



Local Government Energy Audit Report

Academic/Founders/Gym/Theater

July 6, 2023

Prepared for:

Passaic County Community College
144 Broadway
Paterson, New Jersey 07504

Prepared by:

TRC
317 George Street
New Brunswick, New Jersey 08901

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.

Copyright ©2023 TRC. All rights reserved.

Reproduction or distribution of the whole, or any part of the contents of this document without written permission of TRC is prohibited. Neither TRC nor any of its employees makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any data, information, method, product or process disclosed in this document, or represents that its use will not infringe upon any privately-owned rights, including but not limited to, patents, trademarks or copyrights.

Table of Contents

1	Executive Summary.....	1
1.1	Planning Your Project	4
	Pick Your Installation Approach	4
	Options from Your Utility Company.....	4
	<i>Prescriptive and Custom Rebates</i>	4
	<i>Direct Install</i>	4
	<i>Engineered Solutions</i>	4
	Options from New Jersey's Clean Energy Program	5
2	Existing Conditions.....	6
2.1	Site Overview.....	6
2.2	Building Occupancy	6
2.3	Building Envelope	6
2.4	Lighting Systems.....	8
2.5	Air Handling Systems.....	9
	Unitary Electric HVAC Equipment	9
	Unitary Heating Equipment.....	9
	Infrared Heating	10
	Packaged Units	10
	Air Handling Units (AHUs)	11
2.6	Heating Hot Water Systems	11
2.7	Chilled Water Systems.....	11
2.8	Domestic Hot Water	12
2.9	Food Service Equipment.....	12
2.10	Refrigeration.....	13
2.11	Plug Load and Vending Machines	13
2.12	Water-Using Systems	14
2.13	On-Site Generation.....	14
3	Energy Use and Costs	15
3.1	Electricity	17
3.2	Natural Gas.....	18
3.3	Benchmarking.....	19
	Tracking Your Energy Performance	20
4	Energy Conservation Measures	21
4.1	Lighting	24
	ECM 1: Install LED Fixtures	24
	ECM 2: Retrofit Fluorescent Fixtures with LED Lamps and Drivers	24
	ECM 3: Retrofit Fixtures with LED Lamps	25
4.2	Lighting Controls.....	25
	ECM 4: Install Occupancy Sensor Lighting Controls	25
	ECM 5: Install High/Low Lighting Controls	26
4.3	Variable Frequency Drives (VFD).....	26

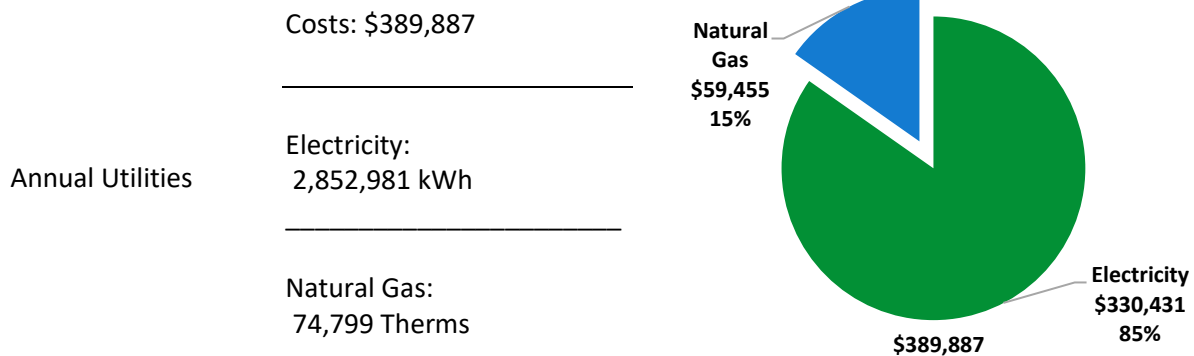
ECM 6: Install VFDs on Constant Volume (CV) Fans	26
ECM 7: Install VFDs on Heating Water Pumps	27
4.4 Unitary HVAC	27
ECM 8: Install High Efficiency Air Conditioning Units	27
4.5 Gas-Fired Heating	28
ECM 9: Install High Efficiency Unit Heaters	28
4.6 HVAC Improvements	28
ECM 10: Install Pipe Insulation	28
4.7 Domestic Water Heating	29
ECM 11: Install Low-Flow DHW Devices	29
4.8 Food Service & Refrigeration Measures	29
ECM 12: Refrigerator/Freezer Case Electrically Commutated Motors	29
ECM 13: Vending Machine Control	30
4.9 Measures for Future Consideration	30
Upgrade/Replace Building Automation System	30
Install High Efficiency Energy Recovery Units (ERUs)	31
Replacing vs. Repairing a Built-up Air Handler	31
5 Energy Efficient Best Practices	34
Energy Tracking with ENERGY STAR Portfolio Manager	34
Lighting Maintenance	34
Lighting Controls	34
Destratification Fans	35
Economizer Maintenance	35
Chiller Maintenance	35
AC System Evaporator/Condenser Coil Cleaning	35
HVAC Filter Cleaning and Replacement	35
Ductwork Maintenance	35
Boiler Maintenance	36
Furnace Maintenance	36
Optimize HVAC Equipment Schedules	36
Water Heater Maintenance	37
Refrigeration Equipment Maintenance	37
Water Conservation	37
Procurement Strategies	38
6 On-site Generation	39
6.1 Solar Photovoltaic	40
6.2 Combined Heat and Power	42
7 Electric Vehicles (EV)	43
7.1 Electric Vehicle Charging	43
8 Project Funding and Incentives	45
8.1 Utility Energy Efficiency Programs	46
Prescriptive and Custom	46
Direct Install	46

Engineered Solutions	47
8.2 New Jersey's Clean Energy Programs.....	48
Large Energy Users	48
Combined Heat and Power	49
Successor Solar Incentive Program (SuSI)	50
Energy Savings Improvement Program	51
9 Project Development	52
10 Energy Purchasing and Procurement Strategies	53
10.1 Retail Electric Supply Options.....	53
10.2 Retail Natural Gas Supply Options	53
Appendix A: Equipment Inventory & Recommendations	A-1
Appendix B: ENERGY STAR Statement of Energy Performance.....	B-1
Appendix C: Glossary	C-1

1 EXECUTIVE SUMMARY

The New Jersey Board of Public Utilities (NJBPB) has sponsored this Local Government Energy Audit (LGEA) report for Academic/Founders/Gym/Theater. 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

N/A
(1-100 scale)

A standard energy use benchmark is not available for this facility type. This report contains suggestions about how to improve building performance and reduce energy costs.

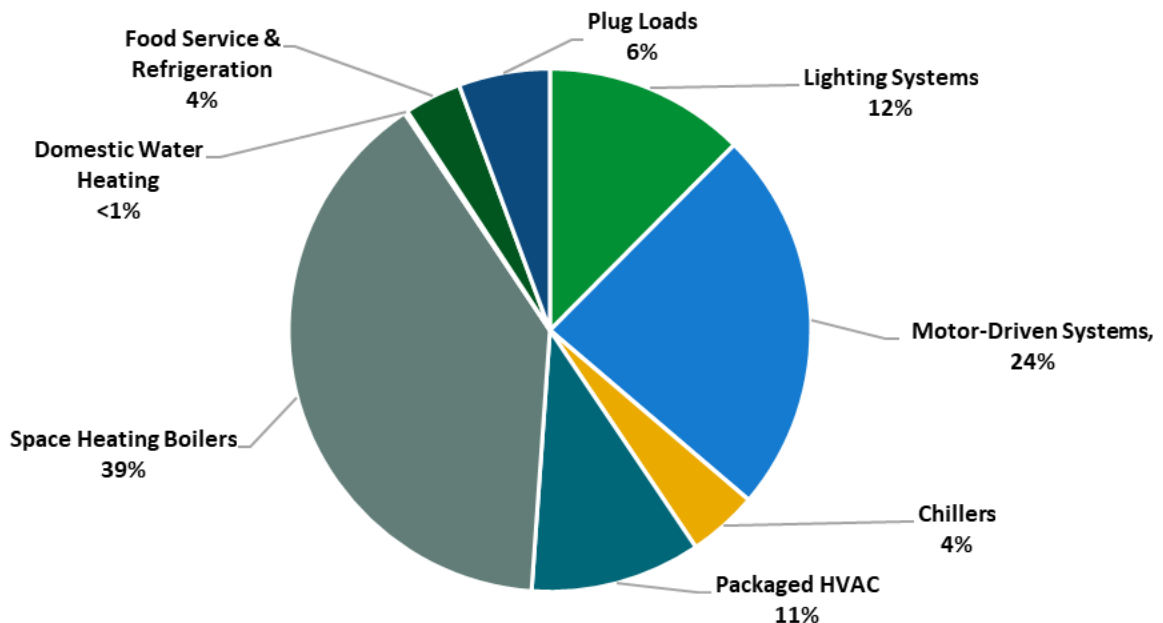


Figure 1 - Energy Use by System

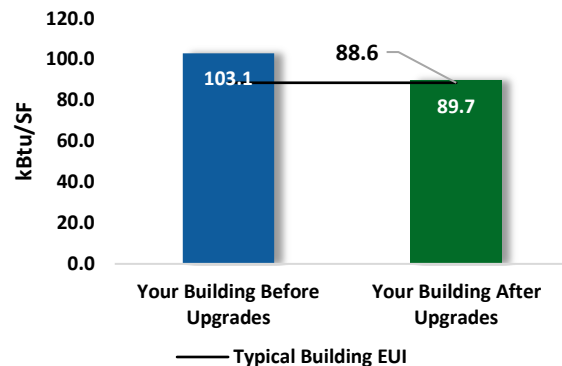
POTENTIAL IMPROVEMENTS



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.

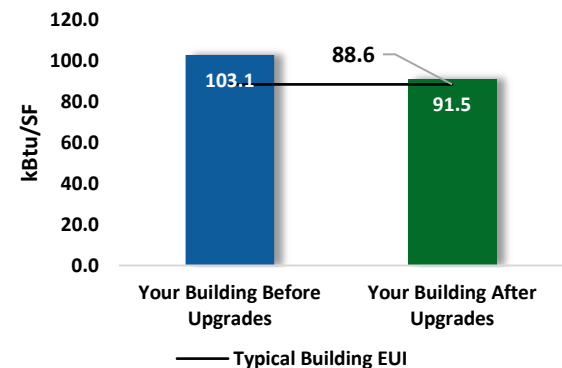
Scenario 1: Full Package (All Evaluated Measures)

Installation Cost	\$600,140
Potential Rebates & Incentives ¹	\$73,119
Annual Cost Savings	\$77,577
Annual Energy Savings	Electricity: 673,639 kWh Natural Gas: -558 Therms
Greenhouse Gas Emission Savings	336 Tons
Simple Payback	6.8 Years
Site Energy Savings (All Utilities)	13%



Scenario 2: Cost Effective Package²

Installation Cost	\$299,487
Potential Rebates & Incentives	\$68,080
Annual Cost Savings	\$67,488
Annual Energy Savings	Electricity: 587,500 kWh Natural Gas: -700 Therms
Greenhouse Gas Emission Savings	292 Tons
Simple Payback	3.4 Years
Site Energy Savings (all utilities)	11%



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			350,959	61.9	-68	\$40,109	\$114,115	\$26,719	\$87,396	2.2	345,469
ECM 1	Install LED Fixtures	Yes	22,645	0.0	0	\$2,623	\$11,474	\$1,800	\$9,674	3.7	22,803
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	968	0.3	0	\$110	\$661	\$95	\$566	5.1	951
ECM 3	Retrofit Fixtures with LED Lamps	Yes	327,347	61.6	-68	\$37,376	\$101,980	\$24,824	\$77,156	2.1	321,716
Lighting Control Measures			86,714	15.7	-18	\$9,899	\$88,796	\$28,180	\$60,616	6.1	85,197
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	56,278	11.7	-12	\$6,425	\$62,021	\$8,475	\$53,546	8.3	55,294
ECM 5	Install High/Low Lighting Controls	Yes	30,435	4.0	-6	\$3,474	\$26,775	\$19,705	\$7,070	2.0	29,903
Motor Upgrades			0	0.0	0	\$0	\$5,246	\$0	\$5,246	0.0	0
ECM 6	Premium Efficiency Motors	Yes	0	0.0	0	\$0	\$5,246	\$0	\$5,246	0.0	0
Variable Frequency Drive (VFD) Measures			207,165	49.3	0	\$23,994	\$346,345	\$15,800	\$330,545	13.8	208,614
ECM 7	Install VFDs on Constant Volume (CV) Fans	Yes	130,884	43.1	0	\$15,159	\$91,584	\$12,800	\$78,784	5.2	131,799
ECM 8	Install VFDs on Heating Water Pumps	No	76,282	6.2	0	\$8,835	\$254,761	\$3,000	\$251,761	28.5	76,815
Unitary HVAC Measures			9,857	4.5	14	\$1,254	\$45,891	\$2,040	\$43,852	35.0	11,588
ECM 9	Install High Efficiency Air Conditioning Units	No	9,857	4.5	14	\$1,254	\$45,891	\$2,040	\$43,852	35.0	11,588
Gas Heating (HVAC/Process) Replacement			8,586	3.0	0	\$994	\$2,028	\$0	\$2,028	2.0	8,646
ECM 10	Install High Efficiency Unit Heaters	Yes	8,586	3.0	0	\$994	\$2,028	\$0	\$2,028	2.0	8,646
HVAC System Improvements			0	0.0	13	\$99	\$257	\$34	\$223	2.2	1,464
ECM 11	Install Pipe Insulation	Yes	0	0.0	13	\$99	\$257	\$34	\$223	2.2	1,464
Domestic Water Heating Upgrade			0	0.0	3	\$28	\$115	\$37	\$78	2.8	405
ECM 12	Install Low-Flow DHW Devices	Yes	0	0.0	3	\$28	\$115	\$37	\$78	2.8	405
Food Service & Refrigeration Measures			10,358	1.1	0	\$1,200	\$2,593	\$310	\$2,283	1.9	10,430
ECM 13	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	5,704	0.5	0	\$661	\$1,213	\$160	\$1,053	1.6	5,744
ECM 14	Vending Machine Control	Yes	4,654	0.5	0	\$539	\$1,380	\$150	\$1,230	2.3	4,687
TOTALS (COST EFFECTIVE MEASURES)			587,500	124.8	-70	\$67,488	\$304,733	\$68,080	\$236,653	3.5	583,410
TOTALS (ALL MEASURES)			673,639	135.5	-56	\$77,577	\$605,386	\$73,119	\$532,266	6.9	671,813

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

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

Figure 2 – Evaluated Energy Improvements

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

1.1 Planning Your Project

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

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

Pick Your Installation Approach

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

Options from Your Utility Company

Prescriptive and Custom Rebates

For facilities wishing to pursue only selected individual measures (or planning to phase implementation of selected measures over multiple years), incentives are available through the Prescriptive and Custom Rebates program. To participate, you can use internal resources or an outside firm or contractor to perform the final design of the ECM(s) and install the equipment. Program pre-approval may be required for some incentives. Contact your utility company for more details prior to project installation.

Direct Install

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

Engineered Solutions

The Engineered Solutions program provides tailored energy-efficiency assistance and turnkey engineering services to municipalities, universities, schools, hospitals, and healthcare facilities (MUSH), non-profit entities, and multifamily buildings. The program provides all professional services from audit, design, construction administration, to commissioning and measurement and verification for custom whole-building energy-efficiency projects. Engineered Solutions allows you to install as many measures as possible under a single project as well as address measures that may not qualify for other programs.

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

Options from New Jersey's Clean Energy Program

Financing and Planning Support with the Energy Savings Improvement Program (ESIP)

For larger facilities with limited capital availability to implement ECMs, project financing may be available through the ESIP. Supported directly by the NJBPU, ESIP provides government agencies with project development, design, and implementation support services, as well as attractive financing for implementing ECMs. You have already taken the first step as an LGEA customer, because this report is required to participate in ESIP.

Resiliency with Return on Investment through Combined Heat and Power (CHP)

The CHP program provides incentives for combined heat and power (i.e., cogeneration) and waste heat to power projects. Combined heat and power systems generate power on-site and recover heat from the generation system to meet on-site thermal loads. Waste heat to power systems use waste heat to generate power. You will work with a qualified developer who will design a system that meets your building's heating and cooling needs.

Successor Solar Incentive Program (SuSI)

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

Ongoing Electric Savings with Demand Response

The Demand Response Energy Aggregator program reduces electric loads at commercial facilities when wholesale electricity prices are high or when the reliability of the electric grid is threatened due to peak power demand. By enabling commercial facilities to reduce electric demand during times of peak demand, the grid is made more reliable, and overall transmission costs are reduced for all ratepayers. Curtailment service providers provide regular payments to medium and large consumers of electric power for their participation in demand response (DR) programs. Program participation is voluntary, and facilities receive payments regardless of whether they are called upon to curtail their load during times of peak demand.

Large Energy User Program (LEUP)

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

For more details on these programs please visit [New Jersey's Clean Energy Program website](http://www.njcleanenergy.com) .



2 EXISTING CONDITIONS

The New Jersey Board of Public Utilities (NJBP) has sponsored this Local Government Energy Audit (LGEA) report for Passaic County Community College Academic Hall, Founders Hall, Gym, and Theater. 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 March 23, 2023, TRC performed an energy audit at Academic/Founders/Gym/Theater located in Paterson, New Jersey. TRC met with Luo Nucci to review the facility operations and help focus our investigation on specific energy-using systems.

Academic/Founders/Gym/Theater is a multi-story, 166,974 square foot building built in 1978. Spaces include classrooms, gymnasium, auditorium, offices, cafeteria, corridors, stairwells, commercial kitchen, and basement mechanical space.

2.2 Building Occupancy

The facility is occupied Monday through Friday during regular business hours. Janitorial services are performed after hours.

Building Name	Weekday/Weekend	Operating Schedule
Academic/Founders/Gym/Theater	Weekday	7:00 AM - 10:00 PM
	Weekend	7:00 AM - 5:00 PM

Figure 3 - Building Occupancy Schedule

2.3 Building Envelope

Building walls are concrete block over structural steel with a brick facade. The roof is flat and covered with rolled asphalt, and it is in poor condition. Sections of the roof are covered with stone ballast.



Flat roof covered with rolled asphalt

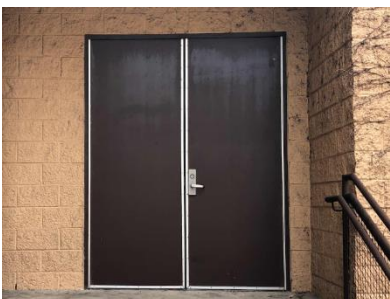


Building Façade

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



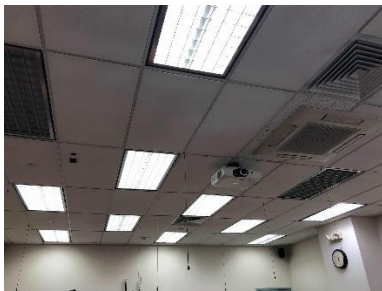
Exterior Doors

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 troffer and surface mounted fixtures and 2-foot fixtures with U-bend tube lamps. Typically, T8 fluorescent lamps use electronic ballasts and T12 fluorescent lamps use magnetic ballasts.

Some of the linear fixtures have been converted to utilize LED tube lamps. Additionally, there are some compact fluorescent lamps (CFL) plug ins, incandescent BR30s, and LED general purpose lamps.

Gymnasium fixtures have manually controlled high bay (T5HO) linear fluorescent lamps. Auditorium fixtures have high bay LED lamps and are manually controlled. All exit signs are LED. Most fixtures are in fair condition. Interior lighting levels were generally sufficient.



Recessed Troffer



Wall Mounted Strip



Recessed Basket Fixtures

Most lighting fixtures are controlled manually with a few fixtures controlled by occupancy sensors.

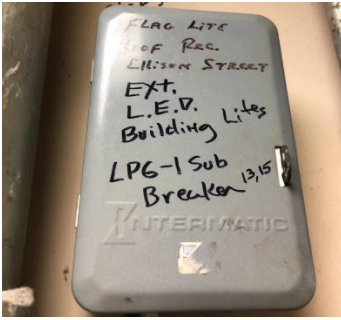


Manual Controls

Exterior fixtures include wall packs and canopy lights, with high intensity discharge (HID), CFLs, or LED lamps.

The pole mounted flood fixtures incorporate a mix of high intensity discharge (HID) or LED lamps.

Exterior fixtures are timer controlled.



Timer



Canopy Fixture



Pole Top Wall Mounted Fixture

The parking lot and walkway fixtures have high intensity discharge (HID) lamps. These are timer controlled.



Slip Fit Shoe Box Fixture



Spider Mount Walkway Fixture



Shoe Box Fixture

2.5 Air Handling Systems

Unitary Electric HVAC Equipment

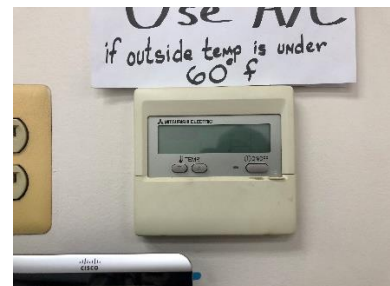
Select offices and server spaces are conditioned by ductless mini split system air conditioners. They vary in condition and range in size between 1 ton and 3 tons with EER ratings between 7 and 14.



Outdoor Condenser



Indoor Evaporator



Thermostat

Unitary Heating Equipment

Mechanical spaces, corridors, and Conference Room E505 are heated by electric resistance heaters. These vary in capacity between 4.09 MBh and 17.05 MBh. The units are in fair condition. These units are controlled by manual dial thermostats.



Electric Resistance Unit Heater



Electric Resistance Fan Coil Unit

Infrared Heating

The front main entrance has four electric resistance infrared heaters used as supplemental heat during cold days. They are in fair condition.



Infrared Heater

Packaged Units

A few offices and classrooms of the building are served by packaged roof top units (RTUs). There are four gas-fired burner units ranging in size from 120 MBh to 254 MBh, 3 tons to 15 tons of cooling with an efficiency range of 9.6EER to 10.7 EER. These units are equipped with economizers that are in fair condition.

Refer to Appendix A for detailed information about each unit.



Rooftop Packaged Units

Air Handling Units (AHUs)

The building is conditioned by air handling units located in the basement mechanical spaces and on the rooftop. Units range in capacity and most of both a hot water coil connected to the boilers and a chilled water coil connected to the chillers. Supply motors range in size from 5 hp to 40 hp. A few motors have VFD's. Most units have return motors, they range in size from 3 hp to 10 hp.

The HVAC system is pneumatically controlled using a 3 hp air compressor located in the basement.



Basement AHU



Rooftop AHUs



2.6 Heating Hot Water Systems

Two Cleaver Brooks 8,369 MBh hot water boilers serve the building's heating load. They have a nominal efficiency of 80%. The boilers are configured in a manual control scheme. Only one boiler is required under high load conditions. Built in 1977, they are in poor condition. There is no service contract in place.

The hydronic distribution system is a four-pipe heating and cooling system.

The boilers are configured in a constant flow primary distribution with two, 30 hp constant speed hot water pumps operating with an automated control scheme. The boilers provide hot water to fin tube radiators, fan coil units, and AHUs throughout the building.

There are 12 feet of two2-inch supply pipe with no insulation that should be added.



Boiler



Heating Hot Water Pump



Combustion Air Fan

2.7 Chilled Water Systems

The chiller plant consists of two Carrier 200-ton, R-123 centrifugal chillers. Only one chiller is needed at a time. The chillers are configured in a primary-secondary distribution loop with two constant flow primary pumps. Two VFD controlled pumps send condenser water to the cooling tower on the roof. The cooling tower has six VFD controlled fans.



Chiller



Chilled Water Pumps



Cooling Tower

2.8 Domestic Hot Water

Most hot water is produced by three 242-gallon, 250 MBh, gas-fired storage water heaters with nominal efficiencies of 80%. In addition, the facility has six, 1.44 kW tankless waters, one, 2 kW, 6-gallon water heater, and one, 81-gallon, 199 MBh gas-fired storage water heater.

One fractional hp circulation pump distributes water to end uses. The circulation pump operates continuously.

Most of the domestic hot water pipes are insulated. Pipe wrap can be added to a five-foot section of 1.25-inch pipe in the Founders Hall mechanical room.



Gas-Fired Storage Water Heaters



Circulation Pump



Gas-Fired Storage Water Heater

2.9 Food Service Equipment

The kitchen has a mix of gas and electric equipment that is used to prepare meals for students and staff. Most cooking is done using a convection electric 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.

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



Griddle



Double Rack Oven



Electric Steamer

2.10 Refrigeration

The kitchen has several stand-up refrigerators and freezers with solid doors. There is a refrigerator chest. All equipment is standard and in fair condition.

The walk-in refrigerators have an estimated .25 ton to .58-ton compressor located kitchen storage room and 1 to 2 fan evaporators.

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



Walk in Cooler



Ice Machine



Solid Door Refrigerator

2.11 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 728 computer workstations throughout the facility. Plug loads include general cafe and office equipment. There are classroom typical loads such as smartboards, projectors, and fans.

There are several residential-style refrigerators and mini refrigerators throughout the building. These vary in condition and efficiency.

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



Television



Vending Machines



Small Desktop

2.12 Water-Using Systems

There are 29 restrooms with toilets, urinals, and sinks. Faucet flow rates are at 1.5 gallons per minute (gpm) or higher.



Lavatory Sinks



Kitchen Sink

2.13 On-Site Generation

The Academic Hall, Founders Hall, Gym, Theater has an emergency generator that, in the event of a power outage, serves the entire building and is only used for emergency needs.

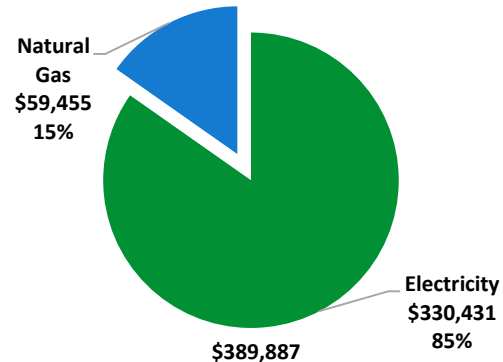


Emergency Generator

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	2,852,981 kWh	\$330,431
Natural Gas	74,799 Therms	\$59,455
Total		\$389,887



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.

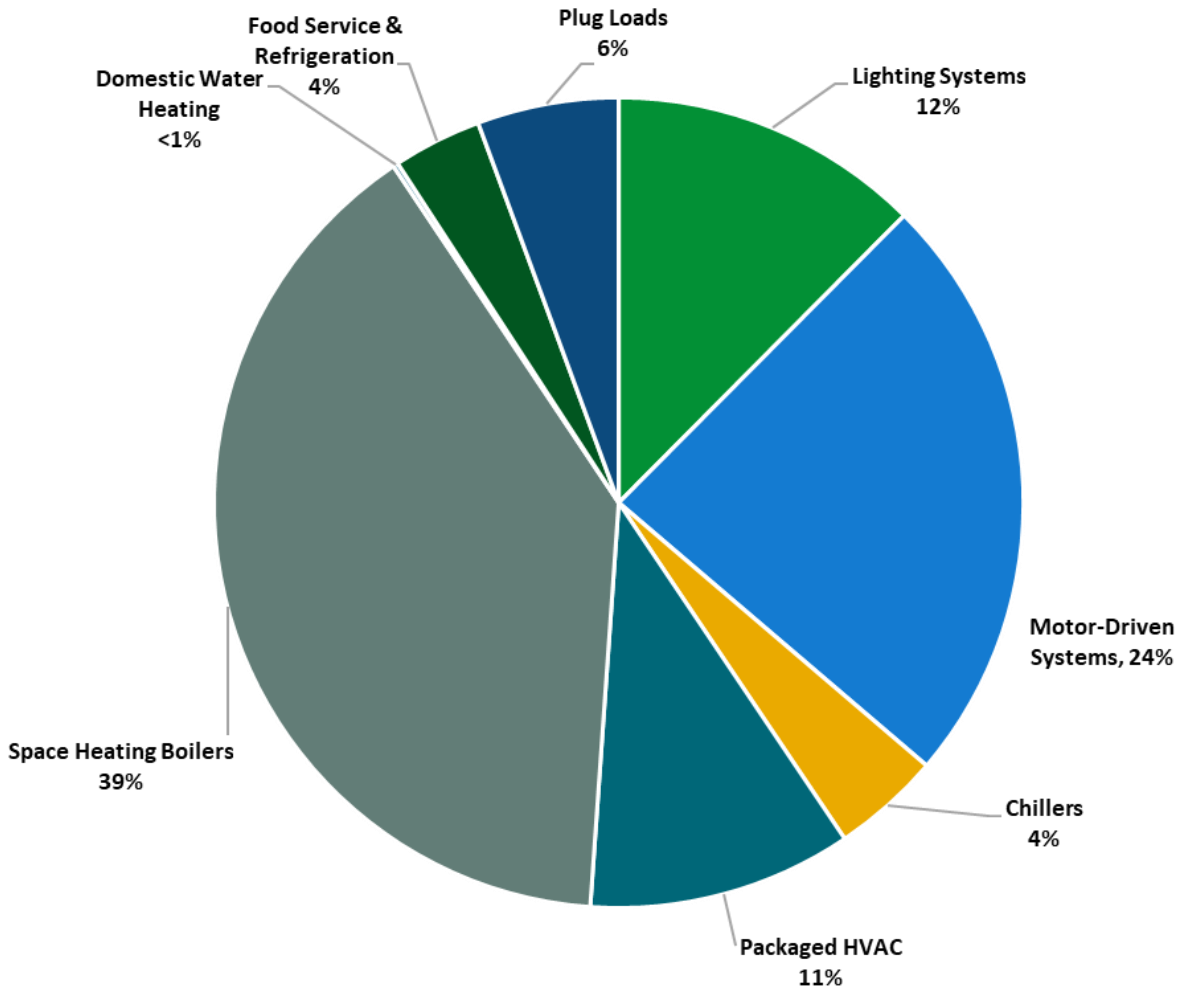
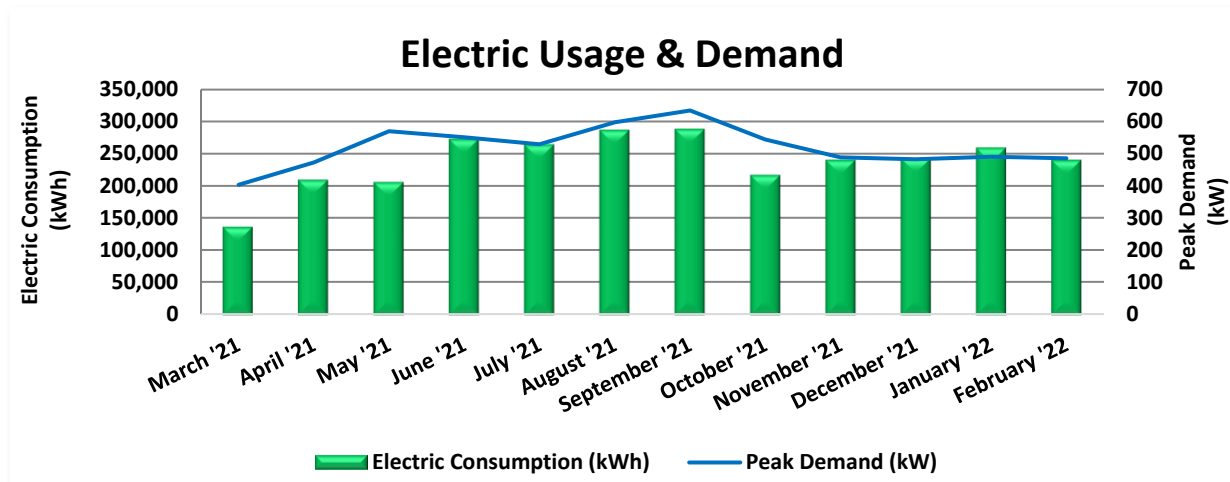


Figure 4 - Energy Balance

3.1 Electricity

PSE&G delivers electricity under rate class Large Power & Lighting Secondary, with electric production provided by Constellation, a third-party supplier.



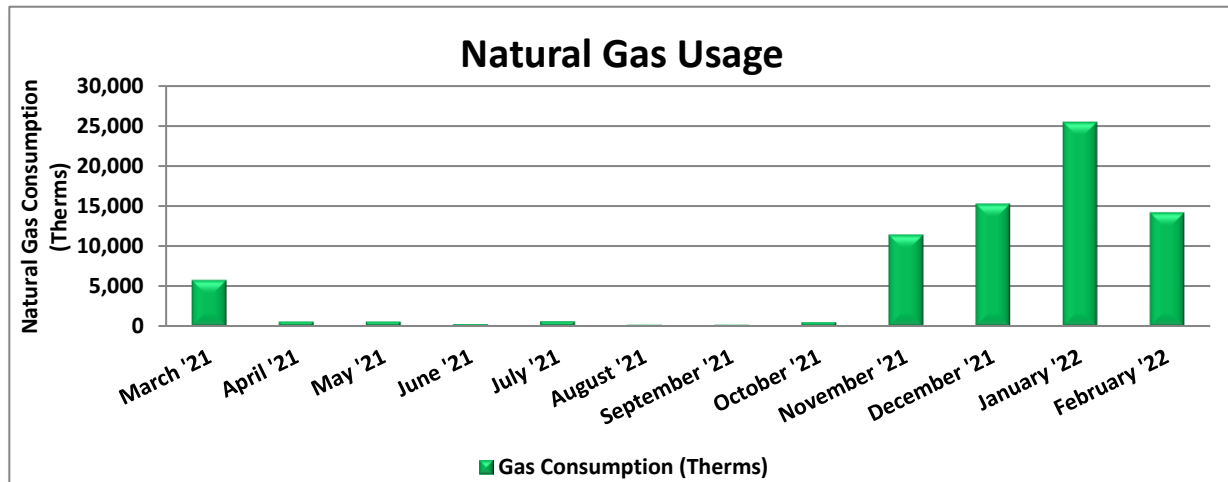
Electric Billing Data					
Period Ending	Days in Period	Electric Usage (kWh)	Demand (kW)	Demand Cost	Total Electric Cost
4/8/21	31	136,483	404	\$1,531	\$15,206
5/8/21	30	209,213	472	\$1,793	\$24,419
6/9/21	32	205,762	571	\$2,854	\$23,457
7/8/21	29	272,493	551	\$7,045	\$33,497
8/6/21	29	263,976	529	\$6,765	\$32,409
9/6/21	31	286,101	598	\$5,473	\$34,230
10/6/21	30	287,701	634	\$4,442	\$33,811
11/4/21	29	216,729	545	\$2,062	\$24,541
12/7/21	33	240,341	489	\$1,851	\$26,597
1/2/22	26	242,788	483	\$1,828	\$26,586
2/7/22	36	259,098	491	\$1,859	\$28,252
3/9/22	30	240,114	485	\$1,835	\$28,331
Totals	366	2,860,797	634	\$39,338	\$331,337
Annual	365	2,852,981	634	\$39,230	\$330,431

Notes:

- Peak demand of 634 kW occurred in September '21.
- Average demand over the past 12 months was 521 kW.
- The average electric cost over the past 12 months was \$0.116/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 Direct Energy, a third-party supplier.



Gas Billing Data			
Period Ending	Days in Period	Natural Gas Usage (Therms)	Natural Gas Cost
4/8/21	31	5,760	\$3,861
5/8/21	30	616	\$539
6/9/21	32	617	\$540
7/8/21	29	298	\$406
8/6/21	29	634	\$644
9/6/21	31	192	\$331
10/6/21	30	185	\$326
11/4/21	29	529	\$2,752
12/7/21	33	11,396	\$8,977
1/2/22	26	15,248	\$11,147
2/7/22	36	25,391	\$18,278
3/9/22	30	14,137	\$11,818
Totals	366	75,004	\$59,618
Annual	365	74,799	\$59,455

Notes:

- The average gas cost for the past 12 months is \$0.795/therm, which is the blended rate used throughout the analysis.

3.3 Benchmarking

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

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

Benchmarking Score	N/A
--------------------	-----

Due to its unique characteristics, this building type is not able to receive a benchmarking score. This report contains suggestions about how to improve building performance and reduce energy costs.

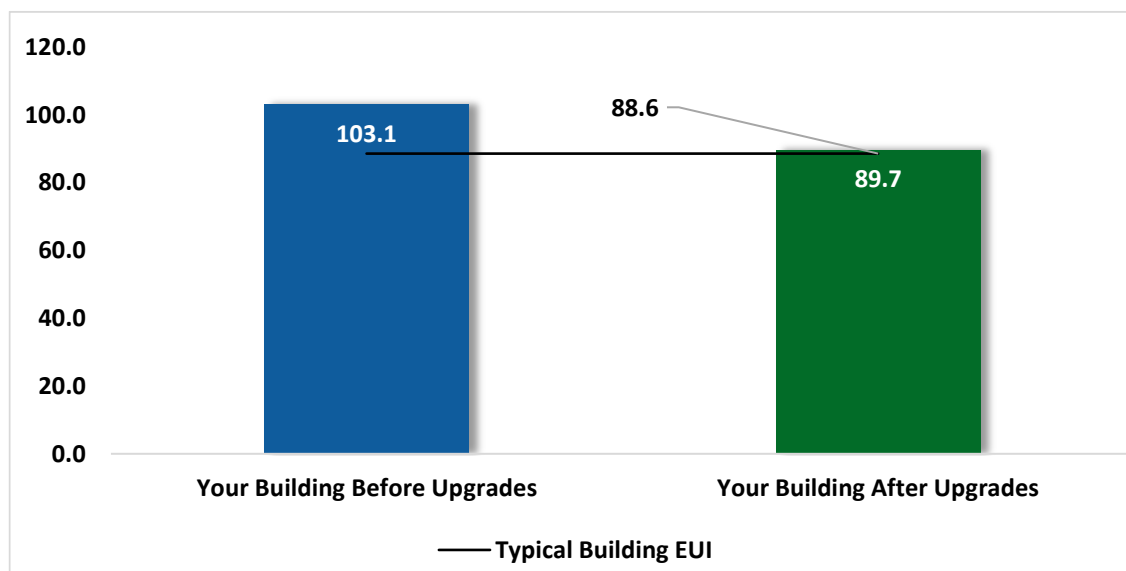


Figure 5 - Energy Use Intensity Comparison³

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 monthly 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			350,959	61.9	-68	\$40,109	\$114,115	\$26,719	\$87,396	2.2	345,469
ECM 1	Install LED Fixtures	Yes	22,645	0.0	0	\$2,623	\$11,474	\$1,800	\$9,674	3.7	22,803
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	968	0.3	0	\$110	\$661	\$95	\$566	5.1	951
ECM 3	Retrofit Fixtures with LED Lamps	Yes	327,347	61.6	-68	\$37,376	\$101,980	\$24,824	\$77,156	2.1	321,716
Lighting Control Measures			86,714	15.7	-18	\$9,899	\$88,796	\$28,180	\$60,616	6.1	85,197
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	56,278	11.7	-12	\$6,425	\$62,021	\$8,475	\$53,546	8.3	55,294
ECM 5	Install High/Low Lighting Controls	Yes	30,435	4.0	-6	\$3,474	\$26,775	\$19,705	\$7,070	2.0	29,903
Motor Upgrades			0	0.0	0	\$0	\$5,246	\$0	\$5,246	0.0	0
ECM 6	Premium Efficiency Motors	Yes	0	0.0	0	\$0	\$5,246	\$0	\$5,246	0.0	0
Variable Frequency Drive (VFD) Measures			207,165	49.3	0	\$23,994	\$346,345	\$15,800	\$330,545	13.8	208,614
ECM 7	Install VFDs on Constant Volume (CV) Fans	Yes	130,884	43.1	0	\$15,159	\$91,584	\$12,800	\$78,784	5.2	131,799
ECM 8	Install VFDs on Heating Water Pumps	No	76,282	6.2	0	\$8,835	\$254,761	\$3,000	\$251,761	28.5	76,815
Unitary HVAC Measures			9,857	4.5	14	\$1,254	\$45,891	\$2,040	\$43,852	35.0	11,588
ECM 9	Install High Efficiency Air Conditioning Units	No	9,857	4.5	14	\$1,254	\$45,891	\$2,040	\$43,852	35.0	11,588
Gas Heating (HVAC/Process) Replacement			8,586	3.0	0	\$994	\$2,028	\$0	\$2,028	2.0	8,646
ECM 10	Install High Efficiency Unit Heaters	Yes	8,586	3.0	0	\$994	\$2,028	\$0	\$2,028	2.0	8,646
HVAC System Improvements			0	0.0	13	\$99	\$257	\$34	\$223	2.2	1,464
ECM 11	Install Pipe Insulation	Yes	0	0.0	13	\$99	\$257	\$34	\$223	2.2	1,464
Domestic Water Heating Upgrade			0	0.0	3	\$28	\$115	\$37	\$78	2.8	405
ECM 12	Install Low-Flow DHW Devices	Yes	0	0.0	3	\$28	\$115	\$37	\$78	2.8	405
Food Service & Refrigeration Measures			10,358	1.1	0	\$1,200	\$2,593	\$310	\$2,283	1.9	10,430
ECM 13	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	5,704	0.5	0	\$661	\$1,213	\$160	\$1,053	1.6	5,744
ECM 14	Vending Machine Control	Yes	4,654	0.5	0	\$539	\$1,380	\$150	\$1,230	2.3	4,687
TOTALS			673,639	135.5	-56	\$77,577	\$605,386	\$73,119	\$532,266	6.9	671,813

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

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

Figure 6 – All Evaluated ECMs

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated M&L Cost (\$)	Estimated Incentive (\$)*	Estimated Net M&L Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades		350,959	61.9	-68	\$40,109	\$114,115	\$26,719	\$87,396	2.2	345,469
ECM 1	Install LED Fixtures	22,645	0.0	0	\$2,623	\$11,474	\$1,800	\$9,674	3.7	22,803
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	968	0.3	0	\$110	\$661	\$95	\$566	5.1	951
ECM 3	Retrofit Fixtures with LED Lamps	327,347	61.6	-68	\$37,376	\$101,980	\$24,824	\$77,156	2.1	321,716
Lighting Control Measures		86,714	15.7	-18	\$9,899	\$88,796	\$28,180	\$60,616	6.1	85,197
ECM 4	Install Occupancy Sensor Lighting Controls	56,278	11.7	-12	\$6,425	\$62,021	\$8,475	\$53,546	8.3	55,294
ECM 5	Install High/Low Lighting Controls	30,435	4.0	-6	\$3,474	\$26,775	\$19,705	\$7,070	2.0	29,903
Motor Upgrades		0	0.0	0	\$0	\$5,246	\$0	\$5,246	0.0	0
ECM 6	Premium Efficiency Motors	0	0.0	0	\$0	\$5,246	\$0	\$5,246	0.0	0
Variable Frequency Drive (VFD) Measures		130,884	43.1	0	\$15,159	\$91,584	\$12,800	\$78,784	5.2	131,799
ECM 7	Install VFDs on Constant Volume (CV) Fans	130,884	43.1	0	\$15,159	\$91,584	\$12,800	\$78,784	5.2	131,799
Gas Heating (HVAC/Process) Replacement		8,586	3.0	0	\$994	\$2,028	\$0	\$2,028	2.0	8,646
ECM 10	Install High Efficiency Unit Heaters	8,586	3.0	0	\$994	\$2,028	\$0	\$2,028	2.0	8,646
HVAC System Improvements		0	0.0	13	\$99	\$257	\$34	\$223	2.2	1,464
ECM 11	Install Pipe Insulation	0	0.0	13	\$99	\$257	\$34	\$223	2.2	1,464
Domestic Water Heating Upgrade		0	0.0	3	\$28	\$115	\$37	\$78	2.8	405
ECM 12	Install Low-Flow DHW Devices	0	0.0	3	\$28	\$115	\$37	\$78	2.8	405
Food Service & Refrigeration Measures		10,358	1.1	0	\$1,200	\$2,593	\$310	\$2,283	1.9	10,430
ECM 13	Refrigerator/Freezer Case Electrically Commutated Motors	5,704	0.5	0	\$661	\$1,213	\$160	\$1,053	1.6	5,744
ECM 14	Vending Machine Control	4,654	0.5	0	\$539	\$1,380	\$150	\$1,230	2.3	4,687
TOTALS		587,500	124.8	-70	\$67,488	\$304,733	\$68,080	\$236,653	3.5	583,410

* - 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		350,959	61.9	-68	\$40,109	\$114,115	\$26,719	\$87,396	2.2	345,469
ECM 1	Install LED Fixtures	22,645	0.0	0	\$2,623	\$11,474	\$1,800	\$9,674	3.7	22,803
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	968	0.3	0	\$110	\$661	\$95	\$566	5.1	951
ECM 3	Retrofit Fixtures with LED Lamps	327,347	61.6	-68	\$37,376	\$101,980	\$24,824	\$77,156	2.1	321,716

When considering lighting upgrades, we suggest using a comprehensive design approach that simultaneously upgrades lighting fixtures and controls to maximize energy savings and improve occupant lighting. Comprehensive design will also consider appropriate lighting levels for different space types to make sure that the right amount of light is delivered where needed. If conversion to LED light sources is proposed, we suggest converting all of a specific lighting type (e.g., linear fluorescent) to LED lamps to minimize the number of lamp types in use at the facility, which should help reduce future maintenance costs.

ECM 1: Install LED Fixtures

Replace existing fixtures containing HID lamps with new LED light fixtures. This measure saves energy by installing LEDs, which use less power than other technologies with a comparable light output.

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

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

Affected Building Areas: exterior fixtures

ECM 2: Retrofit Fluorescent Fixtures with LED Lamps and Drivers

Retrofit fluorescent 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 including academic corridor, enclosed Lot 3 security office, theater, mechanical storage, storage A010, and storage A011

ECM 3: Retrofit Fixtures with LED Lamps

Replace fluorescent, 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, incandescent, or CFL lamps including all classrooms and offices and most corridors

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		86,714	15.7	-18	\$9,899	\$88,796	\$28,180	\$60,616	6.1	85,197
ECM 4	Install Occupancy Sensor Lighting Controls	56,278	11.7	-12	\$6,425	\$62,021	\$8,475	\$53,546	8.3	55,294
ECM 5	Install High/Low Lighting Controls	30,435	4.0	-6	\$3,474	\$26,775	\$19,705	\$7,070	2.0	29,903

Lighting controls reduce energy use by turning off or lowering lighting fixture power levels when not in use. A comprehensive approach to lighting design should upgrade the lighting fixtures and the controls together for maximum energy savings and improved lighting for occupants.

ECM 4: Install Occupancy Sensor Lighting Controls

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

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

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

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

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

ECM 5: Install High/Low Lighting Controls

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

Lighting fixtures with these controls operate at default low levels when the area is unoccupied to provide minimal lighting to meet security or safety 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		207,165	49.3	0	\$23,994	\$346,345	\$15,800	\$330,545	13.8	208,614
ECM 7	Install VFDs on Constant Volume (CV) Fans	130,884	43.1	0	\$15,159	\$91,584	\$12,800	\$78,784	5.2	131,799
ECM 8	Install VFDs on Heating Water Pumps	76,282	6.2	0	\$8,835	\$254,761	\$3,000	\$251,761	28.5	76,815

Variable frequency drives control motors for fans, pumps, and process equipment based on the actual output required of the driven equipment. Energy savings result from more efficient control of motor energy usage when equipment operates at partial load. The magnitude of energy savings depends on the estimated amount of time that the motor would operate at partial load. For equipment with proposed VFDs, we have included replacing the controlled motor with a new inverter duty rated motor to conservatively account for the cost of an inverter duty rated motor.

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

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

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

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

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: basement and rooftop AHUs

ECM 7: Install VFDs on Heating Water Pumps

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

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

Affected Pumps: primary heating hot pumps

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		9,857	4.5	14	\$1,254	\$45,891	\$2,040	\$43,852	35.0	11,588
ECM 9	Install High Efficiency Air Conditioning Units	9,857	4.5	14	\$1,254	\$45,891	\$2,040	\$43,852	35.0	11,588

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 RTUs are eventually replaced, consider purchasing equipment that exceeds the minimum efficiency required by building codes.

ECM 8: Install High Efficiency Air Conditioning Units

Replace 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: Trane RTUs

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		8,586	3.0	0	\$994	\$2,028	\$0	\$2,028	2.0	8,646
ECM 10	Install High Efficiency Unit Heaters	8,586	3.0	0	\$994	\$2,028	\$0	\$2,028	2.0	8,646

ECM 9: Install High Efficiency Unit Heaters

Replace existing standard gas-fired unit heaters with high efficiency gas-fired condensing unit heaters. Improved combustion technology and heat exchanger design optimize the heat recovery from the combustion gases, which can significantly improve unit heater efficiency. Savings result from improved system efficiency.

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

A heating upgrade option that might work in some circumstances would be to replace forced air heating equipment with low-intensity infrared heating units with an enclosed flame, rather than an open flame on a ceramic or metal surface. The most optimal installed system would include modulating high-efficiency infrared heaters, designed for the space and with appropriate controls to vary the capacity based on the space heating needs.

Forced air furnaces heat all of the air in the space served, which is inefficient for large volume spaces with relatively few occupants, areas with high ceilings, or areas with high outside air infiltration. Infrared heaters heat objects and surfaces directly, including the occupants of the space, rather than heating large volumes of air. Infrared heaters also heat the floor, which then re-radiates the heat. As a result, infrared heaters are more effective and efficient at maintaining occupant comfort at significantly lower cost for certain space types.

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	13	\$99	\$257	\$34	\$223	2.2	1,464
ECM 11	Install Pipe Insulation	0	0.0	13	\$99	\$257	\$34	\$223	2.2	1,464

ECM 10: Install Pipe Insulation

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

Affected Systems: hot water piping and domestic 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	3	\$28	\$115	\$37	\$78	2.8	405
ECM 12	Install Low-Flow DHW Devices	0	0.0	3	\$28	\$115	\$37	\$78	2.8	405

ECM 11: 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		10,358	1.1	0	\$1,200	\$2,593	\$310	\$2,283	1.9	10,430
ECM 13	Refrigerator/Freezer Case Electrically Commutated Motors	5,704	0.5	0	\$661	\$1,213	\$160	\$1,053	1.6	5,744
ECM 14	Vending Machine Control	4,654	0.5	0	\$539	\$1,380	\$150	\$1,230	2.3	4,687

ECM 12: Refrigerator/Freezer Case Electrically Commutated Motors

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

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

ECM 13: 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 Measures for Future Consideration

There are additional opportunities for improvement that Passaic County Community College 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.

Passaic County Community College 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.

Upgrade/Replace Building Automation System

Based on our site survey and on conversations with facility staff, it appears that the existing building automation system (BAS) is substantially limited in its capabilities, means of control, monitoring/reporting function, or condition relative to new systems available in the marketplace. A substantial upgrade to your site's BAS could increase the efficiency of your building HVAC system operation.

The current generation BAS typically provides building systems with a network of temperature and pressure sensors that obtain feedback about field conditions and provide signals to control systems to adjust system operation for optimal functioning. Thirty years ago, most control systems were pneumatic systems driven by compressed air, with pneumatic thermostats and air driven actuators for valves and dampers. Pneumatics controls have largely been replaced by direct digital control (DDC) systems, but many pneumatic systems remain. Contemporary DDC systems afford tighter controls and enhanced monitoring and trending capabilities as compared to the older systems.

A controls upgrade would enable automated equipment start and stop times, temperature setpoints, and lockouts and dead bands to be programmed remotely using a graphic interface. Controls can be configured to optimize ventilation and outside air intake by adjusting economizer position, damper function, and fan speed. Existing chilled and hot water distribution system controls are typically tied in, including associated pumps and valves. Coordinated control of HVAC systems is dependent on a network of sensors and status points. A comprehensive building control system provides monitoring and control

for all HVAC systems, so operators can adjust system programming for optimal comfort and energy savings.

It is recommended that an HVAC engineer or contractor who specializes in BAS be contacted for a detailed evaluation and implementation costs. A controls expert will be able to tell you to what extent an existing system can be refurbished or expanded, what sensors should be replaced, what additional HVAC systems could be controlled, and what monitoring and graphic capabilities can be added. For the purposes of this report, the potential energy savings and measure costs were estimated based on industry standards and previous project experience. Further analysis should be conducted for the feasibility of this measure. This is not an investment grade analysis, nor should be used as a basis for design and construction.

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 heat⁴. 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.

Replacing vs. Repairing a Built-up Air Handler

The facility staff asked for guidance regarding replacing versus continuing to repair the old built-up air handling units (AHUs) at this site.

All equipment will eventually reach the end of its useful life (EUL) at which time it will need to be replaced. The difficulty is determining when a built-up AHU, which is basically multiple independent components in one housing, has reached its EUL. Three indications that an AHU has reached its EUL are:

- Replacement parts are no longer available or require custom orders.
- Critical parts of the AHU can no longer be repaired.
- If there is significant corrosion in the frames or walls of the AHU. Indications may be visible holes in pressurized portions of the AHU, difficulty repairing structural members due to physical degradation, or corrosion is impacting the quality of the airstream.

Some external factors that may weigh in favor of replacing an AHU rather than repairing or replacing the components are:

⁴ 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.

- Conditions within the space or the use of the space served by the AHU have changed and the AHU can no longer meet the ventilation or thermal requirements.
- The AHU can no longer meet current code requirements, particularly for indoor air quality.
- The life cycle cost of replacing the AHU is less than the life cycle cost of continuing to repair and replace components of the AHU.

Replacing an AHU often involves more than just the physical unit. Some potential complications of replacing an AHU include:

- Required electrical infrastructure upgrades.
- Control system upgrades to fully utilize expanded onboard features.
- Structural supports if the new unit is heavier.
- For roof mounted units, reconfiguration of roof penetrations and associated roof repairs if the new unit footprint differs from the original.
- For interior units, difficulties in physically removing and/or installing the units due to space constraints.
- Duct testing may be required for new units. New transitional ductwork may be required and additional repairs to existing ductwork may be warranted.
- Replacing an AHU typically requires a longer shut-down period than just repairing or replacing components of an AHU.

Repair Strategies

If the decision is made to replace AHU components, we recommend considering the following:

- If fans need to be replaced, consider using a plenum style fan array which consists of multiple fans in the cross section of the AHU. A fan array provides built in redundancy since there are multiple fans rather than a single fan and can provide more even flow across heating and cooling coils which will improve the effectiveness of the coils. Fan arrays also typically use direct drive fans with sealed bearings, greatly diminishing fan maintenance requirements.
- Consider replacing coils with more effective coils and drip pans.
- Where possible improve access to the components to facilitate maintenance.
- While making repairs, consider replacing other components which are at or beyond their useful life.

Code Compliance

New Jersey uses the ASHRAE Standard 90.1-2016 as the state energy code for commercial buildings (<https://www.energycodes.gov/status/states/new-jersey>). Section 6.1.1.3.1 of Standard 90.1-2016 addresses replacement of HVAC equipment and incorporates key electrical safety and air quality elements. Additional federal, state, and local codes may apply. In summary, ASHRAE compliance requirements are notable with expanded requirements for controls and fan efficiency as compared to prior code versions. While many of the unit code requirements are met at the point of purchase, expanded external controls may be required to fully meet code performance metrics.

The Standard excludes code compliance requirements for repairs or modifications as noted:

- “1. for *equipment* that is being modified or repaired but not replaced, provided that such modifications and/or *repairs* will not result in an increase in the annual *energy* consumption of the *equipment* using the same *energy* type;
2. where a replacement or *alteration* of *equipment* requires extensive revisions to other *systems*, *equipment*, or elements of a *building*, and such replaced or altered *equipment* is a like-for-like replacement;
3. for a refrigerant change of *existing equipment*;
4. for the relocation of *existing equipment*; or
5. for ducts and *piping* where there is insufficient *space* or access to meet these requirements.”

Therefore, in general if an air handler or a component of an air handler is being replaced it must meet the current energy code. Regarding air handlers Standard 90.1-16 specifically addresses fans, fan control, motors, economizers, furnaces, duct furnaces, exhaust air energy recovery, controls, ductwork and piping but does not specifically address coils or control valves.

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 emissions⁵. 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.

⁵ <https://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/use-portfolio-manager>.

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 roof top systems, 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.

Optimize HVAC Equipment Schedules

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

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

Water Heater Maintenance

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

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

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

Refrigeration Equipment Maintenance

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

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

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

Water Conservation



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

For more information regarding water conservation go to the EPA's WaterSense website⁶ or download a copy of EPA's "WaterSense at Work: Best Management Practices for Commercial and Institutional Facilities"⁷ to get ideas for creating a water management plan and best practices for a wide range of water using systems.

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

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

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

Procurement Strategies

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

⁶ <https://www.epa.gov/watersense>.

⁷ <https://www.epa.gov/watersense/watersense-work-0>.

6 ON-SITE GENERATION

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

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

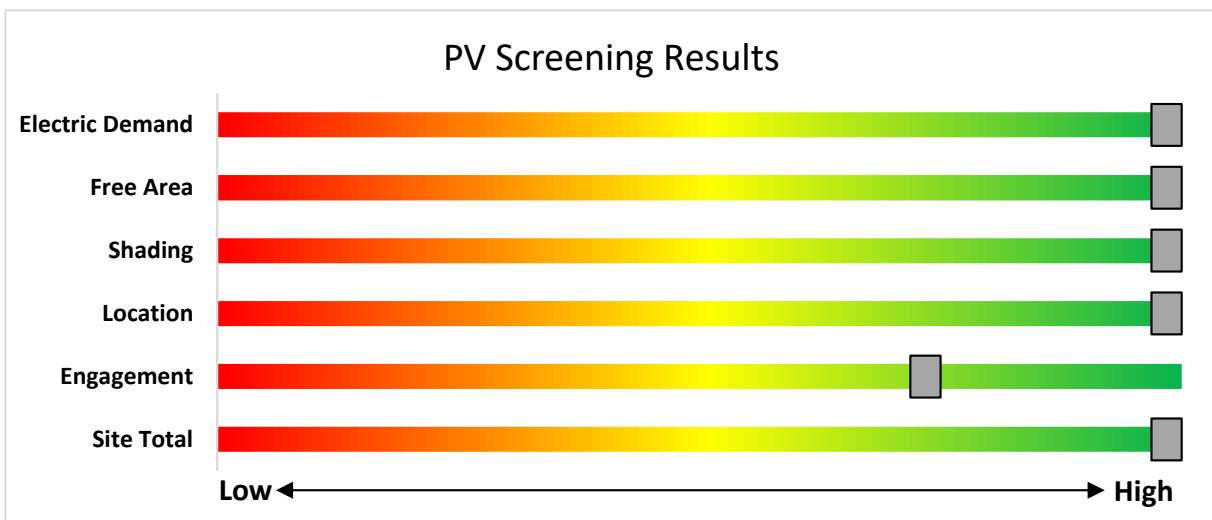
6.1 Solar Photovoltaic

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

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

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

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



Potential	High	
System Potential	335	kW DC STC
Electric Generation	399,109	kWh/yr
Displaced Cost	\$46,220	/yr
Installed Cost	\$871,000	

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.

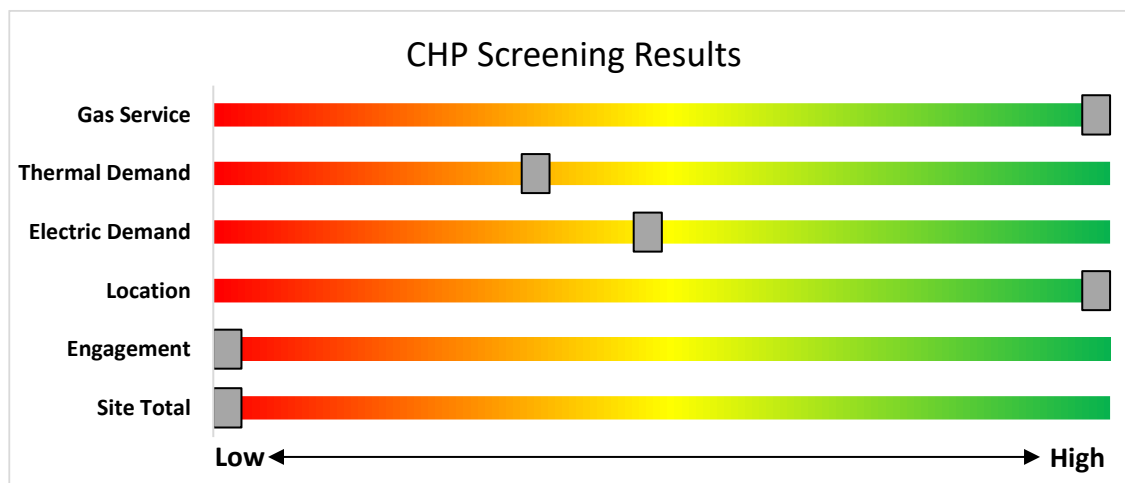


Figure 9 - Combined Heat and Power Screening

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.

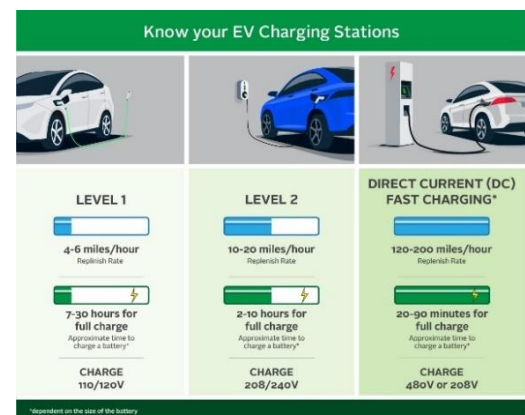
The preliminary assessment of EV charging at the facility shows that there is high potential for adding EV chargers to the facility's parking, based on potential costs of installation and other site factors.

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.

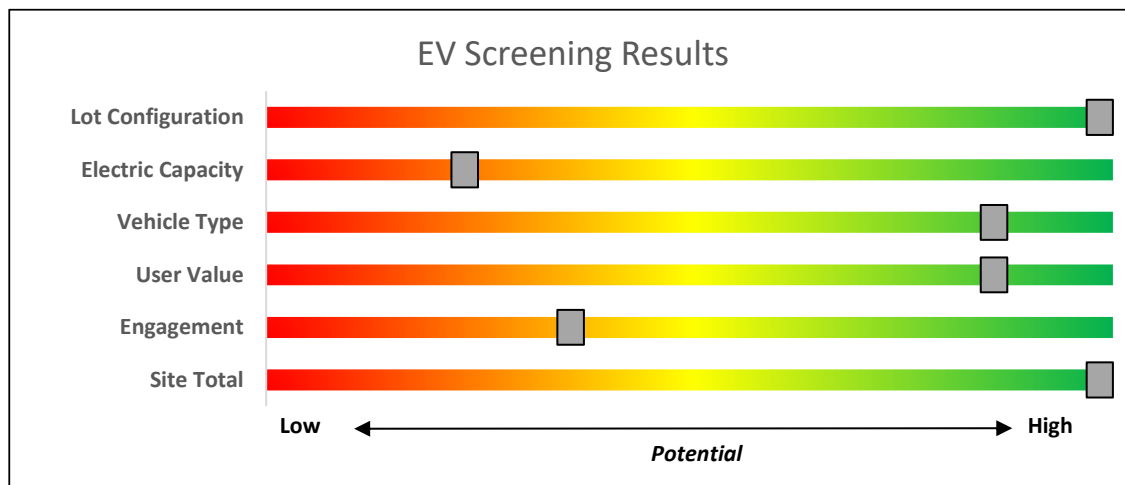


Figure 10 – EV Charger Screening

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 (FEEP). Once the FEEP is approved, the proposed work can begin.

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

Combined Heat and Power

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

Incentives

Eligible Technologies	Size (Installed Rated Capacity) ¹	Incentive (\$/kW)	% of Total Cost Cap per Project ³	\$ Cap per Project ³		
Powered by non-renewable or renewable fuel source ⁴	≤500 kW	\$2,000	30-40% ²	\$2 million		
Gas Internal Combustion Engine	>500 kW - 1 MW	\$1,000				
Gas Combustion Turbine	> 1 MW - 3 MW	\$550	30%	\$3 million		
Microturbine	>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.

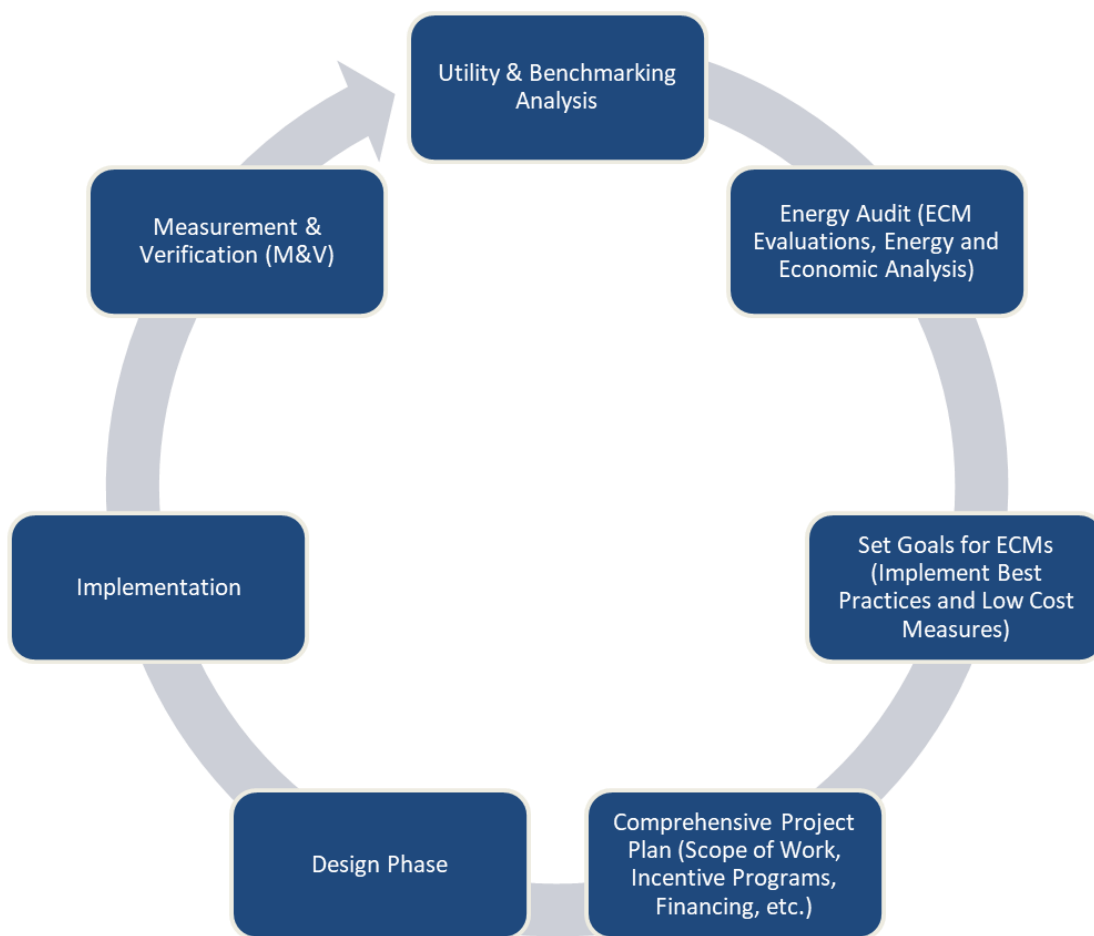


Figure 11 – Project Development Cycle

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 website⁸.

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 website⁹.

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

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



APPENDIX A: EQUIPMENT INVENTORY & RECOMMENDATIONS

Lighting Inventory & Recommendations

Existing Conditions							Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost (\$)	Total Incentives	Simple Payback w/ Incentives in Years
Boys Locker Storage	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	500	3	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	500	0.0	9	0	\$1	\$33	\$6	26.4
Classroom - A106	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.4	1,621	0	\$185	\$763	\$170	3.2
Classroom 52 E107	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 52 E107	15	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	15	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.7	2,702	-1	\$308	\$1,092	\$260	2.7
Classroom 52 E107	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	None	S	93	8,760	3	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	None	44	8,760	0.0	477	0	\$54	\$55	\$15	0.7
Classroom 53 E108	14	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	14	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.6	2,522	-1	\$288	\$1,037	\$245	2.8
Classroom 53 E108	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	None	S	93	8,760	3	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	None	44	8,760	0.0	477	0	\$54	\$55	\$15	0.7
Classroom 53 E108	1	U-Bend Fluorescent - T8: U T8 (32W) - 3L	Wall Switch	S	92	2,600	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	2,600	0.0	169	0	\$19	\$72	\$10	3.2
Classroom 53 E109	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	13	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.6	2,342	0	\$267	\$982	\$230	2.8
Classroom 53 E109	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	None	S	93	8,760	3	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	None	44	8,760	0.0	477	0	\$54	\$55	\$15	0.7
Classroom 53 E109	1	U-Bend Fluorescent - T8: U T8 (32W) - 3L	Wall Switch	S	92	2,600	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	2,600	0.0	169	0	\$19	\$72	\$10	3.2
Classroom 53 E110	14	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	14	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.6	2,522	-1	\$288	\$1,037	\$245	2.8
Classroom 53 E110	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	None	S	93	8,760	3	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	None	44	8,760	0.0	477	0	\$54	\$55	\$15	0.7
Classroom 53 E110	1	U-Bend Fluorescent - T8: U T8 (32W) - 3L	Wall Switch	S	92	2,600	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	2,600	0.0	169	0	\$19	\$72	\$10	3.2
Classroom 53 E111	14	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	14	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.6	2,522	-1	\$288	\$1,037	\$245	2.8
Classroom 53 E111	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	None	S	93	8,760	3	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	None	44	8,760	0.0	477	0	\$54	\$55	\$15	0.7
Classroom 53 E111	1	U-Bend Fluorescent - T8: U T8 (32W) - 3L	Wall Switch	S	92	2,600	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	2,600	0.0	169	0	\$19	\$72	\$10	3.2
Classroom 53 E112	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	13	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.6	2,342	0	\$267	\$982	\$230	2.8
Classroom 53 E112	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	None	S	93	8,760	3	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	None	44	8,760	0.0	477	0	\$54	\$55	\$15	0.7
Classroom 53 E112	1	U-Bend Fluorescent - T8: U T8 (32W) - 3L	Wall Switch	S	92	2,600	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	2,600	0.0	169	0	\$19	\$72	\$10	3.2
Classroom A124	17	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,600	3, 4	Relamp	Yes	17	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,794	0.9	3,597	-1	\$411	\$1,782	\$410	3.3
Conference A168	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	4,940	3, 4	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,409	0.1	1,027	0	\$117	\$434	\$80	3.0
Conference Paterson Rm	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
Conference Paterson Rm	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 4	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,409	0.2	1,825	0	\$208	\$562	\$115	2.1
Conference Paterson Rm	45	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	1,500	3, 4	Relamp	Yes	45	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,035	1.3	2,913	-1	\$333	\$4,071	\$555	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
Corridor 11 Academic	4	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	4,380	3, 5	Relamp	Yes	4	LED Lamps: GX23 (Plug-In) Lamps	High/Low Control	19	3,022	0.0	248	0	\$28	\$325	\$148	6.2
Corridor 11 Academic	3	Compact Fluorescent: (2) 26W Biaxial Plug-In Lamps	Wall Switch	S	52	4,940	3, 5	Relamp	Yes	3	LED Lamps: GX23 (Plug-In) Lamps	High/Low Control	37	3,409	0.1	432	0	\$49	\$300	\$111	3.8
Corridor 11 Academic	3	Compact Fluorescent: (2) 26W Biaxial Plug-In Lamps	Wall Switch	S	52	4,940	3, 5	Relamp	Yes	3	LED Lamps: GX23 (Plug-In) Lamps	High/Low Control	37	3,409	0.1	432	0	\$49	\$300	\$111	3.8
Corridor 11 Academic	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 11 Academic	10	Incandescent: (1) 65W BR30 Screw-In Lamp	Wall Switch	S	65	4,940	3, 5	Relamp	Yes	10	LED Lamps: BR30 Lamps	High/Low Control	10	3,409	0.4	3,157	-1	\$360	\$689	\$380	0.9
Corridor 11 Academic	1	LED Lamps: (1) 6W R16 Screw-In Lamp	Wall Switch	S	6	4,940		None	No	1	LED Lamps: (1) 6W R16 Screw-In Lamp	Wall Switch	6	4,940	0.0	0	0	\$0	\$0	\$0	0.0
Corridor 11 Academic	1	Linear Fluorescent - EST12: 4' T12 (34W) - 3L	Wall Switch	S	115	4,940	2	Relamp & Reballast	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	4,940	0.1	389	0	\$44	\$98	\$15	1.9
Corridor 11 Academic	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 5	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	3,409	0.4	2,738	-1	\$313	\$888	\$540	1.1
Corridor 11 Academic	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 5	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	3,409	0.2	1,141	0	\$130	\$408	\$225	1.4
Corridor 11 Academic	11	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 5	Relamp	Yes	11	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	3,409	0.3	2,510	-1	\$287	\$852	\$495	1.2
Corridor 11 Academic	4	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 5	Relamp	Yes	4	LED - Linear Tubes: (2) U-Lamp	High/Low Control	33	3,409	0.1	853	0	\$97	\$515	\$180	3.4
Corridor 11 Academic	6	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 5	Relamp	Yes	6	LED - Linear Tubes: (2) U-Lamp	High/Low Control	33	3,409	0.2	1,279	0	\$146	\$660	\$270	2.7
Corridor 12 Kitchen	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	\$0	\$0	\$0	0.0
Corridor 12 Kitchen	5	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	4,940	3, 5	Relamp	Yes	5	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	3,409	0.2	1,711	0	\$195	\$499	\$250	1.3
Corridor 17	2	Compact Fluorescent: (1) 26W Biaxial Plug-In Lamp	Wall Switch	S	26	4,940	3, 5	Relamp	Yes	2	LED Lamps: GX23 (Plug-In) Lamps	High/Low Control	19	3,409	0.0	140	0	\$16	\$250	\$72	11.1
Corridor 17	1	Compact Fluorescent: (2) 26W Biaxial Plug-In Lamps	Wall Switch	S	52	4,940	3	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Wall Switch	37	4,940	0.0	82	0	\$9	\$25	\$2	2.5
Corridor 17	1	Compact Fluorescent: (2) 40W Biaxial Plug-In Lamps	Wall Switch	S	80	4,940	3	Relamp	No	1	LED Lamps: PL-L (Bi-ax) Lamps	Wall Switch	56	4,940	0.0	130	0	\$15	\$27	\$2	1.7
Corridor 17	2	Compact Fluorescent: (2) 40W Biaxial Plug-In Lamps	Wall Switch	S	80	4,940	3, 5	Relamp	Yes	2	LED Lamps: PL-L (Bi-ax) Lamps	High/Low Control	56	3,409	0.1	450	0	\$51	\$279	\$74	4.0
Corridor 17	15	Compact Fluorescent: (2) 40W Biaxial Plug-In Lamps	Wall Switch	S	80	4,940	3, 5	Relamp	Yes	15	LED Lamps: PL-L (Bi-ax) Lamps	High/Low Control	56	3,409	0.4	3,371	-1	\$385	\$1,080	\$555	1.4
Corridor 17	12	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	12	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	\$0	\$0	\$0	0.0
Corridor 17	18	Linear Fluorescent - T5HO: 4' T5HO (54W) - 2L	Wall Switch	S	117	4,940	3, 5	Relamp	Yes	18	LED - Linear Tubes: (2) 4' T5HO (25W) Lamps	High/Low Control	51	3,409	1.1	8,002	-2	\$913	\$1,702	\$810	1.0
Corridor 17	23	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	4,940	3, 5	Relamp	Yes	23	LED - Linear Tubes: (2) 2' Lamps	High/Low Control	17	3,409	0.4	2,658	-1	\$303	\$1,648	\$943	2.3
Corridor 17	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 5	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	3,409	0.2	1,825	0	\$208	\$742	\$360	1.8
Corridor 4 Library	3	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	4,940	3, 5	Relamp	Yes	3	LED Lamps: GX23 (Plug-In) Lamps	High/Low Control	19	3,409	0.0	210	0	\$24	\$300	\$111	7.9
Corridor 4 Library	20	Compact Fluorescent: (2) 26W Biaxial Plug-In Lamps	Wall Switch	S	52	4,940	3, 5	Relamp	Yes	20	LED Lamps: GX23 (Plug-In) Lamps	High/Low Control	37	3,409	0.4	2,877	-1	\$328	\$1,400	\$740	2.0

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 4 Library	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 4 Library	34	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,940	3, 5	Relamp	Yes	34	LED - Linear Tubes: (1) 4' Lamp	High/Low Control	15	3,409	0.5	4,064	-1	\$464	\$1,971	\$1,360	1.3
Corridor 4 Library	52	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 5	Relamp	Yes	52	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	3,409	1.6	11,865	-2	\$1,354	\$3,924	\$2,340	1.2
Corridor 4 Library	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	4,940	3, 5	Relamp	Yes	13	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	3,409	0.6	4,449	-1	\$508	\$1,387	\$650	1.5
Corridor A150	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 A150	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	4,940	3, 5	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	3,409	0.1	685	0	\$78	\$335	\$100	3.0
Corridor A150	3	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 5	Relamp	Yes	3	LED - Linear Tubes: (2) U-Lamp	High/Low Control	33	3,409	0.1	640	0	\$73	\$442	\$135	4.2
Corridor Academic Facility Offices	13	Compact Fluorescent: (2) 26W Biaxial Plug-In Lamps	Wall Switch	S	52	4,940	3, 5	Relamp	Yes	13	LED Lamps: GX23 (Plug-In) Lamps	High/Low Control	37	3,409	0.2	1,870	0	\$213	\$1,000	\$481	2.4
Corridor Academic Facility Offices	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 Academic Facility Offices	24	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 5	Relamp	Yes	24	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	3,409	0.7	5,476	-1	\$625	\$1,776	\$1,080	1.1
Dining Area Academic	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
Dining Area Academic	18	Metal Halide: (1) 250W Lamp	Wall Switch	S	295	4,940	3, 4	Relamp	Yes	18	LED Lamps - E39: 125 - 250W Lamp	Occupancy Sensor	75	3,409	3.2	23,793	-5	\$2,716	\$4,824	\$1,420	1.3
Electrical Room 108	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	500	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	500	0.0	16	0	\$2	\$72	\$10	34.3
Electrical Room 12 Outside Gym	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.0	18	0	\$2	\$37	\$10	12.8
Electrical Room 149	1	Compact Fluorescent: (2) 26W Biaxial Plug-In Lamps	Wall Switch	S	52	500	3	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Wall Switch	37	500	0.0	8	0	\$1	\$25	\$2	24.4
Electrical Room 4	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.0	18	0	\$2	\$37	\$10	12.8
Electrical Room A130	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	500	3	Relamp	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	500	0.0	10	0	\$1	\$18	\$5	12.1
Electrical Room Academic	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	500	3	Relamp	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	500	0.0	10	0	\$1	\$18	\$5	12.1
Exterior 4	1	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch		26	4,940	3	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Wall Switch	19	4,940	0.0	35	0	\$4	\$25	\$2	5.7
Exterior 4	1	Compact Fluorescent: (2) 40W Biaxial Plug-In Lamps	Timeclock		80	4,380	3	Relamp	No	1	LED Lamps: PL-L (BiAx) Lamps	Timeclock	56	4,380	0.0	105	0	\$12	\$27	\$2	2.1
Exterior 4	1	Compact Fluorescent: (1) 23W Spiral Plug-In Lamp	Timeclock		23	4,380	3	Relamp	No	1	LED Lamps: A19 Lamps	Timeclock	17	4,380	0.0	26	0	\$3	\$17	\$1	5.3
Exterior 4	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
Exterior 4	7	Incandescent: (2) 65W BR30 Screw-In Lamps	Timeclock		130	4,380	3	Relamp	No	7	LED Lamps: BR30 Lamps	Timeclock	20	4,380	0.0	3,373	0	\$391	\$334	\$42	0.7
Exterior 4	3	LED Lamps: (1) 10W A19 Screw-In Lamp	Timeclock		10	4,380		None	No	3	LED Lamps: (1) 10W A19 Screw-In Lamp	Timeclock	10	4,380	0.0	0	0	\$0	\$0	\$0	0.0
Exterior 4	4	LED Lamps: (1) 100W Corn Bulb Screw-In Lamp	Timeclock		100	4,380		None	No	4	LED Lamps: (1) 100W Corn Bulb Screw-In Lamp	Timeclock	100	4,380	0.0	0	0	\$0	\$0	\$0	0.0

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost (\$)	Total Incentives	Simple Payback w/ Incentives in Years
Exterior 4	6	LED - Fixtures: Wall Pack	Photocell		75	4,380		None	No	6	LED - Fixtures: Wall Pack	Photocell	75	4,380	0.0	0	0	\$0	\$0	\$0	0.0
Exterior 4	3	Metal Halide: (1) 150W Lamp	Timeclock		190	4,380	1	Fixture Replacement	No	3	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Timeclock	45	4,380	0.0	1,905	0	\$221	\$1,037	\$150	4.0
Exterior 4	6	Metal Halide: (1) 250W Lamp	Timeclock		295	4,380	1	Fixture Replacement	No	6	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Timeclock	75	4,380	0.0	5,782	0	\$670	\$2,824	\$300	3.8
Exterior 6	3	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Timeclock		26	4,380	3	Relamp	No	3	LED Lamps: GX23 (Plug-In) Lamps	Timeclock	19	4,380	0.0	92	0	\$11	\$75	\$6	6.5
Exterior 6	3	Compact Fluorescent: (2) 26W Biaxial Plug-In Lamps	Timeclock		52	4,380	3	Relamp	No	3	LED Lamps: GX23 (Plug-In) Lamps	Timeclock	37	4,380	0.0	197	0	\$23	\$75	\$6	3.0
Exterior 6	12	LED - Fixtures: Wall Pack	Timeclock		50	4,380		None	No	12	LED - Fixtures: Wall Pack	Timeclock	50	4,380	0.0	0	0	\$0	\$0	\$0	0.0
Exterior 6	4	Metal Halide: (1) 50W Lamp	Timeclock		72	4,380	1	Fixture Replacement	No	4	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Timeclock	15	4,380	0.0	999	0	\$116	\$663	\$200	4.0
Exterior 6	1	Metal Halide: (1) 150W Lamp	Timeclock		190	4,380	1	Fixture Replacement	No	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Timeclock	45	4,380	0.0	635	0	\$74	\$346	\$50	4.0
Exterior 6	6	Metal Halide: (1) 150W Lamp	Timeclock		190	4,380	1	Fixture Replacement	No	6	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Timeclock	45	4,380	0.0	3,811	0	\$441	\$2,075	\$300	4.0
Exterior 6	4	Metal Halide: (1) 50W Lamp	Timeclock		72	4,380	1	Fixture Replacement	No	4	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Timeclock	15	4,380	0.0	999	0	\$116	\$663	\$200	4.0
Gymnasium 1	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
Gymnasium 1	30	Linear Fluorescent - T5HO: 4' T5HO (54W) - 4L	Wall Switch	S	234	4,940	3, 4	Relamp	Yes	30	LED - Linear Tubes: (4) 4' T5HO (25W) Lamps	Occupancy Sensor	102	3,409	3.5	26,673	-6	\$3,045	\$3,708	\$670	1.0
Janitorial 2	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.0	18	0	\$2	\$37	\$10	12.8
Janitorial 6 Kitchen	1	Compact Fluorescent: (2) 26W Biaxial Plug-In Lamps	Wall Switch	S	52	500	3	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Wall Switch	37	500	0.0	8	0	\$1	\$50	\$10	42.5
Janitorial 9 Boys Locker	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	500	3	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	500	0.0	9	0	\$1	\$33	\$6	26.4
Kitchen 3 Unit 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
Kitchen 3 Unit 1	5	LED Lamps: (1) 10W A19 Screw-In Lamp	Wall Switch	S	10	4,940	4	None	Yes	5	LED Lamps: (1) 10W A19 Screw-In Lamp	Occupancy Sensor	10	3,409	0.0	84	0	\$10	\$270	\$35	24.4
Kitchen 3 Unit 1	4	LED - Fixtures: Ceiling Mount	Wall Switch	S	15	4,940	4	None	Yes	4	LED - Fixtures: Ceiling Mount	Occupancy Sensor	15	3,409	0.0	101	0	\$12	\$270	\$35	20.4
Kitchen 3 Unit 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
Kitchen 3 Unit 2	5	LED Lamps: (1) 10W A19 Screw-In Lamp	Wall Switch	S	10	4,940	4	None	Yes	5	LED Lamps: (1) 10W A19 Screw-In Lamp	Occupancy Sensor	10	3,409	0.0	84	0	\$10	\$270	\$35	24.4
Kitchen 3 Unit 2	4	LED - Fixtures: Ceiling Mount	Wall Switch	S	15	4,940	4	None	Yes	4	LED - Fixtures: Ceiling Mount	Occupancy Sensor	15	3,409	0.0	101	0	\$12	\$270	\$35	20.4
Kitchen 3 Unit 3	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
Kitchen 3 Unit 3	5	LED Lamps: (1) 10W A19 Screw-In Lamp	Wall Switch	S	10	4,940	4	None	Yes	5	LED Lamps: (1) 10W A19 Screw-In Lamp	Occupancy Sensor	10	3,409	0.0	84	0	\$10	\$270	\$35	24.4
Kitchen 3 Unit 3	4	LED - Fixtures: Ceiling Mount	Wall Switch	S	15	4,940	4	None	Yes	4	LED - Fixtures: Ceiling Mount	Occupancy Sensor	15	3,409	0.0	101	0	\$12	\$270	\$35	20.4
Kitchen 3 Unit 4	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
Kitchen 3 Unit 4	5	LED Lamps: (1) 10W A19 Screw-In Lamp	Wall Switch	S	10	4,940	4	None	Yes	5	LED Lamps: (1) 10W A19 Screw-In Lamp	Occupancy Sensor	10	3,409	0.0	84	0	\$10	\$270	\$35	24.4
Kitchen 3 Unit 4	4	LED - Fixtures: Ceiling Mount	Wall Switch	S	15	4,940	4	None	Yes	4	LED - Fixtures: Ceiling Mount	Occupancy Sensor	15	3,409	0.0	101	0	\$12	\$270	\$35	20.4
Kitchen 3 Unit 5	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
Kitchen 3 Unit 5	5	LED Lamps: (1) 10W A19 Screw-In Lamp	Wall Switch	S	10	4,940	4	None	Yes	5	LED Lamps: (1) 10W A19 Screw-In Lamp	Occupancy Sensor	10	3,409	0.0	84	0	\$10	\$270	\$35	24.4
Kitchen 3 Unit 5	4	LED - Fixtures: Ceiling Mount	Wall Switch	S	15	4,940	4	None	Yes	4	LED - Fixtures: Ceiling Mount	Occupancy Sensor	15	3,409	0.0	101	0	\$12	\$270	\$35	20.4
Kitchen 8 Main Kitchen	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 8 Main Kitchen	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	4,940	3, 4	Relamp	Yes	3	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	3,409	0.0	347	0	\$40	\$368	\$53	7.9
Kitchen 8 Main Kitchen	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 4	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,409	0.5	3,651	-1	\$417	\$1,124	\$230	2.1
Kitchen 8 Main Kitchen	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,409	0.1	913	0	\$104	\$416	\$75	3.3
Library 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
Library 1	15	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	4,940	3, 4	Relamp	Yes	15	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	3,409	0.2	1,734	0	\$198	\$758	\$125	3.2
Library 1	61	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 4	Relamp	Yes	61	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,409	1.8	13,919	-3	\$1,589	\$3,577	\$785	1.8
Locker Room 1 Kitchen	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	\$0	\$0	\$0	0.0
Locker Room 1 Kitchen	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	4,940	3	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	4,940	0.0	269	0	\$31	\$55	\$15	1.3
Locker Room 1 Kitchen	3	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 4	Relamp	Yes	3	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	3,409	0.1	640	0	\$73	\$487	\$65	5.8
Locker Room 3 Boys	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
Locker Room 3 Boys	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 4	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,409	0.1	685	0	\$78	\$380	\$65	4.0
Locker Room 3 Boys	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	4,940	3, 4	Relamp	Yes	8	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,409	0.4	2,738	-1	\$313	\$708	\$155	1.8
Mechanical 112	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	500	3	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	500	0.0	31	0	\$4	\$73	\$20	15.1
Mechanical 13 Founders B	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	500	3	Relamp	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	500	0.0	10	0	\$1	\$18	\$5	12.1
Mechanical 9 Kitchen	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.1	54	0	\$6	\$110	\$30	12.8
Office - Corridor A126	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.1	360	0	\$41	\$226	\$50	4.3
Office - Enclosed 138 S202	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,600	0.0	94	0	\$11	\$37	\$10	2.5
Office - Enclosed 138 S203	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,600	0.0	94	0	\$11	\$37	\$10	2.5
Office - Enclosed 138 S204	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,600	0.0	94	0	\$11	\$37	\$10	2.5

	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	
Office - Enclosed 138 S205/206	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,600	0.0	94	0	\$11	\$37	\$10	2.5	
Office - Enclosed 138 S205/206	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,600	0.0	94	0	\$11	\$37	\$10	2.5	
Office - Enclosed 138 S207	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,600	0.0	94	0	\$11	\$37	\$10	2.5	
Office - Enclosed 143 Coach	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	240	0	\$27	\$189	\$40	5.4	
Office - Enclosed 144 Trainers office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	240	0	\$27	\$189	\$40	5.4	
Office - Enclosed 145 Coach	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,600	0.0	94	0	\$11	\$37	\$10	2.5	
Office - Enclosed 146 S102	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,600	3	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,600	0.0	160	0	\$18	\$73	\$20	2.9	
Office - Enclosed 146 S103	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	360	0	\$41	\$380	\$65	7.6	
Office - Enclosed 148 Founders	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.2	721	0	\$82	\$489	\$95	4.8	
Office - Enclosed 149 Public Safety	1	Compact Fluorescent: (2) 26W Bi-axial Plug-In Lamps	Wall Switch	S	52	4,940	3	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Wall Switch	37	4,940	0.0	82	0	\$9	\$50	\$10	4.3	
Office - Enclosed 149 Public Safety	4	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,940	3, 4	Relamp	Yes	4	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	3,409	0.1	770	0	\$88	\$465	\$71	4.5	
Office - Enclosed 149 Public Safety	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	4,940	3	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	4,940	0.0	304	0	\$35	\$73	\$20	1.5	
Office - Enclosed 149 Public Safety	4	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	3,409	0.1	853	0	\$97	\$560	\$75	5.0	
Office - Enclosed 150 Public Safety	2	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	3,409	0.1	426	0	\$49	\$261	\$40	4.5	
Office - Enclosed 151 E102	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.2	600	0	\$69	\$453	\$85	5.4	
Office - Enclosed 151 E102A	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,600	0.0	94	0	\$11	\$37	\$10	2.5	
Office - Enclosed 151 E102B	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	480	0	\$55	\$416	\$75	6.2	
Office - Enclosed 151 E102C	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	360	0	\$41	\$380	\$65	7.6	
Office - Enclosed 151 E103	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	480	0	\$55	\$416	\$75	6.2	
Office - Enclosed 151 E104	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	240	0	\$27	\$189	\$40	5.4	
Office - Enclosed 96 Kitchen	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	240	0	\$27	\$189	\$40	5.4	
Office - Enclosed 97 Lot 3 Security	2	Linear Fluorescent - EST12: 4' T12 (34W) - 2L	Wall Switch	S	72	4,940	2, 4	Relamp & Reballast	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,409	0.1	565	0	\$65	\$254	\$40	3.3	
Office - Enclosed A108	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.4	1,621	0	\$185	\$763	\$170	3.2	
Office - Enclosed A111	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.2	721	0	\$82	\$489	\$95	4.8	
Office - Enclosed A112	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.1	360	0	\$41	\$226	\$50	4.3	

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
Office - Enclosed A114	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.1	360	0	\$41	\$226	\$50	4.3
Office - Enclosed A120	6	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,600	3, 4	Relamp	Yes	6	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,794	0.3	1,269	0	\$145	\$708	\$155	3.8
Office - Enclosed A120	2	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,794	0.1	224	0	\$26	\$261	\$40	8.6
Office - Enclosed A121	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,794	0.1	423	0	\$48	\$262	\$60	4.2
Office - Enclosed A122	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.2	721	0	\$82	\$489	\$95	4.8
Office - Enclosed A122A	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.1	360	0	\$41	\$226	\$50	4.3
Office - Enclosed A123	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.1	540	0	\$62	\$434	\$80	5.7
Office - Enclosed A125A	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	8	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.4	1,441	0	\$165	\$708	\$155	3.4
Office - Enclosed A125A	4	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	2,600	3, 4	Relamp	Yes	4	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,794	0.1	252	0	\$29	\$343	\$55	10.0
Office - Enclosed A125B	4	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	2,600	3, 4	Relamp	Yes	4	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,794	0.1	252	0	\$29	\$343	\$55	10.0
Office - Enclosed A126A	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.1	540	0	\$62	\$434	\$80	5.7
Office - Enclosed A127	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 A127	18	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	2,600	3, 4	Relamp	Yes	18	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,794	0.3	1,132	0	\$129	\$869	\$160	5.5
Office - Enclosed A127	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	2,600	0.0	142	0	\$16	\$55	\$15	2.5
Office - Enclosed A128	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 A128	18	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	2,600	3, 4	Relamp	Yes	18	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,794	0.3	1,132	0	\$129	\$869	\$160	5.5
Office - Enclosed A128	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	2,600	0.0	142	0	\$16	\$55	\$15	2.5
Office - Enclosed A160	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 A160	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.2	721	0	\$82	\$489	\$95	4.8
Office - Enclosed A161	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.1	360	0	\$41	\$226	\$50	4.3
Office - Enclosed A162	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.1	360	0	\$41	\$226	\$50	4.3
Office - Enclosed A163	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.1	360	0	\$41	\$226	\$50	4.3
Office - Enclosed A164	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.1	360	0	\$41	\$226	\$50	4.3
Office - Enclosed A165	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.1	360	0	\$41	\$226	\$50	4.3
Office - Enclosed A166	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.1	360	0	\$41	\$226	\$50	4.3

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
Office - Enclosed A167	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	2,600	0.0	142	0	\$16	\$55	\$15	2.5
Office - Enclosed Study Rm	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	4,940	3, 4	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,409	0.1	1,027	0	\$117	\$434	\$80	3.0
Office - Open Plan 10 G122	1	Compact Fluorescent: (1) 26W Bi axial Plug-In Lamp	Wall Switch	S	26	2,600	3	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Wall Switch	19	2,600	0.0	20	0	\$2	\$25	\$5	8.8
Office - Open Plan 10 G122	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 - Open Plan 10 G122	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	240	0	\$27	\$189	\$40	5.4
Office - Open Plan 10 G122	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.3	1,201	0	\$137	\$635	\$135	3.6
Office - Open Plan 9 E210	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 9 E210	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.5	1,801	0	\$206	\$818	\$185	3.1
Office - Open Plan 9 E210	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	2,600	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	2,600	0.0	83	0	\$9	\$72	\$10	6.6
Office - Open Plan A125	24	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	24	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.7	2,882	-1	\$329	\$1,416	\$310	3.4
Office - Open Plan A130	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	480	0	\$55	\$416	\$75	6.2
Office - Open Plan A130	7	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	7	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.3	1,261	0	\$144	\$653	\$140	3.6
Office - Open Plan A130	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	2,600	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	2,600	0.0	83	0	\$9	\$72	\$10	6.6
Office - Open Plan A130	8	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	8	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,794	0.2	898	0	\$102	\$850	\$115	7.2
Office - Open Plan S101	6	Compact Fluorescent: (1) 26W Bi axial Plug-In Lamp	Wall Switch	S	26	2,600	3, 4	Relamp	Yes	6	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	19	1,794	0.1	221	0	\$25	\$420	\$65	14.1
Office - Open Plan S101	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 - Open Plan S101	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	240	0	\$27	\$189	\$40	5.4
Office - Open Plan S101	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,600	0.0	94	0	\$11	\$37	\$10	2.5
Office - Open Plan S101	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	8	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.4	1,441	0	\$165	\$708	\$155	3.4
Office - Open Plan S101	3	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	3	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,794	0.1	337	0	\$38	\$487	\$65	11.0
Office - Enclosed 131	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	240	0	\$27	\$189	\$40	5.4
Office - Enclosed 132	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	240	0	\$27	\$189	\$40	5.4
Office - Enclosed 133	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	360	0	\$41	\$380	\$65	7.6
Office - Enclosed 134	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	240	0	\$27	\$189	\$40	5.4
Office - Enclosed 135	2	Compact Fluorescent: (1) 23W Spiral Plug-In Lamp	Wall Switch	S	23	2,600	3, 4	Relamp	Yes	2	LED Lamps: A19 Lamps	Occupancy Sensor	17	1,794	0.0	64	0	\$7	\$150	\$22	17.5

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
Office -Enclosed 135	2	Incandescent: (2) 60W A19 Screw-In Lamps	Wall Switch	S	120	2,600	3, 4	Relamp	Yes	2	LED Lamps: A19 Lamps	Occupancy Sensor	18	1,794	0.2	615	0	\$70	\$185	\$24	2.3
Office -Enclosed 135	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	240	0	\$27	\$189	\$40	5.4
Office -Enclosed 136	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	240	0	\$27	\$189	\$40	5.4
Office -Enclosed 137	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	240	0	\$27	\$189	\$40	5.4
Office -Enclosed 138	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	240	0	\$27	\$189	\$40	5.4
Office -Enclosed 139	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	240	0	\$27	\$189	\$40	5.4
Office -Enclosed 144	2	Compact Fluorescent: (1) 23W Spiral Plug-In Lamp	Wall Switch	S	23	2,600	3, 4	Relamp	Yes	2	LED Lamps: A19 Lamps	Occupancy Sensor	17	1,794	0.0	64	0	\$7	\$150	\$22	17.5
Office -Enclosed 144	1	Incandescent: (1) 60W A19 Screw-In Lamp	Wall Switch	S	60	2,600	3	Relamp	No	1	LED Lamps: A19 Lamps	Wall Switch	9	2,600	0.0	146	0	\$17	\$17	\$1	1.0
Office -Enclosed 144	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	240	0	\$27	\$189	\$40	5.4
Office -Enclosed 145	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	240	0	\$27	\$189	\$40	5.4
Office -Enclosed 146	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	240	0	\$27	\$189	\$40	5.4
Office -Enclosed 147	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	240	0	\$27	\$189	\$40	5.4
Office -Enclosed 148	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	240	0	\$27	\$189	\$40	5.4
Office -Enclosed 149	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	360	0	\$41	\$380	\$65	7.6
Office -Enclosed 151	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	240	0	\$27	\$189	\$40	5.4
Office -Enclosed 156	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	240	0	\$27	\$189	\$40	5.4
Office -Enclosed A113	10	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	10	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.5	1,801	0	\$206	\$818	\$185	3.1
Office -Enclosed A116	1	LED Lamps: (1) 10W A19 Screw-In Lamp	Wall Switch	S	10	2,600		None	No	1	LED Lamps: (1) 10W A19 Screw-In Lamp	Wall Switch	10	2,600	0.0	0	0	\$0	\$0	\$0	0.0
Office -Enclosed A116	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.1	540	0	\$62	\$434	\$80	5.7
Office -Enclosed A117	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.1	540	0	\$62	\$434	\$80	5.7
Office -Enclosed A118	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	240	0	\$27	\$189	\$40	5.4
Office -Enclosed A119	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	240	0	\$27	\$189	\$40	5.4
Office -Enclosed A140	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.1	360	0	\$41	\$226	\$50	4.3
Office -Enclosed A140	4	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,794	0.1	449	0	\$51	\$560	\$75	9.5
Office -Enclosed A141	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.1	360	0	\$41	\$226	\$50	4.3

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
Office -Enclosed A142	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	240	0	\$27	\$189	\$40	5.4
Office -Enclosed A143	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,600	0.0	94	0	\$11	\$37	\$10	2.5
Office -Enclosed A152	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	240	0	\$27	\$189	\$40	5.4
Office -Enclosed A153	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	240	0	\$27	\$189	\$40	5.4
Office -Enclosed A154	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	240	0	\$27	\$189	\$40	5.4
Office -Enclosed A155	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	360	0	\$41	\$380	\$65	7.6
Restroom - Female 2	5	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	4,940	3, 4	Relamp	Yes	5	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,409	0.2	1,711	0	\$195	\$544	\$110	2.2
Restroom - Female 2	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	4,940	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	4,940	0.0	158	0	\$18	\$72	\$10	3.5
Restroom - Female 7 Academic	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	4,940	3	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,940	0.0	87	0	\$10	\$33	\$6	2.7
Restroom - Female 7 Academic	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 4	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,409	0.1	685	0	\$78	\$380	\$65	4.0
Restroom - Female 9	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	4,940	3, 4	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,409	0.1	1,027	0	\$117	\$434	\$80	3.0
Restroom - Male	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	4,940	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,409	0.1	685	0	\$78	\$226	\$50	2.2
Restroom - Male 2	5	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	4,940	3, 4	Relamp	Yes	5	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,409	0.2	1,711	0	\$195	\$544	\$110	2.2
Restroom - Male 2	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	4,940	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	4,940	0.0	158	0	\$18	\$72	\$10	3.5
Restroom - Unisex 10 IT-A	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,940	0.0	179	0	\$20	\$37	\$10	1.3
Restroom - Unisex 5 Kitchen	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	4,940	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	4,940	0.0	158	0	\$18	\$72	\$10	3.5
Restroom - Unisex IT-B	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,940	0.0	179	0	\$20	\$37	\$10	1.3
Server Room 1 G122	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3, 4	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	345	0.2	185	0	\$21	\$562	\$115	21.2
Stairs 4 Gym	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	4,940	3, 5	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	3,409	0.1	456	0	\$52	\$298	\$90	4.0
Storage 150	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.0	18	0	\$2	\$37	\$10	12.8
Storage 21 Kitchen	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	500	3	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	500	0.0	27	0	\$3	\$55	\$15	12.8
Storage 28 Gym	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.1	54	0	\$6	\$110	\$30	12.8
Storage 30 Theater	4	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	500	3	Relamp	No	4	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	500	0.1	39	0	\$4	\$73	\$20	12.1
Storage 31 Back Stage	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	500	3	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	500	0.0	27	0	\$3	\$55	\$15	12.8
Storage 32	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.0	18	0	\$2	\$37	\$10	12.8

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
Storage 33 IT founders	3	Incandescent: (1) 60W A19 Screw-In Lamp	Wall Switch	S	60	500	3, 4	Relamp	Yes	3	LED Lamps: A19 Lamps	Occupancy Sensor	9	345	0.1	89	0	\$10	\$322	\$3	31.5
Storage 34 IT - B	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.1	54	0	\$6	\$110	\$30	12.8
Storage 35 IT	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.0	18	0	\$2	\$37	\$10	12.8
Storage 6	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.0	18	0	\$2	\$37	\$10	12.8
Storage Academic	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	345	0.1	92	0	\$11	\$416	\$40	35.7
Theater 1	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 1	31	Incandescent: (1) 750W Screw-in Lamps	Wall Switch	S	750	0		None	No	31	Incandescent: (1) 750W Screw-in Lamps	Wall Switch	750	0	0.0	0	0	\$0	\$0	\$0	0.0
Theater 1	10	LED Lamps: (1) 10W A19 Screw-In Lamp	Wall Switch	S	10	1,000		None	No	10	LED Lamps: (1) 10W A19 Screw-In Lamp	Wall Switch	10	1,000	0.0	0	0	\$0	\$0	\$0	0.0
Theater 1	4	LED Lamps: (1) 12W PAR20 Screw-In Lamp	Wall Switch	S	12	1,000		None	No	4	LED Lamps: (1) 12W PAR20 Screw-In Lamp	Wall Switch	12	1,000	0.0	0	0	\$0	\$0	\$0	0.0
Theater 1	8	LED Lamps: (1) 15W PAR30 Screw-In Lamp	Wall Switch	S	15	1,000		None	No	8	LED Lamps: (1) 15W PAR30 Screw-In Lamp	Wall Switch	15	1,000	0.0	0	0	\$0	\$0	\$0	0.0
Theater 1	50	LED Lamps: (1) 15W PAR30 Screw-In Lamp	Wall Switch	S	15	1,000		None	No	50	LED Lamps: (1) 15W PAR30 Screw-In Lamp	Wall Switch	15	1,000	0.0	0	0	\$0	\$0	\$0	0.0
Theater 1	1	Linear Fluorescent - EST12: 4' T12 (34W) - 4L	Wall Switch	S	144	100	2	Relamp & Reballast	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	100	0.1	9	0	\$1	\$118	\$20	91.1
Classroom 51 E207	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.4	1,441	0	\$165	\$708	\$155	3.4
Classroom A201	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,080	3	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,080	0.1	453	0	\$52	\$219	\$60	3.1
Classroom A202	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,080	3	Relamp	No	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,080	0.2	604	0	\$69	\$292	\$80	3.1
Classroom A203	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,080	3	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,080	0.1	453	0	\$52	\$219	\$60	3.1
Classroom A205	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,080	3	Relamp	No	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,080	0.2	680	0	\$78	\$329	\$90	3.1
Classroom A206A	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 A206A	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.4	1,441	0	\$165	\$708	\$155	3.4
Classroom A206B	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 A206B	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.4	1,441	0	\$165	\$708	\$155	3.4
Classroom A207	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	S	44	2,080		None	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,080	0.0	0	0	\$0	\$0	\$0	0.0
Classroom A208A	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 A208A	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.4	1,441	0	\$165	\$708	\$155	3.4
Classroom A208B	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
Classroom A208B	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.4	1,441	0	\$165	\$708	\$155	3.4
Classroom A209	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.4	1,441	0	\$165	\$708	\$155	3.4
Classroom A210A	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 A210A	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.4	1,441	0	\$165	\$708	\$155	3.4
Classroom A210B	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 A210B	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.4	1,441	0	\$165	\$708	\$155	3.4
Classroom A211	10	Compact Fluorescent: (2) 26W Biaxial Plug-In Lamps	Wall Switch	S	52	2,600	3, 4	Relamp	Yes	10	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	1,794	0.2	757	0	\$86	\$770	\$135	7.3
Classroom A211	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 A211	1	Linear Fluorescent - T5: 4' T5 (28W) - 1L	Wall Switch	S	30	2,600	3	Relamp	No	1	LED - Linear Tubes: (1) 4' T5 (14.5W) Lamp	Wall Switch	15	2,600	0.0	43	0	\$5	\$33	\$5	5.7
Classroom A211	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	2,600	3, 4	Relamp	Yes	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,794	0.0	189	0	\$22	\$325	\$50	12.8
Classroom A211	15	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	15	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.7	2,702	-1	\$308	\$1,092	\$260	2.7
Classroom A212	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	1,820	3	Relamp	No	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,820	0.2	595	0	\$68	\$329	\$90	3.5
Classroom A212B	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	1,820	3	Relamp	No	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,820	0.2	595	0	\$68	\$329	\$90	3.5
Classroom A213	10	Compact Fluorescent: (2) 26W Biaxial Plug-In Lamps	Wall Switch	S	52	2,600	3, 4	Relamp	Yes	10	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	37	1,794	0.2	757	0	\$86	\$770	\$135	7.3
Classroom A213	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 A213	1	Linear Fluorescent - T5: 4' T5 (28W) - 1L	Wall Switch	S	30	2,600	3	Relamp	No	1	LED - Linear Tubes: (1) 4' T5 (14.5W) Lamp	Wall Switch	15	2,600	0.0	43	0	\$5	\$33	\$5	5.7
Classroom A213	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	2,600	3, 4	Relamp	Yes	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,794	0.0	189	0	\$22	\$325	\$50	12.8
Classroom A213	15	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	15	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.7	2,702	-1	\$308	\$1,092	\$260	2.7
Classroom A218	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	1,820	3	Relamp	No	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,820	0.2	595	0	\$68	\$329	\$90	3.5
Classroom A220	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	1,820	3	Relamp	No	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,820	0.2	595	0	\$68	\$329	\$90	3.5
Classroom A221	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	1,820	3	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,820	0.1	396	0	\$45	\$219	\$60	3.5
Classroom A222	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	1,820	3	Relamp	No	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,820	0.2	595	0	\$68	\$329	\$90	3.5
Classroom A223	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	1,820	3	Relamp	No	7	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,820	0.2	462	0	\$53	\$256	\$70	3.5
Classroom A224	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	1,820	3	Relamp	No	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,820	0.1	330	0	\$38	\$183	\$50	3.5
Classroom A224A	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	1,820	3	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,820	0.1	396	0	\$45	\$219	\$60	3.5

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
Classroom A225	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	1,820	3	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,820	0.1	396	0	\$45	\$219	\$60	3.5
Classroom A226	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	1,820	3	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,820	0.1	396	0	\$45	\$219	\$60	3.5
Classroom A228	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	1,820	3	Relamp	No	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,820	0.2	595	0	\$68	\$329	\$90	3.5
Conference A230	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	4,940	3, 4	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,409	0.4	3,080	-1	\$352	\$763	\$170	1.7
Corridor 15 Founders A	3	Compact Fluorescent: (2) 40W Biaxial Plug-In Lamps	Wall Switch	S	80	4,940	3, 5	Relamp	Yes	3	LED Lamps: PL-L (Biax) Lamps	High/Low Control	56	3,409	0.1	674	0	\$77	\$306	\$111	2.5
Corridor 15 Founders A	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 15 Founders A	5	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	S	44	4,940	5	None	Yes	5	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	3,409	0.0	366	0	\$42	\$225	\$175	1.2
Corridor 15 Founders A	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 5	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	3,409	0.1	685	0	\$78	\$335	\$135	2.6
Corridor 16 Founders B	31	Compact Fluorescent: (2) 40W Biaxial Plug-In Lamps	Wall Switch	S	80	4,940	3, 5	Relamp	Yes	31	LED Lamps: PL-L (Biax) Lamps	High/Low Control	56	3,409	0.9	6,967	-1	\$795	\$2,187	\$1,147	1.3
Corridor 16 Founders B	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 16 Founders B	10	LED - Fixtures: Ceiling Mount	Wall Switch	S	30	4,940	5	None	Yes	10	LED - Fixtures: Ceiling Mount	High/Low Control	30	3,409	0.1	505	0	\$58	\$450	\$350	1.7
Corridor 16 Founders B	21	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 5	Relamp	Yes	21	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	3,409	0.6	4,792	-1	\$547	\$1,667	\$945	1.3
Corridor 3	7	Compact Fluorescent: (4) 40W Biaxial Plug-In Lamps	Wall Switch	S	160	4,940	3, 5	Relamp	Yes	7	LED Lamps: PL-L (Biax) Lamps	High/Low Control	112	3,409	0.4	3,147	-1	\$359	\$828	\$273	1.5
Corridor 3	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 3	36	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 5	Relamp	Yes	36	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	3,409	1.1	8,214	-2	\$938	\$2,665	\$1,620	1.1
Corridor Academic	3	Compact Fluorescent: (1) 26W Biaxial Plug-In Lamp	Wall Switch	S	26	4,940	3, 5	Relamp	Yes	3	LED Lamps: GX23 (Plug-In) Lamps	High/Low Control	19	3,409	0.0	210	0	\$24	\$300	\$120	7.5
Corridor Academic	2	Compact Fluorescent: (2) 26W Biaxial Plug-In Lamps	Wall Switch	S	52	4,940	3, 5	Relamp	Yes	2	LED Lamps: GX23 (Plug-In) Lamps	High/Low Control	37	3,409	0.0	288	0	\$33	\$325	\$90	7.2
Corridor Academic	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 Academic	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 5	Relamp	Yes	9	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	3,409	0.3	2,054	0	\$234	\$779	\$405	1.6
Corridor Academic	19	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 5	Relamp	Yes	19	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	3,409	0.6	4,335	-1	\$495	\$1,594	\$855	1.5
Corridor Academic	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 5	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	3,409	0.1	456	0	\$52	\$298	\$90	4.0
Corridor Academic	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 5	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	3,409	0.2	1,369	0	\$156	\$444	\$270	1.1
Electrical Room 15	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.0	18	0	\$2	\$37	\$10	12.8
Electrical Room 2	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.0	18	0	\$2	\$37	\$10	12.8
Electrical Room 3	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.0	18	0	\$2	\$37	\$10	12.8

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
Electrical Room 4	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.0	18	0	\$2	\$37	\$10	12.8
Electrical Room 7	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	500		None	No	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	500	0.0	0	0	\$0	\$0	\$0	0.0
Electrical Room 8	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	500	3	Relamp	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	500	0.0	10	0	\$1	\$18	\$5	12.1
Janitorial 1	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.0	18	0	\$2	\$37	\$10	12.8
Janitorial 8	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	500	3	Relamp	No	2	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	500	0.0	19	0	\$2	\$37	\$10	12.1
Kitchen A234	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	4,940	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,409	0.1	685	0	\$78	\$226	\$50	2.2
Locker Room Women's	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
Locker Room Women's	13	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 4	Relamp	Yes	13	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,409	0.4	2,966	-1	\$339	\$745	\$165	1.7
Locker Room Women's	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,409	0.1	456	0	\$52	\$189	\$40	2.9
Locker Room Women's	2	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	3,409	0.1	426	0	\$49	\$261	\$40	4.5
Office - Enclosed 122 E200	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	360	0	\$41	\$380	\$65	7.6
Office - Enclosed 122 E200A	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	240	0	\$27	\$189	\$40	5.4
Office - Enclosed 122 E200B	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	240	0	\$27	\$189	\$40	5.4
Office - Enclosed 122 E200C	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	240	0	\$27	\$189	\$40	5.4
Office - Enclosed 122 E201	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	480	0	\$55	\$416	\$75	6.2
Office - Enclosed 127 E202	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	480	0	\$55	\$416	\$75	6.2
Office - Enclosed 128 E203	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	240	0	\$27	\$189	\$40	5.4
Office - Enclosed 128 E204	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	240	0	\$27	\$189	\$40	5.4
Office - Enclosed 128 E205	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	240	0	\$27	\$189	\$40	5.4
Office - Enclosed 128 E206	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	240	0	\$27	\$189	\$40	5.4
Office - Enclosed 132 E213215	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	240	0	\$27	\$189	\$40	5.4
Office - Enclosed 133 E217	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	240	0	\$27	\$189	\$40	5.4
Office - Enclosed 134 E212	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	240	0	\$27	\$189	\$40	5.4
Office - Enclosed 134 E214	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	240	0	\$27	\$189	\$40	5.4
Office - Enclosed 134 E216	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	240	0	\$27	\$189	\$40	5.4

Existing Conditions							Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost (\$)	Total Incentives	Simple Payback w/ Incentives in Years
Office - Enclosed A204A	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,600	0.0	94	0	\$11	\$37	\$10	2.5
Office - Enclosed A204B	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,600	0.0	94	0	\$11	\$37	\$10	2.5
Office - Enclosed A204C	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,600	0.0	94	0	\$11	\$37	\$10	2.5
Office - Enclosed A204D	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,600	0.0	94	0	\$11	\$37	\$10	2.5
Office - Enclosed A204E	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,600	0.0	94	0	\$11	\$37	\$10	2.5
Office - Enclosed A219	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	240	0	\$27	\$189	\$40	5.4
Office - Enclosed A220A	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	480	0	\$55	\$416	\$75	6.2
Office - Enclosed A231	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 A231	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.2	721	0	\$82	\$489	\$95	4.8
Office - Enclosed A231	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.1	360	0	\$41	\$226	\$50	4.3
Office - Enclosed A231A	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.1	360	0	\$41	\$226	\$50	4.3
Office - Enclosed A231B	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.1	360	0	\$41	\$226	\$50	4.3
Office - Enclosed A232	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.1	360	0	\$41	\$226	\$50	4.3
Office - Enclosed A233	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.1	360	0	\$41	\$226	\$50	4.3
Office - Enclosed A235	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.1	360	0	\$41	\$226	\$50	4.3
Office - Enclosed A236	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.1	360	0	\$41	\$226	\$50	4.3
Office - Enclosed A237	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.2	721	0	\$82	\$489	\$95	4.8
Office - Enclosed A238	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.1	360	0	\$41	\$226	\$50	4.3
Office - Enclosed A239	1	Compact Fluorescent: (1) 23W Spiral Plug-In Lamp	Wall Switch	S	23	2,600	3	Relamp	No	1	LED Lamps: A19 Lamps	Wall Switch	17	2,600	0.0	17	0	\$2	\$17	\$1	8.3
Office - Enclosed A239	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.2	721	0	\$82	\$489	\$95	4.8
Office - Enclosed A241	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.1	360	0	\$41	\$226	\$50	4.3
Office - Enclosed A242	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.2	721	0	\$82	\$489	\$95	4.8
Office - Enclosed A243	5	LED Lamps: (1) 10W A19 Screw-In Lamp	Wall Switch	S	10	2,600	4	None	Yes	5	LED Lamps: (1) 10W A19 Screw-In Lamp	Occupancy Sensor	10	1,794	0.0	44	0	\$5	\$270	\$35	46.4
Office - Enclosed A243	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.1	360	0	\$41	\$226	\$50	4.3
Office - Enclosed A250	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.2	721	0	\$82	\$489	\$95	4.8

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
Office - Enclosed A251	2	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,794	0.1	224	0	\$26	\$261	\$40	8.6
Office - Enclosed A252	2	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,794	0.1	224	0	\$26	\$261	\$40	8.6
Office - Enclosed A253	2	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,794	0.1	224	0	\$26	\$261	\$40	8.6
Office - Enclosed A254	2	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,794	0.1	224	0	\$26	\$261	\$40	8.6
Office - Enclosed A255	2	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,794	0.1	224	0	\$26	\$261	\$40	8.6
Office - Enclosed A256	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	2,600	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	2,600	0.0	83	0	\$9	\$72	\$10	6.6
Office - Open Plan 230	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 - Open Plan 230	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.5	2,162	0	\$247	\$927	\$215	2.9
Office - Open Plan 230	5	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	5	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.2	901	0	\$103	\$544	\$110	4.2
Office A204	4	LED Lamps: (1) 6W R16 Screw-In Lamp	Wall Switch	S	6	2,600		None	No	4	LED Lamps: (1) 6W R16 Screw-In Lamp	Wall Switch	6	2,600	0.0	0	0	\$0	\$0	\$0	0.0
Office A204	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	1,820	3	Relamp	No	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,820	0.3	793	0	\$91	\$438	\$120	3.5
Restroom - Female 1	5	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	4,940	3, 4	Relamp	Yes	5	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,409	0.2	1,711	0	\$195	\$544	\$110	2.2
Restroom - Female 1	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	4,940	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	4,940	0.0	158	0	\$18	\$72	\$10	3.5
Restroom - Female 6	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	4,940	3	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,940	0.0	87	0	\$10	\$33	\$6	2.7
Restroom - Female 6	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,409	0.1	456	0	\$52	\$189	\$40	2.9
Restroom - Female Gym	5	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 4	Relamp	Yes	5	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	3,409	0.1	1,066	0	\$122	\$632	\$85	4.5
Restroom - Male 1	5	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	4,940	3, 4	Relamp	Yes	5	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,409	0.2	1,711	0	\$195	\$544	\$110	2.2
Restroom - Male 1	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	4,940	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	4,940	0.0	158	0	\$18	\$72	\$10	3.5
Restroom - Male 6	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	4,940	3	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,940	0.0	87	0	\$10	\$33	\$6	2.7
Restroom - Male 6	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,940	0.0	179	0	\$20	\$37	\$10	1.3
Restroom - Male 6	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,409	0.1	456	0	\$52	\$189	\$40	2.9
Restroom - Male 6 (1)	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 4	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,409	0.1	685	0	\$78	\$380	\$65	4.0
Restroom - Male 9	3	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 4	Relamp	Yes	3	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	3,409	0.1	640	0	\$73	\$487	\$65	5.8
Storage 230	1	Compact Fluorescent: (2) 26W Biaxial Plug-In Lamps	Wall Switch	S	52	500	3	Relamp	No	1	LED Lamps: GX23 (Plug-In) Lamps	Wall Switch	37	500	0.0	8	0	\$1	\$50	\$10	42.5
Storage 230 File Rm	2	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	500	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	345	0.1	43	0	\$5	\$261	\$20	48.9

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
Storage 27 E220/220A	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	345	0.1	92	0	\$11	\$416	\$40	35.7
Storage 3	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.0	18	0	\$2	\$37	\$10	12.8
Storage 4	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.0	18	0	\$2	\$37	\$10	12.8
Storage 5 Roof Access	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.0	18	0	\$2	\$37	\$10	12.8
Storage A231	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	500	3	Relamp	No	3	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	500	0.0	29	0	\$3	\$55	\$15	12.1
Workshop E211	15	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	4,940	3, 4	Relamp	Yes	15	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,409	0.7	5,134	-1	\$586	\$1,092	\$260	1.4
Classroom Academic 312	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.4	1,441	0	\$165	\$708	\$155	3.4
Classroom Academic 312	4	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,794	0.1	449	0	\$51	\$560	\$75	9.5
Classroom Academic 314	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	480	0	\$55	\$416	\$75	6.2
Classroom Academic A301	10	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	10	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.5	1,801	0	\$206	\$818	\$185	3.1
Classroom Academic A301	2	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,794	0.1	224	0	\$26	\$261	\$40	8.6
Classroom Academic A306	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.3	1,081	0	\$123	\$599	\$125	3.8
Classroom Academic A308	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.2	721	0	\$82	\$489	\$95	4.8
Classroom Academic A309	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.4	1,441	0	\$165	\$708	\$155	3.4
Classroom Academic A310	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.3	1,081	0	\$123	\$599	\$125	3.8
Classroom Academic A311	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	480	0	\$55	\$416	\$75	6.2
Classroom Academic A315	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	7	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.2	841	0	\$96	\$526	\$105	4.4
Classroom Academic A319	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	480	0	\$55	\$416	\$75	6.2
Classroom Academic A320	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.3	1,201	0	\$137	\$635	\$135	3.6
Classroom Academic A320	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,600	3, 4	Relamp	Yes	3	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,794	0.2	635	0	\$72	\$489	\$95	5.4
Classroom Academic A325	10	Compact Fluorescent: (1) 23W Spiral Plug-In Lamp	Wall Switch	S	23	2,600	3, 4	Relamp	Yes	10	LED Lamps: A19 Lamps	Occupancy Sensor	17	1,794	0.1	322	0	\$37	\$442	\$45	10.8
Classroom Academic A325	5	Incandescent: (1) 60W A19 Screw-In Lamp	Wall Switch	S	60	2,600	3, 4	Relamp	Yes	5	LED Lamps: A19 Lamps	Occupancy Sensor	9	1,794	0.2	769	0	\$88	\$356	\$40	3.6
Classroom Academic A325	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.3	1,081	0	\$123	\$599	\$125	3.8
Classroom Academic A326	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.2	721	0	\$82	\$489	\$95	4.8
Classroom Academic A328	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	1,820	3	Relamp	No	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,820	0.3	793	0	\$91	\$438	\$120	3.5

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
Classroom Academic A330	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	1,820	3	Relamp	No	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,820	0.2	595	0	\$68	\$329	\$90	3.5
Classroom Academic A332	11	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	1,820	3	Relamp	No	11	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,820	0.3	727	0	\$83	\$402	\$110	3.5
Conference 310A	8	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 4	Relamp	Yes	8	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	3,409	0.2	1,705	0	\$195	\$850	\$115	3.8
Conference E313	8	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	4,940	3, 4	Relamp	Yes	8	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	3,409	0.1	925	0	\$106	\$530	\$83	4.2
Conference E322	8	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 4	Relamp	Yes	8	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	3,409	0.2	1,705	0	\$195	\$850	\$115	3.8
Corridor 13 Bridge	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 5	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	3,409	0.2	1,141	0	\$130	\$408	\$225	1.4
Corridor 14 Founder	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 14 Founder	14	Incandescent: (1) 43W BR25 Screw-In Lamp	Wall Switch	S	43	4,940	3, 5	Relamp	Yes	14	LED Lamps: BR20 Lamps	High/Low Control	7	3,409	0.4	2,904	-1	\$331	\$955	\$518	1.3
Corridor 14 Founder	8	Incandescent: (1) 50W R16 Screw-In Lamp	Wall Switch	S	50	4,940	3, 5	Relamp	Yes	8	LED Lamps: R16 Lamps	High/Low Control	8	3,409	0.3	1,934	0	\$221	\$610	\$296	1.4
Corridor 14 Founder	2	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	S	44	4,940	5	None	Yes	2	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	3,409	0.0	147	0	\$17	\$225	\$70	9.3
Corridor 14 Founder	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 5	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	3,409	0.1	913	0	\$104	\$371	\$180	1.8
Corridor 14 Founder	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 5	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	3,409	0.2	1,141	0	\$130	\$408	\$225	1.4
Corridor Academic	4	Compact Fluorescent: (1) 26W Biaxial Plug-In Lamp	Wall Switch	S	26	4,940	3, 5	Relamp	Yes	4	LED Lamps: GX23 (Plug-In) Lamps	High/Low Control	19	3,409	0.0	280	0	\$32	\$325	\$160	5.2
Corridor Academic	4	Compact Fluorescent: (1) 26W Biaxial Plug-In Lamp	Wall Switch	S	26	4,940	3, 5	Relamp	Yes	4	LED Lamps: GX23 (Plug-In) Lamps	High/Low Control	19	3,409	0.0	280	0	\$32	\$325	\$160	5.2
Corridor Academic	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 Academic	1	LED Lamps: (1) 12W R16 Screw-In Lamp	Wall Switch	S	12	4,940		None	No	1	LED Lamps: (1) 12W R16 Screw-In Lamp	Wall Switch	12	4,940	0.0	0	0	\$0	\$0	\$0	0.0
Corridor Academic	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,940	0.0	179	0	\$20	\$37	\$10	1.3
Corridor Academic	22	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 5	Relamp	Yes	22	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	3,409	0.7	5,020	-1	\$573	\$1,703	\$990	1.2
Electrical Room Academic	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	500	3	Relamp	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	500	0.0	10	0	\$1	\$18	\$5	12.1
Janitorial Academic	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	500	3	Relamp	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	500	0.0	10	0	\$1	\$18	\$5	12.1
Janitorial Academic 2	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	500	3	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	500	0.0	9	0	\$1	\$33	\$6	26.4
Janitorial/mechanical 8 Founders	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	500	3, 4	Relamp	Yes	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	345	0.0	36	0	\$4	\$325	\$50	66.3
Janitorial/mechanical 8 Founders	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.0	18	0	\$2	\$37	\$10	12.8
Kitchen 9 E315	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,409	0.1	456	0	\$52	\$189	\$40	2.9
Laboratory A325 Prep	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,409	0.1	456	0	\$52	\$189	\$40	2.9

	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
Laboratory Academic A315, Radiation	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 4	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,409	0.2	1,369	0	\$156	\$489	\$95	2.5
Office - Academic 312A	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	240	0	\$27	\$189	\$40	5.4
Office - Academic 317	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,600	0.0	94	0	\$11	\$37	\$10	2.5
Office - Academic 318	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,600	0.0	94	0	\$11	\$37	\$10	2.5
Office - Academic A321A	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,600	0.0	94	0	\$11	\$37	\$10	2.5
Office - Academic A324	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,600	0.0	94	0	\$11	\$37	\$10	2.5
Office - Academic A334	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,600	0.0	94	0	\$11	\$37	\$10	2.5
Office - Academic A335	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	240	0	\$27	\$189	\$40	5.4
Office - Academic A337	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	240	0	\$27	\$189	\$40	5.4
Office - Academic A338	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	240	0	\$27	\$189	\$40	5.4
Office - Academic A340	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,600	0.0	94	0	\$11	\$37	\$10	2.5
Office - Academic A341	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,600	0.0	94	0	\$11	\$37	\$10	2.5
Office - Academic A342	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,600	0.0	94	0	\$11	\$37	\$10	2.5
Office - Enclosed 121 S304	9	LED Lamps: (1) 12W BR30 Screw-In Lamp	Wall Switch	S	12	2,600	4	None	Yes	9	LED Lamps: (1) 12W BR30 Screw-In Lamp	Occupancy Sensor	12	1,794	0.0	96	0	\$11	\$270	\$35	21.5
Office - Enclosed E302	4	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,794	0.1	449	0	\$51	\$560	\$75	9.5
Office - Enclosed E303	5	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	5	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.2	901	0	\$103	\$544	\$110	4.2
Office - Enclosed E306	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	2,600	0.0	142	0	\$16	\$55	\$15	2.5
Office - Enclosed E307	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.2	721	0	\$82	\$489	\$95	4.8
Office - Enclosed E311	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	480	0	\$55	\$416	\$75	6.2
Office - Enclosed E312	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	240	0	\$27	\$189	\$40	5.4
Office - Enclosed E320	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,600	0.0	94	0	\$11	\$37	\$10	2.5
Office - Enclosed E321	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	240	0	\$27	\$189	\$40	5.4
Office - Enclosed E323	6	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	6	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,794	0.2	673	0	\$77	\$705	\$95	7.9
Office - Open Enclosed 304	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.2	721	0	\$82	\$489	\$95	4.8
Office - Open Plan E305	7	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	7	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.3	1,261	0	\$144	\$653	\$140	3.6

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 - Open Plan E310	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 - Open Plan E310	11	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	11	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.3	1,321	0	\$151	\$672	\$145	3.5
Restroom - Academic Female 5	1	Linear Fluorescent - T8: 3' T8 (25W) - 2L	None	S	48	4,940	3	Relamp	No	1	LED - Linear Tubes: (2) 3' Lamps	None	21	4,940	0.0	147	0	\$17	\$37	\$10	1.6
Restroom - Academic Female 5	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,409	0.1	456	0	\$52	\$189	\$40	2.9
Restroom - Academic Male 5	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,409	0.1	456	0	\$52	\$189	\$40	2.9
Restroom - Academic Male 5	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 4	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,409	0.1	685	0	\$78	\$380	\$65	4.0
Restroom - Unisex 9 S304	1	Incandescent: (1) 60W Screw-in Lamps	Wall Switch	S	60	4,940	3	Relamp	No	1	LED Lamps: A19 Lamps	Wall Switch	9	4,940	0.0	277	0	\$32	\$17	\$1	0.5
Storage 25 E321	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	500	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	345	0.1	69	0	\$8	\$226	\$30	24.7
Storage Academic 312	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.0	18	0	\$2	\$37	\$10	12.8
Storage Academic A325	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.0	18	0	\$2	\$37	\$10	12.8
Storage E310	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.0	18	0	\$2	\$37	\$10	12.8
Electrical Room 13	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	500	3	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	500	0.0	9	0	\$1	\$33	\$6	26.4
Lobby 3 Elevator	2	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	S	30	4,940	5	None	Yes	2	LED - Fixtures: Ambient 2x4 Fixture	High/Low Control	30	3,409	0.0	101	0	\$12	\$225	\$70	13.4
Office - Enclosed 103	2	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	S	30	2,600	4	None	Yes	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	30	1,794	0.0	53	0	\$6	\$116	\$20	15.8
Office - Enclosed 104	2	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	S	30	2,600	4	None	Yes	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	30	1,794	0.0	53	0	\$6	\$116	\$20	15.8
Office - Enclosed 105	2	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	S	25	2,600	4	None	Yes	2	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	25	1,794	0.0	44	0	\$5	\$116	\$20	19.0
Office - Enclosed 105	1	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	S	30	2,600		None	No	1	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	30	2,600	0.0	0	0	\$0	\$0	\$0	0.0
Office - Enclosed 106	2	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	S	30	2,600	4	None	Yes	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	30	1,794	0.0	53	0	\$6	\$116	\$20	15.8
Office - Enclosed 107	1	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	S	25	2,600		None	No	1	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	25	2,600	0.0	0	0	\$0	\$0	\$0	0.0
Office - Enclosed 107	1	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	S	30	2,600		None	No	1	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	30	2,600	0.0	0	0	\$0	\$0	\$0	0.0
Office - Enclosed 108	1	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	S	25	2,600		None	No	1	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	25	2,600	0.0	0	0	\$0	\$0	\$0	0.0
Office - Enclosed 108	1	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	S	30	2,600		None	No	1	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	30	2,600	0.0	0	0	\$0	\$0	\$0	0.0
Office - Enclosed 109	1	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	S	25	2,600		None	No	1	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	25	2,600	0.0	0	0	\$0	\$0	\$0	0.0
Office - Enclosed 109	1	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	S	30	2,600		None	No	1	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	30	2,600	0.0	0	0	\$0	\$0	\$0	0.0
Office - Enclosed 110	1	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	S	25	2,600		None	No	1	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	25	2,600	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 110	1	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	S	30	2,600		None	No	1	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	30	2,600	0.0	0	0	\$0	\$0	\$0	0.0
Office - Enclosed 137	2	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	S	30	2,600	4	None	Yes	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	30	1,794	0.0	53	0	\$6	\$116	\$20	15.8
Office - Enclosed E402	1	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	S	25	2,600		None	No	1	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	25	2,600	0.0	0	0	\$0	\$0	\$0	0.0
Office - Enclosed E402	1	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	S	30	2,600		None	No	1	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	30	2,600	0.0	0	0	\$0	\$0	\$0	0.0
Office - Enclosed E402A	1	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	S	25	2,600		None	No	1	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	25	2,600	0.0	0	0	\$0	\$0	\$0	0.0
Office - Enclosed E402A	1	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	S	30	2,600		None	No	1	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	30	2,600	0.0	0	0	\$0	\$0	\$0	0.0
Office - Open Plan 6	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
Office - Open Plan 6	1	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	S	30	2,600		None	No	1	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	30	2,600	0.0	0	0	\$0	\$0	\$0	0.0
Office - Open Plan 6	9	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	S	30	2,600	4	None	Yes	9	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	30	1,794	0.1	239	0	\$27	\$270	\$35	8.6
Restroom - Male 8	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,940	0.0	179	0	\$20	\$37	\$10	1.3
Restroom - Unisex 8	1	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	S	30	4,940		None	No	1	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	30	4,940	0.0	0	0	\$0	\$0	\$0	0.0
Storage 24	1	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	S	25	500		None	No	1	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	25	500	0.0	0	0	\$0	\$0	\$0	0.0
Storage 24	1	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	S	30	500		None	No	1	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	30	500	0.0	0	0	\$0	\$0	\$0	0.0
Conference E505	1	Incandescent: (1) 50W R16 Screw-In Lamp	Wall Switch	S	50	4,940	3	Relamp	No	1	LED Lamps: R16 Lamps	Wall Switch	8	4,940	0.0	228	0	\$26	\$20	\$2	0.7
Conference E505	12	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	4,940	3, 4	Relamp	Yes	12	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	3,409	0.2	1,387	0	\$158	\$660	\$107	3.5
Janitorial	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	500	3	Relamp	No	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	500	0.0	18	0	\$2	\$65	\$12	26.4
Lobby 2 Elevator	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	4,940	3, 5	Relamp	Yes	3	LED - Linear Tubes: (2) 2' Lamps	High/Low Control	17	3,409	0.0	347	0	\$40	\$323	\$123	5.0
Mechanical 11	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	500	3	Relamp	No	2	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	500	0.0	19	0	\$2	\$37	\$10	12.1
Office - Enclosed 98	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	2,600	3	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,600	0.0	46	0	\$5	\$33	\$6	5.1
Office - Enclosed 98 IT	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	2,600	3	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,600	0.0	46	0	\$5	\$33	\$6	5.1
Office - Enclosed E508	6	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	2,600	3, 4	Relamp	Yes	6	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,794	0.1	365	0	\$42	\$465	\$71	9.5
Office - Open Plan 5	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
Office - Open Plan 5	21	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	2,600	3, 4	Relamp	Yes	21	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,794	0.3	1,277	0	\$146	\$1,223	\$196	7.0
Office - Open Plan 5	11	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	2,600	3, 4	Relamp	Yes	11	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,794	0.2	669	0	\$76	\$628	\$101	6.9
Office - Open Plan 5	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.3	1,201	0	\$137	\$635	\$135	3.6

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
Restroom - Unisex 6	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	4,940	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	3,409	0.0	231	0	\$26	\$181	\$32	5.6
Restroom - Unisex 7	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	4,940	3	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,940	0.0	87	0	\$10	\$33	\$6	2.7
Storage 23 IT	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	500	3	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	500	0.0	9	0	\$1	\$33	\$6	26.4
Storage 22	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	345	0.1	46	0	\$5	\$189	\$20	32.1
Classroom A001	15	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	15	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.7	2,702	-1	\$308	\$1,092	\$260	2.7
Classroom A003	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.4	1,621	0	\$185	\$763	\$170	3.2
Classroom A005	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.4	1,621	0	\$185	\$763	\$170	3.2
Classroom A005	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	2,600	3	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	2,600	0.0	83	0	\$9	\$72	\$10	6.6
Classroom A006	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 A006	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	2,600	0.0	142	0	\$16	\$55	\$15	2.5
Classroom A010	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	13	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.6	2,342	0	\$267	\$982	\$230	2.8
Classroom A011	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,600	3, 4	Relamp	Yes	13	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,794	0.6	2,342	0	\$267	\$982	\$230	2.8
Corridor 1 Mechanical Addition	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 5	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	3,409	0.1	456	0	\$52	\$298	\$90	4.0
Corridor 2 Mechanical Addition	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 2 Mechanical Addition	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 5	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	3,409	0.1	685	0	\$78	\$335	\$135	2.6
Corridor Daycare	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 Daycare	14	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	4,940	3, 5	Relamp	Yes	14	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	3,409	0.6	4,792	-1	\$547	\$1,442	\$700	1.4
Corridor Daycare	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	4,940	3	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	4,940	0.0	269	0	\$31	\$55	\$15	1.3
Electrical Room 1	4	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	500	3, 4	Relamp	Yes	4	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	345	0.1	48	0	\$6	\$343	\$55	52.1
Exterior Daycare	8	Metal Halide: (1) 70W Lamp	Timeclock		95	4,380	1	Fixture Replacement	No	8	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Timeclock	21	4,380	0.0	2,593	0	\$300	\$1,649	\$400	4.2
Janitorial 3	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.0	18	0	\$2	\$37	\$10	12.8
Kitchen Daycare	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	4,940	3, 4	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,409	0.2	1,369	0	\$156	\$489	\$95	2.5
Lobby Daycare	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
Lobby Daycare	4	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	S	40	4,940	5	None	Yes	4	LED - Fixtures: Ambient 2x4 Fixture	High/Low Control	40	3,409	0.0	270	0	\$31	\$225	\$140	2.8
Lobby Daycare	6	LED Lamps: (1) 35W Corn Bulb Screw-In Lamp	Wall Switch	S	35	4,940	5	None	Yes	6	LED Lamps: (1) 35W Corn Bulb Screw-In Lamp	High/Low Control	35	3,409	0.0	354	0	\$40	\$225	\$210	0.4

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
Lobby Daycare	4	LED - Fixtures: Downlight Recessed	Wall Switch	S	18	4,940	5	None	Yes	4	LED - Fixtures: Downlight Recessed	High/Low Control	18	3,409	0.0	121	0	\$14	\$225	\$140	6.1
Lobby Daycare	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	4,940	3, 5	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	3,409	0.1	1,027	0	\$117	\$389	\$150	2.0
Mechanical 1 Academic Rm A	7	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	500	3, 4	Relamp	Yes	7	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	345	0.1	85	0	\$10	\$398	\$35	37.5
Mechanical 1-B, Addition	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
Mechanical 1-B, Addition	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3, 4	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	345	0.5	346	0	\$40	\$818	\$150	16.9
Mechanical 3 Academic 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
Mechanical 3 Academic Main	21	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	500	3, 4	Relamp	Yes	21	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	345	0.3	254	0	\$29	\$923	\$105	28.2
Mechanical 3 Academic Main	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	500	3, 4	Relamp	Yes	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	345	0.0	36	0	\$4	\$325	\$15	74.8
Mechanical 3 Academic Main	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3, 4	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	345	0.2	115	0	\$13	\$453	\$50	30.5
Mechanical 4 Storage	2	Linear Fluorescent - EST12: 4' T12 (34W) - 1L	Wall Switch	S	43	500	2, 4	Relamp & Reballast	Yes	2	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	345	0.0	36	0	\$4	\$217	\$10	50.0
Mechanical 4 Storage	1	Linear Fluorescent - EST12: 4' T12 (34W) - 2L	Wall Switch	S	72	500	2	Relamp & Reballast	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.0	24	0	\$3	\$69	\$10	21.8
Mechanical 5 Part B Academic South	11	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	500	3, 4	Relamp	Yes	11	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	345	0.2	133	0	\$15	\$471	\$90	25.1
Mechanical 6 Gas Meter	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	500	3	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	500	0.0	9	0	\$1	\$33	\$6	26.4
Mechanical 7 Founders Hall	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	500	3	Relamp	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	500	0.0	10	0	\$1	\$18	\$5	12.1
Mechanical 7 Founders Hall	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3, 4	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	345	0.1	69	0	\$8	\$380	\$30	44.2
Office - Enclosed A004	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,794	0.1	240	0	\$27	\$189	\$40	5.4
Office - Enclosed A008	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,600	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,600	0.0	94	0	\$11	\$37	\$10	2.5
Restroom - Female 3	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,940	0.0	179	0	\$20	\$37	\$10	1.3
Restroom - Female 4	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,409	0.1	456	0	\$52	\$189	\$40	2.9
Restroom - Male 3	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,940	0.0	179	0	\$20	\$37	\$10	1.3
Restroom - Male 4	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,409	0.1	456	0	\$52	\$189	\$40	2.9
Restroom - Unisex A003	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,940	0.0	179	0	\$20	\$37	\$10	1.3
Restroom - Unisex A005	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,409	0.1	456	0	\$52	\$189	\$40	2.9
Restroom - Unisex A010	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,940	0.0	179	0	\$20	\$37	\$10	1.3
Restroom - Unisex A011	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,940	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,940	0.0	179	0	\$20	\$37	\$10	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
Storage 1 Founders	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	\$0	\$0	\$0	0.0
Storage 1 Founders	12	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	500	3, 4	Relamp	Yes	12	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	345	0.2	145	0	\$17	\$489	\$60	25.9
Storage 1 Founders	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.0	18	0	\$2	\$37	\$10	12.8
Storage 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
Storage 2	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	500	3	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	500	0.0	9	0	\$1	\$33	\$6	26.4
Storage 2	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	500	3	Relamp	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	500	0.0	10	0	\$1	\$18	\$5	12.1
Storage A003	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	500	3, 4	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	345	0.2	139	0	\$16	\$489	\$60	27.1
Storage A010	1	Linear Fluorescent - EST12: 4' T12 (34W) - 2L	Wall Switch	S	72	500	2	Relamp & Reballast	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.0	24	0	\$3	\$69	\$10	21.8
Storage A011	1	Linear Fluorescent - EST12: 4' T12 (34W) - 2L	Wall Switch	S	72	500	2	Relamp & Reballast	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.0	24	0	\$3	\$69	\$10	21.8
Storage Daycare	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	500	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	345	0.1	69	0	\$8	\$226	\$30	24.7
Storage Daycare	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.0	18	0	\$2	\$37	\$10	12.8
Storage Daycare Exterior Access	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3, 4	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	345	0.1	69	0	\$8	\$380	\$30	44.2
Exterior 9	4	Metal Halide: (1) 400W Lamp	Timeclock		458	4,380	1	Fixture Replacement	No	4	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Timeclock	120	4,380	0.0	5,922	0	\$686	\$2,218	\$200	2.9
Stairs 1 B-1	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch		32	4,940	3, 4	Relamp	Yes	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	3,409	0.0	359	0	\$41	\$280	\$120	3.9
Stairs Academic Addition	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 Academic Addition	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch		62	8,760	3, 4	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	6,044	0.1	1,214	0	\$139	\$335	\$135	1.4
Stairs Academic Addition	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	None		62	8,760	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	6,044	0.1	809	0	\$92	\$298	\$90	2.3
Stairs Academic Addition	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch		93	8,760	3, 4	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	6,044	0.1	1,821	0	\$208	\$389	\$150	1.2
Stairs 3 Founders Hall	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
Stairs 3 Founders Hall	15	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch		32	8,760	3, 4	Relamp	Yes	15	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	6,044	0.2	3,179	-1	\$363	\$499	\$300	0.5

Motor Inventory & Recommendations

Location	Area(s)/System(s) Served	Existing Conditions									Proposed Conditions					Energy Impact & Financial Analysis						
		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 3 Academic Main	Academic/Founders/GYM/Theater	1	Air Compressor	3.0	89.5%	No	Baldor	EM3211T-8	W	1,200		No	89.5%	No		0.0	0	0	\$0	\$0	\$0	0.0
Mechanical 7 Founders Hall	Academic/Founders/GYM/Theater	1	Air Compressor	3.0	89.5%	No	Century	E217M2	W	1,200		No	89.5%	No		0.0	0	0	\$0	\$0	\$0	0.0
Mechanical 3 Academic Main	Academic/Founders/GYM/Theater	2	Chilled Water Pump	15.0	93.0%	Yes	Baldor	EM2513T-G	W	1,368		No	93.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Mechanical 3 Academic Main	Academic/Founders/GYM/Theater	2	Chilled Water Pump	25.0	93.6%	No	Nidec	DB93	W	1,368		No	93.6%	No		0.0	0	0	\$0	\$0	\$0	0.0
Mechanical 1 Academic Rm A	Academic/Founders/GYM/Theater	2	Combustion Air Fan	10.0	91.7%	No	Marathon	FJ 213TTDR7924BB WF2	W	3,391		No	91.7%	No		0.0	0	0	\$0	\$0	\$0	0.0
Mechanical 9 Kitchen	Mechanical 9 Kitchen	1	Exhaust Fan	0.1	65.0%	No	Unknown	Unknown	W	2,745		No	65.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Office -Enclosed A113	Academic/Founders/GYM/Theater	1	Exhaust Fan	0.1	65.0%	No	Unknown	Unknown	W	2,745		No	65.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Office -Enclosed A116	Academic/Founders/GYM/Theater	1	Exhaust Fan	0.1	65.0%	No	Unknown	Unknown	W	2,745		No	65.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Conference E505	Academic/Founders/GYM/Theater	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
Mechanical 1-B, Addition	Academic/Founders/GYM/Theater	1	Exhaust Fan	2.0	65.0%	No	Unknown	Unknown	W	2,745		No	65.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Mechanical 3 Academic Main	Academic/Founders/GYM/Theater	3	Exhaust Fan	0.5	65.0%	No	Unknown	Unknown	W	2,745		No	65.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Exterior 1 A230	Academic/Founders/GYM/Theater	2	Exhaust Fan	5.0	89.5%	No	Unknown	Unknown	W	8,760		No	89.5%	No		0.0	0	0	\$0	\$0	\$0	0.0
Exterior 1 A230	Academic/Founders/GYM/Theater	1	Exhaust Fan	1.5	84.0%	No	Unknown	Unknown	W	8,760		No	84.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Exterior 1 A230	Academic/Founders/GYM/Theater	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
Exterior 10	Academic/Founders/GYM/Theater	1	Exhaust Fan	0.1	65.0%	No	Unknown	Unknown	W	2,745		No	65.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Exterior 3 Academic-C	Academic/Founders/GYM/Theater	1	Exhaust Fan	0.1	65.0%	No	Unknown	Unknown	W	2,745		No	65.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Exterior 3 Academic-C	Academic/Founders/GYM/Theater	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
Exterior 3 Academic-C	Academic/Founders/GYM/Theater	3	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
Exterior 3 Academic-C	Academic/Founders/GYM/Theater	7	Exhaust Fan	0.1	65.0%	No	Unknown	Unknown	W	2,745		No	65.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Exterior 3 Academic-C	Academic/Founders/GYM/Theater	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

		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 7	Academic/Founders/GYM/Theater	1	Exhaust Fan	0.5	70.0%	No	Unknown	Unknown	W	8,760		No	70.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Exterior 7	Academic/Founders/GYM/Theater	4	Exhaust Fan	0.5	70.0%	No	Unknown	Unknown	W	8,760		No	70.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Exterior 8	Academic/Founders/GYM/Theater	1	Exhaust Fan	0.8	65.0%	No	Unknown	Unknown	W	8,760		No	65.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Exterior 9	Academic/Founders/GYM/Theater	1	Exhaust Fan	0.8	65.0%	No	Unknown	Unknown	W	8,760		No	65.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Mechanical 1 Academic Rm A	Academic/Founders/GYM/Theater	2	Heating Hot Water Pump	0.3	65.0%	No	Bel & Gossett	M80121	W	2,745		No	65.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Mechanical 1 Academic Rm A	Academic/Founders/GYM/Theater	2	Heating Hot Water Pump	7.5	88.5%	No	Baldor	M3311T	W	3,391		No	88.5%	No		0.0	0	0	\$0	\$0	\$0	0.0
Mechanical 3 Academic Main	Academic/Founders/GYM/Theater	2	Heating Hot Water Pump	30.0	92.4%	No	Lincoln	TV-2682	W	4,067	8	No	94.1%	Yes	2	6.2	76,282	0	\$8,835	\$254,761	\$3,000	28.5
Mechanical 3 Academic Main	Academic/Founders/GYM/Theater	2	Heating Hot Water Pump	5.0	87.5%	No	Lincoln	TV-299	W	2,745		No	87.5%	No		0.0	0	0	\$0	\$0	\$0	0.0
Mechanical 3 Academic Main	Academic/Founders/GYM/Theater	1	DHW Circulation Pump	0.8	84.0%	Yes	Baldor	VEM3542	W	8,760		No	84.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Mechanical 7 Founders Hall	Academic/Founders/GYM/Theater	2	Heating Hot Water Pump	5.0	87.5%	No	Marathon	JAM182TTDR73 50AEW	W	2,745		No	87.5%	No		0.0	0	0	\$0	\$0	\$0	0.0
Mechanical 7 Founders Hall	Academic/Founders/GYM/Theater	1	Heating Hot Water Pump	1.0	70.0%	No	MagneTek	E117	W	2,745		No	70.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Exterior 7	Academic/Founders/GYM/Theater	5	Heating Hot Water Pump	0.2	65.0%	No	Unknown	Unknown	W	2,745		No	65.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Corridor 17	Academic/Founders/GYM/Theater	2	Other	0.2	65.0%	No	Dayton	4HZ95B	W	2,745		No	65.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Exterior 4	Parking Lots	6	Other	0.5	70.0%	No	Unknown	Unknown	W	2,745		No	70.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Gymnasium 1	Gymnasium 1	5	Other	0.3	65.0%	No	Unknown	Unknown	W	2,745		No	65.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Elevator 1 A006	Elevator 1 A006	1	Other	20.0	70.0%	No	Nidec	Unknown	W	100		No	70.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Mechanical 5 Part B Academic South	Academic/Founders/GYM/Theater	2	Other	0.5	65.0%	No	Unknown	Unknown	W	2,000		No	65.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Mechanical 10 Elevator	Academic/Founders/GYM/Theater	1	Other	25.0	70.0%	No	The Imperial Electric Company	Unknown	W	100		No	70.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Mechanical 1-B, Addition	Academic/Founders/GYM/Theater	1	Return Fan	5.0	89.5%	No	Unknown	Unknown	W	2,745		No	89.5%	No		0.0	0	0	\$0	\$0	\$0	0.0
Mechanical 3 Academic Main	Lobby & Dining Area	1	Return Fan	3.0	80.5%	No	Dayton	3M203	W	2,745		No	80.5%	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 3 Academic Main	Library - Front	1	Return Fan	5.0	87.5%	No	Unknown	Unknown	W	2,745		No	87.5%	No		0.0	0	0	\$0	\$0	\$0	0.0
Mechanical 3 Academic Main	North Side	1	Return Fan	10.0	89.5%	No	Dayton	3KW43	W	3,391		No	89.5%	No		0.0	0	0	\$0	\$0	\$0	0.0
Mechanical 5 Part B Academic South	Academic/Founders/GYM/Theater	1	Return Fan	15.0	93.0%	No	Century	254T	W	3,391		No	93.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Exterior 2 Academic New Wing	Academic/Founders/GYM/Theater	1	Return Fan	10.0	89.5%	No	Century	7-850093-01-OJ	W	3,391	7	No	91.7%	Yes	1	3.1	11,057	0	\$1,281	\$6,697	\$1,100	4.4
Exterior 7	2nd Floor and 1st Floor Corridor	1	Return Fan	3.0	89.5%	No	Marathon	GT1010A	W	2,745	7	No	89.5%	Yes	1	0.9	2,574	0	\$298	\$4,555	\$200	14.6
Exterior 7	Academic/Founders/GYM/Theater	2	Return Fan	10.0	89.5%	No	Unknown	Unknown	W	1,696	7	No	91.7%	Yes	2	6.1	11,060	0	\$1,281	\$13,393	\$2,200	8.7
Exterior 7	Academic/Founders/GYM/Theater	1	Return Fan	10.0	89.5%	No	Unknown	Unknown	W	3,391	7	No	91.7%	Yes	1	3.1	11,057	0	\$1,281	\$6,697	\$1,100	4.4
Mechanical Founders	Founders Hall	1	Supply Fan	1.5	82.5%	No	GE Motors	5KS48WN8074	W	2,745		No	82.5%	No		0.0	0	0	\$0	\$0	\$0	0.0
Mechanical Founders B	Founders Hall	1	Supply Fan	3.0	87.0%	No	Western Electric	182T	W	2,745		No	87.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Electrical Room 15	Academic/Founders/GYM/Theater	1	Supply Fan	0.8	70.0%	No	Howell	Unknown	W	2,745		No	70.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Janitorial 8	Academic/Founders/GYM/Theater	1	Supply Fan	2.0	84.0%	No	Gould	8-331262-03	W	2,745		No	84.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Janitorial/Mechanical 8 Founders	Academic/Founders/GYM/Theater	1	Supply Fan	5.0	87.5%	No	Westinghouse	680B775G45	W	2,745		No	87.5%	No		0.0	0	0	\$0	\$0	\$0	0.0
Janitorial/Mechanical 8 Founders	Academic/Founders/GYM/Theater	1	Supply Fan	5.0	87.5%	No	Unknown	Unknown	W	2,745		No	87.5%	No		0.0	0	0	\$0	\$0	\$0	0.0
Office - Open Plan 6	Academic/Founders/GYM/Theater	2	Supply 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 11	Academic/Founders/GYM/Theater	1	Supply Fan	0.8	70.0%	No	Unknown	Unknown	W	2,745		No	70.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Mechanical 1 Academic Rm A	Academic/Founders/GYM/Theater	1	Supply Fan	2.0	86.5%	No	Unknown	Unknown	W	2,745		No	86.5%	No		0.0	0	0	\$0	\$0	\$0	0.0
Mechanical 1-B, Addition	Academic/Founders/GYM/Theater	1	Supply Fan	10.0	89.5%	No	Megatek	7-850093-01-OJ	W	3,391		No	89.5%	No		0.0	0	0	\$0	\$0	\$0	0.0
Mechanical 3 Academic Main	Library - Front	1	Supply Fan	15.0	91.0%	No	Leland Faraday	LFI-8150	W	3,391		No	91.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Mechanical 3 Academic Main	North Side	1	Supply Fan	25.0	91.7%	Yes	Dayton	3KW52A	W	4,067		No	91.7%	No		0.0	0	0	\$0	\$0	\$0	0.0
Mechanical 3 Academic Main	Lobby & Dining Area	1	Supply Fan	15.0	87.5%	No	Marathon	H622	W	3,391		No	87.5%	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 5 Part B Academic South	Kitchen	1	Supply Fan	10.0	91.7%	No	Marathon	EVD 215TTDR7359BB	W	3,391		No	91.7%	No		0.0	0	0	\$0	\$0	\$0	0.0
Mechanical 5 Part B Academic South	Academic/Founders/GYM/Theater	1	Supply Fan	40.0	94.1%	Yes	Marathon	324TTDC6026AA	W	4,067		No	94.1%	No		0.0	0	0	\$0	\$0	\$0	0.0
Exterior 2 Academic New Wing	Academic/Founders/GYM/Theater	1	Supply Fan	20.0	91.0%	No	Century	7-350026-010J	W	3,391	6	No	93.0%	Yes	1	5.9	21,656	0	\$2,508	\$10,892	\$1,300	3.8
Exterior 7	Academic/Founders/GYM/Theater	2	Supply Fan	15.0	87.5%	No	Unknown	Unknown	W	1,696	6	No	93.0%	Yes	2	9.3	17,999	0	\$2,085	\$18,354	\$2,400	7.7
Exterior 7	Academic/Founders/GYM/Theater	1	Supply Fan	20.0	91.0%	No	Century	E456	W	3,391		No	91.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Exterior 7	Academic/Founders/GYM/Theater	1	Supply Fan	15.0	87.5%	No	GE Motors	5K254AD205A	W	3,391	6	No	93.0%	Yes	1	4.7	17,993	0	\$2,084	\$9,177	\$1,200	3.8
Exterior 8	Academic/Founders/GYM/Theater	1	Supply Fan	15.0	93.0%	No	Century	E450M2	W	3,391		No	93.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Exterior 2 Academic New Wing	Academic/Founders/GYM/Theater	1	Supply Fan	15.0	87.5%	No	Marathon	H622	W	3,391	6	No	93.0%	Yes	1	4.7	17,993	0	\$2,084	\$9,177	\$1,200	3.8
Exterior 7	Academic/Founders/GYM/Theater	1	Supply Fan	5.0	87.5%	No	Unknown	Unknown	W	2,745		No	87.5%	No		0.0	0	0	\$0	\$0	\$0	0.0
Mechanical 16	Academic/Founders/GYM/Theater	1	Supply Fan	0.8	70.0%	No	Howell	38 B1 5500 5	W	2,745		No	70.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Exterior 2 Academic New Wing	Academic/Founders/GYM/Theater	1	Return Fan	7.5	88.5%	No	Century	E302	W	3,391	6	No	91.0%	Yes	1	2.3	8,437	0	\$977	\$5,945	\$1,000	5.1
Server Room G122	Server Room G122	2	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
Exterior 3 Academic C	Academic/Founders/GYM/Theater	6	Cooling Tower Fan	3.0	89.5%	Yes	Baldor	Unknown	W	2,745		No	89.5%	No		0.0	0	0	\$0	\$0	\$0	0.0
Exterior 2 Academic New Wing	Academic/Founders/GYM/Theater	1	Return Fan	10.0	89.5%	No	Century	E303	W	3,391	6	No	91.7%	Yes	1	3.1	11,057	0	\$1,281	\$6,697	\$1,100	4.4



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
Server Room G122	Server Room G122	2	Split-System	5.58		10.00		Liebert	BU067A-CAEIS763/DCSF104-P	W		No							0.0	0	0	\$0	\$0	\$0	0.0
Exterior 10	Academic/Founders	2	Split-System	4.00		13.00		Rheem	RA1348AJ1NA	W		No							0.0	0	0	\$0	\$0	\$0	0.0
Exterior 2 Academic New Wing	RTU-2	1	Split-System	30.00		9.00		York	Unknown	W		No							0.0	0	0	\$0	\$0	\$0	0.0
Exterior 2 Academic New Wing	RTU-3	1	Split-System	30.00		10.80		Carrier	38APS03055A12020	W		No							0.0	0	0	\$0	\$0	\$0	0.0
Corridor 11 Academic	Corridor 11 Academic	3	Electric Resistance Heat		4.09		1 COP	Unknown	Unknown	W		No							0.0	0	0	\$0	\$0	\$0	0.0
Corridor 17	Corridor 17	2	Electric Resistance Heat		17.05		1 COP	Unknown	Unknown	W		No							0.0	0	0	\$0	\$0	\$0	0.0
Conference E505	Conference E505	1	Electric Resistance Heat		10.24		1 COP	Unknown	Unknown	W		No							0.0	0	0	\$0	\$0	\$0	0.0
Office - Enclosed E508	Office - Enclosed E508	1	Electric Resistance Heat		10.24		1 COP	Unknown	Unknown	W		No							0.0	0	0	\$0	\$0	\$0	0.0
Exterior 4	Academic/Founders	1	Ductless Mini-Split HP	2.84	36.00	7.75	8.2 HSPF	Ameristar	M4THM1536A14NAA	W		No							0.0	0	0	\$0	\$0	\$0	0.0
Exterior 4	Academic/Founders	1	Ductless Mini-Split HP	2.00	28.00	13.50	8.5 HSPF	Mitsubishi	PUY-A24NHA	B		No							0.0	0	0	\$0	\$0	\$0	0.0
Exterior	Server Room G122	1	Ductless Mini-Split HP	1.50	19.00	9.00	7.7 HSPF	Ingersoll Rand	M4MHW1518A1N0AA	W		No							0.0	0	0	\$0	\$0	\$0	0.0
Exterior A230	Paterson Room	1	Package Unit	12.50	202.50	9.60	0.81 AFUE	Trane	YCD151C3H0AA	B	9	Yes	1	Package Unit	12.50	202.50	14.00	0.82 Et	2.5	5,402	4	\$655	\$19,265	\$1,113	27.7
Exterior A230	Academic Hall	3	Package Unit	3.00	96.00	10.00	0.8 AFUE	Trane	YHC036A3RHA0GB1A0C1000000	B	9	Yes	3	Package Unit	3.00	96.00	16.00	0.82 AFUE	2.0	4,455	11	\$600	\$26,626	\$927	42.9
Exterior 3 Academic C	Academic Hall	1	Package Unit	5.00		10.70		Trane	THC063A3E0A1D00000000000	W		No							0.0	0	0	\$0	\$0	\$0	0.0
Exterior 8	Founders Hall	2	Package Unit	15.00		9.90		Trane	TCD180E30CBA	W		No							0.0	0	0	\$0	\$0	\$0	0.0
Academic/Founders	Academic/Founders	2	Unit Heater		10.24		1 COP	Dayton	Unknown	W	10	Yes	2	Unit Heater		10.24		0.83 Et	3.0	8,586	0	\$994	\$2,028	\$0	2.0
Corridor 11 Academic	Corridor 11 Academic	4	Infrared Heater		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
Mechanical 3 Academic Main	Academic/Founders/GYM/Theater	2	Water-Cooled Centrifugal Chiller	200.00	York	YTG3A3B2-CGJ	B		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 Academic Room A	Academic/Founders/Gym/Theater	2	Forced Draft Steam Boiler	6,695	Cleaver Brooks	CB-100-200	B		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
Mechanical 5 Part B Academic South	Academic/Founders/GYM/Theater	11	12	2.00	0.0	0	10	\$78	\$197	\$24	2.2
Mechanical 7 Founders Hall	Academic/Founders/GYM/Theater	11	5	1.25	0.0	0	3	\$21	\$60	\$10	2.3

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
Academic/Founders/GYM/Theater	Academic/Founders/GYM/Theater	6	Tankless Water Heater	Ariston	GL 2.5 Ti S	W		No						0.0	0	0	\$0	\$0	\$0	0.0
Kitchen 8 Main Kitchen	Academic/Founders/GYM/Theater	1	Storage Tank Water Heater (<= 50 Gal)	Rheem	1PZ81	W		No						0.0	0	0	\$0	\$0	\$0	0.0
Mechanical 3 Academic Main	Academic/Founders/GYM/Theater	3	Storage Tank Water Heater (> 50 Gal)	AO Smith	BTR-250A 118	W		No						0.0	0	0	\$0	\$0	\$0	0.0
Mechanical 7 Founders Hall	Academic/Founders/GYM/Theater	1	Storage Tank Water Heater (> 50 Gal)	AO Smith	BTR-199 118	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
Academic/Founder /GYM/Ttheater	12	6	Faucet Aerator (Kitchen)	1.80	1.50	0.0	0	1	\$4	\$43	\$12	7.8
Academic/Founder /GYM/Ttheater	12	7	Faucet Aerator (Kitchen)	2.20	1.50	0.0	0	1	\$11	\$50	\$14	3.3
Locker Room 3 Boys	12	1	Faucet Aerator (Lavatory)	2.20	0.50	0.0	0	0	\$4	\$7	\$4	1.0
Academic/Founder /GYM/Ttheater	12	2	Faucet Aerator (Lavatory)	2.50	0.50	0.0	0	1	\$9	\$14	\$7	0.8

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
Main Kitchen	1	Cooler (35F to 55F)	Russell	A118-53B-A	13	Yes	No	No	0.2	2,061	0	\$239	\$303	\$40	1.1
Main Kitchen	1	Medium Temp Freezer (0F to 30F)	Tecumseh	AVA2512ZXNLN		No	No	No	0.0	0	0	\$0	\$0	\$0	0.0
Main Kitchen	1	Medium Temp Freezer (0F to 30F)	Kolpak	PCL199LOP	13	Yes	No	No	0.2	1,581	0	\$183	\$607	\$80	2.9
Classroom A330	1	Cooler (35F to 55F)	Unknown	Unknown	13	Yes	No	No	0.2	2,061	0	\$239	\$303	\$40	1.1

Commercial Refrigerator/Freezer Inventory & Recommendations

	Existing Conditions					Proposed Conditions		Energy Impact & Financial Analysis						
Location	Quantity	Refrigerator/ Freezer Type	Manufacturer	Model	ENERGY STAR Qualified?	ECM #	Install ENERGY STAR Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost (\$)	Total Incentives	Simple Payback w/ Incentives in Years
Main Kitchen	1	Refrigerator Chest	Unknown	Unknown	No		No	0.0	0	0	\$0	\$0	\$0	0.0
Vendor Kitchens	5	Stand-Up Freezer, Solid Door (≤15 cu. ft.)	Traulsen	G12011	No		No	0.0	0	0	\$0	\$0	\$0	0.0
Vendor Kitchens	5	Stand-Up Refrigerator, Solid Door (16 - 30 cu. ft.)	Traulsen	G10010	No		No	0.0	0	0	\$0	\$0	\$0	0.0
Main Kitchen	1	Stand-Up Refrigerator, Solid Door (16 - 30 cu. ft.)	TRUE	T-49	No		No	0.0	0	0	\$0	\$0	\$0	0.0
Vendor Kitchens	5	Stand-Up Refrigerator, Solid Door (≤15 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
Main Kitchen	1	Ice Making Head (≥450 lbs/day), Batch	Hoshizaki	KM-515MWH	Yes		No	0.0	0	0	\$0	\$0	\$0	0.0
Academic/Founders/GYM/Theater	2	Self-Contained Unit (<175 lbs/day), Batch	Scotsman	CU1526SA-1A	Yes		No	0.0	0	0	\$0	\$0	\$0	0.0

Cooking Equipment Inventory & Recommendations

Existing Conditions						Proposed Conditions		Energy Impact & Financial Analysis						
Location	Quantity	Equipment Type	Manufacturer	Model	High Efficiency Equipment?	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
Academic/Founders/GYM/Theater	7	Electric Fryer	Imperial	IFS-50-E	No		No	0.0	0	0	\$0	\$0	\$0	0.0
Academic/Founders/GYM/Theater	6	Electric Griddle (≤2 Feet Width)	Garland	Unknown	No		No	0.0	0	0	\$0	\$0	\$0	0.0
Main Kitchen	1	Electric Griddle (3 Feet Width)	APW Wyoff	Unknown	No		No	0.0	0	0	\$0	\$0	\$0	0.0
Main Kitchen	1	Insulated Food Holding Cabinet (3/4 Size)	Norlake	Unknown	No		No	0.0	0	0	\$0	\$0	\$0	0.0
Main Kitchen	1	Electric Steamer	Cleveland	22CET6	No		No	0.0	0	0	\$0	\$0	\$0	0.0
Main Kitchen	1	Insulated Food Holding Cabinet (1/2 Size)	Hatco	Chef System 32	No		No	0.0	0	0	\$0	\$0	\$0	0.0
Main Kitchen	2	Gas Rack Oven (Double)	Vulkan	Unknown	Yes		No	0.0	0	0	\$0	\$0	\$0	0.0
Academic/Founders/GYM/Theater	7	Electric Steamer	Duke	E302SW M	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
Main Kitchen	1	Door Type (High Temp)	Hobart	Unknown	Natural Gas	N/A	No		No	0.0	0	0	\$0	\$0	\$0	0.0
Laboratory A325 Prep	1	Door Type (Low Temp)	Labconco	Unknown	Natural Gas	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
Office - Enclosed 144 Trainers office	1	Clothes Dryer	2,000	No	Unknown	Unknown
Office - Enclosed 144 Trainers office	1	Clothes Washer	1,200	No	Unknown	Unknown
Academic/Founders/GYM/Theater	36	Coffee Machine	900	No	Varied	Varied
Office - Open Plan S101	1	Dehumidifier	480	No	Unknown	Unknown
Academic/Founders/GYM/Theater	530	Small Desktop	100	No	Varied	Varied
Academic/Founders/GYM/Theater	54	Desktop	270	No	Varied	Varied
Academic/Founders/GYM/Theater	34	Workstation Desktop	500	No	Varied	Varied
Kitchen Daycare	1	Dishwasher	200	No	GE	Unknown
Academic/Founders/GYM/Theater	3	Electric Space Heater	1,500	No	Varied	Varied
Conference E313	1	Ceiling Fan	200	No	Unknown	Unknown
Academic/Founders/GYM/Theater	33	Fan	200	No	Varied	Varied
Academic/Founders/GYM/Theater	24	Laptop	75	No	Varied	Varied
Academic/Founders/GYM/Theater	110	Laptop Workstation	150	No	Varied	Varied
Academic/Founders/GYM/Theater	264	Laptop	75	No	Varied	Varied
Academic/Founders/GYM/Theater	34	Microwave	900	No	Varied	Varied
Academic/Founders/GYM/Theater	13	Paper Shredder	100	No	Unknown	Unknown
Academic/Founders/GYM/Theater	175	Printer	150	No	Varied	Varied
Academic/Founders/GYM/Theater	13	Copier	1,500	No	Varied	Varied
Academic/Founders/GYM/Theater	44	Projector	200	No	Varied	Varied
Academic/Founders/GYM/Theater	39	Mini Refrigerator	126	No	Varied	Varied
Academic/Founders/GYM/Theater	12	Refrigerator	283	No	Varied	Varied
Academic/Founders/GYM/Theater	1	Small Television	120	No	Varied	Varied
Academic/Founders/GYM/Theater	24	Medium Television	175	No	Varied	Varied
Academic/Founders/GYM/Theater	49	Large Television	200	No	Varied	Varied
Academic/Founders/GYM/Theater	1	Toaster	1,000	No	Unknown	Unknown
Academic/Founders/GYM/Theater	2	Toaster Oven	1,500	No	Unknown	Unknown
Academic/Founders/GYM/Theater	8	Water Cooler	200	No	Varied	Varied
Academic/Founders/GYM/Theater	6	Water Fountain	250	No	Elkay	Unknown
Academic/Founders/GYM/Theater	2	Lift	2,400	No	Savania	Unknown
Dining Area	1	Soda Fountain	400	No	Cornelius	ED200
Kitchen Unit 3	1	Toaster	1,750	No	Avantco	Unknown
Kitchen Unit 4	1	Blender	1,800	No	Avamix	928HBX2000
Kitchen Unit 4	1	Food Warmer	2,000	No	Unknown	NB-603
Kitchen Unit 5	1	Ice Blender	1,200	No	Island Oasis	A08081139
Kitchen Unit 3	1	Waffle Maker	1,500	No	Baker	Unknown


	Existing Conditions					
Location	Quantity	Equipment Description	Energy Rate (W)	ENERGY STAR Qualified ?	Manufacturer	Model
Kitchen Unit 3	1	Coffee Machine	517	No	Everest	EPBR1
Academic/Founders/GYM/Theater	8	Hand Dryer	1,500	No	Unknown	Unknown
Office - Enclosed 144 Trainers office	1	Mobile Whirlpool	800	No	WhiteHall	S-90-M
Office - Enclosed 96 Kitchen	1	Mixer	500	No	Kitchen Aid	Unknown
Office - Enclosed A122A	1	Misc. IT Equipment	500	No	Varied	Varied
Office - Open Plan A125	1	Plotter	500	Yes	HP	DesignJet T1300
Office - Open Plan S101	1	Paper Shredder	2,760	No	Titan	200
Academic/Founders/GYM/Theater	1	ATM	180	No	Unknown	Unknown
Classroom A315	1	Digital X-Ray	600	No	Fujifilm	FCR XL-2
Classroom A315	1	Steam Sterilizer	3,000	No	Tuttnauer Autoclave	LABSCI 15L
Classroom A315	1	Isotemp Oven	780	No	Fisher Scientific	Unknown
Classroom A315	1	Misc. Equipment	1,200	No	Thermoscientific	Legned RT+
Classroom A330	1	Misc. Equipment	600	No	Precision	31534
Classroom A330	1	Misc. Equipment	600	No	Lab Line	Imperial III
Corridor Academic	1	Misc. IT Equipment	500	No	Varied	Varied
Classroom A315	1	Misc. Equipment	2,000	No	Varied	Varied
Classroom A311	1	Misc. Computer Equipment	5,000	No	Varied	Varied
Office - Enclosed A204B	1	Misc. Server Equipment	10,000	No	Varied	Varied
Office - Open Plan S101	3	Copier	2,500	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
Academic/Founders/GYM/Theater	3	Glass Fronted Refrigerated	14	Yes	0.4	3,627	0	\$420	\$690	\$150	1.3
Academic/Founders/GYM/Theater	3	Non-Refrigerated	14	Yes	0.1	1,028	0	\$119	\$690	\$0	5.8

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.


ENERGY STAR[®] Statement of Energy Performance



ENERGY STAR[®] Score¹

PCCC - Academic Hall/Founders Hall/Gym/Theater

Primary Property Type: College/University
Gross Floor Area (ft²): 166,974
Built: 1978

For Year Ending: February 28, 2022
Date Generated: March 15, 2023

1. The ENERGY STAR score is a 1-100 assessment of a building's energy efficiency as compared with similar buildings nationwide, adjusting for climate and business activity.

Property & Contact Information

Property Address	Property Owner	Primary Contact
PCCC - Academic Hall/Founders Hall/ Gym/Theater 144-158 Broadway Paterson, New Jersey 07504	Passaic County College 1 College Blvd. Paterson, NJ 07505 (973) 684-4999	Brian Egan 1 College Boulevard Paterson, NJ 07505 (973) 684-4999 began@pccc.edu

Property ID: 23316143

Energy Consumption and Energy Use Intensity (EUI)

Site EUI	Annual Energy by Fuel	National Median Comparison	
103.4 kBtu/ft ²	Natural Gas (kBtu) 7,512,863 (44%) Electric - Grid (kBtu) 9,747,760 (56%)	National Median Site EUI (kBtu/ft ²) National Median Source EUI (kBtu/ft ²) % Diff from National Median Source EUI	88.6 180.6 17%
Source EUI		Annual Emissions	
210.7 kBtu/ft ²		Total (Location-Based) GHG Emissions (Metric Tons CO ₂ e/year)	1,248

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, which 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.