

**GLOUCESTER TOWNSHIP
BOARD OF EDUCATION**

**C.W. LEWIS MIDDLE SCHOOL /
DEPARTMENT OF INSTRUCTION**

**875 ERIAL ROAD
BLACKWOOD, NJ 08012**

FACILITY ENERGY REPORT

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I. HISTORIC ENERGY CONSUMPTION/COST

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

Electric Utility Provider: Atlantic City Electric
Electric Utility Rate Structure: Annual General Service; Monthly General Service
Third Party Supplier: South Jersey Energy

Natural Gas Utility Provider: South Jersey Natural Gas
Utility Rate Structure: Firm Transportation
Third Party Supplier: Hess

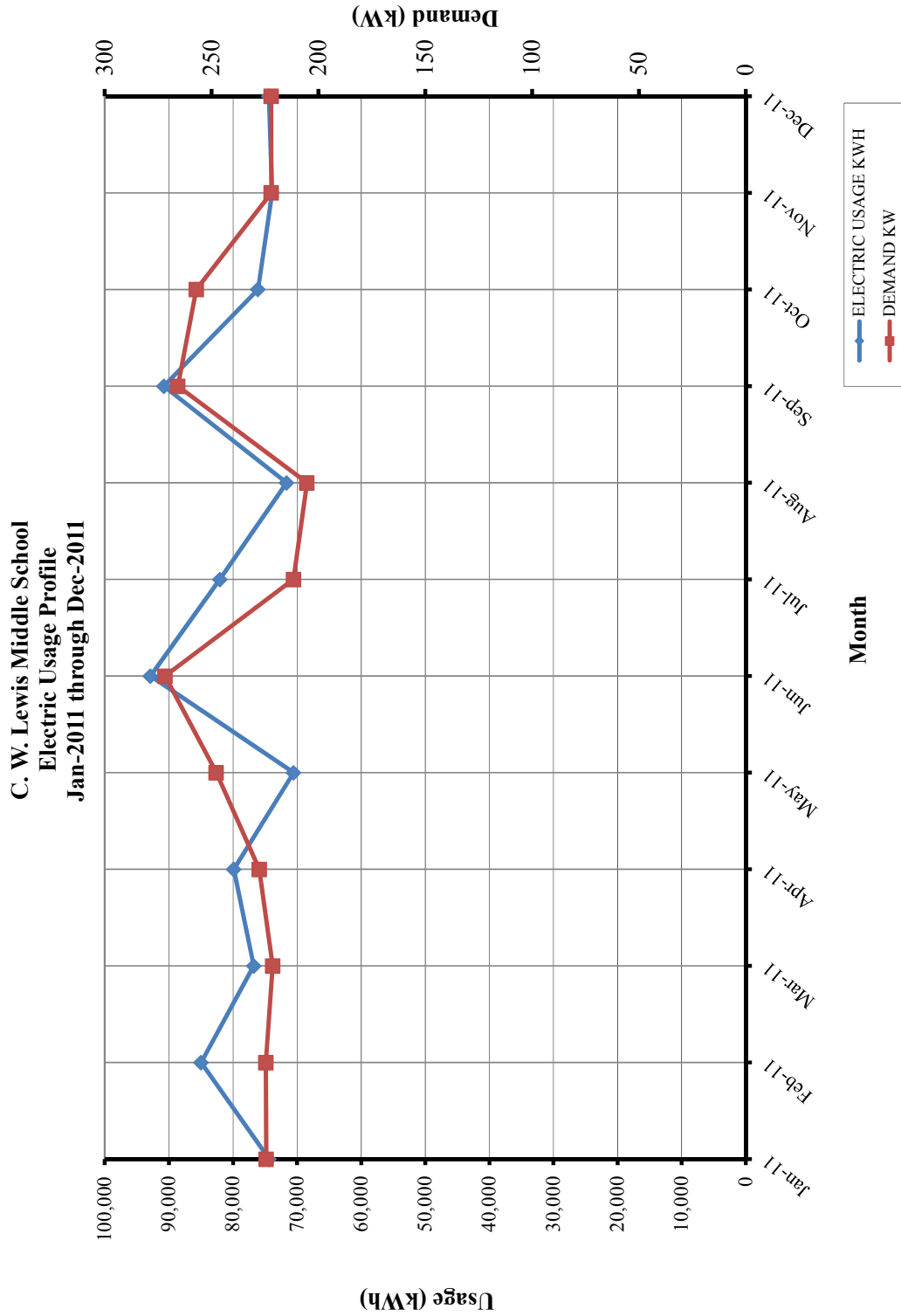
The electric usage profile represents the actual electrical usage for the facility. The electric utility measures consumption in kilowatt-hours (KWH) and maximum demand in kilowatts (KW). One KWH usage is equivalent to 1000 watts running for one hour. One KW of electric demand is equivalent to 1000 watts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

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

**Table 1
Electricity Billing Data**

| ELECTRIC USAGE SUMMARY | | | |
|---|------------------------|-------------------------|-------------------|
| Utility Provider: Atlantic City Electric | | | |
| Rate: Annual General Service (AGS) / Monthly General Service (MGS) | | | |
| Meter No: 83996169 / 80851590 / StreetPrivate Lighting / 105740919 | | | |
| Account # 0389 0429 9997 / 0950 7259 9996 / 0389 0399 9993 / 1127 5779 9997 | | | |
| Third Party Utility Provider: South Jersey Energy | | | |
| TPS Meter / Acct No: - | | | |
| MONTH OF USE | CONSUMPTION KWH | DEMAND KW | TOTAL BILL |
| Jan-11 | 74,356 | 224 | \$11,445 |
| Feb-11 | 84,982 | 225 | \$12,945 |
| Mar-11 | 76,763 | 221 | \$11,828 |
| Apr-11 | 79,873 | 228 | \$12,179 |
| May-11 | 70,548 | 248 | \$9,825 |
| Jun-11 | 92,875 | 272 | \$12,836 |
| Jul-11 | 82,058 | 212 | \$11,159 |
| Aug-11 | 71,638 | 205 | \$9,883 |
| Sep-11 | 90,785 | 266 | \$12,588 |
| Oct-11 | 76,092 | 257 | \$10,490 |
| Nov-11 | 73,910 | 222 | \$10,209 |
| Dec-11 | 74,399 | 222 | \$10,270 |
| Totals | 948,279 | 272 Max | \$135,657 |
| AVERAGE DEMAND | | 233.5 KW average | |
| AVERAGE RATE | | \$0.143 \$/kWh | |

Figure 1
Electricity Usage Profile

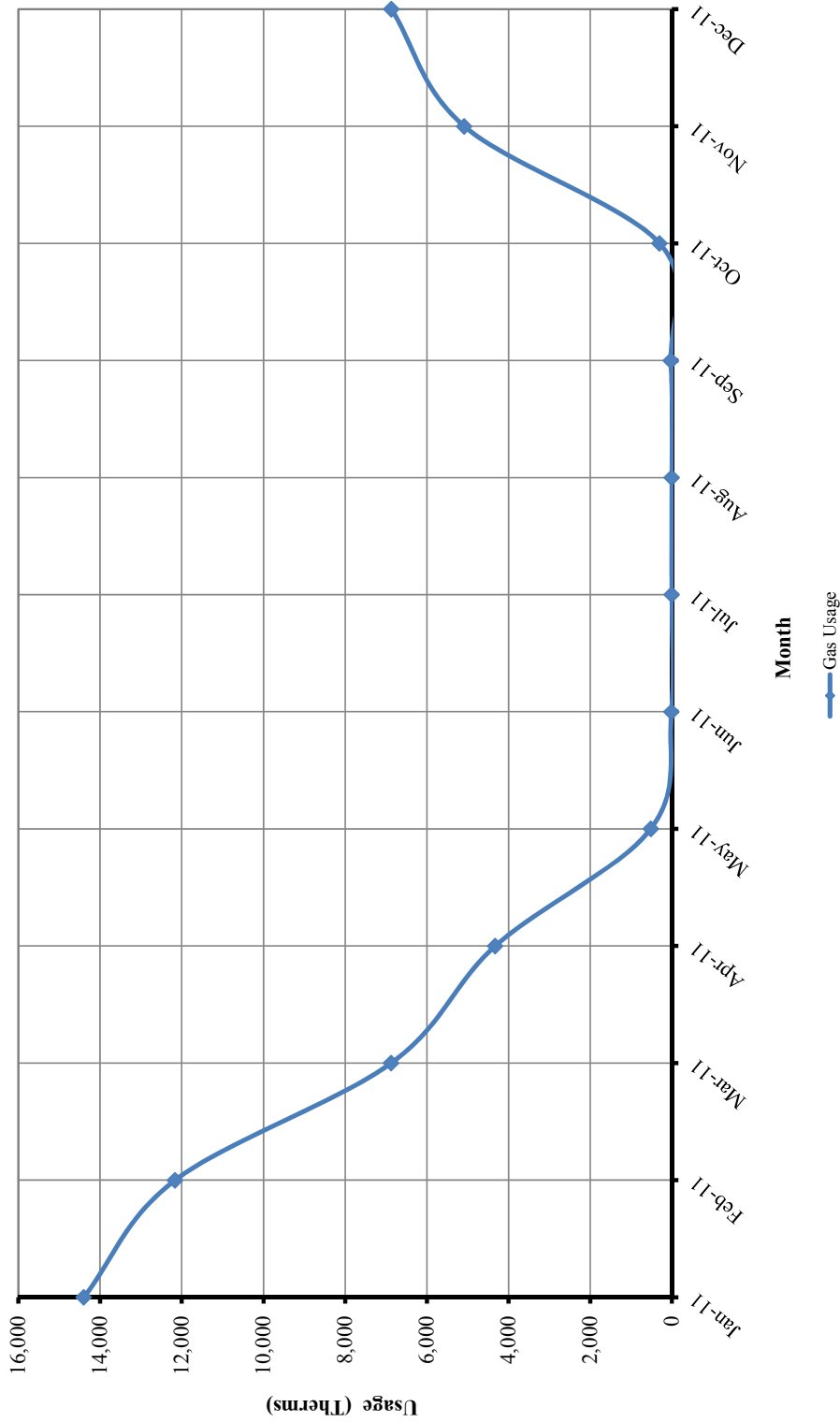


**Table 4
Natural Gas Billing Data**

| NATURAL GAS USAGE SUMMARY | | |
|------------------------------------|---------------------------------|-------------------|
| Utility Provider: South Jersey Gas | | |
| Rate: Firm Transportation | | |
| Meter No: 325930 | | |
| Account Number 2 05 37 0084 0 9 | | |
| Third Party Utility Provider: HESS | | |
| TPS Account No: 446596/447060 | | |
| MONTH OF USE | CONSUMPTION (THERMS) | TOTAL BILL |
| Jan-11 | 14,397 | \$11,345 |
| Feb-11 | 12,163 | \$9,053 |
| Mar-11 | 6,871 | \$7,366 |
| Apr-11 | 4,324 | \$4,647 |
| May-11 | 514 | \$557 |
| Jun-11 | 10 | \$37 |
| Jul-11 | 0 | \$24 |
| Aug-11 | 0 | \$23 |
| Sep-11 | 21 | \$47 |
| Oct-11 | 300 | \$312 |
| Nov-11 | 5,083 | \$5,099 |
| Dec-11 | 6,864 | \$6,875 |
| TOTALS | 50,547 | \$45,385 |
| AVERAGE RATE: | \$0.90 | \$/THERM |

Figure 2
Natural Gas Usage Profile

**C. W. Lewis Middle School
Gas Usage Profile
Jan-2011 through Dec-2011**



II. FACILITY DESCRIPTION

The C.W. Lewis Middle School is located on 875 Erial Road in Blackwood, New Jersey. The 133,204 SF school was built in 1964 with an addition in 2002. The building is a single story facility comprised of classrooms, gymnasium, cafeteria, kitchen, media center, mechanical room and offices.

Occupancy Profile

The typical hours of operation for the Middle School are Monday through Friday between 8:00 am and 2:30 pm. C.W. Lewis Middle School employs approximately 69 people, with student enrollment estimated at 640.

Building Envelope

Exterior walls for the Middle School are masonry brick faced with a concrete block construction. The windows throughout the school are in good condition and appear to be maintained. Typical windows are double pane, operable, 1/4" coated glass with aluminum frames. The roof is a flat, built up with gravel overlay.

HVAC Systems

The majority of classrooms consist of heating only Nesbitt unit ventilators with hot water heating coils. Some of the classrooms have cooling provided by window air conditioning units.

The Cafeteria is conditioned by a Trane 50 ton rooftop unit with direct expansion cooling and no heating coil. Heating is provided by hot water unit ventilators located on the perimeter wall.

The Library is conditioned by a Trane 20 ton rooftop unit with direct expansion cooling and a hot water preheat coil. The preheat coil is supplied hot water by three Rinnai hot water boilers mounted directly to the preheat coil.

The Computer Labs are conditioned by two Trane 4 ton rooftop units fitted with SEMCO Energy Recovery Wheel units. Heating is provided by a hot water reheat coil located in the supply duct and hot water baseboard.

The CST Office is conditioned by a Trane 3 ton rooftop units with heating hot water coil located in the supply ductwork and baseboard heating.

The Gymnasium is conditioned by four ceiling hung heating and ventilating units with hot water coils.

The main office and room #227 Special Education are conditioned by hot water heating only unit ventilators and have an additional cooling split system ceiling mounted unit.

The Teacher's Lounge has an old York Rooftop unit approximately 3 to 5 tons in size for cooling only.

Heating Hot Water is generated by a single boiler plant fitted with two Weil McLain Model 94 Series cast iron sectional boilers. The boilers are natural gas fired rated at 5412 MBH each, and both fitted with a Power Flame Burner and Intellidyne fuel economizer controller. Heating water is circulated via two five horsepower Armstrong pumps rated at 155 gallons per minute and 50 foot of head pressure.

Exhaust System

Air is exhausted from the toilet rooms through the roof exhausters. The kitchen is outfitted with two exhaust hoods each connected to a dedicated roof exhaust fan with on/off control.

HVAC System Controls

The building has Johnson Metasys control system that monitors the boilers and pneumatic thermostats and control valves in the unit ventilators. Supplemental cooling systems are controlled by individual thermostat.

Domestic Hot Water

Domestic hot water is provided by a single Bradford and White 300 MBH gas fired heater with an integrated 100 gallon storage tank. Domestic hot water is circulated via a ½ horsepower pump. The system is tied to an existing storage tank that was originally connected to the main heating boilers, however the tank is no longer in use.

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 | General Lighting Upgrade | \$19,670 | \$12,558 | 1.6 | 857.7% |
| ECM #2 | Gym/Café Lighting Replacement | \$8,130 | \$1,649 | 4.9 | 204.2% |
| ECM #3 | Lighting Controls Upgrade | \$21,530 | \$4,007 | 5.4 | 179.2% |
| ECM #4 | NEMA Premium Motor Replacements | \$2,918 | \$401 | 7.3 | 175.1% |
| ECM #5 | DDC System Upgrade | \$431,000 | \$9,176 | 47.0 | -68.1% |
| RENEWABLE ENERGY MEASURES (REM's) | | | | | |
| ECM NO. | DESCRIPTION | NET INSTALLATION COST | ANNUAL SAVINGS | SIMPLE PAYBACK (Yrs) | SIMPLE LIFETIME ROI |
| REM #1 | 235.47 KW PV System | \$1,408,298 | \$96,341 | 14.6 | 2.6% |
| Notes: | A. Cost takes into consideration applicable NJ Smart Start™ 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 | General Lighting Upgrade | 35.0 | 87,817 | 0 |
| ECM #2 | Gym/Café Lighting Replacement | 4 | 11,528 | 0 |
| ECM #3 | Lighting Controls Upgrade | 0.0 | 28,021 | 0 |
| ECM #4 | NEMA Premium Motor Replacements | 0.7 | 2,607 | 0 |
| ECM #5 | DDC System Upgrade | 0.0 | 41,421 | 3,614 |
| RENEWABLE ENERGY MEASURES (REM's) | | | | |
| ECM NO. | DESCRIPTION | ANNUAL UTILITY REDUCTION | | |
| | | ELECTRIC DEMAND (KW) | ELECTRIC CONSUMPTION (KWH) | NATURAL GAS (THERMS) |
| REM #1 | 235.47 KW PV System | 235.5 | 288,372 | 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 |
| General Lighting Upgrade | \$12,558 | \$36,970 | \$17,300 | \$19,670 | 1.6 |
| Gym/Café Lighting Replacement | \$1,649 | \$11,280 | \$3,150 | \$8,130 | 4.9 |
| Lighting Controls Upgrade | \$4,007 | \$23,750 | \$2,220 | \$21,530 | 5.4 |
| NEMA Premium Motor Replacements | \$401 | \$3,038 | \$120 | \$2,918 | 7.3 |
| DDC System Upgrade | \$9,176 | \$431,000 | \$0 | \$431,000 | 47.0 |
| <i>Design / Construction Extras (15%)</i> | <i>\$0</i> | <i>\$11,256</i> | <i>\$0</i> | <i>\$11,256</i> | |
| Total Project | \$18,615 | \$86,294 | \$22,790 | \$63,504 | 3 |

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

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

ECM #1: Lighting Upgrade – General

Description:

The majority of the interior lighting throughout C.W. Lewis Middle School is provided with fluorescent fixtures with older generation, 700 series and 741/ECO 32W T8 lamps and electronic ballasts. Although these T8 lamps are considered fairly efficient, further energy savings can be achieved by replacing the existing T8 lamps with new generation, 800 series 28W T8 lamps without compromising light output. CE recommends, re-lamping all of the fixtures with 28W T8 lamps and in some cases removing a lamp from the fixture due to excessive foot candle levels in specific areas. In addition, there are a number of older and outdated fixtures with T12 lamps and magnetic ballasts. It is recommended to replace all of the T12 and 700 series T8 fixtures in these areas with higher efficiency fluorescent T8 fixtures with electronic ballasts.

This ECM includes re-lamping of the existing fluorescent fixtures with 800 series, 28W T8 lamps. The ECM also includes retrofit of all older fluorescent fixtures with T8 or T5 fluorescent fixtures with electronic ballasts in the building. The new, energy efficient T8 fixtures will provide adequate lighting and will save on electrical costs due to better performance of the lamp and ballasts.

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.

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 #1 - ENERGY SAVINGS SUMMARY | |
|---|--------------|
| Installation Cost (\$): | \$36,970 |
| NJ Smart Start Equipment Incentive (\$): | \$17,300 |
| Net Installation Cost (\$): | \$19,670 |
| Maintenance Savings (\$/Yr): | \$0 |
| Energy Savings (\$/Yr): | \$12,558 |
| Total Yearly Savings (\$/Yr): | \$12,558 |
| Estimated ECM Lifetime (Yr): | 15 |
| Simple Payback | 1.6 |
| Simple Lifetime ROI | 857.7% |
| Simple Lifetime Maintenance Savings | \$0 |
| Simple Lifetime Savings | \$188,370 |
| Internal Rate of Return (IRR) | 64% |
| Net Present Value (NPV) | \$130,246.59 |

ECM #2: Lighting Upgrade – Gymnasium/Cafeteria

Description:

The gymnasium and cafeteria at C.W. Lewis Middle School are currently lit via 400 watt and 250 watt Metal Halide HID fixtures. The space would be better served with a more efficient, fluorescent lighting system. CE recommends upgrading the lighting to an energy-efficient T5 high output system that includes new three and six lamp, 54 watt high output fixtures.

This measure replaces all the HID, 400 and 250 watt HID MH fixtures with a well-designed T5 high output (HO) system. T5 High output fixtures with reflectors and wire guards will be required in order to meet the mandated 50 foot-candle average within the spaces.

Energy Savings Calculations:

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

Energy Savings Summary:

| ECM #2 - ENERGY SAVINGS SUMMARY | |
|---|-------------|
| Installation Cost (\$): | \$11,280 |
| NJ Smart Start Equipment Incentive (\$): | \$3,150 |
| Net Installation Cost (\$): | \$8,130 |
| Maintenance Savings (\$/Yr): | \$0 |
| Energy Savings (\$/Yr): | \$1,649 |
| Total Yearly Savings (\$/Yr): | \$1,649 |
| Estimated ECM Lifetime (Yr): | 15 |
| Simple Payback | 4.9 |
| Simple Lifetime ROI | 204.2% |
| Simple Lifetime Maintenance Savings | \$0 |
| Simple Lifetime Savings | \$24,728 |
| Internal Rate of Return (IRR) | 19% |
| Net Present Value (NPV) | \$11,550.42 |

ECM #3: Lighting Controls Upgrade – Occupancy Sensors

Description:

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

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

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

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

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

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

Energy Savings Calculations:

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

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

Rebates and Incentives:

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

Smart Start Incentive

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

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

Energy Savings Summary:

| ECM #3 - ENERGY SAVINGS SUMMARY | |
|---|-------------|
| Installation Cost (\$): | \$23,750 |
| NJ Smart Start Equipment Incentive (\$): | \$2,220 |
| Net Installation Cost (\$): | \$21,530 |
| Maintenance Savings (\$/Yr): | \$0 |
| Energy Savings (\$/Yr): | \$4,007 |
| Total Yearly Savings (\$/Yr): | \$4,007 |
| Estimated ECM Lifetime (Yr): | 15 |
| Simple Payback | 5.4 |
| Simple Lifetime ROI | 179.2% |
| Simple Lifetime Maintenance Savings | \$0 |
| Simple Lifetime Savings | \$60,105 |
| Internal Rate of Return (IRR) | 17% |
| Net Present Value (NPV) | \$26,305.31 |

ECM #4: Install NEMA Premium® Efficiency Motors

Description:

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

The electric motors driving the hot and cold water pumps are candidates for replacing with premium efficiency motors. These standard efficiency motors run considerable amount of time over a year.

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

| IMPLEMENTATION SUMMARY | | | | | |
|------------------------|----------------|----------|--------------------|---------------------|-------------------------|
| EQMT ID | FUNCTION | MOTOR HP | HOURS OF OPERATION | EXISTING EFFICIENCY | NEMA PREMIUM EFFICIENCY |
| HWP-1 | Hot Water Pump | 5 | 3,732 | 82.5% | 90.2% |
| HWP-2 | Hot Water Pump | 5 | 3,732 | 82.5% | 90.2% |

Energy Savings Calculations:

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

where, HP = Motor Nameplate Horsepower Rating

LF = Load Factor

Motor Efficiency = Motor Nameplate Efficiency

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

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

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

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

| PREMIUM EFFICIENCY MOTOR CALCULATIONS | | | | | | | |
|--|-----------------|--------------------|----------------------------|--------------------------------|-------------------------|---------------------------|---------------------|
| EQMT ID | MOTOR HP | LOAD FACTOR | EXISTING EFFICIENCY | NEMA PREMIUM EFFICIENCY | POWER SAVINGS kW | ENERGY SAVINGS kWh | COST SAVINGS |
| HWP-1 | 5 | 90% | 82.5% | 90.2% | 0.35 | 1,303 | \$201 |
| HWP-2 | 5 | 90% | 82.5% | 90.2% | 0.35 | 1,303 | \$201 |
| TOTAL | | | | | 0.7 | 2,607 | \$401 |

Equipment Cost and Incentives

Below is a summary of SmartStart Building® incentives for premium efficiency motors:

| INCENTIVES | |
|--------------------|---------------------------------|
| HORSE POWER | NJ SMART START INCENTIVE |
| 5 | \$60 |
| 7.5 | \$90 |
| 10 | \$100 |
| 15 | \$115 |
| 20 | \$125 |
| 25 | \$130 |
| 30 | \$150 |
| 40 | \$180 |

The following table outlines the summary of motor replacement costs and incentives:

| MOTOR REPLACEMENT SUMMARY | | | | | | |
|----------------------------------|-----------------------|-----------------------|------------------------------|-----------------|----------------------|-----------------------|
| EQMT ID | MOTOR POWER HP | INSTALLED COST | SMART START INCENTIVE | NET COST | TOTAL SAVINGS | SIMPLE PAYBACK |
| HWP-1 | 5 | \$1,519 | \$60 | \$1,459 | \$201 | 7.3 |
| HWP-2 | 5 | \$1,519 | \$60 | \$1,459 | \$201 | 7.3 |
| TOTAL | Totals: | \$3,038 | \$120 | \$2,918 | \$401 | 7.3 |

Energy Savings Summary:

| ECM #4 - ENERGY SAVINGS SUMMARY | |
|---|------------|
| Installation Cost (\$): | \$3,038 |
| NJ Smart Start Equipment Incentive (\$): | \$120 |
| Net Installation Cost (\$): | \$2,918 |
| Maintenance Savings (\$/Yr): | \$0 |
| Energy Savings (\$/Yr): | \$401 |
| Total Yearly Savings (\$/Yr): | \$401 |
| Estimated ECM Lifetime (Yr): | 20 |
| Simple Payback | 7.3 |
| Simple Lifetime ROI | 175.1% |
| Simple Lifetime Maintenance Savings | \$0 |
| Simple Lifetime Savings | \$8,028 |
| Internal Rate of Return (IRR) | 12% |
| Net Present Value (NPV) | \$3,054.08 |

ECM #5: Digital Energy Management System (DDC EMS)

Description:

Currently the library, cafeteria (air conditioning only) and child study team areas of the school are being electronically controlled. The unit ventilators in the original sections are controlled locally via central pneumatic control systems.

Concord Engineering recommends installing a DDC system throughout the school to control the entire HVAC systems including the unit ventilators in the classrooms, indoor air handling units, rooftop units and roof exhaust fans.

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

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

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

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

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

Energy Savings Calculations:

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

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

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

| DDC ENERGY MANAGEMENT SYSEM CALCULATIONS | | | |
|---|---|-----------------|----------------|
| ECM INPUTS | EXISTING | PROPOSED | SAVINGS |
| ECM INPUTS | Existing Controls w/ Local Thermostats | DDC Controls | |
| Existing Nat Gas Usage (Therms) | 36,142 | - | |
| Existing Electricity Usage (kWh) | 414,207 | - | |
| Energy Savings, Nat Gas | - | 10% | |
| Energy Savings, Electricity | - | 10% | |
| Gas Cost (\$/Therm) | <i>\$0.90</i> | \$0.90 | |
| Electricity Cost (\$/kWh) | <i>\$0.143</i> | \$0.143 | |
| ENERGY SAVINGS CALCULATIONS | | | |
| ECM RESULTS | EXISTING | PROPOSED | SAVINGS |
| Nat Gas Usage (Therms) | 36,142 | 32,528 | 3,614 |
| Electricity Usage (kWh) | 414,207 | 372,786 | 41,421 |
| Nat Gas Cost (\$) | \$32,528 | \$29,275 | \$3,253 |
| Electricity Cost (\$) | \$59,232 | \$53,308 | \$5,923 |
| Energy Cost (\$) | \$91,759 | \$82,583 | \$9,176 |
| COMMENTS: | | | |
| | | | |

Demand savings due to implementation of this ECM is minimal.

The cost of a full DDC system with new field devices, controllers, computer, software, programming, etc. is approximately \$3.75 per SF in accordance with recent Contractor pricing for systems of this magnitude. Savings from the implementation of this ECM will be from the reduced energy consumption currently used by the HVAC system by proper control of schedule and temperatures via the DDC system.

Cost of complete DDC System = $(\$3.75/\text{SF} \times 114,929 \text{ SF}) = \$431,000$

Currently, there are no prequalified NJ SmartSmart Incentives for installation of the DDC system.

Energy Savings Summary:

| ECM #5 - ENERGY SAVINGS SUMMARY | |
|---|-----------------------|
| Installation Cost (\$): | \$431,000 |
| NJ Smart Start Equipment Incentive (\$): | \$0 |
| Net Installation Cost (\$): | \$431,000 |
| Maintenance Savings (\$/Yr): | \$0 |
| Energy Savings (\$/Yr): | \$9,176 |
| Total Yearly Savings (\$/Yr): | \$9,176 |
| Estimated ECM Lifetime (Yr): | 15 |
| Simple Payback | 47.0 |
| Simple Lifetime ROI | -68.1% |
| Simple Lifetime Maintenance Savings | \$0 |
| Simple Lifetime Savings | \$137,640 |
| Internal Rate of Return (IRR) | -12% |
| Net Present Value (NPV) | (\$321,457.51) |

REM #1: 235.47 kW Solar System**Description:**

The C.W. Lewis Middle School has available roof and parking lot space that could accommodate a significant amount of solar generation. Based on the available areas a 235.47 kilowatt solar array could be installed, assuming the existing roof structure is capable of supporting an array. The array will produce approximately 288,372 kilowatt-hours annually that will reduce the overall electric usage of the facility by 30.41%.

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}): | 235.47 |
| Electric Generation (KWH/Yr): | 288,372 |
| Installation Cost (\$): | \$1,408,298 |
| SREC Revenue (\$/Yr): | \$55,103 |
| Energy Savings (\$/Yr): | \$41,237 |
| Total Yearly Savings (\$/Yr): | \$96,341 |
| ECM Analysis Period (Yr): | 15 |
| Simple Payback (Yrs): | 14.6 |
| Analysis Period Electric Savings (\$): | \$766,967 |
| Analysis Period SREC Revenue (\$): | \$798,240 |
| Net Present Value (NPV) | (\$440,385.47) |

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 which saves the monitor screen not energy.
- F. Ensure outside air dampers are functioning properly and only open during occupied mode.

APPENDIX A

ECM COST & SAVINGS BREAKDOWN
CONCORD ENGINEERING GROUP

Gloucester Township BOE - CW Lewis Middle School

| ECM ENERGY AND FINANCIAL COSTS AND SAVINGS SUMMARY | | | | | | | | | | | | | | | |
|--|---------------------------------|-------------------|-------|---------------------|-----------------------|----------------|---------------|----------|-------------------|--------------------------------|--------------------------------------|--|-----------------------------|--------------------------------------|-------------------------------------|
| ECM NO. | DESCRIPTION | INSTALLATION COST | | | | YEARLY SAVINGS | | | ECM LIFETIME (Yr) | LIFETIME ENERGY SAVINGS | LIFETIME MAINTENANCE SAVINGS | LIFETIME ROI | SIMPLE PAYBACK | INTERNAL RATE OF RETURN | NET PRESENT VALUE (NPV) |
| | | MATERIAL | LABOR | REBATES, INCENTIVES | NET INSTALLATION COST | ENERGY | MAINT. / SREC | TOTAL | | (Yearly Saving * ECM Lifetime) | (Yearly Maint Saving * ECM Lifetime) | (Lifetime Savings - Net Cost) / (Net Cost) | (Net cost / Yearly Savings) | $\sum_{n=0}^N \frac{C_n}{(1+IRR)^n}$ | $\sum_{n=0}^N \frac{C_n}{(1+DR)^n}$ |
| | | (\$) | (\$) | (\$) | (\$) | (\$/Yr) | (\$/Yr) | (\$/Yr) | | (\$) | (\$) | (%) | (Yr) | (\$) | (\$) |
| ECM #1 | General Lighting Upgrade | \$36,970 | \$0 | \$17,300 | \$19,670 | \$12,558 | \$0 | \$12,558 | 15 | \$188,370 | \$0 | 857.7% | 1.6 | 63.80% | \$130,246.59 |
| ECM #2 | Gym/Café Lighting Replacement | \$11,280 | \$0 | \$3,150 | \$8,130 | \$1,649 | \$0 | \$1,649 | 15 | \$24,728 | \$0 | 204.2% | 4.9 | 18.73% | \$11,550.42 |
| ECM #3 | Lighting Controls Upgrade | \$23,750 | \$0 | \$2,220 | \$21,530 | \$4,007 | \$0 | \$4,007 | 15 | \$60,105 | \$0 | 179.2% | 5.4 | 16.80% | \$26,305.31 |
| ECM #4 | NEMA Premium Motor Replacements | \$3,038 | \$0 | \$120 | \$2,918 | \$401 | \$0 | \$401 | 20 | \$8,028 | \$0 | 175.1% | 7.3 | 12.44% | \$3,054.08 |
| ECM #5 | DDC System Upgrade | \$431,000 | \$0 | \$0 | \$431,000 | \$9,176 | \$0 | \$9,176 | 15 | \$137,640 | \$0 | -68.1% | 47.0 | -11.75% | (\$321,457.51) |
| REM RENEWABLE ENERGY AND FINANCIAL COSTS AND SAVINGS SUMMARY | | | | | | | | | | | | | | | |
| REM #1 | 235.47 KW PV System | \$1,408,298 | \$0 | \$0 | \$1,408,298 | \$41,237 | \$55,103 | \$96,341 | 15 | \$1,445,110 | \$826,552 | 2.6% | 14.6 | 0.32% | (\$258,189.41) |

- 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 \geq 16 |
| | \$600 per ton, EER \geq 18 |
| | \$750 per ton, EER \geq 20 |

Energy Efficiency must comply with ASHRAE 90.1-2007

Variable Frequency Drives

| | |
|-----------------------------|-------------------------------|
| Variable Air Volume | \$65 - \$155 per hp |
| Chilled-Water Pumps | \$60 per VFD rated hp |
| Compressors | \$5,250 to \$12,500 per drive |
| Cooling Towers \geq 10 hp | \$60 per VFD rated hp |

Natural Gas Water Heating

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

Prescriptive Lighting

| | |
|--|------------------------------|
| Retro fit of T12 to T-5 or T-8 Lamps w/Electronic Ballast in Existing Facilities | \$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 \geq 100w Retrofit with induction lamp, power coupler and generator (must be 30% less watts/fixture than HID system) | \$50 per fixture |
| HID \geq 100w Replacement with new HID \geq 100w | \$70 per fixture |

Prescriptive Lighting - LED

| | |
|--|--------------------------------------|
| LED 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



STATEMENT OF ENERGY PERFORMANCE

1-C. W. Lewis Middle School

Building ID: 3099382

For 12-month Period Ending: December 31, 2011¹

Date SEP becomes ineligible: N/A

Date SEP Generated: July 03, 2012

Facility

1-C. W. Lewis Middle School
875 Erial Road
Blackwood, NJ 08012

Facility Owner

Gloucester Township Public Schools
17 Erial Road
Blackwood, NJ 08012

Primary Contact for this Facility

John Bilodeau
17 Erial Road
Blackwood, NJ 08012

Year Built: 1969

Gross Floor Area (ft²): 133,204Energy Performance Rating² (1-100) 62**Site Energy Use Summary³**

| | |
|-----------------------------------|-----------|
| Electricity - Grid Purchase(kBtu) | 3,235,528 |
| Natural Gas (kBtu) ⁴ | 5,054,700 |
| Total Energy (kBtu) | 8,290,228 |

Energy Intensity⁴

| | |
|-----------------------------------|-----|
| Site (kBtu/ft ² /yr) | 62 |
| Source (kBtu/ft ² /yr) | 121 |

Emissions (based on site energy use)

| | |
|---|-----|
| Greenhouse Gas Emissions (MtCO ₂ e/year) | 727 |
|---|-----|

Electric Distribution Utility

Atlantic City Electric Co [Peppo Holdings Inc]

National Median Comparison

| | |
|--|-------------|
| National Median Site EUI | 70 |
| National Median Source EUI | 136 |
| % Difference from National Median Source EUI | -11% |
| Building Type | K-12 School |

Meets Industry Standards⁵ for Indoor Environmental Conditions:

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

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

Certifying Professional

Michael Fischette
520 South Burnt Mill Road
Voorhees, NJ 08043

Notes:

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

ENERGY STAR® Data Checklist for Commercial Buildings

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

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

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

| CRITERION | VALUE AS ENTERED IN PORTFOLIO MANAGER | VERIFICATION QUESTIONS | NOTES | <input checked="" type="checkbox"/> |
|-------------------------|---------------------------------------|---|-------|-------------------------------------|
| Building Name | 1-C. W. Lewis Middle School | Is this the official building name to be displayed in the ENERGY STAR Registry of Labeled Buildings? | | <input type="checkbox"/> |
| Type | K-12 School | Is this an accurate description of the space in question? | | <input type="checkbox"/> |
| Location | 875 Erial Road, Blackwood, NJ 08012 | Is this address accurate and complete? Correct weather normalization requires an accurate zip code. | | <input type="checkbox"/> |
| 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. | | <input type="checkbox"/> |

C. W. Lewis (K-12 School)

| CRITERION | VALUE AS ENTERED IN PORTFOLIO MANAGER | VERIFICATION QUESTIONS | NOTES | <input checked="" type="checkbox"/> |
|--|---------------------------------------|---|-------|-------------------------------------|
| Gross Floor Area | 133,204 Sq. Ft. | Does this square footage include all supporting functions such as kitchens and break rooms used by staff, storage areas, administrative areas, elevators, stairwells, atria, vent shafts, etc. Also note that existing atriums should only include the base floor area that it occupies. Interstitial (plenum) space between floors should not be included in the total. Finally gross floor area is not the same as leasable space. Leasable space is a subset of gross floor area. | | <input type="checkbox"/> |
| 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. | | <input type="checkbox"/> |
| Number of PCs | 250 | Is this the number of personal computers in the K12 School? | | <input type="checkbox"/> |
| 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. | | <input type="checkbox"/> |
| 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". | | <input type="checkbox"/> |
| Percent Cooled | 80 % | Is this the percentage of the total floor space within the facility that is served by mechanical cooling equipment? | | <input type="checkbox"/> |
| Percent Heated | 100 % | Is this the percentage of the total floor space within the facility that is served by mechanical heating equipment? | | <input type="checkbox"/> |
| Months | 10(Optional) | Is this school in operation for at least 8 months of the year? | | <input type="checkbox"/> |

| | | | | |
|---------------------|----|--|--|--------------------------|
| High School? | No | Is this building a high school (teaching grades 10, 11, and/or 12)? If the building teaches to high school students at all, the user should check 'yes' to 'high school'. For example, if the school teaches to grades K-12 (elementary/middle and high school), the user should check 'yes' to 'high school'. | | <input type="checkbox"/> |
|---------------------|----|--|--|--------------------------|

ENERGY STAR® Data Checklist for Commercial Buildings

Energy Consumption

Power Generation Plant or Distribution Utility: Atlantic City Electric Co [Pepco Holdings Inc]

| 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)) |
| 12/01/2011 | 12/31/2011 | 74,399.00 |
| 11/01/2011 | 11/30/2011 | 73,910.00 |
| 10/01/2011 | 10/31/2011 | 76,092.00 |
| 09/01/2011 | 09/30/2011 | 90,785.00 |
| 08/01/2011 | 08/31/2011 | 71,638.00 |
| 07/01/2011 | 07/31/2011 | 82,058.00 |
| 06/01/2011 | 06/30/2011 | 92,875.00 |
| 05/01/2011 | 05/31/2011 | 70,548.00 |
| 04/01/2011 | 04/30/2011 | 79,873.00 |
| 03/01/2011 | 03/31/2011 | 76,763.00 |
| 02/01/2011 | 02/28/2011 | 84,982.00 |
| 01/01/2011 | 01/31/2011 | 74,356.00 |
| Electric Consumption (kWh (thousand Watt-hours)) | | 948,279.00 |
| Electric Consumption (kBtu (thousand Btu)) | | 3,235,527.95 |
| Total Electricity (Grid Purchase) Consumption (kBtu (thousand Btu)) | | 3,235,527.95 |
| Is this the total Electricity (Grid Purchase) consumption at this building including all Electricity meters? | | <input type="checkbox"/> |
| Fuel Type: Natural Gas | | |
| Meter: Gas (therms) Space(s): Entire Facility | | |
| Start Date | End Date | Energy Use (therms) |
| 12/01/2011 | 12/31/2011 | 6,864.00 |
| 11/01/2011 | 11/30/2011 | 5,083.00 |
| 10/01/2011 | 10/31/2011 | 300.00 |
| 09/01/2011 | 09/30/2011 | 21.00 |
| 08/01/2011 | 08/31/2011 | 0.00 |
| 07/01/2011 | 07/31/2011 | 0.00 |
| 06/01/2011 | 06/30/2011 | 10.00 |
| 05/01/2011 | 05/31/2011 | 514.00 |
| 04/01/2011 | 04/30/2011 | 4,324.00 |
| 03/01/2011 | 03/31/2011 | 6,871.00 |

| | | |
|---|------------|--------------------------|
| 02/01/2011 | 02/28/2011 | 12,163.00 |
| 01/01/2011 | 01/31/2011 | 14,397.00 |
| Gas Consumption (therms) | | 50,547.00 |
| Gas Consumption (kBtu (thousand Btu)) | | 5,054,700.00 |
| Total Natural Gas Consumption (kBtu (thousand Btu)) | | 5,054,700.00 |
| Is this the total Natural Gas consumption at this building including all Natural Gas meters? | | <input type="checkbox"/> |

| | |
|--|--------------------------|
| 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. | <input type="checkbox"/> |

| | |
|---|--------------------------|
| 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. | <input type="checkbox"/> |

Certifying Professional

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

Name: _____ Date: _____

Signature: _____

Signature is required when applying for the ENERGY STAR.

FOR YOUR RECORDS ONLY. DO NOT SUBMIT TO EPA.

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

Facility
1-C. W. Lewis Middle School
875 Erial Road
Blackwood, NJ 08012

Facility Owner
Gloucester Township Public Schools
17 Erial Road
Blackwood, NJ 08012

Primary Contact for this Facility
John Bilodeau
17 Erial Road
Blackwood, NJ 08012

General Information

| 1-C. W. Lewis Middle School | |
|--|-------------------|
| Gross Floor Area Excluding Parking: (ft ²) | 133,204 |
| Year Built | 1969 |
| For 12-month Evaluation Period Ending Date: | December 31, 2011 |

Facility Space Use Summary

| C. W. Lewis | |
|---|-------------|
| Space Type | K-12 School |
| Gross Floor Area (ft ²) | 133,204 |
| Open Weekends? | No |
| Number of PCs | 250 |
| Number of walk-in refrigeration/freezer units | 2 |
| Presence of cooking facilities | Yes |
| Percent Cooled | 80 |
| Percent Heated | 100 |
| Months ° | 10 |
| High School? | No |
| School District ° | N/A |

Energy Performance Comparison

| Performance Metrics | Evaluation Periods | | Comparisons | | |
|---|-------------------------------------|--------------------------------------|--------------|--------|-----------------|
| | Current (Ending Date 12/31/2011) | Baseline (Ending Date 12/31/2011) | Rating of 75 | Target | National Median |
| Energy Performance Rating | 62 | 62 | 75 | N/A | 50 |
| Energy Intensity | | | | | |
| Site (kBtu/ft ²) | 62 | 62 | 55 | N/A | 70 |
| Source (kBtu/ft ²) | 121 | 121 | 106 | N/A | 136 |
| 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 ₂ e/year | 727 | 727 | 639 | N/A | 817 |
| kgCO ₂ e/ft ² /year | 5 | 5 | 4 | 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.

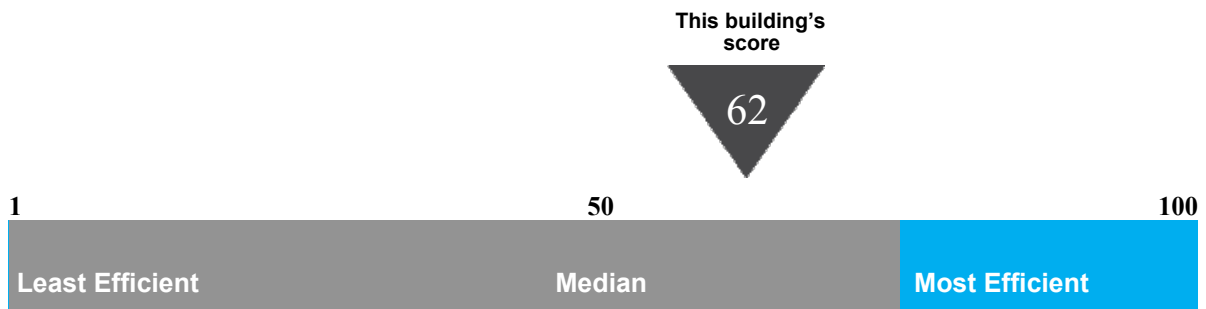
Statement of Energy Performance

2011

1-C. W. Lewis Middle School
875 Erial Road
Blackwood, NJ 08012

Portfolio Manager Building ID: 3099382

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 121 kBtu per square foot per year.*

*Based on source energy intensity for the 12 month period ending December 2011

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



APPENDIX D

MAJOR EQUIPMENT LIST

Concord Engineering Group

C.W. Lewis Middle School

AC Units

| Tag | AC-CAF | AC-3 | CU-1 |
|-------------------------------|-------------------------|-------------------------------------|-----------------|
| Unit Type | AC-Only Rooftop | Rooftop | Condensing unit |
| Qty | 1 | 1 | 1 |
| Location | Roof | Roof | Roof |
| Area Served | Cafeteria | Library | Comm Tech |
| Manufacturer | Trane | Trane | Intertherm |
| Model # | TCH600AE0E0A2JDL ABC | TCD240B300JA | ACZD-024BA-01 |
| Serial # | C00620730 | 324100543D | ACZ9005-04272 |
| Cooling Type | DX | DX | DX |
| Cooling Capacity (Tons) | 50 | 20 | 2 |
| Cooling Efficiency (SEER/EER) | N/A | N/A | N/A |
| Heating Type | N/A | HW Boiler | N/A |
| Heating Input (MBH) | N/A | 540 | N/A |
| Efficiency | N/A | 80% | N/A |
| Fuel | N/A | Natural Gas | N/A |
| Approx Age | 5 | 11 | 15 |
| ASHRAE Service Life | 15 | 15 | 15 |
| Remaining Life | 10 | 4 | 0 |
| Comments | 10 HP Supply Fan | Has 3 Rinnai Boilers for HW Preheat | 230V/1P |

Note:

"N/A" = Not Applicable.

"-" = Info Not Available

AC Units

| Tag | RTU-1 | AC-4A, B | ERU-4A,B |
|--------------------------------------|------------------------|-----------------|------------------|
| Unit Type | AC Only | Rooftop/ ERU | Energy Recovery |
| Qty | 1 | 2 | 2 |
| Location | Roof | Roof | Roof |
| Area Served | | Comp Labs | w/ AC-4A,B |
| Manufacturer | ICP | Trane | SEMCO |
| Model # | PAF036H000E | TSC048A3R0A0Y0 | SP700H4RN4AA |
| Serial # | G043450859 | 316101310L | 30683/M014758-01 |
| Cooling Type | DX | DX | N/A |
| Cooling Capacity (Tons) | 3 | 4 | N/A |
| Cooling Efficiency (SEER/EER) | N/A | N/A | N/A |
| 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 | 8 | 9 | 9 |
| ASHRAE Service Life | 15 | 15 | 15 |
| Remaining Life | 7 | 6 | 6 |
| Comments | 1/3 HP SF, 208/230V/3P | 1 HP SF | 3/4 SF, EF |

Note:

"N/A" = Not Applicable.

"-" = Info Not Available

AC Units

| Tag | AC-1 | RTU-2 | CU-2 |
|-------------------------------|--------------|-----------------|----------------------|
| Unit Type | Rooftop AC | Rooftop AC | Mini split Condenser |
| Qty | 1 | 1 | 1 |
| Location | Roof | Roof | Roof |
| Area Served | CST Office | Teachers Lounge | Main Office |
| Manufacturer | Trane | Yotk | LG |
| Model # | TSC036A3R0A0 | - | LA0126HV |
| Serial # | 316101243L | - | 002KASE00182 |
| Cooling Type | DX | DX | DX |
| Cooling Capacity (Tons) | 3 | 3 ~5 | 1 |
| Cooling Efficiency (SEER/EER) | N/A | N/A | N/A |
| 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 | 9 | - | 10 |
| ASHRAE Service Life | 15 | - | 15 |
| Remaining Life | 6 | - | 5 |
| Comments | 1 HP SF | | 208/230V/1P |

Note:

"N/A" = Not Applicable.

"-" = Info Not Available

MAJOR EQUIPMENT LIST

Concord Engineering Group

C.W. Lewis Middle School

AHUs

| | | | |
|--------------------------------------|--------------------|--|--|
| Tag | UV-1 | | |
| Unit Type | HW Unit Ventilator | | |
| Qty | 48 | | |
| Location | Classrooms | | |
| Area Served | Classrooms | | |
| Manufacturer | Nesbitt | | |
| Model # | - | | |
| Serial # | - | | |
| Cooling Type | N/A | | |
| Cooling Capacity (Tons) | N/A | | |
| Cooling Efficiency (SEER/EER) | N/A | | |
| Heating Type | Hot Water | | |
| Heating Input (MBH) | - | | |
| Efficiency | - | | |
| Fuel | - | | |
| Approx Age | Unknown | | |
| ASHRAE Service Life | Unknown | | |
| Remaining Life | Unknown | | |
| Comments | | | |

Note:

"N/A" = Not Applicable.

"-" = Info Not Available

MAJOR EQUIPMENT LIST

Concord Engineering Group

C.W. Lewis Middle School

Boilers

| Tag | B-1,2 | RB-1,2 | EB-3 |
|---------------------------------------|---|-----------------|-----------------|
| Unit Type | Cast Iron | Small Boiler | Small Boiler |
| Qty | 2 | 2 | 1 |
| Location | Boiler room | Roof | Roof |
| Area Served | Entire Building | Library Rooftop | Library Rooftop |
| Manufacturer | Weil McLain | Rinnai | Rinnai |
| Model # | 1694 | R75LSe | REU-2424WC |
| Serial # | | BA-006252 | 0203-100451 |
| Input Capacity (Btu/Hr) | 5,412 | 180 | 180 |
| Rated Output Capacity (Btu/Hr) | 4,360 | 149 | 148 |
| Approx. Efficiency % | 80.6% | 83.0% | 82.0% |
| Fuel | Natural Gas | Natural Gas | Natural Gas |
| Approx Age | 6 | 8 | 10 |
| ASHRAE Service Life | 25 | 15 | 15 |
| Remaining Life | 19 | 7 | 5 |
| Comments | Net IBR 3791 MBH, Fitted w/ Intellidyne Fuel Economizer | | |

Note:

"N/A" = Not Applicable.

"-" = Info Not Available

MAJOR EQUIPMENT LIST

Concord Engineering Group

C.W. Lewis Middle School

Domestic Water Heaters

| | | | |
|--------------------------------|------------------------------------|--|--|
| Tag | DHW-1 | | |
| Unit Type | Domestic Boiler | | |
| Qty | 1 | | |
| Location | Boiler Room | | |
| Area Served | Entire Building | | |
| Manufacturer | B&W | | |
| Model # | D100L3003NA | | |
| Serial # | FG12190386 | | |
| Size (Gallons) | 100 | | |
| Input Capacity (MBH/KW) | 300 | | |
| Recovery (Gal/Hr) | 290.9 | | |
| Efficiency % | 80% | | |
| Fuel | Natural Gas | | |
| Approx Age | 3 | | |
| ASHRAE Service Life | 15 | | |
| Remaining Life | 12 | | |
| Comments | Has Flue Stack Damper, 1/6 HP Pump | | |

Note:

"N/A" = Not Applicable.

"-" = Info Not Available

MAJOR EQUIPMENT LIST

Concord Engineering Group

C.W. Lewis Middle School

Pumps

| Tag | P-1A, B | P-2 | |
|----------------------------|-----------------------|--------------------------------|--|
| Unit Type | Hot Water End Suction | Domestic Hot Water End Suction | |
| Qty | 2 | 1 | |
| Location | Boiler Room | Boiler Room | |
| Area Served | Entire Building | Entire Building | |
| Manufacturer | Armstrong | Armstrong | |
| Model # | 3x2x8 4030 | - | |
| Serial # | 477212 | - | |
| Horse Power | 5 | 1/2 | |
| Flow | 155 GPM. 50 THD | 25 GPM, 30 THD | |
| Motor Info | Baldor 184T | Baldor 56 | |
| Electrical Power | 200V/3P | 230/460V/3P | |
| RPM | 1740 | 1725 | |
| Motor Efficiency % | 82.5% | 74.0% | |
| Approx Age | 10 | 10 | |
| ASHRAE Service Life | 20 | 20 | |
| Remaining Life | 10 | 10 | |
| Comments | | | |

Note:

"N/A" = Not Applicable.

"-" = Info Not Available

APPENDIX E

CEG Project #: 9C12010
 Facility Name: C.W. Lewis Middle School
 Address: 875 Erial Road
 City, State, Zip: Blackwood, NJ 08012

| Fixture Reference # | Location | Average Burn Hours | Existing Fixtures | | | | | | Proposed Fixtures Retrofit | | | | | | | | Retrofit Energy Savings | | | Proposed Lighting Controls | | | | |
|---------------------|--------------------------|--------------------|---|-------------------|-------------------|-----------------|----------|--------------|----------------------------|-------------------------------|-------------------|-------------------|-----------------|----------|--------------|--------------------|-------------------------|--------------------|---------------|--|-----------------|------------------|---------------------|--------------------|
| | | | 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 | Maintenance Storage | 600 | 1x4 2-Lamp T8 32 Watt Pendant Wrap Prismatic Lens | 2 | 58 | 7 | 0.41 | 244 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 7 | 0.29 | 176 | 0.11 | 67 | \$10 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 1 | Back Maintenance Storage | 600 | 1x4 2-Lamp T8 32 Watt Pendant Wrap Prismatic Lens | 2 | 58 | 2 | 0.12 | 70 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 2 | 0.08 | 50 | 0.03 | 19 | \$3 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 3 | Maintenance Office | 2600 | 4' 2-Lamp T8 32 Watt Wall Mount | 2 | 58 | 1 | 0.06 | 151 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 1 | 0.04 | 109 | 0.02 | 42 | \$6 | 5 | Dual Technology Occupancy Sensor - Switch Mnt. | 0.5 | 20.0% | 22 | \$3 |
| 1 | Maintenance Office | 2600 | 1x4 2-Lamp T8 32 Watt Pendant Wrap Prismatic Lens | 2 | 58 | 1 | 0.06 | 151 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 1 | 0.04 | 109 | 0.02 | 42 | \$6 | 5 | Dual Technology Occupancy Sensor - Switch Mnt. | 0.5 | 20.0% | 22 | \$3 |
| 3 | Maintenance Restroom | 1200 | 4' 2-Lamp T8 32 Watt Wall Mount | 2 | 58 | 1 | 0.06 | 70 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 1 | 0.04 | 50 | 0.02 | 19 | \$3 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 1 | Loading Dock | 600 | 1x4 2-Lamp T8 32 Watt Pendant Wrap Prismatic Lens | 2 | 58 | 4 | 0.23 | 139 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 4 | 0.17 | 101 | 0.06 | 38 | \$5 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 10 | Loading Dock | 600 | 13 Watt CFL Screw In | 1 | 13 | 1 | 0.01 | 8 | Existing To Remain | 0 | 1 | 13 | 0 | 0.01 | 8 | 0.00 | 0 | \$0 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 1 | Mechanical Room | 600 | 1x4 2-Lamp T8 32 Watt Pendant Wrap Prismatic Lens | 2 | 58 | 10 | 0.58 | 348 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 10 | 0.42 | 252 | 0.16 | 96 | \$14 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 1 | Kitchen | 2600 | 1x4 2-Lamp T8 32 Watt Pendant Wrap Prismatic Lens | 2 | 58 | 28 | 1.62 | 4,222 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 28 | 1.18 | 3,058 | 0.45 | 1,165 | \$167 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 1 | Kitchen Dishwasher | 2600 | 1x4 2-Lamp T8 32 Watt Pendant Wrap Prismatic Lens | 2 | 58 | 3 | 0.17 | 452 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 3 | 0.13 | 328 | 0.05 | 125 | \$18 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 1 | Kitchen Storage | 2600 | 1x4 2-Lamp T8 32 Watt Pendant Wrap Prismatic Lens | 2 | 58 | 4 | 0.23 | 603 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 4 | 0.17 | 437 | 0.06 | 166 | \$24 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 1 | Kitchen Rear Hall | 3000 | 1x4 2-Lamp T8 32 Watt Pendant Wrap Prismatic Lens | 2 | 58 | 4 | 0.23 | 696 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 4 | 0.17 | 504 | 0.06 | 192 | \$27 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 1 | Kitchen Office | 2600 | 1x4 2-Lamp T8 32 Watt Pendant Wrap Prismatic Lens | 2 | 58 | 2 | 0.12 | 302 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 2 | 0.08 | 218 | 0.03 | 83 | \$12 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 3 | Kitchen Restrooms | 1200 | 4' 2-Lamp T8 32 Watt Wall Mount | 2 | 58 | 2 | 0.12 | 139 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 2 | 0.08 | 101 | 0.03 | 38 | \$5 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 2 | Faculty Dining Room | 2600 | 2x4 4-Lamp T8 32 Watt Recessed Prismatic Lens | 4 | 109 | 6 | 0.65 | 1,700 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 4 | 84 | 6 | 0.50 | 1,310 | 0.15 | 390 | \$56 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 262 | \$37 |
| 3 | Kitchen Storage | 2600 | 4' 2-Lamp T8 32 Watt Wall Mount | 2 | 58 | 3 | 0.17 | 452 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 3 | 0.13 | 328 | 0.05 | 125 | \$18 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 6 | Classroom #119 | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 20 | 1.16 | 3,016 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 20 | 0.84 | 2,184 | 0.32 | 832 | \$119 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 437 | \$62 |
| 6 | Classroom #118A | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 14 | 0.81 | 2,111 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 14 | 0.59 | 1,529 | 0.22 | 582 | \$83 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 306 | \$44 |

| Fixture Reference # | Location | Average Burn Hours | Existing Fixtures | | | | | | Proposed Fixtures Retrofit | | | | | | Retrofit Energy Savings | | | Proposed Lighting Controls | | | | | | |
|---------------------|--------------------|--------------------|---|-------------------|-------------------|-----------------|----------|--------------|----------------------------|-------------------------------|-------------------|-------------------|-----------------|----------|-------------------------|--------------------|---------------------|----------------------------|---------------|--|-----------------|------------------|---------------------|--------------------|
| | | | 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, \$ |
| 6 | Classroom #118B | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 14 | 0.81 | 2,111 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 14 | 0.59 | 1,529 | 0.22 | 582 | \$83 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 306 | \$44 |
| 2 | Class #118 Storage | 600 | 2x4 4-Lamp T8 32 Watt Recessed Prismatic Lens | 4 | 109 | 1 | 0.11 | 65 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 4 | 84 | 1 | 0.08 | 50 | 0.03 | 15 | \$2 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 2 | Classroom #118C | 2600 | 2x4 4-Lamp T8 32 Watt Recessed Prismatic Lens | 4 | 109 | 8 | 0.87 | 2,267 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 4 | 84 | 8 | 0.67 | 1,747 | 0.20 | 520 | \$74 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 349 | \$50 |
| 6 | Classroom #217 | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 20 | 1.16 | 3,016 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 20 | 0.84 | 2,184 | 0.32 | 832 | \$119 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 437 | \$62 |
| 6 | Classroom #216 | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 20 | 1.16 | 3,016 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 20 | 0.84 | 2,184 | 0.32 | 832 | \$119 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 437 | \$62 |
| 6 | Classroom #215 | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 20 | 1.16 | 3,016 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 20 | 0.84 | 2,184 | 0.32 | 832 | \$119 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 437 | \$62 |
| 6 | Classroom #214 | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 20 | 1.16 | 3,016 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 20 | 0.84 | 2,184 | 0.32 | 832 | \$119 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 437 | \$62 |
| 6 | Classroom #213 | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 20 | 1.16 | 3,016 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 20 | 0.84 | 2,184 | 0.32 | 832 | \$119 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 437 | \$62 |
| 1 | Classroom #226 | 2600 | 1x4 2-Lamp T8 32 Watt Pendant Wrap Prismatic Lens | 2 | 58 | 24 | 1.39 | 3,619 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 24 | 1.01 | 2,621 | 0.38 | 998 | \$143 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 524 | \$75 |
| 1 | Classroom #224 | 2600 | 1x4 2-Lamp T8 32 Watt Pendant Wrap Prismatic Lens | 2 | 58 | 24 | 1.39 | 3,619 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 24 | 1.01 | 2,621 | 0.38 | 998 | \$143 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 524 | \$75 |
| 1 | Classroom #223 | 2600 | 1x4 2-Lamp T8 32 Watt Pendant Wrap Prismatic Lens | 2 | 58 | 24 | 1.39 | 3,619 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 24 | 1.01 | 2,621 | 0.38 | 998 | \$143 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 524 | \$75 |
| 1 | Classroom #224 | 2600 | 1x4 2-Lamp T8 32 Watt Pendant Wrap Prismatic Lens | 2 | 58 | 24 | 1.39 | 3,619 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 24 | 1.01 | 2,621 | 0.38 | 998 | \$143 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 524 | \$75 |
| 1 | Classroom #221 | 2600 | 1x4 2-Lamp T8 32 Watt Pendant Wrap Prismatic Lens | 2 | 58 | 24 | 1.39 | 3,619 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 24 | 1.01 | 2,621 | 0.38 | 998 | \$143 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 524 | \$75 |
| 1 | Classroom #222 | 2600 | 1x4 2-Lamp T8 32 Watt Pendant Wrap Prismatic Lens | 2 | 58 | 24 | 1.39 | 3,619 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 24 | 1.01 | 2,621 | 0.38 | 998 | \$143 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 524 | \$75 |
| 6 | Classroom #322 | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 20 | 1.16 | 3,016 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 20 | 0.84 | 2,184 | 0.32 | 832 | \$119 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 437 | \$62 |
| 1 | Classroom #319 | 2600 | 1x4 2-Lamp T8 32 Watt Pendant Wrap Prismatic Lens | 2 | 58 | 27 | 1.57 | 4,072 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 27 | 1.13 | 2,948 | 0.43 | 1,123 | \$161 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 590 | \$84 |
| 6 | Classroom #324 | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 20 | 1.16 | 3,016 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 20 | 0.84 | 2,184 | 0.32 | 832 | \$119 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 437 | \$62 |
| 1 | Classroom #321 | 2600 | 1x4 2-Lamp T8 32 Watt Pendant Wrap Prismatic Lens | 2 | 58 | 18 | 1.04 | 2,714 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 18 | 0.76 | 1,966 | 0.29 | 749 | \$107 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 393 | \$56 |
| 1 | Classroom #323 | 2600 | 1x4 2-Lamp T8 32 Watt Pendant Wrap Prismatic Lens | 2 | 58 | 27 | 1.57 | 4,072 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 27 | 1.13 | 2,948 | 0.43 | 1,123 | \$161 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 590 | \$84 |
| 6 | Classroom #326 | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 20 | 1.16 | 3,016 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 20 | 0.84 | 2,184 | 0.32 | 832 | \$119 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 437 | \$62 |

| Fixture Reference # | Location | Average Burn Hours | Existing Fixtures | | | | | Proposed Fixtures Retrofit | | | | | | | Retrofit Energy Savings | | | Proposed Lighting Controls | | | | | | |
|---------------------|------------------------|--------------------|---|-------------------|-------------------|-----------------|----------|----------------------------|--|---|-------------------|-------------------|-----------------|----------|-------------------------|--------------------|---------------------|----------------------------|---------------|--|-----------------|------------------|---------------------|--------------------|
| | | | 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, \$ |
| 6 | Classroom #318 | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 12 | 0.70 | 1,810 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 12 | 0.50 | 1,310 | 0.19 | 499 | \$71 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 262 | \$37 |
| 6 | Classroom #317 | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 28 | 1.62 | 4,222 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 28 | 1.18 | 3,058 | 0.45 | 1,165 | \$167 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 612 | \$87 |
| 6 | Classroom #316 | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 20 | 1.16 | 3,016 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 20 | 0.84 | 2,184 | 0.32 | 832 | \$119 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 437 | \$62 |
| 6 | Classroom #315 | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 42 | 2.44 | 6,334 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 42 | 1.76 | 4,586 | 0.67 | 1,747 | \$250 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 917 | \$131 |
| 6 | Classroom #314 | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 20 | 1.16 | 3,016 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 20 | 0.84 | 2,184 | 0.32 | 832 | \$119 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 437 | \$62 |
| 6 | Classroom #211 | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 20 | 1.16 | 3,016 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 20 | 0.84 | 2,184 | 0.32 | 832 | \$119 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 437 | \$62 |
| 6 | *Boys Restroom #212B | 1200 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 2 | 0.12 | 139 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 2 | 0.08 | 101 | 0.03 | 38 | \$5 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 6 | Janitor Closet #212C | 600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 2 | 0.12 | 70 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 2 | 0.08 | 50 | 0.03 | 19 | \$3 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 6 | *Girls Restroom #212A | 1200 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 2 | 0.12 | 139 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 2 | 0.08 | 101 | 0.03 | 38 | \$5 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 12 | *Boys Restroom #212B | 1200 | 60 Watt A-Lamp Screw In | 1 | 60 | 1 | 0.06 | 72 | Re-Lamp | Sylvania Product #29708 Supermini Twist 11 Watt CFL Medium Base | 1 | 11 | 1 | 0.01 | 13 | 0.05 | 59 | \$8 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 12 | *Girls Restroom #212A | 1200 | 60 Watt A-Lamp Screw In | 1 | 60 | 1 | 0.06 | 72 | Re-Lamp | Sylvania Product #29708 Supermini Twist 11 Watt CFL Medium Base | 1 | 11 | 1 | 0.01 | 13 | 0.05 | 59 | \$8 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 6 | Classroom #209 | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 25 | 1.45 | 3,770 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 25 | 1.05 | 2,730 | 0.40 | 1,040 | \$149 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 546 | \$78 |
| 6 | Classroom #210 | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 25 | 1.45 | 3,770 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 25 | 1.05 | 2,730 | 0.40 | 1,040 | \$149 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 546 | \$78 |
| 6 | Classroom #207 | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 20 | 1.16 | 3,016 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 20 | 0.84 | 2,184 | 0.32 | 832 | \$119 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 437 | \$62 |
| 6 | Classroom #208 | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 20 | 1.16 | 3,016 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 20 | 0.84 | 2,184 | 0.32 | 832 | \$119 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 437 | \$62 |
| 7 | Classroom #309 CPU Lab | 2600 | 2x4 3-Lamp T8 32 Watt Recessed Parabolic Lens | 3 | 82 | 14 | 1.15 | 2,985 | Relamp, De-lamp center Lamp, & Defeat Socket | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 14 | 0.59 | 1,529 | 0.56 | 1,456 | \$208 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 306 | \$44 |
| 7 | Classroom #311 CPU Lab | 2600 | 2x4 3-Lamp T8 32 Watt Recessed Parabolic Lens | 3 | 82 | 14 | 1.15 | 2,985 | Relamp, De-lamp center Lamp, & Defeat Socket | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 14 | 0.59 | 1,529 | 0.56 | 1,456 | \$208 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 306 | \$44 |
| 6 | Girls Restroom #312A | 1200 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 2 | 0.12 | 139 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 2 | 0.08 | 101 | 0.03 | 38 | \$5 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 6 | Boys Restroom #312B | 1200 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 2 | 0.12 | 139 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 2 | 0.08 | 101 | 0.03 | 38 | \$5 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 6 | Classroom #310 | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 20 | 1.16 | 3,016 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 20 | 0.84 | 2,184 | 0.32 | 832 | \$119 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 437 | \$62 |

| Fixture Reference # | Location | Average Burn Hours | Existing Fixtures | | | | | | Proposed Fixtures Retrofit | | | | | | Retrofit Energy Savings | | | Proposed Lighting Controls | | | | | | |
|---------------------|-------------------------|--------------------|---|-------------------|-------------------|-----------------|----------|--------------|--|---|-------------------|-------------------|-----------------|----------|-------------------------|--------------------|---------------------|----------------------------|---------------|--|-----------------|------------------|---------------------|--------------------|
| | | | 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, \$ |
| 6 | Classroom #308 | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 15 | 0.87 | 2,262 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 15 | 0.63 | 1,638 | 0.24 | 624 | \$89 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 328 | \$47 |
| 6 | Classroom #305 | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 15 | 0.87 | 2,262 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 15 | 0.63 | 1,638 | 0.24 | 624 | \$89 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 328 | \$47 |
| 6 | Classroom #306 | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 15 | 0.87 | 2,262 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 15 | 0.63 | 1,638 | 0.24 | 624 | \$89 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 328 | \$47 |
| 6 | Classroom #303 | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 20 | 1.16 | 3,016 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 20 | 0.84 | 2,184 | 0.32 | 832 | \$119 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 437 | \$62 |
| 6 | Classroom #304 | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 20 | 1.16 | 3,016 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 20 | 0.84 | 2,184 | 0.32 | 832 | \$119 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 437 | \$62 |
| 6 | Classroom #301 | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 15 | 0.87 | 2,262 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 15 | 0.63 | 1,638 | 0.24 | 624 | \$89 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 328 | \$47 |
| 6 | Classroom #302 | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 15 | 0.87 | 2,262 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 15 | 0.63 | 1,638 | 0.24 | 624 | \$89 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 328 | \$47 |
| 6 | Classroom #205 | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 15 | 0.87 | 2,262 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 15 | 0.63 | 1,638 | 0.24 | 624 | \$89 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 328 | \$47 |
| 6 | Classroom #206 | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 15 | 0.87 | 2,262 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 15 | 0.63 | 1,638 | 0.24 | 624 | \$89 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 328 | \$47 |
| 6 | Classroom #203 | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 20 | 1.16 | 3,016 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 20 | 0.84 | 2,184 | 0.32 | 832 | \$119 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 437 | \$62 |
| 6 | Classroom #204 | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 20 | 1.16 | 3,016 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 20 | 0.84 | 2,184 | 0.32 | 832 | \$119 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 437 | \$62 |
| 6 | Classroom #201 | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 15 | 0.87 | 2,262 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 15 | 0.63 | 1,638 | 0.24 | 624 | \$89 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 328 | \$47 |
| 6 | Classroom #202 | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 15 | 0.87 | 2,262 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 15 | 0.63 | 1,638 | 0.24 | 624 | \$89 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 328 | \$47 |
| 13 | Gymnasium Stage | 2600 | 100 Watt A-Lamp Screw In Pendant | 1 | 100 | 4 | 0.40 | 1,040 | Re-Lamp | Sylvania Product #29708 Supermini Twist 11 Watt CFL Medium Base | 1 | 13 | 4 | 0.05 | 135 | 0.35 | 905 | \$129 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 7 | Library | 2600 | 2x4 3-Lamp T8 32 Watt Recessed Parabolic Lens | 3 | 82 | 48 | 3.94 | 10,234 | Relamp, De-lamp center Lamp, & Defeat Socket | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 48 | 2.02 | 5,242 | 1.92 | 4,992 | \$714 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 8 | Library | 2600 | 2-Lamp T8 32 Watt Sidewall Direct/Indirect | 2 | 58 | 36 | 2.09 | 5,429 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 36 | 1.51 | 3,931 | 0.58 | 1,498 | \$214 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 15 | Library | 2600 | 2-Lamp 13 Watt PL Recessed Can | 1 | 26 | 6 | 0.16 | 406 | Existing To Remain | 0 | 1 | 26 | 0 | 0.16 | 406 | 0.00 | 0 | \$0 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 5 | Library Office | 2600 | 2x4 3-Lamp T8 32 Watt Recessed Prismatic Lens | 3 | 82 | 3 | 0.25 | 640 | Relamp, De-lamp center Lamp, & Defeat Socket | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 3 | 0.13 | 328 | 0.12 | 312 | \$45 | 5 | Dual Technology Occupancy Sensor - Switch Mnt. | 1 | 20.0% | 66 | \$9 |
| 5 | Library Hallway | 3000 | 2x4 3-Lamp T8 32 Watt Recessed Prismatic Lens | 3 | 82 | 7 | 0.57 | 1,722 | Relamp, De-lamp center Lamp, & Defeat Socket | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 7 | 0.29 | 882 | 0.28 | 840 | \$120 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 5 | Lib Faculty Restroom x2 | 1200 | 2x4 3-Lamp T8 32 Watt Recessed Prismatic Lens | 3 | 82 | 2 | 0.16 | 197 | Relamp, De-lamp center Lamp, & Defeat Socket | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 2 | 0.08 | 101 | 0.08 | 96 | \$14 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |

| Fixture Reference # | Location | Average Burn Hours | Existing Fixtures | | | | | | Proposed Fixtures Retrofit | | | | | | Retrofit Energy Savings | | | Proposed Lighting Controls | | | | | | |
|---------------------|------------------------|--------------------|---|-------------------|-------------------|-----------------|----------|--------------|----------------------------|------------------------------------|-------------------|-------------------|-----------------|----------|-------------------------|--------------------|---------------------|----------------------------|---------------|--|-----------------|------------------|---------------------|--------------------|
| | | | 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 | Corridor 100 | 3000 | 2x4 2-Lamp T8 32 Watt Recessed Prismatic Lens | 2 | 58 | 20 | 1.16 | 3,480 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 20 | 0.84 | 2,520 | 0.32 | 960 | \$137 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 2 | Corridor 100 | 3000 | 2x4 4-Lamp T8 32 Watt Recessed Prismatic Lens | 4 | 109 | 2 | 0.22 | 654 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 4 | 84 | 2 | 0.17 | 504 | 0.05 | 150 | \$21 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 4 | Corridor 200 | 3000 | 2x4 2-Lamp T8 32 Watt Recessed Prismatic Lens | 2 | 58 | 37 | 2.15 | 6,438 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 37 | 1.55 | 4,662 | 0.59 | 1,776 | \$254 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 4 | Corridor 300 | 3000 | 2x4 2-Lamp T8 32 Watt Recessed Prismatic Lens | 2 | 58 | 30 | 1.74 | 5,220 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 30 | 1.26 | 3,780 | 0.48 | 1,440 | \$206 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 4 | Corridor A | 3000 | 2x4 2-Lamp T8 32 Watt Recessed Prismatic Lens | 2 | 58 | 17 | 0.99 | 2,958 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 17 | 0.71 | 2,142 | 0.27 | 816 | \$117 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 4 | Corridor B | 3000 | 2x4 2-Lamp T8 32 Watt Recessed Prismatic Lens | 2 | 58 | 9 | 0.52 | 1,566 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 9 | 0.38 | 1,134 | 0.14 | 432 | \$62 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 1 | Corridor B | 3000 | 1x4 2-Lamp T8 32 Watt Pendant Wrap Prismatic Lens | 2 | 58 | 20 | 1.16 | 3,480 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 20 | 0.84 | 2,520 | 0.32 | 960 | \$137 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 4 | Corridor C | 3000 | 2x4 2-Lamp T8 32 Watt Recessed Prismatic Lens | 2 | 58 | 16 | 0.93 | 2,784 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 16 | 0.67 | 2,016 | 0.26 | 768 | \$110 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 4 | Corridor Main Entrance | 3000 | 2x4 2-Lamp T8 32 Watt Recessed Prismatic Lens | 2 | 58 | 8 | 0.46 | 1,392 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 8 | 0.34 | 1,008 | 0.13 | 384 | \$55 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 9 | Corridor Main Entrance | 3000 | 2x2 2-Lamp T8 32 Watt U-Tube Recessed | 2 | 73 | 7 | 0.51 | 1,533 | Re-lamp | Sylvania Lamp FBO30/841XP/6/SS/ECO | 2 | 49 | 7 | 0.34 | 1,029 | 0.17 | 504 | \$72 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 2 | Main Office | 2600 | 2x4 4-Lamp T8 32 Watt Recessed Prismatic Lens | 4 | 109 | 16 | 1.74 | 4,534 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 4 | 84 | 16 | 1.34 | 3,494 | 0.40 | 1,040 | \$149 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 16 | Office 1 | 2600 | 2x4 4-Lamp T8 32 Watt Recessed Parabolic Lens | 4 | 109 | 6 | 0.65 | 1,700 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 4 | 84 | 6 | 0.50 | 1,310 | 0.15 | 390 | \$56 | 5 | Dual Technology Occupancy Sensor - Switch Mnt. | 1 | 20.0% | 262 | \$37 |
| 2 | Office 2 | 2600 | 2x4 4-Lamp T8 32 Watt Recessed Prismatic Lens | 4 | 109 | 4 | 0.44 | 1,134 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 4 | 84 | 4 | 0.34 | 874 | 0.10 | 260 | \$37 | 5 | Dual Technology Occupancy Sensor - Switch Mnt. | 1 | 20.0% | 175 | \$25 |
| 16 | Office 3 | 2600 | 2x4 4-Lamp T8 32 Watt Recessed Parabolic Lens | 4 | 109 | 2 | 0.22 | 567 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 4 | 84 | 2 | 0.17 | 437 | 0.05 | 130 | \$19 | 5 | Dual Technology Occupancy Sensor - Switch Mnt. | 1 | 20.0% | 87 | \$12 |
| 6 | Office 4 | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 4 | 0.23 | 603 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 4 | 0.17 | 437 | 0.06 | 166 | \$24 | 5 | Dual Technology Occupancy Sensor - Switch Mnt. | 1 | 20.0% | 87 | \$12 |
| 6 | Lounge | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 6 | 0.35 | 905 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 6 | 0.25 | 655 | 0.10 | 250 | \$36 | 5 | Dual Technology Occupancy Sensor - Switch Mnt. | 1 | 20.0% | 131 | \$19 |
| 3 | Mens Room | 1200 | 4' 2-Lamp T8 32 Watt Wall Mount | 2 | 58 | 1 | 0.06 | 70 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 1 | 0.04 | 50 | 0.02 | 19 | \$3 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 3 | Womens Room | 1200 | 4' 2-Lamp T8 32 Watt Wall Mount | 2 | 58 | 1 | 0.06 | 70 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 1 | 0.04 | 50 | 0.02 | 19 | \$3 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 6 | Guidance | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 7 | 0.41 | 1,056 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 7 | 0.29 | 764 | 0.11 | 291 | \$42 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 6 | Guidance Office 1 | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 4 | 0.23 | 603 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 4 | 0.17 | 437 | 0.06 | 166 | \$24 | 5 | Dual Technology Occupancy Sensor - Switch Mnt. | 1 | 20.0% | 87 | \$12 |

| Fixture Reference # | Location | Average Burn Hours | Existing Fixtures | | | | | | Proposed Fixtures Retrofit | | | | | | Retrofit Energy Savings | | | Proposed Lighting Controls | | | | | | |
|---------------------|-----------------------------|--------------------|---|-------------------|-------------------|-----------------|----------|--------------|----------------------------|---|-------------------|-------------------|-----------------|----------|-------------------------|--------------------|---------------------|----------------------------|---------------|--|-----------------|------------------|---------------------|--------------------|
| | | | 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, \$ |
| 6 | Guidance Office 2 | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 6 | 0.35 | 905 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 6 | 0.25 | 655 | 0.10 | 250 | \$36 | 5 | Dual Technology Occupancy Sensor - Switch Mnt. | 1 | 20.0% | 131 | \$19 |
| 6 | Storage | 600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 1 | 0.06 | 35 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 1 | 0.04 | 25 | 0.02 | 10 | \$1 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 6 | Janitor | 600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 1 | 0.06 | 35 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 1 | 0.04 | 25 | 0.02 | 10 | \$1 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 2 | Nurse | 2600 | 2x4 4-Lamp T8 32 Watt Recessed Prismatic Lens | 4 | 109 | 8 | 0.87 | 2,267 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 4 | 84 | 8 | 0.67 | 1,747 | 0.20 | 520 | \$74 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 0.5 | 20.0% | 349 | \$50 |
| 6 | Nurse | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 1 | 0.06 | 151 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 1 | 0.04 | 109 | 0.02 | 42 | \$6 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 0.5 | 20.0% | 22 | \$3 |
| 2 | Spec Ed | 2600 | 2x4 4-Lamp T8 32 Watt Recessed Prismatic Lens | 4 | 109 | 8 | 0.87 | 2,267 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 4 | 84 | 8 | 0.67 | 1,747 | 0.20 | 520 | \$74 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 349 | \$50 |
| 2 | Teachers Work Room | 2600 | 2x4 4-Lamp T8 32 Watt Recessed Prismatic Lens | 4 | 109 | 20 | 2.18 | 5,668 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 4 | 84 | 20 | 1.68 | 4,368 | 0.50 | 1,300 | \$186 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 2 | Guidance 105 | 2600 | 2x4 4-Lamp T8 32 Watt Recessed Prismatic Lens | 4 | 109 | 1 | 0.11 | 283 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 4 | 84 | 1 | 0.08 | 218 | 0.03 | 65 | \$9 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 44 | \$6 |
| 13 | Girls Locker Room Storage | 2600 | 100 Watt A-Lamp Screw In Pendant | 1 | 100 | 1 | 0.10 | 260 | Re-Lamp | Sylvania Product #29708 Supermini Twist 11 Watt CFL Medium Base | 1 | 13 | 1 | 0.01 | 34 | 0.09 | 226 | \$32 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 13 | Girls Locker Room Storage | 2600 | 100 Watt A-Lamp Screw In Pendant | 1 | 100 | 1 | 0.10 | 260 | Re-Lamp | Sylvania Product #29708 Supermini Twist 11 Watt CFL Medium Base | 1 | 13 | 1 | 0.01 | 34 | 0.09 | 226 | \$32 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 6 | Girls Locker Room Storage | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 2 | 0.12 | 302 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 2 | 0.08 | 218 | 0.03 | 83 | \$12 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 13 | Girls Locker Room Storage | 2600 | 100 Watt A-Lamp Screw In Pendant | 1 | 100 | 2 | 0.20 | 520 | Re-Lamp | Sylvania Product #29708 Supermini Twist 11 Watt CFL Medium Base | 1 | 13 | 2 | 0.03 | 68 | 0.17 | 452 | \$65 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 13 | Girls Locker Room | 2600 | 100 Watt A-Lamp Screw In Pendant | 1 | 100 | 22 | 2.20 | 5,720 | Re-Lamp | Sylvania Product #29708 Supermini Twist 11 Watt CFL Medium Base | 1 | 13 | 22 | 0.29 | 744 | 1.91 | 4,976 | \$712 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 6 | Girls Locker room Office | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 6 | 0.35 | 905 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 6 | 0.25 | 655 | 0.10 | 250 | \$36 | 5 | Dual Technology Occupancy Sensor - Switch Mnt. | 1 | 20.0% | 131 | \$19 |
| 6 | Boys Locker Room | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 25 | 1.45 | 3,770 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 25 | 1.05 | 2,730 | 0.40 | 1,040 | \$149 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 6 | Boys Locker Room Office | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 8 | 0.46 | 1,206 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 8 | 0.34 | 874 | 0.13 | 333 | \$48 | 5 | Dual Technology Occupancy Sensor - Switch Mnt. | 1 | 20.0% | 175 | \$25 |
| 13 | Boys Locker Room Storage | 600 | 100 Watt A-Lamp Screw In Pendant | 1 | 100 | 1 | 0.10 | 60 | Re-Lamp | Sylvania Product #29708 Supermini Twist 11 Watt CFL Medium Base | 1 | 13 | 1 | 0.01 | 8 | 0.09 | 52 | \$7 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 6 | Storage Right Side of Stage | 600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 2 | 0.12 | 70 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 2 | 0.08 | 50 | 0.03 | 19 | \$3 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 13 | Storage Left side of Stage | 600 | 100 Watt A-Lamp Screw In Pendant | 1 | 100 | 5 | 0.50 | 300 | Re-Lamp | Sylvania Product #29708 Supermini Twist 11 Watt CFL Medium Base | 1 | 13 | 5 | 0.07 | 39 | 0.44 | 261 | \$37 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 6 | Classroom 107 | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 20 | 1.16 | 3,016 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 20 | 0.84 | 2,184 | 0.32 | 832 | \$119 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 437 | \$62 |

| Fixture Reference # | Location | Average Burn Hours | Existing Fixtures | | | | | | Proposed Fixtures Retrofit | | | | | | Retrofit Energy Savings | | | Proposed Lighting Controls | | | | | | |
|---------------------|-----------------|--------------------|---|-------------------|-------------------|-----------------|----------|--------------|--|---|-------------------|-------------------|-----------------|----------|-------------------------|--------------------|---------------------|----------------------------|---------------|--|-----------------|------------------|---------------------|--------------------|
| | | | 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, \$ |
| 6 | Classroom 109 | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 25 | 1.45 | 3,770 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 25 | 1.05 | 2,730 | 0.40 | 1,040 | \$149 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 546 | \$78 |
| 6 | Classroom 111 | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 20 | 1.16 | 3,016 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 20 | 0.84 | 2,184 | 0.32 | 832 | \$119 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 437 | \$62 |
| 6 | Classroom 113 | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 20 | 1.16 | 3,016 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 20 | 0.84 | 2,184 | 0.32 | 832 | \$119 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 437 | \$62 |
| 6 | Classroom 115 | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 25 | 1.45 | 3,770 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 25 | 1.05 | 2,730 | 0.40 | 1,040 | \$149 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 546 | \$78 |
| 6 | *Girls Restroom | 1200 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 3 | 0.17 | 209 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 3 | 0.13 | 151 | 0.05 | 58 | \$8 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 6 | Storage | 600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 2 | 0.12 | 70 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 2 | 0.08 | 50 | 0.03 | 19 | \$3 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 6 | *Boys Restroom | 1200 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 2 | 0.12 | 139 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 2 | 0.08 | 101 | 0.03 | 38 | \$5 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 2 | Cafe Stage | 2600 | 2x4 4-Lamp T8 32 Watt Recessed Prismatic Lens | 4 | 109 | 14 | 1.53 | 3,968 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 4 | 84 | 14 | 1.18 | 3,058 | 0.35 | 910 | \$130 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 6 | Stage Storage 1 | 600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 1 | 0.06 | 35 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 1 | 0.04 | 25 | 0.02 | 10 | \$1 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 6 | Stage Storage 2 | 600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 1 | 0.06 | 35 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 1 | 0.04 | 25 | 0.02 | 10 | \$1 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 6 | Stage Storage 3 | 600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 1 | 0.06 | 35 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 1 | 0.04 | 25 | 0.02 | 10 | \$1 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 6 | Stage Storage 4 | 600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 2 | 0.12 | 70 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 2 | 0.08 | 50 | 0.03 | 19 | \$3 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 6 | Stage Office | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 4 | 0.23 | 603 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 4 | 0.17 | 437 | 0.06 | 166 | \$24 | 5 | Dual Technology Occupancy Sensor - Switch Mnt. | 1 | 20.0% | 87 | \$12 |
| 13 | Stage Storage 5 | 600 | 100 Watt A-Lamp Screw In Pendant | 1 | 100 | 1 | 0.10 | 60 | Re-Lamp | Sylvania Product #29708 Supermini Twist 11 Watt CFL Medium Base | 1 | 13 | 1 | 0.01 | 8 | 0.09 | 52 | \$7 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 1 | Music M-3 | 2600 | 1x4 2-Lamp T8 32 Watt Pendant Wrap Prismatic Lens | 2 | 58 | 36 | 2.09 | 5,429 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 36 | 1.51 | 3,931 | 0.58 | 1,498 | \$214 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 786 | \$112 |
| 6 | Music M-1 | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 28 | 1.62 | 4,222 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 28 | 1.18 | 3,058 | 0.45 | 1,165 | \$167 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 612 | \$87 |
| 5 | CST Lobby | 2600 | 2x4 3-Lamp T8 32 Watt Recessed Prismatic Lens | 3 | 82 | 5 | 0.41 | 1,066 | Relamp, De-lamp center Lamp, & Defeat Socket | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 5 | 0.21 | 546 | 0.20 | 520 | \$74 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 5 | *CST Office 1 | 2600 | 2x4 3-Lamp T8 32 Watt Recessed Prismatic Lens | 3 | 82 | 2 | 0.16 | 426 | Relamp, De-lamp center Lamp, & Defeat Socket | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 2 | 0.08 | 218 | 0.08 | 208 | \$30 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 5 | *CST Office 2 | 2600 | 2x4 3-Lamp T8 32 Watt Recessed Prismatic Lens | 3 | 82 | 2 | 0.16 | 426 | Relamp, De-lamp center Lamp, & Defeat Socket | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 2 | 0.08 | 218 | 0.08 | 208 | \$30 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 5 | *CST Office 3 | 2600 | 2x4 3-Lamp T8 32 Watt Recessed Prismatic Lens | 3 | 82 | 2 | 0.16 | 426 | Relamp, De-lamp center Lamp, & Defeat Socket | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 2 | 0.08 | 218 | 0.08 | 208 | \$30 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |

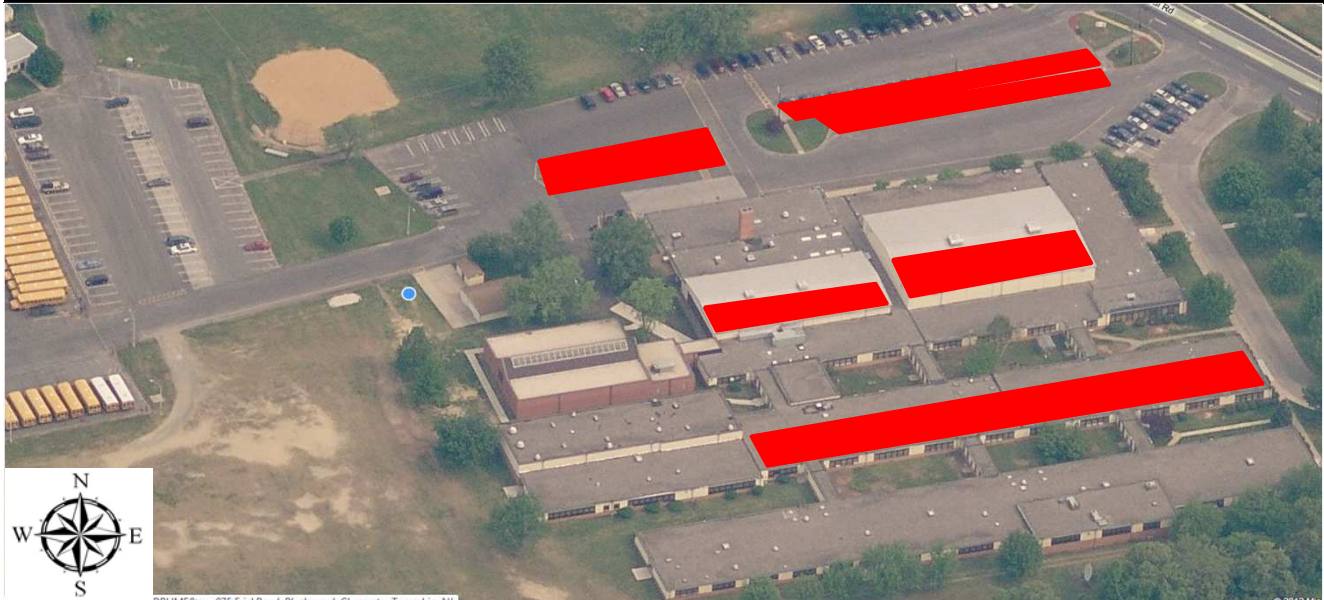
| Fixture Reference # | Location | Average Burn Hours | Existing Fixtures | | | | | | Proposed Fixtures Retrofit | | | | | | Retrofit Energy Savings | | | Proposed Lighting Controls | | | | | | |
|---------------------|----------------------------|--------------------|---|-------------------|-------------------|-----------------|------------|----------------|--|---|-------------------|-------------------|-----------------|----------------|-------------------------|--------------------|---------------------|----------------------------|---------------|--|-----------------|------------------|---------------------|--------------------|
| | | | 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, \$ |
| 5 | *CST Office 4 | 2600 | 2x4 3-Lamp T8 32 Watt Recessed Prismatic Lens | 3 | 82 | 3 | 0.25 | 640 | Relamp, De-lamp center Lamp, & Defeat Socket | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 3 | 0.13 | 328 | 0.12 | 312 | \$45 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 6 | Prep Science Lab 319 | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 3 | 0.17 | 452 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 3 | 0.13 | 328 | 0.05 | 125 | \$18 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 5 | Girls Restroom | 1200 | 2x4 3-Lamp T8 32 Watt Recessed Prismatic Lens | 3 | 82 | 2 | 0.16 | 197 | Relamp, De-lamp center Lamp, & Defeat Socket | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 2 | 0.08 | 101 | 0.08 | 96 | \$14 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 6 | Boys Restroom | 1200 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 2 | 0.12 | 139 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 2 | 0.08 | 101 | 0.03 | 38 | \$5 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 6 | Janitor | 600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 1 | 0.06 | 35 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 1 | 0.04 | 25 | 0.02 | 10 | \$1 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 6 | Computer Lab 219 | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 20 | 1.16 | 3,016 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 20 | 0.84 | 2,184 | 0.32 | 832 | \$119 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 437 | \$62 |
| 6 | Classroom 220 | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 20 | 1.16 | 3,016 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 20 | 0.84 | 2,184 | 0.32 | 832 | \$119 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 437 | \$62 |
| 6 | Art 221 Storage | 600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 8 | 0.46 | 278 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 8 | 0.34 | 202 | 0.13 | 77 | \$11 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 6 | Tech 227 Storage | 600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 8 | 0.46 | 278 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 8 | 0.34 | 202 | 0.13 | 77 | \$11 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 13 | Mech Drawing Prep | 2600 | 100 Watt A-Lamp Screw In Pendant | 1 | 100 | 4 | 0.40 | 1,040 | Re-Lamp | Sylvania Product #29708 Supermini Twist 11 Watt CFL Medium Base | 1 | 13 | 4 | 0.05 | 135 | 0.35 | 905 | \$129 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 6 | Wood Shop Storage | 600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 9 | 0.52 | 313 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 9 | 0.38 | 227 | 0.14 | 86 | \$12 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 6 | Classroom 119 | 2600 | 1x4 2-Lamp T8 32 Watt Surface Wrap Prismatic Lens | 2 | 58 | 20 | 1.16 | 3,016 | Re-lamp | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 20 | 0.84 | 2,184 | 0.32 | 832 | \$119 | 4 | Dual Technology Occupancy Sensor - Remote Mnt. | 1 | 20.0% | 437 | \$62 |
| 5 | New Library Add Girls Room | 1200 | 2x4 3-Lamp T8 32 Watt Recessed Prismatic Lens | 3 | 82 | 3 | 0.25 | 295 | Relamp, De-lamp center Lamp, & Defeat Socket | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 3 | 0.13 | 151 | 0.12 | 144 | \$21 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 5 | New Library Add Boys Room | 1200 | 2x4 3-Lamp T8 32 Watt Recessed Prismatic Lens | 3 | 82 | 2 | 0.16 | 197 | Relamp, De-lamp center Lamp, & Defeat Socket | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 2 | 0.08 | 101 | 0.08 | 96 | \$14 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 5 | Library Storage | 600 | 2x4 3-Lamp T8 32 Watt Recessed Prismatic Lens | 3 | 82 | 3 | 0.25 | 148 | Relamp, De-lamp center Lamp, & Defeat Socket | Sylvania Lamp FO28/841/SS/ECO | 2 | 42 | 3 | 0.13 | 76 | 0.12 | 72 | \$10 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| TOTAL | | | | | | 1,787 | 113 | 285,446 | | | | 1,780 | 78 | 197,628 | 35 | 87,817 | 12,558 | | | 73 | | 28,021 | 4,007 | |

CEG Project #: 9C12010
 Facility Name: C.W. Lewis Middle School
 Address: 875 Erial Road
 City, State, Zip: Blackwood, NJ 08012

| Fixture Reference # | Location | Average Burn Hours | Existing Fixtures | | | | | | Proposed Fixtures Retrofit | | | | | | Retrofit Energy Savings | | | Proposed Lighting Controls | | | | | | |
|---------------------|-----------|--------------------|-------------------------------------|-------------------|-------------------|-----------------|-------------|---------------|----------------------------|--|-------------------|-------------------|-----------------|---------------|-------------------------|--------------------|---------------------|----------------------------|---------------|----------------------|-----------------|------------------|---------------------|--------------------|
| | | | 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 | Cafeteria | 2600 | Pendant Mount Metal Halide 250 Watt | 1 | 295 | 15 | 4.43 | 11,505 | New Fixture | 2x4 54w TSHO 3 Lamp w/Reflector & Wire Guard | 3 | 177 | 15 | 2.66 | 6,903 | 1.77 | 4,602 | \$658 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 14 | Gymnasium | 2600 | Pendant Mount Metal Halide 400 Watt | 1 | 465 | 24 | 11.16 | 29,016 | New Fixture | 2x4 54w TSHO 6 Lamp w/Reflector & Wire Guard | 6 | 354 | 24 | 8.50 | 22,090 | 2.66 | 6,926 | \$990 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| TOTAL | | | | | | 39 | 15.6 | 40,521 | | | | 39 | 11.2 | 28,993 | 4.4 | 11,528 | \$1,649 | | | 0 | | 0 | \$0 | |

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 |
|--------------------------|--------------|-----------------|------|-------------|-------------------|------------------------|------------------|------------------------|-------------------------|--------|
| C.W. Lewis Middle School | 19350 | SHARP NU-U235F2 | 1002 | 17.5 | 17,576 | 235.47 | 288,372 | 190.7 | 41,984 | 13.40 |



= Proposed PV Layout

Notes:

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

Project Name: LGEA Solar PV Project - CW Lewis Middle School
Location: Blackwood, NJ
Description: Photovoltaic System 100% Financing - 15 year

Simple Payback Analysis

| | Photovoltaic System 100% Financing - 15 year |
|------------------------------|---|
| Total Construction Cost | \$1,408,298 |
| Annual kWh Production | 288,372 |
| Annual Energy Cost Reduction | \$41,237 |
| Average Annual SREC Revenue | \$55,103 |

Simple Payback: **14.62** Years

Life Cycle Cost Analysis

| | | | |
|------------------------------|----------------|------------------------------|---------|
| Analysis Period (years): | 15 | Financing %: | 100% |
| Discount Rate: | 3% | Maintenance Escalation Rate: | 3.0% |
| Average Energy Cost (\$/kWh) | \$0.143 | 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 | 288,372 | \$41,237 | \$0 | \$72,093 | \$82,873 | \$59,735 | (\$29,278) | (\$29,278) |
| 2 | \$0 | 286,930 | \$42,474 | \$0 | \$71,733 | \$79,189 | \$63,420 | (\$28,401) | (\$57,679) |
| 3 | \$0 | 285,495 | \$43,749 | \$0 | \$71,374 | \$75,277 | \$67,331 | (\$27,486) | (\$85,165) |
| 4 | \$0 | 284,068 | \$45,061 | \$0 | \$71,017 | \$71,124 | \$71,484 | (\$26,530) | (\$111,695) |
| 5 | \$0 | 282,648 | \$46,413 | \$2,911 | \$70,662 | \$66,715 | \$75,893 | (\$28,445) | (\$140,140) |
| 6 | \$0 | 281,234 | \$47,805 | \$2,897 | \$56,247 | \$62,034 | \$80,574 | (\$41,453) | (\$181,593) |
| 7 | \$0 | 279,828 | \$49,239 | \$2,882 | \$55,966 | \$57,065 | \$85,544 | (\$40,285) | (\$221,878) |
| 8 | \$0 | 278,429 | \$50,717 | \$2,868 | \$55,686 | \$51,788 | \$90,820 | (\$39,074) | (\$260,952) |
| 9 | \$0 | 277,037 | \$52,238 | \$2,853 | \$55,407 | \$46,187 | \$96,421 | (\$37,816) | (\$298,768) |
| 10 | \$0 | 275,652 | \$53,805 | \$2,839 | \$41,348 | \$40,240 | \$102,368 | (\$50,294) | (\$349,063) |
| 11 | \$0 | 274,274 | \$55,419 | \$2,825 | \$41,141 | \$33,926 | \$108,682 | (\$48,873) | (\$397,935) |
| 12 | \$0 | 272,902 | \$57,082 | \$2,811 | \$40,935 | \$27,223 | \$115,385 | (\$47,402) | (\$445,337) |
| 13 | \$0 | 271,538 | \$58,794 | \$2,797 | \$40,731 | \$20,106 | \$122,502 | (\$45,880) | (\$491,217) |
| 14 | \$0 | 270,180 | \$60,558 | \$2,783 | \$27,018 | \$12,550 | \$130,058 | (\$57,815) | (\$549,032) |
| 15 | \$0 | 268,829 | \$62,375 | \$2,769 | \$26,883 | \$4,529 | \$138,080 | (\$56,119) | (\$605,151) |
| Totals: | | 4,177,416 | \$766,967 | \$31,235 | \$798,240 | \$730,825 | \$1,408,298 | (\$605,151) | (\$4,224,884) |
| Net Present Value (NPV) | | | | | | | | (\$440,385) | |