

**CLIFTON PUBLIC SCHOOLS  
CLIFTON HIGH SCHOOL**

**333 COLFAX AVENUE  
CLIFTON, NEW JERSEY 07013**

**FACILITY ENERGY REPORT**

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**I. HISTORIC ENERGY CONSUMPTION/COST**

The energy usage for the facility has been tabulated and plotted in graph form as depicted within this section. Each energy source has been identified and monthly consumption and cost noted per the information provided by the Owner.

Electric Utility Provider:	Public Service Electric & Gas
Electric Utility Rate Structure:	Large Power & Lighting Primary (LPLP)
Third Party Supplier:	Unknown

Natural Gas Utility Provider:	Public Service Electric & Gas
Utility Rate Structure:	Large Volume Gas (LVG)
Third Party Supplier:	Hess

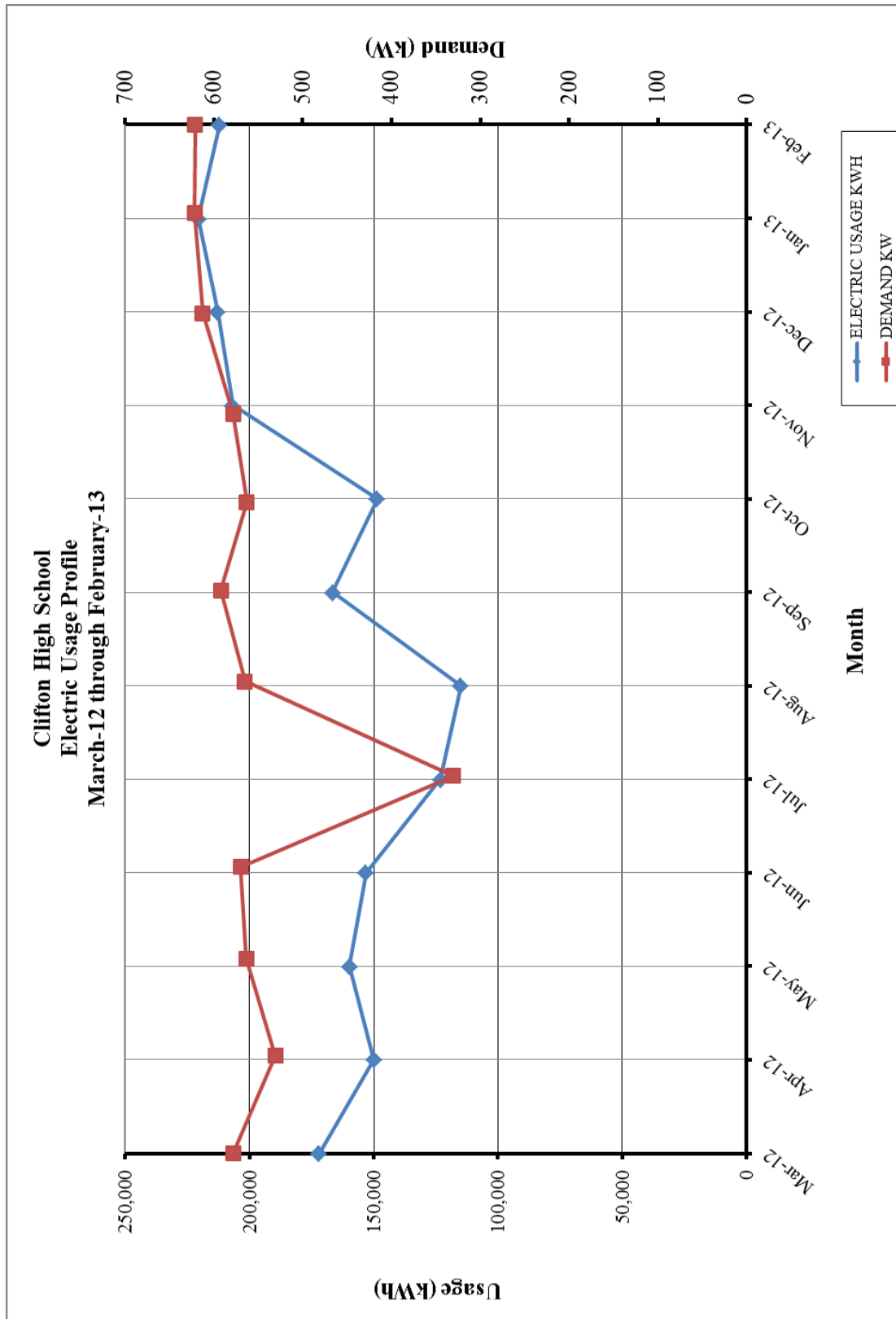
The electric usage profile represents the actual electrical usage for the facility. The electric utility measures consumption in kilowatt-hours (KWH) and maximum demand in kilowatts (KW). One KWH usage is equivalent to 1000 watts running for one hour. One KW of electric demand is equivalent to 1000 watts running at any given time. The basic usage charges are shown as generation service and delivery charges along with several non-utility generation charges. Rates used in this report reflect the historical data received for the facility.

The gas usage profile within each facility report shows the actual natural gas energy usage for the facility. The gas utility measures consumption in cubic feet x 100 (CCF), and converts the quantity into Therms of energy. One Therm is equivalent to 100,000 BTUs of energy.

**Table 1  
Electricity Billing Data**

<b>ELECTRIC USAGE SUMMARY</b>			
Utility Provider: PSEG			
Rate: LPLP			
Meter No: 778016115			
Account No: 004200073404, 006598668603, 006599594603			
Third Party Utility Provider: Unknown			
TPS Meter / Acct No: Unknown			
<b>MONTH OF USE</b>	<b>CONSUMPTION KWH</b>	<b>DEMAND KW</b>	<b>TOTAL BILL</b>
Mar-12	172,041	578.6	\$16,303
Apr-12	149,915	530.9	\$14,551
May-12	159,771	563.8	\$20,876
Jun-12	153,174	569.8	\$21,939
Jul-12	123,171	330.6	\$17,920
Aug-12	115,020	565.0	\$18,712
Sep-12	166,583	592.1	\$16,831
Oct-12	148,575	563.2	\$15,733
Nov-12	206,690	578.2	\$22,013
Dec-12	212,818	612.9	\$21,323
Jan-13	220,527	621.6	\$26,517
Feb-13	212,097	621.0	\$21,008
<b>Totals</b>	<b>2,040,382</b>	<b>621.6 Max</b>	<b>\$233,727</b>
<b>AVERAGE DEMAND</b>		<b>560.6 KW average</b>	
<b>AVERAGE RATE</b>		<b>\$0.115 \$/kWh</b>	

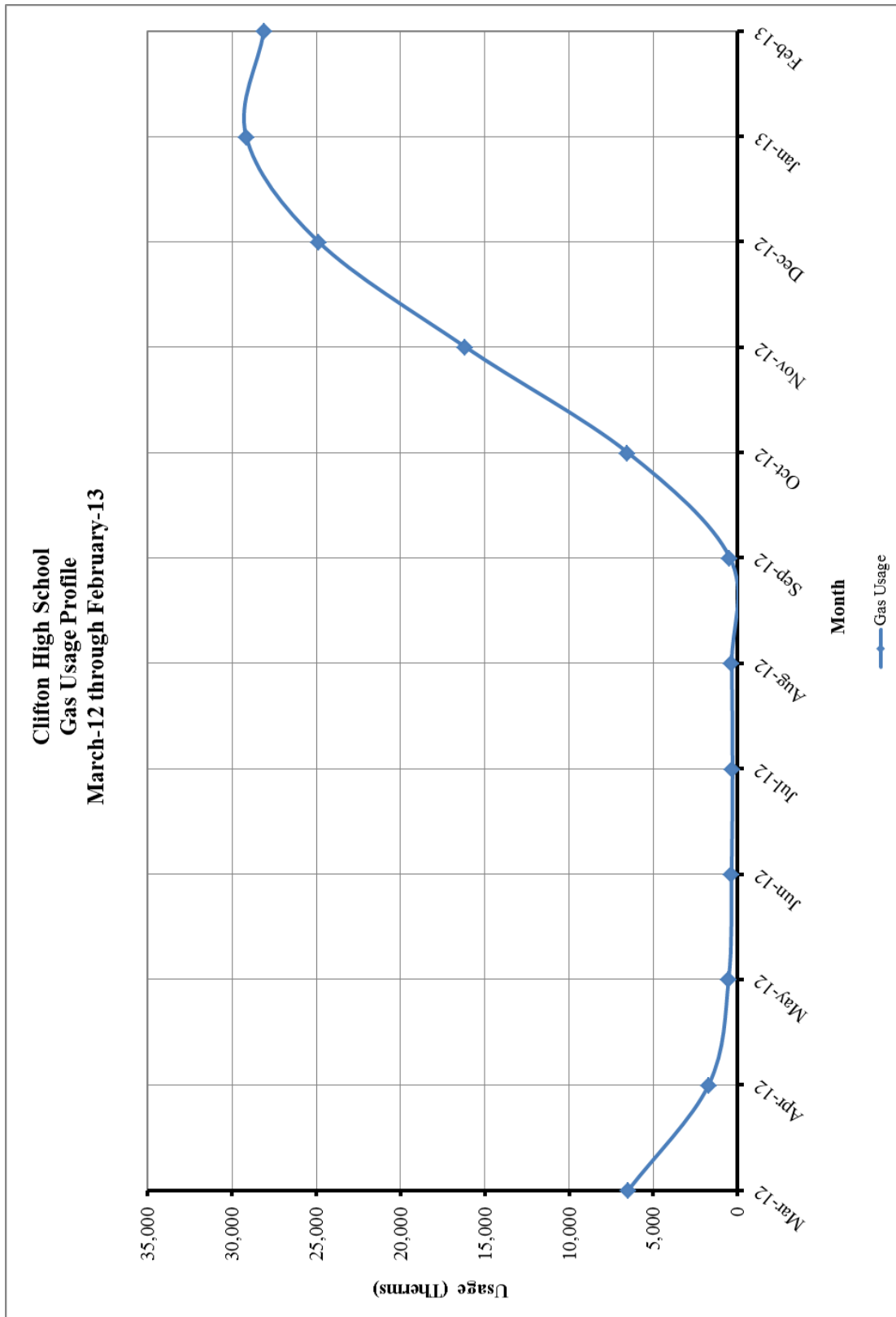
**Figure 1**  
**Electricity Usage Profile**



**Table 4  
Natural Gas Billing Data**

<b>NATURAL GAS USAGE SUMMARY</b>		
Utility Provider: PSEG		
Rate: LVG / GSG		
Meter No: Combined		
Account No: 4200073404		
Third Party Utility Provider: HESS		
TPS Meter No: 446575/447974 & 446575/446926		
<b>MONTH OF USE</b>	<b>CONSUMPTION (THERMS)</b>	<b>TOTAL BILL</b>
Mar-12	6,491.11	\$4,018.58
Apr-12	1,719.55	\$937.27
May-12	539.60	\$380.81
Jun-12	368.22	\$314.96
Jul-12	309.19	\$292.79
Aug-12	356.58	\$325.12
Sep-12	466.89	\$378.45
Oct-12	6,545.27	\$7,648.40
Nov-12	16,163.70	\$14,958.76
Dec-12	24,889.43	\$21,436.73
Jan-13	29,169.82	\$24,397.74
Feb-13	28,104.35	\$24,542.64
<b>TOTALS</b>	<b>115,123.70</b>	<b>\$99,632.25</b>
<b>AVERAGE RATE:</b>	<b>\$0.87</b>	<b>\$/THERM</b>

**Figure 2**  
**Natural Gas Usage Profile**



## II. FACILITY DESCRIPTION

The Clifton High School is located at 333 Colfax Avenue in Clifton, New Jersey. This 356,000 SF facility was originally built in 1962 with major additions/renovations in 1997 and 2008. The building is a 3-story facility (with a basement boiler room) that is comprised of administration offices, teacher's room, audio-visual room, general classrooms, special education classrooms, small group instruction rooms, child study team room, nurse's office, kitchen serving area, multi-purpose gym/cafeteria/assembly, stage, custodial office/supplies, boiler room, storage rooms, and mechanical/electrical rooms.

### Occupancy Profile

The typical hours of operation for the high school are Monday through Friday between 7:00 am and 4:00 pm. Maintenance staff is present in the building as early as 6:00 am, and nighttime cleaning staff present until 10:00 pm. The entire School District High School's enrollment (including the High School Annex) is approximately 3,375 students and has 383 teachers, support staff, and administrative personnel.

### Building Envelope

Exterior walls for this school are brick faced with a concrete block construction. The amount of insulation within the walls is unknown. The windows throughout the 1962 buildings are in very poor condition with typical windows being single-pane, operable, 1/4" clear glass with aluminum frames. In many instances, the window frames are bent or cracks exist around the frame/window sill. Applying energy film to these windows along with weather stripping tape and caulk adhesive to seal drafts should be seriously considered. The windows in the 1997 additions are double-pane, insulated, tinted glass with aluminum frames and are in good condition. Double-pane windows contain two glasses with a spacer bar in between which helps cut energy costs because indoor and outdoor air cannot easily travel through the doubled windows. Various elevations of roofing include built-up bitumen with asphalt sheets over cover board, rigid roof insulation and metal decking along with cover board, ply sheets and an asphalt roof coating; most other sections are built-up roofing with a light aggregate ballast covering; and the newer construction has rubber roofing.

### HVAC Systems

In general, the high school HVAC systems consists of ten (10) condensing, modular boilers for heating hot water, two (2) heating hot water pumps, four (4) condensing, modular boilers for domestic hot water, ten (10) rooftop units, numerous 1962 vintage air handling units, unit ventilators for the classrooms, offices, etc., six (6) split AC units and over seventy (70) window AC units.

The heating hot water system located in the basement mechanical room consists of ten (10) Thermal Solutions Model EVA2000 high-efficiency, modular boilers rated at 2,000 MBH input each and having a thermal efficiency of 88% (new). These units have 2-stage gas modulation, outside temperature reset, and night setback via manual controllers. Each of these units has a 2-



HP primary hot water pump that circulates the water through the boilers. The heating hot water is then pumped to the various hot water coils throughout the entire facility by two (2) Bell & Gossett Model HSC<sup>3</sup> Series base-mounted, double-suction, centrifugal pumps. The first pump has a flow of 625 GPM at 200 feet of TDH and a 50-HP motor with a NEMA efficiency of 93.6% manufactured by Emerson Motor Company. The second pump has a flow design of 1,250 GPM at 115 feet of TDH and a 50-HP motor with a NEMA efficiency of 91.7% also manufactured by Emerson Motor Company. In addition, these motors have Safronics Model AS6-180 automated, solid state, soft start controls that reduces the voltage needed to start a motor with multiple starting/stopping modes.

Ten (10) large rooftop units with gas-fired heating and some units with DX cooling provide conditioned air for the east end of the facility. These units are as follows:

<u>Unit Tag</u>	<u>Area Served</u>	<u>Mfg.</u>	<u>Size (Tons) Each</u>
RTU-1,2,3,4	East Wing Science	Reznor	Make-Up Air (Heating Only)
RTU-5	Media Center, Electronics, IMC, Library Offices, Wood, Arts, etc.	Trane	12.5-Tons
RTU-6	Media Center, Electronics, IMC, Library Offices, Wood, Arts, etc.	Trane	15-Tons
RTU-7	Media Center, Electronics, IMC, Library Offices, Wood, Arts, etc.	Trane	12.5-Tons
RTU-8	Media Center, Electronics, IMC, Library Offices, Wood, Arts, etc.	Trane	8.5-Tons
RTU-9	East Wing Science	Reznor	Make-Up Air (Heating Only)
RTU-10	East Wing	Trane	10-Tons

There are six (6) split condensing units on the roof that range in size from 1.5-Tons to 3-Tons which service administration offices, nurse's office, computer/telephone closets, etc.

There are numerous Model G air handler units that were manufactured by Buffalo Forge Company which heat and ventilate the cafeteria, auditorium, stage, upper gym #3, main gym, locker rooms, music rooms, practice rooms, dressing rooms, etc. These air handling units are original to the 1962 building and are over 50 years old. These units should be re-built with more efficient fans, motors, dampers, actuators, & DDC controls and be properly air balanced.

The 1962 classroom wings are heated and ventilated by Nesbitt 1962 vintage unit ventilators. The 1997 addition classrooms are heated, ventilated and exhausted by Nesbitt Model MCB-MCR self-contained, unit ventilators with hot water coils, 2-way valves, 2-speed fans and a Model E700 classroom exhauster.

The many vestibules, entrance ways and small corridors are heated by ceiling and wall cabinet heaters with hot water coils. Unit heaters are located in receiving, shops, mechanical rooms, etc.

Fresh air is supplied to most of the spaces via the rooftop units, air handlers, roof-mounted air intake housings, etc. Outside air intake louvers provide fresh air for the storage rooms, mechanical rooms, and other smaller spaces. The 1997 addition classrooms receive fresh air thru the unit ventilators equipped with outside air dampers and controls.

### Exhaust System

Air is exhausted from the many toilet rooms through roof exhausters. The areas served by the ten (10) rooftop units are exhausted by these units. There are also many roof exhausters for the various offices, electrical rooms, faculty rooms, storage rooms, mechanical rooms, etc. The 1962 classroom wings are exhausted by numerous rooftop exhaust fans that pull the air from the classroom corridors. The 1997 addition classrooms are exhausted by a separate exhauster that is installed next to the unit ventilators at the perimeter walls.

### HVAC System Controls

Throughout the oldest sections of the facility there are pneumatic manual wall thermostats for various HVAC units and local pneumatic controls with adjustable settings on the heating and ventilating units that were installed in 1962. These indoor temperature controls are inaccurate due to temperature drift, age, cost of maintenance of pneumatics and not having been re-calibrated. In addition, the pneumatic controllers don't have the ability to maintain the temperature at setpoint under changing load conditions. A Honeywell XL 5000 system controls eight (8) heating zones that include the Classroom Wings, Auditorium, Administration, Gyms, Library and the Kitchen/Cafeteria. The newer sections (1997 Addition) have DDC XM 100 controllers in various closets for the rooftop heating & cooling units, make-up air units, etc.

### Domestic Hot Water

The domestic hot water system, that is also located in the basement mechanical room, consists of four (4) PVI Power VT condensing, gas-fired, water heaters with a 250-gallon storage capacity each. Each unit has a  $\frac{3}{4}$  HP blower and a  $\frac{1}{3}$  HP circulation pump. The domestic hot water from each water heater is delivered throughout the facility by an additional  $\frac{1}{3}$  HP domestic hot water pump. The entire draft and combustion air system is controlled by a Tjernlund Model CPC-3 constant pressure controller that modulates the draft and combustion air sub-systems. This controller is interlock to each of the burners and also includes a VFD that can speed up the inducer/blower unit when the system calls for water heating.

### Lighting

Refer to the **Investment Grade Lighting Audit Appendix** for a detailed list of the lighting throughout the facility and estimated operating hours per space.

### Kitchen

The full-cooking, electric kitchen at the High School also prepares all of the meals for the elementary schools. The kitchen/cafeteria building is heated and ventilated by two (2) large Buffalo Forge Company Model G air handler units that are located in the Cafeteria K-3 basement. These air handling units are original to the 1962 building and are over 50 years old. These units should be re-built with more efficient fans, motors, dampers, actuators, & DDC controls and be properly air balanced.

This all electric kitchen consists of Traulsen refrigerator units, Hatco food warmers, Hobart double ovens, Toastmaster food warmers, Vulcan double-stack electric convection ovens, Convotherm combination oven steamers, two (2) large Hobart mixers, etc.

The walk-in refrigerator and freezer boxes are served by two (2) rooftop condenser units. The kitchen hoods are exhausted by two (2) Greenheck exhaust fans located on the kitchen roof.

### III. MAJOR EQUIPMENT LIST

The equipment list contains major energy consuming equipment that through implementation of energy conservation measures could yield substantial energy savings. The list shows the major equipment in the facility and all pertinent information utilized in energy savings calculations. An approximate age was assigned to the equipment in some cases if a manufactures date was not shown on the equipment's nameplate. The ASHRAE service life for the equipment along with the remaining useful life is also shown in the Appendix.

Refer to the **Major Equipment List Appendix** for this facility.

#### IV. ENERGY CONSERVATION MEASURES

Energy Conservation Measures are developed specifically for this facility. The energy savings and calculations are highly dependent on the information received from the site survey and interviews with operations personnel. The assumptions and calculations should be reviewed by the owner to ensure accurate representation of this facility. The following ECMs were analyzed:

**Table 1**  
**ECM Financial Summary**

<b>ENERGY CONSERVATION MEASURES (ECM's)</b>					
<b>ECM NO.</b>	<b>DESCRIPTION</b>	<b>NET INSTALLATION COST<sup>A</sup></b>	<b>ANNUAL SAVINGS<sup>B</sup></b>	<b>SIMPLE PAYBACK (Yrs)</b>	<b>SIMPLE LIFETIME ROI</b>
ECM #1	Lighting Upgrade - General	\$21,303	\$5,224	4.1	267.8%
ECM #2	Lighting Upgrade - Other	\$35,673	\$1,598	22.3	-32.8%
ECM #3	Lighting Controls Upgrade	\$80,695	\$5,797	13.9	7.8%
ECM #4	NEMA Premium Motors	\$21,873	\$729	30.0	-40.0%
ECM #5	Rooftop AC Replacements	\$91,457	\$4,280	21.4	-29.8%
ECM #6	Valve Blanket Insulation	\$25,600	\$3,466	7.4	238.5%
ECM #7	Window AC Replacements	\$23,800	\$2,962	8.0	24.5%
ECM #8	VFD for Hot Water Pumps	\$47,778	\$6,414	7.4	101.4%
ECM #9	DDC Controls Upgrade	\$1,503,900	\$13,010	115.6	-87.0%
ECM #10	CRT Monitor Replacements	\$8,950	\$450	19.9	-49.7%
ECM #11	Vending Miser Controls	\$1,800	\$1,766	1.0	1372.0%
ECM #12	Automatic Sleep/Hibernate on Computers	\$11,533	\$12,283	0.9	1497.5%
<b>RENEWABLE ENERGY MEASURES (REM's)</b>					
<b>ECM NO.</b>	<b>DESCRIPTION</b>	<b>NET INSTALLATION COST</b>	<b>ANNUAL SAVINGS</b>	<b>SIMPLE PAYBACK (Yrs)</b>	<b>SIMPLE LIFETIME ROI</b>
REM #1	392.92 KW PV System	\$2,422,382	\$138,145	17.5	-14.5%
<b>Notes:</b>	A. Cost takes into consideration applicable NJ Smart Start™ incentives.				
	B. Savings takes into consideration applicable maintenance savings.				

**Table 2  
ECM Energy Summary**

<b>ENERGY CONSERVATION MEASURES (ECM's)</b>				
<b>ECM NO.</b>	<b>DESCRIPTION</b>	<b>ANNUAL UTILITY REDUCTION</b>		
		<b>ELECTRIC DEMAND (KW)</b>	<b>ELECTRIC CONSUMPTION (KWH)</b>	<b>NATURAL GAS (THERMS)</b>
ECM #1	Lighting Upgrade - General	26.2	45,423	-
ECM #2	Lighting Upgrade - Other	8.2	13,899	-
ECM #3	Lighting Controls Upgrade	-	50,408	-
ECM #4	NEMA Premium Motors	2.0	6,337	-
ECM #5	Rooftop AC Replacements	11.6	23,266	-
ECM #6	Valve Blanket Insulation	-	-	3,984
ECM #7	Window AC Replacements	26.4	21,156	-
ECM #8	VFD for Hot Water Pumps	-	-	55,771
ECM #9	DDC Controls Upgrade		44,706	9,044
ECM #10	CRT Monitor Replacements	2.1	3,914	-
ECM #11	Vending Miser Controls	-	15,360	-
ECM #12	Automatic Sleep/Hibernate on Computers	-	106,810	-
<b>RENEWABLE ENERGY MEASURES (REM's)</b>				
<b>ECM NO.</b>	<b>DESCRIPTION</b>	<b>ANNUAL UTILITY REDUCTION</b>		
		<b>ELECTRIC DEMAND (KW)</b>	<b>ELECTRIC CONSUMPTION (KWH)</b>	<b>NATURAL GAS (THERMS)</b>
REM #1	392.92 KW PV System	392.9	451,331	-

**Table 3  
Facility Project Summary**

<b>ENERGY SAVINGS IMPROVEMENT PROGRAM - POTENTIAL PROJECT</b>					
<b>ENERGY CONSERVATION MEASURES</b>	<b>ANNUAL ENERGY SAVINGS (\$)</b>	<b>PROJECT COST (\$)</b>	<b>SMART START INCENTIVES</b>	<b>CUSTOMER COST</b>	<b>SIMPLE PAYBACK</b>
Lighting Upgrade - General	\$5,224	\$22,468	\$1,165	\$21,303	4.1
Lighting Upgrade - Other	\$1,598	\$43,395	\$7,722	\$35,673	22.3
Lighting Controls Upgrade	\$5,797	\$88,000	\$7,305	\$80,695	13.9
<del>NEMA Premium Motors</del>	<del>\$729</del>	<del>\$21,873</del>	<del>\$0</del>	<del>\$21,873</del>	<del>30.0</del>
Rooftop AC Replacements	\$4,280	\$96,000	\$4,543	\$91,457	21.4
Valve Blanket Insulation	\$3,466	\$25,600	\$0	\$25,600	7.4
Window AC Replacements	\$2,962	\$23,800	\$0	\$23,800	8.0
VFD for Hot Water Pumps	\$6,414	\$47,778	\$0	\$47,778	7.4
<del>DDC Controls Upgrade</del>	<del>\$13,010</del>	<del>\$1,503,900</del>	<del>\$0</del>	<del>\$1,503,900</del>	<del>115.6</del>
CRT Monitor Replacements	\$450	\$8,950	\$0	\$8,950	19.9
Vending Miser Controls	\$1,766	\$1,800	\$0	\$1,800	1.0
Automatic Sleep/Hibernate on Computers	\$12,283	\$11,533	\$0	\$11,533	0.9
<i>Design / Construction Extras (15%)</i>		\$55,399		\$55,399	
<b>Total Project</b>	<b>\$44,240</b>	<b>\$424,722</b>	<b>\$20,735</b>	<b>\$403,987</b>	<b>9.1</b>

Note: ECM's with the strike-through font are not included in the ESIP.

Design / Construction Extras is shown as an additional cost for the facility project summary. This cost is included to estimate the costs associated with construction management fees for a larger combined project.

## **ECM #1: Lighting Upgrade – General**

### **Description:**

The majority of the interior lighting throughout Clifton High School is provided with fluorescent fixtures with older generation, 700 series and 741/ECO 32W T8 lamps and electronic ballasts. Although these T8 lamps are considered fairly efficient, further energy savings can be achieved by replacing the existing T8 lamps with new generation, 800 series 28W T8 lamps without compromising light output. Concord Engineering recommends that these fixtures remain unmodified due to the extensive costs which will be incurred if these fixtures are to be re-lamped and re-ballasted which results in a long payback period.

This ECM also includes replacement of any incandescent lamps with compact fluorescent lamps. Compact fluorescent lamps (CFL's) were designed to be direct replacements for the standard incandescent lamps which are common to table lamps, spot lights, hi-hats, bathroom vanity lighting, etc. The light output of the CFL has been designed to resemble the incandescent lamp. Typical replacements are: a 13-Watt CFL for a 60-Watt incandescent lamp, an 18-Watt CFL for a 75-Watt incandescent lamp, and a 26-Watt CFL for a 100-Watt incandescent lamp. A CFL can be chosen to screw right into your existing fixtures, or hardwired into your existing fixtures. Where the existing fixture is controlled by a dimmer switch, the CFL bulb must be compatible with a dimmer switch. The energy usage of an incandescent compared to a compact fluorescent approximately 3 to 4 times greater. In addition to the energy savings, compact fluorescent fixtures burn-hours are 8 to 15 times longer than incandescent fixtures ranging from 6,000 to 15,000 burn-hours compared to incandescent fixtures ranging from 750 to 1000 burn-hours. However, the maintenance savings due to reduced lamp replacement is offset by the higher cost of the CFL's compared to the incandescent lamps.

The ECM also includes replacement of some incandescent lamps with LED lamps. The retrofit of existing incandescent fixtures with LED lamps will assist in reducing the facility's electric expenses.

### **Energy Savings Calculations:**

The **Investment Grade Lighting Audit Appendix** outlines the hours of operation, proposed retrofits, costs, savings, and payback periods for each set of fixtures in the each building.



**Energy Savings Summary:**

<b>ECM #1 - ENERGY SAVINGS SUMMARY</b>	
<b>Installation Cost (\$):</b>	\$22,468
<b>NJ Smart Start Equipment Incentive (\$):</b>	\$1,165
<b>Net Installation Cost (\$):</b>	\$21,303
<b>Maintenance Savings (\$/Yr):</b>	\$0
<b>Energy Savings (\$/Yr):</b>	\$5,224
<b>Total Yearly Savings (\$/Yr):</b>	\$5,224
<b>Estimated ECM Lifetime (Yr):</b>	15
<b>Simple Payback</b>	4.1
<b>Simple Lifetime ROI</b>	267.8%
<b>Simple Lifetime Maintenance Savings</b>	\$0
<b>Simple Lifetime Savings</b>	\$78,355
<b>Internal Rate of Return (IRR)</b>	23%
<b>Net Present Value (NPV)</b>	\$41,056.97

## ECM #2: Lighting Upgrade – Other

### Description:

Several areas at Clifton High School are currently lit with various Metal Halide HID fixtures. These spaces would be better served with a more efficient, fluorescent lighting system. Concord Engineering recommends upgrading the lighting to an energy-efficient T5 high output system.

This measure replaces all the HID metal halide fixtures with a well-designed T5 high output (HO) system. T5 High output fixtures with reflectors and wire guards will be required in order to meet the mandated 50 foot-candle average within the spaces.

### Energy Savings Calculations:

A detailed Investment Grade Lighting Audit can be found in **Investment Grade Lighting Audit Appendix** that outlines the proposed retrofits, costs, savings, and payback periods.

### Energy Savings Summary:

<b>ECM #2 - ENERGY SAVINGS SUMMARY</b>	
<b>Installation Cost (\$):</b>	\$43,395
<b>NJ Smart Start Equipment Incentive (\$):</b>	\$7,722
<b>Net Installation Cost (\$):</b>	\$35,673
<b>Maintenance Savings (\$/Yr):</b>	\$0
<b>Energy Savings (\$/Yr):</b>	\$1,598
<b>Total Yearly Savings (\$/Yr):</b>	\$1,598
<b>Estimated ECM Lifetime (Yr):</b>	15
<b>Simple Payback</b>	22.3
<b>Simple Lifetime ROI</b>	-32.8%
<b>Simple Lifetime Maintenance Savings</b>	\$0
<b>Simple Lifetime Savings</b>	\$23,975
<b>Internal Rate of Return (IRR)</b>	-5%
<b>Net Present Value (NPV)</b>	<b>(\$16,592.13)</b>

### ECM #3: Lighting Controls Upgrade – Occupancy Sensors

#### Description:

Some of the lights in the Clifton High School are left on unnecessarily. In many cases the lights are left on because of the inconvenience to manually switch lights off when a room is left or on when a room is first occupied. This is common in rooms that are occupied for only short periods and only a few times per day. In some instances lights are left on due to the misconception that it is better to keep the lights on rather than to continuously switch lights on and off. Although increased switching reduces lamp life, the energy savings outweigh the lamp replacement costs. The payback timeframe for when to turn the lights off is approximately two minutes. If the lights are expected to be off for at least a two minute interval, then it pays to shut them off.

Lighting controls come in many forms. Sometimes an additional switch is adequate to provide reduced lighting levels when full light output is not needed. Occupancy sensors detect motion and will switch the lights on when the room is occupied. Occupancy sensors can either be mounted in place of a current wall switch, or on the ceiling to cover large areas.

The U.S. Department of Energy sponsored a study to analyze energy savings achieved through various types of building system controls. The referenced savings is based on the “Advanced Sensors and Controls for Building Applications: Market Assessment and Potential R&D Pathways,” document posted for public use April 2005. The study has found that commercial buildings have the potential to achieve significant energy savings through the use of building controls. The average energy savings are as follows based on the report:

- Occupancy Sensors for Lighting Control                      20% - 28% energy savings.

Savings resulting from the implementation of this ECM for energy management controls are estimated to be 20% of the total light energy controlled by occupancy sensors (The majority of the savings is expected to be after school hours when rooms are left with lights on)

This ECM includes installation of ceiling or switch mount sensors for individual offices, classrooms, large bathrooms, and Media Centers. Sensors shall be manufactured by SensorSwitch, Watt Stopper or equivalent. The **Investment Grade Lighting Audit Appendix** of this report includes the summary of lighting controls implemented in this ECM and outlines the proposed controls, costs, savings, and payback periods. The calculations adjust the lighting power usage by the applicable percent savings for each area that includes lighting controls.

#### Energy Savings Calculations:

$$\text{Energy Savings} = (\% \text{ Savings} \times \text{Controlled Light Energy (kWh/Yr)})$$

$$\text{Savings.} = \text{Energy Savings (kWh)} \times \text{Ave Elec Cost} \left( \frac{\$}{\text{kWh}} \right)$$

**Rebates and Incentives:**

From the **NJ Smart Start<sup>®</sup> Program Incentives Appendix**, the installation of a lighting control device warrants the following incentive:

Smart Start Incentive

$$= (\# \text{ Wall mount sensors} \times \$20 \text{ per sensor})$$

$$+ (\# \text{ Ceiling mount sensors} \times \$35 \text{ per sensor})$$

**Energy Savings Summary:**

<b>ECM #3 - ENERGY SAVINGS SUMMARY</b>	
<b>Installation Cost (\$):</b>	\$88,000
<b>NJ Smart Start Equipment Incentive (\$):</b>	\$7,305
<b>Net Installation Cost (\$):</b>	\$80,695
<b>Maintenance Savings (\$/Yr):</b>	\$0
<b>Energy Savings (\$/Yr):</b>	\$5,797
<b>Total Yearly Savings (\$/Yr):</b>	\$5,797
<b>Estimated ECM Lifetime (Yr):</b>	15
<b>Simple Payback</b>	13.9
<b>Simple Lifetime ROI</b>	7.8%
<b>Simple Lifetime Maintenance Savings</b>	\$0
<b>Simple Lifetime Savings</b>	\$86,955
<b>Internal Rate of Return (IRR)</b>	1%
<b>Net Present Value (NPV)</b>	<b>(\$11,490.79)</b>

## ECM #4: Install NEMA Premium® Efficiency Motors

### Description:

The improved efficiency of the NEMA Premium® efficient motors is primarily due to better designs with use of better materials to reduce losses. Surprisingly, the electricity used to power a motor represents 95 % of its total lifetime operating cost. Because many motors operate continuously 24 hours a day, even small increases in efficiency can yield substantial energy and dollar savings.

The electric motors driving the air handling units, hot water pumps and condensate return pumps are candidates for replacing with premium efficiency motors. These standard efficiency motors run considerable amount of time over a year.

This energy conservation measure replaces existing inefficient electric motors with NEMA Premium® efficiency motors. NEMA Premium® is the most efficient motor designation in the marketplace today.

IMPLEMENTATION SUMMARY					
EQMT ID	FUNCTION	MOTOR HP	HOURS OF OPERATION	EXISTING EFFICIENCY	NEMA PREMIUM EFFICIENCY
M-1	Boiler Circ Pumps	2	2,745	78.5%	86.5%
M-2	Boiler Circ Pumps	2	2,745	78.5%	86.5%
M-3	Boiler Circ Pumps	2	2,745	78.5%	86.5%
M-4	Boiler Circ Pumps	2	2,745	78.5%	86.5%
M-5	Boiler Circ Pumps	2	2,745	78.5%	86.5%
M-6	Boiler Circ Pumps	2	2,745	78.5%	86.5%
M-7	Boiler Circ Pumps	2	2,745	78.5%	86.5%
M-8	Boiler Circ Pumps	2	2,745	78.5%	86.5%
M-9	Boiler Circ Pumps	2	2,745	84.0%	86.5%
M-10	Boiler Circ Pumps	2	2,745	84.0%	86.5%
M-11	Boiler Room	5	2,745	87.5%	90.2%
M-12	Boiler Room	5	2,745	88.5%	90.2%
M-13	Boys/Girls AHU Gym	7.5	3,391	88.5%	91.7%
M-14	Boys/Girls AHU Gym	7.5	3,391	88.5%	91.7%
AHU-1	Auditorium Mezz	5	4,380	87.5%	90.2%
AHU-2	Auditorium Mezz	5	4,380	87.5%	90.2%
AHU-3	Auditorium Mezz	1.5	4,380	84.0%	88.5%
AHU-4	Auditorium Mezz	2	4,380	84.0%	86.5%
AHU-5	Auditorium Mezz	5	4,380	87.5%	90.2%

### Energy Savings Calculations:

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$$\text{Electric usage, kWh} = \frac{\text{HP} \times \text{LF} \times 0.746 \times \text{Hours of Operation}}{\text{Motor Efficiency}}$$

where, HP = Motor Nameplate Horsepower Rating

LF = Load Factor

Motor Efficiency = Motor Nameplate Efficiency

$$\text{Electric Usage Savings, kWh} = \text{Electric Usage}_{\text{Existing}} - \text{Electric Usage}_{\text{Proposed}}$$

$$\text{Electric Usage Savings, kWh} = \text{Electric Usage}_{\text{Existing}} - \text{Electric Usage}_{\text{Proposed}}$$

$$\text{Electric cost savings} = \text{Electric Usage Savings} \times \text{Electric Rate} \left( \frac{\$}{\text{kWh}} \right)$$

The calculations were carried out and the results are tabulated in the table below:

PREMIUM EFFICIENCY MOTOR CALCULATIONS							
EQMT ID	MOTOR HP	LOAD FACTOR	EXISTING EFFICIENCY	NEMA PREMIUM EFFICIENCY	POWER SAVINGS kW	ENERGY SAVINGS kWh	COST SAVINGS
M-1	2	75%	78.5%	86.5%	0.13	364	\$42
M-2	2	75%	78.5%	86.5%	0.13	364	\$42
M-3	2	75%	78.5%	86.5%	0.13	364	\$42
M-4	2	75%	78.5%	86.5%	0.13	364	\$42
M-5	2	75%	78.5%	86.5%	0.13	364	\$42
M-6	2	75%	78.5%	86.5%	0.13	364	\$42
M-7	2	75%	78.5%	86.5%	0.13	364	\$42
M-8	2	75%	78.5%	86.5%	0.13	364	\$42
M-9	2	75%	84.0%	86.5%	0.04	106	\$12
M-10	2	75%	84.0%	86.5%	0.04	106	\$12
M-11	5	75%	87.5%	90.2%	0.10	264	\$30
M-12	5	75%	88.5%	90.2%	0.06	164	\$19
M-13	7.5	75%	88.5%	91.7%	0.17	564	\$65
M-14	7.5	75%	88.5%	91.7%	0.17	564	\$65
AHU-1	5	75%	87.5%	90.2%	0.10	421	\$48
AHU-2	5	75%	87.5%	90.2%	0.10	421	\$48
AHU-3	1.5	75%	84.0%	88.5%	0.05	224	\$26
AHU-4	2	75%	84.0%	86.5%	0.04	170	\$19
AHU-5	5	75%	87.5%	90.2%	0.10	421	\$48
<b>TOTAL</b>					<b>2.0</b>	<b>6,337</b>	<b>\$729</b>

**Equipment Cost**

The following table outlines the summary of motor replacement costs:

<b>MOTOR REPLACEMENT SUMMARY</b>				
<b>EQMT ID</b>	<b>MOTOR POWER HP</b>	<b>INSTALLED COST</b>	<b>TOTAL SAVINGS</b>	<b>SIMPLE PAYBACK</b>
M-1	2	\$868	\$42	20.7
M-2	2	\$868	\$42	20.7
M-3	2	\$868	\$42	20.7
M-4	2	\$868	\$42	20.7
M-5	2	\$868	\$42	20.7
M-6	2	\$868	\$42	20.7
M-7	2	\$868	\$42	20.7
M-8	2	\$868	\$42	20.7
M-9	2	\$868	\$12	71.0
M-10	2	\$868	\$12	71.0
M-11	5	\$1,519	\$30	50.0
M-12	5	\$1,519	\$19	80.3
M-13	7.5	\$1,971	\$65	30.4
M-14	7.5	\$1,971	\$65	30.4
AHU-1	5	\$1,519	\$48	31.3
AHU-2	5	\$1,519	\$48	31.3
AHU-3	1.5	\$788	\$26	30.6
AHU-4	2	\$868	\$19	44.5
AHU-5	5	\$1,519	\$48	31.3
<b>TOTAL</b>	<b>Totals:</b>	<b>\$21,873</b>	<b>\$729</b>	<b>30.0</b>

**Energy Savings Summary:**

<b>ECM #4 - ENERGY SAVINGS SUMMARY</b>	
<b>Installation Cost (\$):</b>	\$21,873
<b>NJ Smart Start Equipment Incentive (\$):</b>	\$0
<b>Net Installation Cost (\$):</b>	\$21,873
<b>Maintenance Savings (\$/Yr):</b>	\$0
<b>Energy Savings (\$/Yr):</b>	\$729
<b>Total Yearly Savings (\$/Yr):</b>	\$729
<b>Estimated ECM Lifetime (Yr):</b>	18
<b>Simple Payback</b>	30.0
<b>Simple Lifetime ROI</b>	-40.0%
<b>Simple Lifetime Maintenance Savings</b>	\$0
<b>Simple Lifetime Savings</b>	\$13,122
<b>Internal Rate of Return (IRR)</b>	-5%
<b>Net Present Value (NPV)</b>	<b>(\$11,846.69)</b>



## ECM #5: Replace Rooftop Units with High Efficiency Units

### Description:

The Clifton High School has several packaged rooftop systems throughout the school which condition multiple areas. These units are also past their ASHRAE service life and should be considered for replacement.

The units currently installed are lower efficiency compared to modern units. The units can be replaced with new high efficiency units. New units provide higher full load and part load efficiencies due to advances in inverter motor technologies, heat exchangers and higher efficiency refrigerants such as R410A which would be used in place of R22 that is currently used in the unit.

This ECM includes one-for-one replacement of the older rooftop units with new higher efficiency systems. It is recommended to fully evaluate the capacity needed for all new systems prior to moving forward with this ECM. A summary of the unit replacement for this ECM can be found in the table below:

IMPLEMENTATION SUMMARY					
ECM INPUTS	SERVICE FOR	NUMBER OF UNITS	COOLING CAPACITY, BTU/HR	TOTAL CAPACITY, TONS	REPLACE UNIT WITH
RTU	Media Center	1	180,000	15.0	Carrier 48HC
RTU	Media Center	1	150,000	12.5	Carrier 48HC
RTU	Media Center	1	150,000	12.5	Carrier 48HC
RTU	Media Center	1	90,000	7.5	Carrier 48HC
RTU	East Wing	1	120,000	10.0	Carrier 48HC
<b>Total</b>		<b>5</b>	<b>690,000</b>	<b>58</b>	

The manufacturers used as the basis for the calculation is Carrier. The unit pricing and install cost were estimated based on current rates quotes and labor rates. The payback may change based on actual unit pricing and install costs if the ECM is implemented.

### Energy Savings Calculations:

#### Cooling Energy Savings:

Seasonal energy consumption of the air conditioners at the cooling mode is calculated with the equation below:

$$\text{Energy Savings, kWh} = \text{Cooling Capacity, } \frac{\text{BTU}}{\text{Hr}} \times \left( \frac{1}{\text{SEER}_{\text{Old}}} - \frac{1}{\text{SEER}_{\text{New}}} \right) \times \frac{\text{Operation Hours}}{1000 \frac{\text{W}}{\text{kWh}}}$$

$$\text{Demand Savings, kW} = \frac{\text{Energy Savings (kWh)}}{\text{Hours of Cooling}}$$

$$\text{Cooling Cost Savings} = \text{Energy Savings, kWh} \times \text{Cost of Electricity} \left( \frac{\$}{\text{kWh}} \right)$$

ENERGY SAVINGS CALCULATIONS							
ECM INPUTS	COOLING CAPACITY, BTU/Hr	ANNUAL COOLING HOURS*	EXISTING UNITS EER	NEW UNITS EER*	# OF UNITS	ENERGY SAVINGS kWh	DEMAND SAVINGS kW
RTU	180,000	2,000	10 EER	12 EER	1	6,000	3.0
RTU	150,000	2,000	8.6 EER	12.2 EER	1	10,294	5.1
RTU	150,000	2,000	8.6 EER	12.2 EER	1	10,294	5.1
RTU	90,000	2,000	8 EER	12 EER	1	7,500	3.8
RTU	120,000	2,000	10 EER	11.5 EER	1	3,130	1.6
<b>Total</b>					5	37,218	18.6

### Project Cost, Incentives and Maintenance Savings

From the NJ Smart Start<sup>®</sup> Program appendix, the replacement of split system AC units and unitary systems with high efficiency AC systems falls under the category “Unitary HVAC Split System” and warrants an incentive based on efficiency (EER/SEER). The program incentives are calculated as follows:

$$\text{Smart Start}^{\text{®}} \text{ Incentive} = (\text{Cooling Tons} \times \$/\text{Ton Incentive})$$

AC UNITS REBATE SUMMARY				
UNIT DESCRIPTION	UNIT EFFICIENCY	REBATE \$/TON	PROPOSED CAPACITY TONS	TOTAL REBATE \$
≥ 11.25 to < 20 tons	11.5 EER	79	40	\$3,160
≥ 5.4 to < 11.25 tons	11.5 EER	79	18	\$1,383
<b>TOTAL</b>			<b>57.5</b>	<b>\$4,543</b>

Summary of cost, savings and payback for this ECM is below.

<b>COST &amp; SAVINGS SUMMARY</b>							
<b>ECM INPUTS</b>	<b>INSTALLED COST</b>	<b># OF UNITS</b>	<b>TOTAL COST</b>	<b>REBATES</b>	<b>NET COST</b>	<b>ENERGY SAVINGS</b>	<b>PAY BACK YEARS</b>
<b>RTU</b>	\$21,000	1	\$21,000	\$1,185	\$19,815	\$690	28.7
<b>RTU</b>	\$20,625	1	\$20,625	\$988	\$19,638	\$1,184	16.6
<b>RTU</b>	\$20,625	1	\$20,625	\$988	\$19,638	\$1,184	16.6
<b>RTU</b>	\$16,250	1	\$16,250	\$593	\$15,658	\$863	18.2
<b>RTU</b>	\$17,500	1	\$17,500	\$790	\$16,710	\$360	46.4
<b>Total</b>	\$96,000	5	\$96,000	\$4,543	\$91,458	\$4,280	21.4

There is no significant maintenance savings due to implementation of this ECM.

#### Energy Savings Summary:

<b>ECM #5 - ENERGY SAVINGS SUMMARY</b>	
<b>Installation Cost (\$):</b>	\$96,000
<b>NJ Smart Start Equipment Incentive (\$):</b>	\$4,543
<b>Net Installation Cost (\$):</b>	\$91,457
<b>Maintenance Savings (\$/Yr):</b>	\$0
<b>Energy Savings (\$/Yr):</b>	\$4,280
<b>Total Yearly Savings (\$/Yr):</b>	\$4,280
<b>Estimated ECM Lifetime (Yr):</b>	15
<b>Simple Payback</b>	21.4
<b>Simple Lifetime ROI</b>	-29.8%
<b>Simple Lifetime Maintenance Savings</b>	\$0
<b>Simple Lifetime Savings</b>	\$64,200
<b>Internal Rate of Return (IRR)</b>	-4%
<b>Net Present Value (NPV)</b>	<b>(\$40,362.64)</b>

## ECM #6: Valve Blanket Insulation

### Description:

The boiler plant at Clifton High School, supplies hot water in the heating season. The piping remains heated at around 180°F continuously during this period (approximately 6 months). Un-insulated valves have significant heat losses due to the exposure of the steel and copper piping to the surrounding air. Insulated valves have a heat loss which is a small fraction of the heat loss from un-insulated valves. It was identified that insulation for the large steam valves in the boiler room were missing.

Based on the site survey following valves were identified for insulation:

Qty.	Size	Description	Surface Temp.	Area (Ea.) (Sq.ft.)	Bare Heat Loss (BTU/Hr/SF)	Bare Heat Loss (BTU/Hr)	Bare Heat Loss (mmBtu)	Insulated Heat Loss (BTU/Hr/SF)	Insulated Heat Loss (BTU/Hr)	Insulated Heat Loss (mmBtu)	Fuel Savings (mmBtu/yr)	Fuel Savings (\$/yr)
<b>Mechanical Room</b>												
4	12"	Valve	180	15.90	320.00	20,352.00	81.41	26.00	1,653.87	6.62	74.79	\$650.69
6	10"	Valve	180	15.90	320.00	30,528.00	122.11	26.00	2,480.80	9.92	112.19	\$976.04
8	8"	Valve	180	11.80	320.00	30,208.00	120.83	26.00	2,454.80	9.82	111.01	\$965.81
14	6"	Valve	180	6.10	320.00	27,328.00	109.31	26.00	2,220.76	8.88	100.43	\$873.73
<b>32</b>	<b>TOTAL</b>						<b>433.7</b>			<b>35.2</b>	<b>398.4</b>	<b>\$3,466</b>

Valve blankets are designed to provide insulation value over large valves that must remain accessible. This ECM includes installation of valve blankets on all exposed boiler system valves.

### Energy Savings Calculations:

Heat Loss for un-insulated steel piping is based on ASHRAE 2009 Fundamentals – “Insulation for Mechanical Systems”.

$$\begin{aligned} \text{Heat Loss} & \frac{\text{BTU}}{\text{HR}} \text{ per Linear FT} \\ & = \frac{1}{R - \text{Value}} \times \text{Pipe Dia (FT)} \times 3.14 \\ & \times (\text{Pipe Temp } (^\circ\text{F}) - \text{Ambient Temp}(^\circ\text{F})) \end{aligned}$$

$$\text{Heat Loss} \frac{\text{BTU}}{\text{HR}} = \text{Heat Loss} \frac{\text{BTU}}{\text{HR}} \text{ per Linear FT} \times \text{Length of Uninsulated Pipe}$$

$$\text{Energy Use, Therms} = \frac{\text{Heat Loss} \frac{\text{BTU}}{\text{HR}} \times \text{Operating Hrs}}{\text{Heating System Eff. (\%)} \times \text{Fuel Heat Value} \frac{\text{BTU}}{\text{Therm}}}$$

$$\text{Heating Energy Cost Savings} = \text{Energy Use, Therms} \times \text{Cost of Nat Gas} \left( \frac{\$}{\text{Therm}} \right)$$

**Energy Savings Summary:**

<b>ECM #6 - ENERGY SAVINGS SUMMARY</b>	
<b>Installation Cost (\$):</b>	\$25,600
<b>NJ Smart Start Equipment Incentive (\$):</b>	\$0
<b>Net Installation Cost (\$):</b>	\$25,600
<b>Maintenance Savings (\$/Yr):</b>	\$0
<b>Energy Savings (\$/Yr):</b>	\$3,466
<b>Total Yearly Savings (\$/Yr):</b>	\$3,466
<b>Estimated ECM Lifetime (Yr):</b>	25
<b>Simple Payback</b>	7.4
<b>Simple Lifetime ROI</b>	238.5%
<b>Simple Lifetime Maintenance Savings</b>	0
<b>Simple Lifetime Savings</b>	\$86,650
<b>Internal Rate of Return (IRR)</b>	13%
<b>Net Present Value (NPV)</b>	\$34,753.97

## ECM #7: Window AC Unit Replacement

### Description:

Cooling is provided to several offices and classrooms via window air conditioning units. These units vary in size, capacity and efficiency. The units have been fixed or replaced on an “as needed” basis throughout the building. These window AC units are old and inefficient.

It is recommended to utilize the energy star ratings as a minimum standard for replacing any window unit that is in need of replacement. Existing units that are old but still working should be considered for replacement if the efficiency is below 8.0 to 8.5 EER. Window AC units that are over 10 years old are very likely to fall in this efficiency range.

This ECM shows the savings and payback for replacing inefficient window air conditioners with new, Energy Star rated units. Qualifying product list can be found at Energy Star website at: [www.energystar.gov/products](http://www.energystar.gov/products). Although energy star rated products provide a valuable benchmark, it is recommended to consider even higher EER ratings for potential AC unit replacements where available.

### Energy Savings Calculations:

Average Summer Electric Cost: \$0.14/kWh (June through September)  
 Typical AC Unit Size: 12,000 BTU/HR

Estimated Full Load Hours of Unit: 800/Year

$$\text{Energy Savings, kWh} = \text{Cooling Capacity, } \frac{\text{BTU}}{\text{Hr}} \times \left( \frac{1}{\text{EER}_{\text{Old}}} - \frac{1}{\text{EER}_{\text{New}}} \right) \times \frac{\text{Full Load Hours}}{1000 \frac{\text{W}}{\text{kWh}}}$$

$$\text{Demand Savings, kW} = \frac{\text{Energy Savings (kWh)}}{\text{Hours of Cooling}}$$

$$\text{Cooling Cost Savings} = \text{Energy Savings (kWh)} \times \text{Average Summer Elec. Cost} \left( \frac{\$}{\text{kWh}} \right)$$

The following table depicts the replacement plan for the window air conditioning units:

<b>ENERGY SAVINGS CALCULATIONS</b>									
<b>Capacity BTU/H</b>	<b>Amount of Units</b>	<b>Full Load Hrs</b>	<b>Typical Eff. (10 Yrs &amp; Older) EER</b>	<b>New Eff. EER</b>	<b>Energy Savings kWh</b>	<b>Demand Savings kW</b>	<b>Cooling Cost Savings</b>	<b>Net Installed Cost</b>	<b>Simple Payback</b>
12,000	68	800	8	10.8	21156	26.44	\$2,962	\$23,800	8.0

**Energy Savings Summary:**

<b>ECM #7 - ENERGY SAVINGS SUMMARY</b>	
<b>Installation Cost (\$):</b>	\$23,800
<b>NJ Smart Start Equipment Incentive (\$):</b>	\$0
<b>Net Installation Cost (\$):</b>	\$23,800
<b>Maintenance Savings (\$/Yr):</b>	\$0
<b>Energy Savings (\$/Yr):</b>	\$2,962
<b>Total Yearly Savings (\$/Yr):</b>	\$2,962
<b>Estimated ECM Lifetime (Yr):</b>	10
<b>Simple Payback</b>	8.0
<b>Simple Lifetime ROI</b>	24.5%
<b>Simple Lifetime Maintenance Savings</b>	\$0
<b>Simple Lifetime Savings</b>	\$29,620
<b>Internal Rate of Return (IRR)</b>	4%
<b>Net Present Value (NPV)</b>	\$1,466.46

## ECM #8: Install VFD on Hot Water Pumps

### Description:

The Clifton High School currently has 50 horsepower hot water pumps to distribute heating water to the air handling units for the large open spaces and unit ventilators for the classroom and office spaces. The existing pumps operate at constant flow and ride the pump curve only.

This ECM includes the installation of Variable Frequency Drives on the two (2) 50 horsepower existing hot water pumps. The VFD control is based on a differential pressure sensor in the water loop to measure demand for water.

### Energy Savings Calculations:

$$\text{Pump Power HP} = \frac{\text{Flow}_{\text{GPM}} \times \text{Head}_{\text{ft-hd.}}}{3650 \times \eta_{\text{pump}} \times \eta_{\text{motor}}}$$

$$\text{Energy Consumption (kWh)} = \text{Motor HP} \times 0.746 \frac{\text{kW}}{\text{HP}} \times \text{Hours of operation (Hr)} \times \frac{1}{\eta_{\text{motor}}}$$

$$\text{Total Energy Consumption (kWh)} = \sum \text{Energy Consumption of Each Motor}$$

$$\text{Energy Cost (\$)} = \text{Total Consumption (kWh)} \times \text{Average Cost of Electric} \left( \frac{\$}{\text{kWh}} \right)$$

Affinity Laws are used in order to calculate energy savings by calculating the reduced power consumption requirement based a reduction in flow. Affinity laws, are as following:

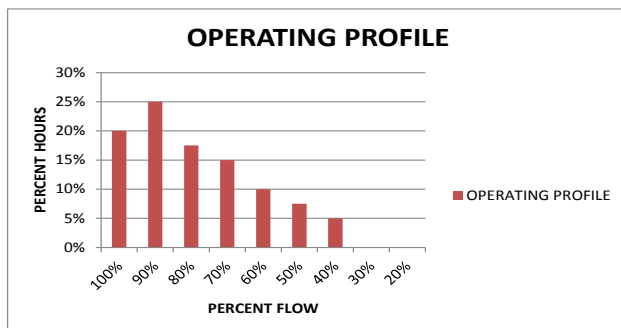
Q = Flow,      n = RPM,      p = total pressure

$$\frac{Q_2}{Q_1} = \frac{n_2}{n_1} \quad \frac{p_2}{p_1} = \left( \frac{n_2}{n_1} \right)^2 \quad \frac{HP_2}{HP_1} = \left( \frac{n_2}{n_1} \right)^3$$



<b>HW PUMPS VFD CALCULATION</b>			
<b>ECM INPUTS</b>	<b>EXISTING</b>	<b>PROPOSED</b>	<b>SAVINGS</b>
<b>ECM INPUTS</b>	CV Pumps	VFD Pumps	
<b>Flow Control</b>	Throttle	VFD	-
<b>Motor Nameplate HP</b>	50.0	50.0	
<b>Flow* (GPM)</b>	625	625	-
<b>Head* (Ft)</b>	200	200	-
<b>Pump Efficiency (%)</b>	75.0%	75.0%	-
<b>Motor Efficiency (%)</b>	93.0%	93.0%	0.0%
<b>Operating Hrs</b>	4000	4000	-
<b>Estimated Power (HP)</b>	45.3	45.3	0.00
<b>Elec Cost (\$/kWh)</b>	0.115	0.115	-
<b>ENERGY SAVINGS CALCULATIONS</b>			
<b>ECM RESULTS</b>	<b>EXISTING</b>	<b>PROPOSED</b>	<b>SAVINGS</b>
<b>Electric Energy (kWh)</b>	145,207	89,436	55,771
<b>Electric Energy Cost (\$)</b>	\$16,699	\$10,285	\$6,414
<b>COMMENTS:</b>	Estimated Flow and Head Pressure, Savings for One Pump, assumed two operate.		

Estimated Operating Profile with VFD



**Energy Savings Summary:**

<b>ECM #8 - ENERGY SAVINGS SUMMARY</b>	
<b>Installation Cost (\$):</b>	\$47,778
<b>NJ Smart Start Equipment Incentive (\$):</b>	\$0
<b>Net Installation Cost (\$):</b>	\$47,778
<b>Maintenance Savings (\$/Yr):</b>	\$0
<b>Energy Savings (\$/Yr):</b>	\$6,414
<b>Total Yearly Savings (\$/Yr):</b>	\$6,414
<b>Estimated ECM Lifetime (Yr):</b>	15
<b>Simple Payback</b>	7.4
<b>Simple Lifetime ROI</b>	101.4%
<b>Simple Lifetime Maintenance Savings</b>	\$0
<b>Simple Lifetime Savings</b>	\$96,210
<b>Internal Rate of Return (IRR)</b>	10%
<b>Net Present Value (NPV)</b>	\$28,791.92

## ECM #9: Digital Energy Management System (DDC EMS)

### Description:

Currently, Clifton High School uses a pneumatic control system with manual boiler start-up controls. This system is very old and offers little more than an on/off cycling control of the heating system.

Concord Engineering recommends installing a DDC system throughout the school to control all of the HVAC systems including the boilers, indoor air handling units, and roof exhaust fans.

The system will include new temperature sensors and new local thermostats with limited override capability, a front end computer and main controller. With the communication between the control devices and the front end computer interface, the facility manager will be able to take advantage of scheduling for occupied and unoccupied periods based on the actual occupancy of each space in the facility. Due to the fact that the building may have diverse hours of occupancy, including evening and weekend activities, having supervisory control over all of the equipment makes sense. The DDC system will also aid in the response time to service / maintenance issues when the facility is not under normal maintenance supervision, i.e. after-hours.

The new DDC system has the potential to provide significant savings by controlling the HVAC systems as a whole and provide operating schedules and features such as space averaging, night set-back, temperature override control, etc. The U.S. Department of Energy sponsored a study to analyze energy savings achieved through various types of building system controls. The referenced savings is based on the “Advanced Sensors and Controls for Building Applications: Market Assessment and Potential R&D Pathways,” document posted for public use April 2005. The study has found that commercial buildings have the potential to achieve significant energy savings through the use of building controls. The average energy savings are as follows based on the referenced report:

- Energy Management and Control System Savings: 5%-15%.

Savings resulting from the implementation of this ECM for energy management controls are estimated to be 5% of the electricity and 10% for natural gas in these buildings.

The basis for the DDC system expansion is the Automated Logic Energy Management System or similar.

### Energy Savings Calculations:

Energy savings for each utility is calculated with the equation below.

Energy Savings (Utility) = Current Energy Consumption × Estimated Savings, %

Following table summarizes energy savings for this facility via implementation of an Energy Management System:

<b>DDC ENERGY MANAGEMENT SYSTEM CALCULATIONS</b>			
<b>ECM INPUTS</b>	<b>EXISTING</b>	<b>PROPOSED</b>	<b>SAVINGS</b>
<b>ECM INPUTS</b>	Existing Controls w/ Local Thermostats	DDC Controls	
<b>Existing Nat Gas Usage (Therms)</b>	90,444	-	
<b>Existing Electricity Usage (kWh)</b>	894,117	-	
<b>Energy Savings, Nat Gas</b>	-	10%	
<b>Energy Savings, Electricity</b>	-	5%	
<b>Gas Cost (\$/Therm)</b>	\$0.87	\$0.87	
<b>Electricity Cost (\$/kWh)</b>	\$0.115	\$0.115	
<b>ENERGY SAVINGS CALCULATIONS</b>			
<b>ECM RESULTS</b>	<b>EXISTING</b>	<b>PROPOSED</b>	<b>SAVINGS</b>
<b>Nat Gas Usage (Therms)</b>	90,444	81,399	9,044
<b>Electricity Usage (kWh)</b>	894,117	849,411	44,706
<b>Nat Gas Cost (\$)</b>	\$78,686	\$70,817	\$7,869
<b>Electricity Cost (\$)</b>	\$102,823	\$97,682	\$5,141
<b>Energy Cost (\$)</b>	\$181,509	\$168,500	\$13,010
<b>COMMENTS:</b>			

Demand savings due to implementation of this ECM is minimal.

The cost of a full DDC system with new field devices, controllers, computer, software, programming, etc. is approximately \$4.22 per SF in accordance with recent Contractor pricing for systems of this magnitude. Savings from the implementation of this ECM will be from the reduced energy consumption currently used by the HVAC system by proper control of schedule and temperatures via the DDC system.

**Energy Savings Summary:**

<b>ECM #9 - ENERGY SAVINGS SUMMARY</b>	
<b>Installation Cost (\$):</b>	\$1,503,900
<b>NJ Smart Start Equipment Incentive (\$):</b>	\$0
<b>Net Installation Cost (\$):</b>	\$1,503,900
<b>Maintenance Savings (\$/Yr):</b>	\$0
<b>Energy Savings (\$/Yr):</b>	\$13,010
<b>Total Yearly Savings (\$/Yr):</b>	\$13,010
<b>Estimated ECM Lifetime (Yr):</b>	15
<b>Simple Payback</b>	115.6
<b>Simple Lifetime ROI</b>	-87.0%
<b>Simple Lifetime Maintenance Savings</b>	\$0
<b>Simple Lifetime Savings</b>	\$195,150
<b>Internal Rate of Return (IRR)</b>	-19%
<b>Net Present Value (NPV)</b>	<b>(\$1,348,587.46)</b>

## ECM #10: CRT Monitor Replacement

### Description:

Clifton High School still utilizes CRT Monitors for use by its staff and students. These monitors not only utilize more energy in operating mode, but also while in idle mode. Typical monitors throughout the buildings consisted of 15 inch size monitors.

This ECM will replace all remaining forty-four (44) existing CRT monitors throughout the school with new 19" Widescreen Dell LCD Model P1911 with AX510 sounds bars.

### Description of Scope:

- Verify final quantity and location of replacement monitors.
- Verify manufacturer and model to be purchased with Districts Technical Support personnel.
- District staff installs new monitors.

### Energy Savings Calculations / Results:

Savings calculations were based on operating occupied hours per week of operating staff and students, and estimated idle time of monitors per week outside occupied hours. Power consumption data is based on actual monitor characteristics for a Dell CRT Model E773c, and Dell LCD Model P1911.

$$\text{Energy Savings} = Qty \times Op\ Hrs \times P_o + Qty \times IdleHrs \times P_i$$

Qty = Quantity

Op Hrs = Operating Hours per Year

Idle Hrs = Idle Hours per Year

P<sub>o</sub> = Operating Power Consumption Watts

P<sub>i</sub> = Idle Power Consumption Watts

<b>CRT MONITOR REPLACEMENT CALCULATIONS</b>			
<b>ECM INPUTS</b>	<b>EXISTING</b>	<b>PROPOSED</b>	<b>SAVINGS</b>
<b>ECM INPUTS</b>	15" CRT	19" LCD	
<b># of Monitors</b>	44	44	
<b>Power Cons. (W)</b>	71	23	48
<b>Idle Power Cons. (W)</b>	5	0.5	4.5
<b>Operating Hrs per Week</b>	33	33	
<b>Operating Weeks per Yr</b>	41	41	
<b>Idle Hrs per Week</b>	136	136	
<b>Idle Weeks per Yr</b>	41	41	
<b>Elec Cost (\$/kWh)</b>	0.115	0.115	
<b>ENERGY SAVINGS CALCULATIONS</b>			
<b>ECM RESULTS</b>	<b>EXISTING</b>	<b>PROPOSED</b>	<b>SAVINGS</b>
<b>Electric Demand (kW)</b>	3.124	1.012	2.112
<b>Electric Usage (kWh)</b>	5,385	1,471	3,914
<b>Energy Cost (\$)</b>	\$619	\$169	\$450
<b>COMMENTS:</b>	Savings Based on Dell 15: CRT Monitor Compared with Dell 19" LCD Model P1911 w/ AX510 Soundbar		

**Energy Savings Summary:**

<b>ECM #10 - ENERGY SAVINGS SUMMARY</b>	
<b>Installation Cost (\$):</b>	\$8,950
<b>NJ Smart Start Equipment Incentive (\$):</b>	\$0
<b>Net Installation Cost (\$):</b>	\$8,950
<b>Maintenance Savings (\$/Yr):</b>	\$0
<b>Energy Savings (\$/Yr):</b>	\$450
<b>Total Yearly Savings (\$/Yr):</b>	\$450
<b>Estimated ECM Lifetime (Yr):</b>	10
<b>Simple Payback</b>	19.9
<b>Simple Lifetime ROI</b>	-49.7%
<b>Simple Lifetime Maintenance Savings</b>	\$0
<b>Simple Lifetime Savings</b>	\$4,500
<b>Internal Rate of Return (IRR)</b>	-11%
<b>Net Present Value (NPV)</b>	<b>(\$5,111.01)</b>



## ECM #5: Vending Miser Controls

### Description:

The Clifton High School currently utilizes vending machines in select areas within the building. Vending machines are common within cafeteria's and faculty rooms which can be in use for a limited time during the day. The installation of the Vending Miser system will help reduce the operating hours of vending machines.

Cold beverage machines regularly operate inefficiently trying to maintain a constant cool temperature within the machine and snack machines with no cooling usually have lights that operate 24/7. The VendingMiser® system incorporates innovative energy-saving technology into a small plug-and-play device that in conjunction with a passive infrared sensor regulate the operation of the cold beverage and snack machines based on occupancy and room temperature. This ECM approximates the installation of twelve (12) of these control systems; six for cold beverage and six for snack machines.

### Energy Savings Calculations:

<b>Cold Drink and Snack Vending Machine Energy Conservation Project</b>					
		<b>Input Variables</b>			
<b>Energy Analysis Prepared For:</b>		<b>Energy Costs (\$0.000 per kwh)</b>			<b>\$0.115</b>
		<b>Facility Occupied Hours per Week</b>			<b>60</b>
<b>Clifton High School</b>		<b>Number of Cold Drink Vending Machines</b>			<b>6</b>
		<b>Number of Uncooled Snack Machines</b>			<b>6</b>
<a href="http://www.VendingMiserStore.com">www.VendingMiserStore.com</a>		<b>Power Requirements of Cold Drink Machine (avg watts)</b>			<b>427</b>
		<b>Power Requirements of Snack Machine (avg watts)</b>			<b>100</b>
		<b>VendingMiser Sale Price (for cold drink machines)</b>			<b>\$200.00</b>
		<b>OfficeMiser Sale Price (for snack machines)</b>			<b>\$100.00</b>
<b>Savings Analysis</b>					
	<b>Before</b>	<b>After</b>			
<b>Cold Drink Machines</b>	<b>\$2,582.73</b>	<b>\$1,203.86</b>	<b>Cost of Operation</b>		
	<b>22,458</b>	<b>10,468</b>	<b>kWh</b>		
		<b>53%</b>	<b>% Energy Savings</b>		
<b>Snack Machines</b>	<b>\$602.78</b>	<b>\$215.28</b>	<b>Cost of Operation</b>		
	<b>5,242</b>	<b>1,872</b>	<b>kWh</b>		
		<b>64%</b>	<b>% Energy Savings</b>		
<b>Project Summary</b>					
<b>Present kWh</b>	<b>Projected kWh</b>	<b>kWh Savings per Year</b>			
<b>27,700</b>	<b>12,340</b>	<b>15,360</b>			
<b>Present Cost</b>	<b>Projected Costs</b>	<b>Annual Savings</b>	<b>Per Cent Savings</b>	<b>Total Project Cost</b>	<b>Break Even (Months)</b>
<b>\$3,185.51</b>	<b>\$1,419.14</b>	<b>\$1,766.37</b>	<b>55%</b>	<b>\$1,800.00</b>	<b>12.2</b>

**Energy Savings Summary:**

<b>ECM #11 - ENERGY SAVINGS SUMMARY</b>	
<b>Installation Cost (\$):</b>	\$1,800
<b>NJ Smart Start Equipment Incentive (\$):</b>	\$0
<b>Net Installation Cost (\$):</b>	\$1,800
<b>Maintenance Savings (\$/Yr):</b>	\$0
<b>Energy Savings (\$/Yr):</b>	\$1,766
<b>Total Yearly Savings (\$/Yr):</b>	\$1,766
<b>Estimated ECM Lifetime (Yr):</b>	15
<b>Simple Payback</b>	1.0
<b>Simple Lifetime ROI</b>	1372.0%
<b>Simple Lifetime Maintenance Savings</b>	\$0
<b>Simple Lifetime Savings</b>	\$26,496
<b>Internal Rate of Return (IRR)</b>	98%
<b>Net Present Value (NPV)</b>	\$19,286.81

## ECM #12: Set Computers to Automatic Stand-by or Hibernate Modes

### Description:

During the survey, it was noticed that the majority of the computers were left at ON position with the monitors at Screen Saver or OFF positions.

Many personal computers (PC) came equipped with automatic Sleep Mode or Hibernate (power down) mode features. Normally computers boot up from Sleep Mode or Hibernate mode much faster than powering up from Shut Down position.

Based on an independent study by the U.S. Department of Energy, Energy star® rated computers use approximately 70% less power during Sleep Mode. It is recommended to set up the PCs at this facility to switch into Sleep Mode after a short period of inactivity and Hibernate mode after a long period of inactivity.

This ECM includes configuring the computers in the classrooms and the offices such that they automatically switch into:

- Sleep Mode after 15 minutes of inactivity
- Hibernate after 60 minutes of inactivity

The inactivity times above can be adjusted based on experience or preference. Even though this ECM can be implemented easily in house, the calculations assume an independent computer technician performing the task at a typical market rate.

### Energy Savings Calculations:

No. of CRT Computers:	199
Operating Weeks per Yr:	42
Estimated percentage of computers left ON over night:	75%

$$\text{Electric Usage} = \frac{\# \text{ of Computers} \times \text{Computer Power (W)} \times \text{Operation (Hrs)}}{1000 \left( \frac{\text{W}}{\text{KW}} \right)}$$

$$\text{Energy Cost} = \text{Electric Usage (kWh)} \times \text{Ave Elec Cost} \left( \frac{\$}{\text{kWh}} \right)$$

The cost of configuring the computers to automatically sleep or hibernate is based on 10 minutes per computer per technician at an hourly rate indicated below.

Implementation Costs: = # Computers X Configuration Time X Cost per Hour  
 = 692 Monitors X 10 Minutes/Computer X \$100 per Hour  
 = \$11,533

<b>AUTOMATIC SLEEP OR HIBERNATE MODES FOR COMPUTERS</b>			
<b>ECM INPUTS</b>	<b>EXISTING</b>	<b>PROPOSED</b>	<b>SAVINGS</b>
<b>ECM INPUTS</b>	Manual Operation	Auto Power Save	-
<b># of Computers</b>	692	692	-
<b>% Computers left ON</b>	75%	75%	-
<b>Power when left ON (Watt)</b>	50	50	-
<b>Power at Stand-by (Watt)</b>	5	5	-
<b>Power at Hibernate (Watt)</b>	4	4	-
<b>Power when OFF (Watt)</b>	0	0	-
<b>Operating Weeks per Yr</b>	42	42	-
<b>Operating Hours per Week</b>	168	168	-
<b>Hours/Wk Computers ON</b>	120	20	-
<b>Hours/Wk at Sleep Mode</b>	0	20	-
<b>Hours/Wk at Hibernate Mode</b>	0	80	-
<b>Hours/Wk at Power Down</b>	48	48	-
<b>Elec Cost (\$/kWh)</b>	0.115	0.115	-
<b>ENERGY SAVINGS CALCULATIONS</b>			
<b>ECM RESULTS</b>	<b>EXISTING</b>	<b>PROPOSED</b>	<b>SAVINGS</b>
<b>Electric Usage (kWh)</b>	130,788	23,978	106,810
<b>Energy Cost (\$)</b>	\$15,041	\$2,757	\$12,283
<b>COMMENTS:</b>	Calculation assumes computers currently run throughout work week and get shut down over the weekend.		

**Energy Savings Summary:**

<b>ECM #12 - ENERGY SAVINGS SUMMARY</b>	
<b>Installation Cost (\$):</b>	\$11,533
<b>NJ Smart Start Equipment Incentive (\$):</b>	\$0
<b>Net Installation Cost (\$):</b>	\$11,533
<b>Maintenance Savings (\$/Yr):</b>	\$0
<b>Energy Savings (\$/Yr):</b>	\$12,283
<b>Total Yearly Savings (\$/Yr):</b>	\$12,283
<b>Estimated ECM Lifetime (Yr):</b>	15
<b>Simple Payback</b>	0.9
<b>Simple Lifetime ROI</b>	1497.5%
<b>Simple Lifetime Maintenance Savings</b>	\$0
<b>Simple Lifetime Savings</b>	\$184,245
<b>Internal Rate of Return (IRR)</b>	107%
<b>Net Present Value (NPV)</b>	\$135,100.66

**REM #1: 392.92 kW Solar System****Description:**

The Clifton High School has available roof and parking lot space that could accommodate a significant amount of solar generation. Based on the available areas a 392.92 kilowatt solar array could be installed. The array will produce approximately 451,331 kilowatt-hours annually that will reduce the overall electric usage of the facility by 22.12%.

**Energy Savings Calculations:**

See **Renewable / Distributed Energy Measures Calculations Appendix** for detailed financial summary and proposed solar layout areas. Financial results in table below are based on 100% financing of the system over a fifteen year period.

**Energy Savings Summary:**

<b>REM #1 - ENERGY SAVINGS SUMMARY</b>	
<b>System Size (KW<sub>DC</sub>):</b>	392.92
<b>Electric Generation (KWH/Yr):</b>	451,331
<b>Installation Cost (\$):</b>	\$2,422,382
<b>SREC Revenue (\$/Yr):</b>	\$86,242
<b>Energy Savings (\$/Yr):</b>	\$51,903
<b>Total Yearly Savings (\$/Yr):</b>	\$138,145
<b>ECM Analysis Period (Yr):</b>	15
<b>Simple Payback (Yrs):</b>	17.5
<b>Analysis Period Electric Savings (\$):</b>	\$965,341
<b>Analysis Period SREC Revenue (\$):</b>	\$1,249,325
<b>Net Present Value (NPV)</b>	<b>(\$1,111,425.42)</b>

## V. ADDITIONAL RECOMMENDATIONS

The following recommendations include no cost/low cost measures, Operation & Maintenance (O&M) items, and water conservation measures with attractive paybacks. These measures are not eligible for the Smart Start Buildings incentives from the office of Clean Energy. While the District is already performing many of these functions through routine maintenance it is important to continue to address these items as they provide an energy savings benefit.

- A. Chemically clean the condenser and evaporator coils periodically to optimize efficiency. Poorly maintained heat transfer surfaces can reduce efficiency 5-10%.
- B. Maintain all weather stripping on windows and doors.
- C. Clean all light fixtures to maximize light output.
- D. Provide more frequent air filter changes to decrease overall system power usage and maintain better IAQ.
- E. Turn off computers when not in use. Ensure computers are not running in screen saver mode.
- F. Replace older style CRT monitors with newer energy efficient LCD/LED monitors.
- G. Ensure classroom televisions are turned off at the end of the day and while not in use.
- H. Ensure outside air dampers are functioning properly and only open during occupied mode.
- I. Removal of non-essential appliance equipment in teacher lounges, classrooms and offices such as extra refrigerators etc.

**APPENDIX A**



**ECM COST & SAVINGS BREAKDOWN**

CONCORD ENGINEERING GROUP

Clifton Public Schools – Clifton High School

ECM ENERGY AND FINANCIAL COSTS AND SAVINGS SUMMARY															
ECM NO.	DESCRIPTION	INSTALLATION COST				YEARLY SAVINGS			ECM LIFETIME	LIFETIME ENERGY SAVINGS	LIFETIME MAINTENANCE SAVINGS	LIFETIME ROI	SIMPLE PAYBACK	INTERNAL RATE OF RETURN (IRR)	NET PRESENT VALUE (NPV)
		MATERIAL	LABOR	REBATES, INCENTIVES	NET INSTALLATION COST	ENERGY	MAINT. / SREC	TOTAL		(Yearly Saving * ECM Lifetime)	(Yearly Maint Saving * ECM Lifetime)	(Lifetime Savings - Net Cost) / (Net Cost)	(Net cost / Yearly Savings)	$\sum_{n=0}^N \frac{C_n}{[1 + IRR]^n}$	$\sum_{n=0}^N \frac{C_n}{[1 + DR]^n}$
		(\$)	(\$)	(\$)	(\$)	(\$/Yr)	(\$/Yr)	(\$/Yr)		(Yr)	(\$)	(\$)	(%)	(Yr)	(\$)
ECM #1	Lighting Upgrade - General	\$11,108	\$11,360	\$1,165	\$21,303	\$5,224	\$0	\$5,224	15	\$78,355	\$0	267.8%	4.1	23.48%	\$41,056.97
ECM #2	Lighting Upgrade - Other	\$32,275	\$11,120	\$7,722	\$35,673	\$1,598	\$0	\$1,598	15	\$23,975	\$0	-32.8%	22.3	-4.60%	(\$16,592.13)
ECM #3	Lighting Controls Upgrade	\$69,850	\$18,150	\$7,305	\$80,695	\$5,797	\$0	\$5,797	15	\$86,955	\$0	7.8%	13.9	0.95%	(\$11,490.79)
ECM #4	NEMA Premium Motors	\$21,873	\$0	\$0	\$21,873	\$729	\$0	\$729	18	\$13,122	\$0	-40.0%	30.0	-4.90%	(\$11,846.69)
ECM #5	Rooftop AC Replacements	\$70,000	\$26,000	\$4,543	\$91,457	\$4,280	\$0	\$4,280	15	\$64,200	\$0	-29.8%	21.4	-4.13%	(\$40,362.64)
ECM #6	Valve Blanket Insulation	\$25,600	\$0	\$0	\$25,600	\$3,466	\$0	\$3,466	25	\$86,650	\$0	238.5%	7.4	12.88%	\$34,753.97
ECM #7	Window AC Replacements	\$23,800	\$0	\$0	\$23,800	\$2,962	\$0	\$2,962	10	\$29,620	\$0	24.5%	8.0	4.19%	\$1,466.46
ECM #8	VFD for Hot Water Pumps	\$16,178	\$31,600	\$0	\$47,778	\$6,414	\$0	\$6,414	15	\$96,210	\$0	101.4%	7.4	10.37%	\$28,791.92
ECM #9	DDC Controls Upgrade	\$1,503,900	\$0	\$0	\$1,503,900	\$13,010	\$0	\$13,010	15	\$195,150	\$0	-87.0%	115.6	-18.80%	(\$1,348,587.46)
ECM #10	CRT Monitor Replacements	\$8,950	\$0	\$0	\$8,950	\$450	\$0	\$450	10	\$4,500	\$0	-49.7%	19.9	-10.88%	(\$5,111.01)
ECM #11	Vending Miser Controls	\$1,800	\$0	\$0	\$1,800	\$1,766	\$0	\$1,766	15	\$26,496	\$0	1372.0%	1.0	98.13%	\$19,286.81
ECM #12	Automatic Sleep/Hibernate on Computers	\$11,533	\$0	\$0	\$11,533	\$12,283	\$0	\$12,283	15	\$184,245	\$0	1497.5%	0.9	106.50%	\$135,100.66
REM RENEWABLE ENERGY AND FINANCIAL COSTS AND SAVINGS SUMMARY															
REM #1	392.92 KW PV System	\$2,422,382	\$0	\$0	\$2,422,382	\$51,903	\$86,242	\$138,145	15	\$2,072,182	\$1,293,636	-14.5%	17.5	#NUM!	\$0.00

- Notes:
- 1) The variable Cn in the formulas for Internal Rate of Return and Net Present Value stands for the cash flow during each period.
  - 2) The variable DR in the NPV equation stands for Discount Rate
  - 3) For NPV and IRR calculations: From n=0 to N periods where N is the lifetime of ECM and Cn is the cash flow during each period.

**APPENDIX B**

# Concord Engineering Group, Inc.

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## SmartStart Building Incentives

The NJ SmartStart Buildings Program offers financial incentives on a wide variety of building system equipment. The incentives were developed to help offset the initial cost of energy-efficient equipment. The following tables show the current available incentives as of February 11, 2013:

### **Electric Chillers**

Water-Cooled Chillers	\$16 - \$170 per ton
Air-Cooled Chillers	\$8 - \$52 per ton

Energy Efficiency must comply with ASHRAE 90.1-2007

### **Gas Cooling**

Gas Absorption Chillers	\$185 - \$400 per ton
Gas Engine-Driven Chillers	Calculated through custom measure path)

### **Desiccant Systems**

\$1.00 per cfm – gas or electric
----------------------------------

### **Electric Unitary HVAC**

Unitary AC and Split Systems	\$73 - \$92 per ton
Air-to-Air Heat Pumps	\$73 - \$92 per ton
Water-Source Heat Pumps	\$81 per ton
Packaged Terminal AC & HP	\$65 per ton
Central DX AC Systems	\$40- \$72 per ton
Dual Enthalpy Economizer Controls	\$250
Occupancy Controlled Thermostat (Hospitality & Institutional Facility)	\$75 per thermostat
A/C Economizing Controls	≤ 5 tons \$85/unit; >5 tons \$170/unit

Energy Efficiency must comply with ASHRAE 90.1-2007

### **Gas Heating**

Gas Fired Boilers < 300 MBH	\$2.00 per MBH, but not less than \$300 per unit
Gas Fired Boilers ≥ 300 - 1500 MBH	\$1.75 per MBH
Gas Fired Boilers ≥1500 - ≤ 4000 MBH	\$1.00 per MBH
Gas Fired Boilers > 4000 MBH	(Calculated through Custom Measure Path)
Gas Furnaces	\$400 per unit, AFUE ≥ 95%
Boiler Economizing Controls	\$1,200 - \$2,700
Low Intensity Infrared Heating	\$300 - \$500 per unit

### Ground Source Heat Pumps

Closed Loop	\$450 per ton, EER $\geq$ 16
	\$600 per ton, EER $\geq$ 18
	\$750 per ton, EER $\geq$ 20

Energy Efficiency must comply with ASHRAE 90.1-2007

### Variable Frequency Drives

Variable Air Volume	\$65 - \$155 per hp
Chilled-Water Pumps	\$60 per VFD rated hp
Compressors	\$5,250 to \$12,500 per drive
Cooling Towers $\geq$ 10 hp	\$60 per VFD rated hp
Boiler Fans $\geq$ 5 HP	\$65 to \$155 per hp
Boiler Feed Water Pumps $\geq$ 5 HP	\$60 to \$155 per hp
Commercial Kitchen Hood up to 50 HP	Retrofit \$55 – \$300 per hp New Hood \$55 - \$250 per hp

### Natural Gas Water Heating

Gas Water Heaters $\leq$ 50 gallons, 0.67 energy factor or better	\$50 per unit
Gas-Fired Water Heaters $>$ 50 gallons	\$1.00 - \$2.00 per MBH
Gas-Fired Booster Water Heaters	\$17 - \$35 per MBH
Gas Fired Tankless Water Heaters	\$300 per unit

### Prescriptive Lighting

Retro fit of T12 to T-5 or T-8 Lamps w/Electronic Ballast in Existing Facilities (Expires 3/1/2013)	\$10 per fixture (1-4 lamps)
Replacement of T12 with new T-5 or T-8 Lamps w/Electronic Ballast in Existing Facilities (Expires 3/1/2013)	\$25 per fixture (1-4 lamps)
T-8 reduced Wattage (28w/25w 4', 1-4 lamps) Lamp & ballast replacement	\$10 per fixture
For retrofit of T-8 fixtures by permanent de-lamping & new reflectors (Electronic ballast replacement required)	\$15 per fixture
T-5 and T-8 High Bay Fixtures	\$16 - \$200 per fixture
Metal Halide w/Pulse Start Including Parking Lot	\$25 per fixture
HID $\geq$ 100w Retrofit with induction lamp, power coupler and generator (must be 30% less watts/fixture than HID system)	\$50 per fixture
HID $\geq$ 100w Replacement with new HID $\geq$ 100w	\$70 per fixture

### Prescriptive Lighting - LED

LED Display Case Lighting	\$30 per display case
LED Shelf-Mtd. Display & Task Lights	\$15 per linear foot
LED Portable Desk Lamp	\$20 per fixture
LED Wall-wash Lights	\$30 per fixture
LED Recessed Down Lights	\$35 per fixture
LED Outdoor Pole/Arm-Mounted Area and Roadway Luminaries	\$175 per fixture
LED Outdoor Pole/Arm-Mounted Decorative Luminaries	\$175 per fixture
LED Outdoor Wall-Mounted Area Luminaries	\$100 per fixture
LED Parking Garage Luminaries	\$100 per fixture
LED Track or Mono-Point Directional Lighting Fixtures	\$50 per fixture
LED High-Bay and Low-Bay Fixtures for Commercial & Industrial Bldgs.	\$150 per fixture
LED High-Bay-Aisle Lighting	\$150 per fixture
LED Bollard Fixtures	\$50 per fixture
LED Linear Panels (1x4, 2x2, 2x4 Troffers only)	\$100 per fixture
LED Fuel Pump Canopy	\$100 per fixture
LED Screw-based & Pin-based (PAR, MR, BR, R) Standards (A-Style) and Decorative Lamps	\$20 per lamp
LED Refrigerator/Freezer case lighting replacement of fluorescent in medium and low temperature display case	\$30 per 4 foot \$42 per 5 foot \$65 per 6 foot
LED Retrofit Kits	To be evaluated through the customer measure path

### Lighting Controls – Occupancy Sensors

Wall Mounted	\$20 per control
Remote Mounted	\$35 per control
Daylight Dimmers	\$25-\$50 per fixture
Occupancy Controlled hi-low Fluorescent Controls	\$25 per fixture controlled

### Lighting Controls – HID or Fluorescent Hi-Bay Controls

Occupancy hi-low	\$75 per fixture controlled
Daylight Dimming	\$75 per fixture controlled

### Premium Motors

Three-Phase Motors ( <i>Expires 3/1/2013</i> )	\$45 - \$700 per motor
Fractional HP Motors Electronic Commutated Motors (replacing shaded pole motors in refrigerator/freezer cases)	\$40 per electronic commutated motor

### Refrigeration Doors/Covers

Energy-Efficient Doors/Covers for Installation on Open Refrigerated Cases	\$100 per door
Aluminum Night Curtains for Installation on Open Refrigerated Cases	\$3.50 per linear foot

### Refrigeration Controls

Door Heater Controls	\$50 per control
Electric Defrost Controls	\$50 per control
Evaporator Fan Controls	\$75 per control
Novelty Cooler Shutoff	\$50 per control

### Other Equipment Incentives

Performance Lighting	\$1.00 per watt per SF below program incentive threshold, currently 5% more energy efficient than ASHRAE 90.1- 2007 for New Construction and Complete Renovation
Custom Electric and Gas Equipment Incentives	not prescriptive
Custom Measures	\$0.16 KWh and \$1.60/Therm of 1st year savings, or a buy down to a 1 year payback on estimated savings. Minimum required savings of 75,000 KWh or 1,500 Therms and an IRR of at least 10%.

**APPENDIX C**



# STATEMENT OF ENERGY PERFORMANCE

## 17-Clifton BOE - Clifton High School

Building ID: 3477618

For 12-month Period Ending: February 28, 2013<sup>1</sup>

Date SEP becomes ineligible: N/A

Date SEP Generated: April 11, 2013

**Facility**

17-Clifton BOE - Clifton High School  
333 Colfax Avenue  
Clifton, NJ 07013

**Facility Owner**

Clifton BOE  
745 Clifton Avenue  
Clifton, NJ 07013

**Primary Contact for this Facility**

Karen Perkins  
745 Clifton Avenue  
Clifton, NJ 07013

**Year Built:** 1962**Gross Floor Area (ft<sup>2</sup>):** 355,961**Energy Performance Rating<sup>2</sup> (1-100)** 94**Site Energy Use Summary<sup>3</sup>**

Electricity - Grid Purchase(kBtu)	6,934,395
Natural Gas (kBtu) <sup>4</sup>	11,233,993
Total Energy (kBtu)	18,168,388

**Energy Intensity<sup>4</sup>**

Site (kBtu/ft <sup>2</sup> /yr)	51
Source (kBtu/ft <sup>2</sup> /yr)	98

**Emissions (based on site energy use)**

Greenhouse Gas Emissions (MtCO <sub>2</sub> e/year)	1,580
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**Electric Distribution Utility**

Public Service Electric &amp; Gas Co

**National Median Comparison**

National Median Site EUI	94
National Median Source EUI	180
% Difference from National Median Source EUI	-45%
Building Type	K-12 School

**Meets Industry Standards<sup>5</sup> for Indoor Environmental Conditions:**

Ventilation for Acceptable Indoor Air Quality	N/A
Acceptable Thermal Environmental Conditions	N/A
Adequate Illumination	N/A

Stamp of Certifying Professional
Based on the conditions observed at the time of my visit to this building, I certify that the information contained within this statement is accurate.

**Certifying Professional**

Michael Fischette  
520 South Burnt Mill Road  
Voorhees, NJ 08043

**Notes:**

1. Application for the ENERGY STAR must be submitted to EPA within 4 months of the Period Ending date. Award of the ENERGY STAR is not final until approval is received from EPA.
2. The EPA Energy Performance Rating is based on total source energy. A rating of 75 is the minimum to be eligible for the ENERGY STAR.
3. Values represent energy consumption, annualized to a 12-month period.
4. Values represent energy intensity, annualized to a 12-month period.
5. Based on Meeting ASHRAE Standard 62 for ventilation for acceptable indoor air quality, ASHRAE Standard 55 for thermal comfort, and IESNA Lighting Handbook for lighting quality.



## ENERGY STAR® Data Checklist for Commercial Buildings

In order for a building to qualify for the ENERGY STAR, a Professional Engineer (PE) or a Registered Architect (RA) must validate the accuracy of the data underlying the building's energy performance rating. This checklist is designed to provide an at-a-glance summary of a property's physical and operating characteristics, as well as its total energy consumption, to assist the PE or RA in double-checking the information that the building owner or operator has entered into Portfolio Manager.

**Please complete and sign this checklist and include it with the stamped, signed Statement of Energy Performance.**

NOTE: You must check each box to indicate that each value is correct, OR include a note.

CRITERION	VALUE AS ENTERED IN PORTFOLIO MANAGER	VERIFICATION QUESTIONS	NOTES	<input checked="" type="checkbox"/>
<b>Building Name</b>	17-Clifton BOE - Clifton High School	Is this the official building name to be displayed in the ENERGY STAR Registry of Labeled Buildings?		<input type="checkbox"/>
<b>Type</b>	K-12 School	Is this an accurate description of the space in question?		<input type="checkbox"/>
<b>Location</b>	333 Colfax Avenue, Clifton, NJ 07013	Is this address accurate and complete? Correct weather normalization requires an accurate zip code.		<input type="checkbox"/>
<b>Single Structure</b>	Single Facility	Does this SEP represent a single structure? SEPs cannot be submitted for multiple-building campuses (with the exception of a hospital, k-12 school, hotel and senior care facility) nor can they be submitted as representing only a portion of a building.		<input type="checkbox"/>
Clifton HS (K-12 School)				
CRITERION	VALUE AS ENTERED IN PORTFOLIO MANAGER	VERIFICATION QUESTIONS	NOTES	<input checked="" type="checkbox"/>
<b>Gross Floor Area</b>	355,961 Sq. Ft.	Does this square footage include all supporting functions such as kitchens and break rooms used by staff, storage areas, administrative areas, elevators, stairwells, atria, vent shafts, etc. Also note that existing atriums should only include the base floor area that it occupies. Interstitial (plenum) space between floors should not be included in the total. Finally gross floor area is not the same as leasable space. Leasable space is a subset of gross floor area.		<input type="checkbox"/>
<b>Open Weekends?</b>	Yes	Is this building normally open at all on the weekends? This includes activities beyond the work conducted by maintenance, cleaning, and security personnel. Weekend activity could include any time when the space is used for classes, performances or other school or community activities. If the building is open on the weekend as part of the standard schedule during one or more seasons, the building should select ?yes? for open weekends. The ?yes? response should apply whether the building is open for one or both of the weekend days.		<input type="checkbox"/>
<b>Number of PCs</b>	692	Is this the number of personal computers in the K12 School?		<input type="checkbox"/>
<b>Number of walk-in refrigeration/freezer units</b>	2	Is this the total number of commercial walk-in type freezers and coolers? These units are typically found in storage and receiving areas.		<input type="checkbox"/>
<b>Presence of cooking facilities</b>	Yes	Does this school have a dedicated space in which food is prepared and served to students? If the school has space in which food for students is only kept warm and/or served to students, or has only a galley that is used by teachers and staff then the answer is "no".		<input type="checkbox"/>
<b>Percent Cooled</b>	10 %	Is this the percentage of the total floor space within the facility that is served by mechanical cooling equipment?		<input type="checkbox"/>
<b>Percent Heated</b>	100 %	Is this the percentage of the total floor space within the facility that is served by mechanical heating equipment?		<input type="checkbox"/>
<b>Months</b>	10(Optional)	Is this school in operation for at least 8 months of the year?		<input type="checkbox"/>

<b>High School?</b>	Yes	Is this building a high school (teaching grades 10, 11, and/or 12)? If the building teaches to high school students at all, the user should check 'yes' to 'high school'. For example, if the school teaches to grades K-12 (elementary/middle and high school), the user should check 'yes' to 'high school'.		<input type="checkbox"/>
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## ENERGY STAR® Data Checklist for Commercial Buildings

### Energy Consumption

**Power Generation Plant or Distribution Utility:** Public Service Electric & Gas Co

Fuel Type: Electricity		
<b>Meter: electric (kWh (thousand Watt-hours))</b> <b>Space(s): Entire Facility</b> <b>Generation Method: Grid Purchase</b>		
Start Date	End Date	Energy Use (kWh (thousand Watt-hours))
01/05/2013	02/04/2013	220,527.00
12/05/2012	01/04/2013	212,818.00
11/05/2012	12/04/2012	206,690.00
10/05/2012	11/04/2012	148,575.00
09/05/2012	10/04/2012	166,583.00
08/05/2012	09/04/2012	115,020.00
07/05/2012	08/04/2012	123,171.00
06/05/2012	07/04/2012	153,174.00
05/05/2012	06/04/2012	159,771.00
04/05/2012	05/04/2012	149,915.00
03/05/2012	04/04/2012	172,041.00
<b>electric Consumption (kWh (thousand Watt-hours))</b>		<b>1,828,285.00</b>
<b>electric Consumption (kBtu (thousand Btu))</b>		<b>6,238,108.42</b>
<b>Total Electricity (Grid Purchase) Consumption (kBtu (thousand Btu))</b>		<b>6,238,108.42</b>
<b>Is this the total Electricity (Grid Purchase) consumption at this building including all Electricity meters?</b>		<input type="checkbox"/>
Fuel Type: Natural Gas		
<b>Meter: gas (therms)</b> <b>Space(s): Entire Facility</b>		
Start Date	End Date	Energy Use (therms)
01/05/2013	02/04/2013	29,169.82
12/05/2012	01/04/2013	24,889.43
11/05/2012	12/04/2012	16,163.70
10/05/2012	11/04/2012	6,545.27
09/05/2012	10/04/2012	466.89
08/05/2012	09/04/2012	356.58
07/05/2012	08/04/2012	309.19
06/05/2012	07/04/2012	368.22
05/05/2012	06/04/2012	539.60
04/05/2012	05/04/2012	1,719.55
03/05/2012	04/04/2012	6,491.11

gas Consumption (therms)	87,019.36
gas Consumption (kBtu (thousand Btu))	8,701,936.00
Total Natural Gas Consumption (kBtu (thousand Btu))	8,701,936.00
Is this the total Natural Gas consumption at this building including all Natural Gas meters?	<input type="checkbox"/>

<b>Additional Fuels</b>	
Do the fuel consumption totals shown above represent the total energy use of this building? Please confirm there are no additional fuels (district energy, generator fuel oil) used in this facility.	<input type="checkbox"/>

<b>On-Site Solar and Wind Energy</b>	
Do the fuel consumption totals shown above include all on-site solar and/or wind power located at your facility? Please confirm that no on-site solar or wind installations have been omitted from this list. All on-site systems must be reported.	<input type="checkbox"/>

## Certifying Professional

(When applying for the ENERGY STAR, the Certifying Professional must be the same PE or RA that signed and stamped the SEP.)

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Signature: \_\_\_\_\_

Signature is required when applying for the ENERGY STAR.

# FOR YOUR RECORDS ONLY. DO NOT SUBMIT TO EPA.

Please keep this Facility Summary for your own records; do not submit it to EPA. Only the Statement of Energy Performance (SEP), Data Checklist and Letter of Agreement need to be submitted to EPA when applying for the ENERGY STAR.

**Facility**  
17-Clifton BOE - Clifton High School  
333 Colfax Avenue  
Clifton, NJ 07013

**Facility Owner**  
Clifton BOE  
745 Clifton Avenue  
Clifton, NJ 07013

**Primary Contact for this Facility**  
Karen Perkins  
745 Clifton Avenue  
Clifton, NJ 07013

## General Information

17-Clifton BOE - Clifton High School	
Gross Floor Area Excluding Parking: (ft <sup>2</sup> )	355,961
Year Built	1962
For 12-month Evaluation Period Ending Date:	February 28, 2013

## Facility Space Use Summary

Clifton HS	
Space Type	K-12 School
Gross Floor Area (ft <sup>2</sup> )	355,961
Open Weekends?	Yes
Number of PCs	692
Number of walk-in refrigeration/freezer units	2
Presence of cooking facilities	Yes
Percent Cooled	10
Percent Heated	100
Months °	10
High School?	Yes
School District °	clifton

## Energy Performance Comparison

Performance Metrics	Evaluation Periods		Comparisons		
	Current (Ending Date 02/28/2013)	Baseline (Ending Date 02/28/2013)	Rating of 75	Target	National Median
Energy Performance Rating	94	94	75	N/A	50
Energy Intensity					
Site (kBtu/ft <sup>2</sup> )	51	51	73	N/A	94
Source (kBtu/ft <sup>2</sup> )	98	98	141	N/A	180
Energy Cost					
\$/year	N/A	N/A	N/A	N/A	N/A
\$/ft <sup>2</sup> /year	N/A	N/A	N/A	N/A	N/A
Greenhouse Gas Emissions					
MtCO <sub>2</sub> e/year	1,580	1,580	2,265	N/A	2,896
kgCO <sub>2</sub> e/ft <sup>2</sup> /year	4	4	6	N/A	7

More than 50% of your building is defined as K-12 School. Please note that your rating accounts for all of the spaces listed. The National Median column presents energy performance data your building would have if your building had a median rating of 50.

Notes:

o - This attribute is optional.

d - A default value has been supplied by Portfolio Manager.

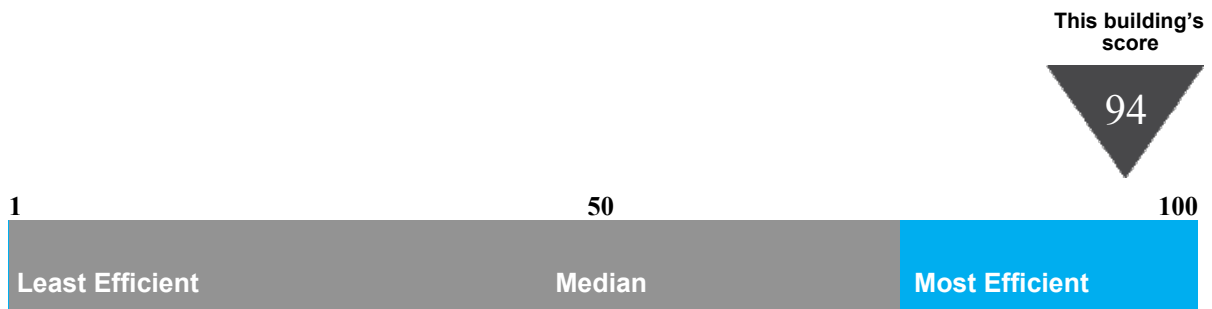
# Statement of Energy Performance

## 2013

17-Clifton BOE - Clifton High School  
333 Colfax Avenue  
Clifton, NJ 07013

Portfolio Manager Building ID: 3477618

The energy use of this building has been measured and compared to other similar buildings using the Environmental Protection Agency's (EPA's) Energy Performance Scale of 1–100, with 1 being the least energy efficient and 100 the most energy efficient. For more information, visit [energystar.gov/benchmark](http://energystar.gov/benchmark).



This building uses 98 kBtu per square foot per year.\*

\*Based on source energy intensity for the 12 month period ending February 2013

**Buildings with a score of 75 or higher may qualify for EPA's ENERGY STAR.**

I certify that the information contained within this statement is accurate and in accordance with U.S. Environmental Protection Agency's measurement standards, found at [energystar.gov](http://energystar.gov)

Date of certification



**APPENDIX D**

## MAJOR EQUIPMENT LIST

### Concord Engineering Group

#### Clifton High School

### AC Units

Tag	RTU-6	RTU-5	RTU-7
Unit Type	Packaged Rooftop	Packaged Rooftop	Packaged Rooftop
Qty	1	1	1
Location	Roof	Roof	Roof
Area Served	Media Center	Media Center	Media Center
Manufacturer	Trane	Trane	Trane
Model #	YCD180B3LAEA	YCD150C3HABA	YCD150C3HCBA
Serial #	M13101530D	M13101523D	M02103905D
Cooling Type	DX, R-22	DX, R-22	DX, R-22
Cooling Capacity (Tons)	15 Tons	12.5 Tons	12.5 Tons
Cooling Efficiency (SEER/EER)	10 EER	8.6 EER	8.6 EER
Heating Type	Forced Air Furnace	Forced Air Furnace	Forced Air Furnace
Heating Input (MBH)	250 MBH	250 MBH	250 MBH
Efficiency	81%	81%	81%
Fuel	Natural Gas	Natural Gas	Natural Gas
Approx Age	16	16	16
ASHRAE Service Life	15	15	15
Remaining Life	(1)	(1)	(1)
Comments			

**Note:**

"N/A" = Not Applicable.

"-" = Info Not Available



## AC Units

<b>Tag</b>	<b>RTU-8</b>		
<b>Unit Type</b>	Packaged Rooftop	Walk-in Condensing Unit	Walk-in Condensing Unit
<b>Qty</b>	1	1	1
<b>Location</b>	Roof	Caferia Roof	Caferia Roof
<b>Area Served</b>	Media Center	Medium Temp Refrigerator	Low Temp Freezer
<b>Manufacturer</b>	Trane	Master-Bilt	Master-Bilt
<b>Model #</b>	YCD102C3LCAB	MHHZ0191C	MHLZ0121C
<b>Serial #</b>	M02103904D	172797	172791
<b>Cooling Type</b>	DX, R-22	DX, R404A	DX, R404A
<b>Cooling Capacity (Tons)</b>	7.5 Tons	2 x 1/20 HP	2 x 1/20 HP
<b>Cooling Efficiency (SEER/EER)</b>	8 EER	5 amp fans	5 amp fans
<b>Heating Type</b>	Forced Air Furnace	N/A	N/A
<b>Heating Input (MBH)</b>	135 MBH	N/A	N/A
<b>Efficiency</b>	81%	N/A	N/A
<b>Fuel</b>	Natural Gas	N/A	N/A
<b>Approx Age</b>	16		
<b>ASHRAE Service Life</b>	15	15	15
<b>Remaining Life</b>	(1)	15	15
<b>Comments</b>			

**Note:**

"N/A" = Not Applicable.

"-" = Info Not Available

## AC Units

<b>Tag</b>	<b>RTU-9</b>	<b>RTU-10</b>	<b>RTU-1,2,3,4</b>
<b>Unit Type</b>	Gas Fired Make-up Air	Packaged AC Unit	Gas Fired Make-up Air
<b>Qty</b>	1	1	4
<b>Location</b>	East Wing	East Wing	East Wing
<b>Area Served</b>	East Wing	East Wing	East Wing
<b>Manufacturer</b>	Reznor	Trane	Reznor
<b>Model #</b>	-	TTA120B300BC	-
<b>Serial #</b>	-	L504XDLAH	-
<b>Cooling Type</b>	N/A	DX, R-22	N/A
<b>Cooling Capacity (Tons)</b>	N/A	10 Tons	N/A
<b>Cooling Efficiency (SEER/EER)</b>	N/A	10 EER	N/A
<b>Heating Type</b>	Gas Heat	N/A	Gas Heat
<b>Heating Input (MBH)</b>	Unknown	N/A	Unknown
<b>Efficiency</b>	Unknown	N/A	Unknown
<b>Fuel</b>	Natural Gas	N/A	Natural Gas
<b>Approx Age</b>	16	16	16
<b>ASHRAE Service Life</b>	15	15	15
<b>Remaining Life</b>	(1)	(1)	(1)
<b>Comments</b>			

**Note:**

"N/A" = Not Applicable.

"-" = Info Not Available

## AC Units

Tag			
<b>Unit Type</b>	Packaged Cooling Only Rooftop	Split System Condensing Unit	Split System Condensing Unit
<b>Qty</b>	1	2	1
<b>Location</b>	Roof		
<b>Area Served</b>	Admin Suite		
<b>Manufacturer</b>	Carrier	Fujitsu	Fujitsu
<b>Model #</b>	-	Outdoor:A0U36CLX Indoor:ASU36CLX	Outdoor:A0U24CL Indoor:ASU24CL
<b>Serial #</b>	-	EBN 020319	DDN008476
<b>Cooling Type</b>	DX	DX, R-410A	DX, R-410A
<b>Cooling Capacity (Tons)</b>	Unknown	33,100 Btu/hr	24,200 Btu/hr
<b>Cooling Efficiency (SEER/EER)</b>	Unknown	15 SEER	
<b>Heating Type</b>	N/A	N/A	N/A
<b>Heating Input (MBH)</b>	N/A	N/A	N/A
<b>Efficiency</b>	N/A	N/A	N/A
<b>Fuel</b>	N/A	N/A	N/A
<b>Approx Age</b>		10	10
<b>ASHRAE Service Life</b>	15	15	15
<b>Remaining Life</b>		5	5
<b>Comments</b>			

**Note:**

"N/A" = Not Applicable.

"-" = Info Not Available

## AC Units

<b>Tag</b>			
<b>Unit Type</b>	Split System Condensing Unit	Split System Condensing Unit	Window AC
<b>Qty</b>	1	2	1
<b>Location</b>		Roof	Room L7
<b>Area Served</b>		G Wing	L7
<b>Manufacturer</b>	Sanyo	Trane XB10	Frigidaire
<b>Model #</b>	Outdoor:CL1852 Indoor:XS1852	2TTB0036A1000AA	FAS155K1A3
<b>Serial #</b>	000283 51	53252HC5F	JK21124115
<b>Cooling Type</b>	DX, R-22	DX, R-22	DX, R-22
<b>Cooling Capacity (Tons)</b>	18,000 Btu/hr	3 Tons	15,100 Btu/hr
<b>Cooling Efficiency (SEER/EER)</b>	10.6 SEER	10 SEER	10.7 EER
<b>Heating Type</b>	N/A	N/A	N/A
<b>Heating Input (MBH)</b>	N/A	N/A	N/A
<b>Efficiency</b>	N/A	N/A	N/A
<b>Fuel</b>	N/A	N/A	N/A
<b>Approx Age</b>	8	8	11
<b>ASHRAE Service Life</b>	15	15	15
<b>Remaining Life</b>	7	7	4
<b>Comments</b>			

**Note:**

"N/A" = Not Applicable.

"-" = Info Not Available

## MAJOR EQUIPMENT LIST

### Concord Engineering Group

#### Clifton High School

### AHUs

<b>Tag</b>			
<b>Unit Type</b>	Heating & Ventilation	Heating & Ventilation	Heating & Ventilation
<b>Qty</b>	1	1	1
<b>Location</b>	Auditorium Mezz	Auditorium Mezz	Auditorium Mezz
<b>Area Served</b>	Music Area	Music Area	Music Area
<b>Manufacturer</b>	Buffalo Forge CO	Buffalo Forge CO	Buffalo Forge CO
<b>Model #</b>	G-152	G-123	G-122
<b>Serial #</b>	60L-12919	60L-12917	60L-12918
<b>Cooling Type</b>	N/A	N/A	N/A
<b>Cooling Capacity (Tons)</b>	N/A	N/A	N/A
<b>Heating Type</b>	Hot Water	Hot Water	Hot Water
<b>Heating Input (MBH)</b>	-	-	-
<b>Supply Fan (HP)</b>	5	5	1.5
<b>Return Fan (HP)</b>	-	-	-
<b>Electrical (V/H/P)</b>	208/3/60	208/3/60	208/3/60
<b>Approx Age</b>	50	50	50
<b>ASHRAE Service Life</b>	20	20	20
<b>Remaining Life</b>	(30)	(30)	(30)
<b>Comments</b>			

**Note:**

"N/A" = Not Applicable.

"-" = Info Not Available

## AHUs

<b>Tag</b>			
<b>Unit Type</b>	Heating & Ventilation	Heating & Ventilation	Unit Ventilator
<b>Qty</b>	1	1	29
<b>Location</b>	Auditorium Mezz	Ceilign-Mount	1997 Classrooms
<b>Area Served</b>	Music Area	Foods, Music Clasrooms	1997 Classrooms
<b>Manufacturer</b>	Buffalo Forge CO	Buffalo Forge	Nesbitt
<b>Model #</b>	G-272A	G-122	MCB- MCR566D2C0AS
<b>Serial #</b>	60L-12914	60L-12913	-
<b>Cooling Type</b>	N/A	N/A	N/A
<b>Cooling Capacity (Tons)</b>	N/A	N/A	N/A
<b>Heating Type</b>	Hot Water	Hot Water	Hot Water
<b>Heating Input (MBH)</b>	-		-
<b>Supply Fan (HP)</b>	2	5	-
<b>Return Fan (HP)</b>	-	-	-
<b>Electrical (V/H/P)</b>	208/3/60	208/3/60	-
<b>Approx Age</b>	50	50	16
<b>ASHRAE Service Life</b>	20	20	20
<b>Remaining Life</b>	(30)	(30)	4
<b>Comments</b>			

**Note:**

"N/A" = Not Applicable.

"-" = Info Not Available

# MAJOR EQUIPMENT LIST

## Concord Engineering Group

### Clifton High School

#### Boilers

<b>Tag</b>			
<b>Unit Type</b>	Modular Watertube Boilers		
<b>Qty</b>	10		
<b>Location</b>	Main Boiler Room		
<b>Area Served</b>	Hot Water Loop		
<b>Manufacturer</b>	Thermal Solutions		
<b>Model #</b>	EVA2000BN1-DAF		
<b>Serial #</b>	64499848 thru 64499857		
<b>Input Capacity (Btu/Hr)</b>	2,000 MBH		
<b>Rated Output Capacity (Btu/Hr)</b>	1760 MBH		
<b>Approx. Efficiency %</b>	88% (New)		
<b>Fuel</b>	Natural Gas		
<b>Approx Age</b>	11		
<b>ASHRAE Service Life</b>	24		
<b>Remaining Life</b>	13		
<b>Comments</b>			

**Note:**

"N/A" = Not Applicable.

"-" = Info Not Available

## MAJOR EQUIPMENT LIST

**Concord Engineering Group**

**Clifton High School**

### Domestic Water Heaters

<b>Tag</b>	<b>DHW-1, 2, &amp;3</b>	<b>DHW-4</b>	
<b>Unit Type</b>	Modular,Condensing Domestic Hot Water Heaters	Modular,Condensing Domestic Hot Water Heaters	
<b>Qty</b>	3	1	
<b>Location</b>	Main Boiler Room	Main Boiler Room	
<b>Area Served</b>	Domestic Hot Water Loop	Domestic Hot Water Loop	
<b>Manufacturer</b>	PVI - Power VT	PVI - Power VT	
<b>Model #</b>	1400 N.250A-PV	1400 N.250A-PV	
<b>Serial #</b>	0807122272 thru 0807122274	1109128559	
<b>Size (Gallons)</b>	250	250	
<b>Input Capacity (MBH/KW)</b>	1,000 MBH	1,000 MBH	
<b>Recovery (Gal/Hr)</b>	1400 GPH @ 80°F Rise	1400 GPH @ 80°F Rise	
<b>Efficiency %</b>	94%	94%	
<b>Fuel</b>	Natural Gas	Natural Gas	
<b>Approx Age</b>	5	2	
<b>ASHRAE Service Life</b>	25	25	
<b>Remaining Life</b>	20	23	
<b>Comments</b>	Equipped with Modulating Draft & Combustion Air Systems Controller	Equipped with Modulating Draft & Combustion Air Systems Controller	

**Note:**

"N/A" = Not Applicable.

"-" = Info Not Available



## MAJOR EQUIPMENT LIST

**Concord Engineering Group**

**Clifton High School**

### Pumps

<b>Tag</b>	<b>P-1 &amp; P-2</b>	
<b>Unit Type</b>	Base Mounted End Suction Pump	In-Line Centrifugal Pump
<b>Qty</b>	2	2
<b>Location</b>	Main Boiler Room	Loading Dock
<b>Area Served</b>	Hot Water Loop	Hot Water Loop
<b>Manufacturer</b>	Bell & Gossett	Bell & Gossett
<b>Model #</b>	HSC3 940	-
<b>Serial #</b>	CS6292-01 F40	-
<b>Horse Power</b>	50 HP	5 HP
<b>Flow</b>	625 GPM @ 200' THD	-
<b>Motor Info</b>	Emerson Motor Corporation	Baldor
<b>Electrical Power</b>	460-230-208/3/60	208-230/460/3/60
<b>RPM</b>	1780 RPM	1725 RPM
<b>Motor Efficiency %</b>	93.0%	85.5%
<b>Approx Age</b>	5	10
<b>ASHRAE Service Life</b>	20	20
<b>Remaining Life</b>	15	10
<b>Comments</b>		

**Note:**

"N/A" = Not Applicable.

"-" = Info Not Available

## MAJOR EQUIPMENT LIST

### Concord Engineering Group

#### Clifton High School

### Exhaust Fans

<b>Tag</b>			
<b>Unit Type</b>	Exhaust Fan		
<b>Qty</b>	1		
<b>Location</b>	Roof		
<b>Area Served</b>	G Area		
<b>Manufacturer</b>	Carnes		
<b>Model #</b>	VEBK15L#A1UA20SP CX		
<b>Serial #</b>	134242.001		
<b>Motor (HP)</b>	1/4 HP		
<b>Electrical (V/H/P)</b>	115v		
<b>Approx Age</b>	8		
<b>ASHRAE Service Life</b>	20		
<b>Remaining Life</b>	12		
<b>Comments</b>			

**Note:**

"N/A" = Not Applicable.

"-" = Info Not Available

## MAJOR EQUIPMENT LIST

### Concord Engineering Group

#### Clifton High School

### Transformers

<b>Tag</b>			
<b>Unit Type</b>	Transformer		
<b>Qty</b>	1		
<b>Location</b>	Main Boiler Room		
<b>Manufacturer</b>	General Electric		
<b>Catalog #</b>	9T23Q3476G03		
<b>Serial #</b>	1475A382NAG052		
<b>Rating (kVA)</b>	150.0		
<b>Electrical (V/H/P)</b>	460/60/3		
<b>Impedance (%)</b>	4.4%		
<b>Approx Age</b>	13		
<b>ASHRAE Service Life</b>	-		
<b>Remaining Life</b>	-		
<b>Comments</b>			

**Note:**

"N/A" = Not Applicable.

"-" = Info Not Available

## MAJOR EQUIPMENT LIST

### Concord Engineering Group

#### Clifton High School

### Motors

<b>Tag</b>			
<b>Unit Type</b>	Motor	Motor	Motor
<b>Qty</b>	8	2	1
<b>Location</b>	Main Boiler Room	Main Boiler Room	Main Boiler Room
<b>Area Served</b>	Boiler Circ Pumps	Boiler Circ Pumps	
<b>Manufacturer</b>	Baldor	AO Smith	General Electric
<b>Model #</b>	VH3157	R187	5W215AG201
<b>Serial #</b>	F0211014342	CA01-17	-
<b>Horse Power</b>	2 HP	2 HP	5 HP
<b>Enclosure Type</b>	OPEN	TE	Open
<b>Electrical Power</b>	230/460/3/60	208-230/460/3/60	208-220/440/3/60
<b>RPM</b>	1725 RPM	1725 RPM	1750 RPM
<b>Efficiency %</b>	78.5%	84.0%	-
<b>Approx Age</b>	13	13	13
<b>ASHRAE Service Life</b>	18	18	18
<b>Remaining Life</b>	5	5	5
<b>Comments</b>			

**Note:**

"N/A" = Not Applicable.

"-" = Info Not Available

## Motors

<b>Tag</b>		
<b>Unit Type</b>	Motor	Motor
<b>Qty</b>	1	2
<b>Location</b>	Main Boiler Room	Boys/Girls Gym AHU
<b>Area Served</b>		Boys/Girls Gym AHU
<b>Manufacturer</b>	Energy Saver	Electro Dynamic
<b>Model #</b>	5KSS184AC205B	-
<b>Serial #</b>	3350020074	-
<b>Horse Power</b>	5 HP	7.5 HP
<b>Enclosure Type</b>	ODP	-
<b>Electrical Power</b>	230/460/3/60	208/3/60
<b>RPM</b>	1750 RPM	1730 RPM
<b>Efficiency %</b>	88.5%	-
<b>Approx Age</b>	13	15
<b>ASHRAE Service Life</b>	18	18
<b>Remaining Life</b>	5	3
<b>Comments</b>		

**Note:**

"N/A" = Not Applicable.

"-" = Info Not Available

**APPENDIX E**

CEG Project #: 6C12066  
 Facility Name: Clifton High School  
 Address: 333 Colfax Avenue  
 City, State, Zip: Clifton, NJ 07013

Fixture Reference #	Location	Average Burn Hours	EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT						RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
			Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Equipment Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Energy Savings, kW	Energy Savings, kWh	Energy Savings, \$	Control Ref #	Controls Description	Qty of Controls	Hour Reduction %	Energy Savings, kWh	Energy Savings, \$
37	Boys' Lavatory #1	2200	1x4, 2 Lamp, T8 32w, Mag. Ballast, Surface Mnt., Prismatic Lens	2	58	1	0.06	128	Existing To Remain	2	58	0	0.06	128	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	26	\$3
10	Boys' Lavatory #1	2200	12" x 12", 2 Lamp, Incandescent 60w, Surface Mnt.	2	120	1	0.12	264	13w CFL Screw Base	1	13	1	0.01	29	0.11	235	\$27	0	No New Controls	0	0.0%	0	\$0
25	Storage Closet	1000	1x4, 2 Lamp, T12 34w, Mag. Ballast, Pendant Mnt., Direct / Indirect Lens	2	80	1	0.08	80	Sylvania Lamp FO28/841/XP/SL/SS/ECO3 Sylvania Ballast QHE2X32T8/UNV ISL-SC	2	49	1	0.05	49	0.03	31	\$4	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	10	\$1
3	Storage Closet	1000	1 Lamp, 100w Incandescent Lamp, Surface Mnt	1	100	1	0.10	100	23w CFL Screw Base	1	23	1	0.02	23	0.08	77	\$9	0	No New Controls	0	0.0%	0	\$0
3	Lower Valley Gym Ball	1800	1 Lamp, 100w Incandescent Lamp, Surface Mnt	1	100	2	0.20	360	23w CFL Screw Base	1	23	2	0.05	83	0.15	277	\$32	0	No New Controls	0	0.0%	0	\$0
44	Office	1800	2x4, 4 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	4	109	4	0.44	785	Sylvania Lamp FO28/841/XP/SL/SS/ECO3 Sylvania Ballast QHE2X32T8/UNV ISL-SC	3	72	4	0.29	518	0.15	266	\$31	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	104	\$12
3	Storage Closet	1000	1 Lamp, 100w Incandescent Lamp, Surface Mnt	1	100	1	0.10	100	23w CFL Screw Base	1	23	1	0.02	23	0.08	77	\$9	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	5	\$1
16	Lower Gym	1800	24", 1 Lamp, HID 250w, Magnetic Ballast, Pendant Mnt., Prismatic Lens	1	295	40	11.80	21,240	2x4, 4 Lamp, 54w T5, (2) 2/54 Elect. Ballast, Singlepoint Mnt., High Bay, Wire Guard, Lens	4	240	40	9.60	17,280	2.20	3,960	\$455	0	No New Controls	0	0.0%	0	\$0
73	Lower Gym	1800	2 Lamp, PAR, 150w, Surface Mnt., No Lens, Emergency Lighting	2	300	4	1.20	2,160	20w Dimmable PAR 38 LED	1	40	4	0.16	288	1.04	1,872	\$215	0	No New Controls	0	0.0%	0	\$0
16	Weight Room	1800	24", 1 Lamp, HID 250w, Magnetic Ballast, Pendant Mnt., Prismatic Lens	1	295	15	4.43	7,965	2x4, 4 Lamp, 54w T5, (2) 2/54 Elect. Ballast, Singlepoint Mnt., High Bay, Wire Guard, Lens	4	240	15	3.60	6,480	0.83	1,485	\$171	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	1,296	\$149
45	Weight Room	1800	1x4, 4 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	4	109	3	0.33	589	Sylvania Lamp FO28/841/XP/SL/SS/ECO3 Sylvania Ballast QHE2X32T8/UNV ISL-SC	3	72	3	0.22	389	0.11	200	\$23	0	No New Controls	0	0.0%	0	\$0
3	Weight Room Storage	1800	1 Lamp, 100w Incandescent Lamp, Surface Mnt	1	100	1	0.10	180	23w CFL Screw Base	1	23	1	0.02	41	0.08	139	\$16	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	8	\$1
47	Weight Room Lavatory	2200	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., No Lens	2	58	1	0.06	128	Existing To Remain	2	58	0	0.06	128	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	26	\$3

Fixture Reference #	Location	Average Burn Hours	EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT						RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
			Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Equipment Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Energy Savings, kW	Energy Savings, kWh	Energy Savings, \$	Control Ref #	Controls Description	Qty of Controls	Hour Reduction %	Energy Savings, kWh	Energy Savings, \$
55	Coach's Office	1800	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mt., Direct/Indirect Lens	2	58	4	0.23	418	Existing To Remain	2	58	0	0.23	418	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mt.	1	20.0%	84	\$10
3	Coach's Lavatory	1000	1 Lamp, 100w Incandescent Lamp, Surface Mt	1	100	1	0.10	100	23w CFL Screw Base	1	23	1	0.02	23	0.08	77	\$9	6	Dual Technology Occupancy Sensor - Switch Mt.	1	20.0%	5	\$1
11	Coach's Lavatory	1000	1 Lamp, 60w Incandescent, Surface Mt.	1	60	1	0.06	60	13w CFL Screw Base	1	13	1	0.01	13	0.05	47	\$5	0	No New Controls	0	0.0%	0	\$0
47	Boys' Locker Room	1800	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mt., No Lens	2	58	13	0.75	1,357	Existing To Remain	2	58	0	0.75	1,357	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
47	Boys' Locker Room	1800	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mt., No Lens	2	58	1	0.06	104	Existing To Remain	2	58	0	0.06	104	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
8	Boys' Locker Room Shower	1800	1 Lamp, 100w Incandescent Lamp, Recessed Mt., Parabolic Lens	1	100	15	1.50	2,700	23w CFL Screw Base	1	23	15	0.35	621	1.16	2,079	\$239	0	No New Controls	0	0.0%	0	\$0
68	LED Exits	8760	LED Exit	1	2	8	0.02	140	Existing To Remain	1	2	0	0.02	140	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
69	LED Exits	8760	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mt. Parabolic Lens	3	82	9	0.74	6,465	Existing To Remain	3	82	0	0.74	6,465	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
38	Ticket Booth	1000	1x4, 2 Lamp, T8 32w, Mag. Ballast, Pendant Mt., Direct/Indirect Lens	2	1	1	0.00	1	Existing To Remain	2	1	0	0.00	1	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mt.	1	20.0%	0	\$0
37	Girls' Lavatory	2200	1x4, 2 Lamp, T8 32w, Mag. Ballast, Surface Mt., Prismatic Lens	2	58	1	0.06	128	Existing To Remain	2	58	0	0.06	128	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mt.	1	20.0%	26	\$3
10	Girls' Lavatory	2200	12" x 12", 2 Lamp, Incandescent 60w, Surface Mt.	2	120	1	0.12	264	13w CFL Screw Base	1	13	1	0.01	29	0.11	235	\$27	0	No New Controls	0	0.0%	0	\$0
48	Ladies' Lavatory	2200	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mt., Prismatic Lens	2	58	2	0.12	255	Existing To Remain	2	58	0	0.12	255	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mt.	1	20.0%	51	\$6
74	Ladies' Lavatory	2200	12"x12", 2 Lamp, 100w Incandescent Lamp, Recessed Mt.	2	200	1	0.20	440	23w CFL Screw Base	2	46	1	0.05	101	0.15	339	\$39	0	No New Controls	0	0.0%	0	\$0
39	Nurse Receptionist Room	1800	1x4, 2 Lamp, T8 32w, Mag. Ballast, Recessed Mt., Prismatic Lens	2	58	3	0.17	313	Existing To Remain	2	58	0	0.17	313	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mt.	1	20.0%	63	\$7



Fixture Reference #	Location	Average Burn Hours	EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT						RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
			Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Equipment Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Energy Savings, kW	Energy Savings, kWh	Energy Savings, \$	Control Ref #	Controls Description	Qty of Controls	Hour Reduction %	Energy Savings, kWh	Energy Savings, \$
38	Nurse Exam Rom	1800	1x4, 2 Lamp, T8 32w, Mag. Ballast, Pendant Mnt., Direct/Indirect Lens	2	58	4	0.23	418	Existing To Remain	2	58	0	0.23	418	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
38	Nurse Exam Rom	1800	1x4, 2 Lamp, T8 32w, Mag. Ballast, Pendant Mnt., Direct/Indirect Lens	2	58	4	0.23	418	Existing To Remain	2	58	0	0.23	418	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
26	Nurse Lavatory	1000	1x2, 1 Lamp, T8 17w, Elect. Ballast, Surface Mnt., Prismatic Lens	1	20	1	0.02	20	Existing To Remain	1	20	0	0.02	20	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	4	\$0
26	Nurse Lavatory	1000	1x2, 1 Lamp, T8 17w, Elect. Ballast, Surface Mnt., Prismatic Lens	1	20	1	0.02	20	Existing To Remain	1	20	0	0.02	20	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
55	Nurse's Office	1800	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Direct/Indirect Lens	2	58	6	0.35	626	Existing To Remain	2	58	0	0.35	626	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	125	\$14
49	Office A-7	1800	1x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	2	0.12	209	Existing To Remain	2	58	0	0.12	209	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	42	\$5
50	Men's Room	2200	1x4, 1 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	1	58	2	0.12	255	Existing To Remain	1	58	0	0.12	255	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	51	\$6
9	Men's Room	2200	12"x12", 100w Incandescent Lamp, Recessed Mnt., Prismatic Lens	1	100	1	0.10	220	23w CFL, Screw Base	1	23	1	0.02	51	0.08	169	\$19	0	No New Controls	0	0.0%	0	\$0
55	CR A-6	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Direct/Indirect Lens	2	58	27	1.57	2,192	Existing To Remain	2	58	0	1.57	2,192	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	438	\$50
49	Main Office	1800	1x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	12	0.70	1,253	Existing To Remain	2	58	0	0.70	1,253	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	251	\$29
44	Main Office	1800	2x4, 4 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	4	109	5	0.55	981	Sylvania Lamp FO28/841/XP/SL/SS/ECO3 Sylvania Ballast QHE2X32T8/UNV ISL-SC	3	72	5	0.36	648	0.19	333	\$38	0	No New Controls	0	0.0%	0	\$0
51	Athletic Director	1800	2x4, 4 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Parabolic Lens	4	109	1	0.11	196	Sylvania Lamp FO28/841/XP/SL/SS/ECO3 Sylvania Ballast QHE2X32T8/UNV ISL-SC	3	72	1	0.07	130	0.04	67	\$8	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	26	\$3
39	Athletic Director	1800	1x4, 2 Lamp, T8 32w, Mag. Ballast, Recessed Mnt., Prismatic Lens	2	58	2	0.12	209	Existing To Remain	2	58	0	0.12	209	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
55	Office Storage	1000	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Direct/Indirect Lens	2	58	2	0.12	116	Existing To Remain	2	58	0	0.12	116	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	23	\$3

Fixture Reference #	Location	Average Burn Hours	EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT						RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
			Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Equipment Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Energy Savings, kW	Energy Savings, kWh	Energy Savings, \$	Control Ref #	Controls Description	Qty of Controls	Hour Reduction %	Energy Savings, kWh	Energy Savings, \$
12	Office Hallway	2200	12"x12", 1 Lamp, 60w Incandescent, Recessed Mnt., Prismatic Lens	1	60	3	0.18	396	13w CFL Screw Base	1	13	3	0.04	86	0.14	310	\$36	0	No New Controls	0	0.0%	0	\$0
49	VP Office	1800	1x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	4	0.23	418	Existing To Remain	2	58	0	0.23	418	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	84	\$10
44	VP Office	1800	2x4, 4 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	4	109	2	0.22	392	Sylvania Lamp FO28/841/XP/XL/SS/ECO3 Sylvania Ballast QHE2X3ZT8/UNV ISL-SC	3	72	2	0.14	259	0.07	133	\$15	0	No New Controls	0	0.0%	0	\$0
49	VP Office	1800	1x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	4	0.23	418	Existing To Remain	2	58	0	0.23	418	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	84	\$10
44	VP Office	1800	2x4, 4 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	4	109	2	0.22	392	Sylvania Lamp FO28/841/XP/XL/SS/ECO3 Sylvania Ballast QHE2X3ZT8/UNV ISL-SC	3	72	2	0.14	259	0.07	133	\$15	0	No New Controls	0	0.0%	0	\$0
44	Principal's Office	1800	2x4, 4 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	4	109	8	0.87	1,570	Sylvania Lamp FO28/841/XP/XL/SS/ECO3 Sylvania Ballast QHE2X3ZT8/UNV ISL-SC	3	72	8	0.58	1,037	0.30	533	\$61	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	207	\$24
2	Office - Men's Room	1000	2 Lamp, 100w Incandescent Lamp, Surface Mnt, No Lens	2	200	2	0.40	400	23w CFL Screw Base	2	46	2	0.09	92	0.31	308	\$35	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	18	\$2
2	Office - Ladies' Room	1000	2 Lamp, 100w Incandescent Lamp, Surface Mnt, No Lens	2	200	2	0.40	400	23w CFL Screw Base	2	46	2	0.09	92	0.31	308	\$35	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	18	\$2
52	Conference Room	1800	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	4	0.33	590	Existing To Remain	3	82	0	0.33	590	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	118	\$14
17	Projection Booth	1000	1 Lamp, 150w Incandescent, Pendant Mnt., No Lens	1	150	3	0.45	450	20w Dimmable PAR 38 LED	1	20	3	0.06	60	0.39	390	\$45	0	No New Controls	0	0.0%	0	\$0
72	Auditorium	1800	8"x8", 1 PAR, 150w, Pendant Mnt., No Lens	1	150	11	1.65	2,970	20w Dimmable PAR 38 LED	1	20	11	0.22	396	1.43	2,574	\$296	0	No New Controls	0	0.0%	0	\$0
71	Auditorium	1800	8", 1 LED Lamp, Pendant Mnt., No Lens	1	7	25	0.18	315	Existing To Remain	1	7	0	0.18	315	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
18	Auditorium	1800	24", 1 Lamp, 400w HID, Magnetic Ballast, Pendant Mnt., Prismatic Lens	1	455	16	7.28	13,104	2x4, 6 Lamp, 54w T5, (3) 2/54 Elect. Ballast, Singlepoint Mnt., High Bay, Wire Guard, Lens	6	360	16	5.76	10,368	1.52	2,736	\$315	0	No New Controls	0	0.0%	0	\$0
17	Auditorium Stage	1800	1 Lamp, 150w Incandescent, Pendant Mnt., No Lens	1	150	4	0.60	1,080	20w Dimmable PAR 38 LED	1	20	4	0.08	144	0.52	936	\$108	0	No New Controls	0	0.0%	0	\$0

Fixture Reference #	Location	Average Burn Hours	EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT						RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
			Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Equipment Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Energy Savings, kW	Energy Savings, kWh	Energy Savings, \$	Control Ref #	Controls Description	Qty of Controls	Hour Reduction %	Energy Savings, kWh	Energy Savings, \$
55	Men's Stage Work Room	1400	1x4, 2 Lamp, T8 32w. Elect. Ballast, Pendant Mnt., Direct/Indirect Lens	2	58	1	0.06	81	Existing To Remain	2	58	0	0.06	81	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
13	Men's Stage Lavatory	1000	1 Lamp, 60w Incandescent, Surface Mnt., No Lens	1	60	1	0.06	60	13w CFL Screw Base	1	13	1	0.01	13	0.05	47	\$5	0	No New Controls	0	0.0%	0	\$0
17	Men's Stage Storage	1000	1 Lamp, 150w Incandescent, Pendant Mnt., No Lens	1	150	1	0.15	150	20w Dimmable PAR 38 LED	1	20	1	0.02	20	0.13	130	\$15	0	No New Controls	0	0.0%	0	\$0
40	Men's Stage Work Room	1400	1x4, 1 Lamp, T8 32w. Magnetic Bal., Surface Mnt., Prismatic Lens	1	58	2	0.12	162	Existing To Remain	1	58	0	0.12	162	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
68	LED Exits	8760	LED Exit	1	2	7	0.01	123	Existing To Remain	1	2	0	0.01	123	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
55	Women's Stage Work Room	1400	1x4, 2 Lamp, T8 32w. Elect. Ballast, Pendant Mnt., Direct/Indirect Lens	2	58	1	0.06	81	Existing To Remain	2	58	0	0.06	81	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
13	Women's Stage Lavatory	1000	1 Lamp, 60w Incandescent, Surface Mnt., No Lens	1	60	1	0.06	60	13w CFL Screw Base	1	13	1	0.01	13	0.05	47	\$5	0	No New Controls	0	0.0%	0	\$0
17	Women's Stage Storage	1400	1 Lamp, 150w Incandescent, Pendant Mnt., No Lens	1	150	1	0.15	210	20w Dimmable PAR 38 LED	1	20	1	0.02	28	0.13	182	\$21	0	No New Controls	0	0.0%	0	\$0
40	Women's Stage Work Room	1400	1x4, 1 Lamp, T8 32w. Magnetic Bal., Surface Mnt., Prismatic Lens	1	58	2	0.12	162	Existing To Remain	1	58	0	0.12	162	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
27	Stage Cage	1000	1x4, 2 Lamp, T12 34w. Mag. Ballast, Surface Mnt., No Lens	2	80	2	0.16	160	Sylvania Lamp FO28/841/XP/XL/SS/ECO3 Sylvania Ballast QHE2X32T8/UNV ISL-SC	2	49	2	0.10	98	0.06	62	\$7	0	No New Controls	0	0.0%	0	\$0
19	Stage Ltg.	8760	1 Lamp, 150w Incandescent, Surface Mnt., No Lens	1	150	4	0.60	5,256	42w CFL Screw Base	1	42	4	0.17	1,472	0.43	3,784	\$435	0	No New Controls	0	0.0%	0	\$0
19	Stage Storage	1000	1 Lamp, 150w Incandescent, Surface Mnt., No Lens	1	150	1	0.15	150	42w CFL Screw Base	1	42	1	0.04	42	0.11	108	\$12	0	No New Controls	0	0.0%	0	\$0
19	Stage Storage	1000	1 Lamp, 150w Incandescent, Surface Mnt., No Lens	1	150	1	0.15	150	42w CFL Screw Base	1	42	1	0.04	42	0.11	108	\$12	0	No New Controls	0	0.0%	0	\$0
55	CR A-5	1400	1x4, 2 Lamp, T8 32w. Elect. Ballast, Pendant Mnt., Direct/Indirect Lens	2	58	16	0.93	1,299	Existing To Remain	2	58	0	0.93	1,299	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	2	20.0%	260	\$30

Fixture Reference #	Location	Average Burn Hours	EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT						RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
			Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Equipment Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Energy Savings, kW	Energy Savings, kWh	Energy Savings, \$	Control Ref #	Controls Description	Qty of Controls	Hour Reduction %	Energy Savings, kWh	Energy Savings, \$
48	CR A-5 Lavatory	1000	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	1	0.06	58	Existing To Remain	2	58	0	0.06	58	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	12	\$1
53	CR A-4	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	16	0.93	1,299	Existing To Remain	2	58	0	0.93	1,299	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	260	\$30
53	CR A-3	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	18	1.04	1,462	Existing To Remain	2	58	0	1.04	1,462	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	292	\$34
55	CR A-3 Prep	1800	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Direct/Indirect Lens	2	58	4	0.23	418	Existing To Remain	2	58	0	0.23	418	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	84	\$10
53	CR A-2	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	15	0.87	1,218	Existing To Remain	2	58	0	0.87	1,218	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	2	20.0%	244	\$28
53	CR A-28	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	24	1.39	1,949	Existing To Remain	2	58	0	1.39	1,949	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	390	\$45
47	CR A-28 Practice	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., No Lens	2	58	4	0.23	325	Existing To Remain	2	58	0	0.23	325	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	65	\$7
48	Practice	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	1	0.06	81	Existing To Remain	2	58	0	0.06	81	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	16	\$2
49	Practice	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	1	0.06	81	Existing To Remain	2	58	0	0.06	81	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	16	\$2
49	Practice	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	1	0.06	81	Existing To Remain	2	58	0	0.06	81	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	16	\$2
49	Storage A-27	1000	1x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	4	0.23	232	Existing To Remain	2	58	0	0.23	232	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	46	\$5
21	A-29	1400	1 Lamp, 300w Incandescent, Pendant Mnt., No Lens	1	300	12	3.60	5,040	Remove	0	0	12	0.00	0	3.60	5,040	\$580	0	No New Controls	0	0.0%	0	\$0
20	A-29	1400	12", 1 Lamp, HHD 175w, Mag. Ballast, Pendant Mnt., Prismatic Lens	1	213	4	0.85	1,193	1x4, 3 Lamp, 54w T5, (1) 3/54 Elect. Ballast, High Bay, Wire Guard, Lens	3	182	4	0.73	1,019	0.12	174	\$20	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	204	\$23
17	A-29 Stage	1400	1 Lamp, 150w Incandescent, Pendant Mnt., No Lens	1	150	4	0.60	840	20w Dimmable PAR 38 LED	1	20	4	0.08	112	0.52	728	\$84	0	No New Controls	0	0.0%	0	\$0

Fixture Reference #	Location	Average Burn Hours	EXISTING FIXTURES					PROPOSED FIXTURE RETROFIT					RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS							
			Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Equipment Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Energy Savings, kW	Energy Savings, kWh	Energy Savings, \$	Control Ref #	Controls Description	Qty of Controls	Hour Reduction %	Energy Savings, kWh	Energy Savings, \$
39	A-29 Office	1800	1x4, 2 Lamp, T8 32w, Mag. Ballast, Recessed Mnt., Prismatic Lens	2	58	1	0.06	104	Existing To Remain	2	58	0	0.06	104	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
47	A-29 Office	1800	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., No Lens	2	58	2	0.12	209	Existing To Remain	2	58	0	0.12	209	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	42	\$5
47	A-29 Office	1800	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., No Lens	2	58	1	0.06	104	Existing To Remain	2	58	0	0.06	104	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
41	2 - Boys' Lavatory	2200	1x4, 1 Lamp, T8 32w, Magnetic Bal., Pendant Mnt., Prismatic Lens	1	58	3	0.17	383	Existing To Remain	1	58	0	0.17	383	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	77	\$9
36	Men's Lavatory	2200	1x2, 1 Lamp, T12 20w, Magnetic Ballast, Surface Mnt., Prismatic Lens	1	22	1	0.02	48	Sylvania Lamp FO17/841/XPECO Sylvania Ballast QHE2X32T8/UNV ISL-SC	1	17	1	0.02	37	0.01	11	\$1	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	7	\$1
41	Girls' Lavatory	2200	1x4, 1 Lamp, T8 32w, Magnetic Bal., Pendant Mnt., Prismatic Lens	1	58	3	0.17	383	Existing To Remain	1	58	0	0.17	383	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	77	\$9
36	Ladies' Lavatory	2200	1x2, 1 Lamp, T12 20w, Magnetic Ballast, Surface Mnt., Prismatic Lens	1	22	1	0.02	48	Sylvania Lamp FO17/841/XPECO Sylvania Ballast QHE2X32T8/UNV ISL-SC	1	17	1	0.02	37	0.01	11	\$1	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	7	\$1
53	CR N208	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	8	0.46	650	Existing To Remain	2	58	0	0.46	650	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	130	\$15
54	Office N209B	1800	2x2, 2 U-Lamp, 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	73	4	0.29	526	Sylvania Lamp FO17/841/XPECO Sylvania Ballast QHE2X32T8/UNV ISL-SC	2	34	4	0.14	245	0.16	281	\$32	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	49	\$6
53	Office N209	1800	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	4	0.23	418	Existing To Remain	2	58	0	0.23	418	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	84	\$10
55	Office N209A	1800	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Direct/Indirect Lens	2	58	2	0.12	209	Existing To Remain	2	58	0	0.12	209	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	42	\$5
53	Office N209	1800	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	4	0.23	418	Existing To Remain	2	58	0	0.23	418	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	84	\$10
53	Office N210	1800	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	6	0.35	626	Existing To Remain	2	58	0	0.35	626	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	125	\$14
53	CR N212	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22

Fixture Reference #	Location	Average Burn Hours	EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT						RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
			Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Equipment Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Energy Savings, kW	Energy Savings, kWh	Energy Savings, \$	Control Ref #	Controls Description	Qty of Controls	Hour Reduction %	Energy Savings, kWh	Energy Savings, \$
53	CR N214	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
68	LED Exits	8760	LED Exit	1	2	3	0.01	53	Existing To Remain	1	2	0	0.01	53	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
53	CR N216	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
55	CR N218	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Direct/Indirect Lens	2	58	21	1.22	1,705	Existing To Remain	2	58	0	1.22	1,705	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	341	\$39
55	CR N217	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Direct/Indirect Lens	2	58	18	1.04	1,462	Existing To Remain	2	58	0	1.04	1,462	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	2	20.0%	292	\$34
55	CR N215	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Direct/Indirect Lens	2	58	21	1.22	1,705	Existing To Remain	2	58	0	1.22	1,705	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	2	20.0%	341	\$39
55	CR 215 Closet	1000	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Direct/Indirect Lens	2	58	9	0.52	522	Existing To Remain	2	58	0	0.52	522	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
53	N213	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
53	N211	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
55	Guidance	1800	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Direct/Indirect Lens	2	58	6	0.35	626	Existing To Remain	2	58	0	0.35	626	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	125	\$14
55	Guidance Office	1800	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Direct/Indirect Lens	2	58	1	0.06	104	Existing To Remain	2	58	0	0.06	104	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	21	\$2
55	Guidance Office	1800	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Direct/Indirect Lens	2	58	1	0.06	104	Existing To Remain	2	58	0	0.06	104	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	21	\$2
55	Guidance Office	1800	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Direct/Indirect Lens	2	58	2	0.12	209	Existing To Remain	2	58	0	0.12	209	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	42	\$5
55	VP Receptionist	1800	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Direct/Indirect Lens	2	58	2	0.12	209	Existing To Remain	2	58	0	0.12	209	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	42	\$5

Fixture Reference #	Location	Average Burn Hours	EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT						RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
			Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Equipment Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Energy Savings, kW	Energy Savings, kWh	Energy Savings, \$	Control Ref #	Controls Description	Qty of Controls	Hour Reduction %	Energy Savings, kWh	Energy Savings, \$
55	VP Office	1800	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Direct/Indirect Lens	2	58	2	0.12	209	Existing To Remain	2	58	0	0.12	209	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	42	\$5
53	Attendance office	1800	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	1,253	Existing To Remain	2	58	0	0.70	1,253	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	251	\$29
19	Janitor's Closet	1000	1 Lamp, 150w Incandescent, Surface Mnt., No Lens	1	150	1	0.15	150	42w CFL Screw Base	1	42	1	0.04	42	0.11	108	\$12	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	8	\$1
56	Boys' Lavatory #1	2200	1x4, 1 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	1	58	3	0.17	383	Existing To Remain	1	58	0	0.17	383	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	77	\$9
36	Men's Lavatory	2200	1x2, 1 Lamp, T12 20w, Magnetic Ballast, Surface Mnt., Prismatic Lens	1	22	1	0.02	48	Sylvania Lamp FO17/841XP/ECO Sylvania Ballast QHE2X32T8/UNV ISL-SC	1	17	1	0.02	37	0.01	11	\$1	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	7	\$1
53	Ladies' Lavatory	2200	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	1	0.06	128	Existing To Remain	2	58	0	0.06	128	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	26	\$3
53	Girls' Lavatory	2200	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	3	0.17	383	Existing To Remain	2	58	0	0.17	383	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	77	\$9
53	CR N107	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	14	0.81	1,137	Existing To Remain	2	58	0	0.81	1,137	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	227	\$26
53	N109	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	14	0.81	1,137	Existing To Remain	2	58	0	0.81	1,137	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	227	\$26
53	N111	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
53	N113	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
53	N115	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
53	N117	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
53	N116	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	18	1.04	1,462	Existing To Remain	2	58	0	1.04	1,462	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	292	\$34

Fixture Reference #	Location	Average Burn Hours	EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT						RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
			Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Equipment Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Energy Savings, kW	Energy Savings, kWh	Energy Savings, \$	Control Ref #	Controls Description	Qty of Controls	Hour Reduction %	Energy Savings, kWh	Energy Savings, \$
53	N119	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	18	1.04	1,462	Existing To Remain	2	58	0	1.04	1,462	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	292	\$34
53	N112	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	14	0.81	1,137	Existing To Remain	2	58	0	0.81	1,137	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	227	\$26
53	N110	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
53	N108	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
17	Storage N105	1000	1 Lamp, 150w Incandescent, Pendant Mnt., No Lens	1	150	2	0.30	300	20w Dimmable PAR 38 LED	1	20	2	0.04	40	0.26	260	\$30	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	8	\$1
53	Storage N105	1000	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	4	0.23	232	Existing To Remain	2	58	0	0.23	232	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
17	Storage N105	1000	1 Lamp, 150w Incandescent, Pendant Mnt., No Lens	1	150	1	0.15	150	20w Dimmable PAR 38 LED	1	20	1	0.02	20	0.13	130	\$15	0	No New Controls	0	0.0%	0	\$0
47	Janitor's Closet	1000	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., No Lens	2	58	1	0.06	58	Existing To Remain	2	58	0	0.06	58	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	12	\$1
53	Boys' Lavatory #1	2200	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	3	0.17	383	Existing To Remain	2	58	0	0.17	383	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	77	\$9
36	Men's Lavatory	2200	1x2, 1 Lamp, T12 20w, Magnetic Ballast, Surface Mnt., Prismatic Lens	1	22	1	0.02	48	Sylvania Lamp FO17/841/XP/ECO Sylvania Ballast QHE2X32T8/UNV ISL-SC	1	17	1	0.02	37	0.01	11	\$1	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	7	\$1
50	Ladies' Lavatory	2200	1x4, 1 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	1	58	1	0.06	128	Existing To Remain	1	58	0	0.06	128	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	26	\$3
53	Girls' Lavatory	2200	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	3	0.17	383	Existing To Remain	2	58	0	0.17	383	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	77	\$9
53	N307	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	14	0.81	1,137	Existing To Remain	2	58	0	0.81	1,137	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	227	\$26
53	N308	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22



Fixture Reference #	Location	Average Burn Hours	EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT						RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
			Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Equipment Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Energy Savings, kW	Energy Savings, kWh	Energy Savings, \$	Control Ref #	Controls Description	Qty of Controls	Hour Reduction %	Energy Savings, kWh	Energy Savings, \$
53	N310	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
53	N312	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
53	N314	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
53	N316	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
53	N315	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
53	N313	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	14	0.81	1,137	Existing To Remain	2	58	0	0.81	1,137	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	227	\$26
53	N313 Prep. Room	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	6	0.35	487	Existing To Remain	2	58	0	0.35	487	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	97	\$11
19	N313 Storage Room	1000	1 Lamp, 150w Incandescent, Surface Mnt., No Lens	1	150	2	0.30	300	42w CFL Screw Base	1	42	2	0.08	84	0.22	216	\$25	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	17	\$2
53	N311	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
53	N309	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	24	1.39	1,949	Existing To Remain	2	58	0	1.39	1,949	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	390	\$45
55	N309 Prep Room	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Direct/Indirect Lens	2	58	1	0.06	81	Existing To Remain	2	58	0	0.06	81	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	16	\$2
55	N311 Prep Room	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Direct/Indirect Lens	2	58	1	0.06	81	Existing To Remain	2	58	0	0.06	81	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
55	N306	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Direct/Indirect Lens	2	58	6	0.35	487	Existing To Remain	2	58	0	0.35	487	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	97	\$11
53	Faculty	1600	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	8	0.46	742	Existing To Remain	2	58	0	0.46	742	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	148	\$17

Fixture Reference #	Location	Average Burn Hours	EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT						RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
			Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Equipment Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Energy Savings, kW	Energy Savings, kWh	Energy Savings, \$	Control Ref #	Controls Description	Qty of Controls	Hour Reduction %	Energy Savings, kWh	Energy Savings, \$
48	JC Closet	1000	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	1	0.06	58	Existing To Remain	2	58	0	0.06	58	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	12	\$1
36	Men's Lavatory	2200	1x2, 1 Lamp, T12 20w, Magnetic Ballast, Surface Mnt., Prismatic Lens	1	22	1	0.02	48	Sylvania Lamp FO17/841/XP/ECO Sylvania Ballast QHE2X32T8/UNV ISL-SC	1	17	1	0.02	37	0.01	11	\$1	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	7	\$1
56	Boys' Lavatory	2200	1x4, 1 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	1	58	3	0.17	383	Existing To Remain	1	58	0	0.17	383	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	77	\$9
56	Ladies' Lavatory	2200	1x4, 1 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	1	58	1	0.06	128	Existing To Remain	1	58	0	0.06	128	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	26	\$3
56	Girls' Lavatory	2200	1x4, 1 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	1	58	3	0.17	383	Existing To Remain	1	58	0	0.17	383	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	77	\$9
53	C307	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	14	0.81	1,137	Existing To Remain	2	58	0	0.81	1,137	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	227	\$26
53	C309	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
53	C311	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
53	C313	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
53	C315	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
53	C317	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
53	C318	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	4	0.23	325	Existing To Remain	2	58	0	0.23	325	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	65	\$7
53	C316	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
53	C314	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22

Fixture Reference #	Location	Average Burn Hours	EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT						RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
			Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Equipment Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Energy Savings, kW	Energy Savings, kWh	Energy Savings, \$	Control Ref #	Controls Description	Qty of Controls	Hour Reduction %	Energy Savings, kWh	Energy Savings, \$
53	C312	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
53	C310	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
53	C308	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
53	C306	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
53	C305	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
53	JC Closet	1000	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	1	0.06	58	Existing To Remain	2	58	0	0.06	58	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	12	\$1
36	Men's Lavatory	2200	1x2, 1 Lamp, T12 20w, Magnetic Ballast, Surface Mnt., Prismatic Lens	1	22	1	0.02	48	Sylvania Lamp FO17/841/XP/ECO Sylvania Ballast QHE2X32T8/UNV ISL-SC	1	17	1	0.02	37	0.01	11	\$1	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	7	\$1
53	Boy's Lavatory	2200	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	3	0.17	383	Existing To Remain	2	58	0	0.17	383	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	77	\$9
53	Girls' Lavatory	2200	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	3	0.17	383	Existing To Remain	2	58	0	0.17	383	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	77	\$9
56	Ladies' Lavatory	2200	1x4, 1 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	1	58	1	0.06	128	Existing To Remain	1	58	0	0.06	128	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	26	\$3
56	C208	1400	1x4, 1 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	1	58	12	0.70	974	Existing To Remain	1	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
56	C210	1400	1x4, 1 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	1	58	12	0.70	974	Existing To Remain	1	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
56	C212	1400	1x4, 1 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	1	58	12	0.70	974	Existing To Remain	1	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
57	C214	1400	2x4, 3 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Parabolic Lens	3	82	17	1.39	1,952	Existing To Remain	3	82	0	1.39	1,952	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	390	\$45

Fixture Reference #	Location	Average Burn Hours	EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT						RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
			Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Equipment Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Energy Savings, kW	Energy Savings, kWh	Energy Savings, \$	Control Ref #	Controls Description	Qty of Controls	Hour Reduction %	Energy Savings, kWh	Energy Savings, \$
50	C214 Prep	1400	1x4, 1 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	1	58	4	0.23	325	Existing To Remain	1	58	0	0.23	325	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	65	\$7
55	C214 Prep	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Direct/Indirect Lens	2	58	3	0.17	244	Existing To Remain	2	58	0	0.17	244	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
22	C214 Storage	1000	1 Lamp, 150w Incandescent, Surface Mnt.	1	150	2	0.30	300	42w CFL Screw Base	1	42	2	0.08	84	0.22	216	\$25	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	17	\$2
22	C214 Storage	1000	1 Lamp, 150w Incandescent, Surface Mnt.	1	150	1	0.15	150	42w CFL Screw Base	1	42	1	0.04	42	0.11	108	\$12	0	No New Controls	0	0.0%	0	\$0
53	C216	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
53	C217	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
53	C215	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
53	C213	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
53	C211	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	10	0.58	812	Existing To Remain	2	58	0	0.58	812	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	162	\$19
53	C209	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
55	C207B	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Direct/Indirect Lens	2	58	2	0.12	162	Existing To Remain	2	58	0	0.12	162	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	32	\$4
53	C207	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	2	0.12	162	Existing To Remain	2	58	0	0.12	162	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	32	\$4
56	C207A	1400	1x4, 1 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	1	58	6	0.35	487	Existing To Remain	1	58	0	0.35	487	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	97	\$11
55	Faculty Room	1600	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Direct/Indirect Lens	2	58	8	0.46	742	Existing To Remain	2	58	0	0.46	742	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	148	\$17

Fixture Reference #	Location	Average Burn Hours	EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT						RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
			Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Equipment Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Energy Savings, kW	Energy Savings, kWh	Energy Savings, \$	Control Ref #	Controls Description	Qty of Controls	Hour Reduction %	Energy Savings, kWh	Energy Savings, \$
53	C205	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	2	0.12	162	Existing To Remain	2	58	0	0.12	162	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	32	\$4
46	JC Closet	1000	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., No Lens	2	58	1	0.06	58	Existing To Remain	2	58	0	0.06	58	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	12	\$1
1	Men's Lavatory	2200	1 Lamp, 100w Incandescent Lamp, Surface Mnt, No Lens	1	100	1	0.10	220	23w CFL Screw Base	1	23	1	0.02	51	0.08	169	\$19	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	10	\$1
3	Boys' Lavatory	2200	1 Lamp, 100w Incandescent Lamp, Surface Mnt	1	100	3	0.30	660	23w CFL Screw Base	1	23	3	0.07	152	0.23	508	\$58	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	30	\$3
3	Girls' Lavatory	2200	1 Lamp, 100w Incandescent Lamp, Surface Mnt	1	100	3	0.30	660	23w CFL Screw Base	1	23	3	0.07	152	0.23	508	\$58	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	30	\$3
1	Ladies' Lavatory	2200	1 Lamp, 100w Incandescent Lamp, Surface Mnt, No Lens	1	100	1	0.10	220	23w CFL Screw Base	1	23	1	0.02	51	0.08	169	\$19	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	10	\$1
27	C108	1400	1x4, 2 Lamp, T12 34w, Mag. Ballast, Surface Mnt., No Lens	2	80	27	2.16	3,024	Sylvania Lamp FO28/841/XP/SL/SS/ECO3 Sylvania Ballast QHE2X32T8/UNV ISL-SC	2	49	27	1.32	1,852	0.84	1,172	\$135	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	370	\$43
53	C109	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	14	0.81	1,137	Existing To Remain	2	58	0	0.81	1,137	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	227	\$26
12	C111	1400	12"x12", 1 Lamp, 60w Incandescent, Recessed Mnt., Prismatic Lens	1	60	12	0.72	1,008	13w CFL Screw Base	1	13	12	0.16	218	0.56	790	\$91	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	44	\$5
16	C113	1400	24", 1 Lamp, HID 250w, Magnetic Ballast, Pendant Mnt., Prismatic Lens	1	295	16	4.72	6,608	2x4, 4 Lamp, 54w T5, (2) 2/54 Elect. Ballast, Singlepoint Mnt., High Bay, Wire Guard, Lens	4	240	16	3.84	5,376	0.88	1,232	\$142	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	1,075	\$124
16	C115	1400	24", 1 Lamp, HID 250w, Magnetic Ballast, Pendant Mnt., Prismatic Lens	1	295	16	4.72	6,608	2x4, 4 Lamp, 54w T5, (2) 2/54 Elect. Ballast, Singlepoint Mnt., High Bay, Wire Guard, Lens	4	240	16	3.84	5,376	0.88	1,232	\$142	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	1,075	\$124
38	C116	1400	1x4, 2 Lamp, T8 32w, Mag. Ballast, Pendant Mnt., Direct/Indirect Lens	2	58	24	1.39	1,949	Existing To Remain	2	58	0	1.39	1,949	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	390	\$45
38	C114	1400	1x4, 2 Lamp, T8 32w, Mag. Ballast, Pendant Mnt., Direct/Indirect Lens	2	58	24	1.39	1,949	Existing To Remain	2	58	0	1.39	1,949	0.00	0	\$0	1	Existing Occupancy Controls	2	20.0%	390	\$45
53	C112	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22

Fixture Reference #	Location	Average Burn Hours	EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT						RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
			Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Equipment Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Energy Savings, kW	Energy Savings, kWh	Energy Savings, \$	Control Ref #	Controls Description	Qty of Controls	Hour Reduction %	Energy Savings, kWh	Energy Savings, \$
53	C110	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mt., Prismatic Lens	2	58	14	0.81	1,137	Existing To Remain	2	58	0	0.81	1,137	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mt.	1	20.0%	227	\$26
55	Guidance	1800	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mt., Direct/Indirect Lens	2	58	6	0.35	626	Existing To Remain	2	58	0	0.35	626	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mt.	1	20.0%	125	\$14
55	Guidance Office	1800	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mt., Direct/Indirect Lens	2	58	1	0.06	104	Existing To Remain	2	58	0	0.06	104	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mt.	1	20.0%	21	\$2
55	Guidance Office	1800	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mt., Direct/Indirect Lens	2	58	1	0.06	104	Existing To Remain	2	58	0	0.06	104	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mt.	1	20.0%	21	\$2
55	Guidance Office	1800	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mt., Direct/Indirect Lens	2	58	2	0.12	209	Existing To Remain	2	58	0	0.12	209	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mt.	1	20.0%	42	\$5
55	VP Office	1800	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mt., Direct/Indirect Lens	2	58	2	0.12	209	Existing To Remain	2	58	0	0.12	209	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mt.	1	20.0%	42	\$5
55	VP Receptionist	1800	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mt., Direct/Indirect Lens	2	58	2	0.12	209	Existing To Remain	2	58	0	0.12	209	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mt.	1	20.0%	42	\$5
48	C105A	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mt., Prismatic Lens	2	58	4	0.23	325	Existing To Remain	2	58	0	0.23	325	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mt.	1	20.0%	65	\$7
47	JC Closet	1000	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mt., No Lens	2	58	1	0.06	58	Existing To Remain	2	58	0	0.06	58	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mt.	1	20.0%	12	\$1
47	Central Basement	1000	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mt., No Lens	2	58	5	0.29	290	Existing To Remain	2	58	0	0.29	290	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mt.	3	20.0%	58	\$7
47	Central Boiler	1000	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mt., No Lens	2	58	22	1.28	1,276	Existing To Remain	2	58	0	1.28	1,276	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
47	Central Electric	1000	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mt., No Lens	2	58	4	0.23	232	Existing To Remain	2	58	0	0.23	232	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mt.	1	20.0%	46	\$5
47	Central Hall	2200	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mt., No Lens	2	58	6	0.35	766	Existing To Remain	2	58	0	0.35	766	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
36	Men's Lavatory	2200	1x2, 1 Lamp, T12 20w, Magnetic Ballast, Surface Mt., Prismatic Lens	1	22	1	0.02	48	Sylvania Lamp FO17/841/XP/ECO Sylvania Ballast QHE2X32T8/UNV ISL-SC	1	17	1	0.02	37	0.01	11	\$1	6	Dual Technology Occupancy Sensor - Switch Mt.	1	20.0%	7	\$1

Fixture Reference #	Location	Average Burn Hours	EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT						RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
			Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Equipment Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Energy Savings, kW	Energy Savings, kWh	Energy Savings, \$	Control Ref #	Controls Description	Qty of Controls	Hour Reduction %	Energy Savings, kWh	Energy Savings, \$
53	Boys' Lavatory	2200	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	3	0.17	383	Existing To Remain	2	58	0	0.17	383	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	77	\$9
53	Girls' Lavatory	2200	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	3	0.17	383	Existing To Remain	2	58	0	0.17	383	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	77	\$9
56	Ladies' Lavatory	2200	1x4, 1 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	1	58	1	0.06	128	Existing To Remain	1	58	0	0.06	128	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	26	\$3
53	S307	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	14	0.81	1,137	Existing To Remain	2	58	0	0.81	1,137	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	227	\$26
53	S309	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
53	S311	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
53	S313	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
53	S315	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
53	S317	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
53	S318	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
53	S316	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
53	S314	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
53	S312	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
53	S310	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22

Fixture Reference #	Location	Average Burn Hours	EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT						RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
			Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Equipment Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Energy Savings, kW	Energy Savings, kWh	Energy Savings, \$	Control Ref #	Controls Description	Qty of Controls	Hour Reduction %	Energy Savings, kWh	Energy Savings, \$
53	S308	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
53	S306	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
53	S305	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	3	0.17	244	Existing To Remain	2	58	0	0.17	244	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	49	\$6
47	JC Closet	1000	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., No Lens	2	58	1	0.06	58	Existing To Remain	2	58	0	0.06	58	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	12	\$1
36	Men's Lavatory	2200	1x2, 1 Lamp, T12 20w, Magnetic Ballast, Surface Mnt., Prismatic Lens	1	22	1	0.02	48	Sylvania Lamp FO17/841XP/ECO Sylvania Ballast QHE2X32T8/UNV ISL-SC	1	17	1	0.02	37	0.01	11	\$1	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	7	\$1
53	Boys' Lavatory	2200	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	3	0.17	383	Existing To Remain	2	58	0	0.17	383	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	77	\$9
53	Girls' Lavatory	2200	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	3	0.17	383	Existing To Remain	2	58	0	0.17	383	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	77	\$9
50	Ladies' Lavatory	2200	1x4, 1 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	1	58	1	0.06	128	Existing To Remain	1	58	0	0.06	128	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	26	\$3
55	S207	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Direct/Indirect Lens	2	58	8	0.46	650	Existing To Remain	2	58	0	0.46	650	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	130	\$15
53	S209	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
53	S211	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
53	S213	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
53	S215	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
55	S217	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Direct/Indirect Lens	2	58	22	1.28	1,786	Existing To Remain	2	58	0	1.28	1,786	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	357	\$41



Fixture Reference #	Location	Average Burn Hours	EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT						RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
			Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Equipment Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Energy Savings, kW	Energy Savings, kWh	Energy Savings, \$	Control Ref #	Controls Description	Qty of Controls	Hour Reduction %	Energy Savings, kWh	Energy Savings, \$
53	S216	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	16	0.93	1,299	Existing To Remain	2	58	0	0.93	1,299	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	260	\$30
53	S214	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	16	0.93	1,299	Existing To Remain	2	58	0	0.93	1,299	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	260	\$30
53	S212	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
53	S210	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
53	S208	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
55	S206A	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Direct/Indirect Lens	2	58	2	0.12	162	Existing To Remain	2	58	0	0.12	162	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	32	\$4
55	S206B	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Direct/Indirect Lens	2	58	2	0.12	162	Existing To Remain	2	58	0	0.12	162	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	32	\$4
55	S206	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Direct/Indirect Lens	2	58	6	0.35	487	Existing To Remain	2	58	0	0.35	487	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	97	\$11
53	Faculty	1600	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	2	0.12	186	Existing To Remain	2	58	0	0.12	186	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	37	\$4
47	JC Closet	1000	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., No Lens	2	58	1	0.06	58	Existing To Remain	2	58	0	0.06	58	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	12	\$1
36	Men's Lavatory	2200	1x2, 1 Lamp, T12 20w, Magnetic Ballast, Surface Mnt., Prismatic Lens	1	22	1	0.02	48	Sylvania Lamp FO17841/XP/ECO Sylvania Ballast QHE2X32T8/UNV ISL-SC	1	17	1	0.02	37	0.01	11	\$1	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	7	\$1
48	Boys' Lavatory	2200	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	3	0.17	383	Existing To Remain	2	58	0	0.17	383	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	77	\$9
48	Girls' Lavatory	2200	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	3	0.17	383	Existing To Remain	2	58	0	0.17	383	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	77	\$9
48	Ladies' Lavatory	2200	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	1	0.06	128	Existing To Remain	2	58	0	0.06	128	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	26	\$3

Fixture Reference #	Location	Average Burn Hours	EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT						RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
			Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Equipment Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Energy Savings, kW	Energy Savings, kWh	Energy Savings, \$	Control Ref #	Controls Description	Qty of Controls	Hour Reduction %	Energy Savings, kWh	Energy Savings, \$
53	VP Office	1800	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	2	0.12	209	Existing To Remain	2	58	0	0.12	209	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	42	\$5
53	VP Receptionist	1800	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	2	0.12	209	Existing To Remain	2	58	0	0.12	209	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	42	\$5
55	Guidance	1800	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Direct/Indirect Lens	2	58	6	0.35	626	Existing To Remain	2	58	0	0.35	626	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	125	\$14
55	Guidance Office	1800	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Direct/Indirect Lens	2	58	1	0.06	104	Existing To Remain	2	58	0	0.06	104	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	21	\$2
55	Guidance Office	1800	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Direct/Indirect Lens	2	58	1	0.06	104	Existing To Remain	2	58	0	0.06	104	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	21	\$2
55	Guidance Office	1800	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Direct/Indirect Lens	2	58	2	0.12	209	Existing To Remain	2	58	0	0.12	209	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	42	\$5
53	S110	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	14	0.81	1,137	Existing To Remain	2	58	0	0.81	1,137	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	227	\$26
53	S112	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	195	\$22
55	S114	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Direct/Indirect Lens	2	58	24	1.39	1,949	Existing To Remain	2	58	0	1.39	1,949	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	2	20.0%	390	\$45
55	S116	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Direct/Indirect Lens	2	58	24	1.39	1,949	Existing To Remain	2	58	0	1.39	1,949	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	2	20.0%	390	\$45
53	S115	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	14	0.81	1,137	Existing To Remain	2	58	0	0.81	1,137	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	227	\$26
53	S113	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	14	0.81	1,137	Existing To Remain	2	58	0	0.81	1,137	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	227	\$26
55	S113 Prep Room	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Direct/Indirect Lens	2	58	3	0.17	244	Existing To Remain	2	58	0	0.17	244	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	49	\$6
53	S111	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	14	0.81	1,137	Existing To Remain	2	58	0	0.81	1,137	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	227	\$26

Fixture Reference #	Location	Average Burn Hours	EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT						RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
			Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Equipment Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Energy Savings, kW	Energy Savings, kWh	Energy Savings, \$	Control Ref #	Controls Description	Qty of Controls	Hour Reduction %	Energy Savings, kWh	Energy Savings, \$
55	S111 Prep Room	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mt., Direct/Indirect Lens	2	58	3	0.17	244	Existing To Remain	2	58	0	0.17	244	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mt.	1	20.0%	49	\$6
53	S109	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mt., Prismatic Lens	2	58	14	0.81	1,137	Existing To Remain	2	58	0	0.81	1,137	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mt.	1	20.0%	227	\$26
53	S108	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mt.	1	20.0%	195	\$22
55	S105	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mt., Direct/Indirect Lens	2	58	4	0.23	325	Existing To Remain	2	58	0	0.23	325	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mt.	1	20.0%	65	\$7
22	S105 Closet	1000	1 Lamp, 150w Incandescent, Surface Mt.	1	150	1	0.15	150	42w CFL Screw Base	1	42	1	0.04	42	0.11	108	\$12	6	Dual Technology Occupancy Sensor - Switch Mt.	1	20.0%	8	\$1
47	JC Closet	1000	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mt., No Lens	2	58	1	0.06	58	Existing To Remain	2	58	0	0.06	58	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mt.	1	20.0%	12	\$1
53	L-8	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mt., Prismatic Lens	2	58	12	0.70	974	Existing To Remain	2	58	0	0.70	974	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mt.	1	20.0%	195	\$22
55	L-7	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mt., Direct/Indirect Lens	2	58	26	1.51	2,111	Existing To Remain	2	58	0	1.51	2,111	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mt.	1	20.0%	422	\$49
55	L-7 Closet	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mt., Direct/Indirect Lens	2	58	2	0.12	162	Existing To Remain	2	58	0	0.12	162	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mt.	1	20.0%	32	\$4
55	L-6	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mt., Direct/Indirect Lens	2	58	33	1.91	2,680	Existing To Remain	2	58	0	1.91	2,680	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mt.	3	20.0%	536	\$62
55	L-3	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mt., Direct/Indirect Lens	2	58	39	2.26	3,167	Existing To Remain	2	58	0	2.26	3,167	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mt.	2	20.0%	633	\$73
55	L-3C	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mt., Direct/Indirect Lens	2	58	2	0.12	162	Existing To Remain	2	58	0	0.12	162	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mt.	1	20.0%	32	\$4
27	Boys' Lavatory	2200	1x4, 2 Lamp, T12 34w, Mag. Ballast, Surface Mt., No Lens	2	80	1	0.08	176	Sylvania Lamp FO28/841/XP/XL/SS/ECO3 Sylvania Ballast QHE2X3ZT8/UNV ISL-SC	2	49	1	0.05	108	0.03	68	\$8	5	Dual Technology Occupancy Sensor - Remote Mt.	1	20.0%	22	\$2
5	Boys' Lavatory	2200	1 Lamp, 100w Incandescent Lamp, Pendant Mt.	1	100	1	0.10	220	23w CFL Screw Base	1	23	1	0.02	51	0.08	169	\$19	0	No New Controls	0	0.0%	0	\$0

Fixture Reference #	Location	Average Burn Hours	EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT						RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
			Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Equipment Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Energy Savings, kW	Energy Savings, kWh	Energy Savings, \$	Control Ref #	Controls Description	Qty of Controls	Hour Reduction %	Energy Savings, kWh	Energy Savings, \$
47	JC Closet	1000	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., No Lens	2	58	1	0.06	58	Existing To Remain	2	58	0	0.06	58	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	12	\$1
4	JC Closet	1000	1 Lamp, 100w Incandescent Lamp, Pendant Mnt., No Lens	1	100	1	0.10	100	23w CFL Screw Base	1	23	1	0.02	23	0.08	77	\$9	0	No New Controls	0	0.0%	0	\$0
48	Girls' Lavatory	2200	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	1	0.06	128	Existing To Remain	2	58	0	0.06	128	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	26	\$3
4	Girls' Lavatory	2200	1 Lamp, 100w Incandescent Lamp, Pendant Mnt., No Lens	1	100	1	0.10	220	23w CFL Screw Base	1	23	1	0.02	51	0.08	169	\$19	0	No New Controls	0	0.0%	0	\$0
55	G-21A	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Direct/Indirect Lens	2	58	21	1.22	1,705	Existing To Remain	2	58	0	1.22	1,705	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	341	\$39
48	G-21A Closet	1000	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	1	0.06	58	Existing To Remain	2	58	0	0.06	58	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	12	\$1
55	G-21	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Direct/Indirect Lens	2	58	14	0.81	1,137	Existing To Remain	2	58	0	0.81	1,137	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	227	\$26
55	G-21 Closet	1000	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Direct/Indirect Lens	2	58	1	0.06	58	Existing To Remain	2	58	0	0.06	58	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	12	\$1
53	G-22 Auto Shop	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	18	1.04	1,462	Existing To Remain	2	58	0	1.04	1,462	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	292	\$34
56	G-22 Auto Shop	1400	1x4, 1 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	1	58	20	1.16	1,624	Existing To Remain	1	58	0	1.16	1,624	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
47	Lockers - Girls	1800	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., No Lens	2	58	13	0.75	1,357	Existing To Remain	2	58	0	0.75	1,357	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
17	Girls' Lavatory	1000	1 Lamp, 150w Incandescent, Pendant Mnt., No Lens	1	150	1	0.15	150	20w Dimmable PAR 38 LED	1	20	1	0.02	20	0.13	130	\$15	0	No New Controls	0	0.0%	0	\$0
17	Lockers - Girl's Storage	1800	1 Lamp, 150w Incandescent, Pendant Mnt., No Lens	1	150	1	0.15	270	20w Dimmable PAR 38 LED	1	20	1	0.02	36	0.13	234	\$27	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	7	\$1
17	Lockers - Girl's Storage	1800	1 Lamp, 150w Incandescent, Pendant Mnt., No Lens	1	150	1	0.15	270	20w Dimmable PAR 38 LED	1	20	1	0.02	36	0.13	234	\$27	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	7	\$1

Fixture Reference #	Location	Average Burn Hours	EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT						RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
			Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Equipment Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Energy Savings, kW	Energy Savings, kWh	Energy Savings, \$	Control Ref #	Controls Description	Qty of Controls	Hour Reduction %	Energy Savings, kWh	Energy Savings, \$
23	Girls' Shower	1800	12", 1 Lamp, 150w Incandescent, Pendant Mnt., No Lens	1	150	13	1.95	3,510	42w CFL Screw Base	1	42	13	0.55	983	1.40	2,527	\$291	0	No New Controls	0	0.0%	0	\$0
55	Gym Office	1800	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Direct/Indirect Lens	2	58	4	0.23	418	Existing To Remain	2	58	0	0.23	418	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	84	\$10
42	Gym Office Lavatory	1000	18", 2 Lamp, CFL, Elect. Bal., Surface Mnt.	2	26	1	0.03	26	Existing To Remain	2	26	0	0.03	26	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	5	\$1
36	Gym Office Lavatory	1000	1x2, 1 Lamp, T12 20w, Magnetic Ballast, Surface Mnt., Prismatic Lens	1	22	1	0.02	22	Sylvania Lamp FO17841/XP/ECO Sylvania Ballast QHE2X32T8/UNV ISL-SC	1	17	1	0.02	17	0.01	5	\$1	0	No New Controls	0	0.0%	0	\$0
46	Athletic Trainer	1800	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., No Lens	2	58	13	0.75	1,357	Existing To Remain	2	58	0	0.75	1,357	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	271	\$31
17	Athletic Trainer Lavatory	1000	1 Lamp, 150w Incandescent, Pendant Mnt., No Lens	1	150	1	0.15	150	20w Dimmable PAR 38 LED	1	20	1	0.02	20	0.13	130	\$15	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	4	\$0
17	Athletic Trainer Storage	1800	1 Lamp, 150w Incandescent, Pendant Mnt., No Lens	1	150	1	0.15	270	20w Dimmable PAR 38 LED	1	20	1	0.02	36	0.13	234	\$27	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	7	\$1
17	Athletic Trainer Storage	1000	1 Lamp, 150w Incandescent, Pendant Mnt., No Lens	1	150	1	0.15	150	20w Dimmable PAR 38 LED	1	20	1	0.02	20	0.13	130	\$15	0	No New Controls	0	0.0%	0	\$0
48	Mech. Room	1000	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	4	0.23	232	Existing To Remain	2	58	0	0.23	232	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
68	LED Exits	8760	LED Exit	1	2	11	0.02	193	Existing To Remain	1	2	0	0.02	193	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
53	L-4	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	39	2.26	3,167	Existing To Remain	2	58	0	2.26	3,167	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	2	20.0%	633	\$73
28	L-4 Office	1800	1x4, 2 Lamp, T12 34w, Mag. Ballast, Pendant Mnt.	2	80	1	0.08	144	Sylvania Lamp FO28/841/XP/XL/SS/ECO3 Sylvania Ballast QHE2X32T8/UNV ISL-SC	2	49	1	0.05	88	0.03	56	\$6	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	18	\$2
24	L-4 Storage	1000	1 Lamp, 150w Incandescent, Pendant Mnt.	1	150	1	0.15	150	42w CFL Screw Base	1	42	1	0.04	42	0.11	108	\$12	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	8	\$1
24	L-4 Storage	1000	1 Lamp, 150w Incandescent, Pendant Mnt.	1	150	1	0.15	150	42w CFL Screw Base	1	42	1	0.04	42	0.11	108	\$12	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	8	\$1

Fixture Reference #	Location	Average Burn Hours	EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT						RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
			Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Equipment Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Energy Savings, kW	Energy Savings, kWh	Energy Savings, \$	Control Ref #	Controls Description	Qty of Controls	Hour Reduction %	Energy Savings, kWh	Energy Savings, \$
55	L-4 Office	1800	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Direct/Indirect Lens	2	58	2	0.12	209	Existing To Remain	2	58	0	0.12	209	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	42	\$5
53	L-5	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	30	1.74	2,436	Existing To Remain	2	58	0	1.74	2,436	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	2	20.0%	487	\$56
55	L-5 Office	1800	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Direct/Indirect Lens	2	58	2	0.12	209	Existing To Remain	2	58	0	0.12	209	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	42	\$5
58	L-5 Office	1800	1x4, 1 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., No Lens	1	58	4	0.23	418	Existing To Remain	1	58	0	0.23	418	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	84	\$10
56	L-5	1400	1x4, 1 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	1	58	7	0.41	568	Existing To Remain	1	58	0	0.41	568	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	114	\$13
53	L-2	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	9	0.52	731	Existing To Remain	2	58	0	0.52	731	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	146	\$17
53	Media Center	1600	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	34	1.97	3,155	Existing To Remain	2	58	0	1.97	3,155	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
55	Media Center Desk	1600	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Direct/Indirect Lens	2	58	14	0.81	1,299	Existing To Remain	2	58	0	0.81	1,299	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
49	Media Center Reading	1600	1x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	60	3.48	5,568	Existing To Remain	2	58	0	3.48	5,568	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
49	Media Center Reading	1600	1x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	86	4.99	7,981	Existing To Remain	2	58	0	4.99	7,981	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
44	L102	1400	2x4, 4 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	4	109	12	1.31	1,831	Sylvania Lamp FO28/841/XP/XL/SS/ECO3 Sylvania Ballast QHE2X32T8/UNV ISL-SC	3	72	12	0.86	1,210	0.44	622	\$71	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	242	\$28
44	L103	1400	2x4, 4 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	4	109	8	0.87	1,221	Sylvania Lamp FO28/841/XP/XL/SS/ECO3 Sylvania Ballast QHE2X32T8/UNV ISL-SC	3	72	8	0.58	806	0.30	414	\$48	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	161	\$19
49	Media Center	1600	1x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	21	1.22	1,949	Existing To Remain	2	58	0	1.22	1,949	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
49	L105	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	4	0.23	325	Existing To Remain	2	58	0	0.23	325	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	65	\$7

Fixture Reference #	Location	Average Burn Hours	EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT						RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
			Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Equipment Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Energy Savings, kW	Energy Savings, kWh	Energy Savings, \$	Control Ref #	Controls Description	Qty of Controls	Hour Reduction %	Energy Savings, kWh	Energy Savings, \$
59	L105	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Direct/Indirect Lens	2	58	4	0.23	325	Existing To Remain	2	58	0	0.23	325	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
68	LED Exits	8760	LED Exit	1	2	5	0.01	88	Existing To Remain	1	2	0	0.01	88	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
49	L106	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	4	0.23	325	Existing To Remain	2	58	0	0.23	325	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	65	\$7
60	L106 Closets	1000	1x4, 4 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	4	109	1	0.11	109	Sylvania Lamp FO28/841/XPXL/SS/ECO3 Sylvania Ballast QHE2X32T8/UNV ISL-SC	3	72	1	0.07	72	0.04	37	\$4	0	No New Controls	0	0.0%	0	\$0
53	Girls' Lavatory	2200	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	5	0.29	638	Existing To Remain	2	58	0	0.29	638	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	128	\$15
49	Girls' Lavatory	2200	1x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	1	0.06	128	Existing To Remain	2	58	0	0.06	128	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
65	Women's Lavatory	2200	2x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	1	0.06	128	Existing To Remain	2	58	0	0.06	128	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	26	\$3
29	JC Closet	1000	1 Lamp, 13w CFL, Elect. Ballast, Surface Mnt., Prismatic Lens	1	18	1	0.02	18	Existing To Remain	1	18	0	0.02	18	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	4	\$0
53	Boys' Lavatory	2200	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	5	0.29	638	Existing To Remain	2	58	0	0.29	638	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	128	\$15
49	Boys' Lavatory	2200	1x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	1	0.06	128	Existing To Remain	2	58	0	0.06	128	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
65	Men's Lavatory	2200	2x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	1	0.06	128	Existing To Remain	2	58	0	0.06	128	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	26	\$3
56	E105 Storage	1000	1x4, 1 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	1	58	5	0.29	290	Existing To Remain	1	58	0	0.29	290	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	58	\$7
49	Elev. MR	2200	1x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	1	0.06	128	Existing To Remain	2	58	0	0.06	128	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	26	\$3
44	Guidance E107	1800	2x4, 4 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	4	109	3	0.33	589	Sylvania Lamp FO28/841/XPXL/SS/ECO3 Sylvania Ballast QHE2X32T8/UNV ISL-SC	3	72	3	0.22	389	0.11	200	\$23	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	78	\$9

Fixture Reference #	Location	Average Burn Hours	EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT						RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
			Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Equipment Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Energy Savings, kW	Energy Savings, kWh	Energy Savings, \$	Control Ref #	Controls Description	Qty of Controls	Hour Reduction %	Energy Savings, kWh	Energy Savings, \$
52	Guidance E107E	1800	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	4	0.33	590	Existing To Remain	3	82	0	0.33	590	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	118	\$14
52	E107D	1800	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	4	0.33	590	Existing To Remain	3	82	0	0.33	590	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	118	\$14
52	E107C	1800	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	4	0.33	590	Existing To Remain	3	82	0	0.33	590	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	118	\$14
30	E107	1800	8"x8", 1 Lamp, 13w CFL, Elect. Ballast, Recessed Mnt., Prismatic Lens	1	18	1	0.02	32	Existing To Remain	1	18	0	0.02	32	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
49	Guidance Lavatory	1000	1x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	1	0.06	58	Existing To Remain	2	58	0	0.06	58	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	12	\$1
52	VP Office	1800	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	4	0.33	590	Existing To Remain	3	82	0	0.33	590	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	118	\$14
44	VP Receptionist	1800	2x4, 4 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	4	109	2	0.22	392	Sylvania Lamp FO28/841/XP/XL/SS/ECO3 Sylvania Ballast QHE2X32T8/UNV ISL-SC	3	72	2	0.14	259	0.07	133	\$15	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	52	\$6
48	CR E111	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	30	1.74	2,436	Existing To Remain	2	58	0	1.74	2,436	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	487	\$56
48	CR E115	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	30	1.74	2,436	Existing To Remain	2	58	0	1.74	2,436	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	487	\$56
48	Prep E109A	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	5	0.29	406	Existing To Remain	2	58	0	0.29	406	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	81	\$9
48	E114	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	15	0.87	1,218	Existing To Remain	2	58	0	0.87	1,218	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	244	\$28
48	E113	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	15	0.87	1,218	Existing To Remain	2	58	0	0.87	1,218	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	244	\$28
48	E112	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	15	0.87	1,218	Existing To Remain	2	58	0	0.87	1,218	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	244	\$28
48	E110	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	30	1.74	2,436	Existing To Remain	2	58	0	1.74	2,436	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	487	\$56



Fixture Reference #	Location	Average Burn Hours	EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT						RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
			Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Equipment Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Energy Savings, kW	Energy Savings, kWh	Energy Savings, \$	Control Ref #	Controls Description	Qty of Controls	Hour Reduction %	Energy Savings, kWh	Energy Savings, \$
48	E106	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	20	1.16	1,624	Existing To Remain	2	58	0	1.16	1,624	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	325	\$37
48	E102	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	20	1.16	1,624	Existing To Remain	2	58	0	1.16	1,624	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	325	\$37
53	Boys' Lavatory	2200	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	5	0.29	638	Existing To Remain	2	58	0	0.29	638	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	128	\$15
49	Boys' Lavatory	2200	1x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	1	0.06	128	Existing To Remain	2	58	0	0.06	128	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
53	Girls' Lavatory	2200	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	5	0.29	638	Existing To Remain	2	58	0	0.29	638	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	128	\$15
49	Girls' Lavatory	2200	1x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	1	0.06	128	Existing To Remain	2	58	0	0.06	128	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
49	Men's Lavatory	2200	1x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	1	0.06	128	Existing To Remain	2	58	0	0.06	128	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	26	\$3
49	Women's Lavatory	2200	1x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	1	0.06	128	Existing To Remain	2	58	0	0.06	128	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	26	\$3
31	JC Closet	1000	1 Lamp, 13w CFL, Elect. Ballast, Recessed Mnt.	1	18	1	0.02	18	Existing To Remain	1	18	0	0.02	18	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	4	\$0
50	Electric Room	1000	1x4, 1 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	1	58	3	0.17	174	Existing To Remain	1	58	0	0.17	174	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	35	\$4
52	E220	1400	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	3	0.25	344	Existing To Remain	3	82	0	0.25	344	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	69	\$8
66	E205	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Parabolic Lens	2	58	15	0.87	1,218	Existing To Remain	2	58	0	0.87	1,218	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	244	\$28
66	E207	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Parabolic Lens	2	58	15	0.87	1,218	Existing To Remain	2	58	0	0.87	1,218	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	244	\$28
66	E209	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Parabolic Lens	2	58	15	0.87	1,218	Existing To Remain	2	58	0	0.87	1,218	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	244	\$28

Fixture Reference #	Location	Average Burn Hours	EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT						RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
			Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Equipment Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Energy Savings, kW	Energy Savings, kWh	Energy Savings, \$	Control Ref #	Controls Description	Qty of Controls	Hour Reduction %	Energy Savings, kWh	Energy Savings, \$
66	E211	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Parabolic Lens	2	58	15	0.87	1,218	Existing To Remain	2	58	0	0.87	1,218	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	244	\$28
48	E213	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	15	0.87	1,218	Existing To Remain	2	58	0	0.87	1,218	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	244	\$28
48	E214	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	15	0.87	1,218	Existing To Remain	2	58	0	0.87	1,218	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	244	\$28
48	E212	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	15	0.87	1,218	Existing To Remain	2	58	0	0.87	1,218	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	244	\$28
48	E210	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	15	0.87	1,218	Existing To Remain	2	58	0	0.87	1,218	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	244	\$28
48	E208	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	20	1.16	1,624	Existing To Remain	2	58	0	1.16	1,624	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	325	\$37
48	E206	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	15	0.87	1,218	Existing To Remain	2	58	0	0.87	1,218	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	244	\$28
48	E204	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	15	0.87	1,218	Existing To Remain	2	58	0	0.87	1,218	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	244	\$28
48	E202	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	15	0.87	1,218	Existing To Remain	2	58	0	0.87	1,218	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	244	\$28
44	L-203	1400	2x4, 4 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	4	109	6	0.65	916	Sylvania Lamp FO28/841/XP/SL/SS/ECO3 Sylvania Ballast QHE2X32T8/UNV ISL-SC	3	72	6	0.43	605	0.22	311	\$36	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	121	\$14
44	L-202	1400	2x4, 4 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	4	109	6	0.65	916	Sylvania Lamp FO28/841/XP/SL/SS/ECO3 Sylvania Ballast QHE2X32T8/UNV ISL-SC	3	72	6	0.43	605	0.22	311	\$36	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	121	\$14
69	L-204	1400	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt. Parabolic Lens	3	82	16	1.31	1,837	Existing To Remain	3	82	0	1.31	1,837	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	367	\$42
69	L-205	1400	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt. Parabolic Lens	3	82	6	0.49	689	Existing To Remain	3	82	0	0.49	689	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	138	\$16
6	L-205	1400	8"x8", 1 Lamp, 100w Incandescent Lamp, Recessed Mnt.	1	100	8	0.80	1,120	23w CFL Screw Base	1	23	8	0.18	258	0.62	862	\$99	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	52	\$6

Fixture Reference #	Location	Average Burn Hours	EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT						RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
			Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Equipment Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Energy Savings, kW	Energy Savings, kWh	Energy Savings, \$	Control Ref #	Controls Description	Qty of Controls	Hour Reduction %	Energy Savings, kWh	Energy Savings, \$
52	L-206	1400	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	1	0.08	115	Existing To Remain	3	82	0	0.08	115	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	23	\$3
47	Media Storage	1000	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., No Lens	2	58	3	0.17	174	Existing To Remain	2	58	0	0.17	174	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	35	\$4
48	TV Studio	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	19	1.10	1,543	Existing To Remain	2	58	0	1.10	1,543	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
69	TV Studio Office	1800	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt. Parabolic Lens	3	82	2	0.16	295	Existing To Remain	3	82	0	0.16	295	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	59	\$7
65	Men's Lavatory	2200	2x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	1	0.06	128	Existing To Remain	2	58	0	0.06	128	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	26	\$3
65	Women's Lavatory	2200	2x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	1	0.06	128	Existing To Remain	2	58	0	0.06	128	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	26	\$3
53	Girls' Lavatory	2200	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	5	0.29	638	Existing To Remain	2	58	0	0.29	638	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	128	\$15
49	Girls' Lavatory	2200	1x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	1	0.06	128	Existing To Remain	2	58	0	0.06	128	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
53	Boys' Lavatory	2200	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	5	0.29	638	Existing To Remain	2	58	0	0.29	638	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	128	\$15
49	Boys' Lavatory	2200	1x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	1	0.06	128	Existing To Remain	2	58	0	0.06	128	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
32	JC Closet	1000	1 Lamp, 13w CFL, Elect. Recessed Mnt., Prismatic Lens	1	18	1	0.02	18	Existing To Remain	1	18	0	0.02	18	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	4	\$0
52	Faculty Room	1600	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	8	0.66	1,050	Existing To Remain	3	82	0	0.66	1,050	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	210	\$24
48	IT Closet	1000	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	1	0.06	58	Existing To Remain	2	58	0	0.06	58	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	12	\$1
48	E305	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	15	0.87	1,218	Existing To Remain	2	58	0	0.87	1,218	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	244	\$28

Fixture Reference #	Location	Average Burn Hours	EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT						RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
			Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Equipment Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Energy Savings, kW	Energy Savings, kWh	Energy Savings, \$	Control Ref #	Controls Description	Qty of Controls	Hour Reduction %	Energy Savings, kWh	Energy Savings, \$
48	E307	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	30	1.74	2,436	Existing To Remain	2	58	0	1.74	2,436	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	487	\$56
52	E307 Prep	1400	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	4	0.33	459	Existing To Remain	3	82	0	0.33	459	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	92	\$11
68	LED Exits	8760	LED Exit	1	2	3	0.01	53	Existing To Remain	1	2	0	0.01	53	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
48	E311	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	35	2.03	2,842	Existing To Remain	2	58	0	2.03	2,842	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	2	20.0%	568	\$65
48	E312	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	35	2.03	2,842	Existing To Remain	2	58	0	2.03	2,842	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	2	20.0%	568	\$65
52	E312 Prep	1400	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	4	0.33	459	Existing To Remain	3	82	0	0.33	459	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	92	\$11
48	E308	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	30	1.74	2,436	Existing To Remain	2	58	0	1.74	2,436	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	487	\$56
48	e306	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	15	0.87	1,218	Existing To Remain	2	58	0	0.87	1,218	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	244	\$28
48	E304	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	15	0.87	1,218	Existing To Remain	2	58	0	0.87	1,218	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	244	\$28
48	E302	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	15	0.87	1,218	Existing To Remain	2	58	0	0.87	1,218	0.00	0	\$0	4	Dual Tech. Occupancy Sensor w/2 Powerpacks - Remote Mnt.	1	20.0%	244	\$28
33	Police	1800	1x4, 2 Lamp, T12 34w, Mag. Ballast, Pendant Mnt., Prismatic Lens	2	80	2	0.16	288	Sylvania Lamp FO28/841/XP/SL/SS/ECO3 Sylvania Ballast QHE2X32T8/UNV ISL-SC	2	49	2	0.10	176	0.06	112	\$13	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	35	\$4
53	Police Office	1800	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	2	0.12	209	Existing To Remain	2	58	0	0.12	209	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	42	\$5
48	Custodian	1000	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	1	0.06	58	Existing To Remain	2	58	0	0.06	58	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	12	\$1
53	Custodian Office	1800	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	2	0.12	209	Existing To Remain	2	58	0	0.12	209	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	42	\$5

Fixture Reference #	Location	Average Burn Hours	EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT						RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
			Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Equipment Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Energy Savings, kW	Energy Savings, kWh	Energy Savings, \$	Control Ref #	Controls Description	Qty of Controls	Hour Reduction %	Energy Savings, kWh	Energy Savings, \$
47	Custodian Locker	1000	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., No Lens	2	58	3	0.17	174	Existing To Remain	2	58	0	0.17	174	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	35	\$4
47	Receiving	1000	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., No Lens	2	58	8	0.46	464	Existing To Remain	2	58	0	0.46	464	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	93	\$11
55	Food Service Office	1800	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Direct/Indirect Lens	2	58	2	0.12	209	Existing To Remain	2	58	0	0.12	209	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	42	\$5
48	Cafeteria K6	1600	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	54	3.13	5,011	Existing To Remain	2	58	0	3.13	5,011	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
7	Cafeteria K6	1600	1 Lamp, 100w Incandescent Lamp, Pendant Mnt., Parabolic Lens	1	100	3	0.30	480	23w CFL Screw Base	1	23	3	0.07	110	0.23	370	\$43	0	No New Controls	0	0.0%	0	\$0
48	Cafeteria K5	1600	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	54	3.13	5,011	Existing To Remain	2	58	0	3.13	5,011	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
7	Cafeteria K5	1600	1 Lamp, 100w Incandescent Lamp, Pendant Mnt., Parabolic Lens	1	100	5	0.50	800	23w CFL Screw Base	1	23	5	0.12	184	0.39	616	\$71	0	No New Controls	0	0.0%	0	\$0
48	Cafeteria K4	1600	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	12	0.70	1,114	Existing To Remain	2	58	0	0.70	1,114	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
50	Cafeteria K4	1600	1x4, 1 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	1	58	9	0.52	835	Existing To Remain	1	58	0	0.52	835	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
48	Cafeteria K3	1600	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	54	3.13	5,011	Existing To Remain	2	58	0	3.13	5,011	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
50	Cafeteria K3	1600	1x4, 1 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	1	58	32	1.86	2,970	Existing To Remain	1	58	0	1.86	2,970	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
47	Kitchen Storage	1000	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., No Lens	2	58	1	0.06	58	Existing To Remain	2	58	0	0.06	58	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	12	\$1
47	Kitchen Hallway	2200	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., No Lens	2	58	3	0.17	383	Existing To Remain	2	58	0	0.17	383	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	77	\$9
47	Kitchen Ladies' Locker Room	1000	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., No Lens	2	58	2	0.12	116	Existing To Remain	2	58	0	0.12	116	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	23	\$3

Fixture Reference #	Location	Average Burn Hours	EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT						RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
			Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Equipment Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Energy Savings, kW	Energy Savings, kWh	Energy Savings, \$	Control Ref #	Controls Description	Qty of Controls	Hour Reduction %	Energy Savings, kWh	Energy Savings, \$
43	Kitchen Ladies' Lavatory	1000	18", 2 Lamp, CFL, Mag. Ballast, Surface Mt.	2	26	1	0.03	26	Existing To Remain	2	26	0	0.03	26	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mt.	1	20.0%	5	\$1
68	LED Exits	8760	LED Exit	1	2	10	0.02	175	Existing To Remain	1	2	0	0.02	175	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
47	Kitchen Dry Storage	1000	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mt., No Lens	2	58	9	0.52	522	Existing To Remain	2	58	0	0.52	522	0.00	0	\$0	5	Dual Technology Occupancy Sensor - Remote Mt.	1	20.0%	104	\$12
1	Walk-in Refrigerator	1600	1 Lamp, 100w Incandescent Lamp, Surface Mt, No Lens	1	100	3	0.30	480	23w CFL Screw Base	1	23	3	0.07	110	0.23	370	\$43	0	No New Controls	0	0.0%	0	\$0
61	Kitchen Office	1800	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mt., Direct/Indirect	2	58	2	0.12	209	Existing To Remain	2	58	0	0.12	209	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mt.	1	20.0%	42	\$5
3	Kitchen Storage	1000	1 Lamp, 100w Incandescent Lamp, Surface Mt	1	100	1	0.10	100	23w CFL Screw Base	1	23	1	0.02	23	0.08	77	\$9	6	Dual Technology Occupancy Sensor - Switch Mt.	1	20.0%	5	\$1
62	Kitchen Halls	2200	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mt.	2	58	12	0.70	1,531	Existing To Remain	2	58	0	0.70	1,531	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
34	Kitchen Serving	1600	8"x8", 2 lamp, 13w CFL, Elect. Ballast, Recessed Mt., No Lens	2	30	17	0.51	816	Existing To Remain	2	30	0	0.51	816	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
34	Kitchen Serving	1600	8"x8", 2 lamp, 13w CFL, Elect. Ballast, Recessed Mt., No Lens	2	30	17	0.51	816	Existing To Remain	2	30	0	0.51	816	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
34	Kitchen Serving	1600	8"x8", 2 lamp, 13w CFL, Elect. Ballast, Recessed Mt., No Lens	2	30	18	0.54	864	Existing To Remain	2	30	0	0.54	864	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
15	Kitchen Serving	1600	1 Lamp, 50w, Hal. Pendant Mt., No Lens	1	50	12	0.60	960	7w Dimmable PAR 38 LED	1	7	12	0.08	134	0.52	826	\$95	0	No New Controls	0	0.0%	0	\$0
15	Kitchen Serving	1600	1 Lamp, 50w, Hal. Pendant Mt., No Lens	1	50	5	0.25	400	7w Dimmable PAR 38 LED	1	7	5	0.04	56	0.22	344	\$40	0	No New Controls	0	0.0%	0	\$0
16	Kitchen	1600	24", 1 Lamp, HD 250w, Magnetic Ballast, Pendant Mt., Prismatic Lens	1	295	8	2.36	3,776	2x4, 4 Lamp, 54w T5, (2) 2/54 Elect. Ballast, Singlepoint Mt., High Bay, Wire Guard, Lens	4	240	8	1.92	3,072	0.44	704	\$81	0	No New Controls	0	0.0%	0	\$0
3	Kitchen Hood	1600	1 Lamp, 100w Incandescent Lamp, Surface Mt	1	100	6	0.60	960	23w CFL Screw Base	1	23	6	0.14	221	0.46	739	\$85	0	No New Controls	0	0.0%	0	\$0

Fixture Reference #	Location	Average Burn Hours	EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT						RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
			Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Equipment Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Energy Savings, kW	Energy Savings, kWh	Energy Savings, \$	Control Ref #	Controls Description	Qty of Controls	Hour Reduction %	Energy Savings, kWh	Energy Savings, \$
16	Upper Gym	1800	24", 1 Lamp, HID 250w, Magnetic Ballast, Pendant Mt., Prismatic Lens	1	295	24	7.08	12,744	2x4, 4 Lamp, 54w T5, (2) 2/54 Elect. Ballast, Singlepoint Mt., High Bay, Wire Guard, Lens	4	240	24	5.76	10,368	1.32	2,376	\$273	0	No New Controls	0	0.0%	0	\$0
68	LED Exits	8760	LED Exit	1	2	8	0.02	140	Existing To Remain	1	2	0	0.02	140	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
50	North First Hall	2200	1x4, 1 Lamp, T8 32w, Elect. Ballast, Surface Mt., Prismatic Lens	1	58	22	1.28	2,807	Existing To Remain	1	58	0	1.28	2,807	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
50	North Second Hall	2200	1x4, 1 Lamp, T8 32w, Elect. Ballast, Surface Mt., Prismatic Lens	1	58	22	1.28	2,807	Existing To Remain	1	58	0	1.28	2,807	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
50	North Third Hall	2200	1x4, 1 Lamp, T8 32w, Elect. Ballast, Surface Mt., Prismatic Lens	1	58	22	1.28	2,807	Existing To Remain	1	58	0	1.28	2,807	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
50	North Stair A	2200	1x4, 1 Lamp, T8 32w, Elect. Ballast, Surface Mt., Prismatic Lens	1	58	4	0.23	510	Existing To Remain	1	58	0	0.23	510	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
63	North Stair A	2200	12", 150w Incandescent Lamp, Pendant Mt.	1	150	3	0.45	990	20w Dimmable PAR 38 LED	1	20	3	0.06	132	0.39	858	\$99	0	No New Controls	0	0.0%	0	\$0
24	North Stair A	2200	1 Lamp, 150w Incandescent, Pendant Mt.	1	150	1	0.15	330	42w CFL Screw Base	1	42	1	0.04	92	0.11	238	\$27	0	No New Controls	0	0.0%	0	\$0
50	North Stair B	2200	1x4, 1 Lamp, T8 32w, Elect. Ballast, Surface Mt., Prismatic Lens	1	58	4	0.23	510	Existing To Remain	1	58	0	0.23	510	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
63	North Stair B	2200	12", 150w Incandescent Lamp, Pendant Mt.	1	150	3	0.45	990	20w Dimmable PAR 38 LED	1	20	3	0.06	132	0.39	858	\$99	0	No New Controls	0	0.0%	0	\$0
24	North Stair B	2200	1 Lamp, 150w Incandescent, Pendant Mt.	1	150	1	0.15	330	42w CFL Screw Base	1	42	1	0.04	92	0.11	238	\$27	0	No New Controls	0	0.0%	0	\$0
50	North Stair C	2200	1x4, 1 Lamp, T8 32w, Elect. Ballast, Surface Mt., Prismatic Lens	1	58	4	0.23	510	Existing To Remain	1	58	0	0.23	510	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
63	North Stair C	2200	12", 150w Incandescent Lamp, Pendant Mt.	1	150	3	0.45	990	20w Dimmable PAR 38 LED	1	20	3	0.06	132	0.39	858	\$99	0	No New Controls	0	0.0%	0	\$0
24	North Stair C	2200	1 Lamp, 150w Incandescent, Pendant Mt.	1	150	1	0.15	330	42w CFL Screw Base	1	42	1	0.04	92	0.11	238	\$27	0	No New Controls	0	0.0%	0	\$0

Fixture Reference #	Location	Average Burn Hours	EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT						RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
			Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Equipment Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Energy Savings, kW	Energy Savings, kWh	Energy Savings, \$	Control Ref #	Controls Description	Qty of Controls	Hour Reduction %	Energy Savings, kWh	Energy Savings, \$
50	North Stair D	2200	1x4, 1 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	1	58	4	0.23	510	Existing To Remain	1	58	0	0.23	510	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
63	North Stair D	2200	12", 150w Incandescent Lamp, Pendant Mnt.	1	150	3	0.45	990	20w Dimmable PAR 38 LED	1	20	3	0.06	132	0.39	858	\$99	0	No New Controls	0	0.0%	0	\$0
24	North Stair D	2200	1 Lamp, 150w Incandescent, Pendant Mnt.	1	150	1	0.15	330	42w CFL Screw Base	1	42	1	0.04	92	0.11	238	\$27	0	No New Controls	0	0.0%	0	\$0
50	Central First Hall	2200	1x4, 1 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	1	58	22	1.28	2,807	Existing To Remain	1	58	0	1.28	2,807	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
50	Central Second Hall	2200	1x4, 1 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	1	58	22	1.28	2,807	Existing To Remain	1	58	0	1.28	2,807	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
50	Central Third Hall	2200	1x4, 1 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	1	58	22	1.28	2,807	Existing To Remain	1	58	0	1.28	2,807	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
50	Stair A	2200	1x4, 1 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	1	58	4	0.23	510	Existing To Remain	1	58	0	0.23	510	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
70	Stair A	2200	12"x12", 1 CFL, Elect. Ballast, Surface Mnt., Prismatic Lens	1	26	3	0.08	172	Existing To Remain	1	26	0	0.08	172	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
24	Stair A	2200	1 Lamp, 150w Incandescent, Pendant Mnt.	1	150	1	0.15	330	42w CFL Screw Base	1	42	1	0.04	92	0.11	238	\$27	0	No New Controls	0	0.0%	0	\$0
50	Stair B	2200	1x4, 1 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	1	58	4	0.23	510	Existing To Remain	1	58	0	0.23	510	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
70	Stair B	2200	12"x12", 1 CFL, Elect. Ballast, Surface Mnt., Prismatic Lens	1	26	3	0.08	172	Existing To Remain	1	26	0	0.08	172	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
24	Stair B	2200	1 Lamp, 150w Incandescent, Pendant Mnt.	1	150	1	0.15	330	42w CFL Screw Base	1	42	1	0.04	92	0.11	238	\$27	0	No New Controls	0	0.0%	0	\$0
50	Stair C	2200	1x4, 1 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	1	58	4	0.23	510	Existing To Remain	1	58	0	0.23	510	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
70	Stair C	2200	12"x12", 1 CFL, Elect. Ballast, Surface Mnt., Prismatic Lens	1	26	3	0.08	172	Existing To Remain	1	26	0	0.08	172	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0



Fixture Reference #	Location	Average Burn Hours	EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT						RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
			Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Equipment Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Energy Savings, kW	Energy Savings, kWh	Energy Savings, \$	Control Ref #	Controls Description	Qty of Controls	Hour Reduction %	Energy Savings, kWh	Energy Savings, \$
24	Stair C	2200	1 Lamp, 150w Incandescent, Pendant Mnt.	1	150	1	0.15	330	42w CFL, Screw Base	1	42	1	0.04	92	0.11	238	\$27	0	No New Controls	0	0.0%	0	\$0
50	Stair D	2200	1x4, 1 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	1	58	4	0.23	510	Existing To Remain	1	58	0	0.23	510	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
70	Stair D	2200	12"x12", 1 CFL, Elect. Ballast, Surface Mnt., Prismatic Lens	1	26	3	0.08	172	Existing To Remain	1	26	0	0.08	172	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
24	Stair D	2200	1 Lamp, 150w Incandescent, Pendant Mnt.	1	150	1	0.15	330	42w CFL, Screw Base	1	42	1	0.04	92	0.11	238	\$27	0	No New Controls	0	0.0%	0	\$0
50	South First Hall	2200	1x4, 1 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	1	58	22	1.28	2,807	Existing To Remain	1	58	0	1.28	2,807	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
50	South Second Hall	2200	1x4, 1 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	1	58	22	1.28	2,807	Existing To Remain	1	58	0	1.28	2,807	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
50	South Third Hall	2200	1x4, 1 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	1	58	22	1.28	2,807	Existing To Remain	1	58	0	1.28	2,807	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
50	Stair A	2200	1x4, 1 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	1	58	4	0.23	510	Existing To Remain	1	58	0	0.23	510	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
70	Stair A	2200	12"x12", 1 CFL, Elect. Ballast, Surface Mnt., Prismatic Lens	1	26	3	0.08	172	Existing To Remain	1	26	0	0.08	172	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
24	Stair A	2200	1 Lamp, 150w Incandescent, Pendant Mnt.	1	150	1	0.15	330	42w CFL, Screw Base	1	42	1	0.04	92	0.11	238	\$27	0	No New Controls	0	0.0%	0	\$0
50	Stair B	2200	1x4, 1 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	1	58	4	0.23	510	Existing To Remain	1	58	0	0.23	510	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
70	Stair B	2200	12"x12", 1 CFL, Elect. Ballast, Surface Mnt., Prismatic Lens	1	26	3	0.08	172	Existing To Remain	1	26	0	0.08	172	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
24	Stair B	2200	1 Lamp, 150w Incandescent, Pendant Mnt.	1	150	1	0.15	330	42w CFL, Screw Base	1	42	1	0.04	92	0.11	238	\$27	0	No New Controls	0	0.0%	0	\$0
50	Stair C	2200	1x4, 1 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	1	58	4	0.23	510	Existing To Remain	1	58	0	0.23	510	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0

Fixture Reference #	Location	Average Burn Hours	EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT						RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
			Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Equipment Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Energy Savings, kW	Energy Savings, kWh	Energy Savings, \$	Control Ref #	Controls Description	Qty of Controls	Hour Reduction %	Energy Savings, kWh	Energy Savings, \$
70	Stair C	2200	12"x12", 1 CFL, Elect. Ballast, Surface Mnt., Prismatic Lens	1	26	3	0.08	172	Existing To Remain	1	26	0	0.08	172	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
24	Stair C	2200	1 Lamp, 150w Incandescent, Pendant Mnt.	1	150	1	0.15	330	42w CFL Screw Base	1	42	1	0.04	92	0.11	238	\$27	0	No New Controls	0	0.0%	0	\$0
50	Stair D	2200	1x4, 1 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	1	58	4	0.23	510	Existing To Remain	1	58	0	0.23	510	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
70	Stair D	2200	12"x12", 1 CFL, Elect. Ballast, Surface Mnt., Prismatic Lens	1	26	3	0.08	172	Existing To Remain	1	26	0	0.08	172	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
24	Stair D	2200	1 Lamp, 150w Incandescent, Pendant Mnt.	1	150	1	0.15	330	42w CFL Screw Base	1	42	1	0.04	92	0.11	238	\$27	0	No New Controls	0	0.0%	0	\$0
49	East First Hall	2200	1x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	29	1.68	3,700	Existing To Remain	2	58	0	1.68	3,700	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
49	East Third Hall	2200	1x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	28	1.62	3,573	Existing To Remain	2	58	0	1.62	3,573	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
49	East Second Hall	2200	1x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	34	1.97	4,338	Existing To Remain	2	58	0	1.97	4,338	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
52	East Second Hall	2200	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	5	0.41	902	Existing To Remain	3	82	0	0.41	902	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
64	East Stair A	2200	1x4, 3 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	3	82	9	0.74	1,624	Existing To Remain	3	82	0	0.74	1,624	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
64	Stair B	2200	1x4, 3 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	3	82	9	0.74	1,624	Existing To Remain	3	82	0	0.74	1,624	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
64	Stair C	2200	1x4, 3 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	3	82	9	0.74	1,624	Existing To Remain	3	82	0	0.74	1,624	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
64	Stair D	2200	1x4, 3 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	3	82	9	0.74	1,624	Existing To Remain	3	82	0	0.74	1,624	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
35	Vestibule V1	2200	12"x12", 2 Lamp, 13w CFL, Elect. Ballast, Surface Mnt., Prismatic Lens	2	30	2	0.06	132	Existing To Remain	2	30	0	0.06	132	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0

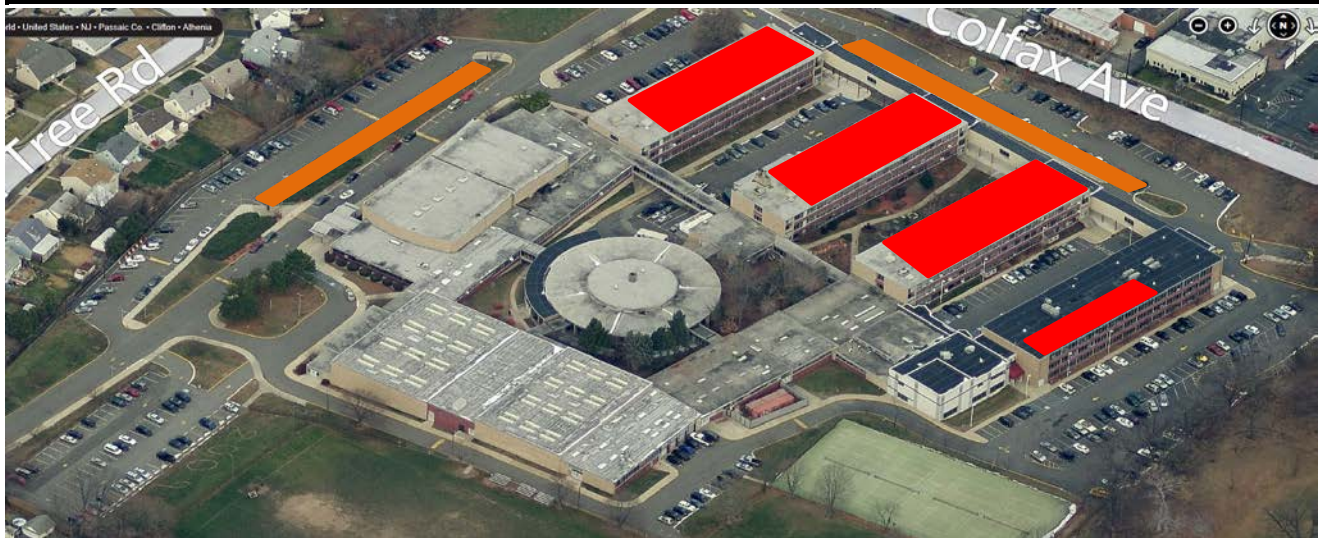
Fixture Reference #	Location	Average Burn Hours	EXISTING FIXTURES					PROPOSED FIXTURE RETROFIT					RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS							
			Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Equipment Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Energy Savings, kW	Energy Savings, kWh	Energy Savings, \$	Control Ref #	Controls Description	Qty of Controls	Hour Reduction %	Energy Savings, kWh	Energy Savings, \$
49	Corridor A	2200	1x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	26	1.51	3,318	Existing To Remain	2	58	0	1.51	3,318	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
50	Corridor B	2200	1x4, 1 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	1	58	12	0.70	1,531	Existing To Remain	1	58	0	0.70	1,531	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
50	Corridor C	2200	1x4, 1 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	1	58	15	0.87	1,914	Existing To Remain	1	58	0	0.87	1,914	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
50	Corridor D	2200	1x4, 1 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	1	58	6	0.35	766	Existing To Remain	1	58	0	0.35	766	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
65	Long Corridor	2200	2x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	69	4.00	8,804	Existing To Remain	2	58	0	4.00	8,804	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
50	Corridor E	2200	1x4, 1 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	1	58	28	1.62	3,573	Existing To Remain	1	58	0	1.62	3,573	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
66	Corridor F	2200	1x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Parabolic Lens	2	58	12	0.70	1,531	Existing To Remain	2	58	0	0.70	1,531	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
51	Corridor F	2200	2x4, 4 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Parabolic Lens	4	109	12	1.31	2,878	Sylvania Lamp FO28/841/XP/PLSS/ECO3 Sylvania Ballast QHEX32T8/UNV ISL-SC	3	72	12	0.86	1,901	0.44	977	\$112	0	No New Controls	0	0.0%	0	\$0
66	Vestibule V2	2200	1x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Parabolic Lens	2	58	3	0.17	383	Existing To Remain	2	58	0	0.17	383	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
67	Display Case	1000	1x4, 1 Lamp, T8 32w, Recessed Mnt, Prismatic Lens	1	28	3	0.08	84	Existing To Remain	1	28	0	0.08	84	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
68	LED Exits	8760	LED Exit	1	2	37	0.07	648	Existing To Remain	1	2	0	0.07	648	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
50	Corridor G	2200	1x4, 1 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	1	58	5	0.29	638	Existing To Remain	1	58	0	0.29	638	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
49	Corridor H	2200	1x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	16	0.93	2,042	Existing To Remain	2	58	0	0.93	2,042	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
55	Corridor H	2200	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Direc/Indirect Lens	2	58	14	0.81	1,786	Existing To Remain	2	58	0	0.81	1,786	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0

Fixture Reference #	Location	Average Burn Hours	EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT						RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
			Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Equipment Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Energy Savings, kW	Energy Savings, kWh	Energy Savings, \$	Control Ref #	Controls Description	Qty of Controls	Hour Reduction %	Energy Savings, kWh	Energy Savings, \$
49	Corridor J	2200	1x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	14	0.81	1,786	Existing To Remain	2	58	0	0.81	1,786	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
50	Corridor K	2200	1x4, 1 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	1	58	12	0.70	1,531	Existing To Remain	1	58	0	0.70	1,531	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
50	Corridor L	2200	1x4, 1 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	1	58	13	0.75	1,659	Existing To Remain	1	58	0	0.75	1,659	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
50	Corridor M	2200	1x4, 1 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	1	58	15	0.87	1,914	Existing To Remain	1	58	0	0.87	1,914	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
50	Corridor N	2200	1x4, 1 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	1	58	20	1.16	2,552	Existing To Remain	1	58	0	1.16	2,552	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
50	Corridor P	2200	1x4, 1 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	1	58	16	0.93	2,042	Existing To Remain	1	58	0	0.93	2,042	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
50	Corridor Q	2200	1x4, 1 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	1	58	10	0.58	1,276	Existing To Remain	1	58	0	0.58	1,276	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
67	Display Case	1000	1x4, 1 Lamp, T8 32w, Recessed Mnt, Prismatic Lens	1	28	2	0.06	56	Existing To Remain	1	28	0	0.06	56	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
50	Corridor R	2200	1x4, 1 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	1	58	6	0.35	766	Existing To Remain	1	58	0	0.35	766	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
50	Corridor S	2200	1x4, 1 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	1	58	4	0.23	510	Existing To Remain	1	58	0	0.23	510	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
75	Display Case	1000	1 Lamp, MR 16 Track Lighting, 35w, Surface Mnt.	1	35	9	0.32	315	Existing To Remain	1	35	0	0.32	315	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
67	Display Case	1000	1x4, 1 Lamp, T8 32w, Recessed Mnt, Prismatic Lens	1	28	2	0.06	56	Existing To Remain	1	28	0	0.06	56	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
67	Display Case	1000	1x4, 1 Lamp, T8 32w, Recessed Mnt, Prismatic Lens	1	28	2	0.06	56	Existing To Remain	1	28	0	0.06	56	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
67	Display Case	1000	1x4, 1 Lamp, T8 32w, Recessed Mnt, Prismatic Lens	1	28	4	0.11	112	Existing To Remain	1	28	0	0.11	112	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0

Fixture Reference #	Location	Average Burn Hours	EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT						RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
			Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Equipment Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Energy Savings, kW	Energy Savings, kWh	Energy Savings, \$	Control Ref #	Controls Description	Qty of Controls	Hour Reduction %	Energy Savings, kWh	Energy Savings, \$
67	Display Case	1000	1x4, 1 Lamp, T8 32w, Recessed Mnt, Prismatic Lens	1	28	4	0.11	112	Existing To Remain	1	28	0	0.11	112	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
68	LED Exits	8760	LED Exit	1	2	17	0.03	298	Existing To Remain	1	2	0	0.03	298	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
55	L-3B	1400	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Direct/Indirect Lens	2	58	4	0.23	325	Existing To Remain	2	58	0	0.23	325	0.00	0	\$0	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	65	\$7
24	Gym Storage	1000	1 Lamp, 150w Incandescent, Pendant Mnt.	1	150	2	0.30	300	42w CFL Screw Base	1	42	2	0.08	84	0.22	216	\$25	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	17	\$2
<b>TOTAL</b>						<b>4.625</b>	<b>315</b>	<b>521,278</b>				<b>466</b>	<b>281</b>	<b>461,956</b>	<b>34</b>	<b>59,322</b>	<b>\$6,822</b>			<b>365</b>	<b>70</b>	<b>50,408</b>	<b>\$5,797</b>

**APPENDIX F**

Location Description	Area (Sq FT)	Panel	Qty	Panel Sq Ft	Panel Total Sq Ft	Total KW <sub>DC</sub>	Total Annual kWh	Total KW <sub>AC</sub>	Panel Weight (41.9 lbs)	W/SQFT
Clifton High School	36650	SHARP NU-U235F2	1672	17.5	29,328	392.92	451,331	318.2	70,057	13.40



= Proposed Roof PV Layout       = Proposed Parking PV Layout

Notes:

1. Estimated kWh based on the National Renewable Energy Laboratory PVWatts Version 1 Calculator Program.

<b>Project Name: LGEA Solar PV Project - Clifton High School</b> <b>Location: Clifton, NJ</b> <b>Description: Photovoltaic System 100% Financing - 15 year</b>										
<b>Simple Payback Analysis</b>										
		<b>Photovoltaic System 100% Financing - 15 year</b>								
Total Construction Cost		\$2,422,382								
Annual kWh Production		451,331								
Annual Energy Cost Reduction		\$51,903								
Average Annual SREC Revenue		\$86,242								
Simple Payback:		<b>17.54</b>								Years
<b>Life Cycle Cost Analysis</b>										
Analysis Period (years):		15				Financing %:		100%		
Discount Rate:		3%				Maintenance Escalation Rate:		3.0%		
Average Energy Cost (\$/kWh)		<b>\$0.115</b>				Energy Cost Escalation Rate:		3.0%		
Financing Rate:		6.00%				Average SREC Value (\$/kWh)		\$0.191		
Period	Additional Cash Outlay	Energy kWh Production	Energy Cost Savings	Additional Maint Costs	SREC Revenue	Interest Expense	Loan Principal	Net Cash Flow	Cumulative Cash Flow	
0	\$0	0	0	0	\$0	0	0	0	0	
1	\$0	451,331	\$51,903	\$0	\$112,833	\$142,548	\$102,749	(\$80,561)	(\$80,561)	
2	\$0	449,074	\$53,460	\$0	\$112,269	\$136,210	\$109,087	(\$79,568)	(\$160,130)	
3	\$0	446,829	\$55,064	\$0	\$111,707	\$129,482	\$115,815	(\$78,526)	(\$238,656)	
4	\$0	444,595	\$56,716	\$0	\$111,149	\$122,339	\$122,958	(\$77,433)	(\$316,089)	
5	\$0	442,372	\$58,417	\$4,556	\$110,593	\$114,755	\$130,542	(\$80,843)	(\$396,932)	
6	\$0	440,160	\$60,170	\$4,534	\$88,032	\$106,704	\$138,594	(\$101,629)	(\$498,561)	
7	\$0	437,959	\$61,975	\$4,511	\$87,592	\$98,156	\$147,142	(\$100,241)	(\$598,802)	
8	\$0	435,769	\$63,834	\$4,488	\$87,154	\$89,080	\$156,217	(\$98,798)	(\$697,600)	
9	\$0	433,591	\$65,749	\$4,466	\$86,718	\$79,445	\$165,852	(\$97,296)	(\$794,896)	
10	\$0	431,423	\$67,722	\$4,444	\$64,713	\$69,216	\$176,082	(\$117,306)	(\$912,201)	
11	\$0	429,265	\$69,753	\$4,421	\$64,390	\$58,355	\$186,942	(\$115,575)	(\$1,027,777)	
12	\$0	427,119	\$71,846	\$4,399	\$64,068	\$46,825	\$198,472	(\$113,783)	(\$1,141,560)	
13	\$0	424,984	\$74,001	\$4,377	\$63,748	\$34,584	\$210,713	(\$111,926)	(\$1,253,485)	
14	\$0	422,859	\$76,221	\$4,355	\$42,286	\$21,588	\$223,710	(\$131,145)	(\$1,384,631)	
15	\$0	420,744	\$78,508	\$4,334	\$42,074	\$7,790	\$237,508	(\$129,048)	(\$1,513,679)	
<b>Totals:</b>		6,538,074	\$965,341	\$48,886	\$1,249,325	\$1,257,076	\$2,422,382	(\$1,513,679)	(\$11,015,559)	
<b>Net Present Value (NPV)</b>								<b>(\$1,111,425)</b>		