WOODBURY CITY SCHOOL DISTRICT

JUNIOR-SENIOR HIGH SCHOOL

25 NORTH BROAD STREET
WOODBURY NJ 08096

FACILITY ENERGY REPORT

TABLE OF CONTENTS

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 Secondary (LPLS)
Third Party Supplier:	South Jersey Energy Co.

Natural Gas Utility Provider:	Public Service Electric & Gas
Utility Rate Structure:	Large Volume Gas (LVG)
Third Party Supplier:	None

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

ELECTRIC USAGE SUMMARY

Utility Provider: PSE&G
Rate: LPLS
Meter No: 778010424
Account # 42 008 026 00
Third Party Utility Provider: South Jersey Energy
TPS Meter / Acct No:

MONTH OF USE	CONSUMPTION KWH	DEMAND KW	TOTAL BILL
Apr-11	154,370	573	$22,820
May-11	157,067	583	$21,272
Jun-11	150,106	613	$25,537
Jul-11	97,519	277	$15,346
Aug-11	107,559	394	$17,993
Sep-11	164,916	536	$26,571
Oct-11	155,933	604	$21,282
Nov-11	159,615	548	$21,616
Dec-11	182,551	693	$24,897
Jan-12	259,002	780	$34,599
Feb-12	220,463	757	$30,483
Mar-12	175,375	650	$24,494
Totals	**1,984,476**	**780 Max**	**$286,909**

AVERAGE DEMAND **584.0 KW average**
AVERAGE RATE **$0.145** **$/kWh**

Figure 1
Electricity Usage Profile

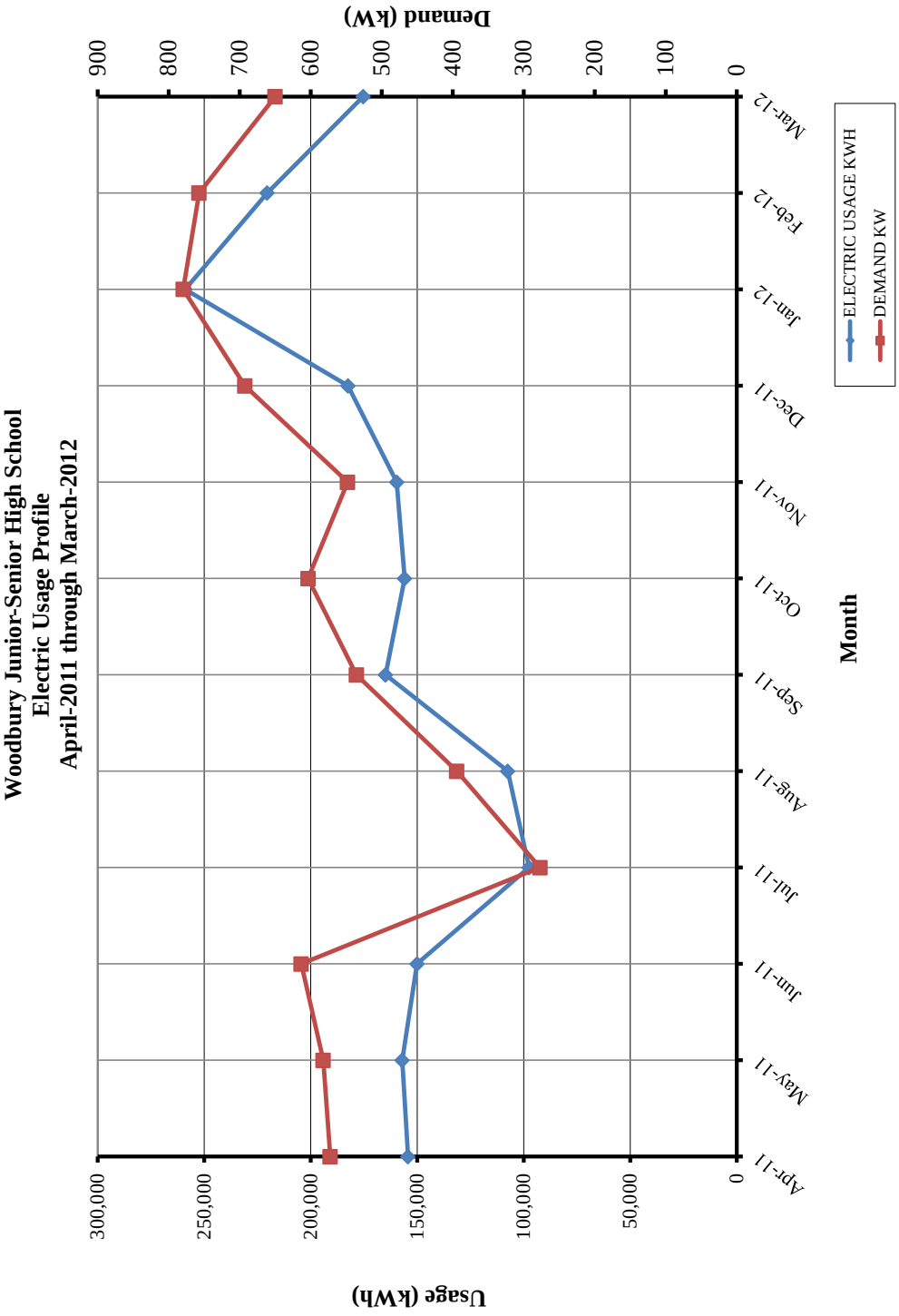
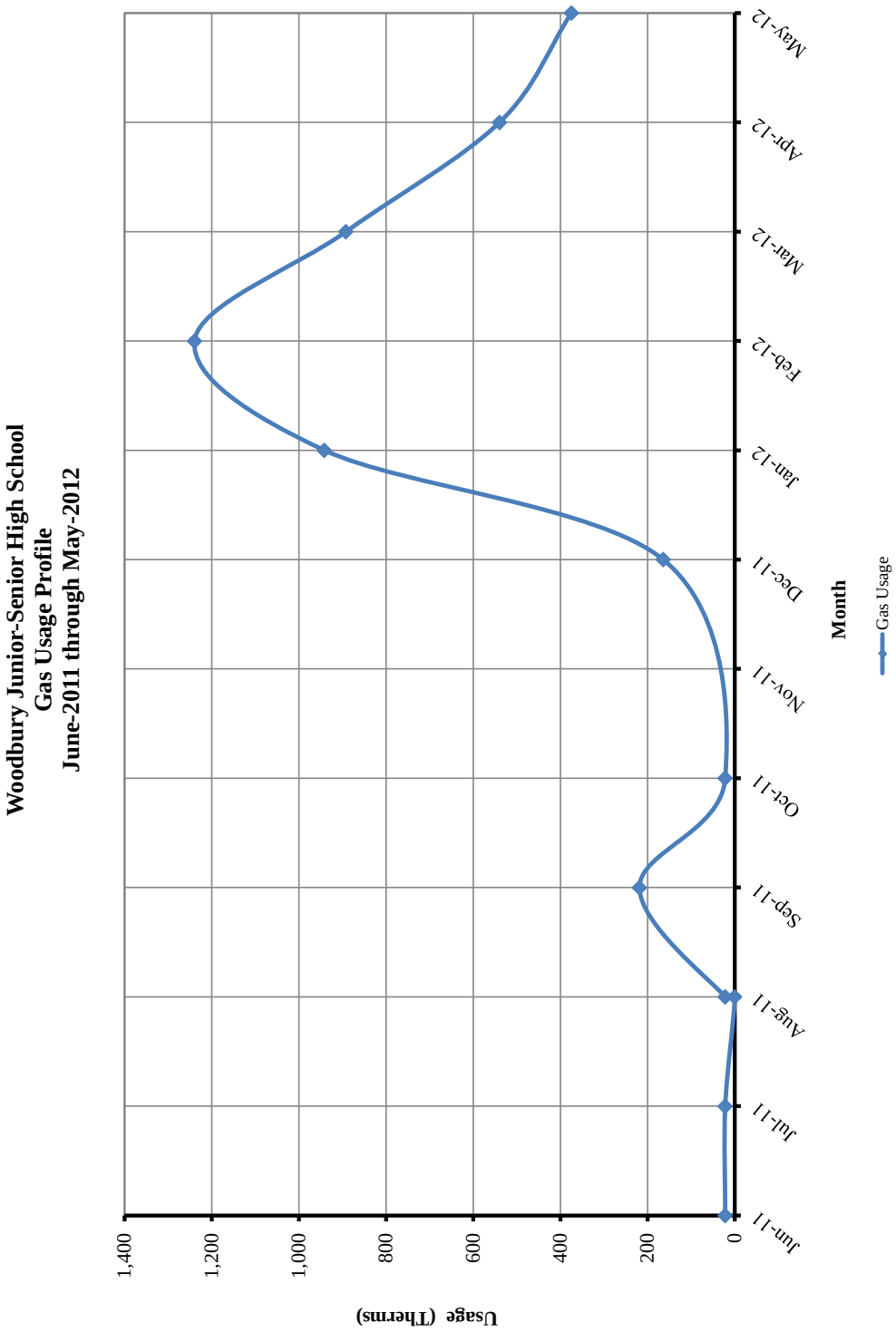


Table 4
Natural Gas Billing Data

NATURAL GAS USAGE SUMMARY		
Utility Provider: PSE&G		
Rate: LVG		
Meter No: 3274636		
Account Number 66 366 235 00		
Third Party Utility Provider: Hess		
TPS Account No: -		
MONTH OF USE	**CONSUMPTION (THERMS)**	**TOTAL BILL**
Jun-11	22	$109
Jul-11	22	$109
Aug-11	0	$98
Aug-11	22	$111
Sep-11	219	$217
Oct-11	22	$111
Dec-11	164	$344
Jan-12	942	$802
Feb-12	1,240	$975
Mar-12	892	$760
Apr-12	540	$524
May-12	375	$268
TOTALS	**4,458**	**$4,428**
AVERAGE RATE:	**$0.99**	**$/THERM**

Figure 2
Natural Gas Usage Profile



II. FACILITY DESCRIPTION

The Junior-Senior High School is located on 25 North Broad Street in Woodbury City, New Jersey. The 181,393 SF school was originally built in 1911 with additions occurring in 1957, 1968, and 2000. The facility also went through a major HVAC renovation in 2006. The building is a three story facility comprised of the main building which contains most of the classrooms, administrative offices, faculty lounges, cafeteria, auditorium, kitchen, and library; and the Gym/Annex building which contains the Paine Gymnasium, weight room, trainer's offices, locker room, and classrooms.

Occupancy Profile

The typical hours of operation for the High School are Monday through Friday between 7:00 am and 5:00 pm, with some light weekend usage for athletics.

Building Envelope

Exterior walls for the High School are brick faced with a concrete block construction. The amount of insulation within the walls is approximately ¾" foam insulation. The windows throughout are in good condition and appear to be maintained. Typical windows throughout are double pane, operable, ¼" coated glass with vinyl frames. The majority of the roof is a flat, built up with stone slag overlay, the oldest building section has a sloped roof with shingles, and the annex gymnasium has a curved roof wood truss supported roof. The amount of insulation below the roofing ranges from 2" to 5" depending on the location and slope of the roof.

HVAC Systems

The school is served by a geothermal heat pump loop system. The geothermal system provides both heating and cooling to the entire high school campus. There are three loop pumps located in the Annex basement that circulate loop water throughout the buildings. These pumps are rated at 600 GPM each with 75 horsepower motors fitted with variable speed drives. The loop requires two of the three pumps to operate in order to supply sufficient flow to the system.

The classrooms typically have vertical geothermal heat pumps manufactured by Airedale that range from 2 to 4 tons with an EER of 16 and COP of 3.5. These units directly receive outdoor air through fixed louvers.

Typical offices and small lounges have console style geothermal heat pumps that are rated for 1 ¼ tons of cooling and 12 MBH of heating. These units have an efficiency rating of 15.4 EER in cooling mode and 3.5 COP in heating mode.

The Library is conditioned by a constant volume Trane 20 ton packaged rooftop unit with natural gas fired heating. The unit is fitted with two 10 ton compressors with 100% / 50% capacity staging. The gas fired heating is rated at 500 MBH capacity and approximately 80% efficient. The unit is fitted with a 5 horsepower supply fan and 1.5 horsepower exhaust fan with standard efficiency motors. The unit has 0 to 100% modulating enthalpy economizer control capability.

The New Cafeteria is conditioned by a constant volume Trane 25 ton split rooftop units with natural gas fired heating. The unit has a remote condenser located on the roof below manufactured by Trane. The rooftop unit is fitted with a two stage gas fired heat exchanged rated at 800 MBH capacity. The unit is fitted with a 15 horsepower supply fan and 5 horsepower exhaust fan with standard efficiency motors. The unit has 0 to 100% modulating enthalpy economizer control capability.

The Paine Gymnasium is conditioned by four vertical style geothermal heat pumps rated at 15 tons of cooling and 150 MBH of heating. The units have an efficiency rating of 14.7 EER in cooling mode and 3.2 COP in heating mode.

Stairwells, vestibules, lobbies, and exposed corridors have electric wall heaters that range 2 to 8 kW. These units are fitted with on board thermostats that control operation of the heaters; however onsite staff noted some of these units operate continuously during the winter months.

Exhaust System

Air is exhausted from the toilet rooms through the roof exhausters. The Kitchen Hood has a single up blast exhaust fan operated by a disconnect switch by the hood, combined with a makeup air unit that supplied unconditioned air directly to the hood.

HVAC System Controls

Most of the upgraded HVAC units are connected and controlled by the building's DDC System. The balance of the units such as the unit heaters are controlled by local wall sensors. The larger rooftop units that existed prior to the 2007 upgrade have also been integrated into the building management system. The school's control system is accessible through internet browser on any computer by district personnel with a log in. Systems are typically scheduled on at 6:00 AM and operate till 5:00 PM, with special events being scheduled on an as needed basis.

Domestic Hot Water

The A, B, I, and J Halls are supplied domestic hot water from an 18 kilowatt 119 gallon Bradford and White electric boiler located in the old boiler room. The Annex and Paine Gym are supplied domestic hot water from an 18 kilowatt 119 gallon Bradford and White electric boiler located in the Annex Pump Room. The Kitchen is served domestic hot water from a 27 kilowatt 119 gallons Bradford and White electric boiler. The M-Hall 3rd Floor is supplied hot water from a natural gas fired 65 MBH 65 gallon Bradford and White boiler located in the 3rd floor storage closet. Lastly the Snack Stand has a 4.5 kilowatt 30 gallon Bradford and White electric boiler located below the counter in the stand.

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.

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

ENERGY CONSERVATION MEASURES (ECM's)					
ECM NO.	**DESCRIPTION**	**NET INSTALLATION COST[A]**	**ANNUAL SAVINGS[B]**	**SIMPLE PAYBACK (Yrs)**	**SIMPLE LIFETIME ROI**
ECM #1	Vending Miser Controls	$700	$951	0.7	1258.2%
ECM #2	Walk-In Controls	$3,350	$255	13.1	-23.9%
ECM #3	Refrigerator Replacement	$660	$110	6.0	66.7%
ECM #4	Washing Machine Replacement	$750	$205	3.7	173.3%
ECM #5	Dishwasher Replacement	$23,800	$2,062	11.5	30.0%
ECM #6	Electric to Gas Booster Heater	$16,500	$1,051	15.7	-4.5%
ECM #7	Ktitchen Hood VAV Controls	$16,600	$1,176	14.1	-29.2%
ECM #8	Time Clock Locker Exhaust Controls	$2,500	$3,813	0.7	1425.2%
ECM #9	Improved Electric Heat Controls	$17,500	$3,176	5.5	81.5%
ECM #10	Annex & Old Boiler DHW to Gas	$44,500	$12,241	3.6	312.6%
ECM #11	ECM Motor	$74,000	$10,045	7.4	35.7%
ECM #12	Lighting Upgrade High School	$13,499	$2,224	6.1	64.8%
ECM #13	Lighting Upgrade Annex	$8,332	$850	9.8	2.0%
ECM #14	Lighting Upgrade Paine Gym	$21,739	$1,644	13.2	-24.4%
ECM #15	Lighting Controls High School	$29,830	$1,021	29.2	-65.8%
ECM #16	Lighting Controls Annex	$4,220	$501	8.4	18.7%
RENEWABLE ENERGY MEASURES (REM's)					
ECM NO.	**DESCRIPTION**	**NET INSTALLATION COST**	**ANNUAL SAVINGS**	**SIMPLE PAYBACK (Yrs)**	**SIMPLE LIFETIME ROI**
REM #1	400 kW PV Array	$2,395,124	$170,731	14.0	6.9%

Notes: A. Cost takes into consideration applicable NJ Smart StartTM incentives.
B. Savings takes into consideration applicable maintenance savings.

Table 2
ECM Energy Summary

ENERGY CONSERVATION MEASURES (ECM's)				
ECM NO.	DESCRIPTION	ANNUAL UTILITY REDUCTION		
		ELECTRIC DEMAND (KW)	ELECTRIC CONSUMPTION (KWH)	NATURAL GAS (THERMS)
ECM #1	Vending Miser Controls	0.0	6,557	0
ECM #2	Walk-In Controls	0.0	1,760	0
ECM #3	Refrigerator Replacement	0.0	756	0
ECM #4	Washing Machine Replacement	0.0	819	0
ECM #5	Dishwasher Replacement	0.0	12,301	0
ECM #6	Electric to Gas Booster Heater	0.0	10,042	-410
ECM #7	Ktitchen Hood VAV Controls	0.0	8,110	0
ECM #8	Time Clock Locker Exhaust Controls	0.0	26,295	0
ECM #9	Improved Electric Heat Controls	0.0	21,905	0
ECM #10	Annex & Old Boiler DHW to Gas	36.0	110,771	-3,860
ECM #11	ECM Motor	0.0	69,274	0
ECM #12	Lighting Upgrade High School	5.9	15,340	0
ECM #13	Lighting Upgrade Annex	3.4	5,863	0
ECM #14	Lighting Upgrade Paine Gym	3.9	11,339	0
ECM #15	Lighting Controls High School	0.0	7,043	0
ECM #16	Lighting Controls Annex	0.0	3,456	0
RENEWABLE ENERGY MEASURES (REM's)				
ECM NO.	DESCRIPTION	ANNUAL UTILITY REDUCTION		
		ELECTRIC DEMAND (KW)	ELECTRIC CONSUMPTION (KWH)	NATURAL GAS (THERMS)
REM #1	400 kW PV Array	335.0	507,998	0

Table 3
Facility Project Summary

ENERGY SAVINGS IMPROVEMENT PROGRAM - POTENTIAL PROJECT					
ENERGY CONSERVATION MEASURES	**ANNUAL ENERGY SAVINGS ($)**	**PROJECT COST ($)**	**SMART START INCENTIVES**	**CUSTOMER COST**	**SIMPLE PAYBACK**
Vending Miser Controls	$951	$700	$0	$700	0.7
Walk-In Controls	$255	$3,500	$150	$3,350	13.1
Refrigerator Replacement	$110	$660	$0	$660	6.0
Washing Machine Replacement	$205	$750	$0	$750	3.7
Dishwasher Replacement	$2,062	$23,800	$0	$23,800	11.5
Electric to Gas Booster Heater	$1,051	$20,000	$3,500	$16,500	15.7
Ktitchen Hood VAV Controls	$1,176	$16,600	$0	$16,600	14.1
Time Clock Locker Exhaust Controls	$3,813	$2,500	$0	$2,500	0.7
Improved Electric Heat Controls	$3,176	$17,500	$0	$17,500	5.5
Annex & Old Boiler DHW to Gas	$12,241	$45,000	$500	$44,500	3.6
ECM Motor	$10,045	$74,000	$0	$74,000	7.4
Lighting Upgrade High School	$2,224	$16,096	$2,597	$13,499	6.1
Lighting Upgrade Annex	$850	$9,942	$1,610	$8,332	9.8
Lighting Upgrade Paine Gym	$1,644	$25,239	$3,500	$21,739	13.2
Lighting Controls High School	$1,021	$31,300	$1,470	$29,830	29.2
Lighting Controls Annex	$501	$4,500	$280	$4,220	8.4
Design / Construction Extras (15%)		*$43,813*		*$43,813*	
Total Project	**$41,325**	**$335,900**	**$13,607**	**$322,293**	**7.8**

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: Vending Miser Controls

Description:

The Junior-Senior High School currently utilizes vending machines in select areas within the building. Vending machines are common within corridors 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 four (4) of these control systems, one (1) for the snack machine and three (3) for the cold beverage machines.

Energy Savings Calculations:

Cold Drink and Snack Vending Machine Energy Conservation Project

	Input Variables	
Energy Analysis Prepared For:	Energy Costs ($0.000 per kwh)	$0.145
	Facility Occupied Hours per Week	60
Woodbury Junior-Senior HS	Number of Cold Drink Vending Machines	3
	Number of Uncooled Snack Machines	1
www.VendingMiserStore.com	Power Requirements of Cold Drink Machine (avg watts	427
	Power Requirements of Snack Machine (avg watts)	100
	VendingMiser Sale Price (for cold drink machines)	$200.00
	OfficeMiser Sale Price (for snack machines)	$100.00

Savings Analysis

	Before	After	
Cold Drink Machines	$1,628.24	$758.95	Cost of Operation
	11,229	5,234	kWh
		53%	% Energy Savings
Snack Machines	$126.67	$45.24	Cost of Operation
	874	312	kWh
		64%	% Energy Savings

Project Summary

Present kWh	Projected kWh	kWh Savings per Year
12,103	5,546	6,557

Present Cost	Projected Costs	Annual Savings	Per Cent Savings	Total Project Cost	Break Even (Months)
$1,754.91	$804.19	$950.72	54%	$700.00	8.8

Energy Savings Summary:

ECM #1 - ENERGY SAVINGS SUMMARY	
Installation Cost ($):	$700
NJ Smart Start Equipment Incentive ($):	$0
Net Installation Cost ($):	$700
Maintenance Savings ($/Yr):	$0
Energy Savings ($/Yr):	$951
Total Yearly Savings ($/Yr):	$951
Estimated ECM Lifetime (Yr):	10
Simple Payback	0.7
Simple Lifetime ROI	1258.2%
Simple Lifetime Maintenance Savings	$0
Simple Lifetime Savings	$9,507
Internal Rate of Return (IRR)	136%
Net Present Value (NPV)	$7,409.83

ECM #2: Walk-In Evaporator Controls

Description:

The two refrigerated walk-in cooler/freezers have a bank of evaporator fans that circulate the cold air over and under the food. These banks of evaporator fans (~1/20 HP motors) run continuously and give off heat that must be removed by the refrigeration.

This measure would install an evaporator fan controller that features two-speed operation of the evaporator fans – high speed during cooling, and low speed or off when not cooling manufactured by Frigitek or equivalent.

Energy Savings Calculations:

Energy savings calculations are based on New Jersey Board of Public Utilities Protocols to Measure Resource Savings. The energy savings are calculated with using existing equipment characteristics.

$$\text{kWh Savings Evap Fans} = \frac{\left(\text{Amps} \times \text{Volts} \times \text{Phase}^{\frac{1}{2}}\right)}{1000} \times 0.55 \times 8760 \times 35.52\%$$

$$\text{kWh Savings Evap Reduced Heat} = \text{kWh Savings Evap Fans} \times 0.28 \times 1.6$$

$$\text{kWh Savings Controls} = \frac{\text{Amps}_{\text{CP}} \times \text{Volts}_{\text{CP}} \times \text{Phase}_{\text{CP}}^{\frac{1}{2}}}{1000} \times 0.85 \times (35\% \times 2{,}195\ \text{Hrs} + 55\% \times 6{,}565\ \text{Hrs}) + \frac{\text{Amps}_{\text{EF}} \times \text{Volts}_{\text{EF}} \times \text{Phase}_{\text{EF}}^{\frac{1}{2}}}{1000} \times 0.55 \times 8760 \times 35.52\% \times 5\%$$

WALK-IN COOLER/FREEZER EVAPORATOR FAN CONTROL			
ECM INPUTS	**EXISTING**	**PROPOSED**	**SAVINGS**
ECM INPUTS	No Controller	Frigitek Controller	
Qty of Evaporator Fans	1	1	
Nameplate Amps of Evap Fan	0.5	0.5	
Nameplate Volts of Evap Fan	230	230	
Phase of Evap Fan	1	1	
Evap Fan Motor Power Factor	0.55	0.55	
Conversion from kW to tons (Refrigeration)	0.28	0.28	
Efficiency of Typical Refrigeration System (kW/ton)	1.6	1.6	
Nameplate Amps of Compressor	4.2	4.2	
Nameplate Volts of Compressor	230	230	
Phase of Compressor	3	3	
Compressor Power Factor	0.85	0.85	
Winter Compressor Duty Cycle	0.35	0.35	
Winter Compressor Op. Hours	2,195	2,195	
Non-Winter Compressor Duty Cycle	0.55	0.55	
Non-Winter Compressor Op. Hours	6,565	6,565	
Elec Cost ($/kWh)	$0.145	$0.145	
ENERGY SAVINGS CALCULATIONS			
ECM RESULTS	**EXISTING**	**PROPOSED**	**SAVINGS**
Evaporator Fan Usage (KWH)	554	357	197
Evap Fan Heat Usage (KWH)	248	160	88
Compressor Usage (KWH)	6,228	5,916	311
Total Electric Usage (KWH)	7,030	6,434	596
Electric Cost ($)	$1,019	$933	$86
COMMENTS:	Walk-In 1		

WALK-IN COOLER/FREEZER EVAPORATOR FAN CONTROL			
ECM INPUTS	**EXISTING**	**PROPOSED**	**SAVINGS**
ECM INPUTS	No Controller	Frigitek Controller	
Qty of Evaporator Fans	2	2	
Nameplate Amps of Evap Fan	0.5	0.5	
Nameplate Volts of Evap Fan	230	230	
Phase of Evap Fan	1	1	
Evap Fan Motor Power Factor	0.55	0.55	
Conversion from kW to tons (Refrigeration)	0.28	0.28	
Efficiency of Typical Refrigeration System (kW/ton)	1.6	1.6	
Nameplate Amps of Compressor	9.2	9.2	
Nameplate Volts of Compressor	230	230	
Phase of Compressor	3	3	
Compressor Power Factor	0.85	0.85	
Winter Compressor Duty Cycle	0.35	0.35	
Winter Compressor Op. Hours	2,195	2,195	
Non-Winter Compressor Duty Cycle	0.55	0.55	
Non-Winter Compressor Op. Hours	6,565	6,565	
Elec Cost ($/kWh)	$0.145	$0.145	
ENERGY SAVINGS CALCULATIONS			
ECM RESULTS	**EXISTING**	**PROPOSED**	**SAVINGS**
Evaporator Fan Usage (KWH)	1,108	715	394
Evap Fan Heat Usage (KWH)	248	160	88
Compressor Usage (KWH)	13,642	12,960	682
Total Electric Usage (KWH)	14,998	13,834	1,164
Electric Cost ($)	$2,175	$2,006	$169
COMMENTS:	Walk-In 2		

Energy Savings Summary:

ECM #2 - ENERGY SAVINGS SUMMARY	
Installation Cost ($):	$3,500
NJ Smart Start Equipment Incentive ($):	$150
Net Installation Cost ($):	$3,350
Maintenance Savings ($/Yr):	$0
Energy Savings ($/Yr):	$255
Total Yearly Savings ($/Yr):	$255
Estimated ECM Lifetime (Yr):	10
Simple Payback	13.1
Simple Lifetime ROI	-23.9%
Simple Lifetime Maintenance Savings	$0
Simple Lifetime Savings	$2,550
Internal Rate of Return (IRR)	-5%
Net Present Value (NPV)	($1,174.80)

ECM #3: Refrigerator Replacement

Description:

The Junior-Senior High School has residential style refrigerators in many of its teacher lounges and the snack stand. The E-Hall has an older vintage refrigerator only unit.

The proposed replacement is a one-for-one with a unit of similar size and dimensions that has the most up-to-date Energy Star Rating. The models selected are 2012 models manufacturers by Frigidaire refrigerator unit

Energy Savings Calculations:

ENERGY STAR REFRIGERATOR CALCULATION			
ECM INPUTS	**EXISTING**	**PROPOSED**	**SAVINGS**
Quantity	1	1	
Manufacturer	Welbilt	Frigidaire	
Type	Refrigerator Only	Refrigerator Only	
Model	W-1061	FRU17B2JW	
Size (Cu-Ft)	10	16.7	
Per Unit Electric Usage (kWh	1,260	504	756
Electric Rate ($/kWh)	$0.145	$0.145	
ENERGY SAVINGS CALCULATIONS			
Electric Usage (kWh)	1,260	504	756
Energy Cost ($)	$183	$73	$110
COMMENTS:	Calculations based Energy Star Website http://www.energystar.gov/index.cfm?fuseaction=refrig.calculator		

Energy Savings Summary:

ECM #3 - ENERGY SAVINGS SUMMARY	
Installation Cost ($):	$660
NJ Smart Start Equipment Incentive ($):	$0
Net Installation Cost ($):	$660
Maintenance Savings ($/Yr):	$0
Energy Savings ($/Yr):	$110
Total Yearly Savings ($/Yr):	$110
Estimated ECM Lifetime (Yr):	10
Simple Payback	6.0
Simple Lifetime ROI	66.7%
Simple Lifetime Maintenance Savings	$0
Simple Lifetime Savings	$1,100
Internal Rate of Return (IRR)	11%
Net Present Value (NPV)	$278.32

ECM #4: Energy Star Clothes Washer Replacement

Description:

The High School has to standard top load clothes washer in the Home Economics Room and E-Hall Custodial Closet. The installation of a newer Energy Star Rated high efficiency front load washer will not only reduce water and energy consumption due to washing and drying of clothes it will also reduce water heating costs.

The proposed replacement is a replacement with a similar sized front load machine that is Energy Star rated. The unit specified in this case is manufactured be GE model GFWN1100L.

Energy Savings Calculations:

Savings calculations are based on water consumption per load and electric consumption per load of the washer.

$$\text{Water Usage (gal)} = \frac{\text{Gallons}}{\text{Load}} \times \frac{\text{Loads}}{\text{year}}$$

$$\text{Water Heat (Btu)} = \text{Water Usage} \times 8.33\frac{\text{lbs}}{\text{gal}} \times \text{c} \times (110 - 50)\Delta\text{T} \times \text{Hot/Cold Mix (50\%)}$$

$$\text{Water Heat Energy (Fuel Units)} = \frac{\text{Water Heat (Btu)}}{\text{Heater Efficiency}} \times \frac{1}{\text{Fuel Conversion}}$$

$$\text{Washer Electric } \left(\frac{\text{kWh}}{\text{Load}}\right) = \text{Volts} \times \text{Amps} \times \text{Run Factor (50\%)} \times \frac{\text{kW}}{1000\ \text{W}} \times 1\frac{\text{hr}}{\text{load}}$$

ENERGY STAR CLOTHES WASHER CALCULATION			
ECM INPUTS	**EXISTING**	**PROPOSED**	**SAVINGS**
Quantity of Units	1	1	
Manufacturer	Alliance	GE	
Type	Top Load	Front Load	
Model	AWN412SP	GFWN1100L	
Loads per Day	3	3	
Days Per Week	5	5	
Weeks Per Year	42	42	
Washer Usage kWh per Load	0.9	0.9	
Washer Usage Gallons per Load	31.4	14	17.4
Percent Hot / Cold Water Mix	0.5	0.5	
Water Heater Type	Electric	Electric	
Water Heater Efficiency	98%	98%	
Electric Rate ($/kWh)	$0.145	$0.145	
Water Rate ($/1,000 Gal)	$7.900	$7.900	
ENERGY SAVINGS CALCULATIONS			
Electric Usage (kWh)	2,045	1,226	819
Water Usage (Gallons)	19,782	8,820	10,962
Energy Cost ($)	$453	$247	$205
COMMENTS:	Janitor's Closet Unit		

ENERGY STAR CLOTHES WASHER CALCULATION			
ECM INPUTS	**EXISTING**	**PROPOSED**	**SAVINGS**
Quantity of Units	1	1	
Manufacturer	Maytag	GE	
Type	Top Load	Front Load	
Model	LAT2500AAE	GFWN1100L	
Loads per Day	2	2	
Days Per Week	3	3	
Weeks Per Year	42	42	
Washer Usage kWh per Load	0.9	0.9	
Washer Usage Gallons per Load	34	14	20
Percent Hot / Cold Water Mix	0.5	0.5	
Water Heater Type	Electric	Electric	
Water Heater Efficiency	98%	98%	
Electric Rate ($/kWh)	$0.145	$0.145	
Water Rate ($/1,000 Gal)	$7.900	$7.900	
ENERGY SAVINGS CALCULATIONS			
Electric Usage (kWh)	867	490	377
Water Usage (Gallons)	8,568	3,528	5,040
Energy Cost ($)	$193	$99	$94
COMMENTS:	Home Economics Class Unit		

Energy Savings Summary:

ECM #4 - ENERGY SAVINGS SUMMARY	
Installation Cost ($):	$750
NJ Smart Start Equipment Incentive ($):	$0
Net Installation Cost ($):	$750
Maintenance Savings ($/Yr):	$0
Energy Savings ($/Yr):	$205
Total Yearly Savings ($/Yr):	$205
Estimated ECM Lifetime (Yr):	10
Simple Payback	3.7
Simple Lifetime ROI	173.3%
Simple Lifetime Maintenance Savings	$0
Simple Lifetime Savings	$2,050
Internal Rate of Return (IRR)	24%
Net Present Value (NPV)	$998.69

ECM #5: Kitchen Dishwasher Replacement

Description:

The kitchen has a dated CSA conveyor type dishwasher model CSA-44H. As dishwasher's age they become less efficient due to dirt build up in water lines, nozzles, and sprayers. An inefficient dishwasher not only increases water costs to operate, but also water heating costs to operate. Newer more efficient dishwashers with optimum rinse technology, energy recovery, and water recycling and reuse capability can significantly decrease the operating costs.

This ECM includes replacing the CSA dishwasher with a similar type manufactured by Hobart Model CL44e. The new model is energy star rated and has a consumption rate of 108 gallons per hour.

Energy Savings Calculations:

$$\text{Water Usage (Gal)} = \text{Washer}\left(\frac{\text{Gal}}{\text{Hr}}\right) \times \text{Use}\left(\frac{\text{Hr}}{\text{Wk}}\right) \times \left(\frac{\text{Wk}}{\text{Yr}}\right)$$

$$\text{Primary HW Heat (BTU)} = \text{Water Usage (Gal)} \times \text{Prim Temp Rise (°F)} \times 8.33\left(\frac{\text{lbs}}{\text{Gal}}\right) \times 1.0\left(\frac{\text{BTU}}{\text{lb} \times \text{°F}}\right)$$

$$\text{Booster HW Heat (BTU)} = \text{Water Usage (Gal)} \times \text{Bstr Temp Rise (°F)} \times 8.33\left(\frac{\text{lbs}}{\text{Gal}}\right) \times 1.0\left(\frac{\text{BTU}}{\text{lb} \times \text{°F}}\right)$$

$$\text{Primary Energy Usage} = \frac{\text{Primary HW Heat (BTU)}}{\text{HWH Eff. (\%)} \times \text{Fuel Conversion}\left(\frac{\text{BTU}}{\text{Unit}}\right)}$$

$$\text{Booster Energy Usage} = \frac{\text{Booster HW Heat (BTU)}}{\text{HWH Eff. (\%)} \times \text{Fuel Conversion}\left(\frac{\text{BTU}}{\text{Unit}}\right)}$$

DISHWASHER REPLACEMENT CALCULATIONS			
ECM INPUTS	**EXISTING**	**PROPOSED**	**SAVINGS**
ECM INPUTS	CMA -44H	Hobart Model	
Estimated Dish Washer Use (Gal/Hr)	192.0	108.0	84
Dish Washer Use (Hr/Week)	10	10	
Dish Washer Use (Week/Yr)	42	42	
Primary Temp Rise (°F)	90	90	
Booster Temp Rise (°F)	50	50	
Dom. HWH Efficiency (%)	98%	98%	
Booster HWH Efficiency (%)	98%	98%	
Primary HW Heat Required (kBTUs)	60,456	34,006	26,449
Booster HW Heat Required (kBTUs)	33,587	18,892	14,694
Elec Cost ($/kWh)	$0.145	$0.145	
Water Cost ($/1,000 Gal)	$7.90	$7.90	
ENERGY SAVINGS CALCULATIONS			
ECM RESULTS	**EXISTING**	**PROPOSED**	**SAVINGS**
Electric Usage (kWh)	28,116	15,816	12,301
Water Usage (1,000 Gal)	81	45	35
Total Energy Cost ($)	$4,714	$2,652	$2,062
COMMENTS:			

Energy Savings Summary:

ECM #5 - ENERGY SAVINGS SUMMARY	
Installation Cost ($):	$23,800
NJ Smart Start Equipment Incentive ($):	$0
Net Installation Cost ($):	$23,800
Maintenance Savings ($/Yr):	$0
Energy Savings ($/Yr):	$2,062
Total Yearly Savings ($/Yr):	$2,062
Estimated ECM Lifetime (Yr):	15
Simple Payback	11.5
Simple Lifetime ROI	30.0%
Simple Lifetime Maintenance Savings	$0
Simple Lifetime Savings	$30,930
Internal Rate of Return (IRR)	3%
Net Present Value (NPV)	$816.02

ECM #6: Kitchen Domestic Gas Booster Heater

Description:

The kitchen uses a 15 kilowatt electric booster heater for the dishwasher. The booster heater is used to boost lower temperature domestic hot water up to 180 degrees Fahrenheit. The use of electric water heating can be much more costly and is more source energy intensive than using a natural gas heater.

This ECM includes replacing the electric booster heaters with new Hatco PMG-100 natural gas fired booster heaters. This will require natural gas to be piped to the heater, and combustion venting to be installed.

Energy Savings Calculations:

$$\text{Booster HW Heat (BTU)} = \text{Washer}\left(\frac{\text{Gal}}{\text{Hr}}\right) \times 8.33\left(\frac{\text{Lbs}}{\text{Gal}}\right) \times \text{Use}\left(\frac{\text{Hr}}{\text{Wk}}\right) \times \left(\frac{\text{Wk}}{\text{Yr}}\right) \times \text{Temp Rise (°F)} \times 1.0\left(\frac{\text{BTU}}{\text{Lb} \times \text{°F}}\right)$$

$$\text{Elec Booster Energy} = \frac{\text{Booster HW Heat (BTU)}}{\text{Elec Heat Value}\left(\frac{\text{BTU}}{\text{kWh}}\right)}$$

$$\text{Gas Booster Energy} = \frac{\text{Booster HW Heat (BTU)}}{\text{HWH Eff. (\%)} \times \text{Gas Heat Value}\left(\frac{\text{BTU}}{\text{Therm}}\right)}$$

$$\text{Elec Energy Cost} = \text{Energy Use, kWh} \times \text{Cost of Elec}\left(\frac{\$}{\text{kWh}}\right)$$

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

INSTANT DOM. HWH BOOSTER CALCULATIONS			
ECM INPUTS	**EXISTING**	**PROPOSED**	**SAVINGS**
ECM INPUTS	Elec Booster Heater	Nat Gas Booster	
Estimated Dish Washer Use (Gal/Hr)	192.0	192.0	
Dish Washer Use (Hr/Week)	10	10	
Dish Washer Use (Week/Yr)	42	42	
Booster Temp Rise (°F)	50	50	
Dom. HWH Efficiency (%)	98%	82%	-16%
Booster HW Heat Required (kBTUs)	33,587	33,587	
Elec Cost ($/kWh)	$0.145	$0.145	
Gas Cost ($/Therm)	$0.99	$0.99	
ENERGY SAVINGS CALCULATIONS			
ECM RESULTS	**EXISTING**	**PROPOSED**	**SAVINGS**
Natural Gas Usage (Therms)	0	410	-410
Elec Booster Energy (kWh)	10,042	0	10,042
Total Energy Cost ($)	$1,456	$405	$1,051
COMMENTS:	This ECM is based on savings due to the fuel switching from electric to natural gas and includes affects from efficiency change.		

Energy Savings Summary:

ECM #6 - ENERGY SAVINGS SUMMARY	
Installation Cost ($):	$20,000
NJ Smart Start Equipment Incentive ($):	$3,500
Net Installation Cost ($):	$16,500
Maintenance Savings ($/Yr):	$0
Energy Savings ($/Yr):	$1,051
Total Yearly Savings ($/Yr):	$1,051
Estimated ECM Lifetime (Yr):	15
Simple Payback	15.7
Simple Lifetime ROI	-4.5%
Simple Lifetime Maintenance Savings	0
Simple Lifetime Savings	$15,765
Internal Rate of Return (IRR)	-1%
Net Present Value (NPV)	($3,953.23)

ECM #7: Commercial Kitchen Exhaust Hood Controls

Description:

The existing kitchen hood operates for 8 hours per day regardless of whether or not cooking is being conducted underneath the hood. This type of operation continuously exhausts conditioned air from out of the kitchen, thereby forcing makeup air systems to continually condition the kitchen space. While this type of operation is standard procedure in most commercial kitchens, additional controls can be added to the hood exhaust system in order to reduce the airflow and power requirements of the system while full load operation is not required.

This ECM would install Captive Aire EMS system that allows for a reduction in air flow to 80%, while cooking is not being conducted. This system will modulate both the exhaust flow and make up air flow down based on the activity senses under the hood. In addition the EMS system comes with a hood mounted control panel that allows for the chef to override the system for a period of time.

Energy Savings Calculations:

Savings were calculated based on the kitchen hood operating for 8 hours per day for 42 weeks per year.

VARIABLE SPEED KITCHEN HOOD CONTROLS			
ECM INPUTS	**EXISTING**	**PROPOSED**	**SAVINGS**
ECM INPUTS	Constant	EMS Controls	
Exhaust Fan, HP	1.5	1.5	
Make-up Air Fan, HP	1.0	1.0	
Exhaust Air, CFM	4,000	4,000	
Full Load Operating Hours	1,680	735	
Part Load Operating Hours	0	945	
Fan Power Usage, kWh	4,178	3,031	1,147
Heating Usage, kWh	60,880	54,031	6,849
Cooling Usage, kWh	1,019	905	115
Elec Cost ($/kWh)	0.145	0.145	-
ENERGY SAVINGS CALCULATIONS			
ECM RESULTS	**EXISTING**	**PROPOSED**	**SAVINGS**
Electric Energy (kWh)	66,077	57,967	8,110
Energy Cost ($)	$9,581	$8,405	$1,176
COMMENTS:	EMS System Reduces Airflow to 80% for low speed operation		

Energy Savings Summary:

ECM #7 - ENERGY SAVINGS SUMMARY	
Installation Cost ($):	$16,600
NJ Smart Start Equipment Incentive ($):	$0
Net Installation Cost ($):	$16,600
Maintenance Savings ($/Yr):	$0
Energy Savings ($/Yr):	$1,176
Total Yearly Savings ($/Yr):	$1,176
Estimated ECM Lifetime (Yr):	10
Simple Payback	14.1
Simple Lifetime ROI	-29.2%
Simple Lifetime Maintenance Savings	$0
Simple Lifetime Savings	$11,760
Internal Rate of Return (IRR)	-6%
Net Present Value (NPV)	($6,568.48)

ECM #8: Locker Room Exhaust Fan Time Clock

Description:

The Locker Rooms in the Annex Building has two exhaust fans which operate on unit mounted switches only and once turned on typically operate 24 hours per day 7 days a week for the majority of the school year until manually turned off. By installing a programmable time clock on these exhaust fans they could be scheduled to shut down during unoccupied periods at night and during the summer.

This ECM includes the installation of a programmable time clock at the unit that can be tied in electrically at the disconnect switch. An alternative approach would be to tie the exhaust fans into the existing building management system if there are available points; however this would cost significantly more than the timer. Costs for this ECM are based on installation of the time clock only.

Energy Savings Calculations:

The energy savings calculations are based reduction of the outside air heating during nights and weekends.

First nominal heat load caused by the operation of this fan is calculated based on outside air, heating degree days and design day temperature difference.

$$\text{Nominal Heat Load}\left(\frac{\text{BTU}}{\text{Hr}}\right) = 1.08 \times \text{Exhaust Flow (CFM)} \times \text{Design Day Temp Difference (°F)}$$

The energy consumption of the exhaust system is calculated using heating degree days equation:

$$\text{Heating Energy}\left(\frac{\text{Therms}}{\text{Yr} \times \text{Unit}}\right) = \frac{\text{Heat Load}\left(\frac{\text{Btu}}{\text{Hr.}}\right) \times \text{HDD}(\text{Day °F}) \times \#\left(\frac{\text{Hr.}}{\text{Day}}\right) \times (0.60)}{65(\text{°F}) \times \text{Fuel Heat Value}\left(\frac{\text{Btu}}{\text{Therms}}\right) \times \text{Heating Efficiency}(\%)}$$

Fan Energy Cost:

$$\textit{Fan}\ \text{Energy, kWh} = \frac{\textit{Fan}\ \text{Power (HP)} \times \frac{0.746\text{kW}}{\text{HP}} \times 0.75\ (\text{Load}\ \textit{Factor}) \times \text{Annual Hrs}}{0.75\ (\textit{Power Factor})}$$

Results of the calculations can be found in the table below:

EXHAUST FAN CALCULATIONS			
ECM INPUTS	**EXISTING CONTROLS**	**PROPOSED CONTROLS**	**SAVINGS**
ECM INPUTS	24/7	12hr/day on weekdays	
Number of Units	2	2	-
Exhaust Flow (CFM)	2500	2500	
Operation Weeks/Yr	40	40	
Operation Days/Week	7	5	
Fan Operating Hours/Day	24	12	
Supply Fan Motor HP	1 5/8	1 5/8	
Fan Annual Hours of Operation*	6720	2400	4320
Design Day Temp. Diff (°F)	50	50	
Heating Degree Days	4824	4824	-
Net Heating System Efficiency	98%	98%	-
Infiltration Energy Loss (MBH/Unit)	67.5	67.5	
Electric Cost ($/KWH)	$0.145	$0.145	
ENERGY SAVINGS CALCULATIONS			
ECM RESULTS	**EXISTING**	**PROPOSED UNITS**	**SAVINGS**
Fan Energy (kWh)	16,293	5,819	10,474
Heating Energy Infiltration (kWh)	31,641	15,821	15,821
Fan Energy Cost ($)	$2,362	$844	$1,519
Infiltration Energy Cost ($)	$4,588	$2,294	$2,294
Total ($)	$6,950	$3,138	$3,813
COMMENTS:			

Energy Savings Summary:

ECM #8 - ENERGY SAVINGS SUMMARY	
Installation Cost ($):	$2,500
NJ Smart Start Equipment Incentive ($):	$0
Net Installation Cost ($):	$2,500
Maintenance Savings ($/Yr):	$0
Energy Savings ($/Yr):	$3,813
Total Yearly Savings ($/Yr):	$3,813
Estimated ECM Lifetime (Yr):	10
Simple Payback	0.7
Simple Lifetime ROI	1425.2%
Simple Lifetime Maintenance Savings	$0
Simple Lifetime Savings	$38,130
Internal Rate of Return (IRR)	153%
Net Present Value (NPV)	$30,025.66

ECM #9: Improved Electric Heat Control

Description:

The stairwell and corridor/lobby entrance electric cabinet heaters current operation causes them to run nearly 24 hours per day 7 days a week from October to April. By installing more advanced programmable thermostat controls and installing a new space sensor to control the heaters the run time could be significantly reduced, in addition to having set back capability during extended unoccupied set points for weekends and holidays.

This ECM would install programmable thermostat controls on approximately twenty-five of the existing 2 kilowatt unit heaters located in the building. These controls can be standalone or tied into the existing building management system with creation of a separate schedule and global set point in the system.

Energy Savings Calculations:

The existing operation is based on degree days from October to April with a base temperature of 70 degrees Fahrenheit. The proposed operation is based on degree days with a base temperature of 60 degrees Fahrenheit.

$$\text{Electric Usage (kWh)} = \text{Heating kW} \times \text{Capacity Factor (80\%)} \times \text{Heating Degree Days} \times 24 \text{ hrs} \times \frac{1}{\Delta T}$$

$$\Delta T = (\text{Base Temp} - \text{Design Temperature})^{\circ}F$$

IMPROVED ELECTRIC HEAT CONTROL CALCULATION			
ECM INPUTS	**EXISTING**	**PROPOSED**	**SAVINGS**
Quantity of Units	25	25	
Heater Size, kW	2.0	2.0	
Total Heating kW	50	50	
Operating Period	Oct - Apr	Oct - Apr	
Operating Characteristics Base Temp	70	60	10
Heating Degree Days (Op Temp)	5468	3447	2021
Design Temperature Difference	55	45	
Electric Rate ($/kWh)	$0.145	$0.145	
ENERGY SAVINGS CALCULATIONS			
Electric Usage (kWh)	95,441	73,536	21,905
Energy Cost ($)	$13,839	$10,663	$3,176
COMMENTS:			

Energy Savings Summary:

ECM #9 - ENERGY SAVINGS SUMMARY	
Installation Cost ($):	$17,500
NJ Smart Start Equipment Incentive ($):	$0
Net Installation Cost ($):	$17,500
Maintenance Savings ($/Yr):	$0
Energy Savings ($/Yr):	$3,176
Total Yearly Savings ($/Yr):	$3,176
Estimated ECM Lifetime (Yr):	10
Simple Payback	5.5
Simple Lifetime ROI	81.5%
Simple Lifetime Maintenance Savings	$0
Simple Lifetime Savings	$31,760
Internal Rate of Return (IRR)	13%
Net Present Value (NPV)	$9,591.92

ECM #10: High Efficiency Gas Hot Water Heater

Description:

The Old Boiler Room and Annex / Gymnasium have 18 kilowatt 110 gallon electric hot water heaters. While electric hot water heating is efficient in terms of thermal efficiency, it costs significantly more per unit of thermal energy to heat the water. By installing high efficiency natural gas fired hot water heaters the associated cost to heat domestic hot water will be greatly reduced.

This ECM will replace the existing two electric domestic water heaters with a 96% thermal efficient Bradford White eF Series Natural Gas fired 125 MBH and 60 gallons of storage domestic water heater. This installation includes using the existing natural gas line located in the boiler rooms and assumes venting can be run out the side wall of the boiler rooms.

Energy Savings Calculations:

Energy Density for "Education" type building = 5.2 kBtu / SF / year

$$\text{DHW Heat Usage} = \text{Energy Density} \left(\frac{\frac{\text{kBtu}}{\text{yr}}}{\text{SF}} \right) \times \text{Building Square Footage (SF)}$$

$$\text{DHW Total Usage} = \frac{\text{DHW Heat Usage (Btu)}}{\text{Heating Eff (\%)} \times \text{Fuel Heat Value} \left(\frac{\text{Btu}}{\text{Fuel Unit}} \right)}$$

$$\text{Energy Cost} = \text{Heat Fuel Usage (Fuel Units)} \times \text{Ave Fuel Cost} \left(\frac{\$}{\text{Fuel Unit}} \right)$$

Old Boiler Room Unit:

CONDENSING DOM. HOT WATER HEATER CALCULATIONS			
ECM INPUTS	**EXISTING**	**PROPOSED**	**SAVINGS**
ECM INPUTS	Existing Hot Water Heater	Bradford White High Efficiency	
Building Type	Education		
Building Square-foot	32,250	32,250	
Domestic Water Usage, kBtu	167,700.00	167,700.00	
DHW Heating Fuel Type	Electric	Gas	
Heating Efficiency	98%	96%	-2%
Total Usage (kBTU)	171,122	174,688	-3,565
Electric Cost ($/kWh)	$ 0.145	$ 0.145	
Nat Gas Cost ($/Therm)	$ 0.990	$ 0.990	
ENERGY SAVINGS CALCULATIONS			
ECM RESULTS	**EXISTING**	**PROPOSED**	**SAVINGS**
Electric Usage (kWh)	50,138	0	50,138
Natural Gas Usage (Therms)	0	1,747	-1,747
Energy Cost ($)	$7,270	$1,729	$5,541
COMMENTS:	Savings are based on Energy Information Administration Commercial Building Energy Consumption Survey 2003 Information		

Annex / Gymnasium:

CONDENSING DOM. HOT WATER HEATER CALCULATIONS			
ECM INPUTS	**EXISTING**	**PROPOSED**	**SAVINGS**
ECM INPUTS	Existing Hot Water Heater	Bradford White High Efficiency	
Building Type	Education		
Building Square-foot	39,000	39,000	
Domestic Water Usage, kBtu	202,800.00	202,800.00	
DHW Heating Fuel Type	Electric	Gas	
Heating Efficiency	98%	96%	-2%
Total Usage (kBTU)	206,939	211,250	-4,311
Electric Cost ($/kWh)	$ 0.145	$ 0.145	
Nat Gas Cost ($/Therm)	$ 0.990	$ 0.990	
ENERGY SAVINGS CALCULATIONS			
ECM RESULTS	**EXISTING**	**PROPOSED**	**SAVINGS**
Electric Usage (kWh)	60,633	0	60,633
Natural Gas Usage (Therms)	0	2,113	-2,113
Energy Cost ($)	$8,792	$2,091	$6,700
COMMENTS:	Savings are based on Energy Information Administration Commercial Building Energy Consumption Survey 2003 Information		

Energy Savings Summary:

ECM #10 - ENERGY SAVINGS SUMMARY	
Installation Cost ($):	$45,000
NJ Smart Start Equipment Incentive ($):	$500
Net Installation Cost ($):	$44,500
Maintenance Savings ($/Yr):	$0
Energy Savings ($/Yr):	$12,241
Total Yearly Savings ($/Yr):	$12,241
Estimated ECM Lifetime (Yr):	15
Simple Payback	3.6
Simple Lifetime ROI	312.6%
Simple Lifetime Maintenance Savings	$0
Simple Lifetime Savings	$183,615
Internal Rate of Return (IRR)	27%
Net Present Value (NPV)	$101,632.26

ECM #11: ECM Motors

Description:

Electronically Commutated Motors (ECM) are proven to generate substantial savings on small motor applications. These motors currently are available in sizes up to 1 horsepower, and provide efficiencies similar to how NEMA premium efficiency motor would at a large horsepower. The motor works much like a direct current (DC) motor and is without mechanical brushes and the commuter reduces friction losses in the motor. The motors are programmable and can be used for a wide range of applications.

This measure would replace the existing supply fan motors in the water source heat pumps and replace them with ECM style motors.

Energy Savings Calculations:

Measure savings for ECM motors has proven that an approximately 65% reduction in power can be realized through the installation these motors.

$$\text{Electric Energy (kWh)} = \frac{(\text{Amps} \times \text{Volts} \times \text{Phase}^{1/2})}{1000} \times \text{Power Factor} \times \text{Operating Hours}$$

$$\text{Energy Savings} = \text{Electric Energy} \times \text{Power Reduction (65\%)}$$

ELECTRONICALLY COMMUTATED MOTOR CALULATION			
ECM INPUTS	**EXISTING**	**PROPOSED**	**SAVINGS**
ECM INPUTS	PSC	ECM	
Quantity of Motors	58	58	
Motor Nameplate HP	0.3	0.3	
Full Load Amps	1.2		
Voltage	460		
Phase	3		
Power Factor	70%		
Operating Hrs	2444	2444	
Load Reduction	-	65.0%	
Elec Cost ($/kWh)	0.145	0.145	
ENERGY SAVINGS CALCULATIONS			
ECM RESULTS	**EXISTING**	**PROPOSED**	**SAVINGS**
Electric Energy (kWh)	94,870	33,204	61,665
Electric Energy Cost ($)	$13,756	$4,815	$8,941
COMMENTS:	VHP-2 & 3 (Classroom Units)		

ELECTRONICALLY COMMUTATED MOTOR CALULATION			
ECM INPUTS	**EXISTING**	**PROPOSED**	**SAVINGS**
ECM INPUTS	PSC	ECM	
Quantity of Motors	38	38	
Motor Nameplate HP	1/12	1/12	
Full Load Amps	0.7		
Voltage	277		
Phase	1		
Power Factor	70%		
Operating Hrs	2444	2444	
Load Reduction	-	65.0%	
Elec Cost ($/kWh)	0.145	0.145	
ENERGY SAVINGS CALCULATIONS			
ECM RESULTS	**EXISTING**	**PROPOSED**	**SAVINGS**
Electric Energy (kWh)	11,705	4,097	7,608
Electric Energy Cost ($)	$1,697	$594	$1,103
COMMENTS:	CHP-1 (Console Units)		

Energy Savings Summary:

ECM #11 - ENERGY SAVINGS SUMMARY	
Installation Cost ($):	$74,000
NJ Smart Start Equipment Incentive ($):	$0
Net Installation Cost ($):	$74,000
Maintenance Savings ($/Yr):	$0
Energy Savings ($/Yr):	$10,045
Total Yearly Savings ($/Yr):	$10,045
Estimated ECM Lifetime (Yr):	10
Simple Payback	7.4
Simple Lifetime ROI	35.7%
Simple Lifetime Maintenance Savings	$0
Simple Lifetime Savings	$100,450
Internal Rate of Return (IRR)	6%
Net Present Value (NPV)	$11,685.89

ECM #12: Lighting Upgrade High School

Description:

The majority of the interior lighting throughout High School is provided with fluorescent fixtures with older generation, 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. There are areas however with 32 Watt U-lamp type T8 lamps that could be upgraded to more efficient 17 watt 2' T8 lamps.

The 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. The color rendering index (CRI) of the CFL is much higher than standard fluorescent lighting, and therefore provides a much "truer" light. The CFL is available in a myriad of shapes and sizes depending on the specific application. 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. The CFL is also available for a number of "brightness colors" that is indicated by the Kelvin rating. A 2700K CFL is the "warmest" color available and is closest in color to the incandescent lamp. CFL's are also available in 3000K, 3500K, and 4100K. The 4100K would be the "brightest" or "coolest" output. 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. In some locations the bulb replacement will need to be tested to make sure the larger base of the CFL will fit into the existing fixture. 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 exterior lighting at High School is currently lit via 175 watt metal halide wall packs, 100 watt wall packs and incandescent down lights. The exterior would be better served by an equivalent LED fixture which would replace the 175 & 100 watt metal halide fixtures. Concord Engineering recommends upgrading the existing 175 and 100 watt metal halides to an energy-efficient LED system.

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:

ECM #12 - ENERGY SAVINGS SUMMARY	
Installation Cost ($):	$16,096
NJ Smart Start Equipment Incentive ($):	$2,597
Net Installation Cost ($):	$13,499
Maintenance Savings ($/Yr):	$0
Energy Savings ($/Yr):	$2,224
Total Yearly Savings ($/Yr):	$2,224
Estimated ECM Lifetime (Yr):	10
Simple Payback	6.1
Simple Lifetime ROI	64.8%
Simple Lifetime Maintenance Savings	$0
Simple Lifetime Savings	$22,240
Internal Rate of Return (IRR)	10%
Net Present Value (NPV)	$5,472.17

ECM #13: Lighting Upgrade Annex

Description:

The majority of the interior lighting throughout Annex is provided with fluorescent fixtures with older generation, 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.

The 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. 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. The CFL is also available for a number of "brightness colors" that is indicated by the Kelvin rating.

The exterior lighting at Annex is currently lit via 100 Watt metal halide canopy light. The exterior would be better served by an equivalent LED fixture. Concord Engineering recommends upgrading the existing 100 watt metal halides to an energy-efficient LED system.

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:

ECM #13 - ENERGY SAVINGS SUMMARY	
Installation Cost ($):	$9,942
NJ Smart Start Equipment Incentive ($):	$1,610
Net Installation Cost ($):	$8,332
Maintenance Savings ($/Yr):	$0
Energy Savings ($/Yr):	$850
Total Yearly Savings ($/Yr):	$850
Estimated ECM Lifetime (Yr):	10
Simple Payback	9.8
Simple Lifetime ROI	2.0%
Simple Lifetime Maintenance Savings	$0
Simple Lifetime Savings	$8,500
Internal Rate of Return (IRR)	0%
Net Present Value (NPV)	($1,081.33)

ECM #14: Lighting Upgrade Paine Gym

Description:

The majority of the interior lighting throughout Paine Gym and Grounds Garage is provided with fluorescent fixtures with older generation, 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.

The 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. 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. The CFL is also available for a number of "brightness colors" that is indicated by the Kelvin rating.

The Gymnasium is currently lit via 250 watt Metal Halide HID fixtures. The space 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 that includes new four lamp, 54 watt high output fixtures.

The exterior lighting at Grounds and Annex is currently lit via 175 Watt metal halide wallpak and a 250 W MH flood light. The exterior would be better served by an equivalent LED fixture. Concord Engineering recommends upgrading the existing 175 watt metal halides and 250 W metal halides to an energy-efficient LED system.

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:

ECM #14 - ENERGY SAVINGS SUMMARY	
Installation Cost ($):	$25,239
NJ Smart Start Equipment Incentive ($):	$3,500
Net Installation Cost ($):	$21,739
Maintenance Savings ($/Yr):	$0
Energy Savings ($/Yr):	$1,644
Total Yearly Savings ($/Yr):	$1,644
Estimated ECM Lifetime (Yr):	10
Simple Payback	13.2
Simple Lifetime ROI	-24.4%
Simple Lifetime Maintenance Savings	$0
Simple Lifetime Savings	$16,440
Internal Rate of Return (IRR)	-5%
Net Present Value (NPV)	($7,715.35)

ECM #15 & 16: Lighting Controls – High School & Annex

Description:

Some of the lights in the High School and Annex 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:

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

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

Rebates and Incentives:

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

Smart Start Incentive
= (# Wall mount sensors × $20 per sensor)
+ (# Ceiling mount sensors × $35 per sensor)

Energy Savings Summary:

ECM #15 - ENERGY SAVINGS SUMMARY	
Installation Cost ($):	$31,300
NJ Smart Start Equipment Incentive ($):	$1,470
Net Installation Cost ($):	$29,830
Maintenance Savings ($/Yr):	$0
Energy Savings ($/Yr):	$1,021
Total Yearly Savings ($/Yr):	$1,021
Estimated ECM Lifetime (Yr):	10
Simple Payback	29.2
Simple Lifetime ROI	-65.8%
Simple Lifetime Maintenance Savings	$0
Simple Lifetime Savings	$10,210
Internal Rate of Return (IRR)	-16%
Net Present Value (NPV)	($21,120.66)

ECM #16 - ENERGY SAVINGS SUMMARY	
Installation Cost ($):	$4,500
NJ Smart Start Equipment Incentive ($):	$280
Net Installation Cost ($):	$4,220
Maintenance Savings ($/Yr):	$0
Energy Savings ($/Yr):	$501
Total Yearly Savings ($/Yr):	$501
Estimated ECM Lifetime (Yr):	10
Simple Payback	8.4
Simple Lifetime ROI	18.7%
Simple Lifetime Maintenance Savings	$0
Simple Lifetime Savings	$5,010
Internal Rate of Return (IRR)	3%
Net Present Value (NPV)	$53.63

REM #1: 400 kW Solar System

Description:

The Junior Senior High School has available parking lot space and roof that could accommodate a significant amount of solar generation. In addition the Field Hockey Field was also evaluated based on the potential for this field being moved by the High School. Based on the available areas a 413 kilowatt solar array could be installed. The array will produce approximately 507,998 kilowatt-hours annually that will reduce the overall electric usage of the facility by 25%.

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:

REM #1 - ENERGY SAVINGS SUMMARY	
System Size (KW_{DC}):	198.11
Electric Generation (KWH/Yr):	233,420
Installation Cost ($):	$2,395,124
SREC Revenue ($/Yr):	$97,071
Energy Savings ($/Yr):	$73,660
Total Yearly Savings ($/Yr):	$170,730
ECM Analysis Period (Yr):	15
Simple Payback (Yrs):	14.0
Analysis Period Electric Savings ($):	$1,369,991
Analysis Period SREC Revenue ($):	$1,406,184
Net Present Value (NPV)	($664,149.03)

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 but save energy none the less.

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. Ensure outside air dampers are functioning properly and only open during occupied mode.

G. Optimize BMS schedules by shifting afterhours building occupancy to specific zones of the building and setting back the unoccupied areas.

H. Install low flow water savings devices in restroom and locker rooms such as faucet aerators, shower heads, and urinals. Automatic flush valves and motion sensors on sinks can help reduce waste.

APPENDIX A

ECM COST & SAVINGS BREAKDOWN

CONCORD ENGINEERING GROUP

Woodbury City School District – Junior-Senior High School

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 Svaing * 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	Vending Miser Controls	$700	$0	$0	$700	$951	$0	$951	10	$9,507	$0	1258.2%	0.7	135.79%	$7,409.83
ECM #2	Walk-In Controls	$3,500	$0	$150	$3,350	$255	$0	$255	10	$2,550	$0	-23.9%	13.1	-4.68%	($1,174.80)
ECM #3	Refrigerator Replacement	$660	$0	$0	$660	$110	$0	$110	10	$1,100	$0	66.7%	6.0	10.56%	$278.32
ECM #4	Washing Machine Replacement	$750	$0	$0	$750	$205	$0	$205	10	$2,050	$0	173.3%	3.7	24.21%	$998.69
ECM #5	Dishwasher Replacement	$18,000	$5,800	$0	$23,800	$2,062	$0	$2,062	15	$30,930	$0	30.0%	11.5	3.47%	$816.02
ECM #6	Electric to Gas Booster Heater	$12,000	$8,000	$3,500	$16,500	$1,051	$0	$1,051	15	$15,765	$0	-4.5%	15.7	-0.56%	($3,953.23)
ECM #7	Ktitchen Hood VAV Controls	$8,600	$8,000	$0	$16,600	$1,176	$0	$1,176	10	$11,760	$0	-29.2%	14.1	-5.82%	($6,568.48)
ECM #8	Time Clock Locker Exhaust Controls	$1,500	$1,000	$0	$2,500	$3,813	$0	$3,813	10	$38,130	$0	1425.2%	0.7	152.51%	$30,025.66
ECM #9	Improved Electric Heat Controls	$12,500	$5,000	$0	$17,500	$3,176	$0	$3,176	10	$31,760	$0	81.5%	5.5	12.62%	$9,591.92
ECM #10	Annex & Old Boiler DHW to Gas	$30,000	$15,000	$500	$44,500	$12,241	$0	$12,241	15	$183,615	$0	312.6%	3.6	26.72%	$101,632.26
ECM #11	ECM Motor	$37,500	$36,500	$0	$74,000	$10,045	$0	$10,045	10	$100,450	$0	35.7%	7.4	5.98%	$11,685.89
ECM #12	Lighting Upgrade High School	$9,931	$6,165	$2,597	$13,499	$2,224	$0	$2,224	10	$22,240	$0	64.8%	6.1	10.29%	$5,472.17
ECM #13	Lighting Upgrade Annex	$6,822	$3,120	$1,610	$8,332	$850	$0	$850	10	$8,500	$0	2.0%	9.8	0.36%	($1,081.33)
ECM #14	Lighting Upgrade Paine Gym	$16,899	$8,340	$3,500	$21,739	$1,644	$0	$1,644	10	$16,440	$0	-24.4%	13.2	-4.78%	($7,715.35)
ECM #15	Lighting Controls High School	$28,050	$3,250	$1,470	$29,830	$1,021	$0	$1,021	10	$10,210	$0	-65.8%	29.2	-15.89%	($21,120.66)
ECM #16	Lighting Controls Annex	$4,050	$450	$280	$4,220	$501	$0	$501	10	$5,010	$0	18.7%	8.4	3.25%	$53.63
REM #1	400 kW PV Array	$1,437,074	$958,050	$0	$2,395,124	$73,660	$97,071	$170,731	15	$2,560,965	$1,456,065	6.9%	14.0	0.85%	($356,948.40)

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.

520 BURNT MILL ROAD
VOORHEES, NEW JERSEY 08043
PHONE: (856) 427-0200
FAX: (856) 427-6508

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 15, 2011:

Electric Chillers

Water-Cooled Chillers	$12 - $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

Energy Efficiency must comply with ASHRAE 90.1-2007

Gas Heating

Gas Fired Boilers < 300 MBH	$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	$300 - $400 per unit, AFUE ≥ 92%

Ground Source Heat Pumps

Closed Loop	\$450 per ton, EER ≥ 16 \$600 per ton, EER ≥ 18 \$750 per ton, EER ≥ 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 ≥ 10 hp	\$60 per VFD rated hp

Natural Gas Water Heating

Gas Water Heaters ≤ 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	\$10 per fixture (1-4 lamps)
Replacement of T12 with new T-5 or T-8 Lamps w/Electronic Ballast in Existing Facilities	\$25 per fixture (1-4 lamps)
Replacement of incandescent with screw-in PAR 38 or PAR 30 (CFL) bulb	\$7 per bulb
T-8 reduced Wattage (28w/25w 4', 1-4 lamps) Lamp & ballast replacement	\$10 per fixture
Hard-Wired Compact Fluorescent	\$25 - \$30 per fixture
Metal Halide w/Pulse Start Including Parking Lot	\$25 per fixture
T-5 and T-8 High Bay Fixtures	\$16 - \$200 per fixture
HID ≥ 100w Retrofit with induction lamp, power coupler and generator (must be 30% less watts/fixture than HID system)	\$50 per fixture
HID ≥ 100w Replacement with new HID ≥ 100w	\$70 per fixture

Prescriptive Lighting - LED

LED New Exit Sign Fixture Existing Facility < 75 kw Existing Facility > 75 kw	 $20 per fixture $10 per fixture
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 (2x2 Troffers only)	$100 per fixture
LED Fuel Pump Canopy	$100 per fixture
LED Refrigerator/Freezer case lighting replacement of fluorescent in medium and low temperature display case	$42 per 5 foot $65 per 6 foot

Lighting Controls – Occupancy Sensors

Wall Mounted	$20 per control
Remote Mounted	$35 per control
Daylight Dimmers	$25 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
Daylight Dimming - office	$50 per fixture controlled

Premium Motors

Three-Phase Motors	$45 - $700 per motor
Fractional HP Motors Electronic Communicated Motors (replacing shaded pole motors in refrigerator/freezer cases)	$40 per electronic communicated motor

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 a IRR of at least 10%.
Multi Measures Bonus	15%

APPENDIX C

OMB No. 2060-0347

STATEMENT OF ENERGY PERFORMANCE
Woodbury Junior-Senior HS

Building ID: 3332824
For 12-month Period Ending: March 31, 2012[1]
Date SEP becomes ineligible: N/A
Date SEP Generated: November 16, 2012

Facility
Woodbury Junior-Senior HS
25 N. Board Street
Woodbury, NJ 08096

Facility Owner
Woodbury City Public School District
25 North Broad Street
Woodbury, NJ 08096

Primary Contact for this Facility
Kara Huber
25 North Broad Street
Woodbury, NJ 08096

Year Built: 1911
Gross Floor Area (ft²): 181,393

Energy Performance Rating[2] (1-100) 67

Site Energy Use Summary[3]

Electricity - Grid Purchase(kBtu)	6,751,730
Natural Gas (kBtu)[4]	444,258
Total Energy (kBtu)	7,195,988

Energy Intensity[4]

Site (kBtu/ft²/yr)	40
Source (kBtu/ft²/yr)	127

Emissions (based on site energy use)

Greenhouse Gas Emissions ($MtCO_2e$/year)	980

Electric Distribution Utility
Public Service Electric & Gas Co

National Median Comparison

National Median Site EUI	47
National Median Source EUI	150
% Difference from National Median Source EUI	-15%
Building Type	K-12 School

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.

Meets Industry Standards[5] **for Indoor Environmental Conditions:**

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

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	☑
Building Name	Woodbury Junior-Senior HS	Is this the official building name to be displayed in the ENERGY STAR Registry of Labeled Buildings?		☐
Type	K-12 School	Is this an accurate description of the space in question?		☐
Location	25 N. Board Street, Woodbury, NJ 08096	Is this address accurate and complete? Correct weather normalization requires an accurate zip code.		☐
Single Structure	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.		☐
Junior-Senior High School (K-12 School)				
CRITERION	**VALUE AS ENTERED IN PORTFOLIO MANAGER**	**VERIFICATION QUESTIONS**	**NOTES**	☑
Gross Floor Area	181,393 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.		☐
Open Weekends?	No	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.		☐
Number of PCs	411	Is this the number of personal computers in the K12 School?		☐
Number of walk-in refrigeration/freezer units	2	Is this the total number of commercial walk-in type freezers and coolers? These units are typically found in storage and receiving areas.		☐
Presence of cooking facilities	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".		☐
Percent Cooled	100 %	Is this the percentage of the total floor space within the facility that is served by mechanical cooling equipment?		☐
Percent Heated	100 %	Is this the percentage of the total floor space within the facility that is served by mechanical heating equipment?		☐
Months	10(Optional)	Is this school in operation for at least 8 months of the year?		☐

High School?	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'.		☐

ENERGY STAR® Data Checklist for Commercial Buildings

Energy Consumption

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

Fuel Type: Electricity

Meter: electric (kWh (thousand Watt-hours))
Space(s): Entire Facility
Generation Method: Grid Purchase

Start Date	End Date	Energy Use (kWh (thousand Watt-hours))
02/02/2012	03/01/2012	220,463.00
01/02/2012	02/01/2012	259,002.00
12/02/2011	01/01/2012	182,551.00
11/02/2011	12/01/2011	159,615.00
10/02/2011	11/01/2011	155,933.00
09/02/2011	10/01/2011	164,916.00
08/02/2011	09/01/2011	107,559.00
07/02/2011	08/01/2011	97,519.00
06/02/2011	07/01/2011	150,106.00
05/02/2011	06/01/2011	157,067.00
04/02/2011	05/01/2011	154,370.00
electric Consumption (kWh (thousand Watt-hours))		**1,809,101.00**
electric Consumption (kBtu (thousand Btu))		**6,172,652.61**
Total Electricity (Grid Purchase) Consumption (kBtu (thousand Btu))		**6,172,652.61**
Is this the total Electricity (Grid Purchase) consumption at this building including all Electricity meters?		☐

Fuel Type: Natural Gas

Meter: gas (therms)
Space(s): Entire Facility

Start Date	End Date	Energy Use (therms)
02/02/2012	03/01/2012	892.00
01/02/2012	02/01/2012	1,240.00
12/02/2011	01/01/2012	942.00
11/02/2011	12/01/2011	164.00
10/02/2011	11/01/2011	22.00
09/02/2011	10/01/2011	219.00
08/02/2011	09/01/2011	22.00
07/02/2011	08/01/2011	0.00
06/02/2011	07/01/2011	22.00
05/02/2011	06/01/2011	22.00
04/02/2011	05/01/2011	375.00

gas Consumption (therms)	**3,920.00**
gas Consumption (kBtu (thousand Btu))	**392,000.00**
Total Natural Gas Consumption (kBtu (thousand Btu))	**392,000.00**
Is this the total Natural Gas consumption at this building including all Natural Gas meters?	☐

Additional Fuels	
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.	☐

On-Site Solar and Wind Energy	
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.	☐

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
Woodbury Junior-Senior HS
25 N. Board Street
Woodbury, NJ 08096

Facility Owner
Woodbury City Public School District
25 North Broad Street
Woodbury, NJ 08096

Primary Contact for this Facility
Kara Huber
25 North Broad Street
Woodbury, NJ 08096

General Information

Woodbury Junior-Senior HS	
Gross Floor Area Excluding Parking: (ft^2)	181,393
Year Built	1911
For 12-month Evaluation Period Ending Date:	March 31, 2012

Facility Space Use Summary

Junior-Senior High School	
Space Type	K-12 School
Gross Floor Area (ft^2)	181,393
Open Weekends?	No
Number of PCs	411
Number of walk-in refrigeration/freezer units	2
Presence of cooking facilities	Yes
Percent Cooled	100
Percent Heated	100
Months °	10
High School?	Yes
School District °	N/A

Energy Performance Comparison

	Evaluation Periods		Comparisons		
Performance Metrics	**Current** (Ending Date 03/31/2012)	**Baseline** (Ending Date 03/31/2012)	**Rating of 75**	**Target**	**National Median**
Energy Performance Rating	67	67	75	N/A	50
Energy Intensity					
Site ($kBtu/ft^2$)	40	40	37	N/A	47
Source ($kBtu/ft^2$)	127	127	117	N/A	150
Energy Cost					
$/year	N/A	N/A	N/A	N/A	N/A
$/$ft^2$/year	N/A	N/A	N/A	N/A	N/A
Greenhouse Gas Emissions					
$MtCO_2e$/year	980	980	903	N/A	1,155
$kgCO_2e/ft^2$/year	5	5	5	N/A	6

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.

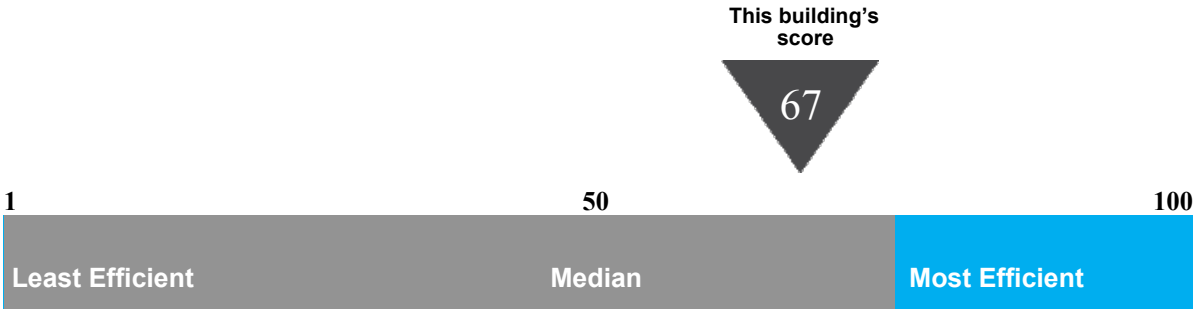
Statement of Energy Performance

2012

Woodbury Junior-Senior HS
25 N. Board Street
Woodbury, NJ 08096

Portfolio Manager Building ID: 3332824

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.



This building uses 127 kBtu per square foot per year.*

*Based on source energy intensity for the 12 month period ending March 2012

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

Date of certification

EPA United States Environmental Protection Agency

Date Generated: 11/16/2012

APPENDIX D

MAJOR EQUIPMENT LIST

Concord Engineering Group

Woodbury Jr.-Sr. High School

Unit Heaters /AC Units

Tag	UH-1	UH-2	UH-3
Unit Type	Unit Heater	Unit Heater	Unit Heater
Qty	25	8	5
Location	-	-	-
Area Served	-	-	-
Manufacturer	Q-Mark	Q-Mark	Q-Mark
Model #	CU935	MUH-3-71	CU935
Serial #	-	-	-
Cooling Type	N/A	N/A	N/A
Cooling Capacity (Tons)	N/A	N/A	N/A
Cooling Efficiency (SEER/EER)	N/A	N/A	N/A
Heating Type	Electric	Electric	Electric
Heating Input (MBH)	2 KW	3 KW	3 KW
Efficiency	100%	100%	100%
Fuel	Electric	Electric	Electric
Approx Age	6	6	6
ASHRAE Service Life	15	15	15
Remaining Life	9	9	9
Comments			

Note:
"N/A" = Not Applicable.
"-" = Info Not Available

Unit Heaters /AC Un

Tag	UH-4	UH-5	UH-6
Unit Type	Unit Heater	Unit Heater	Unit Heater
Qty	10	4	1
Location	-	-	Old Boiler Room
Area Served	-	-	Old Boiler Room
Manufacturer	Q-Mark	Q-Mark	Q-Mark
Model #	MUH-7-41	CU945	MUH-20-41
Serial #	-	-	-
Cooling Type	N/A	N/A	N/A
Cooling Capacity (Tons)	N/A	N/A	N/A
Cooling Efficiency (SEER/EER)	N/A	N/A	N/A
Heating Type	Electric	Electric	Electric
Heating Input (MBH)	7.5 KW	4 KW	20 KW
Efficiency	100%	100%	100%
Fuel	Electric	Electric	Electric
Approx Age	6	6	6
ASHRAE Service Life	15	15	15
Remaining Life	9	9	9
Comments			

Note:
"N/A" = Not Applicable.
"-" = Info Not Available

Unit Heaters /AC Un

Tag	UH-7	UH-8	UH
Unit Type	Unit Heater	Unit Heater	Unit Heater
Qty	7	2	1
Location	-	Locker Room	Snack Stand
Area Served	-	Locker Room	Snack Stand
Manufacturer	Q-Mark	Q-Mark	Berko
Model #	CU945	MUH-15-41	-
Serial #	-	-	-
Cooling Type	N/A	N/A	N/A
Cooling Capacity (Tons)	N/A	N/A	N/A
Cooling Efficiency (SEER/EER)	N/A	N/A	N/A
Heating Type	Electric	Electric	Electric
Heating Input (MBH)	8 KW	15 KW	7.5 KW
Efficiency	100%	100%	100%
Fuel	Electric	Electric	Electric
Approx Age	6	6	-
ASHRAE Service Life	15	15	-
Remaining Life	9	9	-
Comments			

Note:
"N/A" = Not Applicable.
"-" = Info Not Available

Unit Heaters /AC Un

Tag	CU-C1	CU--2	WAC-1
Unit Type	Condensing Unit	Condensing Unit	Window A/C
Qty	1	1	1
Location	Cafeteria Roof	Cafeteria Roof	Main Server
Area Served	New Cafeteria	Kitchen	Main Servier
Manufacturer	Trane	Trane	Frigidaire
Model #	RAUCC25EBX13ABUF00020	TTB018C100A2	FAL1275CA
Serial #	C02K09060	P411615BF	-
Cooling Type	DX, R22	DX, R-22	DX
Cooling Capacity (Tons)	25	1.5	1
Cooling Efficiency (SEER/EER)	8.5 EER	9 EER	10.8 EER
Heating Type	N/A	N/A	N/A
Heating Input (MBH)	N/A	N/A	N/A
Efficiency	N/A	N/A	N/A
Fuel	N/A	N/A	N/A
Approx Age	10	13	2
ASHRAE Service Life	15	15	10
Remaining Life	5	2	8
Comments	Feed RTU-C1	200/230V 1P	115V

Note:
"N/A" = Not Applicable.
"-" = Info Not Available

Unit Heaters /AC Un

Tag	MUA-1
Unit Type	Make Up Air Unit
Qty	1
Location	Cafeteria Roof
Area Served	Kitchen Hood
Manufacturer	Captive-Aire
Model #	NSAU2
Serial #	-
Cooling Type	N/A
Cooling Capacity (Tons)	N/A
Cooling Efficiency (SEER/EER)	N/A
Heating Type	N/A
Heating Input (MBH)	N/A
Efficiency	N/A
Fuel	N/A
Approx Age	12
ASHRAE Service Life	15
Remaining Life	3
Comments	1 HP Fan Motor

Note:
"N/A" = Not Applicable.
"-" = Info Not Available

MAJOR EQUIPMENT LIST

Concord Engineering Group

Woodbury Jr.-Sr. High School

Heat Pumps

Tag	VHP-2	VHP-3	VHP-4
Unit Type	Vertical UV GSHP	Vertical UV GSHP	Vertical UV GSHP
Qty	3	55	8
Location	-	-	-
Area Served	Classrooms	Classrooms	Classrooms
Manufacturer	Airedale	Airedale	Airedale
Model #	SMG2	SMG3	SMG4
Serial #	-	-	-
Cooling Type	Geothermal	Geothermal	Geothermal
Cooling Capacity (Tons)	2	3	4
Cooling Efficiency (SEER/EER)	17.16 EER	16.4 EER	16 EER
Heating Type	Geothermal	Geothermal	Geothermal
Heating Input (MBH)	21.5	33	43.1
Efficiency	3.6 COP	3.5 COP	3.4 COP
Fuel	Electric	Electric	Electric
Approx Age	6	6	6
ASHRAE Service Life	20	20	20
Remaining Life	14	14	14
Comments			

Note:
"N/A" = Not Applicable.
"-" = Info Not Available

Heat Pumps

Tag	RHP-180	RHP-240	VHP-170
Unit Type	Rooftop GSHP	Rooftop GSHP	Large Vert GSHP
Qty	2	2	4
Location	Roof	Roof	Gym/HS
Area Served	Old Multipurpose HS	Auditorium HS	Gym/HS
Manufacturer	Mammoth	Mammoth	Mammoth
Model #	DGY180	PGY240K33A	F170VLC
Serial #	-	U606U6001001	-
Cooling Type	Geothermal	Geothermal	Geothermal
Cooling Capacity (Tons)	14	19	15
Cooling Efficiency (SEER/EER)	15.7 EER	14.5 EER	14.7 EER
Heating Type	Geothermal	Geothermal	Geothermal
Heating Input (MBH)	125	170	150
Efficiency	3.5 COP	3.5 COP	3.2 COP
Fuel	Electric	Electric	Electric
Approx Age	6	6	6
ASHRAE Service Life	20	20	20
Remaining Life	14	14	14
Comments			

Note:
"N/A" = Not Applicable.
"-" = Info Not Available

Heat Pumps

Tag	CHP-1	MHP-071	MHP-111
Unit Type	Console GSHP	Horizontal GSHP	Horizontal GSHP
Qty	38	1	2
Location	In Area Served	-	-
Area Served	Offices / Small Classrooms	-	-
Manufacturer	Waterfurnace	Mammoth	Mammoth
Model #	CW15R223CNNBM19A	FO71MLC	F111MLC
Serial #	WM002	-	-
Cooling Type	Geothermal	Geothermal	Geothermal
Cooling Capacity (Tons)	1.25	6	9
Cooling Efficiency (SEER/EER)	15.4 EER	14 EER	14 EER
Heating Type	Geothermal	Geothermal	Geothermal
Heating Input (MBH)	11.46	35	52
Efficiency	3.5 COP	4.7 COP	4.7 COP
Fuel	Electric	Electric	Electric
Approx Age	6	6	6
ASHRAE Service Life	20	20	20
Remaining Life	14	14	14
Comments			

Note:
"N/A" = Not Applicable.
"-" = Info Not Available

Heat Pumps

Tag	MHP-181	HHP-20e	HHP-25e
Unit Type	Horizontal GSHP	Horizontal GSHP	Horizontal GSHP
Qty	2	1	4
Location	-	-	-
Area Served	-	-	-
Manufacturer	Mammoth	Mammoth	Mammoth
Model #	F181MLC	D-020-H-L	F-025-H-L
Serial #	-	-	-
Cooling Type	Geothermal	Geothermal	Geothermal
Cooling Capacity (Tons)	15	2	5
Cooling Efficiency (SEER/EER)	14 EER	14 EER	14 EER
Heating Type	Geothermal	Geothermal	Geothermal
Heating Input (MBH)	93	17.5	21.5
Efficiency	4.7 COP	3.1 COP	3.1 COP
Fuel	Electric	Electric	Electric
Approx Age	6	6	6
ASHRAE Service Life	20	20	20
Remaining Life	14	14	14
Comments			

Note:
"N/A" = Not Applicable.
"-" = Info Not Available

Heat Pumps

Tag	HHP-35e	HHP-45e	HHP-020
Unit Type	Horizontal GSHP	Horizontal GSHP	Horizontal GSHP
Qty	3	1	1
Location	-	-	-
Area Served	-	-	-
Manufacturer	Mammoth	Mammoth	Mammoth
Model #	F-035-H-L	F-045-H-L	D-020-H-L
Serial #	-	-	-
Cooling Type	Geothermal	Geothermal	Geothermal
Cooling Capacity (Tons)	3	4	2
Cooling Efficiency (SEER/EER)	14 EER	14 EER	14 EER
Heating Type	Geothermal	Geothermal	Geothermal
Heating Input (MBH)	30.25	38.2	15.2
Efficiency	3.1 COP	3.2 COP	3.1 COP
Fuel	Electric	Electric	Electric
Approx Age	6	6	6
ASHRAE Service Life	20	20	20
Remaining Life	14	14	14
Comments			

Note:
"N/A" = Not Applicable.
"-" = Info Not Available

Heat Pumps

Tag	HHP-025	HHP-035	HHP-064
Unit Type	Horizontal GSHP	Horizontal GSHP	Horizontal GSHP
Qty	6	4	1
Location	-	-	-
Area Served	-	-	-
Manufacturer	Mammoth	Mammoth	Mammoth
Model #	F-025-H-L	F-035-H-L	F-064-H-L
Serial #	-	-	-
Cooling Type	Geothermal	Geothermal	Geothermal
Cooling Capacity (Tons)	2	3	5
Cooling Efficiency (SEER/EER)	14 EER	14 EER	14.5 EER
Heating Type	Geothermal	Geothermal	Geothermal
Heating Input (MBH)	19.22	26.2	47.5
Efficiency	3.1 COP	3.1 COP	3.2 COP
Fuel	Electric	Electric	Electric
Approx Age	6	6	6
ASHRAE Service Life	20	20	20
Remaining Life	14	14	14
Comments			

Note:
"N/A" = Not Applicable.
"-" = Info Not Available

Heat Pumps

Tag	HHP-070	RTU-L1	RTU-C1
Unit Type	Horizontal GSHP	CV Rooftop Unit	CV Rooftop Unit
Qty	1	1	1
Location	-	Library Roof	New Cafeteria Roof
Area Served	-	Library	New Cafeteria
Manufacturer	Mammoth	Trane	Trane
Model #	F-070-H-L	SLHFC20ECUU25C29 D1011ADDE000000N	WFHB400EPU46C59 D1E0A00EF00
Serial #	-	C99K21394M	C99K21454M
Cooling Type	Geothermal	DX, R-22	DX, R-22
Cooling Capacity (Tons)	6	20	25
Cooling Efficiency (SEER/EER)	14.5 EER	-	-
Heating Type	Geothermal	Heat Exchanger	2-Stage HX
Heating Input (MBH)	50.7	500	850
Efficiency	3.2 COP	80%	80%
Fuel	Electric	Natural Gas	Natural Gas
Approx Age	6	13	13
ASHRAE Service Life	20	15	15
Remaining Life	14	2	2
Comments		5 HP SF, 1.5 HP EF, Economizer Control	15 HP SF, 5 HP EF, Economizer Controls, Split Cooling w/ CU-C1

Note:
"N/A" = Not Applicable.
"-" = Info Not Available

MAJOR EQUIPMENT LIST

Concord Engineering Group

Woodbury Jr.-Sr. High School

Domestic Water Heaters

Tag	DHW-1	DHW-2	DHW-3
Unit Type	Electric Boiler	Electric Boiler	Gas Heater
Qty	1	1	1
Location	Old Boiler Room	Kitchen Serving Old Caf	M-Hall Storage Closet
Area Served	A, B, I, J Halls	Old Caf / Kitchen	M-Hall, 3nd Flr
Manufacturer	Bradford & White	Bradford & White	Bradford & White
Model #	MII120A183SF42	MII120-54-35F-051	PDX265T6FBN
Serial #	CG7966396	GL-01-3236	HF15206067
Size (Gallons)	119	119	65
Input Capacity (MBH/KW)	18 KW	27 KW	65 MBH
Recovery (Gal/Hr)	74	-	80
Efficiency %	98%	98%	80%
Fuel	Electric	Electric	Natural Gas
Approx Age	10	10	6
ASHRAE Service Life	15	15	15
Remaining Life	5	5	9
Comments	x6 Element 3 kw ea. 208 V 3P	x6 Element 4.5 kw ea. 208V 3P	

Note:

"N/A" = Not Applicable.

"-" = Info Not Available

Domestic Water Hea

Tag	DHW-4	DHW-5
Unit Type	Electric Boiler	Electric Boiler
Qty	1	1
Location	Snack Stand	Pump Room
Area Served	Snack Stand	Annex / Paine Gym
Manufacturer	Bradford & White	Bradford & White
Model #	M230L6D55	MII120A183SF42
Serial #	CB7332929	CG7966397
Size (Gallons)	30	119
Input Capacity (MBH/KW)	4.5 KW	18 KW
Recovery (Gal/Hr)	-	74
Efficiency %	98%	98%
Fuel	Electric	Electric
Approx Age	-	10
ASHRAE Service Life	15	15
Remaining Life	-	5
Comments	240V 3P	x6 Element 3 kw ea. 208 V 3P

Note:
"N/A" = Not Applicable.
"-" = Info Not Available

MAJOR EQUIPMENT LIST

Concord Engineering Group

Woodbury Jr.-Sr. High School

Pumps

Tag	P-1, 2, 3	IP-1	
Unit Type	End Suction Pump	Irrigation Pump	
Qty	3	1	
Location	Annex Basement	Football Field	
Area Served	Geothermal Loop	Irrigation System	
Manufacturer	Bell & Gossett	-	
Model #	VSCS 14.25	-	
Serial #	C02291501G60	-	
Horse Power	75	15	
Flow	600 GPM @ 225'	-	
Motor Info	US Electric 365TS	US Electric 215JM	
Electrical Power	230/460V 3P	208/230V 1P	
RPM	1785	3475	
Motor Efficiency %	95.0%	87.5%	
Approx Age	6	6	
ASHRAE Service Life	18	18	
Remaining Life	12	12	
Comments	Has VSD, 2 pumps required to operate	Has VSD	

Note:
"N/A" = Not Applicable.
"-" = Info Not Available

APPENDIX E

CEG Project #: 9C12054
Facility Name: Jr.-Sr.HS Annex Bldg.
Address: 25 N. Broad Street
City, State, Zip Woodbury, NJ 08096

			EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT							RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
Fixture Reference #	Location, Floor and Room	Average Burn Hours	Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Work Description	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, $
1	B. Storage Room	920	1 Lamp, Incandescent 100w, Surface Mnt., No Lens	1	100	7	0.70	644	Re-Lamp	Philips CFL Energy Saver TuffGuard 25w	1	20	7	0.14	129	0.56	515	$75	0	No New Controls	0	0.0%	0	$0
2	B. Storage Room	920	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., No Lens	1	28	3	0.08	77	Existing to Remain	0	1	28	0	0.08	77	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
3	B. Storage Room	920	1x4, 2 Lamp, T12 34w, Magnetic Ballast, Surface Mnt., No Lens	2	80	1	0.08	74	Re-lamp/Re-ballast	Sylvania Lamp FO28/841/SS/ECO Sylvania Ballast QHE 2X32T8/UNV ISN-SC	2	49	1	0.05	45	0.03	29	$4	0	No New Controls	0	0.0%	0	$0
1	B. Crawl Space	920	1 Lamp, Incandescent 100w, Surface Mnt., No Lens	1	100	4	0.40	368	Re-Lamp	Philips CFL Energy Saver TuffGuard 25w	1	20	4	0.08	74	0.32	294	$43	0	No New Controls	0	0.0%	0	$0
4	B. Stairwell	3680	12"x12", 1 Lamp, Incandescent 100w, Surface Mnt., Prismatic Lens	1	100	1	0.10	368	Re-Lamp	Philips CFL Energy Saver 26w Mini Twister	1	26	1	0.03	96	0.07	272	$39	0	No New Controls	0	0.0%	0	$0
5	1. Stairwell	3680	2x2, 2 Lamp, T8 17w, Elect Ballast, Surface Mnt., Prismatic Lens	2	34	2	0.07	250	Existing to Remain	0	2	34	0	0.07	250	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
6	2. Stariwell	3680	2x2, 2 Lamp, T8 17w, Elect Ballast, Recessed Mnt., Prismatic Lens	2	34	2	0.07	250	Existing to Remain	0	2	34	0	0.07	250	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
7	1. Corridor	3460	LED Exit Signs	1	4	4	0.02	55	Existing to Remain	0	1	4	0	0.02	55	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
8	1. Corridor	3460	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Primatic Lens	3	82	9	0.74	2,553	Existing to Remain	0	3	82	0	0.74	2,553	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
1	1. Janitor's Closet	920	1 Lamp, Incandescent 100w, Surface Mnt., No Lens	1	100	2	0.20	184	Re-Lamp	Philips CFL Energy Saver TuffGuard 25w	1	20	2	0.04	37	0.16	147	$21	0	No New Controls	0	0.0%	0	$0
10	1. Boys' Lavatory	2660	2x4, 4 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	4	109	1	0.11	290	Existing to Remain	0	4	109	0	0.11	290	0.00	0	$0	7	Existing Controls	0	0.0%	0	$0
10	1. Girls' Lavatory	2660	2x4, 4 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	4	109	1	0.11	290	Existing to Remain	0	4	109	0	0.11	290	0.00	0	$0	7	Existing Controls	0	0.0%	0	$0
11	1. 100 Classroom	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	14	0.81	2,160	Existing to Remain	0	2	58	0	0.81	2,160	0.00	0	$0	3	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	1	20.0%	432	$63
11	1. Faculty Room	2280	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	3	0.17	397	Existing to Remain	0	2	58	0	0.17	397	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
5	1. Faculty Room Lavatory	380	2x2, 2 Lamp, T8 17w, Elect Ballast, Surface Mnt., Prismatic Lens	2	34	1	0.03	13	Existing to Remain	0	2	34	0	0.03	13	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
11	1. 103 Classroom	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	14	0.81	2,160	Existing to Remain	0	2	58	0	0.81	2,160	0.00	0	$0	3	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	1	20.0%	432	$63
11	1. 104 Classroom	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	14	0.81	2,160	Existing to Remain	0	2	58	0	0.81	2,160	0.00	0	$0	3	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	1	20.0%	432	$63

			EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT							RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
Fixture Reference #	Location, Floor and Room	Average Burn Hours	Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Work Description	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, $
11	1. 105 Classroom	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	14	0.81	2,160	Existing to Remain	0	2	58	0	0.81	2,160	0.00	0	$0	3	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	1	20.0%	432	$63
11	1. Front offices	1900	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	2	0.12	220	Existing to Remain	0	2	58	0	0.12	220	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
12	1. Offices Closet	1900	10"x10", 1 Lamp, Incandescent 100w, Recessed Mnt.	1	100	1	0.10	190	Re-Lamp	Philips CFL Energy Saver 26w Mini Twister	1	26	1	0.03	49	0.07	141	$20	0	No New Controls	0	0.0%	0	$0
11	1. Rear Offices	1900	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	2	0.12	220	Existing to Remain	0	2	58	0	0.12	220	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
13	Stair 2	3680	1x4, 4 Lamp, T8 32w, Elect. Ballast, Surface Mnt., No Lens	4	109	1	0.11	401	Existing to Remain	0	4	109	0	0.11	401	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
5	Stair 2	3680	2x2, 2 Lamp, T8 17w, Elect Ballast, Surface Mnt., Prismatic Lens	2	34	1	0.03	125	Existing to Remain	0	2	34	0	0.03	125	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
14	Stair 2	3680	2x2, 2 Lamp, T8 17w, Elect Ballast, Recessed Mnt.,	2	34	2	0.07	250	Existing to Remain	0	2	34	0	0.07	250	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
7	2. Corridor	3460	LED Exit Signs	1	4	2	0.01	28	Existing to Remain	0	1	4	0	0.01	28	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
15	2. Corridor	3460	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., No Lens	3	82	8	0.66	2,270	Existing to Remain	0	3	82	0	0.66	2,270	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
11	2. 204 Classroom	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	14	0.81	2,160	Existing to Remain	0	2	58	0	0.81	2,160	0.00	0	$0	3	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	1	20.0%	432	$63
16	2. 204 Closet	920	1 Lamp, CFL 26w, No Lens	1	28	1	0.03	26	Existing to Remain	0	1	28	0	0.03	26	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
11	2. 205 Classroom	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	14	0.81	2,160	Existing to Remain	0	2	58	0	0.81	2,160	0.00	0	$0	3	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	2	20.0%	432	$63
17	2. 205 Closet	920	1 Lamp, Incandescent 100w, No Lens	1	100	1	0.10	92	Re-Lamp	Philips CFL Energy Saver TuffGuard 25w	1	25	1	0.03	23	0.08	69	$10	0	No New Controls	0	0.0%	0	$0
10	2. Boys' Room	2660	2x4, 4 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	4	109	1	0.11	290	Existing to Remain	0	4	109	0	0.11	290	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
10	2. Girls' Room	2660	2x4, 4 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	4	109	1	0.11	290	Existing to Remain	0	4	109	0	0.11	290	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
17	2. Storage	920	1 Lamp, Incandescent 100w, No Lens	1	100	1	0.10	92	Re-Lamp	Philips CFL Energy Saver TuffGuard 25w	1	25	1	0.03	23	0.08	69	$10	0	No New Controls	0	0.0%	0	$0
17	2. Storage	920	1 Lamp, Incandescent 100w, No Lens	1	100	1	0.10	92	Re-Lamp	Philips CFL Energy Saver TuffGuard 25w	1	25	1	0.03	23	0.08	69	$10	0	No New Controls	0	0.0%	0	$0
16	2. Storage	920	1 Lamp, CFL 26w, No Lens	1	28	1	0.03	26	Existing to Remain	0	1	28	0	0.03	26	0.00	0	$0	0	No New Controls	0	0.0%	0	$0

			EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT							RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
Fixture Reference #	Location, Floor and Room	Average Burn Hours	Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Work Description	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, $
11	2. 200 Classroom	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	14	0.81	2,160	Existing to Remain	0	2	58	0	0.81	2,160	0.00	0	$0	3	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	1	20.0%	432	$63
11	2. Faculty Room	2280	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	3	0.17	397	Existing to Remain	0	2	58	0	0.17	397	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
9	2. Faculty Room Lavatory	380	2x2, 2 lamp, T8 17w, Surface Mnt., Prismatic Lens	2	34	1	0.03	13	Existing to Remain	0	2	34	0	0.03	13	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
11	2. 203 Classroom	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	14	0.81	2,160	Existing to Remain	0	2	58	0	0.81	2,160	0.00	0	$0	3	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	1	20.0%	432	$63
1	2. Janitor's Closet	920	1 Lamp, Incandescent 100w, Surface Mnt., No Lens	1	100	15	1.50	1,380	Re-Lamp	Philips CFL Energy Saver TuffGuard 25w	1	20	15	0.30	276	1.20	1,104	$160	0	No New Controls	0	0.0%	0	$0
18	Exterior	4380	1 Lamp, MH 100w, Canopy, Exterior	1	125	16	2.00	8,760	Replace Fixture	80w LED Canopy Mount	1	80	16	1.28	5,606	0.72	3,154	$457	0	No New Controls	0	0.0%	0	$0
19	Exterior	4380	1 Lamp, HPS 100w, Flood, Exterior	1	125	2	0.25	1,095	Existing to Remain	0	1	125	0	0.25	1,095	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
	TOTAL					**216**	**15**	**39,350**					**50**	**12**	**33,487**	**3**	**5,863**	**850**			**9**	**2**	**3,456**	**501**

CEG Project #: 9C12054
Facility Name: Jr.-Sr. HS Cap Paine Gym
Address: 25 N. Broad Street
City, State, Zip Woodbury, NJ 08096

			EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT							RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
Fixture Reference #	Location, Floor and Room	Average Burn Hours	Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Work Description	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, $
3	Mechanical Room	920	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	2	0.12	107	Existing to Remain	0	2	58	0	0.12	107	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
3	Mechanical Room	920	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	4	0.23	213	Existing to Remain	0	2	58	0	0.23	213	0.00	0	$0	7	Existing Controls	0	0.0%	0	$0
7	Mechanical Room	920	1 Lamp, CFL 26w, Elect. Ballast, Pendant Mnt.	1	28	1	0.03	26	Existing to Remain	0	1	28	0	0.03	26	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
9	Mechanical Room	920	1 Lamp, Incandescent 100w, Pendant Mnt., No Lens	1	100	1	0.10	92	Re-lamp	Philips CFL Energy Saver TuffGuard 25w	1	25	1	0.03	23	0.08	69	$10	0	No New Controls	0	0.0%	0	$0
4	Girls' Locker Room	2700	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	26	1.51	4,072	Existing to Remain	0	2	58	0	1.51	4,072	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
1	Girls' Locker Room Exit	2700	LED Exit Signs	1	2	1	0.00	5	Existing to Remain	0	1	2	0	0.00	5	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
2	Girls' Locker Room	2700	Tritium Lighting, Self-Luminous Exit Sign	0	0	1	0.00	0	Existing to Remain	0	0	0	0	0.00	0	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
24	Girls' Lavatory	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Clear Lens	2	58	6	0.35	926	Existing to Remain	0	2	58	0	0.35	926	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
25	Girls' Shower	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Clear Lens	2	58	3	0.17	463	Existing to Remain	0	2	58	0	0.17	463	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
24	Girls' Lavatory	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Clear Lens	2	58	1	0.06	154	Existing to Remain	0	2	58	0	0.06	154	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
4	Girls' Storage	920	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	3	0.17	160	Existing to Remain	0	2	58	0	0.17	160	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
4	1. Girls' Storage	920	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	3	0.17	160	Existing to Remain	0	2	58	0	0.17	160	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
6	1. Girls' Office Hall	3460	1 Lamp, Incandescent 100w	1	100	1	0.10	346	Re-lamp	Philips CFL Energy Saver TuffGuard 25w	1	25	1	0.03	87	0.08	260	$38	0	No New Controls	0	0.0%	0	$0
7	1. Girls' Office Hall	1900	1 Lamp, CFL 26w, Elect. Ballast, Pendant Mnt.	1	28	1	0.03	53	Existing to Remain	0	1	28	0	0.03	53	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
4	1. Girls' Storage	920	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	1	0.06	53	Existing to Remain	0	2	58	0	0.06	53	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
4	1. Girls' Locker/Lavatory	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	1	0.06	154	Existing to Remain	0	2	58	0	0.06	154	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
3	1. Girls' Locker/Lavatory	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	1	0.06	154	Existing to Remain	0	2	58	0	0.06	154	0.00	0	$0	0	No New Controls	0	0.0%	0	$0

			EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT							RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
Fixture Reference #	Location, Floor and Room	Average Burn Hours	Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Work Description	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, $
4	1. Girl's office	1900	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	6	0.35	661	Existing to Remain	0	2	58	0	0.35	661	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
8	Stairway 1	3460	2x2, 2 Lamp, T8 17w, Elect. Ballast, Surface Mnt., Prismatic Lense	2	34	2	0.07	235	Existing to Remain	0	2	34	0	0.07	235	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
4	1. Corridor Outside Girls' Locker Room	3460	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	1	0.06	201	Existing to Remain	0	2	58	0	0.06	201	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
9	1. Storage Room	920	1 Lamp, Incandescent 100w, Pendant Mnt., No Lens	1	100	1	0.10	92	Re-lamp	Philips CFL Energy Saver TuffGuard 25w	1	25	1	0.03	23	0.08	69	$10	0	No New Controls	0	0.0%	0	$0
3	1. Cardio Room	2700	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	7	0.41	1,096	Existing to Remain	0	2	58	0	0.41	1,096	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
1	1. Cardio Room Exits	8760	LED Exit Signs	1	2	2	0.00	35	Existing to Remain	0	1	2	0	0.00	35	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
8	1. Stairway 2	3680	2x2, 2 Lamp, T8 17w, Elect. Ballast, Surface Mnt., Prismatic Lense	2	34	2	0.07	250	Existing to Remain	0	2	34	0	0.07	250	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
10	1. Cardio Room Chase	920	1 Lamp, Incandescent 25w, Surface Mnt.	1	25	3	0.08	69	Existing to Remain	0	1	25	0	0.08	69	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
4	1. Trainer Office	1900	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	5	0.29	551	Existing to Remain	0	2	58	0	0.29	551	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
11	1. Custodian Closet (Boys')	920	1x2, 2 Lamp, T8 17w, Elect. Ballast, Pendant Mnt.	2	34	1	0.03	31	Existing to Remain	0	2	34	0	0.03	31	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
5	1. Corridor Outside Girls' Locker Room	3460	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt.	2	58	1	0.06	201	Existing to Remain	0	2	58	0	0.06	201	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
12	1. Boys' Locker Room Storage	920	1x4, 4 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	109	8	0.87	802	Existing to Remain	0	2	109	0	0.87	802	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
1	1. Boys' Locker Room Storage	920	LED Exit Signs	1	2	1	0.00	2	Existing to Remain	0	1	2	0	0.00	2	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
4	1. Boys' Locker Room	2700	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	15	0.87	2,349	Existing to Remain	0	2	58	0	0.87	2,349	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
4	1. Boys' Locker Room Corridor	3460	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	8	0.46	1,605	Existing to Remain	0	2	58	0	0.46	1,605	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
4	1. Boys' Locker Room Lavatory	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	2	0.12	309	Existing to Remain	0	2	58	0	0.12	309	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
4	1. Boys' Locker	2700	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	2	0.12	313	Existing to Remain	0	2	58	0	0.12	313	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
1	1. Boys' Locker Exit	8760	LED Exit Signs	1	2	1	0.00	18	Existing to Remain	0	1	2	0	0.00	18	0.00	0	$0	0	No New Controls	0	0.0%	0	$0

			EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT							RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
Fixture Reference #	Location, Floor and Room	Average Burn Hours	Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Work Description	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, $
2	1. Boys' Locker Exit	8760	Tritium Lighting, Self-Luminous Exit Sign	0	0	1	0.00	0	Existing to Remain	0	0	0	0	0.00	0	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
5	1. Boys' Locker Room Shower	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt.	2	58	3	0.17	463	Existing to Remain	0	2	58	0	0.17	463	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
9	1. Boys' Locker Room Supplies	920	1 Lamp, Incandescent 100w, Pendant Mnt., No Lens	1	100	1	0.10	92	Re-lamp	Philips CFL Energy Saver TuffGuard 25w	1	25	1	0.03	23	0.08	69	$10	0	No New Controls	0	0.0%	0	$0
5	1. Boys' Locker Room Drying	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt.	2	58	6	0.35	926	Existing to Remain	0	2	58	0	0.35	926	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
5	1. Boys' Locker First Aid	2700	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt.	2	58	2	0.12	313	Existing to Remain	0	2	58	0	0.12	313	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
13	1. Boys' Locker Corrridor to Office	3460	1 Lamp, Incandescent 100w, Pendant Mnt.	1	100	1	0.10	346	Re-lamp	Philips CFL Energy Saver TuffGuard 25w	1	25	1	0.03	87	0.08	260	$38	0	No New Controls	0	0.0%	0	$0
5	1. Boys' Locker/Lavatory	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt.	2	58	1	0.06	154	Existing to Remain	0	2	58	0	0.06	154	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
14	1. Boys' Locker/Lavatory	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt.	1	28	1	0.03	74	Existing to Remain	0	1	28	0	0.03	74	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
5	1. Boys' Locker Office	1900	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt.	2	58	6	0.35	661	Existing to Remain	0	2	58	0	0.35	661	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
15	1. Weight Room	2700	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Primatic Lens	3	82	15	1.23	3,321	Existing to Remain	0	3	82	0	1.23	3,321	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
1	1. Weight Room Exits	8760	LED Exit Signs	1	2	2	0.00	35	Existing to Remain	0	1	2	0	0.00	35	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
4	1. Light to Weightroom	8760	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	1	0.06	508	Existing to Remain	0	2	58	0	0.06	508	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
16	Stairway 3	3680	2x2, 2 Lamp, T8 17w, Elect Ballast, Surface Mnt.	2	34	1	0.03	125	Existing to Remain	0	2	34	0	0.03	125	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
17	2. Gym	2700	1 Lamp, Metal-halide 250w, Pendant, Prismatic Lens	1	295	32	9.44	25,488	Replace Fixture	2x4 54w T5HO 4 Lamp w/Reflector, Lightolier TriLyte #FH4C5DVI454UNV	4	236	32	7.55	20,390	1.89	5,098	$739	0	No New Controls	0	0.0%	0	$0
2	2. Gym Exits	8760	Tritium Lighting, Self-Luminous Exit Sign	0	0	6	0.00	0	Existing to Remain	0	0	0	0	0.00	0	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
18	2. Gym Storage	920	1 Lamp, Incandescent 100w, Surface Mnt.	1	100	1	0.10	92	Re-lamp	Philips CFL Energy Saver TuffGuard 25w	1	25	1	0.03	23	0.08	69	$10	0	No New Controls	0	0.0%	0	$0
19	2. Main Lobby	3460	2x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	6	0.35	1,204	Existing to Remain	0	2	58	0	0.35	1,204	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
19	2. Main Lobby	3460	2x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	1	0.06	201	Existing to Remain	0	2	58	0	0.06	201	0.00	0	$0	0	No New Controls	0	0.0%	0	$0

			EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT							RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
Fixture Reference #	Location, Floor and Room	Average Burn Hours	Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Work Description	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, $
19	2. Girls' Room	2660	2x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	1	0.06	154	Existing to Remain	0	2	58	0	0.06	154	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
6	2. Closet	920	1 Lamp, Incandescent 100w	1	100	1	0.10	92	Re-lamp	Philips CFL Energy Saver TuffGuard 25w	1	25	1	0.03	23	0.08	69	$10	0	No New Controls	0	0.0%	0	$0
8	2. Ticket Office	920	2x2, 2 Lamp, T8 17w, Elect. Ballast, Surface Mnt., Prismatic Lense	2	34	1	0.03	31	Existing to Remain	0	2	34	0	0.03	31	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
19	2. Boys' Room	2660	2x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	1	0.06	154	Existing to Remain	0	2	58	0	0.06	154	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
20	Stairway 4	3680	2x4, 4 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	4	109	1	0.11	401	Existing to Remain	0	4	109	0	0.11	401	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
8	Stairway 4	3680	2x2, 2 Lamp, T8 17w, Elect. Ballast, Surface Mnt., Prismatic Lense	2	34	1	0.03	125	Existing to Remain	0	2	34	0	0.03	125	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
23	Exterior Canopy	3120	1 Lamp, Metal-Halide Lamp, 100w, Surface Mnt., Prismatic Lens	1	125	10	1.25	3,900	Replace Fixture	80w LED Canopy Mount	1	80	10	0.80	2,496	0.45	1,404	$204	0	No New Controls	0	0.0%	0	$0
23	Gym Exit Doorways Canopy	3120	1 Lamp, Metal-Halide Lamp, 100w, Surface Mnt., Prismatic Lens	14	125	2	0.25	780	Replace Fixture	80w LED Canopy Mount	1	80	2	0.16	499	0.09	281	$41	0	No New Controls	0	0.0%	0	$0
21	Exterior Uplight / Bull Signage	3120	1 Lamp, Metal-Halide 250w, Flood Light	1	295	2	0.59	1,841	Replace Fixture	135W, LED Floodlight	1	135	2	0.27	842	0.32	998	$145	0	No New Controls	0	0.0%	0	$0
	TOTAL					**232**	**22**	**57,442**					**53**	**19**	**48,797**	**3**	**8,645**	**1,253**			**0**	**0**	**0**	**0**

CEG Project #: 9C12054
Facility Name: Woodbury H.S. Ground Shop
Address: 25 N. Broad Street
City, State, Zip Woodbury, NJ 08096

			EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT							RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
Fixture Reference #	Location, Floor and Room	Average Burn Hours	Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Work Description	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, $
1	Shop Area	1600	1x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Cage	2	58	3	0.17	278	Existing to Remain	0	2	58	0	0.17	278	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
1	Shop Area	1600	1x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Cage	2	58	10	0.58	928	Existing to Remain	0	2	58	0	0.58	928	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
1	Shop Area	1600	1x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Cage	2	58	2	0.12	186	Existing to Remain	0	2	58	0	0.12	186	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
2	Shop Area Exit Sign	8760	LED Exit Signs	1	4	1	0.00	35	Existing to Remain	0	1	4	0	0.00	35	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
3	Men's Room	380	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	3	0.17	66	Existing to Remain	0	2	58	0	0.17	66	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
3	Ladies' Room	380	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	3	0.17	66	Existing to Remain	0	2	58	0	0.17	66	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
4	Concessions	1600	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	9	0.52	835	Existing to Remain	0	2	58	0	0.52	835	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
5	Exterior	4380	175w Metal-halide Wallpak Exit Lamp	1	213	5	1.07	4,665	Replace Fixture	90w LED Wall Pack	1	90	5	0.45	1,971	0.62	2,694	$391	0	No New Controls	0	0.0%	0	$0
	TOTAL					**36**	**3**	**7,059**					**5**	**2**	**4,365**	**1**	**2,694**	**391**			**0**	**0**	**0**	**0**

CEG Project #: 9C12054
Facility Name: Woodbury Jr. /Sr. High School
Address: 25 N. Broad Street
City, State, Zip Woodbury, NJ 08096

			EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT							RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
Fixture Reference #	Location, Floor and Room	Average Burn Hours	Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Work Description	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, $
1	New Cafeteria	3200	400w MH, Pendant Mnt., Prismatic Lens	1	455	24	10.92	34,944	Existing to Remain	0	1	455	0	10.92	34,944	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
2	New Cafeteria Storage 1	920	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	3	0.17	160	Existing to Remain	0	2	58	0	0.17	160	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
42	New Cafeteria Exit	8760	LED Exit Sign	1	2	4	0.01	70	Existing to Remain	0	1	2	0	0.01	70	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
2	New Cafeteria Storage 2	920	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	1	0.06	53	Existing to Remain	0	2	58	0	0.06	53	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
3	New Cafeteria Storage 3	920	2x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	4	0.23	213	Existing to Remain	0	2	58	0	0.23	213	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
3	New Cafeteria Serving Area	3200	2x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	10	0.58	1,856	Existing to Remain	0	2	58	0	0.58	1,856	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
50	New Cafeteria Serving Area Exit	8760	2 Lamp, 7w CFL, Exit Sign	2	20	1	0.02	175	Replace Fixture	LED Exit Sign	1	4	1	0.00	35	0.02	140	$20	0	No New Controls	0	0.0%	0	$0
4	New Cafeteria Serving Area Storage	920	2 Lamp Strip, T8 32w, Elect. Ballast, Surface Mnt., No Lens	2	58	1	0.06	53	Existing to Remain	0	2	58	0	0.06	53	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
5	Old Cafeteria Kitchen	1900	1.5x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	20	1.16	2,204	Existing to Remain	0	2	58	0	1.16	2,204	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
5	Old Cafeteria Kitchen Corridor	3460	1.5x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	2	0.12	401	Existing to Remain	0	2	58	0	0.12	401	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
3	Old Cafeteria Storage 1	920	2x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	6	0.35	320	Existing to Remain	0	2	58	0	0.35	320	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
2	Old Cafeteria Storage 2	920	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	1	0.06	53	Existing to Remain	0	2	58	0	0.06	53	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
2	Old Cafeteria Storage 3	920	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	2	0.12	107	Existing to Remain	0	2	58	0	0.12	107	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
6	Old Cafeteria Exit	8760	Tritium Lighting, Self-Luminous Exit Sign	0	0	1	0.00	0	Existing to Remain	0	0	0	0	0.00	0	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
7	Old Cafeteria Lobby	3460	1.5x4, 4 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	4	109	1	0.11	377	Existing to Remain	0	4	109	0	0.11	377	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
8	Old Cafeteria Custodial Closet	1900	100w Incandescent, Pendant Mnt.	1	100	1	0.10	190	Re-lamp	Philips CFL Energy Saver TuffGuard 25w	1	25	1	0.03	48	0.08	143	$21	0	No New Controls	0	0.0%	0	$0
9	Old Cafeteria Storage	920	4 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	4	109	2	0.22	201	Existing to Remain	0	4	109	0	0.22	201	0.00	0	$0	0	No New Controls	0	0.0%	0	$0

			EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT							RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
Fixture Reference #	Location, Floor and Room	Average Burn Hours	Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Work Description	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, $
2	Old Cafeteria Office	1900	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	1	0.06	110	Existing to Remain	0	2	58	0	0.06	110	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
50	Old Cafeteria Lobby Exit	8760	2 Lamp, 7w CFL, Exit Sign	2	20	1	0.02	175	Replace Fixture	LED Exit Sign	1	4	1	0.00	35	0.02	140	$20	0	No New Controls	0	0.0%	0	$0
51	Old Cafeteria	3200	250w MH, Pendant Mnt., Prismatic Lens	1	295	13	3.84	12,272	Existing to Remain	0	1	295	0	3.84	12,272	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
11	Old Cafeteria Emergency	8760	90w Incandescent Emergency Only Lighting	1	90	4	0.36	3,154	Existing to Remain	0	1	90	0	0.36	3,154	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
42	Old Cafeteria Exit	8760	LED Exit Sign	1	2	3	0.01	53	Existing to Remain	0	1	2	0	0.01	53	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
2	Old Cafeteria Storage	920	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	4	0.23	213	Existing to Remain	0	2	58	0	0.23	213	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
3	New Cafeteria Lobby	3460	2x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	11	0.64	2,207	Existing to Remain	0	2	58	0	0.64	2,207	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
4	New Cafeteria Lobby Cove	3460	2 Lamp Strip, T8 32w, Elect. Ballast, Surface Mnt., No Lens	2	58	15	0.87	3,010	Existing to Remain	0	2	58	0	0.87	3,010	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
12	Boy's RR	2660	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	3	0.25	654	Existing to Remain	0	3	82	0	0.25	654	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
3	G Hall	3460	2x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	10	0.58	2,007	Existing to Remain	0	2	58	0	0.58	2,007	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
42	G Hall Exit	8760	LED Exit Sign	1	2	3	0.01	53	Existing to Remain	0	1	2	0	0.01	53	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
42	New Cafeteria Lobby Exit	8760	LED Exit Sign	1	2	2	0.00	35	Existing to Remain	0	1	2	0	0.00	35	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
13	Atheletic Director/Athletic Director Office	1900	2x4, 4 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	4	109	2	0.22	414	Existing to Remain	0	4	109	0	0.22	414	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
13		1900	2x4, 4 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	4	109	1	0.11	207	Existing to Remain	0	4	109	0	0.11	207	0.00	0	$0				0.0%	0	$0
2	Atletic Director Closet	920	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	1	0.06	53	Existing to Remain	0	2	58	0	0.06	53	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
13	Girl's RR	2660	2x4, 4 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	4	109	2	0.22	580	Existing to Remain	0	4	109	0	0.22	580	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
14	Choir Room	2660	1x4, 4 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Direct/Indirect Lens	4	109	30	3.27	8,698	Existing to Remain	0	4	109	0	3.27	8,698	0.00	0	$0	3	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	2	0.0%	0	$0
15	Choir Room Storage	920	100w Incandescent, Surface Mnt.	1	100	1	0.10	92	Re-lamp	Philips CFL Energy Saver TuffGuard 25w	1	25	1	0.03	23	0.08	69	$10	0	No New Controls	0	0.0%	0	$0

			EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT							RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
Fixture Reference #	Location, Floor and Room	Average Burn Hours	Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Work Description	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	G4	2660	2x4, 4 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Parabolic Lens	4	109	14	1.53	4,059	Existing to Remain	0	4	109	0	1.53	4,059	0.00	0	$0	3	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	2	0.0%	0	$0
12	Band Room	2660	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	14	1.15	3,054	Existing to Remain	0	3	82	0	1.15	3,054	0.00	0	$0	3	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	3	0.0%	0	$0
17		2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Direct/Indirect Lens	2	58	23	1.33	3,548	Existing to Remain	0	2	58	0	1.33	3,548	0.00	0	$0				0.0%	0	$0
12	Band Room Entrance	2660	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	1	0.08	218	Existing to Remain	0	3	82	0	0.08	218	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
12	Practice Room B	2660	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	1	0.08	218	Existing to Remain	0	3	82	0	0.08	218	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
12	Practice Room A	2660	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	1	0.08	218	Existing to Remain	0	3	82	0	0.08	218	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
12	Office	1900	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	2	0.16	312	Existing to Remain	0	3	82	0	0.16	312	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
15	Storage	920	100w Incandescent, Surface Mnt.	1	100	6	0.60	552	Re-lamp	Philips CFL Energy Saver TuffGuard 25w	1	25	6	0.15	138	0.45	414	$60	0	No New Controls	0	0.0%	0	$0
13	Corridor by Band	3460	2x4, 4 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	4	109	2	0.22	754	Existing to Remain	0	4	109	0	0.22	754	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
42	Corridor by Band Exit	8760	LED Exit Sign	1	2	1	0.00	18	Existing to Remain	0	1	2	0	0.00	18	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
18	G2 Facilities Entrance	3460	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	2	0.12	401	Existing to Remain	0	2	58	0	0.12	401	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
18	G2 Facilities Office Area	1900	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	8	0.46	882	Existing to Remain	0	2	58	0	0.46	882	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
13		1900	2x4, 4 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	4	109	3	0.33	621	Existing to Remain	0	4	109	0	0.33	621	0.00	0	$0		No New Controls		0.0%	0	$0
19	G4 Corridor Display	3460	1 Lamp Strip, T12 34w, Mag. Ballast, Surface Mnt., No Lens	1	50	1	0.05	173	Re-Lamp/Re-Ballast	Sylvania Lamp FO28/841/SS/ECO Sylvania Ballast QHE 2X32T8/UNV ISN-SC	2	25	1	0.03	87	0.03	87	$13	0	No New Controls	0	0.0%	0	$0
3	Faculty RR	2660	2x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	1	0.06	154	Existing to Remain	0	2	58	0	0.06	154	0.00	0	$0	7	Existing Controls	0	20.0%	31	$4
20		2660	1 Lamp Wall, T8 32w, Elect. Ballast, Surface Mnt., No Lens	1	28	1	0.03	74	Existing to Remain	0	1	28	0	0.03	74	0.00	0	$0				0.0%	0	$0
2	Electical Room	920	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	11	0.64	587	Existing to Remain	0	2	58	0	0.64	587	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
15	Electical Room	920	100w Incandescent, Surface Mnt.	1	100	1	0.10	92	Re-lamp	Philips CFL Energy Saver TuffGuard 25w	1	25	1	0.03	23	0.08	69	$10	0	No New Controls	0	0.0%	0	$0

			EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT							RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
Fixture Reference #	Location, Floor and Room	Average Burn Hours	Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Work Description	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, $
21	Auditorium	0	10" Can, 250w MH, Pendant Mnt., No Lens	1	295	6	1.77	0	Existing to Remain	0	1	295	0	1.77	0	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
22	Auditorium	0	10" 32w CFL, Pendant Mnt., No Lens	1	36	12	0.43	0	Existing to Remain	0	1	36	0	0.43	0	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
18	Stage	0	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	6	0.35	0	Existing to Remain	0	2	58	0	0.35	0	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
2	Stage	0	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	1	0.06	0	Existing to Remain	0	2	58	0	0.06	0	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
23	Stage	0	4" 65w Incandescent, Surface Mnt., Flood	1	65	4	0.26	0	Re-lamp	Philips CFL Energy Saver R30 Flood 15w	1	15	4	0.06	0	0.20	0	$0	0	No New Controls	0	0.0%	0	$0
18	Stage Storage 1	920	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	1	0.06	53	Existing to Remain	0	2	58	0	0.06	53	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
18	Stage Storage 2	920	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	1	0.06	53	Existing to Remain	0	2	58	0	0.06	53	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
42	Theatrical	0	LED Exit Sign	1	2	3	0.01	0	Existing to Remain	0	1	2	0	0.01	0	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
52	Auditorium Dim	0	1 Lamp, Dimmable Wall Sconce	1	100	10	1.00	0	Existing to Remain	0	1	100	0	1.00	0	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
53	Auditorium Dim	0	1 Lamp, Pendant Mnt.	1	26	14	0.36	0	Existing to Remain	0	1	26	0	0.36	0	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
3	Auditorium Booth	0	2x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	2	0.12	0	Existing to Remain	0	2	58	0	0.12	0	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
24	D Corridor	3460	2x4, 3 Lamp, (2) T8 (Normal)/(1) T12(Emer. Only) 32/34w, Elect. Ballast, Recessed Mnt.,	3	58	17	0.99	3,412	Existing to Remain	0	3	58	0	0.99	3,412	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
42	D Corridor Exit	8760	LED Exit Sign	1	2	3	0.01	53	Existing to Remain	0	1	2	0	0.01	53	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
25	Mechanical Room	920	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., No Lens	2	58	1	0.06	53	Existing to Remain	0	2	58	0	0.06	53	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
26	Maintenance/Storage	920	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., No Lens	2	58	28	1.62	1,494	Existing to Remain	0	2	58	0	1.62	1,494	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
18	Storage/Stair	920	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	1	0.06	53	Existing to Remain	0	2	58	0	0.06	53	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
27	C Hall Storage	920	1x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., No Lens	2	58	2	0.12	107	Existing to Remain	0	2	58	0	0.12	107	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
28		920	1x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	1	0.06	53	Existing to Remain	0	2	58	0	0.06	53	0.00	0	$0				0.0%	0	$0

			EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT							RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
Fixture Reference #	Location, Floor and Room	Average Burn Hours	Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Work Description	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, $
8	C Hall Storage	920	100w Incandescent, Pendant Mnt.	1	100	3	0.30	276	Re-lamp	Philips CFL Energy Saver TuffGuard 25w	1	25	3	0.08	69	0.23	207	$30	0	No New Controls	0	0.0%	0	$0
2	Storeroom 3	920	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	2	0.12	107	Existing to Remain	0	2	58	0	0.12	107	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
29	Women's RR	2660	2x2, 2 U-Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	73	1	0.07	194	Re-Lamp/Re-Ballast/ Re-Pin	Sylvania Lamp FO17/841/SS/ECO Sylvania Ballast QHE 3X32T8/UNV ISN-SC	3	47	1	0.05	125	0.03	69	$10	0	No New Controls	0	0.0%	0	$0
30	Men's RR	2660	1x1, 100w Incandescent, Recessed Mnt.	1	100	1	0.10	266	Re-Lamp	Philips CFL Energy Saver 26w Mini Twister	1	26	1	0.03	69	0.07	197	$29	0	No New Controls	0	0.0%	0	$0
13	Superintendent Office	1900	2x4, 4 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	4	109	4	0.44	828	Existing to Remain	0	4	109	0	0.44	828	0.00	0	$0	4	Dual Technology Occupancy Sensor - Remote Mnt.	1	0.0%	0	$0
18	Super/AA Office	1900	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	6	0.35	661	Existing to Remain	0	2	58	0	0.35	661	0.00	0	$0	4	Dual Technology Occupancy Sensor - Remote Mnt.	1	0.0%	0	$0
2	Copy Room/Lounge	2280	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	8	0.46	1,058	Existing to Remain	0	2	58	0	0.46	1,058	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
29	Office	1900	2x2, 2 U-Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	73	1	0.07	139	Re-Lamp/Re-Ballast/ Re-Pin	Sylvania Lamp FO17/841/SS/ECO Sylvania Ballast QHE 3X32T8/UNV ISN-SC	3	47	1	0.05	89	0.03	49	$7	0	No New Controls	0	0.0%	0	$0
13	Office	1900	2x4, 4 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	4	109	1	0.11	207	Existing to Remain	0	4	109	0	0.11	207	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
31	Corridor	3460	2x2, 2 Lamp, T8 17w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	34	5	0.17	588	Existing to Remain	0	2	34	0	0.17	588	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
18	Large Office Area/Front Office	1900	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	14	0.81	1,543	Existing to Remain	0	2	58	0	0.81	1,543	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
32	Large Office Area/Storage	920	2x2, 2 Lamp, T8 17w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	34	1	0.03	31	Existing to Remain	0	2	34	0	0.03	31	0.00	0	$0	7	Existing Controls	0	20.0%	6	$1
12	Large Office Area/Rear Office	1900	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	3	0.25	467	Existing to Remain	0	3	82	0	0.25	467	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
12	Corridor B Office	1900	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	2	0.16	312	Existing to Remain	0	3	82	0	0.16	312	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
12	Corridor B Office Inner Office	1900	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	4	0.33	623	Existing to Remain	0	3	82	0	0.33	623	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
12	Conference Room	1900	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	6	0.49	935	Existing to Remain	0	3	82	0	0.49	935	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
13	Girl's RR	2660	2x4, 4 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	4	109	2	0.22	580	Existing to Remain	0	4	109	0	0.22	580	0.00	0	$0	7	Existing Controls	0	20.0%	116	$17
13	Boy's RR	2660	2x4, 4 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	4	109	2	0.22	580	Existing to Remain	0	4	109	0	0.22	580	0.00	0	$0	0	No New Controls	0	0.0%	0	$0

			EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT							RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
Fixture Reference #	Location, Floor and Room	Average Burn Hours	Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Work Description	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, $
33	Custodial	1900	65w Incandescent, Pendant Mnt.	1	65	1	0.07	124	Re-lamp	Philips CFL Energy Saver R30 Flood 15w	1	15	1	0.02	29	0.05	95	$14	0	No New Controls	0	0.0%	0	$0
34		1900	26w CFL	1	28	1	0.03	53	Existing to Remain	0	1	28	0	0.03	53	0.00	0	$0				0.0%	0	$0
13	Telecom Room	1900	2x4, 4 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	4	109	1	0.11	207	Existing to Remain	0	4	109	0	0.11	207	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
4	Display Case	3460	2 Lamp Strip, T8 32w, Elect. Ballast, Surface Mnt., No Lens	2	58	1	0.06	201	Existing to Remain	0	2	58	0	0.06	201	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
2	A2	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	22	1.28	3,394	Existing to Remain	0	2	58	0	1.28	3,394	0.00	0	$0	3	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	2	0.0%	0	$0
2	A4/A2 Storage	920	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	2	0.12	107	Existing to Remain	0	2	58	0	0.12	107	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
2	A4	920	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	23	1.33	1,227	Existing to Remain	0	2	58	0	1.33	1,227	0.00	0	$0	3	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	2	0.0%	0	$0
18	A3	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	14	0.81	2,160	Existing to Remain	0	2	58	0	0.81	2,160	0.00	0	$0	3	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	1	0.0%	0	$0
18	A1	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	14	0.81	2,160	Existing to Remain	0	2	58	0	0.81	2,160	0.00	0	$0	3	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	1	0.0%	0	$0
24	A Hall	3460	2x4, 3 Lamp, (2) T8 (Normal)/(1) T12(Emer. Only) 32/34w, Elect. Ballast, Recessed Mnt.,	3	58	5	0.29	1,003	Existing to Remain	0	3	58	0	0.29	1,003	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
42	A Hall Exit	8760	LED Exit Sign	1	2	2	0.00	35	Existing to Remain	0	1	2	0	0.00	35	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
18	I20	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	1,851	Existing to Remain	0	2	58	0	0.70	1,851	0.00	0	$0	3	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	1	0.0%	0	$0
18	I21	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	16	0.93	2,468	Existing to Remain	0	2	58	0	0.93	2,468	0.00	0	$0	3	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	1	0.0%	0	$0
2	Copy Room	1900	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	2	0.12	220	Existing to Remain	0	2	58	0	0.12	220	0.00	0	$0	7	Existing Controls	0	20.0%	44	$6
18	Assistant Principal	1900	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	4	0.23	441	Existing to Remain	0	2	58	0	0.23	441	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
18	Assistant Principal AA	1900	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	4	0.23	441	Existing to Remain	0	2	58	0	0.23	441	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
15	Janitor Closet	920	100w Incandescent, Surface Mnt.	1	100	1	0.10	92	Re-lamp	Philips CFL Energy Saver TuffGuard 25w	1	25	1	0.03	23	0.08	69	$10	0	No New Controls	0	0.0%	0	$0
18	Main Office	1900	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	10	0.58	1,102	Existing to Remain	0	2	58	0	0.58	1,102	0.00	0	$0	0	No New Controls	0	0.0%	0	$0

			EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT							RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
Fixture Reference #	Location, Floor and Room	Average Burn Hours	Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Work Description	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, $
31	I Main Entry	2660	2x2, 2 Lamp, T8 17w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	34	1	0.03	90	Existing to Remain	0	2	34	0	0.03	90	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
29	Main Office Corridor	1900	2x2, 2 U-Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	73	3	0.22	416	Re-Lamp/Re-Ballast/ Re-Pin	Sylvania Lamp FO17/841/SS/ECO Sylvania Ballast QHE 3X32T8/UNV ISN-SC	3	47	3	0.14	268	0.08	148	$21	0	No New Controls	0	0.0%	0	$0
18	Main Office, Inner Office	1900	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	2	0.12	220	Existing to Remain	0	2	58	0	0.12	220	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
18	Main Office Breakroom	3200	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	3	0.17	557	Existing to Remain	0	2	58	0	0.17	557	0.00	0	$0	5	Dual Technology Occupancy Sensor - Switch Mnt.	1	0.0%	0	$0
18	Principal Office	1900	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	8	0.46	882	Existing to Remain	0	2	58	0	0.46	882	0.00	0	$0	4	Dual Technology Occupancy Sensor - Remote Mnt.	1	0.0%	0	$0
18	Conference Room	1900	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	4	0.23	441	Existing to Remain	0	2	58	0	0.23	441	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
18	Nurse Entrance	1900	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	2	0.12	220	Existing to Remain	0	2	58	0	0.12	220	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
18	Nurse Office	1900	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	6	0.35	661	Existing to Remain	0	2	58	0	0.35	661	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
18	Sick Area 1	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	1	0.06	154	Existing to Remain	0	2	58	0	0.06	154	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
18	Sick Area 2	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	1	0.06	154	Existing to Remain	0	2	58	0	0.06	154	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
18	Nurse Storage 1	920	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	2	0.12	107	Existing to Remain	0	2	58	0	0.12	107	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
18	Nurse Storage 2	920	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	2	0.12	107	Existing to Remain	0	2	58	0	0.12	107	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
18	Nurse Sink	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	1	0.06	154	Existing to Remain	0	2	58	0	0.06	154	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
15	Nurse Storage 3	920	100w Incandescent, Surface Mnt.	1	100	1	0.10	92	Re-lamp	Philips CFL Energy Saver TuffGuard 25w	1	25	1	0.03	23	0.08	69	$10	0	No New Controls	0	0.0%	0	$0
31	Nurse RR	2660	2x2, 2 Lamp, T8 17w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	34	1	0.03	90	Existing to Remain	0	2	34	0	0.03	90	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
18	Guidance Main Area	1900	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	6	0.35	661	Existing to Remain	0	2	58	0	0.35	661	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
18	Guidance Office	1900	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	2	0.12	220	Existing to Remain	0	2	58	0	0.12	220	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
18	Guidance Intercom Room	1900	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	2	0.12	220	Existing to Remain	0	2	58	0	0.12	220	0.00	0	$0	0	No New Controls	0	0.0%	0	$0

			EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT							RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
Fixture Reference #	Location, Floor and Room	Average Burn Hours	Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Work Description	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, $
15	Guidance Storage	920	100w Incandescent, Surface Mnt.	1	100	1	0.10	92	Re-lamp	Philips CFL Energy Saver TuffGuard 25w	1	25	1	0.03	23	0.08	69	$10	0	No New Controls	0	0.0%	0	$0
8	Guidance Storage	920	100w Incandescent, Pendant Mnt.	1	100	2	0.20	184	Re-lamp	Philips CFL Energy Saver TuffGuard 25w	1	25	2	0.05	46	0.15	138	$20	0	No New Controls	0	0.0%	0	$0
18	Guidance Office	1900	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	2	0.12	220	Existing to Remain	0	2	58	0	0.12	220	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
18	Guidance Office	1900	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	4	0.23	441	Existing to Remain	0	2	58	0	0.23	441	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
18	Guidance Office	1900	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	2	0.12	220	Existing to Remain	0	2	58	0	0.12	220	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
18	J-20	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	1,851	Existing to Remain	0	2	58	0	0.70	1,851	0.00	0	$0	3	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	1	0.0%	0	$0
18	J-22	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	1,851	Existing to Remain	0	2	58	0	0.70	1,851	0.00	0	$0	3	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	1	0.0%	0	$0
18	J-25	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	1,851	Existing to Remain	0	2	58	0	0.70	1,851	0.00	0	$0	3	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	1	0.0%	0	$0
18	J-26	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	1,851	Existing to Remain	0	2	58	0	0.70	1,851	0.00	0	$0	3	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	1	0.0%	0	$0
18	J-24	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	8	0.46	1,234	Existing to Remain	0	2	58	0	0.46	1,234	0.00	0	$0	3	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	1	0.0%	0	$0
2	Men's RR	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	1	0.06	154	Existing to Remain	0	2	58	0	0.06	154	0.00	0	$0	7	Existing Controls	0	20.0%	31	$4
31	Women's RR	2660	2x2, 2 Lamp, T8 17w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	34	1	0.03	90	Existing to Remain	0	2	34	0	0.03	90	0.00	0	$0	7	Existing Controls	0	20.0%	18	$3
24	J Hall	3460	2x4, 3 Lamp, (2) T8 (Normal)/(1) T12(Emer. Only) 32/34w, Elect. Ballast, Recessed Mnt.,	3	58	7	0.41	1,405	Existing to Remain	0	3	58	0	0.41	1,405	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
42	J Hall Exit	8760	LED Exit Sign	1	2	1	0.00	18	Existing to Remain	0	1	2	0	0.00	18	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
24	I Hall	3460	2x4, 3 Lamp, (2) T8 (Normal)/(1) T12(Emer. Only) 32/34w, Elect. Ballast, Recessed Mnt.,	3	58	5	0.29	1,003	Existing to Remain	0	3	58	0	0.29	1,003	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
24	A Hall	3460	2x4, 3 Lamp, (2) T8 (Normal)/(1) T12(Emer. Only) 32/34w, Elect. Ballast, Recessed Mnt.,	3	58	5	0.29	1,003	Existing to Remain	0	3	58	0	0.29	1,003	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
42	A Hall Exit	8760	LED Exit Sign	1	2	3	0.01	53	Existing to Remain	0	1	2	0	0.01	53	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
24	B Hall	3460	2x4, 3 Lamp, (2) T8 (Normal)/(1) T12(Emer. Only) 32/34w, Elect. Ballast, Recessed Mnt.,	3	58	7	0.41	1,405	Existing to Remain	0	3	58	0	0.41	1,405	0.00	0	$0	0	No New Controls	0	0.0%	0	$0

			EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT							RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
Fixture Reference #	Location, Floor and Room	Average Burn Hours	Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Work Description	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, $
42	B Hall Exit	8760	LED Exit Sign	1	2	2	0.00	35	Existing to Remain	0	1	2	0	0.00	35	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
18	E Wing Faculty	1900	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	6	0.35	661	Existing to Remain	0	2	58	0	0.35	661	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
2	E1	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	22	1.28	3,394	Existing to Remain	0	2	58	0	1.28	3,394	0.00	0	$0	3	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	2	0.0%	0	$0
38	E1/E2 Storage	920	100w Incandescent Surface Globe	1	100	1	0.10	92	Re-Lamp	Philips CFL Energy Saver 26w Mini Twister	1	26	1	0.03	24	0.07	68	$10	0	No New Controls	0	0.0%	0	$0
18	E3	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	24	1.39	3,703	Existing to Remain	0	2	58	0	1.39	3,703	0.00	0	$0	3	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	2	0.0%	0	$0
18	E2 Storage	920	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	2	0.12	107	Existing to Remain	0	2	58	0	0.12	107	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
18	E2	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	24	1.39	3,703	Existing to Remain	0	2	58	0	1.39	3,703	0.00	0	$0	3	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	2	0.0%	0	$0
2	Police Room	1900	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	2	0.12	220	Existing to Remain	0	2	58	0	0.12	220	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
18	E6	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	24	1.39	3,703	Existing to Remain	0	2	58	0	1.39	3,703	0.00	0	$0	3	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	2	0.0%	0	$0
3	AV Storage	920	2x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	3	0.17	160	Existing to Remain	0	2	58	0	0.17	160	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
13	Boy's RR	2660	2x4, 4 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	4	109	1	0.11	290	Existing to Remain	0	4	109	0	0.11	290	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
31		2660	2x2, 2 Lamp, T8 17w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	34	2	0.07	181	Existing to Remain	0	2	34	0	0.07	181	0.00	0	$0				0.0%	0	$0
13	Girl's RR	2660	2x4, 4 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	4	109	1	0.11	290	Existing to Remain	0	4	109	0	0.11	290	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
31		2660	2x2, 2 Lamp, T8 17w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	34	2	0.07	181	Existing to Remain	0	2	34	0	0.07	181	0.00	0	$0				0.0%	0	$0
35	Custodial Closet	920	1 Lamp Strip, T8 32w, Elect. Ballast, Surface Mnt., No Lens	1	28	1	0.03	26	Existing to Remain	0	1	28	0	0.03	26	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
38		920	100w Incandescent Surface Globe	1	100	1	0.10	92	Re-Lamp	Philips CFL Energy Saver 26w Mini Twister	1	26	1	0.03	24	0.07	68	$10				0.0%	0	$0
18	Library	2280	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	80	4.64	10,579	Existing to Remain	0	2	58	0	4.64	10,579	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
2	Library Conference/Break	1900	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	4	0.23	441	Existing to Remain	0	2	58	0	0.23	441	0.00	0	$0	0	No New Controls	0	0.0%	0	$0

			EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT							RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
Fixture Reference #	Location, Floor and Room	Average Burn Hours	Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Work Description	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, $
2	Library Storage 1	920	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	6	0.35	320	Existing to Remain	0	2	58	0	0.35	320	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
2	Library Storage 2	920	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	4	0.23	213	Existing to Remain	0	2	58	0	0.23	213	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
2	Library Conference/Office	1900	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	4	0.23	441	Existing to Remain	0	2	58	0	0.23	441	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
24	E Hall	3460	2x4, 3 Lamp, (2) T8 (Normal)/(1) T12(Emer. Only) 32/34w, Elect. Ballast, Recessed Mnt.,	3	58	7	0.41	1,405	Existing to Remain	0	3	58	0	0.41	1,405	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
42	E Hall Exit	8760	LED Exit Sign	1	2	2	0.00	35	Existing to Remain	0	1	2	0	0.00	35	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
18	L-25	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	30	1.74	4,628	Existing to Remain	0	2	58	0	1.74	4,628	0.00	0	$0	3	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	2	0.0%	0	$0
18	L-22	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	24	1.39	3,703	Existing to Remain	0	2	58	0	1.39	3,703	0.00	0	$0	3	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	2	0.0%	0	$0
18	L-23 Chemical Storage	920	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	6	0.35	320	Existing to Remain	0	2	58	0	0.35	320	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
15	Custodial Closet	920	100w Incandescent, Surface Mnt.	1	100	1	0.10	92	Re-lamp	Philips CFL Energy Saver TuffGuard 25w	1	25	1	0.03	23	0.08	69	$10	0	No New Controls	0	0.0%	0	$0
36	Display	3460	1 Lamp Strip, T12 34w, Mag. Ballast, No Lens	1	50	1	0.05	173	Re-Lamp/Re-Ballast	Sylvania Lamp FO28/841/SS/ECO Sylvania Ballast QHE 2X32T8/UNV ISN-SC	1	25	1	0.03	87	0.03	87	$13	0	No New Controls	0	0.0%	0	$0
18	L-21	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	28	1.62	4,320	Existing to Remain	0	2	58	0	1.62	4,320	0.00	0	$0	3	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	2	0.0%	0	$0
18	L-20	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	22	1.28	3,394	Existing to Remain	0	2	58	0	1.28	3,394	0.00	0	$0	3	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	2	0.0%	0	$0
2	L-20 Closet	920	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	4	0.23	213	Existing to Remain	0	2	58	0	0.23	213	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
24	L Hall	3460	2x4, 3 Lamp, (2) T8 (Normal)/(1) T12(Emer. Only) 32/34w, Elect. Ballast, Recessed Mnt.,	3	58	7	0.41	1,405	Existing to Remain	0	3	58	0	0.41	1,405	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
42	L Hall Exit	8760	LED Exit Sign	1	2	1	0.00	18	Existing to Remain	0	1	2	0	0.00	18	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
13	Boy's RR J	2660	2x4, 4 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	4	109	2	0.22	580	Existing to Remain	0	4	109	0	0.22	580	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
31		2660	2x2, 2 Lamp, T8 17w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	34	1	0.03	90	Existing to Remain	0	2	34	0	0.03	90	0.00	0	$0				0.0%	0	$0
13	Girl's RR J	2660	2x4, 4 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	4	109	2	0.22	580	Existing to Remain	0	4	109	0	0.22	580	0.00	0	$0	0	No New Controls	0	0.0%	0	$0

			EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT							RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
Fixture Reference #	Location, Floor and Room	Average Burn Hours	Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Work Description	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, $
32	J/K Hall	3460	2x2, 2 Lamp, T8 17w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	34	1	0.03	118	Existing to Remain	0	2	34	0	0.03	118	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
15	Book Room	2660	100w Incandescent, Surface Mnt.	1	100	3	0.30	798	Re-lamp	Philips CFL Energy Saver TuffGuard 25w	1	25	3	0.08	200	0.23	599	$87	0	No New Controls	0	0.0%	0	$0
37	Book Storage	920	1 Lamp, 100w Incandescent, Surface Mnt.	1	100	1	0.10	92	Re-lamp	Philips CFL Energy Saver TuffGuard 25w	1	25	1	0.03	23	0.08	69	$10	0	No New Controls	0	0.0%	0	$0
34		920	26w CFL	1	28	2	0.06	52	Existing to Remain	0	1	28	0	0.06	52	0.00	0	$0				0.0%	0	$0
24	K Hall	3460	2x4, 3 Lamp, (2) T8 (Normal)/(1) T12(Emer. Only) 32/34w, Elect. Ballast, Recessed Mnt.,	3	58	18	1.04	3,612	Existing to Remain	0	3	58	0	1.04	3,612	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
42	K Hall Exit	8760	LED Exit Sign	1	2	3	0.01	53	Existing to Remain	0	1	2	0	0.01	53	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
3	K-1	2660	2x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	3	0.17	463	Existing to Remain	0	2	58	0	0.17	463	0.00	0	$0	5	Dual Technology Occupancy Sensor - Switch Mnt.	1	0.0%	0	$0
26	Faculty M Wing	3460	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., No Lens	2	58	3	0.17	602	Existing to Remain	0	2	58	0	0.17	602	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
16	Boy's RR M Wing	2660	2x4, 4 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Parabolic Lens	4	109	2	0.22	580	Existing to Remain	0	4	109	0	0.22	580	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
18	M-19	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	8	0.46	1,234	Existing to Remain	0	2	58	0	0.46	1,234	0.00	0	$0	3	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	1	0.0%	0	$0
3	Men's RR	2660	2x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	1	0.06	154	Existing to Remain	0	2	58	0	0.06	154	0.00	0	$0	7	Existing Controls	0	20.0%	31	$4
3	Women's RR	2660	2x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	2	0.12	309	Existing to Remain	0	2	58	0	0.12	309	0.00	0	$0	7	Existing Controls	0	20.0%	62	$9
18	M-20	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	1,851	Existing to Remain	0	2	58	0	0.70	1,851	0.00	0	$0	3	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	1	0.0%	0	$0
38	M-20 Storage	920	100w Incandescent Surface Globe	1	100	2	0.20	184	Re-Lamp	Philips CFL Energy Saver 26w Mini Twister	1	26	2	0.05	48	0.15	136	$20	0	No New Controls	0	0.0%	0	$0
12	M-21	2660	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	20	1.64	4,362	Existing to Remain	0	3	82	0	1.64	4,362	0.00	0	$0	3	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	2	0.0%	0	$0
12	M-21 Storage	920	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	11	0.90	830	Existing to Remain	0	3	82	0	0.90	830	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
12	M-21 Kiln	2660	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	1	0.08	218	Existing to Remain	0	3	82	0	0.08	218	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
12	M-23	2660	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	20	1.64	4,362	Existing to Remain	0	3	82	0	1.64	4,362	0.00	0	$0	3	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	1	0.0%	0	$0

			EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT							RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
Fixture Reference #	Location, Floor and Room	Average Burn Hours	Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Work Description	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, $
18	M-24	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	1,851	Existing to Remain	0	2	58	0	0.70	1,851	0.00	0	$0	3	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	1	0.0%	0	$0
38	M-24 Storage	920	100w Incandescent Surface Globe	1	100	2	0.20	184	Re-Lamp	Philips CFL Energy Saver 26w Mini Twister	1	26	2	0.05	48	0.15	136	$20	0	No New Controls	0	0.0%	0	$0
18	M-22	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	1,851	Existing to Remain	0	2	58	0	0.70	1,851	0.00	0	$0	3	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	1	0.0%	0	$0
54	M-22 Storage	2660	1 Lamp, 26w CFL, Surface Mnt.	1	26	1	0.03	69	Existing to Remain	0	1	26	0	0.03	69	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
38		920	100w Incandescent Surface Globe	1	100	1	0.10	92	Re-Lamp	Philips CFL Energy Saver 26w Mini Twister	1	26	1	0.03	24	0.07	68	$10				0.0%	0	$0
24	M Hall	3460	2x4, 3 Lamp, (2) T8 (Normal)/(1) T12(Emer. Only) 32/34w, Elect. Ballast, Recessed Mnt.,	3	58	11	0.64	2,207	Existing to Remain	0	3	58	0	0.64	2,207	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
42	M Hall Exit	8760	LED Exit Sign	1	2	3	0.01	53	Existing to Remain	0	1	2	0	0.01	53	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
12	Q-37	2660	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	8	0.66	1,745	Existing to Remain	0	3	82	0	0.66	1,745	0.00	0	$0	7	Existing Controls	0	20.0%	349	$51
12	Q-35	2660	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	8	0.66	1,745	Existing to Remain	0	3	82	0	0.66	1,745	0.00	0	$0	7	Existing Controls	0	20.0%	349	$51
12	Q-34	2660	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	8	0.66	1,745	Existing to Remain	0	3	82	0	0.66	1,745	0.00	0	$0	7	Existing Controls	0	20.0%	349	$51
12	Q-32	2660	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	8	0.66	1,745	Existing to Remain	0	3	82	0	0.66	1,745	0.00	0	$0	7	Existing Controls	0	20.0%	349	$51
12	Q-33	2660	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	10	0.82	2,181	Existing to Remain	0	3	82	0	0.82	2,181	0.00	0	$0	7	Existing Controls	0	20.0%	436	$63
12	Q-33 Prep	2660	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	3	0.25	654	Existing to Remain	0	3	82	0	0.25	654	0.00	0	$0	7	Existing Controls	0	20.0%	131	$19
12	Q-31	2660	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	10	0.82	2,181	Existing to Remain	0	3	82	0	0.82	2,181	0.00	0	$0	7	Existing Controls	0	20.0%	436	$63
12	Q-30	2660	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	8	0.66	1,745	Existing to Remain	0	3	82	0	0.66	1,745	0.00	0	$0	7	Existing Controls	0	20.0%	349	$51
12	Faculty Room	2280	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	8	0.66	1,496	Existing to Remain	0	3	82	0	0.66	1,496	0.00	0	$0	7	Existing Controls	0	20.0%	299	$43
12	Server Room	3200	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	1	0.08	262	Existing to Remain	0	3	82	0	0.08	262	0.00	0	$0	7	Existing Controls	0	20.0%	52	$8
24	Q Hall	3460	2x4, 3 Lamp, (2) T8 (Normal)/(1) T12(Emer. Only) 32/34w, Elect. Ballast, Recessed Mnt.,	3	58	11	0.64	2,207	Existing to Remain	0	3	58	0	0.64	2,207	0.00	0	$0	0	No New Controls	0	0.0%	0	$0

			EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT							RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
Fixture Reference #	Location, Floor and Room	Average Burn Hours	Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Work Description	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, $
42	Q Hall Exit	8760	LED Exit Sign	1	2	3	0.01	53	Existing to Remain	0	1	2	0	0.01	53	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
32	Blue Stair	3680	2x2, 2 Lamp, T8 17w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	34	6	0.20	751	Existing to Remain	0	2	34	0	0.20	751	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
2	Blue Stair	3680	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	3	0.17	640	Existing to Remain	0	2	58	0	0.17	640	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
32	Q Stair	3680	2x2, 2 Lamp, T8 17w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	34	3	0.10	375	Existing to Remain	0	2	34	0	0.10	375	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
55	Q Stair	3680	12"x12", 2 Lamp, 100w Incandescent, Prismatic Lens	2	200	2	0.40	1,472	Re-lamp	Philips CFL Energy Saver 26w Mini Twister	2	52	2	0.10	383	0.30	1,089	$158	0	No New Controls	0	0.0%	0	$0
2	Q Stair	3680	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	2	0.12	427	Existing to Remain	0	2	58	0	0.12	427	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
32	Gold Stair	3680	2x2, 2 Lamp, T8 17w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	34	4	0.14	500	Existing to Remain	0	2	34	0	0.14	500	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
2	Gold Stair	3680	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	3	0.17	640	Existing to Remain	0	2	58	0	0.17	640	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
2	Gold Stair	3680	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	2	0.12	427	Existing to Remain	0	2	58	0	0.12	427	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
13	Q Boy's RR	2660	2x4, 4 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	4	109	2	0.22	580	Existing to Remain	0	4	109	0	0.22	580	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
18	Custodial	1900	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	2	0.12	220	Existing to Remain	0	2	58	0	0.12	220	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
12	Jr High Main Office	1900	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	4	0.33	623	Existing to Remain	0	3	82	0	0.33	623	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
12	Assistant Principal	1900	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	2	0.16	312	Existing to Remain	0	3	82	0	0.16	312	0.00	0	$0	7	Existing Controls	0	20.0%	62	$9
12	Conference Room	1900	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	2	0.16	312	Existing to Remain	0	3	82	0	0.16	312	0.00	0	$0	7	Existing Controls	0	20.0%	62	$9
12	Jr High Guidance	1900	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	2	0.16	312	Existing to Remain	0	3	82	0	0.16	312	0.00	0	$0	7	Existing Controls	0	20.0%	62	$9
12	P-39	2660	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	9	0.74	1,963	Existing to Remain	0	3	82	0	0.74	1,963	0.00	0	$0	7	Existing Controls	0	20.0%	393	$57
12	P-38	2660	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	9	0.74	1,963	Existing to Remain	0	3	82	0	0.74	1,963	0.00	0	$0	7	Existing Controls	0	20.0%	393	$57
2	P-37	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	21	1.22	3,240	Existing to Remain	0	2	58	0	1.22	3,240	0.00	0	$0	3	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	2	0.0%	0	$0

			EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT							RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
Fixture Reference #	Location, Floor and Room	Average Burn Hours	Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Work Description	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	P-36	2660	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	9	0.74	1,963	Existing to Remain	0	3	82	0	0.74	1,963	0.00	0	$0	7	Existing Controls	0	20.0%	393	$57
2	P-35	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	21	1.22	3,240	Existing to Remain	0	2	58	0	1.22	3,240	0.00	0	$0	3	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	2	0.0%	0	$0
12	P-34	2660	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	9	0.74	1,963	Existing to Remain	0	3	82	0	0.74	1,963	0.00	0	$0	7	Existing Controls	0	20.0%	393	$57
2	P-33	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	21	1.22	3,240	Existing to Remain	0	2	58	0	1.22	3,240	0.00	0	$0	3	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	2	0.0%	0	$0
12	P-32	2660	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	9	0.74	1,963	Existing to Remain	0	3	82	0	0.74	1,963	0.00	0	$0	7	Existing Controls	0	20.0%	393	$57
12	P-31	2660	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	9	0.74	1,963	Existing to Remain	0	3	82	0	0.74	1,963	0.00	0	$0	7	Existing Controls	0	20.0%	393	$57
12	P-30	2660	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	9	0.74	1,963	Existing to Remain	0	3	82	0	0.74	1,963	0.00	0	$0	7	Existing Controls	0	20.0%	393	$57
39	Small Corridor to P-29	3460	2x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., No Lens	2	58	1	0.06	201	Existing to Remain	0	2	58	0	0.06	201	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
18		2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	4	0.23	617	Existing to Remain	0	2	58	0	0.23	617	0.00	0	$0				0.0%	0	$0
3	Men's RR by P-28	2660	2x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	1	0.06	154	Existing to Remain	0	2	58	0	0.06	154	0.00	0	$0	7	Existing Controls	0	20.0%	31	$4
40		2660	2x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	1	0.06	154	Existing to Remain	0	2	58	0	0.06	154	0.00	0	$0				0.0%	0	$0
12	P Girl's RR	2660	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	3	0.25	654	Existing to Remain	0	3	82	0	0.25	654	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
12	Small Hall to P-29	3460	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	1	0.08	284	Existing to Remain	0	3	82	0	0.08	284	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
12	P-29	2660	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	4	0.33	872	Existing to Remain	0	3	82	0	0.33	872	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
12	P-29 RR	2660	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	1	0.08	218	Existing to Remain	0	3	82	0	0.08	218	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
24	P Hall	3460	2x4, 3 Lamp, (2) T8 (Normal)/(1) T12(Emer. Only) 32/34w, Elect. Ballast, Recessed Mnt.,	3	58	13	0.75	2,609	Existing to Remain	0	3	58	0	0.75	2,609	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
42	P Hall Exit	8760	LED Exit Sign	1	2	2	0.00	35	Existing to Remain	0	1	2	0	0.00	35	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
32	Smallwood Stair	3680	2x2, 2 Lamp, T8 17w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	34	4	0.14	500	Existing to Remain	0	2	34	0	0.14	500	0.00	0	$0	0	No New Controls	0	0.0%	0	$0

			EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT							RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
Fixture Reference #	Location, Floor and Room	Average Burn Hours	Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Work Description	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, $
2	Smallwood Stair	3680	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	3	0.17	640	Existing to Remain	0	2	58	0	0.17	640	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
42	Smallwood Stair Exit	8760	LED Exit Sign	1	2	1	0.00	18	Existing to Remain	0	1	2	0	0.00	18	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
24	Corridor by Smallwood Stair	3460	2x4, 3 Lamp, (2) T8 (Normal)/(1) T12(Emer. Only) 32/34w, Elect. Ballast, Recessed Mnt.,	3	58	3	0.17	602	Existing to Remain	0	3	58	0	0.17	602	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
42	Corridor by Smallwood Stair Exit	8760	LED Exit Sign	1	2	2	0.00	35	Existing to Remain	0	1	2	0	0.00	35	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
13	Boy's RR	2660	2x4, 4 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	4	109	2	0.22	580	Existing to Remain	0	4	109	0	0.22	580	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
13	Girl's RR	2660	2x4, 4 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	4	109	2	0.22	580	Existing to Remain	0	4	109	0	0.22	580	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
32	Stair	3680	2x2, 2 Lamp, T8 17w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	34	3	0.10	375	Existing to Remain	0	2	34	0	0.10	375	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
13	O-34	2660	2x4, 4 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	4	109	11	1.20	3,189	Existing to Remain	0	4	109	0	1.20	3,189	0.00	0	$0	7	Existing Controls	0	20.0%	638	$92
2	O-34 Storage 1	920	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	1	0.06	53	Existing to Remain	0	2	58	0	0.06	53	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
2	O-34 Storage 2	920	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	1	0.06	53	Existing to Remain	0	2	58	0	0.06	53	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
2	O-33	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	18	1.04	2,777	Existing to Remain	0	2	58	0	1.04	2,777	0.00	0	$0	3	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	2	0.0%	0	$0
2	O-32	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	12	0.70	1,851	Existing to Remain	0	2	58	0	0.70	1,851	0.00	0	$0	3	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	1	0.0%	0	$0
2	O-31	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	12	0.70	1,851	Existing to Remain	0	2	58	0	0.70	1,851	0.00	0	$0	3	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	1	0.0%	0	$0
18	O-30	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	8	0.46	1,234	Existing to Remain	0	2	58	0	0.46	1,234	0.00	0	$0	4	Dual Technology Occupancy Sensor - Remote Mnt.	1	0.0%	0	$0
18	O-29	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	2	0.12	309	Existing to Remain	0	2	58	0	0.12	309	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
18	O-29 Office	1900	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	8	0.46	882	Existing to Remain	0	2	58	0	0.46	882	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
8	O-29 Closet	920	100w Incandescent, Pendant Mnt.	1	100	6	0.60	552	Re-lamp	Philips CFL Energy Saver TuffGuard 25w	1	25	6	0.15	138	0.45	414	$60	0	No New Controls	0	0.0%	0	$0
18	O-27	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	5	0.29	771	Existing to Remain	0	2	58	0	0.29	771	0.00	0	$0	0	No New Controls	0	0.0%	0	$0

			EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT							RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
Fixture Reference #	Location, Floor and Room	Average Burn Hours	Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Work Description	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, $
2	O-28	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	13	0.75	2,006	Existing to Remain	0	2	58	0	0.75	2,006	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
24	O Hall	3460	2x4, 3 Lamp, (2) T8 (Normal)/(1) T12(Emer. Only) 32/34w, Elect. Ballast, Recessed Mnt.,	3	58	5	0.29	1,003	Existing to Remain	0	3	58	0	0.29	1,003	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
42	O Hall Exit	8760	LED Exit Sign	1	2	1	0.00	18	Existing to Remain	0	1	2	0	0.00	18	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
41	N-33	2660	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Parabolic Lens	3	82	17	1.39	3,708	Existing to Remain	0	3	82	0	1.39	3,708	0.00	0	$0	3	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	1	0.0%	0	$0
41	N-34	2660	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Parabolic Lens	3	82	17	1.39	3,708	Existing to Remain	0	3	82	0	1.39	3,708	0.00	0	$0	3	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	1	0.0%	0	$0
41	N-32	2660	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Parabolic Lens	3	82	15	1.23	3,272	Existing to Remain	0	3	82	0	1.23	3,272	0.00	0	$0	3	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	2	0.0%	0	$0
18	N-30	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	12	0.70	1,851	Existing to Remain	0	2	58	0	0.70	1,851	0.00	0	$0	3	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	1	0.0%	0	$0
18	N-31	2660	1x4, 2 Lamp, T8 32w, Elect. Ballast, Pendant Mnt., Prismatic Lens	2	58	16	0.93	2,468	Existing to Remain	0	2	58	0	0.93	2,468	0.00	0	$0	3	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	1	0.0%	0	$0
24	N Hall	3460	2x4, 3 Lamp, (2) T8 (Normal)/(1) T12(Emer. Only) 32/34w, Elect. Ballast, Recessed Mnt.,	3	58	5	0.29	1,003	Existing to Remain	0	3	58	0	0.29	1,003	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
42	N Hall Exit	8760	LED Exit Sign	1	2	2	0.00	35	Existing to Remain	0	1	2	0	0.00	35	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
32	Stair by N-31	3680	2x2, 2 Lamp, T8 17w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	34	4	0.14	500	Existing to Remain	0	2	34	0	0.14	500	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
55	Stair by N-31	3680	12"x12", 2 Lamp, 100w Incandescent, Prismatic Lens	2	200	1	0.20	736	Re-lamp	Philips CFL Energy Saver 26w Mini Twister	2	52	1	0.05	191	0.15	545	$79	0	No New Controls	0	0.0%	0	$0
38	Stair by N-31	3680	100w Incandescent Surface Globe	1	100	1	0.10	368	Re-Lamp	Philips CFL Energy Saver 26w Mini Twister	1	26	1	0.03	96	0.07	272	$39	0	No New Controls	0	0.0%	0	$0
2	Stair by N-31	3680	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	3	0.17	640	Existing to Remain	0	2	58	0	0.17	640	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
32	Stair by N-34	3680	2x2, 2 Lamp, T8 17w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	34	4	0.14	500	Existing to Remain	0	2	34	0	0.14	500	0.00	0	$0	0	No New Controls	0	0.0%	0	$0
55	Stair by N-34	3680	12"x12", 2 Lamp, 100w Incandescent, Prismatic Lens	2	200	2	0.40	1,472	Re-lamp	Philips CFL Energy Saver 26w Mini Twister	2	52	2	0.10	383	0.30	1,089	$158	0	No New Controls	0	0.0%	0	$0
38	Stair by N-34	3680	100w Incandescent Surface Globe	1	100	1	0.10	368	Re-Lamp	Philips CFL Energy Saver 26w Mini Twister	1	26	1	0.03	96	0.07	272	$39	0	No New Controls	0	0.0%	0	$0
2	Stair by N-34	3680	1x4, 2 Lamp, T8 32w, Elect. Ballast, Surface Mnt., Prismatic Lens	2	58	3	0.17	640	Existing to Remain	0	2	58	0	0.17	640	0.00	0	$0	0	No New Controls	0	0.0%	0	$0

			EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT							RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS					
Fixture Reference #	Location, Floor and Room	Average Burn Hours	Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Work Description	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, $
44	Exterior	4380	1 Lamp, 175w MH, Mag. Ballast, Wall Pack, Exterior	1	213	5	1.07	4,665	Replace Fixture	90w LED Wall Pack	1	90	5	0.45	1,971	0.62	2,694	$391	0	No New Controls	0	0.0%	0	$0
45	Exterior	4380	1 Lamp, 100w MH, Mag. Ballast, Wall Pack, Exterior	1	125	14	1.75	7,665	Replace Fixture	60w LED Wall Pack	1	60	14	0.84	3,679	0.91	3,986	$578	0	No New Controls	0	0.0%	0	$0
46	Exterior	4380	1 Lamp, 100w MH, Mag. Ballast, Canopy Mnt., Exterior	1	125	6	0.75	3,285	Replace Fixture	80w LED Canopy Mount	1	80	6	0.48	2,102	0.27	1,183	$171	0	No New Controls	0	0.0%	0	$0
48	Exterior	4380	1 Lamp, 100w Incandescent, Wall Mnt. Jelly Jar, Exterior	1	100	1	0.10	438	Re-Lamp	Philips CFL Energy Saver 26w Mini Twister	1	26	1	0.03	114	0.07	324	$47	0	No New Controls	0	0.0%	0	$0
	TOTAL					**1,786**	**130**	**331,479**					**83**	**124**	**316,140**	**6**	**15,340**	**$2,224**			**65**	**6**	**7,043**	**$1,021**

APPENDIX F

Location Description	Area (Sq FT)	Panel	Qty	Panel Sq Ft	Panel Total Sq Ft	Total KW_{DC}	Total Annual kWh	Total KW_{AC}	Panel Weight (41.9 lbs)	W/SQFT
Roof / Parking Lot	-	SHARP NU-U235F2	843	17.5	14,787	198.11	233,420	160.5	35,322	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.

Location Description	Area (Sq FT)	Panel	Qty	Panel Sq Ft	Panel Total Sq Ft	Total KW_{DC}	Total Annual kWh	Total KW_{AC}	Panel Weight (41.9 lbs)	W/SQFT
Field Hockey Field	-	SHARP NU-U235F2	917	17.5	16,085	215.50	274,578	174.6	38,422	13.40

= Proposed Ground PV Layout

Notes:

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

Project Name: **LGEA Solar PV Project - Roof, Parking, & Ground**
Location: **Woodbury, NJ**
Description: **Photovoltaic System 100% Financing - 15 year**

Simple Payback Analysis

	Photovoltaic System 100% Financing - 15 year
Total Construction Cost	$2,395,124
Annual kWh Production	507,998
Annual Energy Cost Reduction	$73,660
Average Annual SREC Revenue	$97,071

Simple Payback: **14.03** Years

Life Cycle Cost Analysis

Analysis Period (years):	15	Financing %:	100%
Discount Rate:	3%	Maintenance Escalation Rate:	3.0%
Average Energy Cost ($/kWh)	**$0.145**	Energy Cost Escalation Rate:	3.0%
Financing Rate:	6.00%	Average SREC Value ($/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	507,998	$73,660	$0	$127,000	$140,944	$101,593	($41,878)	($41,878)
2	$0	505,458	$75,870	$0	$126,365	$134,678	$107,859	($40,303)	($82,181)
3	$0	502,931	$78,146	$0	$125,733	$128,025	$114,512	($38,659)	($120,840)
4	$0	500,416	$80,490	$0	$125,104	$120,962	$121,575	($36,943)	($157,783)
5	$0	497,914	$82,905	$5,129	$124,478	$113,464	$129,073	($40,282)	($198,065)
6	$0	495,424	$85,392	$5,103	$99,085	$105,503	$137,034	($63,163)	($261,228)
7	$0	492,947	$87,954	$5,077	$98,589	$97,051	$145,486	($61,071)	($322,299)
8	$0	490,483	$90,592	$5,052	$98,097	$88,078	$154,459	($58,900)	($381,200)
9	$0	488,030	$93,310	$5,027	$97,606	$78,551	$163,986	($56,648)	($437,848)
10	$0	485,590	$96,109	$5,002	$72,838	$68,437	$174,100	($78,591)	($516,438)
11	$0	483,162	$98,992	$4,977	$72,474	$57,699	$184,838	($76,047)	($592,485)
12	$0	480,746	$101,962	$4,952	$72,112	$46,298	$196,239	($73,414)	($665,900)
13	$0	478,343	$105,021	$4,927	$71,751	$34,195	$208,342	($70,691)	($736,591)
14	$0	475,951	$108,172	$4,902	$47,595	$21,345	$221,192	($91,672)	($828,264)
15	$0	473,571	$111,417	$4,878	$47,357	$7,702	$234,835	($88,641)	($916,904)
	Totals:	7,358,964	$1,369,991	$55,024	$1,406,184	$1,242,931	$2,395,124	($916,904)	($6,259,903)

Net Present Value (NPV) **($664,149)**