





Local Government Energy Audit Report

Vineland High School South January 3, 2020

Prepared for: Vineland Public Schools 2880 E. Chestnut Avenue Vineland, NJ 08361 *Prepared by:* TRC 900 Route 9 North Woodbridge, NJ 07095

Disclaimer

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

TRC reviewed the energy conservation measures and estimates of energy savings were reviewed for technical accuracy. Actual, achieved energy savings depend on behavioral factors and other uncontrollable variables and, therefore, estimates of final energy savings are not guaranteed. TRC and the New Jersey Board of Public Utilities (NJBPU) shall in no event be liable should the actual energy savings vary.

TRC bases estimated installation costs on our experience at similar facilities, pricing from local contractors and vendors, and/or cost estimates from RS Means. Cost estimates include material and labor pricing associated with installation of primary recommended equipment only. Cost estimates do not include demolition or removal of hazardous waste. We encourage the owner of the facility to independently confirm these cost estimates and to obtain multiple estimates when considering measure installations. Actual installation costs can vary widely based on individual measures and conditions. TRC and NJBPU do not guarantee installed cost estimates and shall in no event be held liable should actual installed costs vary from estimates.

New Jersey's Clean Energy Program (NJCEP) incentive values provided in this report are estimates based on program information available at the time of the report. Incentive levels are not guaranteed. The NJBPU reserves the right to extend, modify, or terminate programs without prior notice. Please review all available program incentives and eligibility requirements prior to selecting and installing any energy conservation measures.

The customer and their respective contractor(s) are responsible to implement energy conservation measures in complete conformance with all applicable local, state and federal requirements.

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TRC 1 Executive Summary

The New Jersey Board of Public Utilities (NJBPU) has sponsored this Local Government Energy Audit (LGEA) report for Vineland High School South. 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.



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.



¹ Incentives are based on current SmartStart Prescriptive incentives. Other Program incentives may apply.

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



#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (Ibs)
Lighting	Upgrades		686,756	83.1	-113	\$91,868	\$218,947	\$0	\$218,947	2.4	678,354
ECM 1	Install LED Fixtures	Yes	150,563	0.5	-1	\$20,469	\$91,916	\$0	\$91,916	4.5	151,539
ECM 2	Retrofit Fixtures with LED Lamps	Yes	536,193	82.6	-112	\$71,399	\$127,031	\$0	\$127,031	1.8	526,815
Lighting	Control Measures		134,498	20.1	-28	\$17,910	\$68,112	\$0	\$68,112	3.8	132,146
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	119,758	17.9	-25	\$15,947	\$57,762	\$0	\$57,762	3.6	117,664
ECM 4	Install High/Low Lighting Controls	Yes	14,740	2.2	-3	\$1,963	\$10,350	\$0	\$10,350	5.3	14,482
Electric l	Jnitary HVAC Measures		7,200	3.9	0	\$979	\$54,460	\$0	\$54,460	55.6	7,251
ECM 5	Install High Efficiency Air Conditioning Units	No	7,200	3.9	0	\$979	\$54,460	\$0	\$54,460	55.6	7,251
Domesti	ic Water Heating Upgrade		0	0.0	74	\$1,009	\$186	\$186	\$0	0.0	8,666
ECM 6	Install Low-Flow DHW Devices	Yes	0	0.0	74	\$1,009	\$186	\$186	\$0	0.0	8,666
Food Se	rvice & Refrigeration Measures		22,120	2.3	0	\$3,008	\$21,544	\$0	\$21,544	7.2	22,274
ECM 7	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	2,108	0.3	0	\$287	\$2,426	\$0	\$2,426	8.5	2,123
ECM 8	Refrigeration Controls	Yes	2,468	0.0	0	\$336	\$1,037	\$0	\$1,037	3.1	2,485
ECM 9	Replace Refrigeration Equipment	No	6,261	0.7	0	\$852	\$16,470	\$0	\$16,470	19.3	6,304
ECM 10	Vending Machine Control	Yes	11,283	1.3	0	\$1,535	\$1,610	\$0	\$1,610	1.0	11,362
	TOTALS (COST EFFECTIVE MEASURES)		837,114	104.7	-67	\$112,943	\$292,319	\$186	\$292,132	2.6	835,137
	TOTALS (ALL MEASURES)		850,574	109.4	-67	\$114,774	\$363,248	\$186	\$363,062	3.2	848,692

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

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

Figure 2 – Evaluated Energy Improvements

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

TRC



1.1 Planning Your Project

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

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

Pick Your Installation Approach

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

The potential ECMs identified for this building likely qualify for incentive and funding programs. Based on current program rules and requirements, your measures are likely to qualify for the following programs:

	Energy Conservation Measure	SmartStart	Direct Install	Pay For Performance
ECM 1	Install LED Fixtures			
ECM 2	Retrofit Fixtures with LED Lamps			
ECM 3	Install Occupancy Sensor Lighting Controls			
ECM 4	Install High/Low Lighting Controls			
ECM 5	Install High Efficiency Air Conditioning Units			
ECM 6	Install Low-Flow DHW Devices	х		Х
ECM 7	Refrigerator/Freezer Case Electrically Commutated			
ECIVI 7	Motors			
ECM 8	Refrigeration Controls			
ECM 9	Replace Refrigeration Equipment			
ECM 10	Vending Machine Control			

Figure 3 – Funding Options







New Jersey's Clean Energy Programs At-A-Glance

	SmartStart Flexibility to install at your own pace	Direct Install Turnkey installation	Pay for Performance Whole building upgrades		
Who should use it?	Buildings installing individual measures or small group of measures.	Small to mid-size facilities that can bundle multiple measures together. Average peak demand should be below 200 kW. Not suitable for significant building shell issues.	Mid to large size facilities looking to implement as many measures as possible at one time. Peak demand should be over 200 kW.		
How does it work?	Use in-house staff or your preferred contractor.	Pre-approved contractors pass savings along to you via reduced material and labor costs.	Whole-building approach to energy upgrades designed to reduce energy use by at least 15%. The more you save, the higher the incentives.		
What are the Incentives?	Fixed incentives for specific energy efficiency measures.	Incentives pay up to 70% of eligible costs, up to \$125,000 per project. You pay the remaining 30% directly to the contractor.	Up to 25% of installation cost, calculated based on level of energy savings per square foot.		
How do I participate?	Submit an application for the specific equipment to be installed.	Contact a participating contractor in your region.	Contact a pre-qualified Partner to develop your Energy Reduction Plan and set your energy savings targets.		
Take 1 program c	the next step by visiting	www.njcleanenergy.c	om for contractor.		



Individual Measures with SmartStart

For facilities wishing to pursue only selected individual measures (or planning to phase implementation of selected measures over multiple years), incentives are available through the SmartStart program. To participate, you can use internal resources or an outside firm or contractor to perform the final design of the ECM(s) and install the equipment. Program pre-approval is required for some SmartStart incentives, so only after receiving pre-approval should you proceed with ECM installation.

Turnkey Installation with Direct Install

The Direct Install program provides turnkey installation of multiple measures through an authorized network of participating contractors. This program can provide substantially higher incentives than SmartStart, up to 70% of the cost of selected measures. Direct Install contractors will assess and verify individual measure eligibility and, in most cases, they perform the installation work. The Direct Install program is available to sites with an average peak demand of less than 200 kW.

Whole Building Approach with Pay for Performance

Pay for Performance can be a good option for medium to large sized facilities to achieve deep energy savings. Pay for Performance allows you to install as many measures as possible under a single project as well as address measures that may not qualify for other programs. Many facilities pursuing an Energy Savings Improvement Program (ESIP) loan also use this program. Pay for Performance works for larger customers with a peak demand over 200 kW. The minimum installed scope of work must include at least two unique measures resulting in at least 15% energy savings, where lighting cannot make up the majority of the savings.

More Options from Around the State

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

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

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

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

Ongoing Electric Savings with Demand Response

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

TRC2 Existing Conditions



The New Jersey Board of Public Utilities (NJBPU) has sponsored this Local Government Energy Audit (LGEA) Report for Vineland High School South. This report provides information on how your facility uses energy, identifies energy conservation measures (ECMs) that can reduce your energy use, and provides information and assistance to help you implement the ECMs. This report also contains valuable information on financial incentives from New Jersey's Clean Energy Program (NJCEP) for implementing ECMs.

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

2.1 Site Overview

On August 21, 2019, TRC performed an energy audit at Vineland High School South located in Vineland, New Jersey. TRC met with Noel Feliciano Plumer to review the facility operations and help focus our investigation on specific energy-using systems.

Vineland Senior High School South is a public high school located in Vineland, New Jersey. It holds classes for 11th and 12th grade students. It is a two-story, 232,550 square foot building built in 1964. Spaces include: classrooms, gymnasium, auditorium, offices, cafeteria, corridors, stairwells, a commercial kitchen and mechanical space.

Recent improvements include HVAC upgrade in the facility in 2017. The school shares an electric meter with High School North, and the usage for this site has been estimated based on the calculated load for this school.





Auditorium & Cafeteria

2.2 Building Occupancy

The facility is occupied from September through June with some extracurricular activities in the summer. Typical weekday occupancy is 1,166 including full time staff and students.

Building Name	Weekday/Weekend	Operating Schedule
	Weekday	6:00 AM - 11:00 PM
Vineland High School South	Weekend	Saturday: 7:00 AM - 5:30 PM Sunday: No Operation





2.3 Building Envelope

TRC

Building walls are concrete block over structural steel. Some parts of the building have a brick façade while others have a glass and aluminum frame façade. The roof is flat and covered with black membrane and it is in good condition. The walls are made of concrete masonry units (CMUs) gypsum drywall interior finish.

Most of the windows are double glazed having aluminum frames with a thermal break. The glass-to-frame seals are in good condition. Exterior doors have aluminum frames and are in good condition with undamaged door seals.













Glass Aluminum Frames Facade

Exit Doors

2.4 Lighting Systems

The primary interior lighting system uses 32-Watt linear fluorescent T8 lamps. Additionally, there are some 23-Watt compact fluorescent lamps (CFL), 60-Watt incandescent and several LED general purpose lamps of varying wattage serving smaller spaces. Typically, T8 fluorescent lamps use electronic ballasts.

Fixture types include 2-lamp, 3-lamp or 4-lamp, 2-foot or 4-foot long troffers and surface mounted fixtures and 2-foot U-bend and linear tube 2-lamp or 3-lamp fixtures. Most fixtures are in good condition and are controlled with a mixture of manual wall switches and occupancy sensors.

The gymnasium has a mix of high bay LED fixtures and linear T8 lamp fixtures, all of which are manually controlled. The auditorium has high bay fixtures with 250Wwatt halogen incandescent lamps and manually controlled linear T8 4-lamp, 4-foot fixtures.

All exit signs are LED units. Interior lighting levels were generally sufficient.

Exterior fixtures include wall packs, pole lights, flood lights, recessed fixtures, and canopy lights with a mix of high intensity discharge (HID) and LED lamps. Exterior light fixtures are controlled by a time clock or photocell, depending on the fixture.







Linear T8 Troffer



High Bay LED Fixture -Gym



2x2 Linear T8



Ceiling Mounted Occupancy Sensor



Wall Pack Fixtures



Wall Pack LED Fixture



Exterior HID Lights

2.5 Air Handling Systems

Unit Ventilators

The classroom unit ventilators have Daikin self-contained water source heat pump unit ventilators. Each has a 0.25 hp supply fan and a direct expansion (DX) coil. The unit ventilators provide heating and cooling and are controlled with the building energy management system (EMS). They were installed during the 2017 facility's HVAC system upgrade.



Daikin Self-Contained WSHP Unit Ventilator

Water Source Heat Pumps (WSHP)

Building areas including the gym, auditorium, library, cafeteria, kitchen, locker rooms are served with AAON water source heat pump units controlled by the EMS. The units are roof and ceiling mounted. These units have cooling capacities ranging from 5 tons to 90 tons and heating capacities ranging from 58 MBH to 350 MBh. The units were all installed in 2017 and are in good condition. There are two cooling towers in the school for heat rejection from the heat pumps. The three gymnasiums (Gyms 1, 2, and 3) and the kitchen are each served by a 30-ton WSHP located in the Penthouse (gym units) and on the roof (kitchen).





The auditorium has a roof-mounted 90-ton WSHP. The large WSHP (30 ton and 90 ton) are variable air volume units with the supply and return fans controlled by variable frequency drives.



90-Ton AAON WSHP





VFDs

Roof Mounted WSHP





Ceiling Mounted WSHP & Heat Rejection Cooling Towers

Packaged Units

Some classrooms and hallways are cooled using packaged units with cooling capacities ranging from 4 tons to 6 tons with EER values ranging from 9.8-13.

Most of the units were installed in 2016 and were found to be in good condition. Some of the units were installed in 2010. These are passed their useful life and have been evaluated for replacement. Some units are equipped with an economizer that opens to draw in outside air for cooling when the outside air temperature is cool and dry enough.

Refer to Appendix A for detailed information about each unit. The occupied cooling setpoint is 70°F and the space temperatures are controlled by an EMS.



Trane & Goodman Packaged Units





Air Conditioners

Smaller spaces such as offices, storage, and server rooms are cooled using split AC units. The cooling capacities range from 0.75 tons to 3 tons, with an average EER value of 10.8. The split AC units are controlled by programmable thermostats located in their respective zones. There are a few new units, however, several of them have passed their useful life. The older units have been evaluated for replacement. The split system units are controlled with programmable thermostats.



Split System Units

General Building Exhaust System

There are numerous fractional horsepower exhaust fans located throughout the building which serve the restrooms and other areas. There are some specialty exhaust blowers for science rooms with fume hoods. The exhaust fans are controlled by the EMS.







General Exhaust Air System

2.6 Heating Hot Water Systems

The space heating in the school is provided by a mixture of water source heat pumps and make-up air units with gas-fired furnaces. The heat pump loop circulates water to the Aerco gas-fired condensing hot water boilers using two variable speed 100 hp water circulation pumps. The boilers have an output capacity of 2790 MBh and a 93% efficiency. Water from the boilers circulates to the various spaces using four, 2 hp variable speed heating hot water pumps.

Science classrooms are heated using gas-fired make up air unit furnaces with heating capacities ranging from 80 MBh to 240 MBh. The furnaces have an efficiency rating of 80% and are all in good condition.

The auto shop has a gas fired Reznor warm air unit heater of 80 MBh output capacity and an efficiency of 80%.

The occupied heating setpoint is 68°F and most of the space temperatures are all controlled by an EMS.







Condensing Hot Water Boilers



Water Circulation Pumps



Make-Up Air (MUA) Unit



VFDs

2.7 Building Energy Management Systems (EMS)

A Trane EMS controls most of the HVAC equipment, including the boilers, water source heat pumps, unit ventilators, air handlers, exhaust fans, package units, and heat rejection cooling towers. The EMS provides equipment scheduling control and monitors and controls space temperatures, supply air temperatures, heating water loop temperatures, and chilled water loop temperatures.

2880 East Chestnut Avenue Vineland, NJ, 08361	Vineland High School South	Tozour Automati Be Connected 24/7 Hotline: 855.4.TOZ(HP Supply Temp: 83.5 °F HP Return Temp: 87.9 °F B1 Entering Temp: 82.6 °F B2 Entering Temp: 82.7 °F B3 Entering Temp: 82.5 °F B4 Entering Temp: 82.4 °F	Hot Water System: Enab	Ied P1 Enable: Off P1 Status: Off P1 Speed: 0.0 % P1 Fail: Off C Penp Atem
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Trane EMS

Domestic Hot Water 2.8

TRC

2.9

Hot water is produced by three 800 MBh gas-fired Lochinvar storage water heaters, each with a tank capacity of 500 gallons and an efficiency of 80%. Fractional hp circulation pumps distribute water to end uses.

The art classroom has an electric water heater with an input capacity of 3 kW and a tank capacity of 19 gallons.

The water heaters are in good condition and well maintained, and the pipes are in good condition

Tank

Gas-Fired Domestic Hot Water Heaters and Storage

Food Service and Refrigeration Equipment The kitchen has a mix of gas and electric equipment that is used to prepare lunches for students. Most cooking is done using a convection oven and conventional gas-fired stove. Bulk prepared foods are held in several holding cabinets. Equipment is high efficiency and in good condition.

The dishwasher is an ENERGY STAR[®] high temperature, rack type unit consists of electric booster.

The kitchen has several stand-up refrigerators and freezers with either solid doors. There is also an energy efficient refrigerator chest. All equipment is standard and in good condition.

The walk-in refrigerator has an estimated 0.6-ton compressor and a two-fan evaporator. There are two walk-in medium temperature freezers that have a 0.75-ton to 1.0-ton compressor and a three-fan evaporator with evaporator controls.

The dishwasher is an ENERGY STAR® high temperature with an electric booster heater.

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





DHW Recirculation Pump



Electric Water Heater







Kitchen



Dishwasher





Gas-Fired Convection Oven



Reach in Refrigerators



Walk-in Evaporator

2.10 Plug Load & Vending Machines

The location is doing a great job managing their electrical plug loads. This report makes additional suggestions for ECMs in this area as well as Energy Efficient Best Practices.

There are 200 computer work stations throughout the facility. Plug loads throughout the building include general café and office equipment. There are classroom typical loads such as smart boards, projectors, and fans.

There are several residential-style refrigerators throughout the building that are used to store food by staff. These vary in condition and efficiency.

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



Vending Machines



Kiln



Large Copier



Water Cooler





2.11 Water-Using Systems

Approximately 26 faucets have flow rates at 2.2 gallons per minute (gpm) or higher. Toilets are rated at 1.6 gallons per flush (gpf) and urinals are rated at 1.0 gpf.

The locker rooms with showers and showerheads are rated as low flow.



Lavatory Sinks



Showerheads



TRC **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.

			Gas \$64.606
U	tility Summary		13%
Fuel	Usage	Cost	
Electricity	3,059,877 kWh	\$416,170	
Natural Gas	47,414 Therms	\$64,606	
Tota	1	\$480,776	

Natural Electricity \$416,170 87% \$480,776

An energy balance identifies and quantifies energy use in your various building systems. This can highlight areas with the most potential for improvement. This energy balance was developed using calculated energy use for each of the end uses noted in the figure.

The energy auditor collects information regarding equipment operating hours, capacity, efficiency, and other operational parameters from facility staff, drawings, and on-site observations. This information is used as the inputs to calculate the existing conditions energy use for the site. The calculated energy use is then compared to the historical energy use and the initial inputs are revised, as necessary, to balance the calculated energy use to the historical energy use.



Figure 5 - Energy Balance



3.1 Electricity

City of Vineland delivers electricity under rate class GLP20. The electric meter is shared with the High School North. The total electricity demand (kW) on the meter has been apportioned evenly between the two high schools as they contain roughly the same amount of equipment and are of similar size.



The estimate energy usage (kWh) for this location is similarly apportioned from the master meter.

	Electric Billing Data											
Period Ending	Days in Period	Electric Usage (kWh)	Demand (kW)	Demand Cost	Total Electric Cost							
8/23/17	30	217,729	786	\$4,505	\$28,758							
9/23/17	31	259,242	830	\$8,055	\$36,511							
10/24/17	31	263,316	697	\$8,118	\$34,602							
11/27/17	34	265,533	693	\$6,593	\$33,256							
12/21/17	24	289,064	806	\$6,717	\$35,325							
1/25/18	35	313,325	855	\$6,835	\$38,056							
2/22/18	28	233,582	694	\$6,042	\$30,543							
3/23/18	29	242,712	707	\$5,529	\$31,240							
4/25/18	33	232,256	720	\$6,078	\$33,074							
5/18/18	23	187,541	636	\$7,969	\$29,776							
6/21/18	34	298,425	582	\$8,595	\$45,679							
7/24/18	33	257,152	593	\$7,203	\$39,349							
Totals	365	3,059,877	855	\$82,238	\$416,170							
Annual	365	3,059,877	855	\$82,238	\$416,170							

Notes:

- Peak demand of 855 kW occurred in January 2018.
- Average demand over the past 12 months was 716 kW.
- The average electric cost over the past 12 months was \$0.136/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.

New Jersey's Cleanenergy program"

3.2 Natural Gas

TRC

South Jersey Gas delivers natural gas under rate class General Service, with natural gas supply provided by Woodruff Energy, a third-party supplier. This site has a dedicated gas meter.



	Gas Billing Data										
Period Ending	Days in Period	Natural Gas Usage (Therms)	Natural Gas Cost								
8/14/17	30	394	\$1,897								
9/13/17	30	3,311	\$4,509								
10/11/17	28	71	\$1,452								
11/10/17	30	228	\$1,762								
12/11/17	31	632	\$2,354								
1/15/18	35	13,622	\$15,265								
2/13/18	29	9,556	\$11,061								
3/14/18	29	7,706	\$10,626								
4/11/18	28	7,602	\$10,308								
5/9/18	28	2,670	\$3,212								
6/8/18	30	630	\$728								
7/12/18	34	601 5	\$901								
Totals	362	47,024	\$64,075								
Annual	365	47,414	\$64,606								

Notes:

• The average gas cost for the past 12 months is \$1.363/therm, which is the blended rate used throughout the analysis.



TRC

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.



Figure 6 - Energy Use Intensity Comparison³

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

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

³ Based on all evaluated ECMs





Tracking Your Energy Performance

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

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

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

For more information on ENERGY STAR[®] and Portfolio Manager[®], visit their website⁴.

⁴ <u>https://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/earn-recognition/energy-star-certification/how-app-1.</u>



4 ENERGY CONSERVATION MEASURES

The goal of this audit report is to identify and evaluate potential energy efficiency improvements, provide information about the cost effectiveness of those improvements, and recognize potential financial incentives from NJBPU. Most energy conservation measures have received preliminary analysis of feasibility which identifies expected ranges of savings and costs. This level of analysis is typically sufficient to demonstrate project cost-effectiveness and help prioritize energy measures.

Calculations of energy use and savings are based on the current version of the *New Jersey's Clean Energy Program Protocols to Measure Resource Savings*, which is approved by the NJBPU. Further analysis or investigation may be required to calculate more precise savings based on specific circumstances.

Operation and maintenance costs for the proposed new equipment will generally be lower than the current costs for the existing equipment—especially if the existing equipment is at or past its normal useful life. We have conservatively assumed there to be no impact on overall maintenance costs over the life of the equipment.

Financial incentives are based on the current NJCEP prescriptive SmartStart program. A higher level of investigation may be necessary to support any SmartStart Custom, Pay for Performance, or Direct Install incentive applications. Some measures and proposed upgrades may be eligible for higher incentives than those shown below through other NJCEP programs described in a following section of this report.

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 Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting	Upgrades		686,756	83.1	-113	\$91,868	\$218,947	\$0	\$218,947	2.4	678,354
ECM 1	Install LED Fixtures	Yes	150,563	0.5	-1	\$20,469	\$91,916	\$0	\$91,916	4.5	151,539
ECM 2	Retrofit Fixtures with LED Lamps	Yes	536,193	82.6	-112	\$71,399	\$127,031	\$0	\$127,031	1.8	526,815
Lighting	Control Measures		134,498	20.1	-28	\$17,910	\$68,112	\$0	\$68,112	3.8	132,146
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	119,758	17.9	-25	\$15,947	\$57,762	\$0	\$57,762	3.6	117,664
ECM 4	Install High/Low Lighting Controls	Yes	14,740	2.2	-3	\$1,963	\$10,350	\$0	\$10,350	5.3	14,482
Electric	Jnitary HVAC Measures		7,200	3.9	0	\$979	\$54,460	\$0	\$54,460	55.6	7,251
ECM 5	Install High Efficiency Air Conditioning Units	No	7,200	3.9	0	\$979	\$54,460	\$0	\$54,460	55.6	7,251
Domesti	c Water Heating Upgrade		0	0.0	74	\$1,009	\$186	\$186	\$0	0.0	8,666
ECM 6	Install Low-Flow DHW Devices	Yes	0	0.0	74	\$1,009	\$186	\$186	\$0	0.0	8,666
Food Se	rvice & Refrigeration Measures		22,120	2.3	0	\$3,008	\$21,544	\$0	\$21,544	7.2	22,274
ECM 7	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	2,108	0.3	0	\$287	\$2,426	\$0	\$2,426	8.5	2,123
ECM 8	Refrigeration Controls	Yes	2,468	0.0	0	\$336	\$1,037	\$0	\$1,037	3.1	2,485
ECM 9	Replace Refrigeration Equipment	No	6,261	0.7	0	\$852	\$16,470	\$0	\$16,470	19.3	6,304
ECM 10	Vending Machine Control	Yes	11,283	1.3	0	\$1,535	\$1,610	\$0	\$1,610	1.0	11,362
	TOTALS		850,574	109.4	-67	\$114,774	\$363,248	\$186	\$363,062	3.2	848,692

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

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

Figure 7 – All Evaluated ECMs



#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO2e Emissions Reduction (Ibs)
Lighting	Upgrades	686,756	83.1	-113	\$91,868	\$218,947	\$0	\$218,947	2.4	678,354
ECM 1	Install LED Fixtures	150,563	0.5	-1	\$20,469	\$91,916	\$0	\$91,916	4.5	151,539
ECM 2	Retrofit Fixtures with LED Lamps	536,193	82.6	-112	\$71,399	\$127,031	\$0	\$127,031	1.8	526,815
Lighting	Control Measures	134,498	20.1	-28	\$17,910	\$68,112	\$0	\$68,112	3.8	132,146
ECM 3	Install Occupancy Sensor Lighting Controls	119,758	17.9	-25	\$15,947	\$57,762	\$0	\$57,762	3.6	117,664
ECM 4	Install High/Low Lighting Controls	14,740	2.2	-3	\$1,963	\$10,350	\$0	\$10,350	5.3	14,482
Domest	ic Water Heating Upgrade	0	0.0	74	\$1,009	\$186	\$186	\$0	0.0	8,666
ECM 6	Install Low-Flow DHW Devices	0	0.0	74	\$1,009	\$186	\$186	\$0	0.0	8,666
Food Se	rvice & Refrigeration Measures	15,859	1.5	0	\$2,157	\$5,074	\$0	\$5,074	2.4	15,970
ECM 7	Refrigerator/Freezer Case Electrically Commutated Motors	2,108	0.3	0	\$287	\$2,426	\$0	\$2,426	8.5	2,123
ECM 8	Refrigeration Controls	2,468	0.0	0	\$336	\$1,037	\$0	\$1,037	3.1	2,485
ECM 10	Vending Machine Control	11,283	1.3	0	\$1,535	\$1,610	\$0	\$1,610	1.0	11,362
TOTALS		837,114	104.7	-67	\$112,943	\$292,319	\$186	\$292,132	2.6	835,137

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

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

Figure 8 – Cost Effective ECMs





4.1 Lighting

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting	; Upgrades	686,756	83.1	-113	\$91,868	\$218,947	\$0	\$218,947	2.4	678,354
ECM 1	Install LED Fixtures	150,563	0.5	-1	\$20,469	\$91,916	\$0	\$91,916	4.5	151,539
ECM 2	Retrofit Fixtures with LED Lamps	536,193	82.6	-112	\$71,399	\$127,031	\$0	\$127,031	1.8	526,815

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

ECM 1: Install LED Fixtures

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

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

ECM 2: 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.

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, CFL or incandescent lamp fixtures





4.2 Lighting Controls

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Control Measures		134,498	20.1	-28	\$17,910	\$68,112	\$0	\$68,112	3.8	132,146
ECM 3	Install Occupancy Sensor Lighting Controls	119,758	17.9	-25	\$15,947	\$57,762	\$0	\$57,762	3.6	117,664
ECM 4	Install High/Low Lighting Controls	14,740	2.2	-3	\$1,963	\$10,350	\$0	\$10,350	5.3	14,482

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

ECM 3: Install Occupancy Sensor Lighting Controls

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

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

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

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

Affected building areas: offices, conference rooms, classrooms, gymnasium, library, restrooms, and storage rooms

ECM 4: Install High/Low Lighting Controls

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

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

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

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

Affected building areas: hallways





4.3 Electric Unitary HVAC

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Electric	Unitary HVAC Measures	7,200	3.9	0	\$979	\$54,460	\$0	\$54,460	55.6	7,251
ECM 5	Install High Efficiency Air Conditioning Units	7,200	3.9	0	\$979	\$54,460	\$0	\$54,460	55.6	7,251

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 at this facility 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 split AC unit and packaged AC units are eventually replaced, consider purchasing equipment that exceeds the minimum efficiency required by building codes.

ECM 5: Install High Efficiency Air Conditioning Units

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

4.4 Domestic Water Heating

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (Ibs)
Domest	tic Water Heating Upgrade	0	0.0	74	\$1,009	\$186	\$186	\$0	0.0	8,666
ECM 6	Install Low-Flow DHW Devices	0	0.0	74	\$1,009	\$186	\$186	\$0	0.0	8,666

ECM 6: 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

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.





4.5 Food Service & Refrigeration Measures

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (Ibs)
Food Se	ervice & Refrigeration Measures	22,120	2.3	0	\$3,008	\$21,544	\$0	\$21,544	7.2	22,274
ECM 7	Refrigerator/Freezer Case Electrically Commutated Motors	2,108	0.3	0	\$287	\$2,426	\$0	\$2,426	8.5	2,123
ECM 8	Refrigeration Controls	2,468	0.0	0	\$336	\$1,037	\$0	\$1,037	3.1	2,485
ECM 9	Replace Refrigeration Equipment	6,261	0.7	0	\$852	\$16,470	\$0	\$16,470	19.3	6,304
ECM 10	Vending Machine Control	11,283	1.3	0	\$1,535	\$1,610	\$0	\$1,610	1.0	11,362

ECM 7: Refrigerator/Freezer Case Electrically Commutated Motors

Replace shaded pole or permanent split capacitor (PSC) motors with electronically commutated (EC) motors in walk-in coolers and freezers. 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 8: Refrigeration Controls

Install additional controls to optimize the operation of walk-in coolers and freezers.

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

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

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

ECM 9: Replace Refrigeration Equipment

We evaluated replacement of the older, existing commercial refrigerators with new ENERGY STAR[®] rated equipment. The energy savings associated with this measure come from reduced energy usage, due to more efficient technology, and reduced run times.





ECM 10: 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 the 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.



TRC

5 ENERGY EFFICIENT BEST PRACTICES

A whole building maintenance plan will extend equipment life; improve occupant comfort, health, and safety; and reduce energy and maintenance costs. You may already be doing some of these things— see our list below for potential additions to your maintenance plan. Be sure to consult with qualified equipment specialists for details on proper maintenance and system operation.

Energy Tracking with ENERGY STAR® Portfolio Manager®



You've heard it before - you can't manage what you don't measure. ENERGY STAR[®] Portfolio Manager[®] is an online tool that you can use to measure and track energy and water consumption, as well as greenhouse gas 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.

Motor Maintenance

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

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





Thermostat Schedules and Temperature Resets



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

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.

Boiler Maintenance

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

Furnace Maintenance

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

Water Heater Maintenance

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

- Leaks or heavy corrosion on the pipes and valves.
- Corrosion or wear on the gas line and on the piping. If you noticed any black residue, soot, or charred metal, this is a sign you may be having combustion issues and you should have the unit serviced by a professional.





- For electric water heaters, look for signs of leaking such as rust streaks or residue around the upper and lower panels covering the electrical components on the tank.
- For water heaters more than three years old, have a technician inspect the sacrificial anode annually.

Plug Load Controls



Reducing plug loads is a common way to decrease your electrical use. Limiting the energy use of plug loads can include increasing occupant awareness, removing under-used equipment, installing hardware controls, and using software controls. Consider enabling the most aggressive power settings on existing devices or install load sensing or occupancy sensing (advanced) power strips⁶. Your local utility may offer incentives or rebates for this equipment.

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[®] website⁷ or download a copy of EPA's "WaterSense[®] at Work: Best Management

Practices for Commercial and Institutional Facilities⁷⁸ 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.

⁶ For additional information refer to "Assessing and Reducing Plug and Process Loads in Office Buildings" <u>http://www.nrel.gov/docs/fy13osti/54175.pdf</u>, or "Plug Load Best Practices Guide" <u>http://www.advancedbuildings.net/plug-load-best-practices-guide-offices.</u>

⁷ <u>https://www.epa.gov/watersense.</u>

⁸ <u>https://www.epa.gov/watersense/watersense-work-0.</u>





Procurement Strategies

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


6 ON-SITE GENERATION

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

Preliminary screenings were performed to determine if an on-site generation measure could be a costeffective 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	716	kW DC STC
Electric Generation	853,021	kWh/yr
Displaced Cost	\$116,020	/yr
Installed Cost	\$1,861,600	

Figure 9 - Photovoltaic Screening

Solar Renewable Energy Certificate (SREC) Registration Program (SRP)

Rebates are not available for solar projects, but owners of solar projects MUST register their projects in the SREC Registration Program before starting construction. Once your PV system is up and running, you periodically earn credits, which can then be sold on the open market for up to 15 years.

If you are considering installing solar photovoltaics on your building, visit <u>www.njcleanenergy.com/srec</u> for more information about the SREC Registration Program.

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

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



Aerial View of the High School South

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.

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 10 - Combined Heat and Power Screening

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



7 PROJECT FUNDING AND INCENTIVES

Ready to improve your building's performance? New Jersey's Clean Energy Programs can help. Pick the program that works best for you. Incentive programs that may apply to this facility are identified in the Executive Summary. This section provides an overview of currently available New Jersey Clean Energy Programs.

	SmartStart Flexibility to install at your own pace	Direct Install <i>Turnkey installation</i>	Pay for Performance Whole building upgrades
Who should use it?	Buildings installing individual measures or small group of measures.	Small to mid-size facilities that can bundle multiple measures together.	Mid to large size facilities looking to implement as many measures as possible at one time.
		Average peak demand should be below 200 kW.	Peak demand should be over 200 kW.
		Not suitable for significant building shell issues.	
How does it work?	Use in-house staff or your preferred contractor.	Pre-approved contractors pass savings along to you via reduced material and labor costs.	Whole-building approach to energy upgrades designed to reduce energy use by at least 15%. The more you save, the higher the incentives.
What are the Incentives?	Fixed incentives for specific energy efficiency measures.	Incentives pay up to 70% of eligible costs, up to \$125,000 per project. You pay the remaining 30% directly to the contractor.	Up to 25% of installation cost, calculated based on level of energy savings per square foot.
How do I participate?	Submit an application for the specific equipment to be installed.	Contact a participating contractor in your region.	Contact a pre-qualified Partner to develop your Energy Reduction Plan and set your energy savings targets.
Take	the next step by visitin details, applications, ar	g www.njcleanenergy nd to contact a qualified	.com for d contractor.





7.1 SmartStart



SmartStart offers incentives for installing prescriptive and custom energy efficiency measures at your facility. This program provides an effective mechanism for securing incentives for energy efficiency measures installed individually or as part of a package of energy upgrades. This program serves most common equipment types and sizes.

SmartStart routinely adds, removes, or modifies incentives from year-to-year for various energy efficient equipment based on market trends and new technologies.

Equipment with Prescriptive Incentives Currently Available:

Electric Chillers Electric Unitary HVAC Gas Cooling Gas Heating Gas Water Heating Ground Source Heat Pumps Lighting Lighting Controls Refrigeration Doors Refrigeration Controls Refrigerator/Freezer Motors Food Service Equipment Variable Frequency Drives

Incentives

The SmartStart Prescriptive program provides fixed incentives for specific energy efficiency measures. Prescriptive incentives vary by equipment type.

SmartStart Custom provides incentives for more unique or specialized technologies or systems that are not addressed through prescriptive incentives. Custom incentives are calculated at \$0.16/kWh and \$1.60/therm based on estimated annual savings. Incentives are capped at 50% of the total installed incremental project cost, or a project cost buy down to a one-year payback (whichever is less). Program incentives are capped at \$500,000 per electric account and \$500,000 per natural gas account, per fiscal year.

How to Participate

Submit an application for the specific equipment to be installed. Many applications are designed as rebates, although others require application approval prior to installation. You can work with your preferred contractor or use internal staff to install measures.

Visit <u>www.njcleanenergy.com/SSB</u> for a detailed program description, instructions for applying, and applications.





7.2 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 over the recent 12-month period. You work directly with a preapproved 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, up to \$125,000 per project. Each entity is limited to incentives up to \$250,000 per fiscal year.

How to Participate

To participate in Direct Install, you will need to contact the participating contractor assigned to the region of the state where your facility is located. A complete list of Direct Install program partners is provided on the Direct Install website linked below. 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 program, subject to program caps and eligibility, while the remaining 30% of the cost is paid to the contractor by the customer.

Detailed program descriptions and applications can be found at: <u>www.njcleanenergy.com/DI.</u>





7.3 Pay for Performance - Existing Buildings



Pay for Performance works for larger customers with a peak demand over 200 kW. The minimum installed scope of work must include at least two unique measures that results in at least 15% source energy savings, and lighting cannot make up the majority of the savings. P4P is a generally a good option for medium-to-large sized facilities looking to implement as many

measures as possible under a single project to achieve deep energy savings. This program 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

Incentives are based on estimated and achieved energy savings ranging from \$0.18-\$0.22/kWh and \$1.80-\$2.50/therm, capped at the lesser of 50% total project cost, or \$1 million per electric account and \$1 million per natural gas account, per fiscal year, not to exceed \$2 million per project. An incentive of \$0.15/square foot is also available to offset the cost of developing the Energy Reduction Plan (see below) contingent on the project moving forward with measure installation.

How to Participate

Contact one of the pre-approved consultants and contractors ("Partners"). Under direct contract to you, they will help further evaluate the measures identified in this report through development of the energy reduction plan), assist you in implementing selected measures, and verify actual savings one year after the installation. Your Partner will also help you apply for incentives.

Approval of the final scope of work is required by the program prior to installation. Installation can be done by the contractor of your choice (some P4P Partners are also contractors) or by internal staff, but the Partner remains involved throughout construction to ensure compliance with the program requirements.

Detailed program descriptions, instructions for applying, applications and list of Partners can be found at: www.njcleanenergy.com/P4P.





7.4 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	<u>≤</u> 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		
Microturbine Fuel Cells with Heat Recovery	>3 MW	\$350	30%	\$3 million
Waste Heat to	<1 MW	\$1,000	30%	\$2 million
Power	> 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 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.





7.5 Energy Savings Improvement Program

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

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

How to Participate

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

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

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

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

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



7.6 SREC Registration Program

The SREC (Solar Renewable Energy Certificate) Registration Program (SRP) is used to register the intent to install solar projects in New Jersey. Rebates are not available for solar projects, but owners of solar projects *must* register their projects prior to the start of construction to establish the project's eligibility to earn SRECs. Registration of the intent to participate in New Jersey's solar marketplace provides market participants with information about the pipeline of anticipated new solar capacity and insight into future SREC pricing.

After the registration is accepted, construction is complete, and final paperwork has been submitted and is deemed complete, the project is issued a New Jersey certification number, which enables it to generate New Jersey SRECs. SRECs are generated once the solar project has been authorized to be energized by the Electric Distribution Company (EDC).

Each time a solar installation generates 1,000 kilowatt-hours (kWh) of electricity, an SREC is earned. Solar project owners report the energy production to the SREC Tracking System. This reporting allows SRECs to be placed in the customer's electronic account. SRECs can then be sold on the SREC Tracking System, providing revenue for the first 15 years of the project's life.

Electricity suppliers, the primary purchasers of SRECs, are required to pay a Solar Alternative Compliance Payment (SACP) if they do not meet the requirements of New Jersey's Solar Renewable Portfolio Standard. Purchasing SRECs can help them meet those requirements. As SRECs are traded in a competitive market, the price may vary significantly. The actual price of an SREC during a trading period fluctuates depending on supply and demand.

Information about the SRP can be found at: <u>www.njcleanenergy.com/srec</u>.



8 ENERGY PURCHASING AND PROCUREMENT STRATEGIES

8.1 Retail Electric Supply Options

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

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

A list of licensed third-party electric suppliers is available at the NJBPU website⁹.

8.2 Retail Natural Gas Supply Options

The natural gas market in New Jersey is also deregulated. Most customers that remain with the utility for natural gas service pay rates that are market-based and that fluctuate monthly. The utility provides basic gas supply service (BGSS) to customers who choose not to buy from a third-party supplier for natural gas commodity.

A customer's decision about whether to buy natural gas from a retail supplier typically depends on whether a customer prefers budget certainty and/or longer-term rate stability. Customers can secure longer-term fixed prices by signing up for service through a third-party retail natural gas supplier. Many larger natural gas customers may seek the assistance of a professional consultant to assist in their procurement process.

If your facility does not already purchase natural gas from a third-party supplier, consider shopping for a reduced rate from third-party natural gas suppliers. If your facility already purchases natural gas from a third-party supplier, review and compare prices at the end of each contract year.

A list of licensed third-party natural gas suppliers is available at the NJBPU website¹⁰.

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

¹⁰ www.state.nj.us/bpu/commercial/shopping.html.





APPENDIX A: EQUIPMENT INVENTORY & RECOMMENDATIONS

Lighting Inventory & Recommendations

	Existin	g Conditions					Prop	osed Conditio	ns						Energy Ir	npact & F	inancial A	nalysis			
Location	Fixture Quantit Y	Fixture Description	Control System	Light Leve	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantit y	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w Incentives in Years
Pent House	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,440	2	Relamp	No	8	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,440	0.2	1,289	0	\$172	\$292	\$0	1.7
Trailer Office	14	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	s	114	4,440	2, 3	Relamp	Yes	14	LED - Linear Tubes: (4) 4' Lamps	Occupanc y Sensor	58	3,064	0.7	5,058	-1	\$674	\$1,292	\$0	1.9
Trailer Office	2	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	4,440	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) U-Lamp	Occupanc y Sensor	33	3,064	0.1	383	0	\$51	\$261	\$0	5.1
Trailer Office	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
Boiler room	14	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,440	2	Relamp	No	14	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,440	0.3	2,256	0	\$300	\$511	\$0	1.7
Boiler room	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	\$0	\$0	\$0	0.0
Storage room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	2,120	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,120	0.0	77	0	\$10	\$37	\$0	3.6
Electrical room	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,440	0.1	484	0	\$64	\$110	\$0	1.7
Gym	60	LED - Fixtures: High-Bay	Wall Switch	s	100	4,440	3	None	Yes	60	LED - Fixtures: High-Bay	Occupanc y Sensor	100	3,064	1.3	9,084	-2	\$1,210	\$1,350	\$0	1.1
Gym	9	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	9	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	\$0	\$0	\$0	0.0
Gym	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.4	2,461	-1	\$328	\$438	\$0	1.3
Boys locker room	27	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupano y Sensor	s	62	3,064	2	Relamp	No	27	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.6	3,003	-1	\$400	\$986	\$0	2.5
Boys locker room	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
Boys locker room - office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupano y Sensor	s	62	3,064	2	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	445	0	\$59	\$146	\$0	2.5
Boys locker room - office	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
Boys locker room restroom 1	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Occupano y Sensor	s	33	3,064	2	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Occupanc y Sensor	17	3,064	0.0	54	0	\$7	\$33	\$0	4.5
Boys locker room restroom 2	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Occupano y Sensor	s	33	3,064	2	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Occupanc y Sensor	17	3,064	0.0	54	0	\$7	\$33	\$0	4.5
Boys locker room storage	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupano y Sensor	s	62	3,064	2	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	334	0	\$44	\$110	\$0	2.5
Restroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupano y Sensor	s	62	3,064	2	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.0	222	0	\$30	\$73	\$0	2.5
Shower room	10	LED Lamps: Recessed - 1 lamp	Occupano y Sensor	s	15	3,064		None	No	10	LED Lamps: Recessed - 1 lamp	Occupanc y Sensor	15	3,064	0.0	0	0	\$0	\$0	\$0	0.0
Storage room	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupano y Sensor	s	62	2,120	2	Relamp	No	12	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	2,120	0.3	923	0	\$123	\$438	\$0	3.6
Athletic office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupano y Sensor	s	62	3,064	2	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	445	0	\$59	\$146	\$0	2.5
Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,440	0.0	161	0	\$21	\$37	\$0	1.7
Girls locker room	19	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupano y Sensor	s	62	3,064	2	Relamp	No	19	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.5	2,113	0	\$281	\$694	\$0	2.5
Girls locker room	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	\$O	0.0





	Existin	g Conditions	-				Prop	osed Conditio	ns		-				Energy In	npact & F	inancial A	nalysis			
Location	Fixture Quantit Y	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantit Y	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Girls locker room - Hallway	3	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	s	53	4,440	2, 4	Relamp	Yes	3	LED - Linear Tubes: (3) 2' Lamps	High/Low Control	26	3,064	0.1	519	0	\$69	\$371	\$0	5.4
Restroom	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	820	0	\$109	\$416	\$0	3.8
Shower room	9	LED Lamps: Recessed - 1 lamp	Wall Switch	s	15	4,440	3	None	Yes	9	LED Lamps: Recessed - 1 lamp	Occupanc y Sensor	15	3,064	0.0	204	0	\$27	\$270	\$0	9.9
Storage room	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupanc y Sensor	s	62	2,120	2	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	2,120	0.1	308	0	\$41	\$146	\$0	3.6
Storage room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	2,120	2	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,120	0.0	154	0	\$20	\$73	\$0	3.6
Storage room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	2,120	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,120	0.0	77	0	\$10	\$37	\$0	3.6
Storage room	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,120	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	1,463	0.1	294	0	\$39	\$226	\$0	5.8
Closet	1	LED Lamps: Recessed - 1 lamp	Wall Switch	s	13	2,120		None	No	1	LED Lamps: Recessed - 1 lamp	Wall Switch	13	2,120	0.0	0	0	\$0	\$0	\$0	0.0
Women's restroom	2	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	s	53	4,440	2, 3	Relamp	Yes	2	LED - Linear Tubes: (3) 2' Lamps	Occupanc y Sensor	26	3,064	0.1	346	0	\$46	\$368	\$0	8.0
Women's restroom	1	Incandescent: Screw-in 1 lamp	Wall Switch	s	60	4,440	2, 3	Relamp	Yes	1	LED Lamps: Screw-in 1 lamp	Occupanc y Sensor	9	3,064	0.0	263	0	\$35	\$17	\$0	0.5
Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupanc y Sensor	s	62	3,064	2	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	445	0	\$59	\$146	\$0	2.5
Closet 1	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	s	33	2,120	2	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,120	0.0	37	0	\$5	\$33	\$0	6.5
Closet 2	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	s	33	2,120	2	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,120	0.0	37	0	\$5	\$33	\$0	6.5
Restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	s	33	4,440	2	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,440	0.0	78	0	\$10	\$33	\$0	3.1
West cafeteria	24	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupanc y Sensor	S	62	3,064	2	Relamp	No	24	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.6	2,669	-1	\$355	\$876	\$0	2.5
West cafeteria	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
East Cafeteria	40	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupanc y Sensor	s	62	3,064	2	Relamp	No	40	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	1.0	4,448	-1	\$592	\$1,461	\$0	2.5
East Cafeteria	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
Storage	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupanc y Sensor	S	62	2,120	2	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	2,120	0.1	308	0	\$41	\$146	\$0	3.6
Storage	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	29	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	s	114	4,440	2	Relamp	No	29	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	4,440	1.2	7,932	-2	\$1,056	\$2,118	\$0	2.0
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
Kitchen office	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	s	114	4,440	2, 3	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupanc y Sensor	58	3,064	0.1	723	0	\$96	\$416	\$0	4.3
Storage room	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	s	114	2,120	2, 3	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupanc y Sensor	58	1,463	0.1	345	0	\$46	\$262	\$0	5.7
Storage room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	2,120	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	1,463	0.1	196	0	\$26	\$189	\$0	7.2





	Existin	g Conditions					Prop	osed Conditio	ons		-				Energy I	npact & F	inancial A	nalysis			
Location	Fixture Quantit Y	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantit y	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Locker room	2	LED Lamps: Recessed - 1 lamp	Wall Switch	s	10	4,440		None	No	2	LED Lamps: Recessed - 1 lamp	Wall Switch	10	4,440	0.0	0	0	\$0	\$0	\$0	0.0
Locker room	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	s	33	4,440	2	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,440	0.0	78	0	\$10	\$33	\$0	3.1
Storage food	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	s	114	2,120	2, 3	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupanc y Sensor	58	1,463	0.1	345	0	\$46	\$262	\$0	5.7
Kitchen hood	8	Incandescent: Screw-in 1 lamp	Wall Switch	s	60	4,440	2	Relamp	No	8	LED Lamps: Screw-in 1 lamp	Wall Switch	9	4,440	0.3	1,993	0	\$265	\$138	\$0	0.5
Auditorium	9	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	9	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	\$0	\$0	\$0	0.0
Stage	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
Auditorium	41	Halogen Incandescent: Screw-in 1 lamp	Wall Switch	s	250	4,440	2	Relamp	No	41	LED Lamps: Screw-in 1 lamp	Wall Switch	38	4,440	6.3	42,552	-9	\$5,666	\$1,442	\$0	0.3
Stage	2	Metal Halide: (1) 400W Lamp	Wall Switch	s	458	4,440	1	Fixture Replacement	No	2	LED - Fixtures: High-Bay	Wall Switch	137	4,440	0.5	3,132	-1	\$417	\$1,550	\$0	3.7
Booth room	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	s	93	4,440	2, 3	Relamp	Yes	8	LED - Linear Tubes: (3) 4' Lamps	Occupanc y Sensor	44	3,064	0.4	2,461	-1	\$328	\$708	\$0	2.2
A wing hall	60	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 4	Relamp	Yes	60	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	3,064	1.8	12,305	-3	\$1,638	\$4,441	\$0	2.7
A wing hall	13	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	13	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	\$0	\$0	\$0	0.0
Gym foyer	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	3,064	0.1	820	0	\$109	\$371	\$0	3.4
Gym foyer	2	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	\$0	\$0	\$0	0.0
Exit 12	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,440	0.0	322	0	\$43	\$73	\$0	1.7
Exit 11	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,440	0.0	322	0	\$43	\$73	\$0	1.7
Men's restroom	5	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	s	33	4,440	2, 3	Relamp	Yes	5	LED - Linear Tubes: (2) 2' Lamps	Occupanc y Sensor	17	3,064	0.1	519	0	\$69	\$433	\$0	6.3
Women's restroom	6	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	s	33	4,440	2, 3	Relamp	Yes	6	LED - Linear Tubes: (2) 2' Lamps	Occupanc y Sensor	17	3,064	0.1	623	0	\$83	\$465	\$0	5.6
Auxillia ry gym	6	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	s	114	4,440	2, 3	Relamp	Yes	6	LED - Linear Tubes: (4) 4' Lamps	Occupanc y Sensor	58	3,064	0.3	2,168	0	\$289	\$708	\$0	2.5
Auxillia ry gym	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	\$0	\$0	\$0	0.0
Closet 1	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	2,120	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,120	0.0	77	0	\$10	\$37	\$0	3.6
Closet 2	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	2,120	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,120	0.0	77	0	\$10	\$37	\$0	3.6
Training room	7	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	s	114	4,440	2, 3	Relamp	Yes	7	LED - Linear Tubes: (4) 4' Lamps	Occupanc y Sensor	58	3,064	0.4	2,529	-1	\$337	\$781	\$0	2.3
Training room	3	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) U-Lamp	Occupanc y Sensor	33	3,064	0.1	575	0	\$77	\$217	\$0	2.8
Restroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	410	0	\$55	\$189	\$0	3.5
Storage room	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	2,120	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	1,463	0.1	294	0	\$39	\$226	\$0	5.8

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	Existin	g Conditions					Prop	osed Conditio	ns		•				Energy In	npact & F	inancial A	nalysis			
Location	Fixture Quantit Y	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantit Y	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Storage room	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	s	62	2,120	2	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	2,120	0.0	68	0	\$9	\$72	\$0	8.0
Storage room	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	2,120	2, 3	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	1,463	0.2	588	0	\$78	\$335	\$0	4.3
Storage room	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	\$0	\$0	\$0	0.0
Wrestling room	16	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	s	114	4,440	2, 3	Relamp	Yes	16	LED - Linear Tubes: (4) 4' Lamps	Occupanc y Sensor	58	3,064	0.9	5,781	-1	\$770	\$1,438	\$0	1.9
Atheletic office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	820	0	\$109	\$262	\$0	2.4
Office	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	s	114	4,440	2, 3	Relamp	Yes	3	LED - Linear Tubes: (4) 4' Lamps	Occupanc y Sensor	58	3,064	0.2	1,084	0	\$144	\$335	\$0	2.3
Restroom	1	Compact Fluorescent: Screw-in 1 lamp	Wall Switch	s	23	4,440	2	Relamp	No	1	LED Lamps: Screw-in 1 lamp	Wall Switch	16	4,440	0.0	34	0	\$4	\$17	\$0	3.8
Room A134	16	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	s	53	4,440	2, 3	Relamp	Yes	16	LED - Linear Tubes: (3) 2' Lamps	Occupanc y Sensor	26	3,064	0.4	2,767	-1	\$368	\$1,050	\$0	2.9
Girls restroom	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupanc y Sensor	s	62	3,064	2	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	334	0	\$44	\$110	\$0	2.5
Girls restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Occupanc y Sensor	s	33	3,064	2	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Occupanc y Sensor	17	3,064	0.0	54	0	\$7	\$33	\$0	4.5
Room A135	16	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	s	53	4,440	2, 3	Relamp	Yes	16	LED - Linear Tubes: (3) 2' Lamps	Occupanc y Sensor	26	3,064	0.4	2,767	-1	\$368	\$1,050	\$0	2.9
Custodial closet	1	Compact Fluorescent: Screw-in 1 lamp	Wall Switch	s	23	2,120	2	Relamp	No	1	LED Lamps: Screw-in 1 lamp	Wall Switch	16	2,120	0.0	16	0	\$2	\$17	\$0	8.0
Men's restroom	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupanc y Sensor	s	62	3,064	2	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	334	0	\$44	\$110	\$0	2.5
Men's restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Occupanc y Sensor	s	33	3,064	2	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Occupanc y Sensor	17	3,064	0.0	54	0	\$7	\$33	\$0	4.5
Exit 17	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,440	0.0	161	0	\$21	\$37	\$0	1.7
Room A136	16	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	s	33	4,440	2, 3	Relamp	Yes	16	LED - Linear Tubes: (2) 2' Lamps	Occupanc y Sensor	17	3,064	0.2	1,662	0	\$221	\$790	\$0	3.6
Room A133	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.6	4,102	-1	\$546	\$1,270	\$0	2.3
Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	2,120	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,120	0.0	77	0	\$10	\$37	\$0	3.6
Room A137	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.5	3,691	-1	\$492	\$927	\$0	1.9
Room A138	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.5	3,691	-1	\$492	\$927	\$0	1.9
Room A132	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.6	4,102	-1	\$546	\$1,270	\$0	2.3
Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,120	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,120	0.0	77	0	\$10	\$37	\$0	3.6
Storage	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,120	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,120	0.0	77	0	\$10	\$37	\$0	3.6
Restroom 1	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,440	0.0	161	0	\$21	\$37	\$0	1.7
Restroom 2	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,440	0.0	161	0	\$21	\$37	\$0	1.7





-	Existin	g Conditions					Prop	osed Conditio	ns		-				Energy Ir	npact & F	inancial A	nalysis			
Location	Fixture Quantit Y	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantit y	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Room A139	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	820	0	\$109	\$262	\$0	2.4
Room A 131	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.5	3,691	-1	\$492	\$927	\$0	1.9
Secutiry office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	820	0	\$109	\$262	\$0	2.4
Security closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,440	0.0	161	0	\$21	\$37	\$0	1.7
Assisstant principal	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupanc y Sensor	s	62	3,064	2	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	445	0	\$59	\$146	\$0	2.5
Closet	1	Compact Fluorescent: Screw-in 1 lamp	Wall Switch	s	23	2,120	2	Relamp	No	1	LED Lamps: Screw-in 1 lamp	Wall Switch	16	2,120	0.0	16	0	\$2	\$17	\$0	8.0
Main lobby	12	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	12	LED - Linear Tubes: (2) U-Lamp	Occupanc y Sensor	33	3,064	0.3	2,299	0	\$306	\$1,140	\$0	3.7
Main lobby	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
Main entrance	6	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 4	Relamp	Yes	6	LED - Linear Tubes: (2) U-Lamp	High/Low Control	33	3,064	0.2	1,150	0	\$153	\$660	\$0	4.3
Main entrance	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	\$0	\$0	\$0	0.0
Main office	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.5	3,076	-1	\$410	\$818	\$0	2.0
Main office	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
VP office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	820	0	\$109	\$262	\$0	2.4
Data office	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	615	0	\$82	\$226	\$0	2.8
Main office hallway	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupanc y Sensor	s	62	3,064	2	Relamp	No	7	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.2	778	0	\$104	\$256	\$0	2.5
Main office hallway	2	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	\$0	\$0	\$0	0.0
Conference room	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.2	1,230	0	\$164	\$489	\$0	3.0
Principal	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	820	0	\$109	\$262	\$0	2.4
Principal Secretary	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	820	0	\$109	\$262	\$0	2.4
Guidance	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupanc y Sensor	s	62	3,064	2	Relamp	No	9	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.2	1,001	0	\$133	\$329	\$0	2.5
Guidance	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 1	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	410	0	\$55	\$189	\$0	3.5
Office 2	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	410	0	\$55	\$189	\$0	3.5
Office 3	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	410	0	\$55	\$189	\$0	3.5
Office 4	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupanc v Sensor	29	3,064	0.1	410	0	\$55	\$189	\$0	3.5

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	Existin	g Conditions					Prop	osed Conditio	ns		•	-			Energy In	npact & F	inancial A	nalysis			
Location	Fixture Quantit Y	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantit Y	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Closet	1	Incandescent: Screw-in 1 lamp	Wall Switch	s	60	2,120	2	Relamp	No	1	LED Lamps: Screw-in 1 lamp	Wall Switch	9	2,120	0.0	119	0	\$16	\$17	\$0	1.1
Break room	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	615	0	\$82	\$226	\$0	2.8
B wing hallway	44	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 4	Relamp	Yes	44	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	3,064	1.3	9,023	-2	\$1,202	\$3,182	\$0	2.6
B wing hallway	7	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	7	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	\$0	\$0	\$0	0.0
Room B112	27	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	27	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.8	5,537	-1	\$737	\$1,526	\$0	2.1
Store room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	2,120	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,120	0.0	77	0	\$10	\$37	\$0	3.6
Assisstant principal	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	820	0	\$109	\$262	\$0	2.4
Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	2,120	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,120	0.0	77	0	\$10	\$37	\$0	3.6
Men's restroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	410	0	\$55	\$189	\$0	3.5
Room B110	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	820	0	\$109	\$262	\$0	2.4
Room B110	6	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	s	114	4,440	2, 3	Relamp	Yes	6	LED - Linear Tubes: (4) 4' Lamps	Occupanc y Sensor	58	3,064	0.3	2,168	0	\$289	\$554	\$0	1.9
Closet 1	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	2,120	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	1,463	0.1	196	0	\$26	\$189	\$0	7.2
Closet 2	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	s	114	2,120	2, 3	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupanc y Sensor	58	1,463	0.1	345	0	\$46	\$262	\$0	5.7
Women's restroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	410	0	\$55	\$189	\$0	3.5
Nurse's office	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.2	1,641	0	\$218	\$562	\$0	2.6
Nurse's office	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	\$0	\$0	\$0	0.0
Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,440	0.0	161	0	\$21	\$37	\$0	1.7
Restroom	1	Incandescent: Screw-in 1 lamp	Wall Switch	s	60	4,440	2	Relamp	No	1	LED Lamps: Screw-in 1 lamp	Wall Switch	9	4,440	0.0	249	0	\$33	\$17	\$0	0.5
Guidance office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	410	0	\$55	\$189	\$0	3.5
Guidance	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
Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	2,120	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,120	0.0	77	0	\$10	\$37	\$0	3.6
Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	410	0	\$55	\$189	\$0	3.5
Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	410	0	\$55	\$189	\$0	3.5
Exit 43	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,440	0.0	161	0	\$21	\$37	\$0	1.7
Men's restroom	7	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	s	33	4,440	2, 3	Relamp	Yes	7	LED - Linear Tubes: (2) 2' Lamps	Occupanc y Sensor	17	3,064	0.1	727	0	\$97	\$498	\$0	5.1





-	Existin	g Conditions					Prop	osed Conditio	ns						Energy Ir	npact & F	inancial A	nalysis			
Location	Fixture Quantit y	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantit Y	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Custodial closet	1	Compact Fluorescent: Screw-in 1 lamp	Wall Switch	s	23	2,120	2	Relamp	No	1	LED Lamps: Screw-in 1 lamp	Wall Switch	16	2,120	0.0	16	0	\$2	\$17	\$0	8.0
Women's restroom	7	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	s	33	4,440	2, 3	Relamp	Yes	7	LED - Linear Tubes: (2) 2' Lamps	Occupanc y Sensor	17	3,064	0.1	727	0	\$97	\$498	\$0	5.1
Room B 113	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	410	0	\$55	\$189	\$0	3.5
Auditorium lobby	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
Exit 1	3	LED - Fixtures: Ambient - 2' - Indirect Fixture	Wall Switch	s	40	4,440		None	No	3	LED - Fixtures: Ambient - 2' - Indirect Fixture	Wall Switch	40	4,440	0.0	0	0	\$0	\$0	\$0	0.0
Auditorium lobby	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	s	114	4,440	2, 3	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupanc y Sensor	58	3,064	0.6	4,336	-1	\$577	\$1,146	\$0	2.0
Exit 45	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,440	0.0	161	0	\$21	\$37	\$0	1.7
Exit 44	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,440	0.0	161	0	\$21	\$37	\$0	1.7
Room B114	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	s	114	4,440	2, 3	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupanc y Sensor	58	3,064	0.1	723	0	\$96	\$262	\$0	2.7
Room B115	1	Incandescent: Screw-in 1 lamp	Wall Switch	s	60	4,440	2	Relamp	No	1	LED Lamps: Screw-in 1 lamp	Wall Switch	9	4,440	0.0	249	0	\$33	\$17	\$0	0.5
Room B108	17	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	s	114	4,440	2, 3	Relamp	Yes	17	LED - Linear Tubes: (4) 4' Lamps	Occupanc y Sensor	58	3,064	0.9	6,142	-1	\$818	\$1,512	\$0	1.8
Room B108	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	410	0	\$55	\$73	\$0	1.3
Closet	1	Incandescent: Screw-in 1 lamp	Wall Switch	s	60	2,120	2	Relamp	No	1	LED Lamps: Screw-in 1 lamp	Wall Switch	9	2,120	0.0	119	0	\$16	\$17	\$0	1.1
Closet	1	Incandescent: Screw-in 1 lamp	Wall Switch	s	60	2,120	2	Relamp	No	1	LED Lamps: Screw-in 1 lamp	Wall Switch	9	2,120	0.0	119	0	\$16	\$17	\$0	1.1
Room B107	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.2	1,641	0	\$218	\$562	\$0	2.6
Storage room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	2,120	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,120	0.0	77	0	\$10	\$37	\$0	3.6
Dance studio	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.4	2,461	-1	\$328	\$708	\$0	2.2
Room B102	39	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	39	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	1.2	7,998	-2	\$1,065	\$2,234	\$0	2.1
Room B102	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
Closet	2	Compact Fluorescent: Screw-in 1 lamp	Wall Switch	s	23	2,120	2, 3	Relamp	Yes	2	LED Lamps: Screw-in 1 lamp	Occupanc y Sensor	16	1,463	0.0	55	0	\$7	\$150	\$0	20.4
Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	s	114	4,440	2, 3	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupanc y Sensor	58	3,064	0.1	723	0	\$96	\$262	\$0	2.7
Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	2,120	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,120	0.0	77	0	\$10	\$37	\$0	3.6
Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	2,120	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,120	0.0	77	0	\$10	\$37	\$0	3.6
Office	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,440	0.0	161	0	\$21	\$37	\$0	1.7
Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	2,120	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,120	0.0	77	0	\$10	\$37	\$0	3.6

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-	Existin	g Conditions					Prop	osed Conditio	ns		•				Energy In	npact & F	inancial A	nalysis			
Location	Fixture Quantit y	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantit Y	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Room B105	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.5	3,691	-1	\$492	\$927	\$0	1.9
Prop room	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	615	0	\$82	\$226	\$0	2.8
Room B104	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.5	3,691	-1	\$492	\$927	\$0	1.9
Room B103	25	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	25	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.8	5,127	-1	\$683	\$1,453	\$0	2.1
Room B103	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	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	410	0	\$55	\$189	\$0	3.5
Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	2,120	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	1,463	0.1	196	0	\$26	\$189	\$0	7.2
Closet	1	Compact Fluorescent: Screw-in 1 lamp	Wall Switch	s	23	2,120	2	Relamp	No	1	LED Lamps: Screw-in 1 lamp	Wall Switch	16	2,120	0.0	16	0	\$2	\$17	\$0	8.0
Closet	1	Compact Fluorescent: Screw-in 1 lamp	Wall Switch	s	23	2,120	2	Relamp	No	1	LED Lamps: Screw-in 1 lamp	Wall Switch	16	2,120	0.0	16	0	\$2	\$17	\$0	8.0
C wing hallway	29	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 4	Relamp	Yes	29	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	3,064	0.9	5,947	-1	\$792	\$2,184	\$0	2.8
C wing hallway	4	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	\$0	\$0	\$0	0.0
Exit 23	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,440	0.0	161	0	\$21	\$37	\$0	1.7
Room C9	24	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	24	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.7	4,922	-1	\$655	\$1,416	\$0	2.2
Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	2,120	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,120	0.0	77	0	\$10	\$37	\$0	3.6
Room C8	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.5	3,691	-1	\$492	\$927	\$0	1.9
Room C7	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.5	3,691	-1	\$492	\$927	\$0	1.9
Room C7	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
Room C10	27	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	27	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.8	5,537	-1	\$737	\$1,526	\$0	2.1
Office	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	s	114	4,440	2	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	4,440	0.0	274	0	\$36	\$73	\$0	2.0
Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	2,120	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,120	0.0	77	0	\$10	\$37	\$0	3.6
Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	410	0	\$55	\$189	\$0	3.5
Room C6	23	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	23	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.7	4,717	-1	\$628	\$1,110	\$0	1.8
Room C6	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
Tech office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	410	0	\$55	\$189	\$0	3.5
Exit 22	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,440	0.0	161	0	\$21	\$37	\$0	1.7





-	Existin	g Conditions	-				Prop	osed Conditio	ns				-		Energy Ir	npact & F	inancial A	nalysis			
Location	Fixture Quantit Y	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantit Y	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Office	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.2	1,230	0	\$164	\$489	\$0	3.0
Room C5	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.5	3,691	-1	\$492	\$927	\$0	1.9
Room C12	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.5	3,691	-1	\$492	\$927	\$0	1.9
Room C4	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.5	3,691	-1	\$492	\$927	\$0	1.9
Room C13	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.5	3,691	-1	\$492	\$927	\$0	1.9
Room C14	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.5	3,691	-1	\$492	\$927	\$0	1.9
Room C3	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.5	3,691	-1	\$492	\$927	\$0	1.9
Room C2	20	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	s	114	4,440	2, 3	Relamp	Yes	20	LED - Linear Tubes: (4) 4' Lamps	Occupanc y Sensor	58	3,064	1.1	7,226	-2	\$962	\$1,731	\$0	1.8
Prep room	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	s	114	4,440	2, 3	Relamp	Yes	3	LED - Linear Tubes: (4) 4' Lamps	Occupanc y Sensor	58	3,064	0.2	1,084	0	\$144	\$335	\$0	2.3
Room C1	15	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	s	114	4,440	2, 3	Relamp	Yes	15	LED - Linear Tubes: (4) 4' Lamps	Occupanc y Sensor	58	3,064	0.8	5,420	-1	\$722	\$1,365	\$0	1.9
Maintenance room	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	820	0	\$109	\$262	\$0	2.4
Maintenance room	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	\$0	\$0	\$0	0.0
Maintenance office	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	615	0	\$82	\$226	\$0	2.8
Maintenance storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	410	0	\$55	\$189	\$0	3.5
Exit 39	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,440	0.0	161	0	\$21	\$37	\$0	1.7
Storage room 4	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	2,120	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	1,463	0.1	392	0	\$52	\$262	\$0	5.0
D wing hallway	17	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 4	Relamp	Yes	17	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	3,064	0.5	3,486	-1	\$464	\$1,296	\$0	2.8
D wing hallway	3	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	3	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	\$0	\$0	\$0	0.0
Exit	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,440	0.0	161	0	\$21	\$37	\$0	1.7
Room D 118	21	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	21	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.6	4,307	-1	\$573	\$1,307	\$0	2.3
Room D 117	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.5	3,691	-1	\$492	\$927	\$0	1.9
Room D119	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.5	3,691	-1	\$492	\$927	\$0	1.9
Room D120	21	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	21	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.6	4,307	-1	\$573	\$1,307	\$0	2.3
Room D 116	26	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	26	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.8	5,332	-1	\$710	\$1,489	\$0	2.1
Room D 115	4	Linear Fluorescent - T8: 4' T8 (32W) - 21	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupanc v Sensor	29	3,064	0.1	820	0	\$109	\$262	\$0	2.4

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	Existin	g Conditions					Prop	osed Conditio	ns						Energy In	npact & F	inancial A	nalysis			
Location	Fixture Quantit Y	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantit Y	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Room D121	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.5	3,691	-1	\$492	\$927	\$0	1.9
Room D 114	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.5	3,691	-1	\$492	\$927	\$0	1.9
Room D 122	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.5	3,691	-1	\$492	\$927	\$0	1.9
Room D 113	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.5	3,691	-1	\$492	\$927	\$0	1.9
Exit 41	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,440	0.0	161	0	\$21	\$37	\$0	1.7
Women's restroom	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	615	0	\$82	\$380	\$0	4.6
Women's restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	s	33	4,440	2, 3	Relamp	Yes	1	LED - Linear Tubes: (2) 2' Lamps	Occupanc y Sensor	17	3,064	0.0	104	0	\$14	\$33	\$0	2.4
Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	2,120	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,120	0.0	77	0	\$10	\$37	\$0	3.6
Men's restroom	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	615	0	\$82	\$380	\$0	4.6
Men's restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	s	33	4,440	2, 3	Relamp	Yes	1	LED - Linear Tubes: (2) 2' Lamps	Occupanc y Sensor	17	3,064	0.0	104	0	\$14	\$33	\$0	2.4
Hallwaydisplay	8	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	s	33	4,440	2	Relamp	No	8	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,440	0.1	625	0	\$83	\$260	\$0	3.1
V wing hallway	28	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	s	114	4,440	2, 4	Relamp	Yes	28	LED - Linear Tubes: (4) 4' Lamps	High/Low Control	58	3,064	1.5	10,117	-2	\$1,347	\$2,720	\$0	2.0
V wing hallway	3	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	3	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	\$0	\$0	\$0	0.0
V wing hallway	3	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 4	Relamp	Yes	3	LED - Linear Tubes: (2) U-Lamp	High/Low Control	33	3,064	0.1	575	0	\$77	\$217	\$0	2.8
Room V 400	72	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	72	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	2.2	14,766	-3	\$1,966	\$3,709	\$0	1.9
Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	s	114	4,440	2, 3	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupanc y Sensor	58	3,064	0.2	1,445	0	\$192	\$408	\$0	2.1
Room V 400	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 1	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	410	0	\$55	\$189	\$0	3.5
Office 2	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	820	0	\$109	\$262	\$0	2.4
Office 3	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	s	114	4,440	2, 3	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupanc y Sensor	58	3,064	0.1	723	0	\$96	\$262	\$0	2.7
Men's restroom	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupanc y Sensor	s	62	3,064	2	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	445	0	\$59	\$146	\$0	2.5
Men's restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	s	33	4,440	2	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,440	0.0	78	0	\$10	\$33	\$0	3.1
Storage room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	2,120	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,120	0.0	77	0	\$10	\$37	\$0	3.6
Women's restroom	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupanc y Sensor	s	62	3,064	2	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	445	0	\$59	\$146	\$0	2.5
Women's restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	s	33	4,440	2	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,440	0.0	78	0	\$10	\$33	\$0	3.1





	Existin	g Conditions	-		-	-	Prop	osed Conditio	ns	-		-	-	-	Energy I	mpact & F	inancial A	nalysis			
Location	Fixture Quantit y	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantit y	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Room V401	48	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	48	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	1.5	9,844	-2	\$1,311	\$2,563	\$0	2.0
Room V401	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
Closet 1	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	2,120	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	1,463	0.1	294	0	\$39	\$226	\$0	5.8
Closet 2	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	2,120	2, 3	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	1,463	0.2	588	0	\$78	\$335	\$0	4.3
Closet 3	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	2,120	2, 3	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	1,463	0.2	588	0	\$78	\$335	\$0	4.3
Office	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.2	1,230	0	\$164	\$335	\$0	2.0
Studio	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.4	2,461	-1	\$328	\$708	\$0	2.2
Closet 1	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	2,120	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,120	0.0	77	0	\$10	\$37	\$0	3.6
Closet 2	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	2,120	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,120	0.0	77	0	\$10	\$37	\$0	3.6
Closet 3	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	2,120	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	1,463	0.1	196	0	\$26	\$189	\$0	7.2
Raft office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	410	0	\$55	\$189	\$0	3.5
Raft office	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	s	33	4,440	2	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,440	0.0	78	0	\$10	\$33	\$0	3.1
Restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Occupanc y Sensor	s	33	3,064	2	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Occupanc y Sensor	17	3,064	0.0	54	0	\$7	\$33	\$0	4.5
Room V407	50	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	50	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	1.5	10,254	-2	\$1,365	\$2,636	\$0	1.9
Room V407	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
Room V402	76	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	76	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	2.3	15,586	-3	\$2,075	\$4,665	\$0	2.2
Room V402	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
Tools storage	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	2,120	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	1,463	0.1	392	0	\$52	\$262	\$0	5.0
Storage room	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	2,120	2, 3	Relamp	Yes	9	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	1,463	0.3	881	0	\$117	\$445	\$0	3.8
Locker room	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	820	0	\$109	\$262	\$0	2.4
Room V404A	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	s	93	4,440	2, 3	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupanc y Sensor	44	3,064	0.4	2,769	-1	\$369	\$763	\$0	2.1
Room V404B	8	Compact Fluorescent: Screw-in 1 lamp	Occupanc y Sensor	s	23	3,064	2	Relamp	No	8	LED Lamps: Screw-in 1 lamp	Occupanc y Sensor	16	3,064	0.0	186	0	\$25	\$138	\$0	5.6
Hallway	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 4	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	3,064	0.2	1,025	0	\$137	\$408	\$0	3.0
Hallway	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	\$0	\$0	\$0	0.0
Room V403	45	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	45	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	1.4	9,229	-2	\$1,229	\$2,453	\$0	2.0





	Existin	g Conditions					Prop	osed Conditio	ns		•	-			Energy In	npact & F	inancial A	nalysis			
Location	Fixture Quantit Y	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantit Y	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Office	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,440	2, 3	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.2	1,230	0	\$164	\$489	\$0	3.0
Electrical room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,440	0.0	161	0	\$21	\$37	\$0	1.7
Life skills room	22	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupanc y Sensor	s	93	3,064	2	Relamp	No	22	LED - Linear Tubes: (3) 4' Lamps	Occupanc y Sensor	44	3,064	0.8	3,670	-1	\$489	\$1,205	\$0	2.5
Storage room	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupanc y Sensor	s	93	2,120	2	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupanc y Sensor	44	2,120	0.1	231	0	\$31	\$110	\$0	3.6
Life skills room	9	Compact Fluorescent: Screw-in 1 lamp	Occupanc y Sensor	s	23	3,064	2	Relamp	No	9	LED Lamps: Screw-in 1 lamp	Occupanc y Sensor	16	3,064	0.0	209	0	\$28	\$155	\$0	5.6
Storage	6	Compact Fluorescent: Screw-in 1 lamp	Occupanc y Sensor	s	23	2,120	2	Relamp	No	6	LED Lamps: Screw-in 1 lamp	Occupanc y Sensor	16	2,120	0.0	97	0	\$13	\$103	\$0	8.0
Restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	s	33	4,440	2	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,440	0.0	78	0	\$10	\$33	\$0	3.1
Break room	6	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Occupanc y Sensor	s	53	3,064	2	Relamp	No	6	LED - Linear Tubes: (3) 2' Lamps	Occupanc y Sensor	26	3,064	0.1	556	0	\$74	\$293	\$0	4.0
Break room	2	Compact Fluorescent: Screw-in 1 lamp	Occupanc y Sensor	s	23	3,064	2	Relamp	No	2	LED Lamps: Screw-in 1 lamp	Occupanc y Sensor	16	3,064	0.0	47	0	\$6	\$34	\$0	5.6
Room V405	38	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	38	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	1.1	7,793	-2	\$1,038	\$2,198	\$0	2.1
Room V405	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	\$0	\$0	\$0	0.0
Storage room	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	2,120	2, 3	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	1,463	0.2	588	0	\$78	\$335	\$0	4.3
Room V406	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.2	1,230	0	\$164	\$489	\$0	3.0
Room V406	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	8	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	s	114	4,440	2, 3	Relamp	Yes	8	LED - Linear Tubes: (4) 4' Lamps	Occupanc y Sensor	58	3,064	0.4	2,891	-1	\$385	\$854	\$0	2.2
Server room	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	s	114	4,440	2, 3	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupanc y Sensor	58	3,064	0.1	723	0	\$96	\$262	\$0	2.7
Classroom	8	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	s	114	4,440	2, 3	Relamp	Yes	8	LED - Linear Tubes: (4) 4' Lamps	Occupanc y Sensor	58	3,064	0.4	2,891	-1	\$385	\$854	\$0	2.2
Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	s	114	2,120	2, 3	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupanc y Sensor	58	1,463	0.1	345	0	\$46	\$262	\$0	5.7
Classroom	10	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	s	114	4,440	2, 3	Relamp	Yes	10	LED - Linear Tubes: (4) 4' Lamps	Occupanc y Sensor	58	3,064	0.5	3,613	-1	\$481	\$1,000	\$0	2.1
Classroom	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
Storage room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupanc y Sensor	s	62	2,120	2	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	2,120	0.0	154	0	\$20	\$73	\$0	3.6
A wing hall	17	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 4	Relamp	Yes	17	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	3,064	0.5	3,486	-1	\$464	\$1,296	\$0	2.8
Stairwell	6	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 4	Relamp	Yes	6	LED - Linear Tubes: (2) U-Lamp	High/Low Control	33	3,064	0.2	1,150	0	\$153	\$660	\$0	4.3
Stairwell	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
A wing 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





	Existin	g Conditions	-				Prop	osed Conditio	ns	-			-	-	Energy Ir	npact & F	inancial A	nalysis			
Location	Fixture Quantit Y	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantit Y	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Room A239	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.6	4,102	-1	\$546	\$1,270	\$0	2.3
Room A240	19	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	19	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.6	3,897	-1	\$519	\$1,234	\$0	2.4
Room A238	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.6	4,102	-1	\$546	\$1,270	\$0	2.3
Women's restroom	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupanc y Sensor	s	62	3,064	2	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	334	0	\$44	\$110	\$0	2.5
Women's restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Occupanc y Sensor	s	33	3,064	2	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Occupanc y Sensor	17	3,064	0.0	54	0	\$7	\$33	\$0	4.5
Custodial closet	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Occupanc y Sensor	s	33	2,120	2	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Occupanc y Sensor	17	2,120	0.0	37	0	\$5	\$33	\$0	6.5
Men's restroom	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupanc y Sensor	s	62	3,064	2	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	334	0	\$44	\$110	\$0	2.5
Men's restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Occupanc y Sensor	S	33	3,064	2	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Occupanc y Sensor	17	3,064	0.0	54	0	\$7	\$33	\$0	4.5
Room A241	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.6	4,102	-1	\$546	\$1,270	\$0	2.3
Room A237	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	820	0	\$109	\$262	\$0	2.4
Room A242	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.6	4,102	-1	\$546	\$1,270	\$0	2.3
Room A236	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.6	4,102	-1	\$546	\$1,270	\$0	2.3
Room A243	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.6	4,102	-1	\$546	\$1,270	\$0	2.3
Room A235	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.6	4,102	-1	\$546	\$1,270	\$0	2.3
Room A234	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.6	4,102	-1	\$546	\$1,270	\$0	2.3
Room A233	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.2	1,641	0	\$218	\$562	\$0	2.6
Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupanc y Sensor	s	62	2,120	2	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	2,120	0.0	154	0	\$20	\$73	\$0	3.6
Women's restroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupanc y Sensor	s	62	3,064	2	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.0	222	0	\$30	\$73	\$0	2.5
Women's restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Occupanc y Sensor	s	33	3,064	2	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Occupanc y Sensor	17	3,064	0.0	54	0	\$7	\$33	\$0	4.5
Library	94	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	94	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	2.8	19,277	-4	\$2,567	\$5,592	\$0	2.2
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
Closet	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	s	33	2,120	2	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,120	0.0	37	0	\$5	\$33	\$0	6.5
Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupanc y Sensor	s	62	3,064	2	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.0	222	0	\$30	\$73	\$0	2.5
Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupanc y Sensor	S	62	3,064	2	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.0	222	0	\$30	\$73	\$0	2.5
Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	2,120	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,120	0.0	77	0	\$10	\$37	\$0	3.6





	Existin	g Conditions					Prop	osed Conditio	ons		-	-			Energy I	mpact & F	inancial A	nalysis			
Location	Fixture Quantit y	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantit y	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
B wing hallway	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 4	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	3,064	0.5	3,691	-1	\$492	\$1,332	\$0	2.7
B wing hallway	2	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	\$0	\$0	\$0	0.0
Stairwell	6	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 4	Relamp	Yes	6	LED - Linear Tubes: (2) U-Lamp	High/Low Control	33	3,064	0.2	1,150	0	\$153	\$660	\$0	4.3
Stairwell	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
Room B206	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupanc y Sensor	s	62	3,064	2	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	445	0	\$59	\$146	\$0	2.5
Women's restroom	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupanc y Sensor	s	62	3,064	2	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	334	0	\$44	\$110	\$0	2.5
Women's restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Occupanc y Sensor	s	33	3,064	2	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Occupanc y Sensor	17	3,064	0.0	54	0	\$7	\$33	\$0	4.5
Men's restroom	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupanc y Sensor	s	62	3,064	2	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	334	0	\$44	\$110	\$0	2.5
Men's restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Occupanc y Sensor	s	33	3,064	2	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Occupanc y Sensor	17	3,064	0.0	54	0	\$7	\$33	\$0	4.5
Room B205	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.6	4,102	-1	\$546	\$1,270	\$0	2.3
Closet	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	s	33	2,120	2	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,120	0.0	37	0	\$5	\$33	\$0	6.5
Room B207	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.6	4,102	-1	\$546	\$1,270	\$0	2.3
Room B204	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.6	4,102	-1	\$546	\$1,270	\$0	2.3
Room B208	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.6	4,102	-1	\$546	\$1,270	\$0	2.3
Room B203	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.6	4,102	-1	\$546	\$1,270	\$0	2.3
Room B209	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.6	4,102	-1	\$546	\$1,270	\$0	2.3
Room B202	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,440	2, 3	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.6	4,102	-1	\$546	\$1,270	\$0	2.3
Room B210	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.6	4,102	-1	\$546	\$1,270	\$0	2.3
Room B211	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.6	4,102	-1	\$546	\$1,270	\$0	2.3
Room B212	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupanc y Sensor	s	62	3,064	2	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	445	0	\$59	\$146	\$0	2.5
Center hallway	8	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	s	33	4,440	2, 4	Relamp	Yes	8	LED - Linear Tubes: (2) 2' Lamps	High/Low Control	17	3,064	0.1	831	0	\$111	\$485	\$0	4.4
C wing hallway	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 4	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	3,064	0.5	3,691	-1	\$492	\$657	\$0	1.3
C wing hallway	2	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	\$0	\$0	\$0	0.0
Stairwell	6	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	6	LED - Linear Tubes: (2) U-Lamp	Occupanc y Sensor	33	3,064	0.2	1,150	0	\$153	\$705	\$0	4.6
Stairwell	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





	Existin	g Conditions				-	Prop	osed Conditio	ns	-		-	-		Energy li	mpact & F	inancial A	nalysis		-	
Location	Fixture Quantit y	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantit y	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Room C229	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	s	114	4,440	2, 3	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupanc y Sensor	58	3,064	0.6	4,336	-1	\$577	\$1,146	\$0	2.0
Prep room	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	s	114	4,440	2, 3	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupanc y Sensor	58	3,064	0.1	723	0	\$96	\$262	\$0	2.7
Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	2,120	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	1,463	0.1	196	0	\$26	\$189	\$0	7.2
Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	s	114	2,120	2, 3	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupanc y Sensor	58	1,463	0.1	345	0	\$46	\$262	\$0	5.7
Room C228	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	s	114	4,440	2, 3	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupanc y Sensor	58	3,064	0.6	4,336	-1	\$577	\$1,146	\$0	2.0
Prep room	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	s	114	4,440	2, 3	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupanc y Sensor	58	3,064	0.1	723	0	\$96	\$262	\$0	2.7
Room C227	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	s	114	4,440	2, 3	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupanc y Sensor	58	3,064	0.6	4,336	-1	\$577	\$1,146	\$0	2.0
Storage room	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	s	114	2,120	2	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,120	0.0	131	0	\$17	\$73	\$0	4.2
Storage room	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	s	114	2,120	2	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,120	0.0	131	0	\$17	\$73	\$0	4.2
Room C230	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	s	114	4,440	2, 3	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupanc y Sensor	58	3,064	0.6	4,336	-1	\$577	\$1,146	\$0	2.0
Storage	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	s	114	2,120	2	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,120	0.0	131	0	\$17	\$73	\$0	4.2
Room C231	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	s	114	4,440	2, 3	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupanc y Sensor	58	3,064	0.6	4,336	-1	\$577	\$1,146	\$0	2.0
Storage	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	s	114	2,120	2	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,120	0.0	131	0	\$17	\$73	\$0	4.2
Prep room	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	s	114	4,440	2, 3	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupanc y Sensor	58	3,064	0.1	723	0	\$96	\$262	\$0	2.7
Room C226	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	s	114	4,440	2, 3	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupanc y Sensor	58	3,064	0.6	4,336	-1	\$577	\$1,146	\$0	2.0
Prep room	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	s	114	4,440	2, 3	Relamp	Yes	3	LED - Linear Tubes: (4) 4' Lamps	Occupanc y Sensor	58	3,064	0.2	1,084	0	\$144	\$335	\$0	2.3
Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	2,120	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,120	0.0	77	0	\$10	\$37	\$0	3.6
Room C232	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	s	114	4,440	2, 3	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupanc y Sensor	58	3,064	0.6	4,336	-1	\$577	\$1,146	\$0	2.0
Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	s	114	2,120	2	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,120	0.0	131	0	\$17	\$73	\$0	4.2
Room C225	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	s	114	4,440	2, 3	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupanc y Sensor	58	3,064	0.6	4,336	-1	\$577	\$1,146	\$0	2.0
Room C224	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	s	114	4,440	2, 3	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupanc y Sensor	58	3,064	0.2	1,445	0	\$192	\$408	\$0	2.1
Men's restroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupanc y Sensor	s	62	3,064	2	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.0	222	0	\$30	\$73	\$0	2.5
Men's restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Occupanc y Sensor	s	33	3,064	2	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Occupanc y Sensor	17	3,064	0.0	54	0	\$7	\$33	\$0	4.5
Storage room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	2,120	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,120	0.0	77	0	\$10	\$37	\$0	3.6
Room C202	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupanc v Sensor	29	3,064	0.2	1,025	0	\$137	\$453	\$0	3.3





-	Existin	g Conditions	-		-	-	Prop	osed Conditio	ns	-			-		Energy li	mpact & F	inancial A	nalysis			
Location	Fixture Quantit Y	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantit Y	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Stairwell	6	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 4	Relamp	Yes	6	LED - Linear Tubes: (2) U-Lamp	High/Low Control	33	3,064	0.2	1,150	0	\$153	\$660	\$0	4.3
Stairwell	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
Hallwaydisplay	6	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	s	33	4,440	2	Relamp	No	6	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,440	0.1	469	0	\$62	\$195	\$0	3.1
D wing hallway	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 4	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	3,064	0.5	3,281	-1	\$437	\$1,034	\$0	2.4
D wing hallway	2	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	\$0	\$0	\$0	0.0
Room D218	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.6	4,102	-1	\$546	\$1,270	\$0	2.3
Stairwell	6	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 4	Relamp	Yes	6	LED - Linear Tubes: (2) U-Lamp	High/Low Control	33	3,064	0.2	1,150	0	\$153	\$660	\$0	4.3
Stairwell	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
Room D217	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.6	4,102	-1	\$546	\$1,270	\$0	2.3
Room D219	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.6	4,102	-1	\$546	\$1,270	\$0	2.3
Room D216	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.6	4,102	-1	\$546	\$1,270	\$0	2.3
Room D220	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.6	4,102	-1	\$546	\$1,270	\$0	2.3
Room D215	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.6	4,102	-1	\$546	\$1,270	\$0	2.3
Room D221	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.6	4,102	-1	\$546	\$1,270	\$0	2.3
Room D214	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.6	4,102	-1	\$546	\$1,270	\$0	2.3
Room D222	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.6	4,102	-1	\$546	\$1,270	\$0	2.3
Room D213	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.6	4,102	-1	\$546	\$1,270	\$0	2.3
Room D223	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	615	0	\$82	\$226	\$0	2.8
Room D212	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	615	0	\$82	\$226	\$0	2.8
Women's restroom	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	615	0	\$82	\$380	\$0	4.6
Women's restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	s	33	4,440	2, 3	Relamp	Yes	1	LED - Linear Tubes: (2) 2' Lamps	Occupanc y Sensor	17	3,064	0.0	104	0	\$14	\$33	\$0	2.4
Custodial closet	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	s	62	2,120	2	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	2,120	0.0	68	0	\$9	\$72	\$0	8.0
Men's restroom	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,440	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	615	0	\$82	\$380	\$0	4.6
Men's restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	s	33	4,440	2, 3	Relamp	Yes	1	LED - Linear Tubes: (2) 2' Lamps	Occupanc y Sensor	17	3,064	0.0	104	0	\$14	\$33	\$0	2.4
Stairwell	6	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 4	Relamp	Yes	6	LED - Linear Tubes: (2) U-Lamp	High/Low Control	33	3,064	0.2	1,150	0	\$153	\$660	\$0	4.3





	Existin	g Conditions					Prop	osed Conditio	ns						Energy li	npact & F	inancial A	nalysis			
Location	Fixture Quantit y	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantit y	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Stairwell	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
Book Store	2	Linear Fluorescent - T8: 4' T8 (32W) - 21	Wall Switch	s	62	4,440	2	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,440	0.0	322	0	\$43	\$73	\$0	1.7
Elevator	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,440	0.0	161	0	\$21	\$37	\$0	1.7
Elevator room	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,440	0.1	484	0	\$64	\$110	\$0	1.7
Basement	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	s	62	4,440	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupanc y Sensor	29	3,064	0.1	820	0	\$109	\$416	\$0	3.8
Exterior wall pack	1	High-Pressure Sodium: (1) 250W Lamp	Timeclock	c	295	4,380	1	Fixture Replacement	No	1	LED - Fixtures: Outdoor Wall- Mounted Area Fixture	Timeclock	89	4,380	0.0	904	0	\$123	\$966	\$0	7.9
Exterior Recessed fixtures	39	LED Lamps: Recessed fixture - 1 lamp	Timeclock	c	13	4,380		None	No	39	LED Lamps: Recessed fixture - 1 lamp	Timeclock	13	4,380	0.0	0	0	\$0	\$0	\$0	0.0
Exterior Recessed fixtures	8	LED Lamps: Recessed fixture - 1 lamp	Photocell		13	4,380		None	No	8	LED Lamps: Recessed fixture - 1 lamp	Photocell	13	4,380	0.0	0	0	\$0	\$0	\$0	0.0
Exterior wall pack	3	LED Lamps: Recessed fixture - 1 lamp	Photocell		27	4,380		None	No	3	LED Lamps: Recessed fixture - 1 lamp	Photocell	27	4,380	0.0	0	0	\$0	\$0	\$0	0.0
Exterior wall pack	5	Metal Halide: (1) 100W Lamp	Timeclock	c	128	4,380	1	Fixture Replacement	No	5	LED - Fixtures: Outdoor Wall- Mounted Area Fixture	Timeclock	38	4,380	0.0	1,962	0	\$267	\$4,830	\$0	18.1
Exterior wall pack	7	Metal Halide: (1) 400W Lamp	Timeclock	¢	458	4,380	1	Fixture Replacement	No	7	LED - Fixtures: Outdoor Wall- Mounted Area Fixture	Timeclock	137	4,380	0.0	9,830	0	\$1,337	\$6,762	\$0	5.1
Exterior Recessed fixtures	8	LED Lamps: Recessed fixture - 1 lamp	Wall Switch		10	4,440		None	No	8	LED Lamps: Recessed fixture - 1 lamp	Wall Switch	10	4,440	0.0	0	0	\$0	\$0	\$0	0.0
Exterior wall pack	15	LED Lamps: Recessed fixture - 1 lamp	Timeclock	c	27	4,380		None	No	15	LED Lamps: Recessed fixture - 1 lamp	Timeclock	27	4,380	0.0	0	0	\$0	\$0	\$0	0.0
Exterior wall pack	8	LED Lamps: Recessed fixture - 1 lamp	Photocell		18	4,380		None	No	8	LED Lamps: Recessed fixture - 1 lamp	Photocell	18	4,380	0.0	0	0	\$0	\$0	\$0	0.0
Exterior wall pack	5	High-Pressure Sodium: (1) 50W Lamp	Photocell		66	4,380	1	Fixture Replacement	No	5	LED - Fixtures: Outdoor Wall- Mounted Area Fixture	Photocell	20	4,380	0.0	1,012	0	\$138	\$4,830	\$0	35.1
Exterior pole light	2	High-Pressure Sodium: (1) 250W Lamp	Photocell		295	4,380	1	Fixture Replacement	No	2	LED - Fixtures: Outdoor Pole/Arm- Mounted Area/Roadway Fixture	Photocell	89	4,380	0.0	1,809	0	\$246	\$1,861	\$0	7.6
Exterior wall pack	1	LED - Fixtures: Outdoor Wall- Mounted Area Fixture	Timeclock	ĸ	45	4,380		None	No	1	LED - Fixtures: Outdoor Wall- Mounted Area Fixture	Timeclock	45	4,380	0.0	0	0	\$0	\$0	\$0	0.0
Exterior wall pack	14	Metal Halide: (1) 250W Lamp	Timeclock	(295	4,380	1	Fixture Replacement	No	14	LED - Fixtures: Outdoor Wall- Mounted Area Fixture	Timeclock	89	4,380	0.0	12,663	0	\$1,722	\$13,524	\$0	7.9
Exterior wall pack	19	LED - Fixtures: Outdoor Wall- Mounted Area Fixture	Timeclock	c	54	4,380		None	No	19	LED - Fixtures: Outdoor Wall- Mounted Area Fixture	Timeclock	54	4,380	0.0	0	0	\$0	\$0	\$0	0.0
Exterior wall pack	7	Metal Halide: (1) 250W Lamp	Photocell		295	4,380	1	Fixture Replacement	No	7	LED - Fixtures: Outdoor Wall- Mounted Area Fixture	Photocell	89	4,380	0.0	6,331	0	\$861	\$6,762	\$0	7.9
Exterior wall pack	22	LED - Fixtures: Outdoor Wall- Mounted Area Fixture	Photocell		54	4,380		None	No	22	LED - Fixtures: Outdoor Wall- Mounted Area Fixture	Photocell	54	4,380	0.0	0	0	\$0	\$0	\$0	0.0
Exterior wall pack	2	Metal Halide: (1) 400W Lamp	Photocell		458	4,380	1	Fixture Replacement	No	2	LED - Fixtures: Outdoor Wall- Mounted Area Fixture	Photocell	137	4,380	0.0	2,808	0	\$382	\$1,932	\$0	5.1
Front entrance	4	Metal Halide: (1) 50W Lamp	Timeclock	¢	72	4,380	1	Fixture Replacement	No	4	LED - Fixtures: Outdoor Porch Wall Mount	Timeclock	22	4,380	0.0	883	0	\$120	\$1,975	\$0	16.4
Exterior pole light	14	High-Pressure Sodium: (1) 250W Lamp	Timeclock	¢	295	4,380	1	Fixture Replacement	No	14	LED - Fixtures: Outdoor Pole/Arm- Mounted Area/Roadway Fixture	Timeclock	89	4,380	0.0	12,663	0	\$1,722	\$13,028	\$0	7.6
Track field	8	LED - Fixtures: Outdoor Wall- Mounted Area Fixture	Photocell		120	4,380		None	No	8	LED - Fixtures: Outdoor Wall- Mounted Area Fixture	Photocell	120	4,380	0.0	0	0	\$0	\$0	\$0	0.0





	Existin	g Conditions					Prop	osed Conditio	ons						Energy li	npact & F	inancial A	nalysis			
Location	Fixture Quantit y	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantit y	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Tennis court	20	Metal Halide: (1) 1000W Lamp	Wall Switch		1,080	4,440	1	Fixture Replacement	Fixture eplacement No 20		LED - Fixtures: Outdoor Pole/Arm- Mounted Area/Roadway Fixture	Wall Switch	324	4,440	0.0	67,133	0	\$9,131	\$18,611	\$0	2.0
Band field	16	High-Pressure Sodium: (1) 400W Lamp	Photocell		465	4,380	1	Fixture Replacement	No	16	LED - Fixtures: Outdoor Pole/Arm- Mounted Area/Roadway Fixture	Photocell	140	4,380	0.0	22,811	0	\$3,102	\$14,889	\$0	4.8
Flag light	2	Metal Halide: (1) 1000W Lamp	Timeclock		1,080	4,380	1	Fixture Replacement	No	2	LED - Fixtures: Other	Timeclock	324	4,380	0.0	6,623	0	\$901	\$397	\$0	0.4





Motor Inventory & Recommendations

		Existin	g Conditions						Prop	osed Co	ondition	s		Energy Im	ipact & Fii	nancial An	alysis			
Location	Area(s)/System(s) Served	Motor Quantit y	Motor Application	HP Per Motor	Full Load Efficienc Y	VFD Control?	Remaining Useful Life	Annual Operating Hours	ECM #	Install High Efficienc y Motors?	Full Load Efficiency	Install VFDs?	Numbe r of VFDs	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Roof	Kitchen hood	1	Kitchen Hood Exhaust Fan	3.0	87.5%	Yes	w	2,745		No	87.5%	No		0.0	0	0	\$0	\$0	\$0	0.0
Roof	Kitchen locker room	1	Exhaust Fan	0.2	60.0%	No	В	2,745		No	60.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Roof	Boys Athletic office	1	Exhaust Fan	0.3	60.0%	No	w	2,745		No	60.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Ground floor	Cooling tower recirculate	2	Cooling Tower Fan	10.0	89.5%	No	w	3,391		No	89.5%	No		0.0	0	0	\$0	\$0	\$0	0.0
Ground floor	Cooling tower recirculate	1	Process Pump	3.0	87.5%	No	w	2,745		No	87.5%	No		0.0	0	0	\$0	\$0	\$0	0.0
Boiler Room	HH Recirculation	4	Heating Hot Water Pump	2.0	87.0%	Yes	w	2,745		No	87.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Boiler Room	HH Recirculation	2	Water-Source Heat Pump Circulation Pump	100.0	95.4%	Yes	w	2,665		No	95.4%	No		0.0	0	0	\$0	\$0	\$0	0.0
Boiler Room	DHW	1	Heating Hot Water Pump	0.5	60.0%	No	w	8,760		No	60.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Boiler Room	Sump pump	1	Process Pump	0.8	60.0%	No	w	2,745		No	60.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Locker room	Auto shop	1	Air Compressor	7.5	85.5%	No	w	2,200		No	85.5%	No		0.0	0	0	\$0	\$0	\$0	0.0
Elevator room	Elevator room	1	Process Pump	20.0	91.0%	No	w	3,391		No	91.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Roof	Restroom C wing	1	Exhaust Fan	0.3	60.0%	No	w	2,745		No	60.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Roof	B wing hall	1	Exhaust Fan	0.3	60.0%	No	w	2,745		No	60.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Roof	A wing hall	1	Exhaust Fan	0.3	60.0%	No	w	2,745		No	60.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Roof	Gym	3	Exhaust Fan	2.0	86.5%	No	w	2,745		No	86.5%	No		0.0	0	0	\$0	\$0	\$0	0.0
Roof	Room B108	1	Exhaust Fan	0.3	60.0%	No	w	2,745		No	60.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Roof	B105,B104	2	Exhaust Fan	0.3	60.0%	No	w	2,745		No	60.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Roof	Studio	1	Exhaust Fan	0.3	60.0%	No	w	2,745		No	60.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Roof	Restroom	1	Exhaust Fan	0.3	60.0%	No	w	2,745		No	60.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Roof	Store	1	Exhaust Fan	0.3	60.0%	No	w	2,745		No	60.0%	No		0.0	0	0	\$0	\$0	\$0	0.0





	*	Existin	g Conditions						Prop	osed Co	ondition	s		Energy Im	pact & Fir	nancial An	alysis			
Location	Area(s)/System(s) Served	Motor Quantit Y	Motor Application	HP Per Motor	Full Load Efficienc Y	VFD Control?	Remaining Useful Life	Annual Operating Hours	ECM #	Install High Efficienc y Motors?	Full Load Efficiency	Install VFDs?	Numbe r of VFDs	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Roof	Hallway	1	Exhaust Fan	0.2	60.0%	No	w	2,745		No	60.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Roof	Dishwasher	2	Exhaust Fan	0.3	60.0%	No	w	2,745		No	60.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Roof	Classroom	1	Exhaust Fan	0.3	60.0%	No	w	2,745		No	60.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Roof	Restroom	1	Exhaust Fan	0.3	60.0%	No	w	2,745		No	60.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Roof	Classroom	2	Exhaust Fan	0.3	60.0%	No	w	2,745		No	60.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Roof	Restroom	1	Exhaust Fan	0.3	60.0%	No	w	2,745		No	60.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Roof	Hallway	1	Exhaust Fan	0.3	60.0%	No	w	2,745		No	60.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Roof	Store/Office	2	Exhaust Fan	0.2	60.0%	No	w	2,745		No	60.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Roof	Science classroom	2	Exhaust Fan	0.2	60.0%	No	w	2,745		No	60.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Roof	Hallway	2	Exhaust Fan	0.3	60.0%	No	w	2,745		No	60.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Roof	Science classroom	3	Exhaust Fan	0.3	60.0%	No	w	2,745		No	60.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Roof	Hallway	1	Exhaust Fan	0.3	60.0%	No	w	2,745		No	60.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Roof	Science classroom	3	Exhaust Fan	0.3	60.0%	No	w	2,745		No	60.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Roof	Science classroom	2	Exhaust Fan	0.3	60.0%	No	w	2,745		No	60.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Roof	Restroom	1	Exhaust Fan	0.3	60.0%	No	w	2,745		No	60.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Roof	Classroom	1	Supply Fan	3.0	87.5%	Yes	w	2,745		No	87.5%	No		0.0	0	0	\$0	\$0	\$0	0.0
Roof	Studio	1	Supply Fan	3.0	87.5%	Yes	w	2,745		No	87.5%	No		0.0	0	0	\$0	\$0	\$0	0.0
Roof	Auto classroom	1	Supply Fan	1.0	82.5%	No	В	2,745		No	82.5%	No		0.0	0	0	\$0	\$0	\$0	0.0
Roof	Store	1	Supply Fan	1.0	82.5%	No	В	2,745		No	82.5%	No		0.0	0	0	\$0	\$0	\$0	0.0
Roof	Classroom	1	Supply Fan	1.0	85.5%	No	w	2,745		No	85.5%	No		0.0	0	0	\$0	\$0	\$0	0.0





		Existin	g Conditions				-	-	Prop	osed Co	ondition	S		Energy Im	pact & Fir	nancial An	alysis		-	
Location	Area(s)/System(s) Served	Motor Quantit Y	Motor Application	HP Per Motor	Full Load Efficienc Y	VFD Control?	Remaining Useful Life	Annual Operating Hours	ECM #	Install High Efficienc y Motors?	Full Load Efficiency	Install VFDs?	Numbe r of VFDs	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Roof	Classroom	1	Supply Fan	3.0	87.5%	Yes	w	2,745		No	87.5%	No		0.0	0	0	\$0	\$0	\$0	0.0
Roof	Science Classroom	1	Supply Fan	0.3	60.0%	No	w	2,745		No	60.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Roof	Science Classroom	1	Supply Fan	1.0	85.5%	No	w	2,745		No	85.5%	No		0.0	0	0	\$0	\$0	\$0	0.0
Roof	Science Classroom	1	Supply Fan	1.0	85.5%	No	w	2,745		No	85.5%	No		0.0	0	0	\$0	\$0	\$0	0.0
Roof	Science Classroom	1	Supply Fan	1.0	85.5%	No	w	2,745		No	85.5%	No		0.0	0	0	\$0	\$0	\$0	0.0
Roof	Library	2	Supply Fan	2.0	86.5%	Yes	w	2,745		No	86.5%	No		0.0	0	0	\$0	\$0	\$0	0.0
Roof	Auditorium	2	Supply Fan	20.0	93.0%	Yes	w	3,391		No	93.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Roof	Auditorium	2	Return Fan	3.0	87.5%	Yes	w	2,745		No	87.5%	No		0.0	0	0	\$0	\$0	\$0	0.0
Roof	RM 106	1	Supply Fan	2.0	86.5%	Yes	w	2,745		No	86.5%	No		0.0	0	0	\$0	\$0	\$0	0.0
Roof	Rm B103	1	Supply Fan	3.0	87.5%	Yes	w	2,745		No	87.5%	No		0.0	0	0	\$0	\$0	\$0	0.0
Roof	Rm B102	1	Supply Fan	3.0	87.5%	Yes	w	2,745		No	87.5%	No		0.0	0	0	\$0	\$0	\$0	0.0
Roof	Auxillary gym, Training room	2	Supply Fan	2.0	86.5%	Yes	w	2,745		No	86.5%	No		0.0	0	0	\$0	\$0	\$0	0.0
Roof	Auxillary gym, Training room	2	Return Fan	1.0	85.5%	Yes	w	2,745		No	85.5%	No		0.0	0	0	\$0	\$0	\$0	0.0
Roof	West cafeteria	1	Supply Fan	5.0	89.5%	Yes	w	2,745		No	89.5%	No		0.0	0	0	\$0	\$0	\$0	0.0
Roof	Kitchen	1	Supply Fan	15.0	91.0%	Yes	w	3,391		No	91.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Roof	Kitchen	1	Exhaust Fan	3.0	87.5%	Yes	w	2,745		No	87.5%	No		0.0	0	0	\$0	\$0	\$0	0.0
Roof	East Cafeteria	1	Supply Fan	5.0	89.5%	Yes	w	2,745		No	89.5%	No		0.0	0	0	\$0	\$0	\$0	0.0
Roof	Boys locker room	1	Supply Fan	2.0	87.5%	Yes	w	2,745		No	87.5%	No		0.0	0	0	\$0	\$0	\$0	0.0
Roof	Boys locker room	1	Exhaust Fan	1.0	85.5%	Yes	w	2,745		No	85.5%	No		0.0	0	0	\$0	\$0	\$0	0.0
Roof	Girls locker room	1	Supply Fan	2.0	87.5%	Yes	w	2,745		No	87.5%	No		0.0	0	0	\$0	\$0	\$0	0.0





		Existin	g Conditions						Prop	oosed Co	ondition	s		Energy In	ipact & Fii	nancial An	alysis			
Location	Area(s)/System(s) Served	Motor Quantit Y	Motor Application	HP Per Motor	Full Load Efficienc Y	VFD Control?	Remaining Useful Life	Annual Operating Hours	ECM #	Install High Efficienc y Motors?	Full Load Efficiency	Install VFDs?	Numbe r of VFDs	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Roof	Girls locker room	1	Exhaust Fan	1.0	85.5%	Yes	w	2,745		No	85.5%	No		0.0	0	0	\$0	\$0	\$0	0.0
Boiler Room	DHW circulate	1	Water Supply Pump	0.5	60.0%	No	w	2,745		No	60.0%	No		0.0	0	0	\$0	\$0	\$0	0.0
Electrical	Auditorium left	1	Supply Fan	7.6	85.5%	No	w	3,391		No	85.5%	No		0.0	0	0	\$0	\$0	\$0	0.0
Classrooms	Classroom	25	Supply Fan	0.3	60.0%	No	w	2,745		No	60.0%	No		0.0	0	0	\$0	\$0	\$0	0.0





Electric HVAC Inventory & Recommendations

		Existin	g Conditions				Prop	osed Co	onditio	ns					Energy In	ipact & Fir	nancial An	alysis			
Location	Area(s)/System(s) Served	System Quantit y	System Type	Cooling Capacit y per Unit (Tons)	Heating Capacity per Unit (MBh)	Remaining Useful Life	ECM #	Install High Efficienc y System?	System Quantit y	System Type	Cooling Capacit y per Unit (Tons)	Heating Capacity per Unit (MBh)	Cooling Mode Efficiency (SEER/EER)	Heating Mode Efficiency (COP)	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Roof	Office tech	1	Split-System AC	2.00		В	5	Yes	1	Split-System AC	2.00		14.00		0.3	467	0	\$64	\$2,992	\$0	47.1
Roof	Classroom	1	Water Source HP	10.00	117.00	w		No							0.0	0	0	\$0	\$0	\$0	0.0
Roof	Studio	1	Water Source HP	10.00	117.00	w		No							0.0	0	0	\$0	\$0	\$0	0.0
Roof	Office	1	Split-System AC	2.00		В	5	Yes	1	Split-System AC	2.00		14.00		0.3	467	0	\$64	\$2,992	\$0	47.1
Roof	Auto classroom	1	Packaged AC	5.00		В	5	Yes	1	Packaged AC	5.00		14.00		0.5	942	0	\$128	\$11,345	\$0	88.5
Roof	Store	1	Packaged AC	4.00		В	5	Yes	1	Packaged AC	4.00		14.00		0.4	754	0	\$103	\$9,076	\$0	88.5
Roof	Classroom	1	Water Source HP	5.00	58.10	w		No							0.0	0	0	\$0	\$0	\$0	0.0
Roof	Server Room	1	Split-System AC	3.00		N		No							0.0	0	0	\$0	\$0	\$0	0.0
Roof	Server Room	1	Split-System AC	1.00		В	5	Yes	1	Split-System AC	1.00		14.00		0.2	338	0	\$46	\$1,496	\$0	32.6
Roof	Classroom	1	Water Source HP	10.00	117.00	w		No							0.0	0	0	\$0	\$0	\$0	0.0
Roof	Office	1	Split-System AC	2.50		В	5	Yes	1	Split-System AC	2.50		14.00		0.5	845	0	\$115	\$3,741	\$0	32.6
Roof	C Wing Hall	1	Packaged AC	4.00		w		No							0.0	0	0	\$0	\$0	\$0	0.0
Roof	Copy Room	1	Split-System AC	1.00		w		No							0.0	0	0	\$0	\$0	\$0	0.0
Roof	D wing hall	1	Packaged AC	4.00		w		No							0.0	0	0	\$0	\$0	\$0	0.0
Roof	D wing hall	1	Split-System AC	1.50		В	5	Yes	1	Split-System AC	1.50		14.00		0.2	350	0	\$48	\$2,244	\$0	47.1
Roof	Office	1	Split-System AC	1.50		В	5	Yes	1	Split-System AC	1.50		14.00		0.2	350	0	\$48	\$2,244	\$0	47.1
Roof	Library	2	Water Source HP	7.00	96.00	w		No							0.0	0	0	\$0	\$0	\$0	0.0
Roof	B-wing hall	1	Packaged AC	4.00		w		No							0.0	0	0	\$0	\$0	\$0	0.0
Roof	Audit office	4	Split-System AC	0.75		В	5	Yes	4	Split-System AC	0.75		14.00		0.4	701	0	\$95	\$4,489	\$0	47.1
Roof	A wing hall	1	Packaged AC	4.00		w		No							0.0	0	0	\$0	\$0	\$0	0.0





-		Existin	g Conditions				Prop	osed Co	ondition	ıs					Energy In	npact & Fir	nancial An	alysis	-		
Location	Area(s)/System(s) Served	System Quantit y	System Type	Cooling Capacit y per Unit (Tons)	Heating Capacity per Unit (kBtu/hr)	Remaining Useful Life	ECM #	Install High Efficienc y System?	System Quantit y	System Type	Cooling Capacit y per Unit (Tons)	Heating Capacity per Unit (kBtu/hr)	Cooling Mode Efficiency (SEER/EER)	Heating Mode Efficiency (COP)	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Roof	Office	1	Split-System AC	3.00		В	5	Yes	1	Split-System AC	3.00		14.00		0.4	701	0	\$95	\$4,489	\$0	47.1
Roof	Auditorium	1	Water Source HP	90.00	1,060.00	w		No							0.0	0	0	\$0	\$0	\$0	0.0
Roof	Office	1	Split-System AC	0.75		В	5	Yes	1	Split-System AC	0.75		14.00		0.1	175	0	\$24	\$1,122	\$0	47.1
Roof	RM 106	1	Water Source HP	5.00	58.10	w		No							0.0	0	0	\$0	\$0	\$0	0.0
Roof	Rm B103	1	Water Source HP	10.00	117.00	w		No							0.0	0	0	\$0	\$0	\$0	0.0
Roof	Rm B102	1	Water Source HP	10.00	117.00	w		No							0.0	0	0	\$0	\$0	\$0	0.0
Ground Floor	Dance room	1	Split-System AC	3.00		В	5	Yes	1	Split-System AC	3.00		14.00		0.4	701	0	\$95	\$4,489	\$0	47.1
Roof	Girls locker room	1	Water Source HP	9.00	106.00	w		No							0.0	0	0	\$0	\$0	\$0	0.0
Roof	Auxilliary Gym	1	Water Source HP	5.00	58.10	w		No							0.0	0	0	\$0	\$0	\$0	0.0
Roof	Training room	1	Water Source HP	5.00	58.10	w		No							0.0	0	0	\$0	\$0	\$0	0.0
Roof	East/West Cafeteria	1	Water Source HP	15.00	178.00	w		No							0.0	0	0	\$0	\$0	\$0	0.0
Roof	East Cafeteria	1	Water Source HP	25.00	280.00	w		No							0.0	0	0	\$0	\$0	\$0	0.0
Roof	Kitchen	1	Water Source HP	30.00	340.00	w		No							0.0	0	0	\$0	\$0	\$0	0.0
Roof	Store	1	Split-System AC	2.50		В	5	Yes	1	Split-System AC	2.50		14.00		0.2	408	0	\$55	\$3,741	\$0	67.4
Roof	Boys locker room	1	Water Source HP	9.00	106.00	w		No							0.0	0	0	\$0	\$0	\$0	0.0
Roof	Weight room	1	Packaged AC	6.00		w		No							0.0	0	0	\$0	\$0	\$0	0.0
Penn house	Gym 3	1	Water Source HP	30.00	348.00	w		No							0.0	0	0	\$0	\$0	\$0	0.0
Penn house	Gym 2	1	Water Source HP	30.00	348.00	w		No							0.0	0	0	\$0	\$0	\$0	0.0
Penn house	Gym 1	1	Water Source HP	30.00	348.00	w		No							0.0	0	0	\$0	\$0	\$0	0.0
Ground floor	Child study office	1	Split-System AC	2.00		w		No							0.0	0	0	\$0	\$0	\$0	0.0
		Existin	g Conditions				Prop	osed Co	onditio	ns			-	-	Energy In	npact & Fir	nancial An	alysis			
Location	Area(s)/System(s) Served	System Quantit y	System Type	Cooling Capacit y per Unit (Tons)	Heating Capacity per Unit (kBtu/hr)	Remaining Useful Life	ECM #	Install High Efficienc y System?	System Quantit y	System Type	Cooling Capacit y per Unit (Tons)	Heating Capacity per Unit (kBtu/hr)	Cooling Mode Efficiency (SEER/EER)	Heating Mode Efficiency (COP)	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Ground Floor	Child study office	1	Split-System AC	3.00		w		No							0.0	0	0	\$0	\$0	\$0	0.0
Electrical	Auditorium left	1	Water Source HP	9.00	108.00	w		No							0.0	0	0	\$0	\$0	\$0	0.0
Store room	Store room	1	Split-System Air- Source HP	3.00	32.80	В		No							0.0	0	0	\$0	\$0	\$0	0.0





Fuel Heating Inventory & Recommendations

DHW Inventory & Recommendations

		Existin	g Conditions		Prop	osed Co	onditio	ns				Energy In	npact & Fi	nancial An	alysis			
Location	Area(s)/System(s) Served	System Quantit y	System Type	Remaining Useful Life	ECM #	Replace?	System Quantit y	System Type	Fuel Type	System Efficiency	Efficienc y Units	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Boiler room	DHW	3	Storage Tank Water Heater (> 50 Gal)	w		No						0.0	0	0	\$0	\$0	\$0	0.0
Closet	Art Classroom	1	Storage Tank Water Heater (≤ 50 Gal)	w		No						0.0	0	0	\$0	\$0	\$0	0.0

Low-Flow Device Recommendations

	Reco	mmeda	ation Inputs			Energy Im	npact & Fir	nancial An	alysis			
Location	ECM #	Device Quantit y	Device Type	Existing Flow Rate (gpm)	Proposed Flow Rate (gpm)	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Restrooms	6	26	Faucet Aerator (Lavatory)	2.20	0.50	0.0	0	74	\$1,009	\$186	\$186	0.0




Walk-In Cooler/Freezer Inventory & Recommendations

Existing Conditions				Proposed Conditions				Energy Impact & Financial Analysis						
Location	Cooler/ Freezer Quantit y	Case Type/Temperature	ECM #	Install EC Evaporator Fan Motors?	Install Electric Defrost Control?	Install Evaporator Fan Control?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years	
Storage	1	Cooler (35F to 55F)	7	Yes	No	No	0.1	527	0	\$72	\$607	\$0	8.5	
Kitchen	1	Medium Temp Freezer (0F to 30F)	7, 8	Yes	Yes	No	0.1	2,024	0	\$275	\$1,429	\$0	5.2	
Kitchen	1	Medium Temp Freezer (0F to 30F)	7, 8	Yes	Yes	No	0.1	2,024	0	\$275	\$1,429	\$0	5.2	

Commercial Refrigerator/Freezer Inventory & Recommendations

	Existing Conditions Proposed Conditions						Energy Impact & Financial Analysis						
Location	Quantit y	Refrigerator/ Freezer Type	ENERGY STAR Qualified?	ECM #	Install ENERGY STAR Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years	
Kitchen	2	Refrigerator Chest	Yes		No	0.0	0	0	\$0	\$0	\$0	0.0	
Kitchen	2	Stand-Up Refrigerator, Solid Door (31 - 50 cu. ft.)	No	9	Yes	0.2	1,645	0	\$224	\$3,968	\$0	17.7	
Kitchen	5	Stand-Up Refrigerator, Solid Door (31 - 50 cu. ft.)	No	9	Yes	0.5	3,951	0	\$537	\$9,600	\$0	17.9	
Kitchen	2	Stand-Up Refrigerator, Glass Door (31 - 50 cu. ft.)	Yes		No	0.0	0	0	\$0	\$0	\$0	0.0	





Commercial Ice Maker Inventory & Recommendations

	Existin	xisting Conditions Proposed Con				ns Energy Impact & Financial Analysis						
Location	Quantit y	Ice Maker Type	ENERGY STAR Qualified?	ECM #	Install ENERGY STAR Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen	1	Self-Contained Unit (<175 lbs/day), Batch	No	9	Yes	0.1	665	0	\$90	\$2,902	\$0	32.1
Atheletic training room	1	Self-Contained Unit (<175 lbs/day), Batch	Yes		No	0.0	0	0	\$0	\$0	\$0	0.0

Cooking Equipment Inventory & Recommendations

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

Dishwasher Inventory & Recommendations





Plug Load Inventory

	Existin	g Conditions		
Location	Quantit y	Equipment Description	Energy Rate (W)	ENERGY STAR Qualified ?
High School South	18	Microwave	900.0	Yes
High School South	23	Small Fridge	60.0	Yes
High School South	4	Washing machine	900.0	Yes
High School South	4	Drying machine	1,500.0	Yes
High School South	14	Refrigerator	200.0	Yes
High School South	4	Kitchen electrical table	5,000.0	Yes
High School South	1	Airwasher electrical pump	45,000.0	Yes
High School South	10	Water cooler	520.0	Yes
High School South	73	Television	130.0	Yes
High School South	15	Coffee Machine	400.0	Yes
High School South	1	Kiln	9,984.0	Yes
High School South	4	Dehumidification	900.0	Yes
High School South	7	Toaster	1,200.0	Yes
High School South	2	Electric range	3,000.0	Yes
High School South	4	Commercial coffee maker	900.0	Yes
High School South	200	Desktop Computers	145.0	Yes
High School South	53	Printers	80.0	Yes
High School South	580	Laptops	75.0	Yes

Vending Machine Inventory & Recommendations

	Existin	g Conditions	Proposed	roposed Conditions		Energy Impact & Financial Analysis							
Location	Quantit y	Vending Machine Type	ECM #	Install Controls?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years		
East Cafeteria	1	Refrigerated	10	Yes	0.2	1,612	0	\$219	\$230	\$0	1.0		
A wing hallway	2	Refrigerated	10	Yes	0.4	3,224	0	\$438	\$460	\$0	1.0		
Room B110	2	Refrigerated	10	Yes	0.4	3,224	0	\$438	\$460	\$0	1.0		
V wing hallway	2	Refrigerated	10	Yes	0.4	3,224	0	\$438	\$460	\$0	1.0		





APPENDIX B: ENERGY STAR® STATEMENT OF ENERGY PERFORMANCE

EUI is presented in terms of *site energy* and *source energy*. Site energy is the amount of fuel and electricity consumed by a building as reflected in utility bills. Source energy includes fuel consumed to generate electricity consumed at the site, factoring in electric production and distribution losses for the region.

LEARN MORE AT energystar.gov	ENERGY Performa	' STAR [®] Sta ance	atement o	f Energy	
	Vii	neland High S	chool North	n and South	
4	3 Prir Gro Bui	nary Property Type: ss Floor Area (ft²): lt: 1964	: K-12 School 462,130		
ENERGY Sco	For STAR® Date re ¹	Year Ending: May 31 e Generated: October	, 2018 21, 2019		
1. The ENERGY STAR climate and business	l score is a 1-100 assessn activity.	nent of a building's energy (efficiency as compared	d with similar buildings nation	wide, adjusting for
Property & Con	tact Information				
Property Address Vineland High Sch 2880 E. Chestnut Vineland, New Jer Property ID: 8490	s nool North and South Avenue sey 08361 1035	Property Owner Vineland Public Schoo 61 W. Landis Avenue Vineland, NJ 08360 (856) 794-6700	bls	Primary Contact Gene Mercoli 61 W. Landis Avenue Vineland, NJ 08360 856-794-6700, ext. 2226 wweaver@vineland.org	
Energy Consum	nption and Energy U	lse Intensity (EUI)			
Site EUI 61.3 kBtu/ft ² Source EUI 145.2 kBtu/ft ²	Annual Energy by Fu Natural Gas (kBtu) Electric - Grid (kBtu)	el 6,982,040 (25%) 21,348,706 (75%)	National Median C National Median Si National Median Si % Diff from Nationa Annual Emissions Greenhouse Gas E CO2e/year)	comparison ite EUI (kBtu/ft²) ource EUI (kBtu/ft²) al Median Source EUI i Emissions (Metric Tons	57.6 136.5 6% 2,534
Signature & S	tamp of Verifvin	g Professional	,,		
I	(Name) verify th	at the above information	is true and correct t	o the best of my knowledge	
Signature: Licensed Profes:	sional	_Date:			
()					

Professional Engineer Stamp

(if applicable)

LGEA Report – Vineland Public Schools Vineland High School South





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.
СНР	Combined heat and power. Also referred to as cogeneration.
СОР	<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	Demand control ventilation: a control strategy to limit the amount of outside air introduced to the conditioned space based on actual occupancy need.
US DOE	United States Department of Energy
EC Motor	Electronically commutated motor
ECM	Energy conservation measure
EER	<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	United States Environmental Protection Agency
Generation	The process of generating electric power from sources of primary energy (e.g., natural gas, the sun, oil).
GHG	<i>Greenhouse gases:</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	Gallons per flush





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





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