0.1 | 376 | 0 | \$56 | \$261 | \$40 | 3.9 |
| Recreation Fitness Center | 1 | Exit Signs: LED - 2 W Lamp | None | | 6 | 8,760 | | None | No | 1 | Exit Signs: LED - 2 W Lamp | None | 6 | 8,760 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |

| | Existing Conditions | | | | | | Proposed Conditions | | | | | | | | Energy Impact & Financial Analysis | | | | | | |
|---------------------------|---------------------|---|------------------|-------------|-------------------|------------------------|---------------------|------------------------|---------------|------------------|---|------------------|-------------------|------------------------|------------------------------------|--------------------------|----------------------------|----------------------------------|-------------------------|------------------|---------------------------------------|
| Location | Fixture Quantity | Fixture Description | Control System | Light Level | Watts per Fixture | Annual Operating Hours | ECM # | Fixture Recommendation | Add Controls? | Fixture Quantity | Fixture Description | Control System | Watts per Fixture | Annual Operating Hours | Total Peak kW Savings | Total Annual kWh Savings | Total Annual MMBtu Savings | Total Annual Energy Cost Savings | Estimated M&L Cost (\$) | Total Incentives | Simple Payback w/ Incentives in Years |
| Recreation Fitness Center | 36 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 4,356 | 2, 3 | Relamp | Yes | 36 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 1.6 | 10,865 | -2 | \$1,620 | \$2,782 | \$645 | 1.3 |
| Restroom - Female 2 | 5 | LED Lamps: (1) 12W BR30 Screw-In Lamp | Occupancy Sensor | S | 12 | 3,006 | | None | No | 5 | LED Lamps: (1) 12W BR30 Screw-In Lamp | Occupancy Sensor | 12 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Restroom - Female 2 | 1 | LED - Linear Tubes: (1) 4' Lamp | Occupancy Sensor | S | 15 | 3,006 | | None | No | 1 | LED - Linear Tubes: (1) 4' Lamp | Occupancy Sensor | 15 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Restroom - Female 5 | 3 | U-Bend Fluorescent - T8: U T8 (32W) - 3L | Wall Switch | S | 92 | 4,356 | 2, 3 | Relamp | Yes | 3 | LED - Linear Tubes: (3) U-Lamp | Occupancy Sensor | 50 | 3,006 | 0.1 | 832 | 0 | \$124 | \$596 | \$80 | 4.2 |
| Restroom - Female Coach | 2 | LED Lamps: (1) 12W BR30 Screw-In Lamp | Wall Switch | S | 12 | 4,356 | 3 | None | Yes | 2 | LED Lamps: (1) 12W BR30 Screw-In Lamp | Occupancy Sensor | 12 | 3,006 | 0.0 | 36 | 0 | \$5 | \$116 | \$20 | 18.1 |
| Restroom - Female MS | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 2 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.1 | 402 | 0 | \$60 | \$189 | \$40 | 2.5 |
| Restroom - Female MS 2 | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Occupancy Sensor | S | 62 | 3,006 | 2 | Relamp | No | 2 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.0 | 218 | 0 | \$33 | \$73 | \$20 | 1.6 |
| Restroom - Male 1 | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 4,356 | 2 | Relamp | No | 1 | LED - Linear Tubes: (4) 4' Lamps | Wall Switch | 58 | 4,356 | 0.0 | 268 | 0 | \$40 | \$73 | \$20 | 1.3 |
| Restroom - Male 4 | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2 | Relamp | No | 1 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | 29 | 4,356 | 0.0 | 158 | 0 | \$24 | \$37 | \$10 | 1.1 |
| Restroom - Male 5 | 3 | U-Bend Fluorescent - T8: U T8 (32W) - 3L | Wall Switch | S | 92 | 4,356 | 2, 3 | Relamp | Yes | 3 | LED - Linear Tubes: (3) U-Lamp | Occupancy Sensor | 50 | 3,006 | 0.1 | 832 | 0 | \$124 | \$596 | \$80 | 4.2 |
| Restroom - Male MS (1) | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 4,356 | 2, 3 | Relamp | Yes | 2 | LED - Linear Tubes: (4) 4' Lamps | Occupancy Sensor | 58 | 3,006 | 0.1 | 709 | 0 | \$106 | \$262 | \$60 | 1.9 |
| Restroom - Male MS 2 | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Occupancy Sensor | S | 62 | 3,006 | 2 | Relamp | No | 2 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.0 | 218 | 0 | \$33 | \$73 | \$20 | 1.6 |
| Restroom - Unisex 112 | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2 | Relamp | No | 1 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | 29 | 4,356 | 0.0 | 158 | 0 | \$24 | \$37 | \$10 | 1.1 |
| Restroom - Unisex 2 | 3 | LED Lamps: (1) 12W BR30 Screw-In Lamp | Occupancy Sensor | S | 12 | 3,006 | | None | No | 3 | LED Lamps: (1) 12W BR30 Screw-In Lamp | Occupancy Sensor | 12 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Restroom - Unisex 2 | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Occupancy Sensor | S | 62 | 3,006 | 2 | Relamp | No | 1 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.0 | 109 | 0 | \$16 | \$37 | \$10 | 1.6 |
| Restroom - Unisex LS | 1 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Occupancy Sensor | S | 62 | 3,006 | 2 | Relamp | No | 1 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | 33 | 3,006 | 0.0 | 96 | 0 | \$14 | \$72 | \$10 | 4.4 |
| Restroom - Unisex LSB | 1 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Occupancy Sensor | S | 62 | 3,006 | 2 | Relamp | No | 1 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | 33 | 3,006 | 0.0 | 96 | 0 | \$14 | \$72 | \$10 | 4.4 |
| Restroom - Unisex Math | 1 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2 | Relamp | No | 1 | LED - Linear Tubes: (2) U-Lamp | Wall Switch | 33 | 4,356 | 0.0 | 139 | 0 | \$21 | \$72 | \$10 | 3.0 |
| Server Room 236 | 1 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | S | 29 | 350 | | None | No | 1 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 350 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Server Room Admin | 1 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Wall Switch | S | 62 | 500 | 2 | Relamp | No | 1 | LED - Linear Tubes: (2) U-Lamp | Wall Switch | 33 | 500 | 0.0 | 16 | 0 | \$2 | \$72 | \$10 | 26.3 |
| Server Room Boys arm | 1 | LED - Fixtures: Ambient - 4' - Direct Fixture | Wall Switch | S | 30 | 500 | | None | No | 1 | LED - Fixtures: Ambient - 4' - Direct Fixture | Wall Switch | 30 | 500 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Server Room Main | 1 | Linear Fluorescent - EST12: 4' T12 (34W) - 1L | Occupancy Sensor | S | 43 | 350 | 1 | Relamp & Reballast | No | 1 | LED - Linear Tubes: (1) 4' Lamp | Occupancy Sensor | 15 | 350 | 0.0 | 11 | 0 | \$2 | \$51 | \$5 | 27.8 |
| Server Room Main | 2 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Occupancy Sensor | S | 62 | 350 | 2 | Relamp | No | 2 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | 33 | 350 | 0.0 | 22 | 0 | \$3 | \$145 | \$20 | 37.5 |
| Storage 1 | 3 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 4,356 | 2, 3 | Relamp | Yes | 3 | LED - Linear Tubes: (4) 4' Lamps | Occupancy Sensor | 58 | 3,006 | 0.2 | 1,063 | 0 | \$159 | \$489 | \$60 | 2.7 |
| Storage 129 | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 4,356 | 2, 3 | Relamp | Yes | 2 | LED - Linear Tubes: (4) 4' Lamps | Occupancy Sensor | 58 | 3,006 | 0.1 | 709 | 0 | \$106 | \$262 | \$40 | 2.1 |

| Existing Conditions | | | | | | | Proposed Conditions | | | | | | | Energy Impact & Financial Analysis | | | | | | | |
|----------------------------|------------------|--|------------------|-------------|-------------------|------------------------|---------------------|------------------------|---------------|------------------|--|------------------|-------------------|------------------------------------|-----------------------|--------------------------|----------------------------|----------------------------------|-------------------------|------------------|---------------------------------------|
| Location | Fixture Quantity | Fixture Description | Control System | Light Level | Watts per Fixture | Annual Operating Hours | ECM # | Fixture Recommendation | Add Controls? | Fixture Quantity | Fixture Description | Control System | Watts per Fixture | Annual Operating Hours | Total Peak kW Savings | Total Annual kWh Savings | Total Annual MMBtu Savings | Total Annual Energy Cost Savings | Estimated M&L Cost (\$) | Total Incentives | Simple Payback w/ Incentives in Years |
| Storage 144 Kiln Rm | 3 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 4,356 | 2, 3 | Relamp | Yes | 3 | LED - Linear Tubes: (4) 4' Lamps | Occupancy Sensor | 58 | 3,006 | 0.2 | 1,063 | 0 | \$159 | \$489 | \$60 | 2.7 |
| Storage 147 | 5 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 4,356 | 2, 3 | Relamp | Yes | 5 | LED - Linear Tubes: (4) 4' Lamps | Occupancy Sensor | 58 | 3,006 | 0.3 | 1,772 | 0 | \$264 | \$635 | \$100 | 2.0 |
| Storage 151 | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Occupancy Sensor | S | 93 | 3,006 | 2 | Relamp | No | 2 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.1 | 327 | 0 | \$49 | \$110 | \$30 | 1.6 |
| Storage 152 | 3 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Occupancy Sensor | S | 93 | 3,006 | 2 | Relamp | No | 3 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.1 | 491 | 0 | \$73 | \$164 | \$45 | 1.6 |
| Storage 176 | 5 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 4,356 | 2, 3 | Relamp | Yes | 5 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.2 | 1,509 | 0 | \$225 | \$544 | \$75 | 2.1 |
| Storage 176B | 6 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 4,356 | 2, 3 | Relamp | Yes | 6 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.3 | 1,811 | 0 | \$270 | \$599 | \$90 | 1.9 |
| Storage 195 | 1 | Compact Fluorescent: (1) 23W Spiral Plug-In Lamp | Wall Switch | S | 23 | 4,356 | 2 | Relamp | No | 1 | LED Lamps: (1) A-Lamp | Wall Switch | 17 | 4,356 | 0.0 | 29 | 0 | \$4 | \$17 | \$1 | 3.8 |
| Storage 196 | 3 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 4,356 | 2, 3 | Relamp | Yes | 3 | LED - Linear Tubes: (4) 4' Lamps | Occupancy Sensor | 58 | 3,006 | 0.2 | 1,063 | 0 | \$159 | \$489 | \$60 | 2.7 |
| Storage Athletic Equipment | 3 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 3 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.1 | 604 | 0 | \$90 | \$380 | \$30 | 3.9 |
| Storage Athletic Equipment | 14 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 4,356 | 2, 3 | Relamp | Yes | 14 | LED - Linear Tubes: (4) 4' Lamps | Occupancy Sensor | 58 | 3,006 | 0.7 | 4,963 | -1 | \$740 | \$1,292 | \$280 | 1.4 |
| Storage MS Library | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2 | Relamp | No | 1 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | 29 | 4,356 | 0.0 | 158 | 0 | \$24 | \$37 | \$10 | 1.1 |
| Storage Rm 144 | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 4,356 | 2 | Relamp | No | 1 | LED - Linear Tubes: (4) 4' Lamps | Wall Switch | 58 | 4,356 | 0.0 | 268 | 0 | \$40 | \$73 | \$20 | 1.3 |
| Theater Auditorium | 4 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2 | Relamp | No | 4 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | 29 | 4,356 | 0.1 | 632 | 0 | \$94 | \$146 | \$40 | 1.1 |
| Theater Auditorium | 4 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2 | Relamp | No | 4 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | 29 | 4,356 | 0.1 | 632 | 0 | \$94 | \$146 | \$40 | 1.1 |
| Theater Auditorium | 4 | Exit Signs: LED - 2 W Lamp | None | | 6 | 8,760 | | None | No | 4 | Exit Signs: LED - 2 W Lamp | None | 6 | 8,760 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Theater Auditorium | 1 | LED Lamps: (1) 10W A19 Screw-In Lamp | Wall Switch | S | 10 | 4,356 | | None | No | 1 | LED Lamps: (1) 10W A19 Screw-In Lamp | Wall Switch | 10 | 4,356 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Theater Auditorium | 1 | LED Lamps: (1) 10W A19 Screw-In Lamp | Wall Switch | S | 10 | 4,356 | | None | No | 1 | LED Lamps: (1) 10W A19 Screw-In Lamp | Wall Switch | 10 | 4,356 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Theater Auditorium | 1 | LED Lamps: (1) 18W A19 Screw-In Lamp | Wall Switch | S | 18 | 4,356 | | None | No | 1 | LED Lamps: (1) 18W A19 Screw-In Lamp | Wall Switch | 18 | 4,356 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Theater Auditorium | 28 | LED Lamps: (1) 23W PAR38 Screw-In Lamp | Wall Switch | S | 23 | 4,356 | 3 | None | Yes | 28 | LED Lamps: (1) 23W PAR38 Screw-In Lamp | Occupancy Sensor | 23 | 3,006 | 0.1 | 957 | 0 | \$143 | \$540 | \$70 | 3.3 |
| Theater Auditorium | 4 | LED Lamps: (1) 23W PAR38 Screw-In Lamp | Wall Switch | S | 23 | 4,356 | 3 | None | Yes | 4 | LED Lamps: (1) 23W PAR38 Screw-In Lamp | Occupancy Sensor | 23 | 3,006 | 0.0 | 137 | 0 | \$20 | \$270 | \$35 | 11.5 |
| Theater Auditorium | 1 | LED Lamps: (1) 23W PAR38 Screw-In Lamp | Wall Switch | S | 23 | 4,356 | | None | No | 1 | LED Lamps: (1) 23W PAR38 Screw-In Lamp | Wall Switch | 23 | 4,356 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Theater Auditorium | 2 | Metal Halide: (1) 400W Lamp | Wall Switch | S | 458 | 4,356 | 2, 3 | Relamp | Yes | 2 | LED Lamps - E39: ≤125 W Lamp | Occupancy Sensor | 120 | 3,006 | 0.5 | 3,596 | -1 | \$536 | \$869 | \$135 | 1.4 |
| Workshop 147 Woodshop | 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 |
| Workshop 147 Woodshop | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 2 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.1 | 402 | 0 | \$60 | \$189 | \$40 | 2.5 |
| Workshop 147 Woodshop | 30 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 4,356 | 2, 3 | Relamp | Yes | 30 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 1.4 | 9,054 | -2 | \$1,350 | \$2,183 | \$520 | 1.2 |

| Existing Conditions | | | | | | | Proposed Conditions | | | | | | | Energy Impact & Financial Analysis | | | | | | | |
|---------------------------|------------------|--|------------------|-------------|-------------------|------------------------|---------------------|------------------------|---------------|------------------|--|------------------|-------------------|------------------------------------|-----------------------|--------------------------|----------------------------|----------------------------------|-------------------------|------------------|---------------------------------------|
| Location | Fixture Quantity | Fixture Description | Control System | Light Level | Watts per Fixture | Annual Operating Hours | ECM # | Fixture Recommendation | Add Controls? | Fixture Quantity | Fixture Description | Control System | Watts per Fixture | Annual Operating Hours | Total Peak kW Savings | Total Annual kWh Savings | Total Annual MMBtu Savings | Total Annual Energy Cost Savings | Estimated M&L Cost (\$) | Total Incentives | Simple Payback w/ Incentives in Years |
| Workshop Facility | 3 | LED - Linear Tubes: (2) 8' Lamps | Wall Switch | S | 72 | 4,356 | 3 | None | Yes | 3 | LED - Linear Tubes: (2) 8' Lamps | Occupancy Sensor | 72 | 3,006 | 0.0 | 321 | 0 | \$48 | \$270 | \$35 | 4.9 |
| Workshop Theater Set Shop | 1 | Linear Fluorescent - T12: 4' T12 (40W) - 2L | Wall Switch | S | 88 | 4,356 | 1 | Relamp & Reballast | No | 1 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | 29 | 4,356 | 0.0 | 283 | 0 | \$42 | \$69 | \$10 | 1.4 |
| Workshop Theater Set Shop | 2 | U-Bend Fluorescent - EST12: U T12 (34W) - 2L | Wall Switch | S | 72 | 4,356 | 1, 3 | Relamp & Reballast | Yes | 2 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | 33 | 3,006 | 0.1 | 472 | 0 | \$70 | \$325 | \$40 | 4.1 |
| Cafeteria | 4 | Compact Fluorescent: (1) 26W Biaxial Plug-In Lamp | Wall Switch | S | 26 | 4,356 | 2, 3 | Relamp | Yes | 4 | LED Lamps: GX23 (Plug-In) Lamps | Occupancy Sensor | 19 | 3,006 | 0.0 | 247 | 0 | \$37 | \$320 | \$39 | 7.6 |
| Cafeteria | 3 | Compact Fluorescent: (1) 26W Biaxial Plug-In Lamp | Wall Switch | S | 26 | 4,356 | 2, 3 | Relamp | Yes | 3 | LED Lamps: GX23 (Plug-In) Lamps | Occupancy Sensor | 19 | 3,006 | 0.0 | 185 | 0 | \$28 | \$308 | \$38 | 9.8 |
| Cafeteria | 9 | Compact Fluorescent: (1) 26W Biaxial Plug-In Lamp | Wall Switch | S | 26 | 4,356 | 2, 3 | Relamp | Yes | 9 | LED Lamps: GX23 (Plug-In) Lamps | Occupancy Sensor | 19 | 3,006 | 0.1 | 556 | 0 | \$83 | \$383 | \$44 | 4.1 |
| Cafeteria | 8 | Compact Fluorescent: (2) 26W Biaxial Plug-In Lamps | Wall Switch | S | 52 | 4,356 | 2, 3 | Relamp | Yes | 8 | LED Lamps: GX23 (Plug-In) Lamps | Occupancy Sensor | 37 | 3,006 | 0.2 | 1,015 | 0 | \$151 | \$470 | \$51 | 2.8 |
| Cafeteria | 1 | Compact Fluorescent: (2) 26W Biaxial Plug-In Lamps | Wall Switch | S | 52 | 4,356 | 2, 3 | Relamp | Yes | 1 | LED Lamps: GX23 (Plug-In) Lamps | Occupancy Sensor | 37 | 3,006 | 0.0 | 127 | 0 | \$19 | \$25 | \$2 | 1.2 |
| Cafeteria | 8 | Compact Fluorescent: (2) 26W Biaxial Plug-In Lamps | Wall Switch | S | 52 | 4,356 | 2, 3 | Relamp | Yes | 8 | LED Lamps: GX23 (Plug-In) Lamps | Occupancy Sensor | 37 | 3,006 | 0.2 | 1,015 | 0 | \$151 | \$470 | \$51 | 2.8 |
| Cafeteria | 5 | LED Lamps: (1) 10W A19 Screw-In Lamp | Wall Switch | S | 10 | 4,356 | 3 | None | Yes | 5 | LED Lamps: (1) 10W A19 Screw-In Lamp | Occupancy Sensor | 10 | 3,006 | 0.0 | 74 | 0 | \$11 | \$270 | \$35 | 21.2 |
| Cafeteria | 2 | LED Lamps: (1) 15W A19 Screw-In Lamp | Wall Switch | S | 15 | 4,356 | 3 | None | Yes | 2 | LED Lamps: (1) 15W A19 Screw-In Lamp | Occupancy Sensor | 15 | 3,006 | 0.0 | 45 | 0 | \$7 | \$0 | \$0 | 0.0 |
| Cafeteria | 9 | LED Lamps: (1) 15W A19 Screw-In Lamp | Wall Switch | S | 15 | 4,356 | 3 | None | Yes | 9 | LED Lamps: (1) 15W A19 Screw-In Lamp | Occupancy Sensor | 15 | 3,006 | 0.0 | 201 | 0 | \$30 | \$270 | \$35 | 7.9 |
| Cafeteria | 8 | LED Lamps: (1) 15W A19 Screw-In Lamp | Wall Switch | S | 15 | 4,356 | 3 | None | Yes | 8 | LED Lamps: (1) 15W A19 Screw-In Lamp | Occupancy Sensor | 15 | 3,006 | 0.0 | 178 | 0 | \$27 | \$270 | \$35 | 8.8 |
| Cafeteria | 1 | LED - Fixtures: Ceiling Mount | Wall Switch | S | 15 | 4,356 | 3 | None | Yes | 1 | LED - Fixtures: Ceiling Mount | Occupancy Sensor | 15 | 3,006 | 0.0 | 22 | 0 | \$3 | \$0 | \$0 | 0.0 |
| Cafeteria | 2 | LED Lamps: (1) 15W PAR30 Screw-In Lamp | Wall Switch | S | 15 | 4,356 | 3 | None | Yes | 2 | LED Lamps: (1) 15W PAR30 Screw-In Lamp | Occupancy Sensor | 15 | 3,006 | 0.0 | 45 | 0 | \$7 | \$0 | \$0 | 0.0 |
| Cafeteria | 4 | LED Lamps: (1) 15W PAR30 Screw-In Lamp | Wall Switch | S | 15 | 4,356 | 3 | None | Yes | 4 | LED Lamps: (1) 15W PAR30 Screw-In Lamp | Occupancy Sensor | 15 | 3,006 | 0.0 | 89 | 0 | \$13 | \$270 | \$35 | 17.7 |
| Cafeteria | 16 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 16 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.5 | 3,219 | -1 | \$480 | \$1,124 | \$230 | 1.9 |
| Classroom - 227 | 4 | LED - Fixtures: Ambient - 6' - Direct/Indirect Fixture | Occupancy Sensor | S | 40 | 3,006 | | None | No | 4 | LED - Fixtures: Ambient - 6' - Direct/Indirect Fixture | Occupancy Sensor | 40 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Classroom - 231 | 4 | LED - Fixtures: Ambient - 6' - Direct/Indirect Fixture | Occupancy Sensor | S | 40 | 3,006 | | None | No | 4 | LED - Fixtures: Ambient - 6' - Direct/Indirect Fixture | Occupancy Sensor | 40 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Classroom - 232 | 4 | LED - Fixtures: Ambient - 6' - Direct/Indirect Fixture | Occupancy Sensor | S | 40 | 3,006 | | None | No | 4 | LED - Fixtures: Ambient - 6' - Direct/Indirect Fixture | Occupancy Sensor | 40 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Classroom - 233 | 4 | LED - Fixtures: Ambient - 6' - Direct/Indirect Fixture | Occupancy Sensor | S | 40 | 3,006 | | None | No | 4 | LED - Fixtures: Ambient - 6' - Direct/Indirect Fixture | Occupancy Sensor | 40 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Classroom - 234 | 4 | LED - Fixtures: Ambient - 6' - Direct/Indirect Fixture | Occupancy Sensor | S | 40 | 3,006 | | None | No | 4 | LED - Fixtures: Ambient - 6' - Direct/Indirect Fixture | Occupancy Sensor | 40 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Classroom - 235 | 4 | LED - Fixtures: Ambient - 6' - Direct/Indirect Fixture | Occupancy Sensor | S | 40 | 3,006 | | None | No | 4 | LED - Fixtures: Ambient - 6' - Direct/Indirect Fixture | Occupancy Sensor | 40 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Classroom 200 | 2 | LED - Fixtures: Ambient - 4' - Direct Fixture | Occupancy Sensor | S | 30 | 3,006 | | None | No | 2 | LED - Fixtures: Ambient - 4' - Direct Fixture | Occupancy Sensor | 30 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Classroom 200 | 2 | LED - Fixtures: Ambient - 8' - Direct Fixture | Occupancy Sensor | S | 60 | 3,006 | | None | No | 2 | LED - Fixtures: Ambient - 8' - Direct Fixture | Occupancy Sensor | 60 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |

| Existing Conditions | | | | | | | Proposed Conditions | | | | | | | Energy Impact & Financial Analysis | | | | | | | |
|---------------------|------------------|--|------------------|-------------|-------------------|------------------------|---------------------|------------------------|---------------|------------------|--|------------------|-------------------|------------------------------------|-----------------------|--------------------------|----------------------------|----------------------------------|-------------------------|------------------|---------------------------------------|
| Location | Fixture Quantity | Fixture Description | Control System | Light Level | Watts per Fixture | Annual Operating Hours | ECM # | Fixture Recommendation | Add Controls? | Fixture Quantity | Fixture Description | Control System | Watts per Fixture | Annual Operating Hours | Total Peak kW Savings | Total Annual kWh Savings | Total Annual MMBtu Savings | Total Annual Energy Cost Savings | Estimated M&L Cost (\$) | Total Incentives | Simple Payback w/ Incentives in Years |
| Classroom 202 | 2 | LED - Fixtures: Ambient - 4' - Direct Fixture | Occupancy Sensor | S | 30 | 3,006 | | None | No | 2 | LED - Fixtures: Ambient - 4' - Direct Fixture | Occupancy Sensor | 30 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Classroom 202 | 2 | LED - Fixtures: Ambient - 8' - Direct Fixture | Occupancy Sensor | S | 60 | 3,006 | | None | No | 2 | LED - Fixtures: Ambient - 8' - Direct Fixture | Occupancy Sensor | 60 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Classroom 203 | 2 | LED - Fixtures: Ambient - 4' - Direct Fixture | Occupancy Sensor | S | 30 | 3,006 | | None | No | 2 | LED - Fixtures: Ambient - 4' - Direct Fixture | Occupancy Sensor | 30 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Classroom 203 | 2 | LED - Fixtures: Ambient - 8' - Direct Fixture | Occupancy Sensor | S | 60 | 3,006 | | None | No | 2 | LED - Fixtures: Ambient - 8' - Direct Fixture | Occupancy Sensor | 60 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Classroom 204 | 2 | LED - Fixtures: Ambient - 4' - Direct Fixture | Occupancy Sensor | S | 30 | 3,006 | | None | No | 2 | LED - Fixtures: Ambient - 4' - Direct Fixture | Occupancy Sensor | 30 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Classroom 204 | 2 | LED - Fixtures: Ambient - 8' - Direct Fixture | Occupancy Sensor | S | 60 | 3,006 | | None | No | 2 | LED - Fixtures: Ambient - 8' - Direct Fixture | Occupancy Sensor | 60 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Classroom 205 | 2 | LED - Fixtures: Ambient - 4' - Direct Fixture | Occupancy Sensor | S | 30 | 3,006 | | None | No | 2 | LED - Fixtures: Ambient - 4' - Direct Fixture | Occupancy Sensor | 30 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Classroom 205 | 2 | LED - Fixtures: Ambient - 8' - Direct Fixture | Occupancy Sensor | S | 60 | 3,006 | | None | No | 2 | LED - Fixtures: Ambient - 8' - Direct Fixture | Occupancy Sensor | 60 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Classroom 211 (1) | 2 | LED - Fixtures: Ambient - 4' - Direct Fixture | Occupancy Sensor | S | 30 | 3,006 | | None | No | 2 | LED - Fixtures: Ambient - 4' - Direct Fixture | Occupancy Sensor | 30 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Classroom 211 (1) | 2 | LED - Fixtures: Ambient - 8' - Direct Fixture | Occupancy Sensor | S | 60 | 3,006 | | None | No | 2 | LED - Fixtures: Ambient - 8' - Direct Fixture | Occupancy Sensor | 60 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Classroom 213 | 2 | LED - Fixtures: Ambient - 4' - Direct Fixture | Occupancy Sensor | S | 30 | 3,006 | | None | No | 2 | LED - Fixtures: Ambient - 4' - Direct Fixture | Occupancy Sensor | 30 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Classroom 213 | 2 | LED - Fixtures: Ambient - 8' - Direct Fixture | Occupancy Sensor | S | 60 | 3,006 | | None | No | 2 | LED - Fixtures: Ambient - 8' - Direct Fixture | Occupancy Sensor | 60 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Classroom 214 | 2 | LED - Fixtures: Ambient - 4' - Direct Fixture | Occupancy Sensor | S | 30 | 3,006 | | None | No | 2 | LED - Fixtures: Ambient - 4' - Direct Fixture | Occupancy Sensor | 30 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Classroom 214 | 2 | LED - Fixtures: Ambient - 8' - Direct Fixture | Occupancy Sensor | S | 60 | 3,006 | | None | No | 2 | LED - Fixtures: Ambient - 8' - Direct Fixture | Occupancy Sensor | 60 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Classroom 221 | 4 | LED - Fixtures: Ambient - 6' - Direct/Indirect Fixture | Occupancy Sensor | S | 40 | 3,006 | | None | No | 4 | LED - Fixtures: Ambient - 6' - Direct/Indirect Fixture | Occupancy Sensor | 40 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Classroom 222 | 4 | LED - Fixtures: Ambient - 6' - Direct/Indirect Fixture | Occupancy Sensor | S | 40 | 3,006 | | None | No | 4 | LED - Fixtures: Ambient - 6' - Direct/Indirect Fixture | Occupancy Sensor | 40 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Classroom 223 | 4 | LED - Fixtures: Ambient - 6' - Direct/Indirect Fixture | Occupancy Sensor | S | 40 | 3,006 | | None | No | 4 | LED - Fixtures: Ambient - 6' - Direct/Indirect Fixture | Occupancy Sensor | 40 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Classroom 225 | 4 | LED - Fixtures: Ambient - 6' - Direct/Indirect Fixture | Occupancy Sensor | S | 40 | 3,006 | | None | No | 4 | LED - Fixtures: Ambient - 6' - Direct/Indirect Fixture | Occupancy Sensor | 40 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Classroom 225 (1) | 4 | LED - Fixtures: Ambient - 6' - Direct/Indirect Fixture | Occupancy Sensor | S | 40 | 3,006 | | None | No | 4 | LED - Fixtures: Ambient - 6' - Direct/Indirect Fixture | Occupancy Sensor | 40 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Classroom 240 | 2 | Exit Signs: LED - 2 W Lamp | None | | 6 | 8,760 | | None | No | 2 | Exit Signs: LED - 2 W Lamp | None | 6 | 8,760 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Classroom 240 | 11 | LED Lamps: (1) 12W BR40 Screw-In Lamp | Wall Switch | S | 12 | 4,356 | 3 | None | Yes | 11 | LED Lamps: (1) 12W BR40 Screw-In Lamp | Occupancy Sensor | 12 | 3,006 | 0.0 | 196 | 0 | \$29 | \$270 | \$35 | 8.0 |
| Classroom 240 | 8 | LED - Linear Tubes: (1) 4' Lamp | Wall Switch | S | 15 | 4,356 | 3 | None | Yes | 8 | LED - Linear Tubes: (1) 4' Lamp | Occupancy Sensor | 15 | 3,006 | 0.0 | 172 | 0 | \$26 | \$270 | \$35 | 9.1 |
| Classroom 240 | 2 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 2 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | 33 | 3,006 | 0.1 | 376 | 0 | \$56 | \$261 | \$40 | 3.9 |
| Classroom 241 | 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 |
| Classroom 241 | 9 | LED Lamps: (1) 12W PAR30 Screw-In Lamp | Wall Switch | S | 12 | 4,356 | 3 | None | Yes | 9 | LED Lamps: (1) 12W PAR30 Screw-In Lamp | Occupancy Sensor | 12 | 3,006 | 0.0 | 160 | 0 | \$24 | \$270 | \$35 | 9.8 |

| Existing Conditions | | | | | | | Proposed Conditions | | | | | | | Energy Impact & Financial Analysis | | | | | | | |
|---------------------|------------------|---|----------------|-------------|-------------------|------------------------|---------------------|------------------------|---------------|------------------|----------------------------------|------------------|-------------------|------------------------------------|-----------------------|--------------------------|----------------------------|----------------------------------|-------------------------|------------------|---------------------------------------|
| Location | Fixture Quantity | Fixture Description | Control System | Light Level | Watts per Fixture | Annual Operating Hours | ECM # | Fixture Recommendation | Add Controls? | Fixture Quantity | Fixture Description | Control System | Watts per Fixture | Annual Operating Hours | Total Peak kW Savings | Total Annual kWh Savings | Total Annual MMBtu Savings | Total Annual Energy Cost Savings | Estimated M&L Cost (\$) | Total Incentives | Simple Payback w/ Incentives in Years |
| Classroom 241 | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 4,356 | 2 | Relamp | No | 1 | LED - Linear Tubes: (3) 4' Lamps | Wall Switch | 44 | 4,356 | 0.0 | 237 | 0 | \$35 | \$55 | \$15 | 1.1 |
| Classroom 241 | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 4,356 | 2 | Relamp | No | 1 | LED - Linear Tubes: (4) 4' Lamps | Wall Switch | 58 | 4,356 | 0.0 | 268 | 0 | \$40 | \$73 | \$20 | 1.3 |
| Classroom 243 | 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 |
| Classroom 243 | 16 | LED - Linear Tubes: (1) 4' Lamp | Wall Switch | S | 15 | 4,356 | 3 | None | Yes | 16 | LED - Linear Tubes: (1) 4' Lamp | Occupancy Sensor | 15 | 3,006 | 0.1 | 345 | 0 | \$51 | \$540 | \$70 | 9.1 |
| Classroom 243 | 10 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 4,356 | 2, 3 | Relamp | Yes | 10 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.5 | 3,018 | -1 | \$450 | \$818 | \$185 | 1.4 |
| Classroom 243 | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 4,356 | 2 | Relamp | No | 1 | LED - Linear Tubes: (4) 4' Lamps | Wall Switch | 58 | 4,356 | 0.0 | 268 | 0 | \$40 | \$73 | \$20 | 1.3 |
| Classroom 250 | 1 | LED - Fixtures: Flood Fixture | Wall Switch | S | 26 | 4,356 | | None | No | 1 | LED - Fixtures: Flood Fixture | Wall Switch | 26 | 4,356 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Classroom 251 | 20 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | S | 29 | 4,356 | 3 | None | Yes | 20 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.1 | 862 | 0 | \$128 | \$540 | \$70 | 3.7 |
| Classroom 254 (1) | 20 | LED - Linear Tubes: (1) 4' Lamp | Wall Switch | S | 15 | 4,356 | 3 | None | Yes | 20 | LED - Linear Tubes: (1) 4' Lamp | Occupancy Sensor | 15 | 3,006 | 0.1 | 431 | 0 | \$64 | \$540 | \$70 | 7.3 |
| Classroom 254 (1) | 5 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 5 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.2 | 1,006 | 0 | \$150 | \$453 | \$85 | 2.5 |
| Classroom 254 (1) | 15 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 4,356 | 2, 3 | Relamp | Yes | 15 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.7 | 4,527 | -1 | \$675 | \$1,092 | \$260 | 1.2 |
| Classroom 254 (1) | 3 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 4,356 | 2, 3 | Relamp | Yes | 3 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.1 | 905 | 0 | \$135 | \$434 | \$80 | 2.6 |
| Classroom 255 | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 4,356 | 2 | Relamp | No | 1 | LED - Linear Tubes: (3) 4' Lamps | Wall Switch | 44 | 4,356 | 0.0 | 237 | 0 | \$35 | \$55 | \$15 | 1.1 |
| Classroom 255 (1) | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2 | Relamp | No | 1 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | 29 | 4,356 | 0.0 | 158 | 0 | \$24 | \$37 | \$10 | 1.1 |
| Classroom 255 (1) | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 4,356 | 2 | Relamp | No | 1 | LED - Linear Tubes: (3) 4' Lamps | Wall Switch | 44 | 4,356 | 0.0 | 237 | 0 | \$35 | \$55 | \$15 | 1.1 |
| Classroom 275 | 1 | LED Lamps: (2) 5.5W Biax Lamps | Wall Switch | S | 11 | 4,356 | | None | No | 1 | LED Lamps: (2) 5.5W Biax Lamps | Wall Switch | 11 | 4,356 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Classroom 275 | 9 | LED - Linear Tubes: (3) 4' Lamps | Wall Switch | S | 44 | 4,356 | 3 | None | Yes | 9 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.1 | 582 | 0 | \$87 | \$270 | \$35 | 2.7 |
| Classroom 277 | 1 | LED Lamps: (2) 5.5W Biax Lamps | Wall Switch | S | 11 | 4,356 | | None | No | 1 | LED Lamps: (2) 5.5W Biax Lamps | Wall Switch | 11 | 4,356 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Classroom 277 | 9 | LED - Linear Tubes: (3) 4' Lamps | Wall Switch | S | 44 | 4,356 | 3 | None | Yes | 9 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.1 | 582 | 0 | \$87 | \$270 | \$35 | 2.7 |
| Classroom 278 | 2 | LED Lamps: (2) 5.5W Biax Lamps | Wall Switch | S | 11 | 4,356 | 3 | None | Yes | 2 | LED Lamps: (2) 5.5W Biax Lamps | Occupancy Sensor | 11 | 3,006 | 0.0 | 33 | 0 | \$5 | \$116 | \$20 | 19.7 |
| Classroom 278 | 3 | LED - Linear Tubes: (3) 4' Lamps | Wall Switch | S | 44 | 4,356 | 3 | None | Yes | 3 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.0 | 194 | 0 | \$29 | \$270 | \$35 | 8.1 |
| Classroom 278 | 8 | LED - Linear Tubes: (3) 4' Lamps | Wall Switch | S | 44 | 4,356 | 3 | None | Yes | 8 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.1 | 517 | 0 | \$77 | \$270 | \$35 | 3.0 |
| Classroom 279 | 1 | LED Lamps: (2) 5.5W Biax Lamps | Wall Switch | S | 11 | 4,356 | | None | No | 1 | LED Lamps: (2) 5.5W Biax Lamps | Wall Switch | 11 | 4,356 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Classroom 279 | 9 | LED - Linear Tubes: (3) 4' Lamps | Wall Switch | S | 44 | 4,356 | 3 | None | Yes | 9 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.1 | 582 | 0 | \$87 | \$270 | \$35 | 2.7 |
| Classroom 280 | 1 | LED Lamps: (2) 5.5W Biax Lamps | Wall Switch | S | 11 | 4,356 | | None | No | 1 | LED Lamps: (2) 5.5W Biax Lamps | Wall Switch | 11 | 4,356 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |

| Existing Conditions | | | | | | | Proposed Conditions | | | | | | | Energy Impact & Financial Analysis | | | | | | | |
|-----------------------|------------------|--|------------------|-------------|-------------------|------------------------|---------------------|------------------------|---------------|------------------|---|------------------|-------------------|------------------------------------|-----------------------|--------------------------|----------------------------|----------------------------------|-------------------------|------------------|---------------------------------------|
| Location | Fixture Quantity | Fixture Description | Control System | Light Level | Watts per Fixture | Annual Operating Hours | ECM # | Fixture Recommendation | Add Controls? | Fixture Quantity | Fixture Description | Control System | Watts per Fixture | Annual Operating Hours | Total Peak kW Savings | Total Annual kWh Savings | Total Annual MMBtu Savings | Total Annual Energy Cost Savings | Estimated M&L Cost (\$) | Total Incentives | Simple Payback w/ Incentives in Years |
| Classroom 280 | 9 | LED - Linear Tubes: (3) 4' Lamps | Wall Switch | S | 44 | 4,356 | 3 | None | Yes | 9 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.1 | 582 | 0 | \$87 | \$270 | \$35 | 2.7 |
| Classroom 281 | 1 | LED Lamps: (2) 5.5W Biax Lamps | Wall Switch | S | 11 | 4,356 | | None | No | 1 | LED Lamps: (2) 5.5W Biax Lamps | Wall Switch | 11 | 4,356 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Classroom 281 | 9 | LED - Linear Tubes: (3) 4' Lamps | Wall Switch | S | 44 | 4,356 | 3 | None | Yes | 9 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.1 | 582 | 0 | \$87 | \$270 | \$35 | 2.7 |
| Classroom 282 | 1 | LED Lamps: (2) 5.5W Biax Lamps | Wall Switch | S | 11 | 4,356 | | None | No | 1 | LED Lamps: (2) 5.5W Biax Lamps | Wall Switch | 11 | 4,356 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Classroom 282 | 9 | LED - Linear Tubes: (3) 4' Lamps | Wall Switch | S | 44 | 4,356 | 3 | None | Yes | 9 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.1 | 582 | 0 | \$87 | \$270 | \$35 | 2.7 |
| Classroom 65 | 2 | LED - Fixtures: Ambient - 4' - Direct Fixture | Occupancy Sensor | S | 30 | 3,006 | | None | No | 2 | LED - Fixtures: Ambient - 4' - Direct Fixture | Occupancy Sensor | 30 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Classroom 65 | 2 | LED - Fixtures: Ambient - 8' - Direct Fixture | Occupancy Sensor | S | 60 | 3,006 | | None | No | 2 | LED - Fixtures: Ambient - 8' - Direct Fixture | Occupancy Sensor | 60 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Classroom Art Gallery | 6 | Compact Fluorescent: (2) 26W Biaxial Plug-In Lamps | Wall Switch | S | 52 | 4,356 | 2, 3 | Relamp | Yes | 6 | LED Lamps: GX23 (Plug-In) Lamps | Occupancy Sensor | 37 | 3,006 | 0.1 | 761 | 0 | \$113 | \$420 | \$47 | 3.3 |
| Classroom Art Gallery | 3 | LED - Fixtures: Ceiling Mount | Wall Switch | S | 40 | 4,356 | 3 | None | Yes | 3 | LED - Fixtures: Ceiling Mount | Occupancy Sensor | 40 | 3,006 | 0.0 | 178 | 0 | \$27 | \$270 | \$35 | 8.8 |
| Classroom Art Gallery | 25 | LED Lamps: (1) 15W PAR30 Screw-In Lamp | Wall Switch | S | 15 | 4,356 | 3 | None | Yes | 25 | LED Lamps: (1) 15W PAR30 Screw-In Lamp | Occupancy Sensor | 15 | 3,006 | 0.1 | 557 | 0 | \$83 | \$540 | \$70 | 5.7 |
| Classroom Art Gallery | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 4,356 | 2 | Relamp | No | 1 | LED - Linear Tubes: (4) 4' Lamps | Wall Switch | 58 | 4,356 | 0.0 | 268 | 0 | \$40 | \$73 | \$20 | 1.3 |
| Classroom Green House | 10 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | S | 29 | 4,356 | 3 | None | Yes | 10 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.1 | 431 | 0 | \$64 | \$270 | \$35 | 3.7 |
| Classroom R215 | 2 | LED - Fixtures: Ambient - 4' - Direct Fixture | Occupancy Sensor | S | 30 | 3,006 | | None | No | 2 | LED - Fixtures: Ambient - 4' - Direct Fixture | Occupancy Sensor | 30 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Classroom R215 | 2 | LED - Fixtures: Ambient - 8' - Direct Fixture | Occupancy Sensor | S | 60 | 3,006 | | None | No | 2 | LED - Fixtures: Ambient - 8' - Direct Fixture | Occupancy Sensor | 60 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Computer Lab 3 | 2 | LED - Fixtures: Ambient 2x4 Fixture | Wall Switch | S | 35 | 4,356 | 3 | None | Yes | 2 | LED - Fixtures: Ambient 2x4 Fixture | Occupancy Sensor | 35 | 3,006 | 0.0 | 104 | 0 | \$15 | \$116 | \$20 | 6.2 |
| Conference Fox Rm | 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 |
| Conference Fox Rm | 13 | LED Lamps: (1) 12W BR30 Screw-In Lamp | Wall Switch | S | 12 | 4,356 | 3 | None | Yes | 13 | LED Lamps: (1) 12W BR30 Screw-In Lamp | Occupancy Sensor | 12 | 3,006 | 0.0 | 232 | 0 | \$35 | \$270 | \$35 | 6.8 |
| Conference Fox Rm | 12 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 4,356 | 2, 3 | Relamp | Yes | 12 | LED - Linear Tubes: (4) 4' Lamps | Occupancy Sensor | 58 | 3,006 | 0.6 | 4,254 | -1 | \$634 | \$1,146 | \$275 | 1.4 |
| Corridor 12 | 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 |
| Corridor 12 | 7 | LED Lamps: (1) 5.5W Biax Lamps | Wall Switch | S | 6 | 4,356 | 4 | None | Yes | 7 | LED Lamps: (1) 5.5W Biax Lamps | High/Low Control | 6 | 3,006 | 0.0 | 57 | 0 | \$9 | \$450 | \$245 | 24.0 |
| Corridor 12 | 5 | LED - Linear Tubes: (2) 2' Lamps | Wall Switch | S | 17 | 4,356 | 4 | None | Yes | 5 | LED - Linear Tubes: (2) 2' Lamps | High/Low Control | 17 | 3,006 | 0.0 | 126 | 0 | \$19 | \$225 | \$175 | 2.7 |
| Corridor 12 | 1 | Linear Fluorescent - T8: 2' T8 (17W) - 2L | Wall Switch | S | 33 | 4,356 | 2 | Relamp | No | 1 | LED - Linear Tubes: (2) 2' Lamps | Wall Switch | 17 | 4,356 | 0.0 | 77 | 0 | \$11 | \$33 | \$6 | 2.3 |
| Corridor 12 | 1 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | None | S | 62 | 8,760 | 2 | Relamp | No | 1 | LED - Linear Tubes: (2) U-Lamp | None | 33 | 8,760 | 0.0 | 279 | 0 | \$42 | \$72 | \$10 | 1.5 |
| Corridor Art | 3 | Exit Signs: LED - 2 W Lamp | None | | 6 | 8,760 | | None | No | 3 | Exit Signs: LED - 2 W Lamp | None | 6 | 8,760 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Corridor Art | 7 | LED Lamps: (1) 12W BR40 Screw-In Lamp | None | S | 12 | 8,760 | 4 | None | Yes | 7 | LED Lamps: (1) 12W BR40 Screw-In Lamp | High/Low Control | 12 | 6,044 | 0.0 | 251 | 0 | \$37 | \$450 | \$245 | 5.5 |

| 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 |
| Corridor Art | 13 | LED - Fixtures: Ceiling Mount | Wall Switch | S | 15 | 4,356 | 4 | None | Yes | 13 | LED - Fixtures: Ceiling Mount | High/Low Control | 15 | 3,006 | 0.0 | 290 | 0 | \$43 | \$675 | \$455 | 5.1 |
| Corridor Art | 20 | LED - Fixtures: Ceiling Mount | Timeclock | S | 15 | 4,380 | | None | No | 20 | LED - Fixtures: Ceiling Mount | Timeclock | 15 | 4,380 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Corridor H/E | 7 | Exit Signs: LED - 2 W Lamp | None | | 6 | 8,760 | | None | No | 7 | Exit Signs: LED - 2 W Lamp | None | 6 | 8,760 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Corridor H/E | 2 | LED - Fixtures: Ceiling Mount | Wall Switch | S | 30 | 4,356 | 4 | None | Yes | 2 | LED - Fixtures: Ceiling Mount | High/Low Control | 30 | 3,006 | 0.0 | 89 | 0 | \$13 | \$225 | \$70 | 11.7 |
| Corridor H/E | 1 | LED - Fixtures: Ceiling Mount | None | S | 30 | 8,760 | | None | No | 1 | LED - Fixtures: Ceiling Mount | None | 30 | 8,760 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Corridor H/E | 44 | LED - Fixtures: Ambient - 2' - Direct Fixture | Daylight Dimming | S | 12 | 2,614 | | None | No | 44 | LED - Fixtures: Ambient - 2' - Direct Fixture | Daylight Dimming | 12 | 2,614 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Corridor H/E | 13 | LED - Fixtures: Ambient - 2' - Direct Fixture | Occupancy Sensor | S | 20 | 3,006 | | None | No | 13 | LED - Fixtures: Ambient - 2' - Direct Fixture | Occupancy Sensor | 20 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Corridor H/E | 14 | LED - Fixtures: Ambient - 4' - Direct Fixture | Wall Switch | S | 25 | 4,356 | 4 | None | Yes | 14 | LED - Fixtures: Ambient - 4' - Direct Fixture | High/Low Control | 25 | 3,006 | 0.1 | 520 | 0 | \$77 | \$675 | \$490 | 2.4 |
| Corridor H/E | 19 | LED - Fixtures: Ambient - 4' - Direct Fixture | Occupancy Sensor | S | 30 | 3,006 | | None | No | 19 | LED - Fixtures: Ambient - 4' - Direct Fixture | Occupancy Sensor | 30 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Corridor H/E | 3 | LED - Fixtures: Ambient - 4' - Direct Fixture | None | S | 30 | 4,356 | 4 | None | Yes | 3 | LED - Fixtures: Ambient - 4' - Direct Fixture | High/Low Control | 30 | 3,006 | 0.0 | 134 | 0 | \$20 | \$225 | \$105 | 6.0 |
| Corridor H/E | 2 | LED - Fixtures: Ceiling Mount | Occupancy Sensor | S | 12 | 3,006 | | None | No | 2 | LED - Fixtures: Ceiling Mount | Occupancy Sensor | 12 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Corridor LS gymateria | 1 | Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps | None | S | 26 | 4,356 | 2 | Relamp | No | 1 | LED Lamps: GX23 (Plug-In) Lamps | None | 19 | 4,356 | 0.0 | 34 | 0 | \$5 | \$25 | \$2 | 4.6 |
| Corridor LS gymateria | 1 | Exit Signs: LED - 2 W Lamp | None | | 6 | 8,760 | | None | No | 1 | Exit Signs: LED - 2 W Lamp | None | 6 | 8,760 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Corridor LS gymateria | 2 | Metal Halide: (1) 100W Lamp | Wall Switch | S | 128 | 4,356 | 2, 4 | Relamp | Yes | 2 | LED Lamps: (1) A-Lamp | High/Low Control | 30 | 3,006 | 0.2 | 1,028 | 0 | \$153 | \$259 | \$70 | 1.2 |
| Corridor M/L | 8 | Exit Signs: LED - 2 W Lamp | None | | 6 | 8,760 | | None | No | 8 | Exit Signs: LED - 2 W Lamp | None | 6 | 8,760 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Corridor M/L | 13 | LED - Fixtures: Ceiling Mount | Wall Switch | S | 30 | 4,356 | 4 | None | Yes | 13 | LED - Fixtures: Ceiling Mount | High/Low Control | 30 | 3,006 | 0.1 | 579 | 0 | \$86 | \$675 | \$455 | 2.5 |
| Corridor M/L | 23 | LED - Fixtures: Ambient 1x4 Fixture | Wall Switch | S | 20 | 4,356 | 4 | None | Yes | 23 | LED - Fixtures: Ambient 1x4 Fixture | High/Low Control | 20 | 3,006 | 0.1 | 683 | 0 | \$102 | \$900 | \$805 | 0.9 |
| Corridor M/L | 1 | LED - Fixtures: Ambient - 2' - Direct Fixture | Occupancy Sensor | S | 20 | 3,006 | | None | No | 1 | LED - Fixtures: Ambient - 2' - Direct Fixture | Occupancy Sensor | 20 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Corridor M/L | 23 | LED - Fixtures: Ambient - 4' - Direct Fixture | Occupancy Sensor | S | 25 | 3,006 | | None | No | 23 | LED - Fixtures: Ambient - 4' - Direct Fixture | Occupancy Sensor | 25 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Corridor M/L | 1 | LED - Fixtures: Ceiling Mount | Occupancy Sensor | S | 12 | 3,006 | | None | No | 1 | LED - Fixtures: Ceiling Mount | Occupancy Sensor | 12 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Corridor M/L | 11 | LED - Fixtures: Ceiling Mount | Timeclock | S | 12 | 4,380 | | None | No | 11 | LED - Fixtures: Ceiling Mount | Timeclock | 12 | 4,380 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Corridor Main | 2 | Exit Signs: LED - 2 W Lamp | None | | 6 | 8,760 | | None | No | 2 | Exit Signs: LED - 2 W Lamp | None | 6 | 8,760 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Corridor Main | 39 | LED - Fixtures: Ceiling Mount | Wall Switch | S | 12 | 4,356 | 4 | None | Yes | 39 | LED - Fixtures: Ceiling Mount | High/Low Control | 12 | 3,006 | 0.1 | 695 | 0 | \$104 | \$1,575 | \$1,365 | 2.0 |
| Corridor Main | 13 | LED - Fixtures: Ceiling Mount | None | S | 12 | 4,356 | 4 | None | Yes | 13 | LED - Fixtures: Ceiling Mount | High/Low Control | 12 | 3,006 | 0.0 | 232 | 0 | \$35 | \$675 | \$455 | 6.4 |
| Corridor Main | 2 | LED Lamps: (1) 12W PAR20 Screw-In Lamp | Wall Switch | S | 12 | 4,356 | 4 | None | Yes | 2 | LED Lamps: (1) 12W PAR20 Screw-In Lamp | High/Low Control | 12 | 3,006 | 0.0 | 36 | 0 | \$5 | \$225 | \$70 | 29.2 |

| Existing Conditions | | | | | | | Proposed Conditions | | | | | | | Energy Impact & Financial Analysis | | | | | | | |
|--------------------------|------------------|--|------------------|-------------|-------------------|------------------------|---------------------|------------------------|---------------|------------------|--|------------------|-------------------|------------------------------------|-----------------------|--------------------------|----------------------------|----------------------------------|-------------------------|------------------|---------------------------------------|
| Location | Fixture Quantity | Fixture Description | Control System | Light Level | Watts per Fixture | Annual Operating Hours | ECM # | Fixture Recommendation | Add Controls? | Fixture Quantity | Fixture Description | Control System | Watts per Fixture | Annual Operating Hours | Total Peak kW Savings | Total Annual kWh Savings | Total Annual MMBtu Savings | Total Annual Energy Cost Savings | Estimated M&L Cost (\$) | Total Incentives | Simple Payback w/ Incentives in Years |
| Corridor Main | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 4,356 | 2, 4 | Relamp | Yes | 2 | LED - Linear Tubes: (4) 4' Lamps | High/Low Control | 58 | 3,006 | 0.1 | 709 | 0 | \$106 | \$371 | \$110 | 2.5 |
| Corridor Main | 11 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 4,356 | 2, 4 | Relamp | Yes | 11 | LED - Linear Tubes: (4) 4' Lamps | High/Low Control | 58 | 3,006 | 0.6 | 3,899 | -1 | \$581 | \$1,253 | \$605 | 1.1 |
| Corridor Theater/Science | 7 | Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps | Wall Switch | S | 26 | 4,356 | 2, 4 | Relamp | Yes | 7 | LED Lamps: GX23 (Plug-In) Lamps | High/Low Control | 19 | 3,006 | 0.1 | 432 | 0 | \$64 | \$625 | \$259 | 5.7 |
| Corridor Theater/Science | 3 | Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps | None | S | 26 | 4,356 | 2, 4 | Relamp | Yes | 3 | LED Lamps: GX23 (Plug-In) Lamps | High/Low Control | 19 | 3,006 | 0.0 | 185 | 0 | \$28 | \$300 | \$111 | 6.8 |
| Corridor Theater/Science | 30 | Compact Fluorescent: (1) 26W Biaxial Plug-In Lamp | Wall Switch | S | 26 | 4,356 | 2, 4 | Relamp | Yes | 30 | LED Lamps: GX23 (Plug-In) Lamps | High/Low Control | 19 | 3,006 | 0.3 | 1,853 | 0 | \$276 | \$1,500 | \$1,080 | 1.5 |
| Corridor Theater/Science | 6 | Compact Fluorescent: (1) 26W Biaxial Plug-In Lamp | None | S | 26 | 4,356 | 2, 4 | Relamp | Yes | 6 | LED Lamps: GX23 (Plug-In) Lamps | High/Low Control | 19 | 3,006 | 0.1 | 371 | 0 | \$55 | \$300 | \$216 | 1.5 |
| Corridor Theater/Science | 17 | Compact Fluorescent: (1) 26W Biaxial Plug-In Lamp | Wall Switch | S | 26 | 4,356 | 2, 4 | Relamp | Yes | 17 | LED Lamps: GX23 (Plug-In) Lamps | High/Low Control | 19 | 3,006 | 0.2 | 1,050 | 0 | \$157 | \$888 | \$612 | 1.8 |
| Corridor Theater/Science | 16 | Compact Fluorescent: (2) 40W Biaxial Plug-In Lamps | Wall Switch | S | 80 | 4,356 | 2, 4 | Relamp | Yes | 16 | LED Lamps: PL-L (Biax) Lamps | High/Low Control | 56 | 3,006 | 0.5 | 3,171 | -1 | \$473 | \$1,107 | \$592 | 1.1 |
| Corridor Theater/Science | 7 | Exit Signs: LED - 2 W Lamp | None | | 6 | 8,760 | | None | No | 7 | Exit Signs: LED - 2 W Lamp | None | 6 | 8,760 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Corridor Theater/Science | 2 | LED Lamps: (1) 15W PAR20 Screw-In Lamp | Wall Switch | S | 15 | 4,356 | 4 | None | Yes | 2 | LED Lamps: (1) 15W PAR20 Screw-In Lamp | High/Low Control | 15 | 3,006 | 0.0 | 45 | 0 | \$7 | \$225 | \$70 | 23.3 |
| Corridor Theater/Science | 17 | Linear Fluorescent - T5: 4' T5 (28W) - 2L | Wall Switch | S | 60 | 4,356 | 2, 4 | Relamp | Yes | 17 | LED - Linear Tubes: (2) 4' T5 (14.5W) Lamps | High/Low Control | 30 | 3,006 | 0.5 | 3,201 | -1 | \$477 | \$1,645 | \$765 | 1.8 |
| Corridor Upper Gym A | 5 | Exit Signs: LED - 2 W Lamp | None | | 6 | 8,760 | | None | No | 5 | Exit Signs: LED - 2 W Lamp | None | 6 | 8,760 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Corridor Upper Gym A | 4 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 4,356 | 2, 4 | Relamp | Yes | 4 | LED - Linear Tubes: (3) 4' Lamps | High/Low Control | 44 | 3,006 | 0.2 | 1,207 | 0 | \$180 | \$444 | \$200 | 1.4 |
| Corridor Upper Gym A | 9 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 4 | Relamp | Yes | 9 | LED - Linear Tubes: (2) U-Lamp | High/Low Control | 33 | 3,006 | 0.3 | 1,692 | 0 | \$252 | \$1,102 | \$405 | 2.8 |
| Dining Area Serving Area | 10 | Compact Fluorescent: (1) 26W Biaxial Plug-In Lamp | Wall Switch | S | 26 | 4,356 | 2, 3 | Relamp | Yes | 10 | LED Lamps: GX23 (Plug-In) Lamps | Occupancy Sensor | 19 | 3,006 | 0.1 | 618 | 0 | \$92 | \$395 | \$45 | 3.8 |
| Dining Area Serving Area | 8 | LED Lamps: (1) 12W PAR20 Screw-In Lamp | Wall Switch | S | 12 | 4,356 | 3 | None | Yes | 8 | LED Lamps: (1) 12W PAR20 Screw-In Lamp | Occupancy Sensor | 12 | 3,006 | 0.0 | 143 | 0 | \$21 | \$270 | \$35 | 11.1 |
| Electrical Room Library | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 500 | 2 | Relamp | No | 1 | LED - Linear Tubes: (4) 4' Lamps | Wall Switch | 58 | 500 | 0.0 | 31 | 0 | \$5 | \$73 | \$20 | 11.6 |
| Janitorial 6 | 1 | LED Lamps: (1) 30W Corn Bulb Screw-In Lamp | Wall Switch | S | 30 | 500 | | None | No | 1 | LED Lamps: (1) 30W Corn Bulb Screw-In Lamp | Wall Switch | 30 | 500 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Janitorial H\E | 2 | LED - Fixtures: Ambient - 4' - Direct Fixture | Occupancy Sensor | S | 20 | 500 | | None | No | 2 | LED - Fixtures: Ambient - 4' - Direct Fixture | Occupancy Sensor | 20 | 500 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Laboratory 240 | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 4,356 | 2 | Relamp | No | 1 | LED - Linear Tubes: (3) 4' Lamps | Wall Switch | 44 | 4,356 | 0.0 | 237 | 0 | \$35 | \$55 | \$15 | 1.1 |
| Laboratory 240 | 3 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 3 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | 33 | 3,006 | 0.1 | 564 | 0 | \$84 | \$487 | \$65 | 5.0 |
| Laboratory 240B | 2 | LED Lamps: (1) 10W A19 Screw-In Lamp | Wall Switch | S | 10 | 4,356 | 3 | None | Yes | 2 | LED Lamps: (1) 10W A19 Screw-In Lamp | Occupancy Sensor | 10 | 3,006 | 0.0 | 30 | 0 | \$4 | \$116 | \$20 | 21.7 |
| Laboratory STEM | 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 |
| Laboratory STEM | 10 | LED - Fixtures: Ambient - 6' - Direct/Indirect Fixture | Wall Switch | S | 40 | 4,356 | 3 | None | Yes | 10 | LED - Fixtures: Ambient - 6' - Direct/Indirect Fixture | Occupancy Sensor | 40 | 3,006 | 0.1 | 594 | 0 | \$89 | \$270 | \$35 | 2.7 |
| Laboratory STEM | 12 | LED Lamps: (1) 12W PAR20 Screw-In Lamp | Wall Switch | S | 12 | 4,356 | 3 | None | Yes | 12 | LED Lamps: (1) 12W PAR20 Screw-In Lamp | Occupancy Sensor | 12 | 3,006 | 0.0 | 214 | 0 | \$32 | \$270 | \$35 | 7.4 |

| | 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 |
| Laboratory STEM | 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 |
| Laboratory STEM | 6 | LED - Fixtures: Ambient - 8' - Direct Fixture | High/Low Control | S | 60 | 3,006 | | None | No | 6 | LED - Fixtures: Ambient - 8' - Direct Fixture | High/Low Control | 60 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Laboratory STEM | 3 | LED Lamps: (1) 12W PAR20 Screw-In Lamp | High/Low Control | S | 12 | 3,006 | | None | No | 3 | LED Lamps: (1) 12W PAR20 Screw-In Lamp | High/Low Control | 12 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Library HS | 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 |
| Library HS | 2 | LED - Fixtures: Ceiling Mount | Wall Switch | S | 12 | 4,356 | 3 | None | Yes | 2 | LED - Fixtures: Ceiling Mount | Occupancy Sensor | 12 | 3,006 | 0.0 | 36 | 0 | \$5 | \$116 | \$20 | 18.1 |
| Library HS | 3 | LED - Linear Tubes: (3) 4' Lamps | Wall Switch | S | 44 | 4,356 | 3 | None | Yes | 3 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.0 | 194 | 0 | \$29 | \$270 | \$35 | 8.1 |
| Library HS | 6 | Linear Fluorescent - T5: 4' T5 (28W) - 2L | Wall Switch | S | 60 | 4,356 | 2, 3 | Relamp | Yes | 6 | LED - Linear Tubes: (2) 4' T5 (14.5W) Lamps | Occupancy Sensor | 30 | 3,006 | 0.2 | 1,130 | 0 | \$168 | \$612 | \$95 | 3.1 |
| Library HS | 8 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 8 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.2 | 1,610 | 0 | \$240 | \$562 | \$115 | 1.9 |
| Library HS | 3 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 4,356 | 2, 3 | Relamp | Yes | 3 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.1 | 905 | 0 | \$135 | \$434 | \$80 | 2.6 |
| Library LS | 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 |
| Library LS | 1 | LED - Fixtures: Ceiling Mount | Wall Switch | S | 15 | 4,356 | 3 | None | Yes | 1 | LED - Fixtures: Ceiling Mount | Occupancy Sensor | 15 | 3,006 | 0.0 | 22 | 0 | \$3 | \$0 | \$0 | 0.0 |
| Library LS | 3 | LED - Fixtures: Ambient - 2' - Direct Fixture | Wall Switch | S | 30 | 4,356 | 3 | None | Yes | 3 | LED - Fixtures: Ambient - 2' - Direct Fixture | Occupancy Sensor | 30 | 3,006 | 0.0 | 134 | 0 | \$20 | \$270 | \$35 | 11.8 |
| Library LS | 4 | LED - Fixtures: Ambient - 8' - Direct Fixture | Wall Switch | S | 60 | 4,356 | 3 | None | Yes | 4 | LED - Fixtures: Ambient - 8' - Direct Fixture | Occupancy Sensor | 60 | 3,006 | 0.1 | 356 | 0 | \$53 | \$270 | \$35 | 4.4 |
| Library LS | 1 | LED - Fixtures: Ambient - 2' - Direct Fixture | Wall Switch | S | 25 | 4,356 | 3 | None | Yes | 1 | LED - Fixtures: Ambient - 2' - Direct Fixture | Occupancy Sensor | 25 | 3,006 | 0.0 | 37 | 0 | \$6 | \$0 | \$0 | 0.0 |
| Library LS | 2 | LED - Fixtures: Ambient - 8' - Direct Fixture | Wall Switch | S | 60 | 4,356 | 3 | None | Yes | 2 | LED - Fixtures: Ambient - 8' - Direct Fixture | Occupancy Sensor | 60 | 3,006 | 0.0 | 178 | 0 | \$27 | \$0 | \$0 | 0.0 |
| Lobby LS | 3 | Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps | Wall Switch | S | 26 | 4,356 | 2, 4 | Relamp | Yes | 3 | LED Lamps: GX23 (Plug-In) Lamps | High/Low Control | 19 | 3,006 | 0.0 | 185 | 0 | \$28 | \$300 | \$111 | 6.8 |
| Lobby LS | 3 | Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps | Wall Switch | S | 26 | 4,356 | 2, 4 | Relamp | Yes | 3 | LED Lamps: GX23 (Plug-In) Lamps | High/Low Control | 19 | 3,006 | 0.0 | 185 | 0 | \$28 | \$300 | \$111 | 6.8 |
| Lobby LS | 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 |
| Lobby LS | 6 | LED Lamps: (1) 5.5W Biax Lamps | Wall Switch | S | 6 | 4,356 | 4 | None | Yes | 6 | LED Lamps: (1) 5.5W Biax Lamps | High/Low Control | 6 | 3,006 | 0.0 | 49 | 0 | \$7 | \$225 | \$210 | 2.1 |
| Lobby LS | 4 | LED Lamps: (1) 5.5W Biax Lamps | Wall Switch | S | 6 | 4,356 | 4 | None | Yes | 4 | LED Lamps: (1) 5.5W Biax Lamps | High/Low Control | 6 | 3,006 | 0.0 | 33 | 0 | \$5 | \$225 | \$140 | 17.4 |
| Lobby LS | 1 | LED Lamps: (2) 5.5W Biax Lamps | Wall Switch | S | 11 | 4,356 | 3 | None | Yes | 1 | LED Lamps: (2) 5.5W Biax Lamps | Occupancy Sensor | 11 | 3,006 | 0.0 | 16 | 0 | \$2 | \$0 | \$0 | 0.0 |
| Lobby LS | 4 | LED Lamps: (1) 12W PAR20 Screw-In Lamp | Occupancy Sensor | S | 12 | 3,006 | | None | No | 4 | LED Lamps: (1) 12W PAR20 Screw-In Lamp | Occupancy Sensor | 12 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Lobby LS | 6 | LED - Linear Tubes: (2) U-Lamp | Wall Switch | S | 33 | 4,356 | 4 | None | Yes | 6 | LED - Linear Tubes: (2) U-Lamp | High/Low Control | 33 | 3,006 | 0.0 | 294 | 0 | \$44 | \$225 | \$210 | 0.3 |
| Lobby LS | 3 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 4 | Relamp | Yes | 3 | LED - Linear Tubes: (2) U-Lamp | High/Low Control | 33 | 3,006 | 0.1 | 564 | 0 | \$84 | \$442 | \$135 | 3.7 |
| Locker Room 242 | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2 | Relamp | No | 1 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | 29 | 4,356 | 0.0 | 158 | 0 | \$24 | \$37 | \$10 | 1.1 |

| Existing Conditions | | | | | | | Proposed Conditions | | | | | | | Energy Impact & Financial Analysis | | | | | | | |
|---------------------------|------------------|--|------------------|-------------|-------------------|------------------------|---------------------|------------------------|---------------|------------------|--|------------------|-------------------|------------------------------------|-----------------------|--------------------------|----------------------------|----------------------------------|-------------------------|------------------|---------------------------------------|
| Location | Fixture Quantity | Fixture Description | Control System | Light Level | Watts per Fixture | Annual Operating Hours | ECM # | Fixture Recommendation | Add Controls? | Fixture Quantity | Fixture Description | Control System | Watts per Fixture | Annual Operating Hours | Total Peak kW Savings | Total Annual kWh Savings | Total Annual MMBtu Savings | Total Annual Energy Cost Savings | Estimated M&L Cost (\$) | Total Incentives | Simple Payback w/ Incentives in Years |
| Mechanical 209 | 3 | LED Lamps: (1) 10W A19 Screw-In Lamp | Wall Switch | S | 10 | 500 | | None | No | 3 | LED Lamps: (1) 10W A19 Screw-In Lamp | Wall Switch | 10 | 500 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical 209 | 3 | LED Lamps: (1) 10W A19 Screw-In Lamp | Wall Switch | S | 10 | 500 | | None | No | 3 | LED Lamps: (1) 10W A19 Screw-In Lamp | Wall Switch | 10 | 500 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical 219 | 5 | LED Lamps: (1) 10W A19 Screw-In Lamp | Wall Switch | S | 10 | 500 | | None | No | 5 | LED Lamps: (1) 10W A19 Screw-In Lamp | Wall Switch | 10 | 500 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical 230 | 2 | LED Lamps: (1) 10W A19 Screw-In Lamp | Wall Switch | S | 10 | 500 | | None | No | 2 | LED Lamps: (1) 10W A19 Screw-In Lamp | Wall Switch | 10 | 500 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical 230 | 5 | LED Lamps: (1) 10W A19 Screw-In Lamp | Wall Switch | S | 10 | 500 | | None | No | 5 | LED Lamps: (1) 10W A19 Screw-In Lamp | Wall Switch | 10 | 500 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Multipurpose Gymateria | 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 |
| Multipurpose Gymateria | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 2 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.1 | 402 | 0 | \$60 | \$189 | \$40 | 2.5 |
| Multipurpose Gymateria | 10 | Linear Fluorescent - T8: 4' T8 (32W) - 6L | Wall Switch | S | 176 | 4,356 | 2, 3 | Relamp | Yes | 10 | LED - Linear Tubes: (6) 4' Lamps | Occupancy Sensor | 87 | 3,006 | 0.8 | 5,557 | -1 | \$828 | \$1,365 | \$335 | 1.2 |
| Office - Enclosed 201 | 2 | LED - Fixtures: Ambient - 4' - Direct Fixture | Occupancy Sensor | S | 30 | 3,006 | | None | No | 2 | LED - Fixtures: Ambient - 4' - Direct Fixture | Occupancy Sensor | 30 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Office - Enclosed 201 | 2 | LED - Fixtures: Ambient - 8' - Direct Fixture | Occupancy Sensor | S | 60 | 3,006 | | None | No | 2 | LED - Fixtures: Ambient - 8' - Direct Fixture | Occupancy Sensor | 60 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Office - Enclosed 206 | 2 | LED - Fixtures: Ceiling Mount | Occupancy Sensor | S | 30 | 3,006 | | None | No | 2 | LED - Fixtures: Ceiling Mount | Occupancy Sensor | 30 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Office - Enclosed 207 | 2 | LED - Fixtures: Ceiling Mount | Occupancy Sensor | S | 30 | 3,006 | | None | No | 2 | LED - Fixtures: Ceiling Mount | Occupancy Sensor | 30 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Office - Enclosed 208 | 4 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 4 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | 33 | 3,006 | 0.1 | 752 | 0 | \$112 | \$560 | \$75 | 4.3 |
| Office - Enclosed 209 | 1 | LED - Fixtures: Ambient - 4' - Direct Fixture | Occupancy Sensor | S | 30 | 3,006 | | None | No | 1 | LED - Fixtures: Ambient - 4' - Direct Fixture | Occupancy Sensor | 30 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Office - Enclosed 216 | 2 | LED - Fixtures: Ceiling Mount | Occupancy Sensor | S | 15 | 3,006 | | None | No | 2 | LED - Fixtures: Ceiling Mount | Occupancy Sensor | 15 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Office - Enclosed 218 | 2 | LED - Fixtures: Ceiling Mount | Occupancy Sensor | S | 15 | 3,006 | | None | No | 2 | LED - Fixtures: Ceiling Mount | Occupancy Sensor | 15 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Office - Enclosed 220 | 4 | LED - Fixtures: Ambient - 6' - Direct/Indirect Fixture | Occupancy Sensor | S | 40 | 3,006 | | None | No | 4 | LED - Fixtures: Ambient - 6' - Direct/Indirect Fixture | Occupancy Sensor | 40 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Office - Enclosed 220 (1) | 4 | LED - Fixtures: Ambient - 6' - Direct/Indirect Fixture | Occupancy Sensor | S | 40 | 3,006 | | None | No | 4 | LED - Fixtures: Ambient - 6' - Direct/Indirect Fixture | Occupancy Sensor | 40 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Office - Enclosed 237 | 2 | LED - Fixtures: Ambient - 4' - Direct Fixture | Occupancy Sensor | S | 25 | 3,006 | | None | No | 2 | LED - Fixtures: Ambient - 4' - Direct Fixture | Occupancy Sensor | 25 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Office - Enclosed 238 | 2 | LED - Fixtures: Ambient - 4' - Direct Fixture | Occupancy Sensor | S | 25 | 3,006 | | None | No | 2 | LED - Fixtures: Ambient - 4' - Direct Fixture | Occupancy Sensor | 25 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Office - Enclosed 238 | 2 | LED - Fixtures: Ambient - 4' - Direct Fixture | Occupancy Sensor | S | 25 | 3,006 | | None | No | 2 | LED - Fixtures: Ambient - 4' - Direct Fixture | Occupancy Sensor | 25 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Office - Enclosed 239 | 2 | LED - Fixtures: Ambient - 4' - Direct Fixture | Occupancy Sensor | S | 25 | 3,006 | | None | No | 2 | LED - Fixtures: Ambient - 4' - Direct Fixture | Occupancy Sensor | 25 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Office - Enclosed 240 | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Occupancy Sensor | S | 93 | 3,006 | 2 | Relamp | No | 2 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.1 | 327 | 0 | \$49 | \$110 | \$30 | 1.6 |
| Office - Enclosed 240 | 2 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Occupancy Sensor | S | 62 | 3,006 | 2 | Relamp | No | 2 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | 33 | 3,006 | 0.0 | 192 | 0 | \$29 | \$145 | \$20 | 4.4 |
| Office - Enclosed 241 | 2 | LED Lamps: (1) 12W BR30 Screw-In Lamp | Wall Switch | S | 12 | 4,356 | 3 | None | Yes | 2 | LED Lamps: (1) 12W BR30 Screw-In Lamp | Occupancy Sensor | 12 | 3,006 | 0.0 | 36 | 0 | \$5 | \$116 | \$20 | 18.1 |

| Existing Conditions | | | | | | | Proposed Conditions | | | | | | | Energy Impact & Financial Analysis | | | | | | | |
|-------------------------------|------------------|---|------------------|-------------|-------------------|------------------------|---------------------|------------------------|---------------|------------------|---|------------------|-------------------|------------------------------------|-----------------------|--------------------------|----------------------------|----------------------------------|-------------------------|------------------|---------------------------------------|
| Location | Fixture Quantity | Fixture Description | Control System | Light Level | Watts per Fixture | Annual Operating Hours | ECM # | Fixture Recommendation | Add Controls? | Fixture Quantity | Fixture Description | Control System | Watts per Fixture | Annual Operating Hours | Total Peak kW Savings | Total Annual kWh Savings | Total Annual MMBtu Savings | Total Annual Energy Cost Savings | Estimated M&L Cost (\$) | Total Incentives | Simple Payback w/ Incentives in Years |
| Office - Enclosed 241 | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Occupancy Sensor | S | 93 | 3,006 | 2 | Relamp | No | 1 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.0 | 164 | 0 | \$24 | \$55 | \$15 | 1.6 |
| Office - Enclosed 241 | 2 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Occupancy Sensor | S | 62 | 3,006 | 2 | Relamp | No | 2 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | 33 | 3,006 | 0.0 | 192 | 0 | \$29 | \$145 | \$20 | 4.4 |
| Office - Enclosed 243 | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 4,356 | 2 | Relamp | No | 1 | LED - Linear Tubes: (3) 4' Lamps | Wall Switch | 44 | 4,356 | 0.0 | 237 | 0 | \$35 | \$55 | \$15 | 1.1 |
| Office - Enclosed 243 | 2 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 2 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | 33 | 3,006 | 0.1 | 376 | 0 | \$56 | \$261 | \$40 | 3.9 |
| Office - Enclosed 249 | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 4,356 | 2 | Relamp | No | 1 | LED - Linear Tubes: (3) 4' Lamps | Wall Switch | 44 | 4,356 | 0.0 | 237 | 0 | \$35 | \$55 | \$15 | 1.1 |
| Office - Enclosed 274 | 2 | LED - Fixtures: Ambient - 8' - Direct Fixture | Occupancy Sensor | S | 60 | 3,006 | | None | No | 2 | LED - Fixtures: Ambient - 8' - Direct Fixture | Occupancy Sensor | 60 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Office - Enclosed 276 | 4 | LED - Fixtures: Ambient 2x2 Fixture | Occupancy Sensor | S | 30 | 3,006 | | None | No | 4 | LED - Fixtures: Ambient 2x2 Fixture | Occupancy Sensor | 30 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Office - Enclosed 283 | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 2 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.1 | 402 | 0 | \$60 | \$189 | \$40 | 2.5 |
| Office - Enclosed 284 | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 2 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.1 | 402 | 0 | \$60 | \$189 | \$40 | 2.5 |
| Office - Enclosed 285 | 3 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 3 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.1 | 604 | 0 | \$90 | \$380 | \$65 | 3.5 |
| Office - Enclosed 64 | 1 | LED - Fixtures: Ambient - 4' - Direct Fixture | Wall Switch | S | 25 | 4,356 | | None | No | 1 | LED - Fixtures: Ambient - 4' - Direct Fixture | Wall Switch | 25 | 4,356 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Office - Enclosed Admin 1 | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 2 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.1 | 402 | 0 | \$60 | \$189 | \$40 | 2.5 |
| Office - Enclosed Admin 1 (1) | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 4,356 | 2, 3 | Relamp | Yes | 2 | LED - Linear Tubes: (4) 4' Lamps | Occupancy Sensor | 58 | 3,006 | 0.1 | 709 | 0 | \$106 | \$262 | \$60 | 1.9 |
| Office - Enclosed Admin 1 (2) | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 4,356 | 2, 3 | Relamp | Yes | 2 | LED - Linear Tubes: (4) 4' Lamps | Occupancy Sensor | 58 | 3,006 | 0.1 | 709 | 0 | \$106 | \$262 | \$60 | 1.9 |
| Office - Enclosed Admin 1 (3) | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 4,356 | 2, 3 | Relamp | Yes | 2 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.1 | 604 | 0 | \$90 | \$226 | \$50 | 2.0 |
| Office - Enclosed Admin 1 (4) | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 4,356 | 2, 3 | Relamp | Yes | 2 | LED - Linear Tubes: (4) 4' Lamps | Occupancy Sensor | 58 | 3,006 | 0.1 | 709 | 0 | \$106 | \$262 | \$60 | 1.9 |
| Office - Enclosed Admin 1 (5) | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 4,356 | 2, 3 | Relamp | Yes | 2 | LED - Linear Tubes: (4) 4' Lamps | Occupancy Sensor | 58 | 3,006 | 0.1 | 709 | 0 | \$106 | \$262 | \$60 | 1.9 |
| Office - Enclosed Admin 1 (6) | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 4,356 | 2, 3 | Relamp | Yes | 2 | LED - Linear Tubes: (4) 4' Lamps | Occupancy Sensor | 58 | 3,006 | 0.1 | 709 | 0 | \$106 | \$262 | \$60 | 1.9 |
| Office - Enclosed Admin 1 (7) | 3 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 4,356 | 2, 3 | Relamp | Yes | 3 | LED - Linear Tubes: (4) 4' Lamps | Occupancy Sensor | 58 | 3,006 | 0.2 | 1,063 | 0 | \$159 | \$489 | \$95 | 2.5 |
| Office - Enclosed Admin 1 (8) | 5 | LED - Fixtures: Ceiling Mount | Wall Switch | S | 12 | 4,356 | 3 | None | Yes | 5 | LED - Fixtures: Ceiling Mount | Occupancy Sensor | 12 | 3,006 | 0.0 | 89 | 0 | \$13 | \$270 | \$35 | 17.7 |
| Office - Enclosed Admin 1 (8) | 6 | LED - Linear Tubes: (4) 2' Lamps | Wall Switch | S | 34 | 4,356 | 3 | None | Yes | 6 | LED - Linear Tubes: (4) 2' Lamps | Occupancy Sensor | 34 | 3,006 | 0.0 | 303 | 0 | \$45 | \$270 | \$35 | 5.2 |
| Office - Enclosed Admin 9 | 3 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 4,356 | 2, 3 | Relamp | Yes | 3 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.1 | 905 | 0 | \$135 | \$434 | \$80 | 2.6 |
| Office - Enclosed Art | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Occupancy Sensor | S | 93 | 3,006 | 2 | Relamp | No | 1 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.0 | 164 | 0 | \$24 | \$55 | \$15 | 1.6 |
| Office - Enclosed Art | 2 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Occupancy Sensor | S | 62 | 3,006 | 2 | Relamp | No | 2 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | 33 | 3,006 | 0.0 | 192 | 0 | \$29 | \$145 | \$20 | 4.4 |
| Office - Enclosed Class Dean | 2 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 2 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | 33 | 3,006 | 0.1 | 376 | 0 | \$56 | \$261 | \$40 | 3.9 |

| Existing Conditions | | | | | | | Proposed Conditions | | | | | | | Energy Impact & Financial Analysis | | | | | | | |
|----------------------------|------------------|---|------------------|-------------|-------------------|------------------------|---------------------|------------------------|---------------|------------------|---|------------------|-------------------|------------------------------------|-----------------------|--------------------------|----------------------------|----------------------------------|-------------------------|------------------|---------------------------------------|
| Location | Fixture Quantity | Fixture Description | Control System | Light Level | Watts per Fixture | Annual Operating Hours | ECM # | Fixture Recommendation | Add Controls? | Fixture Quantity | Fixture Description | Control System | Watts per Fixture | Annual Operating Hours | Total Peak kW Savings | Total Annual kWh Savings | Total Annual MMBtu Savings | Total Annual Energy Cost Savings | Estimated M&L Cost (\$) | Total Incentives | Simple Payback w/ Incentives in Years |
| Office - Enclosed Copy Rm | 3 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 4,356 | 2, 3 | Relamp | Yes | 3 | LED - Linear Tubes: (4) 4' Lamps | Occupancy Sensor | 58 | 3,006 | 0.2 | 1,063 | 0 | \$159 | \$489 | \$95 | 2.5 |
| Office - Enclosed HS 1 | 4 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Occupancy Sensor | S | 62 | 3,006 | 2 | Relamp | No | 4 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | 33 | 3,006 | 0.1 | 384 | 0 | \$57 | \$290 | \$40 | 4.4 |
| Office - Enclosed HS 2 | 4 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Occupancy Sensor | S | 62 | 3,006 | 2 | Relamp | No | 4 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | 33 | 3,006 | 0.1 | 384 | 0 | \$57 | \$290 | \$40 | 4.4 |
| Office - Enclosed HS 3 | 4 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Occupancy Sensor | S | 62 | 3,006 | 2 | Relamp | No | 4 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | 33 | 3,006 | 0.1 | 384 | 0 | \$57 | \$290 | \$40 | 4.4 |
| Office - Enclosed HS 4 | 3 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Occupancy Sensor | S | 62 | 3,006 | 2 | Relamp | No | 3 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | 33 | 3,006 | 0.1 | 288 | 0 | \$43 | \$217 | \$30 | 4.4 |
| Office - Enclosed HS 5 | 4 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Occupancy Sensor | S | 62 | 3,006 | 2 | Relamp | No | 4 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | 33 | 3,006 | 0.1 | 384 | 0 | \$57 | \$290 | \$40 | 4.4 |
| Office - Enclosed HS 6 | 6 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Occupancy Sensor | S | 62 | 3,006 | 2 | Relamp | No | 6 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | 33 | 3,006 | 0.1 | 575 | 0 | \$86 | \$435 | \$60 | 4.4 |
| Office - Enclosed Kitchen | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 4,356 | 2 | Relamp | No | 1 | LED - Linear Tubes: (3) 4' Lamps | Wall Switch | 44 | 4,356 | 0.0 | 237 | 0 | \$35 | \$55 | \$15 | 1.1 |
| Office - Enclosed Mailroom | 3 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 4,356 | 2, 3 | Relamp | Yes | 3 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.1 | 905 | 0 | \$135 | \$434 | \$80 | 2.6 |
| Office - Nurse | 7 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 4,356 | 2, 3 | Relamp | Yes | 7 | LED - Linear Tubes: (4) 4' Lamps | Occupancy Sensor | 58 | 3,006 | 0.4 | 2,481 | -1 | \$370 | \$781 | \$175 | 1.6 |
| Office - Open Plan 210 | 2 | LED - Fixtures: Ambient - 4' - Direct Fixture | Occupancy Sensor | S | 30 | 3,006 | | None | No | 2 | LED - Fixtures: Ambient - 4' - Direct Fixture | Occupancy Sensor | 30 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Office - Open Plan 210 | 2 | LED - Fixtures: Ambient - 8' - Direct Fixture | Occupancy Sensor | S | 60 | 3,006 | | None | No | 2 | LED - Fixtures: Ambient - 8' - Direct Fixture | Occupancy Sensor | 60 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Restroom - Female | 4 | Compact Fluorescent: (1) 26W Biaxial Plug-In Lamp | Occupancy Sensor | S | 26 | 3,006 | 2 | Relamp | No | 4 | LED Lamps: GX23 (Plug-In) Lamps | Occupancy Sensor | 19 | 3,006 | 0.0 | 93 | 0 | \$14 | \$50 | \$4 | 3.3 |
| Restroom - Female | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 1L | Occupancy Sensor | S | 32 | 3,006 | 2 | Relamp | No | 1 | LED - Linear Tubes: (1) 4' Lamp | Occupancy Sensor | 15 | 3,006 | 0.0 | 58 | 0 | \$9 | \$18 | \$5 | 1.5 |
| Restroom - Female 11 | 4 | LED - Fixtures: Ceiling Mount | Occupancy Sensor | S | 12 | 3,006 | | None | No | 4 | LED - Fixtures: Ceiling Mount | Occupancy Sensor | 12 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Restroom - Female 11 | 1 | LED - Linear Tubes: (1) 4' Lamp | Occupancy Sensor | S | 15 | 3,006 | | None | No | 1 | LED - Linear Tubes: (1) 4' Lamp | Occupancy Sensor | 15 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Restroom - Female H/E | 5 | LED - Fixtures: Ambient - 2' - Direct Fixture | Occupancy Sensor | S | 12 | 3,006 | | None | No | 5 | LED - Fixtures: Ambient - 2' - Direct Fixture | Occupancy Sensor | 12 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Restroom - Female H/E | 3 | LED - Fixtures: Ambient - 2' - Direct Fixture | Occupancy Sensor | S | 20 | 3,006 | | None | No | 3 | LED - Fixtures: Ambient - 2' - Direct Fixture | Occupancy Sensor | 20 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Restroom - Female H/E | 1 | LED - Fixtures: Ceiling Mount | Occupancy Sensor | S | 12 | 3,006 | | None | No | 1 | LED - Fixtures: Ceiling Mount | Occupancy Sensor | 12 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Restroom - Female LS 2 | 3 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 3 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.1 | 604 | 0 | \$90 | \$380 | \$65 | 3.5 |
| Restroom - Male | 3 | LED - Fixtures: Ceiling Mount | Occupancy Sensor | S | 12 | 3,006 | | None | No | 3 | LED - Fixtures: Ceiling Mount | Occupancy Sensor | 12 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Restroom - Male | 1 | LED - Linear Tubes: (1) 4' Lamp | Occupancy Sensor | S | 15 | 3,006 | | None | No | 1 | LED - Linear Tubes: (1) 4' Lamp | Occupancy Sensor | 15 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Restroom - Male 10 | 4 | Compact Fluorescent: (1) 26W Biaxial Plug-In Lamp | Occupancy Sensor | S | 26 | 3,006 | 2 | Relamp | No | 4 | LED Lamps: GX23 (Plug-In) Lamps | Occupancy Sensor | 19 | 3,006 | 0.0 | 93 | 0 | \$14 | \$50 | \$4 | 3.3 |
| Restroom - Male 10 | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 1L | Occupancy Sensor | S | 32 | 3,006 | 2 | Relamp | No | 1 | LED - Linear Tubes: (1) 4' Lamp | Occupancy Sensor | 15 | 3,006 | 0.0 | 58 | 0 | \$9 | \$18 | \$5 | 1.5 |
| Restroom - Male 11 | 5 | LED - Fixtures: Ambient - 2' - Direct Fixture | Occupancy Sensor | S | 12 | 3,006 | | None | No | 5 | LED - Fixtures: Ambient - 2' - Direct Fixture | Occupancy Sensor | 12 | 3,006 | 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 |
| Restroom - Male 11 | 3 | LED - Fixtures: Ambient - 2' - Direct Fixture | Occupancy Sensor | S | 20 | 3,006 | | None | No | 3 | LED - Fixtures: Ambient - 2' - Direct Fixture | Occupancy Sensor | 20 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Restroom - Male 11 | 1 | LED - Fixtures: Ceiling Mount | Occupancy Sensor | S | 12 | 3,006 | | None | No | 1 | LED - Fixtures: Ceiling Mount | Occupancy Sensor | 12 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Restroom - Male LS 2 | 3 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 3 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.1 | 604 | 0 | \$90 | \$380 | \$65 | 3.5 |
| Restroom - Unisex 278 | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 4,356 | 2 | Relamp | No | 1 | LED - Linear Tubes: (3) 4' Lamps | Wall Switch | 44 | 4,356 | 0.0 | 237 | 0 | \$35 | \$55 | \$15 | 1.1 |
| Restroom - Unisex 7 | 1 | U-Bend Fluorescent - T8: U T8 (32W) - 3L | Wall Switch | S | 92 | 8,760 | 2 | Relamp | No | 1 | LED - Linear Tubes: (3) U-Lamp | Wall Switch | 50 | 8,760 | 0.0 | 410 | 0 | \$61 | \$109 | \$15 | 1.5 |
| Restroom - Unisex Amin | 1 | U-Bend Fluorescent - T8: U T8 (32W) - 3L | Occupancy Sensor | S | 92 | 3,006 | 2 | Relamp | No | 1 | LED - Linear Tubes: (3) U-Lamp | Occupancy Sensor | 50 | 3,006 | 0.0 | 141 | 0 | \$21 | \$109 | \$15 | 4.5 |
| Restroom - Unisex Caf | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 2 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.1 | 402 | 0 | \$60 | \$189 | \$40 | 2.5 |
| Restroom - Unisex Caf 2 | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Occupancy Sensor | S | 62 | 3,006 | 2 | Relamp | No | 2 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.0 | 218 | 0 | \$33 | \$73 | \$20 | 1.6 |
| Restroom - Unisex Nurse A | 1 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Occupancy Sensor | S | 62 | 3,006 | 2 | Relamp | No | 1 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | 33 | 3,006 | 0.0 | 96 | 0 | \$14 | \$72 | \$10 | 4.4 |
| Restroom - Unisex Nurse B | 1 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Occupancy Sensor | S | 62 | 3,006 | 2 | Relamp | No | 1 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | 33 | 3,006 | 0.0 | 96 | 0 | \$14 | \$72 | \$10 | 4.4 |
| Storage 229 | 1 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | S | 29 | 3,006 | | None | No | 1 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Storage 241 | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 4,356 | 2 | Relamp | No | 1 | LED - Linear Tubes: (4) 4' Lamps | Wall Switch | 58 | 4,356 | 0.0 | 268 | 0 | \$40 | \$73 | \$20 | 1.3 |
| Storage 243 | 3 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 4,356 | 2, 3 | Relamp | Yes | 3 | LED - Linear Tubes: (4) 4' Lamps | Occupancy Sensor | 58 | 3,006 | 0.2 | 1,063 | 0 | \$159 | \$489 | \$60 | 2.7 |
| Storage ES Art | 1 | LED - Fixtures: Ambient 2x2 Fixture | Wall Switch | S | 25 | 4,356 | | None | No | 1 | LED - Fixtures: Ambient 2x2 Fixture | Wall Switch | 25 | 4,356 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Storage LS 2 | 1 | Compact Fluorescent: (2) 5.5W Biaxial Plug-In Lamps | Wall Switch | S | 11 | 4,356 | 2 | Relamp | No | 1 | LED Lamps: GX23 (Plug-In) Lamps | Wall Switch | 8 | 4,356 | 0.0 | 14 | 0 | \$2 | \$25 | \$2 | 10.7 |
| Theater 1 Loft | 5 | Compact Fluorescent: (1) 23W Spiral Plug-In Lamp | Wall Switch | S | 23 | 4,356 | 2, 3 | Relamp | Yes | 5 | LED Lamps: (1) A-Lamp | Occupancy Sensor | 17 | 3,006 | 0.0 | 270 | 0 | \$40 | \$356 | \$40 | 7.9 |
| Theater 1 Loft | 2 | LED Lamps: (1) 10W A19 Screw-In Lamp | Wall Switch | S | 10 | 4,356 | 3 | None | Yes | 2 | LED Lamps: (1) 10W A19 Screw-In Lamp | Occupancy Sensor | 10 | 3,006 | 0.0 | 30 | 0 | \$4 | \$116 | \$20 | 21.7 |
| Theater 1 Loft | 24 | LED Lamps: (1) 100W Biax Lamps | Wall Switch | S | 100 | 4,356 | 3 | None | Yes | 24 | LED Lamps: (1) 100W Biax Lamps | Occupancy Sensor | 100 | 3,006 | 0.5 | 3,565 | -1 | \$531 | \$540 | \$70 | 0.9 |
| Theater Control Rm | 3 | LED Lamps: (1) 20W PAR20 Screw-In Lamp | Wall Switch | S | 20 | 500 | 3 | None | Yes | 3 | LED Lamps: (1) 20W PAR20 Screw-In Lamp | Occupancy Sensor | 20 | 345 | 0.0 | 10 | 0 | \$2 | \$270 | \$35 | 154.1 |
| Classroom 340 | 8 | LED - Fixtures: Ambient - 4' - Direct/Indirect Fixture | Wall Switch | S | 20 | 4,356 | 3 | None | Yes | 8 | LED - Fixtures: Ambient - 4' - Direct/Indirect Fixture | Occupancy Sensor | 20 | 3,006 | 0.0 | 238 | 0 | \$35 | \$270 | \$35 | 6.6 |
| Classroom 351 | 2 | Exit Signs: LED - 2 W Lamp | None | | 6 | 8,760 | | None | No | 2 | Exit Signs: LED - 2 W Lamp | None | 6 | 8,760 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Classroom 351 | 16 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 16 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.5 | 3,219 | -1 | \$480 | \$1,124 | \$230 | 1.9 |
| Classroom 351 (1) | 2 | Exit Signs: LED - 2 W Lamp | None | | 6 | 8,760 | | None | No | 2 | Exit Signs: LED - 2 W Lamp | None | 6 | 8,760 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Classroom 351 (1) | 1 | LED - Fixtures: Ceiling Mount | Wall Switch | S | 15 | 4,356 | | None | No | 1 | LED - Fixtures: Ceiling Mount | Wall Switch | 15 | 4,356 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Classroom 351 (1) | 16 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 16 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.5 | 3,219 | -1 | \$480 | \$1,124 | \$230 | 1.9 |

| Existing Conditions | | | | | | | Proposed Conditions | | | | | | | Energy Impact & Financial Analysis | | | | | | | |
|---------------------|------------------|--|------------------|-------------|-------------------|------------------------|---------------------|------------------------|---------------|------------------|--|------------------|-------------------|------------------------------------|-----------------------|--------------------------|----------------------------|----------------------------------|-------------------------|------------------|---------------------------------------|
| Location | Fixture Quantity | Fixture Description | Control System | Light Level | Watts per Fixture | Annual Operating Hours | ECM # | Fixture Recommendation | Add Controls? | Fixture Quantity | Fixture Description | Control System | Watts per Fixture | Annual Operating Hours | Total Peak kW Savings | Total Annual kWh Savings | Total Annual MMBtu Savings | Total Annual Energy Cost Savings | Estimated M&L Cost (\$) | Total Incentives | Simple Payback w/ Incentives in Years |
| Classroom 355 | 8 | LED - Fixtures: Ambient - 4' - Direct/Indirect Fixture | Wall Switch | S | 20 | 4,356 | 3 | None | Yes | 8 | LED - Fixtures: Ambient - 4' - Direct/Indirect Fixture | Occupancy Sensor | 20 | 3,006 | 0.0 | 238 | 0 | \$35 | \$270 | \$35 | 6.6 |
| Classroom 374 | 3 | LED Lamps: (2) 5.5W Biax Lamps | Wall Switch | S | 11 | 4,356 | 3 | None | Yes | 3 | LED Lamps: (2) 5.5W Biax Lamps | Occupancy Sensor | 11 | 3,006 | 0.0 | 49 | 0 | \$7 | \$116 | \$20 | 13.1 |
| Classroom 374 | 6 | LED - Linear Tubes: (3) 4' Lamps | Wall Switch | S | 44 | 4,356 | 3 | None | Yes | 6 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.1 | 388 | 0 | \$58 | \$270 | \$35 | 4.1 |
| Classroom 375 | 12 | LED - Linear Tubes: (3) 4' Lamps | Wall Switch | S | 44 | 4,356 | 3 | None | Yes | 12 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.1 | 775 | 0 | \$116 | \$270 | \$35 | 2.0 |
| Classroom 376 | 12 | LED - Linear Tubes: (3) 4' Lamps | Wall Switch | S | 44 | 4,356 | 3 | None | Yes | 12 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.1 | 775 | 0 | \$116 | \$270 | \$35 | 2.0 |
| Classroom 377 | 12 | LED - Linear Tubes: (3) 4' Lamps | Wall Switch | S | 44 | 4,356 | 3 | None | Yes | 12 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.1 | 775 | 0 | \$116 | \$270 | \$35 | 2.0 |
| Classroom 378 | 12 | LED - Linear Tubes: (3) 4' Lamps | Wall Switch | S | 44 | 4,356 | 3 | None | Yes | 12 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.1 | 775 | 0 | \$116 | \$270 | \$35 | 2.0 |
| Classroom 379 | 12 | LED - Linear Tubes: (3) 4' Lamps | Wall Switch | S | 44 | 4,356 | 3 | None | Yes | 12 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.1 | 775 | 0 | \$116 | \$270 | \$35 | 2.0 |
| Classroom 380 | 12 | LED - Linear Tubes: (3) 4' Lamps | Wall Switch | S | 44 | 4,356 | 3 | None | Yes | 12 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.1 | 775 | 0 | \$116 | \$270 | \$35 | 2.0 |
| Classroom 381 | 12 | LED - Linear Tubes: (3) 4' Lamps | Wall Switch | S | 44 | 4,356 | 3 | None | Yes | 12 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.1 | 775 | 0 | \$116 | \$270 | \$35 | 2.0 |
| Classroom 382 | 12 | LED - Linear Tubes: (3) 4' Lamps | Wall Switch | S | 44 | 4,356 | 3 | None | Yes | 12 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.1 | 775 | 0 | \$116 | \$270 | \$35 | 2.0 |
| Classroom 383 | 2 | LED Lamps: (2) 5.5W Biax Lamps | Wall Switch | S | 11 | 4,356 | 3 | None | Yes | 2 | LED Lamps: (2) 5.5W Biax Lamps | Occupancy Sensor | 11 | 3,006 | 0.0 | 33 | 0 | \$5 | \$116 | \$20 | 19.7 |
| Classroom 383 | 8 | LED - Linear Tubes: (3) 4' Lamps | Wall Switch | S | 44 | 4,356 | 3 | None | Yes | 8 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.1 | 517 | 0 | \$77 | \$270 | \$35 | 3.0 |
| Classroom 385 | 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 |
| Classroom 385 | 4 | LED - Fixtures: Ambient - 8' - Direct Fixture | Occupancy Sensor | S | 60 | 3,006 | | None | No | 4 | LED - Fixtures: Ambient - 8' - Direct Fixture | Occupancy Sensor | 60 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Classroom 385 | 6 | LED Lamps: (1) 10W PAR20 Screw-In Lamp | Occupancy Sensor | S | 10 | 3,006 | | None | No | 6 | LED Lamps: (1) 10W PAR20 Screw-In Lamp | Occupancy Sensor | 10 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Classroom 387 | 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 |
| Classroom 387 | 4 | LED - Fixtures: Ambient - 8' - Direct Fixture | Occupancy Sensor | S | 60 | 3,006 | | None | No | 4 | LED - Fixtures: Ambient - 8' - Direct Fixture | Occupancy Sensor | 60 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Classroom 387 | 6 | LED Lamps: (1) 10W PAR20 Screw-In Lamp | Occupancy Sensor | S | 10 | 3,006 | | None | No | 6 | LED Lamps: (1) 10W PAR20 Screw-In Lamp | Occupancy Sensor | 10 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Conference LS | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 4,356 | 2 | Relamp | No | 1 | LED - Linear Tubes: (3) 4' Lamps | Wall Switch | 44 | 4,356 | 0.0 | 237 | 0 | \$35 | \$55 | \$15 | 1.1 |
| Corridor Admin | 2 | Exit Signs: LED - 2 W Lamp | None | | 6 | 8,760 | | None | No | 2 | Exit Signs: LED - 2 W Lamp | None | 6 | 8,760 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Corridor Admin | 9 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 4 | Relamp | Yes | 9 | LED - Linear Tubes: (2) 4' Lamps | High/Low Control | 29 | 3,006 | 0.3 | 1,811 | 0 | \$270 | \$779 | \$405 | 1.4 |
| Corridor LS | 5 | Exit Signs: LED - 2 W Lamp | None | | 6 | 8,760 | | None | No | 5 | Exit Signs: LED - 2 W Lamp | None | 6 | 8,760 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Corridor LS | 5 | LED Lamps: (1) 5.5W Biax Lamps | Wall Switch | S | 6 | 4,356 | 4 | None | Yes | 5 | LED Lamps: (1) 5.5W Biax Lamps | High/Low Control | 6 | 3,006 | 0.0 | 41 | 0 | \$6 | \$225 | \$175 | 8.2 |
| Corridor LS | 2 | LED Lamps: (2) 5.5W Biax Lamps | Wall Switch | S | 11 | 4,356 | 4 | None | Yes | 2 | LED Lamps: (2) 5.5W Biax Lamps | High/Low Control | 11 | 3,006 | 0.0 | 33 | 0 | \$5 | \$225 | \$70 | 31.8 |

| | 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 |
| Corridor LS | 3 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 4 | Relamp | Yes | 3 | LED - Linear Tubes: (2) U-Lamp | High/Low Control | 33 | 3,006 | 0.1 | 564 | 0 | \$84 | \$442 | \$135 | 3.7 |
| Corridor Tech | 2 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 4 | Relamp | Yes | 2 | LED - Linear Tubes: (2) U-Lamp | High/Low Control | 33 | 3,006 | 0.1 | 376 | 0 | \$56 | \$370 | \$90 | 5.0 |
| Corridor Tech | 3 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 4 | Relamp | Yes | 3 | LED - Linear Tubes: (2) U-Lamp | High/Low Control | 33 | 3,006 | 0.1 | 564 | 0 | \$84 | \$442 | \$135 | 3.7 |
| Corridor Tech | 3 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | None | S | 62 | 8,760 | 2, 4 | Relamp | Yes | 3 | LED - Linear Tubes: (2) U-Lamp | High/Low Control | 33 | 6,044 | 0.1 | 1,134 | 0 | \$169 | \$442 | \$135 | 1.8 |
| Electrical Room 9 | 1 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Wall Switch | S | 62 | 500 | 2 | Relamp | No | 1 | LED - Linear Tubes: (2) U-Lamp | Wall Switch | 33 | 500 | 0.0 | 16 | 0 | \$2 | \$72 | \$10 | 26.3 |
| Library HS | 3 | Exit Signs: LED - 2 W Lamp | None | | 6 | 8,760 | | None | No | 3 | Exit Signs: LED - 2 W Lamp | None | 6 | 8,760 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Library HS | 4 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 4 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.1 | 805 | 0 | \$120 | \$416 | \$75 | 2.8 |
| Library HS | 3 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 3 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.1 | 604 | 0 | \$90 | \$380 | \$65 | 3.5 |
| Library HS | 4 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 4,356 | 2, 3 | Relamp | Yes | 4 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.2 | 1,207 | 0 | \$180 | \$489 | \$95 | 2.2 |
| Mech-Gymnateria | 3 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 500 | 2 | Relamp | No | 3 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | 29 | 500 | 0.1 | 54 | 0 | \$8 | \$110 | \$30 | 9.8 |
| Mechanical Admin | 1 | Compact Fluorescent: (1) 55W Screw-In Lamp | Wall Switch | S | 55 | 500 | 2 | Relamp | No | 1 | LED Lamps: (1) A-Lamp | Wall Switch | 38 | 500 | 0.0 | 9 | 0 | \$1 | \$17 | \$1 | 11.6 |
| Mechanical Admin | 1 | LED Lamps: (1) 14W A19 Screw-In Lamp | Wall Switch | S | 14 | 500 | | None | No | 1 | LED Lamps: (1) 14W A19 Screw-In Lamp | Wall Switch | 14 | 500 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical campus center | 2 | LED Lamps: (1) 18W Corn Bulb Screw-In Lamp | Wall Switch | S | 18 | 500 | | None | No | 2 | LED Lamps: (1) 18W Corn Bulb Screw-In Lamp | Wall Switch | 18 | 500 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical campus center | 3 | LED Lamps: (1) 30W Corn Bulb Screw-In Lamp | Wall Switch | S | 30 | 500 | | None | No | 3 | LED Lamps: (1) 30W Corn Bulb Screw-In Lamp | Wall Switch | 30 | 500 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical campus center | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 500 | 2 | Relamp | No | 1 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | 29 | 500 | 0.0 | 18 | 0 | \$3 | \$37 | \$10 | 9.8 |
| Mechanical Commons AHU-B | 1 | LED Lamps: (1) 10W A19 Screw-In Lamp | Wall Switch | S | 10 | 500 | | None | No | 1 | LED Lamps: (1) 10W A19 Screw-In Lamp | Wall Switch | 10 | 500 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical ES | 1 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | S | 29 | 500 | | None | No | 1 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | 29 | 500 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical ES | 5 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 500 | 2 | Relamp | No | 5 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | 29 | 500 | 0.1 | 91 | 0 | \$14 | \$183 | \$50 | 9.8 |
| Mechanical HS Library 1 | 3 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 500 | 2 | Relamp | No | 3 | LED - Linear Tubes: (4) 4' Lamps | Wall Switch | 58 | 500 | 0.1 | 92 | 0 | \$14 | \$219 | \$60 | 11.6 |
| Mechanical HS Library 2 | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 500 | 2 | Relamp | No | 1 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | 29 | 500 | 0.0 | 18 | 0 | \$3 | \$37 | \$10 | 9.8 |
| Mechanical HS Library 2 | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 500 | 2 | Relamp | No | 1 | LED - Linear Tubes: (4) 4' Lamps | Wall Switch | 58 | 500 | 0.0 | 31 | 0 | \$5 | \$73 | \$20 | 11.6 |
| Mechanical upper gym | 6 | LED Lamps: (1) 12W A19 Screw-In Lamp | Wall Switch | S | 12 | 500 | | None | No | 6 | LED Lamps: (1) 12W A19 Screw-In Lamp | Wall Switch | 12 | 500 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Office - Enclosed 342 | 3 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | S | 33 | 3,006 | | None | No | 3 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | 33 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Office - Enclosed 343 | 3 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | S | 33 | 3,006 | | None | No | 3 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | 33 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Office - Enclosed 345 | 2 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | S | 33 | 3,006 | | None | No | 2 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | 33 | 3,006 | 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 |
| Office - Enclosed 346 | 2 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | S | 33 | 3,006 | | None | No | 2 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | 33 | 3,006 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Office - Enclosed 346 | 3 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 3 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.1 | 604 | 0 | \$90 | \$380 | \$65 | 3.5 |
| Office - Enclosed 353 | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 2 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.1 | 402 | 0 | \$60 | \$189 | \$40 | 2.5 |
| Office - Enclosed 353 (1) | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 2 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.1 | 402 | 0 | \$60 | \$189 | \$40 | 2.5 |
| Office - Enclosed 356 | 6 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Occupancy Sensor | S | 62 | 3,006 | 2 | Relamp | No | 6 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | 33 | 3,006 | 0.1 | 575 | 0 | \$86 | \$435 | \$60 | 4.4 |
| Office - Enclosed 383 | 1 | LED - Linear Tubes: (3) 4' Lamps | Wall Switch | S | 44 | 4,356 | | None | No | 1 | LED - Linear Tubes: (3) 4' Lamps | Wall Switch | 44 | 4,356 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Office - Enclosed 384 | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 4,356 | 2, 3 | Relamp | Yes | 2 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.1 | 604 | 0 | \$90 | \$226 | \$50 | 2.0 |
| Office - Enclosed 386 | 3 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 4,356 | 2, 3 | Relamp | Yes | 3 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.1 | 905 | 0 | \$135 | \$434 | \$80 | 2.6 |
| Office - Enclosed 389 | 4 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 4,356 | 2, 3 | Relamp | Yes | 4 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.2 | 1,207 | 0 | \$180 | \$489 | \$95 | 2.2 |
| Office - Enclosed 91 | 2 | LED - Fixtures: Ambient - 4' - Direct Fixture | Wall Switch | S | 20 | 4,356 | 3 | None | Yes | 2 | LED - Fixtures: Ambient - 4' - Direct Fixture | Occupancy Sensor | 20 | 3,006 | 0.0 | 59 | 0 | \$9 | \$116 | \$20 | 10.8 |
| Office - Enclosed Library | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 4,356 | 2, 3 | Relamp | Yes | 2 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 3,006 | 0.1 | 604 | 0 | \$90 | \$226 | \$50 | 2.0 |
| Office - Open Plan 341 | 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 |
| Office - Open Plan 341 | 14 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | S | 29 | 4,356 | 3 | None | Yes | 14 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.1 | 603 | 0 | \$90 | \$270 | \$35 | 2.6 |
| Office - Open Plan 341 | 1 | LED - Linear Tubes: (2) U-Lamp | Wall Switch | S | 33 | 4,356 | | None | No | 1 | LED - Linear Tubes: (2) U-Lamp | Wall Switch | 33 | 4,356 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Office - Open Plan 341 | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2 | Relamp | No | 1 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | 29 | 4,356 | 0.0 | 158 | 0 | \$24 | \$37 | \$10 | 1.1 |
| Office - Open Plan 341 | 2 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 2 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | 33 | 3,006 | 0.1 | 376 | 0 | \$56 | \$261 | \$40 | 3.9 |
| Restroom - Female LS | 3 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 3 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.1 | 604 | 0 | \$90 | \$380 | \$65 | 3.5 |
| Restroom - Male LS | 3 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 3 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.1 | 604 | 0 | \$90 | \$380 | \$65 | 3.5 |
| Restroom - Unisex 341 | 1 | LED Lamps: (1) 10W A19 Screw-In Lamp | Wall Switch | S | 10 | 4,356 | | None | No | 1 | LED Lamps: (1) 10W A19 Screw-In Lamp | Wall Switch | 10 | 4,356 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Restroom - Unisex 341 | 1 | LED - Linear Tubes: (2) 2' Lamps | Wall Switch | S | 17 | 4,356 | | None | No | 1 | LED - Linear Tubes: (2) 2' Lamps | Wall Switch | 17 | 4,356 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Restroom - Unisex 6 | 1 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 1 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | 33 | 3,006 | 0.0 | 188 | 0 | \$28 | \$188 | \$30 | 5.7 |
| Storage 18 LS | 1 | Compact Fluorescent: (2) 5.5W Biaxial Plug-In Lamps | Wall Switch | S | 11 | 4,356 | 2 | Relamp | No | 1 | LED Lamps: GX23 (Plug-In) Lamps | Wall Switch | 8 | 4,356 | 0.0 | 14 | 0 | \$2 | \$25 | \$2 | 10.7 |
| Storage 341 | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Occupancy Sensor | S | 62 | 3,006 | 2 | Relamp | No | 1 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.0 | 109 | 0 | \$16 | \$37 | \$10 | 1.6 |
| Storage HS Library | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 4,356 | 2 | Relamp | No | 1 | LED - Linear Tubes: (4) 4' Lamps | Wall Switch | 58 | 4,356 | 0.0 | 268 | 0 | \$40 | \$73 | \$20 | 1.3 |
| Corridor 1 | 2 | Exit Signs: LED - 2 W Lamp | None | | 6 | 8,760 | | None | No | 2 | Exit Signs: LED - 2 W Lamp | None | 6 | 8,760 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |

| | Existing Conditions | | | | | | Proposed Conditions | | | | | | | | Energy Impact & Financial Analysis | | | | | | | |
|---------------------------|---------------------|---|----------------|-------------|-------------------|------------------------|---------------------|------------------------|---------------|------------------|--|------------------|-------------------|------------------------|------------------------------------|--------------------------|----------------------------|----------------------------------|-------------------------|------------------|---------------------------------------|--|
| Location | Fixture Quantity | Fixture Description | Control System | Light Level | Watts per Fixture | Annual Operating Hours | ECM # | Fixture Recommendation | Add Controls? | Fixture Quantity | Fixture Description | Control System | Watts per Fixture | Annual Operating Hours | Total Peak kW Savings | Total Annual kWh Savings | Total Annual MMBtu Savings | Total Annual Energy Cost Savings | Estimated M&L Cost (\$) | Total Incentives | Simple Payback w/ Incentives in Years | |
| Corridor 1 | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 4,356 | 2, 4 | Relamp | Yes | 2 | LED - Linear Tubes: (3) 4' Lamps | High/Low Control | 44 | 3,006 | 0.1 | 604 | 0 | \$90 | \$335 | \$100 | 2.6 | |
| Corridor 1 | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 4,356 | 2, 4 | Relamp | Yes | 2 | LED - Linear Tubes: (3) 4' Lamps | High/Low Control | 44 | 3,006 | 0.1 | 604 | 0 | \$90 | \$335 | \$100 | 2.6 | |
| Elevator 1 | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 500 | 2, 3 | Relamp | Yes | 2 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 345 | 0.1 | 46 | 0 | \$7 | \$189 | \$40 | 21.6 | |
| Elevator 3 | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 500 | 2 | Relamp | No | 1 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | 29 | 500 | 0.0 | 18 | 0 | \$3 | \$37 | \$10 | 9.8 | |
| Mechanical 1 | 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 | |
| Mechanical 1 | 11 | LED Lamps: (1) 35W Corn Bulb Screw-In Lamp | Wall Switch | S | 35 | 500 | | None | No | 11 | LED Lamps: (1) 35W Corn Bulb Screw-In Lamp | Wall Switch | 35 | 500 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 | |
| Basement Mechanical Rm | 4 | LED Lamps: (1) 30W Corn Bulb Screw-In Lamp | Wall Switch | S | 30 | 500 | | None | No | 4 | LED Lamps: (1) 30W Corn Bulb Screw-In Lamp | Wall Switch | 30 | 500 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 | |
| Basement Mechanical Rm | 9 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 500 | 2 | Relamp | No | 9 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | 29 | 500 | 0.2 | 163 | 0 | \$24 | \$329 | \$90 | 9.8 | |
| Mechanical D | 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 | |
| Mechanical D | 1 | LED Lamps: (1) 30W Corn Bulb Screw-In Lamp | Wall Switch | S | 30 | 500 | | None | No | 1 | LED Lamps: (1) 30W Corn Bulb Screw-In Lamp | Wall Switch | 30 | 500 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 | |
| Mechanical D | 5 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 500 | 2 | Relamp | No | 5 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | 29 | 500 | 0.1 | 91 | 0 | \$14 | \$183 | \$50 | 9.8 | |
| Mechanical D | 13 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 500 | 2 | Relamp | No | 13 | LED - Linear Tubes: (4) 4' Lamps | Wall Switch | 58 | 500 | 0.5 | 400 | 0 | \$60 | \$949 | \$260 | 11.6 | |
| Mechanical Old Chiller Rm | 3 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 500 | 2 | Relamp | No | 3 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | 29 | 500 | 0.1 | 54 | 0 | \$8 | \$110 | \$30 | 9.8 | |
| Storage 3 | 6 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 4,356 | 2, 3 | Relamp | Yes | 6 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 3,006 | 0.2 | 1,207 | 0 | \$180 | \$489 | \$60 | 2.4 | |
| Elevator 2 | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 500 | 2 | Relamp | No | 1 | LED - Linear Tubes: (4) 4' Lamps | Wall Switch | 58 | 500 | 0.0 | 31 | 0 | \$5 | \$73 | \$20 | 11.6 | |
| Mechanical G theater | 3 | LED Lamps: (1) 10W A19 Screw-In Lamp | Wall Switch | S | 10 | 500 | | None | No | 3 | LED Lamps: (1) 10W A19 Screw-In Lamp | Wall Switch | 10 | 500 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 | |
| Stairs 3 Caf | 1 | Compact Fluorescent: (1) 13W Biaxial Plug-In Lamp | Wall Switch | | 13 | 4,356 | 2 | Relamp | No | 1 | LED Lamps: GX23 (Plug-In) Lamps | Wall Switch | 10 | 4,356 | 0.0 | 14 | 0 | \$2 | \$13 | \$1 | 5.4 | |
| Stairs 3 Caf | 4 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | | 62 | 4,356 | 2, 4 | Relamp | Yes | 4 | LED - Linear Tubes: (2) 4' Lamps | High/Low Control | 29 | 3,006 | 0.1 | 805 | 0 | \$120 | \$371 | \$180 | 1.6 | |
| Stairs 3-science A | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | None | | 62 | 4,356 | 2 | Relamp | No | 1 | LED - Linear Tubes: (2) 4' Lamps | None | 29 | 4,356 | 0.0 | 158 | 0 | \$24 | \$37 | \$10 | 1.1 | |
| Stairs 3-science 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 | |
| Stairs 3-science A | 1 | LED - Fixtures: Ceiling Mount | None | | 15 | 4,356 | | None | No | 1 | LED - Fixtures: Ceiling Mount | None | 15 | 4,356 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 | |
| Stairs 3-science 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 | |
| Stairs 3-science B | 2 | LED - Fixtures: Ceiling Mount | None | | 15 | 4,356 | 4 | None | Yes | 2 | LED - Fixtures: Ceiling Mount | High/Low Control | 15 | 3,006 | 0.0 | 45 | 0 | \$7 | \$225 | \$70 | 23.3 | |
| Stairs 3-science B | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | None | | 62 | 4,356 | 2 | Relamp | No | 1 | LED - Linear Tubes: (2) 4' Lamps | None | 29 | 4,356 | 0.0 | 158 | 0 | \$24 | \$37 | \$10 | 1.1 | |
| Stairs Admin | 1 | Exit Signs: LED - 2 W Lamp | None | | 6 | 8,760 | | None | No | 1 | Exit Signs: LED - 2 W Lamp | None | 6 | 8,760 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 | |

| Existing Conditions | | | | | | | Proposed Conditions | | | | | | | | Energy Impact & Financial Analysis | | | | | | |
|---------------------|------------------|---|----------------|-------------|-------------------|------------------------|---------------------|------------------------|---------------|------------------|---|------------------|-------------------|------------------------|------------------------------------|--------------------------|----------------------------|----------------------------------|-------------------------|------------------|---------------------------------------|
| Location | Fixture Quantity | Fixture Description | Control System | Light Level | Watts per Fixture | Annual Operating Hours | ECM # | Fixture Recommendation | Add Controls? | Fixture Quantity | Fixture Description | Control System | Watts per Fixture | Annual Operating Hours | Total Peak kW Savings | Total Annual kWh Savings | Total Annual MMBtu Savings | Total Annual Energy Cost Savings | Estimated M&L Cost (\$) | Total Incentives | Simple Payback w/ Incentives in Years |
| Stairs Admin | 2 | LED - Fixtures: Ambient - 2' - Direct Fixture | None | | 15 | 4,356 | 4 | None | Yes | 2 | LED - Fixtures: Ambient - 2' - Direct Fixture | High/Low Control | 15 | 3,006 | 0.0 | 45 | 0 | \$7 | \$225 | \$70 | 23.3 |
| Stairs Admin | 1 | LED - Fixtures: Ambient 2x2 Fixture | None | | 15 | 4,356 | | None | No | 1 | LED - Fixtures: Ambient 2x2 Fixture | None | 15 | 4,356 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Stairs Admin | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | | 114 | 4,356 | 2 | Relamp | No | 1 | LED - Linear Tubes: (4) 4' Lamps | Wall Switch | 58 | 4,356 | 0.0 | 268 | 0 | \$40 | \$73 | \$20 | 1.3 |
| Stairs Admin 2 | 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 |
| Stairs Admin 2 | 2 | LED - Fixtures: Ambient - 2' - Direct Fixture | None | | 15 | 4,356 | 4 | None | Yes | 2 | LED - Fixtures: Ambient - 2' - Direct Fixture | High/Low Control | 15 | 3,006 | 0.0 | 45 | 0 | \$7 | \$225 | \$70 | 23.3 |
| Stairs Admin 2 | 2 | LED - Fixtures: Ambient 2x2 Fixture | None | | 15 | 4,356 | 4 | None | Yes | 2 | LED - Fixtures: Ambient 2x2 Fixture | High/Low Control | 15 | 3,006 | 0.0 | 45 | 0 | \$7 | \$225 | \$70 | 23.3 |
| Stairs LS | 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 |
| Stairs LS | 6 | LED Lamps: (2) 5W Plug-In Lamps | None | | 10 | 4,356 | 4 | None | Yes | 6 | LED Lamps: (2) 5W Plug-In Lamps | High/Low Control | 10 | 3,006 | 0.0 | 89 | 0 | \$13 | \$225 | \$210 | 1.1 |
| Stairs LS 2 | 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 |
| Stairs LS 2 | 4 | LED Lamps: (2) 5W Plug-In Lamps | None | | 10 | 4,356 | 4 | None | Yes | 4 | LED Lamps: (2) 5W Plug-In Lamps | High/Low Control | 10 | 3,006 | 0.0 | 59 | 0 | \$9 | \$225 | \$140 | 9.6 |
| Stairs Upper Gym 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 |
| Stairs Upper Gym A | 1 | LED - Fixtures: Ambient 1x4 Fixture | None | | 25 | 4,356 | | None | No | 1 | LED - Fixtures: Ambient 1x4 Fixture | None | 25 | 4,356 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Stairs Upper Gym A | 2 | LED - Fixtures: Ambient 2x2 Fixture | None | | 25 | 4,356 | 4 | None | Yes | 2 | LED - Fixtures: Ambient 2x2 Fixture | High/Low Control | 25 | 3,006 | 0.0 | 74 | 0 | \$11 | \$225 | \$70 | 14.0 |
| Stairs Upper Gym A | 1 | LED - Fixtures: Ceiling Mount | None | | 25 | 4,356 | | None | No | 1 | LED - Fixtures: Ceiling Mount | None | 25 | 4,356 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Exterior 2 | 4 | LED Lamps: (1) 35W Corn Bulb Screw-In Lamp | Timeclock | | 35 | 4,380 | | None | No | 4 | LED Lamps: (1) 35W Corn Bulb Screw-In Lamp | Timeclock | 35 | 4,380 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Exterior 2 | 18 | LED Lamps: (1) 65W Corn Bulb Screw-In Lamp | Timeclock | | 65 | 4,380 | | None | No | 18 | LED Lamps: (1) 65W Corn Bulb Screw-In Lamp | Timeclock | 65 | 4,380 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Exterior 2 | 5 | LED Lamps: (1) 65W Corn Bulb Screw-In Lamp | Timeclock | | 65 | 4,380 | | None | No | 5 | LED Lamps: (1) 65W Corn Bulb Screw-In Lamp | Timeclock | 65 | 4,380 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Exterior 2 | 7 | LED - Fixtures: Outdoor Pole/Arm-Mounted Area/Roadway Fixture | Timeclock | | 65 | 4,380 | | None | No | 7 | LED - Fixtures: Outdoor Pole/Arm-Mounted Area/Roadway Fixture | Timeclock | 65 | 4,380 | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |

Motor Inventory & Recommendations

| | | Existing Conditions | | | | | | | | | Proposed Conditions | | | | | Energy Impact & Financial Analysis | | | | | | |
|-----------------------------|-----------------------------|---------------------|------------------------|--------------|----------------------|--------------|----------------|-------------------|-----------------------|------------------------|---------------------|---------------------------------|----------------------|---------------|----------------|------------------------------------|--------------------------|----------------------------|----------------------------------|-------------------------|------------------|---------------------------------------|
| Location | Area(s)/System(s) Served | Motor Quantity | Motor Application | HP Per Motor | Full Load Efficiency | VFD Control? | 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 |
| Grounds Building - Garage 2 | Grounds Building - Garage 2 | 1 | Exhaust Fan | 0.2 | 65.0% | No | Unknown | Unknown | W | 2,745 | | No | 65.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Storage Kitchen | Princeton Day School | 1 | Exhaust Fan | 0.3 | 65.0% | No | Unknown | Unknown | W | 2,745 | | No | 65.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Gymnasium Lower | Gymnasium Lower | 1 | Heating Hot Water Pump | 0.3 | 65.0% | No | Unknown | Unknown | W | 4,000 | | No | 65.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Gymnasium Upper | Gymnasium Upper | 5 | Other | 0.8 | 70.0% | No | Unknown | Unknown | W | 200 | | No | 70.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Gymnasium Lower | Gymnasium Lower | 1 | Supply Fan | 7.5 | 91.0% | No | Unknown | Unknown | W | 3,391 | | No | 91.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Storage Kitchen | Kitchen | 1 | Supply Fan | 3.0 | 89.5% | No | Unknown | Unknown | W | 3,000 | | No | 89.5% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical ES | Elementary School | 2 | Chilled Water Pump | 3.0 | 89.5% | No | Marathon | M314 | W | 2,500 | | No | 89.5% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Storage Kitchen | Kitchen | 1 | Supply Fan | 2.0 | 86.5% | No | Unknown | Unknown | W | 3,000 | | No | 86.5% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical 1 | Princeton Day School | 2 | Chilled Water Pump | 60.0 | 95.0% | Yes | Weg | 060180T3E364T | W | 2,500 | | No | 95.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical 1 | Princeton Day School | 1 | Heating Hot Water Pump | 1.0 | 70.0% | No | Bell & Gossett | J QF 56B17D116K K | W | 4,000 | | No | 70.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical 1 | Princeton Day School | 1 | Heating Hot Water Pump | 30.0 | 91.7% | Yes | Worldwide | ODP30-36-264TS | W | 4,000 | | No | 91.7% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical 1 | Princeton Day School | 1 | Heating Hot Water Pump | 30.0 | 91.7% | Yes | Marathon | VVD 284TSTD87356A | W | 4,000 | | No | 91.7% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical 1 | Princeton Day School | 2 | Heating Hot Water Pump | 5.0 | 86.5% | No | Marathon | V184TTD87356A N | W | 2,000 | | No | 86.5% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical 1 | Princeton Day School | 1 | DHW Circulation Pump | 2.0 | 86.5% | No | Baldor | EM3157T | W | 8,760 | | No | 86.5% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical 1 | Heat Exchanger Pump | 1 | Heating Hot Water Pump | 0.8 | 70.0% | No | AO Smith | 8-117526-24 | W | 4,000 | | No | 70.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical 1 | Lower GYM | 2 | Heating Hot Water Pump | 2.0 | 80.0% | No | Baldor | JMM3157T | W | 2,000 | | No | 80.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical 1 | Lower School | 2 | Heating Hot Water Pump | 7.5 | 86.5% | No | Marathon | 213TTDBA7048A A | W | 2,000 | | No | 86.5% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical 1 | MS - Science Wing | 2 | Heating Hot Water Pump | 5.0 | 86.5% | No | Marathon | V184TTDB7356A N | W | 2,000 | | No | 86.5% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical D | Princeton Day School | 2 | Combustion Air Fan | 3.0 | 80.0% | No | Baldor | VM3158 | W | 3,450 | | No | 80.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical D | Princeton Day School | 2 | Heating Hot Water Pump | 7.5 | 88.5% | No | Baldor | M3311T | W | 2,000 | | No | 88.5% | 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 |
| Mechanical D | Princeton Day School | 2 | DHW Circulation Pump | 0.1 | 65.0% | No | Taco | NBF-18S | W | 8,760 | | No | 65.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical D | Princeton Day School | 1 | DHW Circulation Pump | 0.0 | 65.0% | No | Taco | 007-SF5 | W | 8,760 | | No | 65.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical D | Princeton Day School | 1 | Supply Fan | 0.0 | 65.0% | No | Fasco | Unknown | W | 2,745 | | No | 65.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Elevator 1 | Princeton Day School | 1 | Other | 20.0 | 72.0% | No | ThyssenKrupp | 590AF1 | W | 150 | | No | 72.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Elevator 2 | Princeton Day School | 1 | Other | 20.0 | 72.0% | No | ThyssenKrupp | 590AF1 | W | 150 | | No | 72.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical 110 | Princeton Day School | 1 | Heating Hot Water Pump | 0.8 | 70.0% | No | Bell & Gossett | M80039 | W | 4,000 | | No | 70.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical MS Boys | Princeton Day School | 1 | Heating Hot Water Pump | 0.8 | 70.0% | No | Bell & Gossett | W V M 48T17D1738 | W | 4,000 | | No | 70.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical School Store | Princeton Day School | 1 | Heating Hot Water Pump | 0.8 | 70.0% | No | Marathon | 5K46KN4085 | W | 4,000 | | No | 70.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical Maintenance | Princeton Day School | 1 | Heating Hot Water Pump | 0.3 | 70.0% | No | Armstrong | 116638-061 | W | 4,000 | | No | 70.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical Maintenance | Princeton Day School | 1 | Heating Hot Water Pump | 0.3 | 70.0% | No | Unknown | Unknown | W | 4,000 | | No | 70.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Elevator 3 | Princeton Day School | 1 | Other | 25.0 | 72.0% | No | Unknown | Unknown | W | 200 | | No | 72.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical - Gymateria | Princeton Day School | 1 | Return Fan | 5.0 | 85.5% | No | Marathon | H124 | W | 3,000 | 5 | No | 89.5% | Yes | 1 | 1.6 | 5,303 | 0 | \$800 | \$5,028 | \$900 | 5.2 |
| Mechanical - Gymateria | Princeton Day School | 1 | Supply Fan | 7.5 | 89.5% | No | Unknown | Unknown | W | 3,000 | 5 | No | 91.0% | Yes | 1 | 2.2 | 7,241 | 0 | \$1,092 | \$5,945 | \$1,000 | 4.5 |
| Mechanical Campus Center | Princeton Day School | 1 | Supply Fan | 10.0 | 91.7% | No | AO Smith | Unknown | W | 3,000 | 5 | No | 91.7% | Yes | 1 | 2.9 | 9,152 | 0 | \$1,380 | \$6,697 | \$1,100 | 4.1 |
| Mechanical Campus Center | Princeton Day School | 1 | Return Fan | 5.0 | 87.5% | No | US Motor | D5P2D | W | 3,000 | 5 | No | 89.5% | Yes | 1 | 1.5 | 4,989 | 0 | \$752 | \$5,028 | \$900 | 5.5 |
| Mechanical Campus Center | Princeton Day School | 1 | Exhaust Fan | 0.5 | 70.0% | No | Unknown | Unknown | W | 2,745 | | No | 70.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical Campus Center | Princeton Day School | 1 | Exhaust Fan | 1.0 | 70.0% | No | AO Smith | 311P776 | W | 2,745 | | No | 70.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical Campus Center | Princeton Day School | 1 | Exhaust Fan | 1.0 | 70.0% | No | Unknown | Unknown | W | 2,745 | | No | 70.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical Upper Gym | Princeton Day School | 1 | Supply Fan | 10.0 | 90.2% | No | Baldor | M2510 | W | 3,000 | 5 | No | 91.7% | Yes | 1 | 2.9 | 9,578 | 0 | \$1,445 | \$6,697 | \$1,100 | 3.9 |
| Mechanical Upper Gym | Princeton Day School | 1 | Return Fan | 3.0 | 82.5% | No | Baldor | M3394 | W | 3,000 | 5 | No | 89.5% | Yes | 1 | 1.0 | 3,481 | 0 | \$525 | \$4,555 | \$200 | 8.3 |

| | | Existing Conditions | | | | | | | | | Proposed Conditions | | | | | Energy Impact & Financial Analysis | | | | | | | |
|------------------------|--------------------------|---------------------|------------------------|--------------|----------------------|--------------|----------------|-----------------|-----------------------|------------------------|---------------------|---------------------------------|----------------------|---------------|----------------|------------------------------------|--------------------------|----------------------------|----------------------------------|-------------------------|------------------|---------------------------------------|--|
| Location | Area(s)/System(s) Served | Motor Quantity | Motor Application | HP Per Motor | Full Load Efficiency | VFD Control? | 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 | |
| Basement Mechanical Rm | Princeton Day School | 1 | Supply Fan | 15.0 | 93.0% | Yes | Westinghouse | DHP0154 | W | 3,000 | | No | 93.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 | |
| Basement Mechanical Rm | Princeton Day School | 1 | Return Fan | 5.0 | 89.5% | Yes | Baldor | EM3615T-G | W | 3,000 | | No | 89.5% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 | |
| Mechanical Upper Gym | Princeton Day School | 1 | Heating Hot Water Pump | 0.2 | 65.0% | No | Armstrong | ASTRO 230CI | W | 4,000 | | No | 65.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 | |
| Basement Mechanical Rm | Princeton Day School | 2 | Heating Hot Water Pump | 0.3 | 65.0% | No | Bell & Gossett | Unknown | W | 2,000 | | No | 65.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 | |
| Basement Mechanical Rm | Princeton Day School | 1 | Supply Fan | 2.0 | 82.5% | No | Baldor | M3609 | W | 3,000 | | No | 82.5% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 | |
| Exterior 1 | Lower Library | 1 | Supply Fan | 7.5 | 91.7% | No | Century | Unknown | W | 3,000 | | No | 91.7% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 | |
| Exterior 1 | Princeton Day School | 2 | Exhaust Fan | 0.3 | 65.0% | No | Unknown | Unknown | W | 8,760 | | No | 65.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 | |
| Exterior 1 | Princeton Day School | 7 | Exhaust Fan | 0.3 | 70.0% | No | Marathon | DQD 56L7D15523A | W | 8,760 | | No | 70.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 | |
| Exterior 1 | Princeton Day School | 1 | Supply Fan | 40.0 | 93.0% | Yes | Weg | 13ABR06 BV98444 | W | 3,000 | | No | 93.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 | |
| Exterior 1 | Princeton Day School | 1 | Return Fan | 10.0 | 89.5% | Yes | AO Smith | Unknown | W | 3,000 | | No | 89.5% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 | |
| Exterior 1 | Princeton Day School | 1 | Supply Fan | 5.0 | 87.5% | No | Westinghouse | DHP0152 | W | 3,000 | | No | 87.5% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 | |
| Exterior 1 | Science Room | 2 | Supply Fan | 0.8 | 70.0% | No | LCC | 210CA-SWSI | W | 3,000 | | No | 70.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 | |
| Exterior 1 | Princeton Day School | 1 | Supply Fan | 10.0 | 91.7% | No | Century | Unknown | W | 3,000 | 5 | No | 91.7% | Yes | 1 | 2.9 | 9,152 | 0 | \$1,380 | \$6,697 | \$1,100 | 4.1 | |
| Exterior 1 | Princeton Day School | 2 | Exhaust Fan | 1.0 | 70.0% | No | Unknown | Unknown | W | 2,745 | | No | 70.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 | |
| Mechanical G Theater | Princeton Day School | 1 | Return Fan | 5.0 | 89.5% | No | Century | 7-850119-01-OJ | W | 3,000 | 5 | No | 89.5% | Yes | 1 | 1.5 | 4,689 | 0 | \$707 | \$5,028 | \$900 | 5.8 | |
| Mechanical G Theater | Princeton Day School | 1 | Supply Fan | 10.0 | 89.5% | No | Century | Unknown | W | 3,000 | 5 | No | 91.7% | Yes | 1 | 3.0 | 9,782 | 0 | \$1,475 | \$6,697 | \$1,100 | 3.8 | |
| Mechanical G Theater | Princeton Day School | 1 | Exhaust Fan | 0.8 | 70.0% | No | Unknown | Unknown | W | 2,745 | | No | 70.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 | |
| Exterior 1 | Princeton Day School | 1 | Supply Fan | 3.0 | 87.5% | No | GE | 5K49VN4546X | W | 3,000 | | No | 87.5% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 | |
| Exterior 2 | Princeton Day School | 1 | Supply Fan | 7.5 | 88.5% | No | Century | 7-850115-01-J2 | W | 3,000 | 5 | No | 91.0% | Yes | 1 | 2.2 | 7,464 | 0 | \$1,126 | \$5,945 | \$1,000 | 4.4 | |
| Exterior 2 | Princeton Day School | 1 | Supply Fan | 7.5 | 88.5% | No | Leeson | D2137170856 | W | 3,000 | 5 | No | 91.0% | Yes | 1 | 2.2 | 7,464 | 0 | \$1,126 | \$5,945 | \$1,000 | 4.4 | |

| | | 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 |
| Exterior 2 | Princeton Day School | 2 | Process Pump | 10.0 | 89.5% | No | Unknown | Unknown | W | 50 | | No | 89.5% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical Maintenance | Princeton Day School | 1 | Heating Hot Water Pump | 0.1 | 65.0% | No | Taco | 0015E3-F2 | W | 4,000 | | No | 65.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical 6th Grade | Princeton Day School | 2 | Supply Fan | 1.5 | 86.5% | No | Century | T0105 | W | 3,000 | | No | 86.5% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical 6th Grade | Princeton Day School | 1 | Return Fan | 1.0 | 70.0% | No | Dayton | Unknown | W | 3,000 | | No | 70.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical HS Library 2 | HS Library | 1 | Supply Fan | 5.0 | 87.5% | No | AO Smith | 07-850113-01-0J | W | 3,000 | 5 | No | 89.5% | Yes | 1 | 1.5 | 4,989 | 0 | \$752 | \$5,028 | \$900 | 5.5 |
| Mechanical HS Library 2 | HS Library | 1 | Return Fan | 3.0 | 86.5% | No | AO Smith | 7-850111-01-0J | W | 3,000 | 5 | No | 89.5% | Yes | 1 | 0.9 | 3,086 | 0 | \$466 | \$4,555 | \$200 | 9.4 |
| Mechanical HS Library 1 | HS Library | 1 | Supply Fan | 5.0 | 87.5% | No | AO Smith | 07-850113-01-0J | W | 3,000 | 5 | No | 89.5% | Yes | 1 | 1.5 | 4,989 | 0 | \$752 | \$5,028 | \$900 | 5.5 |
| Mechanical HS Library 1 | HS Library | 1 | Return Fan | 3.0 | 86.5% | No | AO Smith | 7-850111-01-0J | W | 3,000 | 5 | No | 89.5% | Yes | 1 | 0.9 | 3,086 | 0 | \$466 | \$4,555 | \$200 | 9.4 |
| Mechanical Admin | Princeton Day School | 1 | Supply Fan | 3.0 | 86.5% | No | Baldor | M3211T | W | 3,000 | 5 | No | 89.5% | Yes | 1 | 0.9 | 3,086 | 0 | \$466 | \$4,555 | \$200 | 9.4 |
| Mechanical Commons | Commons | 1 | Supply Fan | 15.0 | 93.0% | Yes | Westinghouse | Unknown | W | 3,000 | | No | 93.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical Commons | Commons | 1 | Return Fan | 5.0 | 89.5% | Yes | Baldor | EM365T-G | W | 3,000 | | No | 89.5% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical Commons | Commons | 1 | Heating Hot Water Pump | 0.8 | 70.0% | No | Bell & Gossett | Unknown | W | 4,000 | | No | 70.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical Admin | Princeton Day School | 1 | Return Fan | 1.0 | 70.0% | No | Dayton | Unknown | W | 3,000 | | No | 70.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical D | Princeton Day School | 2 | Combustion Air Fan | 3.0 | 80.0% | No | Baldor | VM3158 | W | 3,450 | | No | 80.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical 219 | Princeton Day School | 1 | Supply Fan | 15.0 | 93.0% | Yes | Unknown | Unknown | W | 3,000 | | No | 93.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical 219 | Princeton Day School | 1 | Return Fan | 7.5 | 88.5% | Yes | Unknown | Unknown | W | 3,000 | | No | 88.5% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical 230 | Princeton Day School | 1 | Supply Fan | 7.5 | 89.5% | Yes | Baldor | EM3611T-G | W | 3,000 | | No | 89.5% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical 230 | Princeton Day School | 1 | Return Fan | 3.0 | 86.5% | Yes | Unknown | Unknown | W | 3,000 | | No | 86.5% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical 209 | Princeton Day School | 1 | Supply Fan | 7.5 | 89.5% | Yes | Unknown | Unknown | W | 3,000 | | No | 89.5% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical 209 | Princeton Day School | 1 | Return Fan | 3.0 | 86.5% | Yes | Unknown | Unknown | W | 3,000 | | 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 |
| Mechanical ES | Princeton Day School | 1 | Supply Fan | 15.0 | 89.5% | Yes | MagneTek | 362225 | W | 3,000 | | No | 89.5% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical ES | Princeton Day School | 1 | Return Fan | 10.0 | 91.7% | Yes | Worldwide | ODP10-18-215T-GR | W | 3,000 | | No | 91.7% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Exterior ES | Princeton Day School | 1 | Exhaust Fan | 0.3 | 65.0% | No | PennBarry | DX11B | W | 2,745 | | No | 65.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Exterior ES | Princeton Day School | 1 | Supply Fan | 5.0 | 84.0% | No | MegneTek | 6-355825 | W | 3,000 | | No | 84.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Kitchen Storage | Kitchen | 1 | Exhaust Fan | 2.0 | 84.0% | No | Westinghouse | ASGHUW001 | W | 2,745 | | No | 84.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Kitchen Storage | Kitchen | 1 | Supply Fan | 5.0 | 87.5% | Yes | Unknown | Unknown | W | 3,000 | | No | 87.5% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical Lower Gym | Princeton Day School | 1 | Heating Hot Water Pump | 0.5 | 70.0% | No | Unknown | Unknown | W | 4,000 | | No | 70.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical Lower Gym | Princeton Day School | 1 | Supply Fan | 1.0 | 70.0% | No | Unknown | Unknown | W | 3,000 | | No | 70.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Elevator 4 | Princeton Day School | 1 | Other | 2.0 | 70.0% | No | Controller | 562752 | W | 100 | | No | 70.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical 5 dust collector | Princeton Day School | 1 | Other | 5.0 | 87.5% | No | Unknown | Unknown | W | 100 | | No | 87.5% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Princeton Day School | Princeton Day School | 11 | Supply Fan | 0.3 | 65.0% | No | Unknown | Unknown | W | 3,000 | | No | 65.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Princeton Day School | Princeton Day School | 7 | Ventilation Fan | 0.2 | 65.0% | No | Unknown | Unknown | W | 2,745 | | No | 65.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Princeton Day School | Princeton Day School | 29 | Supply Fan | 0.1 | 65.0% | No | Unknown | Unknown | W | 3,000 | | No | 65.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Electrical Room 174 | Electrical Room 174 | 1 | Exhaust Fan | 0.3 | 65.0% | No | Unknown | Unknown | W | 2,745 | | No | 65.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Janitorial 5 | Princeton Day School | 1 | Supply Fan | 1.0 | 70.0% | No | Unknown | Unknown | W | 3,000 | | No | 70.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical Old Chiller Rm | Princeton Day School | 1 | Supply Fan | 5.0 | 87.5% | No | Unknown | Unknown | W | 3,000 | | No | 87.5% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical Old Chiller Rm | Princeton Day School | 1 | Return Fan | 2.0 | 84.0% | No | Unknown | Unknown | W | 3,000 | | No | 84.0% | No | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Carriage House - Attic | Carriage House | 1 | Supply Fan | 0.3 | 70.0% | No | Unknown | Unknown | W | 3,300 | | 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 |
| Carriage House - Exterior | Carriage House | 1 | Split-System | 2.50 | | 9.00 | | Arco Aire | NAC030AKA5 | B | 6 | Yes | 1 | Split-System | 2.50 | | 16.00 | | 0.7 | 1,458 | 0 | \$220 | \$4,634 | \$263 | 19.9 |
| Carriage House - Attic | Carriage House | 1 | Forced Air Furnace | | 60.00 | | 0.78 AFUE | Addison | GHC075A-3EI | B | 7 | Yes | 1 | Forced Air Furnace | | 60.00 | | 0.97 AFUE | 0.0 | 0 | 22 | \$188 | \$2,639 | \$500 | 11.4 |
| Grounds Building - Garage | Grounds Building | 1 | Forced Air Furnace | | 87.00 | | 0.827 AFUE | American Standard | Freedom 80 | W | | No | | | | | | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Grounds Building - Garage | Grounds Building | 1 | Window AC | 1.50 | | 9.70 | | Thermal Zone | WAC418230R | B | 6 | Yes | 1 | Window AC | 1.50 | | 12.00 | | 0.2 | 356 | 0 | \$54 | \$1,094 | \$0 | 20.4 |
| Grounds Building - Office | Grounds Building - Office | 1 | Window AC | 1.00 | | 10.00 | | Koldfront | Unknown | W | | No | | | | | | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Exterior 1 | Lower Library | 1 | Package Unit | 30.00 | 283.00 | 8.80 | 0.81 AFUE | Trane | YCH360A4LU2B1CE1ABC000GH0K000PR | B | 6 | Yes | 1 | Package Unit | 30.00 | 283.00 | 12.50 | 0.82 Et | 6.1 | 12,109 | 3 | \$1,849 | \$45,412 | \$2,550 | 23.2 |
| Exterior 1 | Library Room 303 | 1 | Split-System | 25.00 | | 11.10 | | Trane | RAUCC254BY03A0DF00000 | B | | No | | | | | | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Exterior 1 | Library Room 304 | 1 | Split-System | 20.00 | | 10.90 | | Trane | RAUCC204BY03A0DF00000 | B | 6 | Yes | 1 | Split-System | 20.00 | | 12.50 | | 1.4 | 2,818 | 0 | \$425 | \$30,490 | \$1,700 | 67.7 |
| Exterior 1 | RTU-2 | 1 | Package Unit | 75.00 | 697.00 | 8.30 | 0.8 AFUE | Trane | SFHFC754J766A9AD8001AOC00G00000RT078000 | B | 6 | Yes | 1 | Package Unit | 75.00 | 697.00 | 12.00 | 0.82 Et | 16.7 | 33,434 | 13 | \$5,155 | \$124,461 | \$5,775 | 23.0 |
| Exterior 1 | Princeton Day School | 1 | Ductless Mini-Split AC | 1.00 | | 12.00 | | Mitsubishi | PUY-A12NKA7 | W | | No | | | | | | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Exterior 1 | Princeton Day School | 1 | Ductless Mini-Split AC | 2.62 | | 15.90 | | Sanyo | C3672R | B | | No | | | | | | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Exterior 1 | Princeton Day School | 1 | Ductless Mini-Split AC | 1.96 | | 12.00 | | Samsung | US24A2RC | W | | No | | | | | | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Exterior 1 | Princeton Day School | 1 | Split-System | 10.00 | | 9.00 | | York | H4CE240A46A | W | | No | | | | | | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Exterior 1 | Princeton Day School | 1 | Split-System | 3.00 | | 10.00 | | ICP | CAC036LCA | B | 6 | Yes | 1 | Split-System | 3.00 | | 16.00 | | 0.7 | 1,350 | 0 | \$204 | \$5,517 | \$315 | 25.5 |
| Exterior 1 | Princeton Day School | 2 | Split-System | 4.00 | | 10.00 | | ICP | CAC048LCA | B | 6 | Yes | 2 | Split-System | 4.00 | | 16.00 | | 1.8 | 3,600 | 0 | \$543 | \$14,830 | \$840 | 25.8 |
| Exterior 1 | Princeton Day School | 2 | Split-System | 2.00 | | 13.00 | | Trane | 2TTB3024A1000AA | W | | No | | | | | | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Exterior 1 | Princeton Day School | 1 | Split-System | 1.50 | | 13.00 | | Trane | 2TTB3018A1000AA | W | | No | | | | | | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Exterior 1 | RTU-4 | 1 | Package Unit | 35.00 | 283.00 | 8.30 | 0.81 AFUE | Trane | YCD420A4LU2B6DE4ABC000GH0K0000R | B | 6 | Yes | 1 | Package Unit | 35.00 | 283.00 | 12.50 | 0.82 Et | 8.5 | 17,002 | 3 | \$2,587 | \$54,131 | \$2,975 | 19.8 |
| Exterior 1 | Princeton Day School | 1 | Split-System | 2.50 | | 16.00 | | Trane | 4TTR6030J1000AA | W | | No | | | | | | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Exterior 1 | Princeton Day School | 1 | Ductless Mini-Split HP | 1.03 | | 13.50 | | Fujitsu | AOU12RQ | 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 |
| Exterior 1 | RTU-3 Set Shop | 1 | Package Unit | 8.50 | 96.00 | 11.20 | 0.8 AFUE | Trane | YSC102A4RLA2KH100C1020607 | W | | No | | | | | | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Exterior 2 | Campus Center | 1 | Split-System | 30.00 | | 11.30 | | Trane | RAUCC304EU13ABDF00010 | B | | No | | | | | | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Exterior 2 | RTU-6 | 1 | Package Unit | 30.00 | 283.00 | 8.80 | 0.81 AFUE | Trane | YCH360A4LU2B1BE1ABC000GH0K000PR | B | 6 | Yes | 1 | Package Unit | 30.00 | 283.00 | 12.50 | 0.82 Et | 6.1 | 12,109 | 3 | \$1,849 | \$45,412 | \$2,550 | 23.2 |
| Exterior 2 | RTU-5 Locker Room | 1 | Package Unit | 27.50 | 283.00 | 8.80 | 0.81 AFUE | Trane | YCH330A4LU0B1AA1ABC000H0K000PR | B | 6 | Yes | 1 | Package Unit | 27.50 | 283.00 | 12.50 | 0.82 Et | 5.6 | 11,100 | 3 | \$1,697 | \$40,733 | \$2,338 | 22.6 |
| Exterior 2 | Princeton Day School | 3 | Ductless Mini-Split HP | 3.00 | 36.00 | 9.40 | 9.3 HSPF | Mitsubishi | MXZ-4B36NA | W | | No | | | | | | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Exterior 2 | Princeton Day School | 1 | Split-System | 9.83 | | 10.30 | | ICP | CAE120LAA----- | W | | No | | | | | | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Exterior 2 | Princeton Day School | 2 | Split-System | 2.50 | | 10.00 | | Heil | E092303522 | W | | No | | | | | | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Exterior 2 | Princeton Day School | 1 | Split-System | 2.00 | | 10.00 | | ICP | R2A324GKN300 | W | | No | | | | | | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Exterior 2 | Princeton Day School | 3 | Ductless Mini-Split HP | 2.50 | | 16.00 | | Mitsubishi | MUY-D30NA-1 | W | | No | | | | | | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical HS Library 2 | HS Library | 1 | Forced Air Furnace | 30.00 | 360.00 | | 0.8 AFUE | Trane | Unknown | W | | No | | | | | | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical HS Library 1 | HS Library | 1 | Forced Air Furnace | 30.00 | 360.00 | | 0.8 AFUE | Trane | Unknown | W | | No | | | | | | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Exterior ES | Princeton Day School | 1 | Ductless Mini-Split AC | 1.00 | | 12.50 | | Trane Mitsubishi | TRUYA0121KA70NA | W | | No | | | | | | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Exterior ES | Princeton Day School | 1 | Split-System | 2.00 | | 13.00 | | Sure Comfort | RCU13022A24J757 | W | | No | | | | | | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Exterior ES | Princeton Day School | 1 | Ductless Mini-Split HP | 2.00 | 27.60 | 12.50 | 10 HSPF | Mitsubishi | MUZ-GL24NA | W | | No | | | | | | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Princeton Day School | Princeton Day School | 2 | Window AC | 0.50 | | 9.00 | | Unknown | Unknown | W | | No | | | | | | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Corridor | Corridor | 2 | Electric Resistance Heat | | 13.65 | | 1 COP | Unknown | Unknown | W | | No | | | | | | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Electrical Room MS Art | Electrical Room MS Art | 1 | Electric Resistance Heat | | 17.06 | | 1 COP | Unknown | Unknown | W | | No | | | | | | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |

Electric Chiller Inventory & Recommendations

| | | Existing Conditions | | | | | | Proposed Conditions | | | | | | | | Energy Impact & Financial Analysis | | | | | | |
|----------|--------------------------|---------------------|---------------------------|----------------------------------|--------------|--------------------|-----------------------|---------------------|-----------------------------------|------------------|-------------|-------------------------|-------------------------|-------------------------------|--------------------------|------------------------------------|--------------------------|----------------------------|----------------------------------|-------------------------|------------------|---------------------------------------|
| Location | Area(s)/System(s) Served | Chiller Quantity | System Type | Cooling Capacity per Unit (Tons) | Manufacturer | Model | Remaining Useful Life | ECM # | Install High Efficiency Chillers? | Chiller Quantity | System Type | Constant/Variable Speed | Cooling Capacity (Tons) | Full Load Efficiency (kW/Ton) | IPLV Efficiency (kW/Ton) | Total Peak kW Savings | Total Annual kWh Savings | Total Annual MMBtu Savings | Total Annual Energy Cost Savings | Estimated M&L Cost (\$) | Total Incentives | Simple Payback w/ Incentives in Years |
| Exterior | Princeton Day School | 1 | Air-Cooled Scroll Chiller | 450.00 | McQuay | AWS450BTHEVNN-ER10 | W | | No | | | | | | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |



Space Heating Boiler Inventory & Recommendations

| | | Existing Conditions | | | | | | Proposed Conditions | | | | | | | Energy Impact & Financial Analysis | | | | | | |
|--------------|--------------------------|---------------------|---------------------------------|--------------------------------|--------------|-------------------------|-----------------------|---------------------|---------------------------------|-----------------|-------------|--------------------------------|--------------------|--------------------------|------------------------------------|--------------------------|----------------------------|----------------------------------|-------------------------|------------------|---------------------------------------|
| Location | Area(s)/System(s) Served | System Quantity | System Type | Output Capacity per Unit (MBh) | Manufacturer | Model | Remaining Useful Life | ECM # | Install High Efficiency System? | System Quantity | System Type | Output Capacity per Unit (MBh) | Heating Efficiency | Heating Efficiency Units | Total Peak kW Savings | Total Annual kWh Savings | Total Annual MMBtu Savings | Total Annual Energy Cost Savings | Estimated M&L Cost (\$) | Total Incentives | Simple Payback w/ Incentives in Years |
| Mechanical 1 | Princeton Day School | 3 | Condensing Hot Water Boiler | 2,532 | Aerco | G-10-1310 | W | | No | | | | | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical D | Princeton Day School | 2 | Non-Condensing Hot Water Boiler | 3,270 | Weil-McLain | Model 88 Series 1, 1388 | 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 |
| Storage Kitchen | Princeton Day School | 8 | 12 | 1.50 | 0.0 | 0 | 8 | \$68 | \$197 | \$24 | 2.5 |
| Mechanical 110 | Princeton Day School | 8 | 10 | 1.50 | 0.0 | 0 | 7 | \$57 | \$164 | \$20 | 2.5 |
| Workshop Facility | Princeton Day School | 8 | 6 | 1.25 | 0.0 | 0 | 3 | \$29 | \$80 | \$12 | 2.3 |
| Basement Mechanical | Princeton Day School | 8 | 13 | 2.00 | 0.0 | 0 | 11 | \$90 | \$213 | \$26 | 2.1 |
| Basement Mechanical | Princeton Day School | 8 | 6 | 2.50 | 0.0 | 0 | 6 | \$50 | \$98 | \$12 | 1.7 |
| Basement Mechanical | Princeton Day School | 8 | 5 | 1.50 | 0.0 | 0 | 3 | \$28 | \$82 | \$10 | 2.5 |
| Mechanical 1 | Princeton Day School | 8 | 6 | 2.50 | 0.0 | 0 | 6 | \$50 | \$98 | \$12 | 1.7 |
| Mechanical ES | Princeton Day School | 8 | 5 | 2.00 | 0.0 | 0 | 4 | \$35 | \$82 | \$10 | 2.1 |
| Mechanical School Store | Princeton Day School | 8 | 15 | 1.50 | 0.0 | 0 | 10 | \$85 | \$246 | \$30 | 2.5 |
| Mechanical School Store | Princeton Day School | 8 | 5 | 2.00 | 0.0 | 0 | 4 | \$35 | \$82 | \$10 | 2.1 |

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 |
| Grounds Building | Grounds Building | 1 | Storage Tank Water Heater (≤ 50 Gal) | American Standard | CE-20-AS | W | | No | | | | | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical 6th grade | Princeton Day School | 1 | Storage Tank Water Heater (> 50 Gal) | AO Smith | BTH 120 100 | W | | No | | | | | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Classroom Green House | Princeton Day School | 1 | Storage Tank Water Heater (≤ 50 Gal) | Rheem | PROE6 1 RH POU | W | | No | | | | | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical D | Princeton Day School | 1 | Storage Tank Water Heater (> 50 Gal) | Rheem | ELD120-3 | W | | No | | | | | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Mechanical 1 | Princeton Day School | 1 | Indirect System | Aerco | G-10-1310 | W | | No | | | | | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Kitchen 1 | Princeton Day School | 1 | Booster Water Heater | Hatco | C-30 | W | | No | | | | | | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |

Low-Flow Device Recommendations

| | | Recommendation 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 |
| Princeton Day School | 9 | 14 | Faucet Aerator (Kitchen) | 2.20 | 1.50 | 0.0 | 0 | 3 | \$23 | \$100 | \$28 | 3.1 |
| Princeton Day School | 9 | 22 | Faucet Aerator (Lavatory) | 2.50 | 0.50 | 0.0 | 0 | 12 | \$104 | \$158 | \$79 | 0.8 |
| Princeton Day School | 9 | 7 | Showerhead | 2.20 | 1.50 | 0.0 | 0 | 4 | \$32 | \$625 | \$105 | 16.0 |

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 |
| Storage Kitchen | 1 | Cooler (35F to 55F) | Russell | AE26-92B | 11 | No | No | Yes | 0.0 | 614 | 0 | \$93 | \$1,674 | \$75 | 17.3 |
| Storage Kitchen | 1 | Medium Temp Freezer (0F to 30F) | Russell | AA28-106 B | 10, 11 | Yes | No | Yes | 0.1 | 1,052 | 0 | \$159 | \$2,281 | \$155 | 13.4 |

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 |
| Kitchen 1 | 2 | Refrigerator Chest | Unknown | Unknown | No | | No | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Multipurpose Gymateria | 1 | Refrigerator Chest | Unknown | Unknown | No | | No | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Kitchen 1 | 1 | Stand-Up Refrigerator, Solid Door (16 - 30 cu. ft.) | Unknown | Unknown | No | | No | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Kitchen 1 | 2 | Stand-Up Refrigerator, Solid Door (31 - 50 cu. ft.) | Unknown | Unknown | Yes | | No | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Kitchen 1 | 1 | Stand-Up Refrigerator, Solid Door (31 - 50 cu. ft.) | Unknown | Unknown | No | | No | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |

Commercial Ice Maker Inventory & Recommendations

| Existing Conditions | | | | | | Proposed Conditions | | Energy Impact & Financial Analysis | | | | | | |
|------------------------------------|----------|--|--------------|----------|------------------------|---------------------|--------------------------------|------------------------------------|--------------------------|----------------------------|----------------------------------|-------------------------|------------------|---------------------------------------|
| Location | Quantity | Ice Maker Type | Manufacturer | Model | ENERGY STAR Qualified? | ECM # | Install ENERGY STAR Equipment? | Total Peak kW Savings | Total Annual kWh Savings | Total Annual MMBtu Savings | Total Annual Energy Cost Savings | Estimated M&L Cost (\$) | Total Incentives | Simple Payback w/ Incentives in Years |
| Kitchen 1 | 2 | Ice Making Head (<450 lbs/day), Continuous | Unknown | Unknown | Yes | | No | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Office - Enclosed Athletic Trainer | 1 | Self-Contained Unit (<175 lbs/day), Continuous | Hoshizaki | F-450mah | Yes | | No | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Dining Area Serving Area | 1 | Self-Contained Unit (<175 lbs/day), Batch | Unknown | Unknown | No | | No | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |

Novelty Cooler Inventory & Recommendations

| Existing Conditions | | | | | Proposed Conditions | | Energy Impact & Financial Analysis | | | | | | |
|---------------------|----------|--------------------|--------------|---------|---------------------|------------------------------------|------------------------------------|--------------------------|----------------------------|----------------------------------|-------------------------|------------------|---------------------------------------|
| Location | Quantity | Cooler Description | Manufacturer | Model | ECM # | Install Automatic Shutoff 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 |
| Dining Area 1 Snack | 2 | Novelty Cooler | Unknown | Unknown | | No | 0.00 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Kitchen 1 | 1 | Novelty Cooler | Unknown | Unknown | | No | 0.00 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |



Cooking Equipment Inventory & Recommendations

| Existing Conditions | | | | | | Proposed Conditions | | Energy Impact & Financial Analysis | | | | | | |
|---------------------|----------|--|--------------|---------|-----------------------------|---------------------|------------------------------------|------------------------------------|--------------------------|----------------------------|----------------------------------|-------------------------|------------------|---------------------------------------|
| Location | Quantity | Equipment Type | 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 | 1 | Electric Griddle (4 Feet Width) | Varied | Varied | No | | No | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Kitchen 1 | 3 | Insulated Food Holding Cabinet (Full Size) | Varied | Varied | No | | No | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Kitchen 1 | 1 | Gas Conveyor Oven (<25") | Unknown | Unknown | No | | No | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Kitchen 1 | 1 | Gas Rack Oven (Double) | Vulkan | Unknown | Yes | | No | 0.0 | 0 | 0 | \$0 | \$0 | \$0 | 0.0 |
| Kitchen 1 | 1 | Gas Steamer | Unknown | Unknown | No | | 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 |
| Kitchen 1 | 1 | Multi-Tank Conveyor (High Temp) | Hobart | CLP966EN | 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 |
| Maintenance Garage | 3 | Cart Charging Station | 1,200 | No | Accusense | 1-36018-04 |
| Carriage House | 2 | Desktop | 270 | No | Apple | Unknown |
| Carriage House | 1 | Microwave | 800 | No | Unknown | Unknown |
| Carriage House | 1 | Smartboard | 400 | No | Smartboard | SPNL-6075 |
| Carriage House | 2 | Printer | 150 | No | Unknown | Unknown |
| Carriage House | 1 | Toaster Oven | 1,500 | No | Unknown | Unknown |
| Carriage House | 1 | Mini Refrigerator | 126 | No | Unknown | Unknown |
| Grounds Building | 1 | Desktop | 270 | No | Unknown | Unknown |
| Grounds Building | 4 | Fan | 500 | No | Unknown | Unknown |
| Grounds Building | 1 | Microwave | 800 | No | Unknown | Unknown |
| Grounds Building | 1 | Printer | 150 | No | Unknown | Unknown |
| Grounds Building | 1 | Mini Refrigerator | 126 | No | Unknown | Unknown |
| Grounds Building | 1 | Misc. Equipment | 1,500 | No | Unknown | Unknown |
| Grounds Building | 1 | Welder | 1,500 | No | Miller | Unknown |
| Grounds Building | 1 | Lift | 1,500 | No | GHS | FA7147 |
| Grounds Building | 2 | Cart Charging Station | 800 | No | Accusense | 1-36018-04 |
| Grounds Building | 3 | Scoreboard | 100 | No | Unknown | Unknown |
| Princeton Day School | 1 | Air Purifier | 1,000 | No | Delta | Unknown |
| Princeton Day School | 2 | Trash Compactor | 1,500 | No | Marathon | VTP-6 |
| Princeton Day School | 23 | Coffee Machine | 800 | No | Varied | Varied |
| Princeton Day School | 2 | Dehumidifier | 625 | No | GE | Unknown |
| Princeton Day School | 103 | Desktop | 270 | Yes | Varied | Varied |
| Princeton Day School | 3 | Dishwasher | 1,000 | No | GE | GLD5708V00W W |
| Princeton Day School | 13 | Electric Space Heaters | 1,500 | No | Varied | Varied |
| Princeton Day School | 36 | Ceiling Fan | 200 | No | Unknown | Unknown |
| Princeton Day School | 22 | Fan | 200 | No | Varied | Varied |
| Classroom 144 | 1 | Kiln | 3,600 | No | Skutt | KM-714 |
| Classroom 144 | 1 | Kiln | 11,520 | No | Skutt | KM-1027 |
| Princeton Day School | 20 | Microwave | 1,000 | No | Varied | Varied |
| Princeton Day School | 8 | Paper Shredder | 200 | No | Varied | Varied |
| Princeton Day School | 73 | Printer | 150 | No | Varied | Varied |
| Princeton Day School | 15 | Copier | 1,500 | No | Varied | Varied |
| Princeton Day School | 46 | Projector | 150 | No | Varied | Varied |
| Princeton Day School | 39 | Mini Refrigerator | 126 | No | Varied | Varied |
| Princeton Day School | 9 | Refrigerator | 383 | No | Varied | Varied |

| Existing Conditions | | | | | | |
|----------------------|----------|---------------------------|-----------------|-------------------------|--------------|----------|
| Location | Quantity | Equipment Description | Energy Rate (W) | ENERGY STAR Qualified ? | Manufacturer | Model |
| Princeton Day School | 133 | Smart Board | 200 | No | Varied | Varied |
| Princeton Day School | 16 | Television | 125 | No | Varied | Varied |
| Dining Area | 1 | Toaster Oven | 1,000 | No | Unknown | Unknown |
| Princeton Day School | 6 | Water Cooler | 120 | No | Varied | Varied |
| Princeton Day School | 10 | Water Fountain | 200 | No | Elkay | Unknown |
| Princeton Day School | 1,111 | Laptop | 75 | No | Varied | Varied |
| Classroom 144 | 1 | Misc. Equipment | 2,500 | No | Varied | Varied |
| Library STEM | 1 | Misc. Equipment | 2,500 | No | Varied | Varied |
| Library Computer Lab | 1 | Misc. Equipment | 2,500 | No | Varied | Varied |
| Exterior | 2 | Cart Charging Station | 1,200 | No | Unknown | Unknown |
| Kitchen | 1 | Misc. Equipment | 3,500 | No | Unknown | Unknown |
| Athletic Trainer | 1 | Heating Equipment | 1,000 | No | Chattanooga | 2402 |
| Fitness Center | 1 | Misc. Equipment | 3,500 | No | Varied | Varied |
| Woodshop | 1 | Equipment | 10,000 | No | Format | Exact 63 |
| Woodshop | 1 | Misc. Equipment | 5,000 | No | Varied | Varied |
| Woodshop | 1 | Welder | 2,500 | No | Unknown | Unknown |
| Princeton Day School | 1 | 3-D printer, Laser Cutter | 15,000 | No | Varied | Varied |
| Princeton Day School | 1 | Misc. Computer Equipment | 6,000 | No | Varied | Varied |

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 |
| Exterior | 1 | Non-Refrigerated | 12 | Yes | 0.0 | 343 | 0 | \$52 | \$230 | \$0 | 4.5 |
| Exterior | 1 | Refrigerated | 12 | Yes | 0.2 | 1,612 | 0 | \$243 | \$230 | \$50 | 0.7 |

Miscellaneous Fuel Inventory

| Existing Conditions | | | | | | |
|----------------------------|----------|-----------------------|-------------------------------|-------------------------|--------------|-----------------|
| Location | Quantity | Equipment Description | Input Capacity per Unit (MBh) | ENERGY STAR Qualified ? | Manufacturer | Model |
| Storage Athletic Equipment | 3 | Clothes Dryer | 22.5 | Yes | Speed Queen | ATGE9AGP113TW01 |
| Classroom 144 | 1 | Kiln | 205.0 | No | Blaauw | Gaskiln G-0 8-1 |



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) | Mechanical D | 2,500 | Electric | 9.0 | 119 | Heat Pump Water Heater | 2.5 | 119 | \$4,544.73 | 0.00 | 3,077 | 0 | \$464 | \$4,545 | \$0 | \$0 | \$0 | \$4,545 | 9.79 | 9.79 |
| | | | 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.

While this building looks as like it is performing below the national average, it should be noted that Portfolio Manager does not make a distinction between public and private schools. The Princeton Day School Campus operations and buildings are different than most public schools.



ENERGY STAR® Statement of Energy Performance

20

ENERGY STAR®
Score¹

**Princeton Day School
Main Building, Carriage, Grounds & Maintenance**

Primary Property Type: K-12 School
Gross Floor Area (ft²): 262,194
Built: 1964

For Year Ending: February 28, 2022
Date Generated: February 16, 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 Princeton Day School - Main Building, Carriage, Grounds & Maintenance 650 Great Road Princeton, New Jersey 08540 | Property Owner Princeton Day School 650 Great Road Princeton, NJ 08640 (609) 924-6700 | Primary Contact Robert Clemens 650 Great Road Princeton, NJ 08640 (609) 924-6700 Ext. 1401 rclemens@pds.org |
| Property ID: 22816924 | | |

| Energy Consumption and Energy Use Intensity (EUI) | | | |
|---|---|---|-------|
| Site EUI | Annual Energy by Fuel | National Median Comparison | |
| 100.7 kBtu/ft² | Electric - Solar (kBtu) 25,472 (0%) | National Median Site EUI (kBtu/ft²) | 74 |
| | Electric - Grid (kBtu) 11,318,100 (43%) | National Median Source EUI (kBtu/ft²) | 133.3 |
| | Natural Gas (kBtu) 15,056,804 (57%) | % Diff from National Median Source EUI | 36% |
| Source EUI | | Annual Emissions | |
| 181.3 kBtu/ft² | | Total (Location-Based) GHG Emissions (Metric Tons CO2e/year) | 1,786 |

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 | <i>British thermal unit</i> : 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 | <i>Combined heat and power</i> . Also referred to as cogeneration. |
| COP | <i>Coefficient of performance</i> : 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 | <i>Demand control ventilation</i> : a control strategy to limit the amount of outside air introduced to the conditioned space based on actual occupancy need. |
| US DOE | <i>United States Department of Energy</i> |
| EC Motor | <i>Electronically commutated motor</i> |
| ECM | <i>Energy conservation measure</i> |
| EER | <i>Energy efficiency ratio</i> : a measure of efficiency in terms of cooling energy provided divided by electric input. |
| EUI | <i>Energy Use Intensity</i> : 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 | <i>United States Environmental Protection Agency</i> |
| Generation | The process of generating electric power from sources of primary energy (e.g., natural gas, the sun, oil). |
| GHG | <i>Greenhouse gas</i> 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 | <i>Gallons per flush</i> |

| | |
|------------------|---|
| gpm | <i>Gallon per minute</i> |
| HID | <i>High intensity discharge</i> : high-output lighting lamps such as high-pressure sodium, metal halide, and mercury vapor. |
| hp | <i>Horsepower</i> |
| HPS | <i>High-pressure sodium</i> : a type of HID lamp. |
| HSPF | <i>Heating seasonal performance factor</i> : a measure of efficiency typically applied to heat pumps. Heating energy provided divided by seasonal energy input. |
| HVAC | <i>Heating, ventilating, and air conditioning</i> |
| IHP 2014 | US DOE Integral Horsepower rule. The current ruling regarding required electric motor efficiency. |
| IPLV | <i>Integrated part load value</i> : a measure of the part load efficiency usually applied to chillers. |
| kBtu | One thousand British thermal units |
| kW | <i>Kilowatt</i> : equal to 1,000 Watts. |
| kWh | <i>Kilowatt-hour</i> : 1,000 Watts of power expended over one hour. |
| LED | <i>Light emitting diode</i> : a high-efficiency source of light with a long lamp life. |
| LGEA | <i>Local Government Energy Audit</i> |
| 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 | <i>Metal halide</i> : a type of HID lamp. |
| MBh | <i>Thousand Btu per hour</i> |
| MBtu | <i>One thousand British thermal units</i> |
| MMBtu | <i>One million British thermal units</i> |
| MV | <i>Mercury Vapor</i> : a type of HID lamp. |
| NJBPU | <i>New Jersey Board of Public Utilities</i> |
| NJCEP | <i>New Jersey's Clean Energy Program</i> : 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 | <i>Photovoltaic</i> : refers to an electronic device capable of converting incident light directly into electricity (direct current). |

| | |
|-----------------------------|---|
| SEER | <i>Seasonal energy efficiency ratio</i> : a measure of efficiency in terms of annual cooling energy provided divided by total electric input. |
| SEP | <i>Statement of energy performance</i> : 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) | <i>Solar renewable energy credit</i> : 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 | <i>Variable air volume</i> |
| VFD | <i>Variable frequency drive</i> : 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. |
| | |