

**NORTH BRUNSWICK TOWNSHIP
PUBLIC SCHOOL DISTRICT**

NORTH BRUNSWICK TWP. HIGH SCHOOL

**98 RAIDER ROAD
NORTH BRUNSWICK, NJ 08902**

FACILITY ENERGY REPORT

TABLE OF CONTENTS

I. HISTORIC ENERGY CONSUMPTION/COST..... 2

II. FACILITY DESCRIPTION 7

III. MAJOR EQUIPMENT LIST 10

IV. ENERGY CONSERVATION MEASURES..... 11

V. ADDITIONAL RECOMMENDATIONS 52

Appendix A – ECM Cost & Savings Breakdown

Appendix B – New Jersey Smart Start® Program Incentives

Appendix C – Portfolio Manager “Statement of Energy Performance”

Appendix D – Major Equipment List

Appendix E – Investment Grade Lighting Audit

Appendix F – Renewable / Distributed Energy Measures Calculations

I. HISTORIC ENERGY CONSUMPTION/COST

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

| | |
|----------------------------------|---|
| Electric Utility Provider: | Public Service Electric & Gas |
| Electric Utility Rate Structure: | Large Power and Lighting Service (LPLS) |
| Third Party Supplier: | None |

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

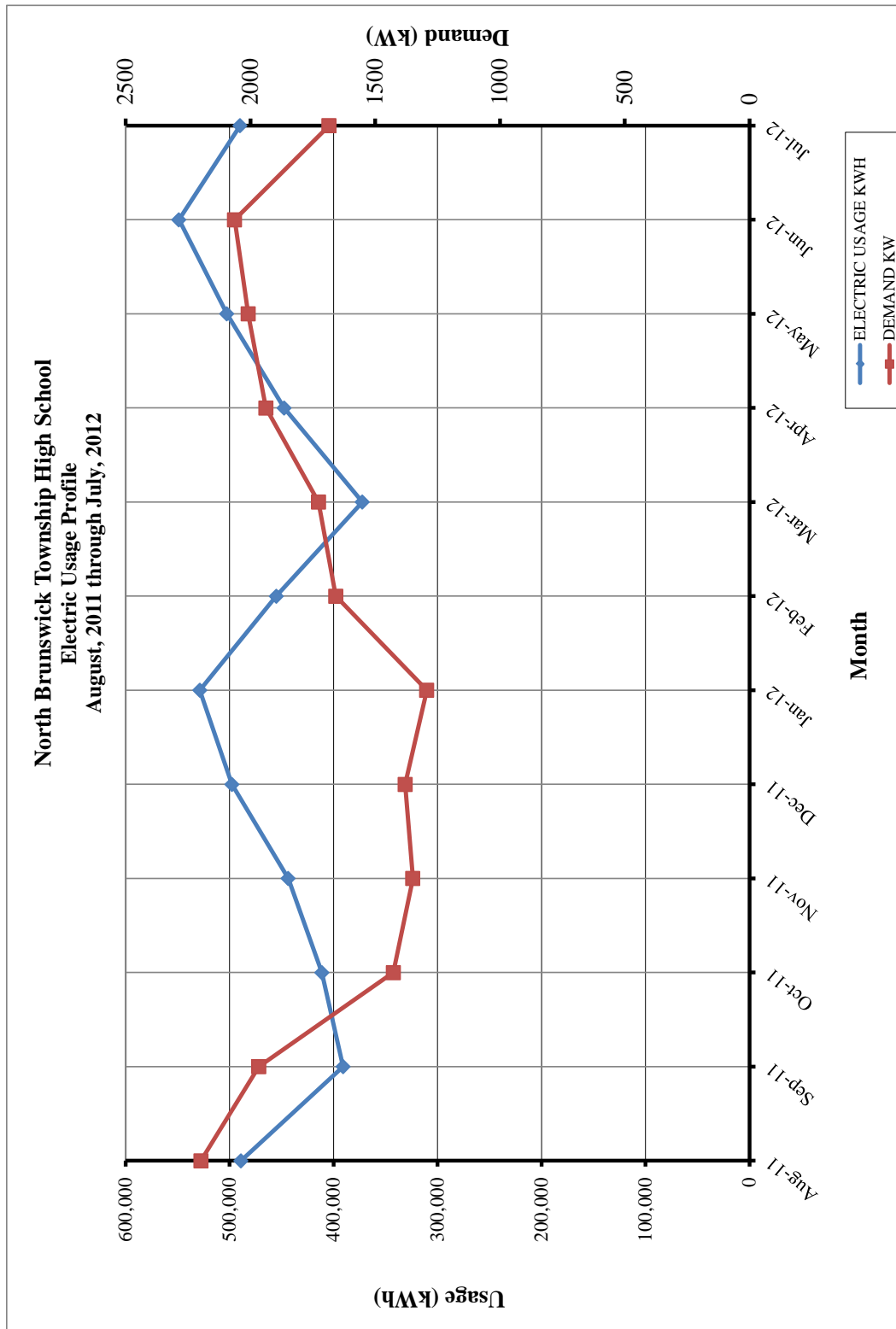
The electric usage profile represents the actual electrical usage for the facility. The electric utility measures consumption in kilowatt-hours (KWH) and maximum demand in kilowatts (KW). One KWH usage is equivalent to 1000 watts running for one hour. One KW of electric demand is equivalent to 1000 watts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

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

**Table 1
Electricity Billing Data**

| ELECTRIC USAGE SUMMARY | | | |
|-------------------------------|------------------------|--------------------------|-------------------|
| Utility Provider: PSE&G | | | |
| Rate: LPLS | | | |
| Meter No: 778020223 | | | |
| Account # E 42-005-877-18 | | | |
| Third Party Utility N/A | | | |
| TPS Meter / Acct No: N/A | | | |
| MONTH OF USE | CONSUMPTION KWH | DEMAND KW | TOTAL BILL |
| Aug-11 | 488,985 | 2198.0 | \$75,326 |
| Sep-11 | 390,835 | 1966.0 | \$42,323 |
| Oct-11 | 411,251 | 1427.0 | \$45,197 |
| Nov-11 | 443,603 | 1349.0 | \$42,787 |
| Dec-11 | 497,787 | 1380.0 | \$51,195 |
| Jan-12 | 528,635 | 1293.0 | \$47,452 |
| Feb-12 | 455,076 | 1658.0 | \$45,812 |
| Mar-12 | 372,397 | 1727.0 | \$35,600 |
| Apr-12 | 447,552 | 1938.0 | \$45,835 |
| May-12 | 502,633 | 2009.0 | \$70,959 |
| Jun-12 | 548,747 | 2063.0 | \$88,658 |
| Jul-12 | 489,964 | 1685.0 | \$69,813 |
| Totals | 5,577,465 | 2198.0 Max | \$660,958 |
| AVERAGE DEMAND | | 1724.4 KW average | |
| AVERAGE RATE | | \$0.119 \$/kWh | |

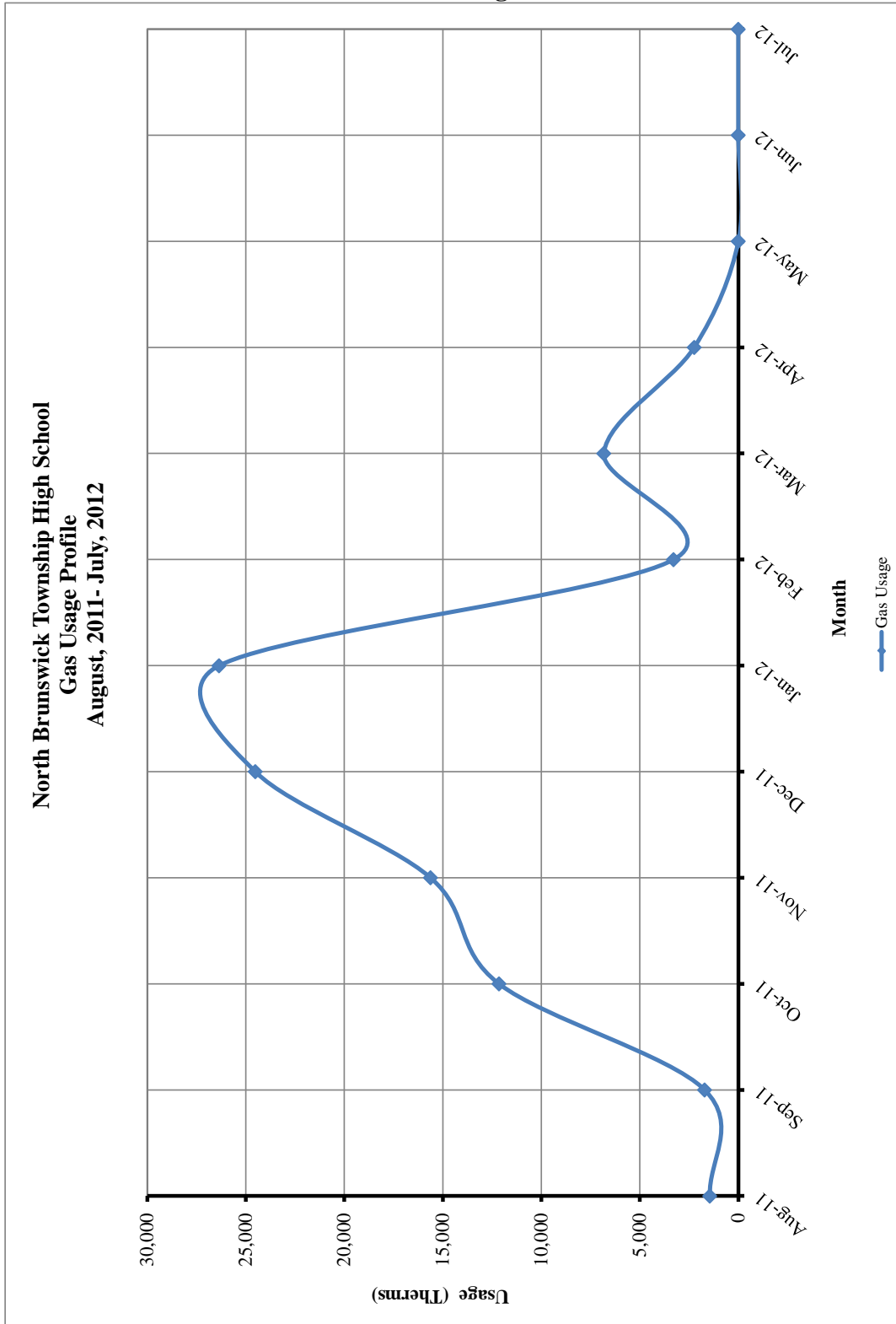
Figure 1
Electricity Usage Profile



**Table 4
Natural Gas Billing Data**

| NATURAL GAS USAGE SUMMARY | | |
|---------------------------------------|---------------------------------|--------------------|
| Utility Provider: PSE&G | | |
| Rate: LVG | | |
| Meter No: 3166163 | | |
| Point of Delivery ID: G 42-005-877-18 | | |
| Third Party Utility Provider: | | |
| TPS Meter No: - | | |
| MONTH OF USE | CONSUMPTION (THERMS) | TOTAL BILL |
| Aug-11 | 1,446.00 | \$1,196.98 |
| Sep-11 | 1,712.00 | \$1,366.31 |
| Oct-11 | 12,151.00 | \$12,820.00 |
| Nov-11 | 15,624.00 | \$15,553.99 |
| Dec-11 | 24,517.00 | \$22,153.10 |
| Jan-12 | 26,352.00 | \$21,780.32 |
| Feb-12 | 3,285.00 | \$5,251.12 |
| Mar-12 | 6,826.00 | \$4,034.93 |
| Apr-12 | 2,240.00 | \$1,377.28 |
| May-12 | 0.00 | \$99.50 |
| Jun-12 | 0.00 | \$99.50 |
| Jul-12 | 0.00 | \$99.50 |
| TOTALS | 94,153.00 | \$85,832.53 |
| AVERAGE RATE: | \$0.91 | \$/THERM |

Figure 2
Natural Gas Usage Profile



II. FACILITY DESCRIPTION

North Brunswick Township High School is located on 98 Raider Road in North Brunswick, New Jersey. The 387,456 square foot high school was constructed in 1973 with additions completed in 1990 and 2006. The building is a two story building consisting of administrative offices, classrooms, two separate gymnasiums, cafeteria, media center, an auditorium and music rooms. In addition, there is a 7,260 square foot modular building on the campus.

Occupancy Profile

The typical hours of operation for the school are Monday through Friday from 7:20 am to 4:00 pm from September through June. In addition, the building has limited occupancy during evening hours for after-school activities. The school's current estimated enrollment is approximately 1,790 students with approximately 117 teachers. The modular building is currently not used by students and is used for storage, per conversations with the building maintenance staff.

Building Envelope

Exterior walls for the high school are a combination of 4" brick and pre-cast concrete panels with a concrete block interior construction. The amount of insulation within the walls is unknown. The windows throughout the school are in good condition and appear to be maintained. Typical windows throughout the school are double pane, ¼" insulated glass with aluminum frames. Blinds are utilized through the facility per occupant comfort. The blinds are valuable because they help to reduce heat loss in the winter and reduce solar heat in the summer. The roof over the original section of the building is a tar covered roof painted silver. This section of the roof is in poor condition. The roof over the newer additions is a flat, EPDM rubber roof on steel decking. The amount of insulation below the roofing is unknown, but the roof is in good condition.

HVAC Systems

The classrooms in the original section of the building is served by a total of sixteen (16) vintage Nesbitt packaged multi-zone rooftop units with gas fired heating and direct expansion cooling. Each unit is rated for 30 Tons of cooling and heating capacities ranging from 300 MBH to 800 MBH. These units are all approximately twenty two (22) years old and have far surpassed their useful service life, per ASHRAE standards.

The Main gymnasium is served by four (4) vintage Nesbitt packaged rooftop units. Each of these units is rated for 30 Tons of cooling and 600 MBH of heating. These units are also approximately twenty two (22) years old and have surpassed their useful service life, per ASHRAE. The indoor pool is conditioned / dehumidified by a Dectron dehumidification unit with a remote cooler. This unit is rated for 35 Tons of cooling. This unit was installed approximately 3 years ago and is in excellent condition.

The 500 wing (1990 addition) is a two-pipe changeover system. Hot water is provided in heating season via two (2) outdoor, roof mounted Teledyne water tube gas fired boilers, each rated for

870 MBH of heating. Both of these boilers were installed in 1995 and are approaching the end of their useful service life of twenty four (24) years, per ASHRAE. Chilled water is provided in cooling season by a 60-Ton roof mounted, air cooled McQuay chiller. This chiller utilizes R-22 refrigerant, and has surpassed its useful life of 20 years, as defined by ASHRAE.

The 2006 addition, which is the Auditorium and ancillary classrooms, is served by a total of nine (9) Seasons Four packaged rooftop multi-zone units. These units range in cooling capacity from 25 Tons to 27 Tons and have gas fired heating sections with input capacities ranging from 700 MBH up to 1040 MBH. These units are all in excellent condition. In addition, there are two Aeon units that served areas behind the stage. One unit is 5-Tons and the other is 8-Tons. Both units have gas fired heating sections and are in excellent condition.

The pool is heated via a single boiler, located in the pool pump/filter room adjacent to the main gymnasium. This boiler is a 1,000 MBH PK Thermific model with an operating efficiency of approximately 80% based on its age and condition. This boiler is reaching the end of its useful service life, per ASHRAE.

The modular building is conditioned by a total of eight (8) packaged heating and cooling units, mounted on the exterior of the structure. These units rarely operate, as the modular building is only currently used for storage.

Exhaust System

Air is exhausted from the toilet rooms through the roof exhausters. The exhaust fans are controlled by the occupancy schedule in the BAS.

HVAC System Controls

The HVAC systems within school are controlled by a DDC system by Novar. All of the older multi-zone units have been retrofitted with newer controllers. The DDC system controls the operation, status and temperature set points of the all of the heating and cooling equipment in the facility. Based on conversations with the facility operators, typical cooling set points are 74F/85°F in occupied/unoccupied modes and heating set points are 70F/65°F in occupied/unoccupied modes.

Domestic Hot Water

Domestic hot water for the 2006 addition restrooms is provided by an A.O. Smith Cyclone, high efficiency condensing style hot water heater. This unit is in good condition. The 500 Wing 1990 addition uses a plate and frame heat exchanger located in the penthouse boiler room to generate domestic hot water. This heat exchanger receives 180-190 degree hot water from the boilers and transfers this to the domestic hot water. The domestic hot water is circulated to via a single zone pump with a fractional horsepower motor. This configuration requires that at least one boiler be operational to provide domestic hot water to the building. The original section of the building receives hot water from a gas fired domestic hot water boiler, located in the main floor mechanical room. This boiler is a 1,900 MBH PK Thermific model with a remote storage tank.

The building is also served by a domestic cold water booster skid, located in the main floor mechanical room. This skid is Caneris Model TS-225, with three (3) base mounted, end suction constant volume pumps with 5 HP motors.

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 | Lighting Upgrade | \$63,005 | \$11,344 | 5.6 | 170.1% |
| ECM #2 | Lighting Controls | \$22,835 | \$4,239 | 5.4 | 178.5% |
| ECM #3 | NEMA Premium Pump Motors | \$3,726 | \$153 | 24.4 | -38.4% |
| ECM #4 | Boiler Replacement - 500 Wing | \$75,976 | \$941 | 80.7 | -69.0% |
| ECM #5 | Domestic Hot Water Boiler Replacement | \$50,871 | \$2,754 | 18.5 | 35.3% |
| ECM #6 | Pool Boiler Replacment | \$45,974 | \$406 | 113.2 | -77.9% |
| ECM #7 | Air Cooled Chiller Replacement - 500 Wing | \$87,600 | \$5,722 | 15.3 | 30.6% |
| ECM #8 | Rooftop Unit Replacement | \$1,759,510 | \$64,432 | 27.3 | -45.1% |
| ECM #9 | Split System AC Unit Replacement (Ductless Splits) | \$46,078 | \$2,342 | 19.7 | -23.8% |
| ECM #10 | Domestic Water VFD Booster Skid | \$27,888 | \$1,853 | 15.0 | -0.3% |
| ECM #11 | Vending Machine Controls | \$1,611 | \$2,140 | 0.8 | 1892.8% |
| ECM #12 | CRT Computer Monitor Replacement | \$3,510 | \$337 | 10.4 | 44.0% |
| ECM #13 | Set Computers to Automatic Standby or Hibernate Modes | \$2,770 | \$6,116 | 0.5 | 3211.9% |
| ECM #14 | Pool Cover | \$16,451 | \$1,145 | 14.4 | 11.4% |
| RENEWABLE ENERGY MEASURES (REM's) | | | | | |
| ECM NO. | DESCRIPTION | NET INSTALLATION COST | ANNUAL SAVINGS | SIMPLE PAYBACK (Yrs) | SIMPLE LIFETIME ROI |
| REM #1 | 782.55 KW Solar Array | \$4,890,344 | \$283,639 | 17.2 | -13.0% |

Notes: A. Cost takes into consideration applicable NJ Smart StartTM incentives.

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 | Lighting Upgrade | 28.3 | 92,939 | - |
| ECM #2 | Lighting Controls | - | 35,622 | |
| ECM #3 | NEMA Premium Pump Motors | 0.5 | 1,282 | - |
| ECM #4 | Boiler Replacement - 500 Wing | - | - | 1,034 |
| ECM #5 | Domestic Hot Water Boiler Replacement | - | - | 3,026 |
| ECM #6 | Pool Boiler Replacment | - | - | 447 |
| ECM #7 | Air Cooled Chiller Replacement - 500 Wing | 18.4 | 48,088 | - |
| ECM #8 | Rooftop Unit Replacement | 229.0 | 504,000 | 4,897 |
| ECM #9 | Split System AC Unit Replacement (Ductless Splits) | 6.2 | 19,682 | - |
| ECM #10 | Domestic Water VFD Booster Skid | - | 5,410 | - |
| ECM #11 | Vending Machine Controls | | 17,985 | - |
| ECM #12 | CRT Computer Monitor Replacment | 0.6 | 1,116 | |
| ECM #13 | Set Computers to Automatic Stand-by or Hibernate Modes | - | 51,399 | - |
| ECM #14 | Pool Cover | - | - | 1,186 |
| RENEWABLE ENERGY MEASURES (REM's) | | | | |
| ECM NO. | DESCRIPTION | ANNUAL UTILITY REDUCTION | | |
| | | ELECTRIC DEMAND (KW) | ELECTRIC CONSUMPTION (KWH) | NATURAL GAS (THERMS) |
| REM #1 | 782.55 KW Solar Array | 633.9 | 914,714 | - |

**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 |
| Lighting Upgrade | \$11,344 | \$63,005 | \$0 | \$63,005 | 5.6 |
| Lighting Controls | \$4,239 | \$24,450 | \$1,615 | \$22,835 | 5.4 |
| NEMA Premium Pump Motors | \$153 | \$3,906 | \$180 | \$3,726 | 24.4 |
| Boiler Replacement - 500 Wing | \$941 | \$79,158 | \$3,182 | \$75,976 | 80.7 |
| Domestic Hot Water Boiler Replacement | \$2,754 | \$52,726 | \$1,855 | \$50,871 | 18.5 |
| Pool Boiler Replacement | \$406 | \$47,829 | \$1,855 | \$45,974 | 113.2 |
| Air Cooled Chiller Replacement - 500 Wing | \$5,722 | \$90,600 | \$3,000 | \$87,600 | 15.3 |
| Rooftop Unit Replacement | \$64,432 | \$1,803,750 | \$44,240 | \$1,759,510 | 27.3 |
| Split System AC Unit Replacement (Ductless Splits) | \$2,342 | \$48,148 | \$2,070 | \$46,078 | 19.7 |
| Domestic Water VFD Booster Skid | \$1,853 | \$27,888 | \$0 | \$27,888 | 15.0 |
| Vending Machine Controls | \$2,140 | \$1,611 | \$0 | \$1,611 | 0.8 |
| CRT Computer Monitor Replacement | \$337 | \$3,510 | \$0 | \$3,510 | 10.4 |
| Set Computers to Automatic Stand-by or Hibernate Modes | \$6,116 | \$2,770 | \$0 | \$2,770 | 0.5 |
| Pool Cover | \$1,145 | \$16,451 | \$0 | \$16,451 | 14.4 |
| <i>Design / Construction Extras (15%)</i> | | \$62,133 | | \$62,133 | |
| Total Project | \$39,086 | \$476,356 | \$11,902 | \$464,454 | 11.9 |

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

Description:

The stage area and auxiliary gymnasium at the High School are currently lit via 400 watt Metal Halide HID fixtures. These areas would be better served with a more efficient, fluorescent lighting system. Concord Engineering recommends upgrading the lighting in the gymnasiums to an energy-efficient T5 high output system that includes new six lamp, 54 watt high output fixtures. This ECM also replaces the recessed down light lamps throughout the school with LED lamps.

In addition, it was observed that the lighting levels in the Main Gymnasium were insufficient. The Gym is currently lit via thirty five (35) 2 lamp, 32 Watt T8 fixtures with electronic ballasts yielding a foot-candle rating of 28. Part of this ECM is to replace these fixtures with new, 6-lamp, T-5 H.O. fixtures which will yield a f.c. rating of 40, while keeping energy costs the same and reducing maintenance.

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 #1 - ENERGY SAVINGS SUMMARY | |
|---|-------------|
| Installation Cost (\$): | \$63,005 |
| NJ Smart Start Equipment Incentive (\$): | \$0 |
| Net Installation Cost (\$): | \$63,005 |
| Maintenance Savings (\$/Yr): | \$0 |
| Energy Savings (\$/Yr): | \$11,344 |
| Total Yearly Savings (\$/Yr): | \$11,344 |
| Estimated ECM Lifetime (Yr): | 15 |
| Simple Payback | 5.6 |
| Simple Lifetime ROI | 170.1% |
| Simple Lifetime Maintenance Savings | \$0 |
| Simple Lifetime Savings | \$170,160 |
| Internal Rate of Return (IRR) | 16% |
| Net Present Value (NPV) | \$72,418.94 |

ECM #2: Lighting Controls Upgrade – Occupancy Sensors

Description:

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

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

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

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

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

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

Energy Savings Calculations:

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

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

Rebates and Incentives:

From the **NJ Smart Start® 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 #2 - ENERGY SAVINGS SUMMARY | |
|---|-------------|
| Installation Cost (\$): | \$24,450 |
| NJ Smart Start Equipment Incentive (\$): | \$1,615 |
| Net Installation Cost (\$): | \$22,835 |
| Maintenance Savings (\$/Yr): | \$0 |
| Energy Savings (\$/Yr): | \$4,239 |
| Total Yearly Savings (\$/Yr): | \$4,239 |
| Estimated ECM Lifetime (Yr): | 15 |
| Simple Payback | 5.4 |
| Simple Lifetime ROI | 178.5% |
| Simple Lifetime Maintenance Savings | \$0 |
| Simple Lifetime Savings | \$63,585 |
| Internal Rate of Return (IRR) | 17% |
| Net Present Value (NPV) | \$27,769.91 |

ECM #3: 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 chilled and hot 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 |
| P-1 | 2-Pipe Changeover Pump | 5 | 2,745 | 85.5% | 90.2% |
| P-2 | 2-Pipe Changeover Pump | 5 | 2,745 | 85.5% | 90.2% |
| P-3 | Domestic Hot Water HX Pump | 2 | 1,600 | 81.5% | 86.5% |

Energy Savings Calculations:

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

where, HP = Motor Nameplate Horsepower Rating

LF = Load Factor

Motor Efficiency = Motor Nameplate Efficiency

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

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

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

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

| PREMIUM EFFICIENCY MOTOR CALCULATIONS | | | | | | | |
|--|-----------------|--------------------|----------------------------|--------------------------------|-------------------------|---------------------------|---------------------|
| EQMT ID | MOTOR HP | LOAD FACTOR | EXISTING EFFICIENCY | NEMA PREMIUM EFFICIENCY | POWER SAVINGS kW | ENERGY SAVINGS kWh | COST SAVINGS |
| P-1 | 5 | 90% | 85.5% | 90.2% | 0.20 | 565 | \$67 |
| P-2 | 5 | 90% | 85.5% | 90.2% | 0.20 | 565 | \$67 |
| P-3 | 2 | 90% | 81.5% | 86.5% | 0.10 | 153 | \$18 |
| TOTAL | | | | | 0.5 | 1,282.4 | \$153 |

Equipment Cost and Incentives

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

| INCENTIVES | |
|--------------------|---------------------------------|
| HORSE POWER | NJ SMART START INCENTIVE |
| 1 | \$50 |
| 1.5 | \$50 |
| 2 | \$60 |
| 3 | \$60 |
| 5 | \$60 |
| 7.5 | \$90 |
| 10 | \$100 |

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 |
| P-1 | 5 | \$1,519 | \$60 | \$1,459 | \$67 | 21.7 |
| P-2 | 5 | \$1,519 | \$60 | \$1,459 | \$67 | 21.7 |
| P-3 | 2 | \$868 | \$60 | \$808 | \$18 | 44.3 |
| TOTAL | Totals: | \$3,906 | \$180 | \$3,726 | \$153 | 24.4 |

Energy Savings Summary:

| ECM #3 - ENERGY SAVINGS SUMMARY | |
|---|---------------------|
| Installation Cost (\$): | \$3,906 |
| NJ Smart Start Equipment Incentive (\$): | \$180 |
| Net Installation Cost (\$): | \$3,726 |
| Maintenance Savings (\$/Yr): | \$0 |
| Energy Savings (\$/Yr): | \$153 |
| Total Yearly Savings (\$/Yr): | \$153 |
| Estimated ECM Lifetime (Yr): | 15 |
| Simple Payback | 24.4 |
| Simple Lifetime ROI | -38.4% |
| Simple Lifetime Maintenance Savings | \$0 |
| Simple Lifetime Savings | \$2,295 |
| Internal Rate of Return (IRR) | -6% |
| Net Present Value (NPV) | (\$1,899.50) |

ECM #4: Condensing Boiler Installation

Description:

There are two existing Teledyne water tube boilers which are used as the primary source of heat for 500 Wing of the high school. These boilers serve the hot water loop throughout this section of the building. These boilers are approximately 17 years old and are approaching their life expectancy of a typical water tube boiler and should be considered for replacement. With the increased efficiency of the condensing boilers, the savings can be substantial.

New condensing boilers could substantially improve the operating efficiency of the heating system of the building. Condensing boiler's peak efficiency tops out at 99% depending on return water temperature. Due to the operating conditions of the building, the annual average operating efficiency of the proposed condensing boiler is expected to be 92%. The existing boiler's efficiency is approximately 65%, which makes the condensing boilers an 27% increase in efficiency. This ECM is based on variable supply water temperature adjusted based on outdoor temperature.

This ECM includes installation of two (2) condensing gas fired boilers to replace the existing rooftop boilers. The basis for this ECM is Aerco condensing boiler; model number MLX – 909. The boiler installation is based on a one for one replacement based on capacity of the existing boiler. The new boilers would be installed within the penthouse mechanical room

Energy Savings Calculations:

The total gas consumption by the domestic hot water heater is calculated in ECM#5 and is estimated to be 16,475 therms. Additionally, it is estimated that the kitchen equipment accounts for approximately 3.5% of the building natural gas consumption, which is 3,295 therms.

Currently, the other gas consuming equipment connected to the building gas meter is the 500 wing boilers, Pool Heater, and thirty seven (37) rooftop units with gas fired heating. Therefore, annual energy consumption of the boilers has to be estimated. In this calculation, it is assumed that the energy consumption of the boilers will be in proportion with the ratio of the total heating capacity of each piece of equipment.

Below calculation is performed to estimate annual gas usage of the cast iron boilers:

Total facility heating capacity (Heating equipment output capacity):

| | |
|----------------------------------|----------------------|
| (2) Teledyne hot water boilers | = 1,716 MBH |
| (1) P.K. Thermific Boiler (Pool) | = 850 MBH |
| (37) Gas Fired RTUs | = 16,212 MBH |
| Total Output Capacity | = 18,778 MMBH |

| | |
|--|-----------------------|
| Total facility gas heating capacity: | 18,778 MBH |
| Total Capacity –Boilers only: | 1,716 MBH |
| Percent usage by boilers: | 9.1% of Total |
| Natural gas usage of facility | 94,153 therms |
| Natural gas usage of DHW | - 16,475 therms |
| Natural gas usage of kitchen equip | - <u>3,295 therms</u> |
| Total gas usage of heating equipment = | 74,383 Therms |
| Estimated natural gas usage of boilers | 9.1% of 74,383 Therms |
| Estimated natural gas usage of boilers | 6,797 Therms |

$$\text{Bldg Heat Required} = \text{Heating Nat. Gas (Therm)} \times \text{Heating Eff (\%)} \times \text{Fuel Heat Value} \left(\frac{\text{BTU}}{\text{Therm}} \right)$$

$$\text{Proposed Heating Gas Usage} = \frac{\text{Bldg. Heat Required (BTU)}}{\text{New Heating Eff (\%)} \times \text{Fuel Heat Value} \left(\frac{\text{BTU}}{\text{Therm}} \right)}$$

$$\text{Energy Cost} = \text{Heating Gas Usage (Therms)} \times \text{Ave Fuel Cost} \left(\frac{\$}{\text{Therm}} \right)$$

Energy savings calculations are summarized in the table below:

| CONDENSING BOILER CALCULATIONS | | | |
|--|----------------------------|------------------------|----------------|
| ECM INPUTS | EXISTING | PROPOSED | SAVINGS |
| ECM INPUTS | Existing Cast Iron Boilers | New Condensing Boilers | |
| Existing Nat Gas (Therms) | 6,797 | 0 | |
| Boiler Efficiency (%) | 78% | 92% | 14% |
| Nat Gas Heat Value (BTU/Therm) | 100,000 | 100,000 | |
| Equivalent Building Heat Usage (MMBTUs) | 530 | 530 | |
| Gas Cost (\$/Therm) | 0.91 | 0.91 | |
| ENERGY SAVINGS CALCULATIONS | | | |
| ECM RESULTS | EXISTING | PROPOSED | SAVINGS |
| Natural Gas Usage (Therms) | 6,797 | 5,763 | 1,034 |
| Energy Cost (\$) | \$6,186 | \$5,244 | \$941 |
| COMMENTS: | | | |
| | | | |

Note: Concord Engineering is utilizing a seasonal average efficiency of 92% to account for efficiencies based on an outside air reset schedule.

From the **NJ Smart Start Appendix**, the installation of new condensing boilers warrants the following incentive: \$1.75 per MBH, or \$3,182.

Energy Savings Summary:

| ECM #4 - ENERGY SAVINGS SUMMARY | |
|---|----------------------|
| Installation Cost (\$): | \$79,158 |
| NJ Smart Start Equipment Incentive (\$): | \$3,182 |
| Net Installation Cost (\$): | \$75,976 |
| Maintenance Savings (\$/Yr): | \$0 |
| Energy Savings (\$/Yr): | \$941 |
| Total Yearly Savings (\$/Yr): | \$941 |
| Estimated ECM Lifetime (Yr): | 25 |
| Simple Payback | 80.7 |
| Simple Lifetime ROI | -69.0% |
| Simple Lifetime Maintenance Savings | \$0 |
| Simple Lifetime Savings | \$23,525 |
| Internal Rate of Return (IRR) | -8% |
| Net Present Value (NPV) | (\$59,590.17) |

ECM #5: High Efficiency Gas Hot Water Heater

Description:

The original section of the High School has one P.K. Thermific gas-fired hot water heater boiler that provides domestic hot water to the bathrooms and kitchen. The gas fired heater is approaching the end of its life expectancy and is an ideal candidate for replacement with a new condensing style boiler.

This ECM will replace the original gas fired domestic water boiler with Natural Gas fired 92.0% thermal efficient Aerco Innovation 1060 condensing boiler. The existing storage tank will remain.

Energy Savings Calculations:

| DOM. HOT WATER HEATER CALCULATIONS | | | |
|---|---|------------------------|----------------|
| ECM INPUTS | EXISTING | PROPOSED | SAVINGS |
| ECM INPUTS | Existing Gas Hot Water Heater | High Efficiency Heater | |
| Building Type | Education | | |
| Building Square-foot | 253,466 | 253,466 | |
| Domestic Water Usage, kBtu | 1,318,023.20 | 1,318,023.20 | |
| DHW Heating Fuel Type | Gas | Gas | |
| Heating Efficiency | 80% | 98% | 18% |
| Total Usage (kBtu) | 1,647,529 | 1,344,922 | 302,607 |
| Electric Cost (\$/kWh) | \$ 0.119 | \$ - | |
| Nat Gas Cost (\$/Therm) | \$ 0.910 | \$ 0.910 | |
| ENERGY SAVINGS CALCULATIONS | | | |
| ECM RESULTS | EXISTING | PROPOSED | SAVINGS |
| Natural Gas Usage (Therms) | 16,475 | 13,449 | 3,026 |
| Energy Cost (\$) | \$14,993 | \$12,239 | \$2,754 |
| COMMENTS: | Savings are based on Energy Information Administration Commercial Building Energy Consumption Survey 2003 Information | | |

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

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

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

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

From the **NJ Smart Start Appendix**, the installation of new condensing boilers warrants the following incentive: \$1.75 per MBH, or \$1,855.

Energy Savings Summary:

| ECM #5 - ENERGY SAVINGS SUMMARY | |
|---|--------------|
| Installation Cost (\$): | \$52,726 |
| NJ Smart Start Equipment Incentive (\$): | \$1,855 |
| Net Installation Cost (\$): | \$50,871 |
| Maintenance Savings (\$/Yr): | \$0 |
| Energy Savings (\$/Yr): | \$2,754 |
| Total Yearly Savings (\$/Yr): | \$2,754 |
| Estimated ECM Lifetime (Yr): | 25 |
| Simple Payback | 18.5 |
| Simple Lifetime ROI | 35.3% |
| Simple Lifetime Maintenance Savings | \$0 |
| Simple Lifetime Savings | \$68,850 |
| Internal Rate of Return (IRR) | 2% |
| Net Present Value (NPV) | (\$2,915.13) |

ECM #6: Condensing Boiler Installation – Pool Heater

Description:

There is a single boiler which is used as the primary source for heating the pool at the high school. This boiler is approximately 22 years old and is approaching the end of its life expectancy for a typical boiler and should be considered for replacement. With the increased efficiency of the condensing boilers, the savings can be substantial.

New condensing boilers could substantially improve the operating efficiency of the heating system of the building. Condensing boiler's peak efficiency tops out at 99% depending on return water temperature. Due to the operating conditions of the building, the annual average operating efficiency of the proposed condensing boiler is expected to be 92%. The existing boiler's efficiency is approximately 65%, which makes the condensing boilers an 27% increase in efficiency. This ECM is based on variable supply water temperature adjusted based on outdoor temperature.

This ECM includes installation of one (1) condensing gas fired boilers to replace the existing rooftop boilers. The basis for this ECM is Aerco condensing boiler; model number MLX – 1060. The boiler installation is based on a one for one replacement based on capacity of the existing boiler. The new boilers would be installed within the pool pump room.

Energy Savings Calculations:

The total gas consumption by the domestic hot water heater is calculated in ECM#5 and is estimated to be 16,475 therms. Additionally, it is estimated that the kitchen equipment accounts for approximately 3.5% of the building natural gas consumption, which is 3,295 therms.

Currently, the other gas consuming equipment connected to the building gas meter is the 500 wing boilers, Pool Heater, and thirty seven (37) rooftop units with gas fired heating. Therefore, annual energy consumption of the Pool Heater boiler has to be estimated. In this calculation, it is assumed that the energy consumption of the boiler will be in proportion with the ratio of the total heating capacity of each piece of equipment.

Below calculation is performed to estimate annual gas usage of the cast iron boilers:

Total facility heating capacity (Heating equipment output capacity):

| | |
|----------------------------------|----------------------|
| (1) P.K. Thermific Boiler (Pool) | = 850 MBH |
| (2) Teledyne hot water boilers | = 1,716 MBH |
| (37) Gas Fired RTUs | = 16,212 MBH |
| Total Output Capacity | = 18,778 MMBH |

| | |
|--|-----------------------|
| Total facility gas heating capacity: | 18,778 MBH |
| Total Capacity –Pool Boiler only: | 850 MBH |
| Percent usage by boilers: | 4.5% of Total |
| Natural gas usage of facility | 94,153 therms |
| Natural gas usage of DHW | - 16,475 therms |
| Natural gas usage of kitchen equip | - <u>3,295 therms</u> |
| Total gas usage of heating equipment = | 74,383 Therms |
| Estimated natural gas usage of boilers | 4.5% of 74,383 Therms |
| Estimated natural gas usage of boilers | 3,367 Therms |

$$\text{Bldg Heat Required} = \text{Heating Nat. Gas (Therm)} \times \text{Heating Eff (\%)} \times \text{Fuel Heat Value} \left(\frac{\text{BTU}}{\text{Therm}} \right)$$

$$\text{Proposed Heating Gas Usage} = \frac{\text{Bldg. Heat Required (BTU)}}{\text{New Heating Eff (\%)} \times \text{Fuel Heat Value} \left(\frac{\text{BTU}}{\text{Therm}} \right)}$$

$$\text{Energy Cost} = \text{Heating Gas Usage (Therms)} \times \text{Ave Fuel Cost} \left(\frac{\$}{\text{Therm}} \right)$$

Energy savings calculations are summarized in the table below:

| CONDENSING BOILER CALCULATIONS | | | |
|--|----------------------------|------------------------|----------------|
| ECM INPUTS | EXISTING | PROPOSED | SAVINGS |
| ECM INPUTS | Existing Cast Iron Boilers | New Condensing Boilers | |
| Existing Nat Gas (Therms) | 3,367 | 0 | |
| Boiler Efficiency (%) | 85% | 98% | 13% |
| Nat Gas Heat Value (BTU/Therm) | 100,000 | 100,000 | |
| Equivalent Building Heat Usage (MMBTUs) | 286 | 286 | |
| Gas Cost (\$/Therm) | 0.91 | 0.91 | |
| ENERGY SAVINGS CALCULATIONS | | | |
| ECM RESULTS | EXISTING | PROPOSED | SAVINGS |
| Natural Gas Usage (Therms) | 3,367 | 2,920 | 447 |
| Energy Cost (\$) | \$3,064 | \$2,658 | \$406 |
| COMMENTS: | | | |
| | | | |

From the **NJ Smart Start Appendix**, the installation of new condensing boilers warrants the following incentive: \$1.75 per MBH, or \$1,855.

Energy Savings Summary:

| ECM #6 - ENERGY SAVINGS SUMMARY | |
|---|----------------------|
| Installation Cost (\$): | \$47,829 |
| NJ Smart Start Equipment Incentive (\$): | \$1,855 |
| Net Installation Cost (\$): | \$45,974 |
| Maintenance Savings (\$/Yr): | \$0 |
| Energy Savings (\$/Yr): | \$406 |
| Total Yearly Savings (\$/Yr): | \$406 |
| Estimated ECM Lifetime (Yr): | 25 |
| Simple Payback | 113.2 |
| Simple Lifetime ROI | -77.9% |
| Simple Lifetime Maintenance Savings | 0 |
| Simple Lifetime Savings | \$10,150 |
| Internal Rate of Return (IRR) | -9% |
| Net Present Value (NPV) | (\$38,904.20) |

ECM #7: Air Cooled Chiller Replacement - 500 Wing**Description:**

The facility currently has a single air cooled chiller that is past its useful life expectancy. This chiller is a 60 ton McQuay model located on the roof. This chiller serves the 500 wing addition air handling unit. The estimated efficiency of the chiller is 1.333 KW/Ton at full load capacity, and an estimated 1.263 kW/Ton at part load.

This ECM includes the installation of a new high efficient variable speed air cooled chiller. The chiller is based on a 60 ton York Model YCAV. The owner should have a professional engineer verify heating and cooling loads prior to moving forward with this ECM.

Energy Savings Calculations:

$$\text{Electric Usage} = \text{Cooling Tons} \times \left(\frac{\text{kW}}{\text{Ton}} \right) \times \text{Full Load Hrs.}$$

$$\text{Demand Savings} = \text{Cooling Tons} \times \left(\text{Existing} \frac{\text{kW}}{\text{Ton}} - \text{Proposed} \frac{\text{kW}}{\text{Ton}} \right)$$

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

| CHILLER CALCULATIONS | | | |
|--|-----------------------------|-------------------------|----------------|
| ECM INPUTS | EXISTING | PROPOSED | SAVINGS |
| ECM INPUTS | Existing Air Cooled Chiller | High Efficiency Chiller | |
| Operating Capacity (Tons) | 60.0 | 60.0 | |
| Chiller Efficiency (KW/Ton) | 1.333 | 1.026 | |
| Full Load Cooling Hrs (Est.) | 800 | 800 | |
| Cooling Energy (kWh) | 64,000 | 49,248 | |
| Chiller Operating Hours (May to Sept) | 3,650 | 3,650 | |
| Chiller Part Load Hours Est. | 1,600 | 1,600 | |
| Chiller IPLV (KW/Ton) | 1.263 | 0.800 | |
| Chiller Part Load % | 75.0% | 75.0% | |
| Part Load Cooling Energy (kWh) | 90,936 | 57,600 | |
| Elec Cost (\$/kWh) | 0.119 | 0.119 | |
| ENERGY SAVINGS CALCULATIONS | | | |
| ECM RESULTS | EXISTING | PROPOSED | SAVINGS |
| Electric Energy (kWh) | 154,936 | 106,848 | 48,088 |
| Electric Demand (KW) | 80.0 | 61.6 | 18.4 |
| Electric Energy Cost (\$) | \$18,437 | \$12,715 | \$5,722 |
| COMMENTS: | | | |

From the NJ Smart Start[®] Program appendix, the unit falls under the category “Electric Chiller” and warrants an incentive based on efficiency (EER) at 1.02 KW/Ton*. The program incentives are calculated as follows:

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

$$= (60 \text{ Tons} \times \$50/\text{Ton})$$

*ARI rating used for Smart Start, Manufacturer's data used for comparison purposes.

Energy Savings Summary:

| ECM #7 - ENERGY SAVINGS SUMMARY | |
|---|--------------|
| Installation Cost (\$): | \$90,600 |
| NJ Smart Start Equipment Incentive (\$): | \$3,000 |
| Net Installation Cost (\$): | \$87,600 |
| Maintenance Savings (\$/Yr): | \$0 |
| Energy Savings (\$/Yr): | \$5,722 |
| Total Yearly Savings (\$/Yr): | \$5,722 |
| Estimated ECM Lifetime (Yr): | 20 |
| Simple Payback | 15.3 |
| Simple Lifetime ROI | 30.6% |
| Simple Lifetime Maintenance Savings | \$0 |
| Simple Lifetime Savings | \$114,440 |
| Internal Rate of Return (IRR) | 3% |
| Net Present Value (NPV) | (\$2,471.09) |

ECM #8: RTU Upgrades

Description:

The original section of the High School is air conditioned by sixteen (16) vintage packaged rooftop multi-zone units and four (4) packaged rooftop single zone units with D/X cooling and gas fired heating sections. These units are in poor condition and have surpassed their useful ASHRAE service life. The units currently installed are less efficient compared to modern equipment and can be replaced with new high efficiency units. New air conditioners provide higher full load and part load efficiencies due to advances in inverter motor technologies, heat exchangers and refrigerants.

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

| IMPLEMENTATION SUMMARY | | | | | |
|------------------------|-----------------------------|-----------------|--------------------------|----------------------|----------------------------------|
| ECM INPUTS | UNIT TAG | NUMBER OF UNITS | COOLING CAPACITY, BTU/HR | TOTAL CAPACITY, TONS | REPLACE UNIT WITH |
| RTU | RTU-5,6,8,10,11,12,13,14,19 | 9 | 288,000 | 24.0 | Nesbitt Multi-Zone Packaged RTU |
| RTU | RTU-1 thru 4 | 4 | 360,000 | 30.0 | Nesbitt Single Zone Packaged RTU |
| RTU | RTU-18 | 1 | 384,000 | 32.0 | Nesbitt Multi-Zone Packaged RTU |
| RTU | RTU-7,9,15,16,17,20 | 6 | 384,000 | 32.0 | Nesbitt Multi-Zone Packaged RTU |
| Total | | 20 | 1,032,000 | 86 | |

The manufacturers used as the basis for this calculation is Nesbitt. All units are one for one style replacements with matching capacity of the new units to the old units. The unit pricing and install cost were estimated based on current rates. The payback may change based on actual unit pricing and install costs if the ECM is implemented.

Energy Savings Calculations:

Cooling Energy Savings:

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

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

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

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

| ENERGY SAVINGS CALCULATIONS | | | | | | | |
|-----------------------------|--------------------------|----------------------|-----------------------|------------------|------------|--------------------|-------------------|
| ECM INPUTS | COOLING CAPACITY, BTU/Hr | ANNUAL COOLING HOURS | EXISTING UNITS (S)EER | NEW UNITS (S)EER | # OF UNITS | ENERGY SAVINGS kWh | DEMAND SAVINGS kW |
| RTU | 288,000 | 2,200 | 8 EER | 11 EER | 9 | 194,400 | 88.4 |
| RTU | 360,000 | 2,200 | 8 EER | 11 EER | 4 | 108,000 | 49.1 |
| RTU | 384,000 | 2,200 | 8 EER | 11 EER | 1 | 28,800 | 13.1 |
| RTU | 384,000 | 2,200 | 8 EER | 11 EER | 6 | 172,800 | 78.5 |
| Total | | | | | 20 | 504,000 | 229 |

Heating Energy Savings

The estimated gas consumption of the building boilers, domestic hot water heaters and kitchen equipment was calculated in ECMs 4,5 & 6 and is as follows:

Natural gas usage of boilers 6,797 Therms
 Natural gas usage of pool heater 3,367 Therms
 Natural gas usage of DHW 16,475 therms
 Natural gas usage of kitchen equip 3,295 therms
 Equipment gas usage (excluding RTUs) = 29,934 Therms

Total Building gas usage 94,153 Therms
 Equipment gas usage (excluding RTUs) -29,934 Therms
 Gas Usage of all RTU's 64,219 Therms

There are a total of thirty seven (37) rooftop units on the building with a total gas input rating of 20,265 MBH. The twenty (20) rooftop units proposed for replacement in the ECM account for a total 12,140 MBH, or 61% of the remaining gas input. Therefore, rooftop units on the original building have the following estimated gas usage:

61% of 64,219 Therms = **39,173 Therms**

$$\text{Bldg Heat Required} = \text{Heating Nat. Gas (Therm)} \times \text{Heating Eff (\%)} \times \text{Fuel Heat Value} \left(\frac{\text{BTU}}{\text{Therm}} \right)$$

$$\text{Proposed Heating Gas Usage} = \frac{\text{Bldg. Heat Required (BTU)}}{\text{New Heating Eff (\%)} \times \text{Fuel Heat Value} \left(\frac{\text{BTU}}{\text{Therm}} \right)}$$

$$\text{Energy Cost} = \text{Heating Gas Usage (Therms)} \times \text{Ave Fuel Cost} \left(\frac{\$}{\text{Therm}} \right)$$

Energy savings calculations are summarized in the table below:

| ROOFTOP UNIT GAS HEATING CALCULATIONS | | | |
|--|-----------------|-----------------|----------------|
| ECM INPUTS | EXISTING | PROPOSED | SAVINGS |
| ECM INPUTS | Rooftop Units | Rooftop Units | |
| Existing Nat Gas (Therms) | 39,174 | 0 | |
| Boiler Efficiency (%) | 70% | 80% | 10% |
| Nat Gas Heat Value (BTU/Therm) | 100,000 | 100,000 | |
| Equivalent Building Heat Usage (MMBTUs) | 2,742 | 2,742 | |
| Gas Cost (\$/Therm) | 0.91 | 0.91 | |
| ENERGY SAVINGS CALCULATIONS | | | |
| ECM RESULTS | EXISTING | PROPOSED | SAVINGS |
| Natural Gas Usage (Therms) | 39,174 | 34,277 | 4,897 |
| Energy Cost (\$) | \$35,648 | \$31,192 | \$4,456 |
| COMMENTS: | | | |
| | | | |

Energy Savings Summary:

| ECM #8 - ENERGY SAVINGS SUMMARY | |
|---|-----------------------|
| Installation Cost (\$): | \$1,803,750 |
| NJ Smart Start Equipment Incentive (\$): | \$44,240 |
| Net Installation Cost (\$): | \$1,759,510 |
| Maintenance Savings (\$/Yr): | \$0 |
| Energy Savings (\$/Yr): | \$64,432 |
| Total Yearly Savings (\$/Yr): | \$64,432 |
| Estimated ECM Lifetime (Yr): | 15 |
| Simple Payback | 27.3 |
| Simple Lifetime ROI | -45.1% |
| Simple Lifetime Maintenance Savings | \$0 |
| Simple Lifetime Savings | \$966,480 |
| Internal Rate of Return (IRR) | -7% |
| Net Present Value (NPV) | (\$990,324.97) |

ECM #9: Replace AC Units with High Efficiency Units

Description:

The High School utilizes ductless split system cooling only units to condition several interior spaces within the school. The units suggested to be replaced all have capacities ranging of 1 ton. Please refer to the **Major Equipment List Appendix** for further information about these units.

These units are in fair condition though the current units in operation are not high efficiency units. These units are approximately ten years old and are reaching the end of their ASHRAE service life of fifteen years.

These units can be replaced with new higher efficiency units. New split system and packaged units provide higher full load and part load efficiencies due to advances in inverter motor technologies, heat exchangers and higher efficiency refrigerants such as R410A which would be used in place of R22 that is currently used in the units.

This ECM includes one-for-one replacement of the older split system units with new higher efficiency systems which include new evaporator coils and refrigerant lines as well as indoor units. It is recommended to fully evaluate the capacity needed for all new systems prior to moving forward with this ECM. A summary of the unit replacements for this ECM can be found in the table below:

| IMPLEMENTATION SUMMARY | | | | | |
|------------------------|-----------------------------|-----------------|--------------------------|----------------------|--------------------------------|
| ECM INPUTS | SERVICE FOR | NUMBER OF UNITS | COOLING CAPACITY, BTU/HR | TOTAL CAPACITY, TONS | REPLACE UNIT WITH |
| SS | IDF Closets/Interior Spaces | 11 | 12,000 | 1.0 | Airedale Ductless Split System |
| Total | | 11 | 12,000 | 11.0 | |

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

Energy Savings Calculations:

Cooling Energy Savings:

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

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

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

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

| ENERGY SAVINGS CALCULATIONS | | | | | | | |
|-----------------------------|--------------------------|----------------------|---------------------|------------------|------------|--------------------|-------------------|
| ECM INPUTS | COOLING CAPACITY, BTU/Hr | ANNUAL COOLING HOURS | EXISTING UNITS SEER | SPLIT UNITS SEER | # OF UNITS | ENERGY SAVINGS kWh | DEMAND SAVINGS kW |
| SS | 12,000 | 3,200 | 9 SEER | 15.5 SEER | 11 | 19,682 | 6.2 |
| Total | | | | | 11 | 19,682 | 6.2 |

Project Cost, Incentives and Maintenance Savings

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

| COST & SAVINGS SUMMARY | | | | | | | |
|------------------------|----------------|------------|------------|---------|----------|---------------|----------------|
| ECM INPUTS | INSTALLED COST | # OF UNITS | TOTAL COST | REBATES | NET COST | ENERGY SAVING | PAY BACK YEARS |
| SS | \$48,148 | 11 | \$48,148 | \$2,070 | \$46,078 | \$2,342 | 19.7 |
| Total | \$48,148 | \$11 | \$48,148 | \$2,070 | \$46,078 | \$2,342 | 19.7 |

Energy Savings Summary:

| ECM #9 - ENERGY SAVINGS SUMMARY | |
|--|---------------|
| Installation Cost (\$): | \$48,148 |
| NJ Smart Start Equipment Incentive (\$): | \$2,070 |
| Net Installation Cost (\$): | \$46,078 |
| Maintenance Savings (\$/Yr): | \$0 |
| Energy Savings (\$/Yr): | \$2,342 |
| Total Yearly Savings (\$/Yr): | \$2,342 |
| Estimated ECM Lifetime (Yr): | 15 |
| Simple Payback | 19.7 |
| Simple Lifetime ROI | -23.8% |
| Simple Lifetime Maintenance Savings | \$0 |
| Simple Lifetime Savings | \$35,130 |
| Internal Rate of Return (IRR) | -3% |
| Net Present Value (NPV) | (\$18,119.27) |

ECM #10: Install Domestic Water Booster Skid w/VFD

Description:

Domestic Water is supplied to the High School building via a set of three (3) domestic water booster pumps. The pump skid is fairly old and the pump motors are standard efficiency motors. The pump set operates 24/7. Modern domestic water booster pump systems utilize variable frequency drives and advanced controls in order to vary flow based on the facility water demand.

This ECM replaces the existing domestic cold water booster pump set with a new variable flow domestic booster pump set. The new pump set includes new pumps, premium efficiency motors, variable frequency drives and controls. The basis for this ECM is Delta Pak ES System variable flow domestic booster pump control system.

Energy Savings Calculations:

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

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

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

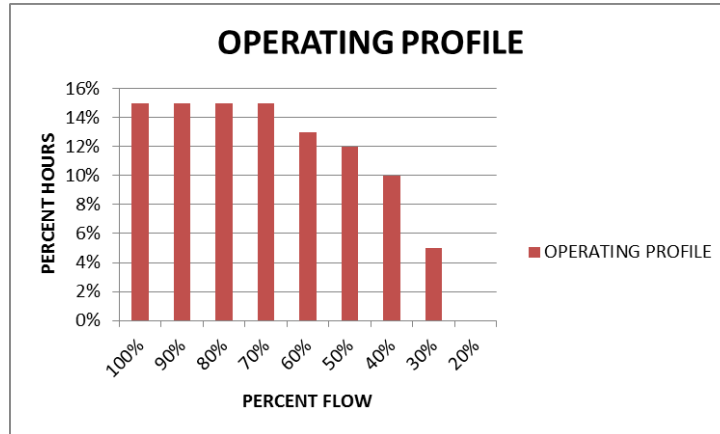
$$\text{Energy Cost (\$)} = \text{Total Consumption (kWh)} \times \text{Average Cost of Electric} \left(\frac{\$}{\text{kWh}} \right)$$

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

$$Q = \text{Flow}, \quad n = \text{RPM}, \quad p = \text{total pressure}$$

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

Estimated Operating Profile with VFD



Energy Savings Summary:

| ECM #10 - ENERGY SAVINGS SUMMARY | |
|---|--------------|
| Installation Cost (\$): | \$27,888 |
| NJ Smart Start Equipment Incentive (\$): | \$0 |
| Net Installation Cost (\$): | \$27,888 |
| Maintenance Savings (\$/Yr): | \$0 |
| Energy Savings (\$/Yr): | \$1,853 |
| Total Yearly Savings (\$/Yr): | \$1,853 |
| Estimated ECM Lifetime (Yr): | 15 |
| Simple Payback | 15.0 |
| Simple Lifetime ROI | -0.3% |
| Simple Lifetime Maintenance Savings | \$0 |
| Simple Lifetime Savings | \$27,795 |
| Internal Rate of Return (IRR) | 0% |
| Net Present Value (NPV) | (\$5,766.51) |

ECM #11: Vending Miser Controls

Description:

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

Cold beverage machines regularly operate inefficiently trying to maintain a constant cool temperature within the machine and snack machines with no cooling usually have lights that operate 24/7. The VendingMiser® system incorporates innovative energy-saving technology into a small plug-and-play device that in conjunction with a passive infrared sensor regulate the operation of the cold beverage and snack machines based on occupancy and room temperature. This ECM approximates the installation of nine (9) of these control systems for the cold beverage machines and refrigerated drink display cases.

Energy Savings Calculations:

See **Vending Miser Appendix** for calculation methods and analysis.

Energy Savings Summary:

| ECM #11 - ENERGY SAVINGS SUMMARY | |
|---|-------------|
| Installation Cost (\$): | \$1,611 |
| NJ Smart Start Equipment Incentive (\$): | \$0 |
| Net Installation Cost (\$): | \$1,611 |
| Maintenance Savings (\$/Yr): | \$0 |
| Energy Savings (\$/Yr): | \$2,140 |
| Total Yearly Savings (\$/Yr): | \$2,140 |
| Estimated ECM Lifetime (Yr): | 15 |
| Simple Payback | 0.8 |
| Simple Lifetime ROI | 1892.8% |
| Simple Lifetime Maintenance Savings | \$0 |
| Simple Lifetime Savings | \$32,104 |
| Internal Rate of Return (IRR) | 133% |
| Net Present Value (NPV) | \$23,939.05 |

ECM #12: CRT Monitor Replacement

Description:

The High School still utilizes a large amount of CRT Monitors for use by its staff and students. These monitors not only utilize more energy in operating mode, but also while being in idle mode. Typical monitors throughout the buildings consisted of 17 inch size monitors.

This ECM will replace all remaining twenty seven (27) existing CRT monitors throughout the school with new 19" Widescreen Dell LCD Model E1913. It is also assumed that the IT department will distribute and install the monitors throughout the district.

Energy Savings Calculations:

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

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

Qty = Quantity

Op Hrs = Operating Hours per Year

Idle Hrs = Idle Hours per Year

P_o = Operating Power Consumption Watts

P_i = Idle Power Consumption Watts

| CRT MONITOR REPLACEMENT CALCULATIONS | | | |
|---|---|-----------------|----------------|
| ECM INPUTS | EXISTING | PROPOSED | SAVINGS |
| ECM INPUTS | 17" CRT | 19" LCD | |
| # of Monitors | 27 | 27 | |
| Power Cons. (W) | 71 | 23 | 48 |
| Idle Power Cons. (W) | 5 | 0.5 | 4.5 |
| Operating Hrs per Week | 40 | 40 | |
| Operating Weeks per Yr | 42 | 42 | |
| Idle Hrs per Week | 128 | 128 | |
| Idle Weeks per Yr | 42 | 42 | |
| Elec Cost (\$/kWh) | 0.119 | 0.119 | |
| ENERGY SAVINGS CALCULATIONS | | | |
| ECM RESULTS | EXISTING | PROPOSED | SAVINGS |
| Electric Demand (kW) | 1.917 | 0.621 | 1.296 |
| Electric Usage (kWh) | 3,946 | 1,116 | 2,830 |
| Energy Cost (\$) | \$470 | \$133 | \$337 |
| COMMENTS: | Savings Based on Dell 17: CRT Monitor Compared with Dell 19 " LCD Model E1913 | | |

Project Cost:

Project Cost is based on the list price of new monitors with sound bar of \$130 per unit.

Energy Savings Summary:

| ECM #12 - ENERGY SAVINGS SUMMARY | |
|---|----------|
| Installation Cost (\$): | \$3,510 |
| NJ Smart Start Equipment Incentive (\$): | \$0 |
| Net Installation Cost (\$): | \$3,510 |
| Maintenance Savings (\$/Yr): | \$0 |
| Energy Savings (\$/Yr): | \$337 |
| Total Yearly Savings (\$/Yr): | \$337 |
| Estimated ECM Lifetime (Yr): | 15 |
| Simple Payback | 10.4 |
| Simple Lifetime ROI | 44.0% |
| Simple Lifetime Maintenance Savings | \$0 |
| Simple Lifetime Savings | \$5,055 |
| Internal Rate of Return (IRR) | 5% |
| Net Present Value (NPV) | \$513.08 |

ECM #13: Set Computers to Automatic Stand-by or Hibernate Modes

Description:

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

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

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

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

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

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

Energy Savings Calculations:

| | |
|--|-----|
| No. of CRT Computers: | 333 |
| Operating Weeks per Yr: | 42 |
| Estimated percentage of computers left ON overnight: | 75% |

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

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

The cost of configuring the computers to automatically sleep or hibernate is based on 5 minutes per computer per technician at an hourly rate indicated below.

Implementation Costs: = # Computers X Configuration Time X Cost per Hour
 = 333 Computers X 5 Minutes/Computer X \$100 per Hour
 = \$2,775

| AUTOMATIC SLEEP OR HIBERNATE MODES FOR COMPUTERS | | | |
|---|--|-----------------|----------------|
| ECM INPUTS | EXISTING | PROPOSED | SAVINGS |
| ECM INPUTS | Manual Operation | Auto Power Save | - |
| # of Computers | 333 | 333 | - |
| % Computers left ON | 75% | 75% | - |
| Power when left ON (Watt) | 50 | 50 | - |
| Power at Stand-by (Watt) | 5 | 5 | - |
| Power at Hibernate (Watt) | 4 | 4 | - |
| Power when OFF (Watt) | 0 | 0 | - |
| Operating Weeks per Yr | 42 | 42 | - |
| Operating Hours per Week | 168 | 168 | - |
| Hours/Wk Computers ON | 120 | 20 | - |
| Hours/Wk at Sleep Mode | 0 | 20 | - |
| Hours/Wk at Hibernate Mode | 0 | 80 | - |
| Hours/Wk at Power Down | 48 | 48 | - |
| Elec Cost (\$/kWh) | 0.119 | 0.119 | - |
| ENERGY SAVINGS CALCULATIONS | | | |
| ECM RESULTS | EXISTING | PROPOSED | SAVINGS |
| Electric Usage (kWh) | 62,937 | 11,538 | 51,399 |
| Energy Cost (\$) | \$7,490 | \$1,373 | \$6,116 |
| COMMENTS: | Calculation assumes computers currently run throughout school week and get shut down over the weekend. | | |

Energy Savings Summary:

| ECM #13 - ENERGY SAVINGS SUMMARY | |
|---|-------------|
| Installation Cost (\$): | \$2,770 |
| NJ Smart Start Equipment Incentive (\$): | \$0 |
| Net Installation Cost (\$): | \$2,770 |
| Maintenance Savings (\$/Yr): | \$0 |
| Energy Savings (\$/Yr): | \$6,116 |
| Total Yearly Savings (\$/Yr): | \$6,116 |
| Estimated ECM Lifetime (Yr): | 15 |
| Simple Payback | 0.5 |
| Simple Lifetime ROI | 3211.9% |
| Simple Lifetime Maintenance Savings | \$0 |
| Simple Lifetime Savings | \$91,740 |
| Internal Rate of Return (IRR) | 221% |
| Net Present Value (NPV) | \$70,242.41 |

ECM #14: Pool Cover

Description:

The Pool is used throughout the year at the High School however there is still a significant amount of time when the pool area is unoccupied. While the pool is occupied and unoccupied evaporation occurs from the pool to the space resulting in heat loss and water loss. As the evaporation occurs the buildings boiler system and domestic water system make up for the losses heat and water. Over the course of a year these losses add up to almost 70% of the operating cost of an indoor pool.

This ECM recommends installing a pool cover that used during unoccupied periods to reduce the evaporation rate. This measure includes the purchasing of the cover and roller.

Description of Scope:

Preliminary Scope

- Contact pool equipment suppliers to assist in cover selection and obtain competitive pricing.

Construction Scope

- Purchase Pool Cover and Roller Assembly.
- Install Roller and Pool Cover.

Additional Maintenance & Implementation Risk:

Installation of this measure will not have a significant impact on pool maintenance costs.

There is no risk involved with implementation of this measure.

Energy Savings Calculations:

Savings are calculated based using the Shah described in “Calculating Evaporation from Indoor Water Pools” (Shah, 2004). Based on DOE data pool covers can save anywhere from 25% to 50% of the evaporative losses during unoccupied times.

Water savings were also estimated for this ECM based on an estimated water rate of \$5.00 per 1,000 gallons.

Pool Occupied Hours = Weekdays 10 Hours / Day (winter); 6 Hours / Day (summer)

Pool Unoccupied Hours = Weekdays 14 Hours / Day (winter); 18 Hours / Day (summer)

Evaporative Losses =

$$\text{Evaporation Rate} \left(\frac{\text{lbs}}{\text{hr}} \right) \times \text{Hours} \times \text{Latent Heat of Evaporation} \left(\frac{\text{Btu}}{\text{lb}} \right) \times$$

$$\text{Infiltration Loss Factor} \times \frac{1}{\text{Efficiency}} \times \frac{1 \text{ kBtu}}{1,000 \text{ Btu}}$$

| POOL COVER SAVINGS CALCULATION | | | |
|---------------------------------------|-----------------|-----------------|----------------|
| ECM INPUTS | EXISTING | PROPOSED | SAVINGS |
| Pool Area (sq-ft.) | 4,036 | | |
| Pool Temperature (°F) | 80 | | |
| Air Temperature (°F) | 82 | | |
| Evaporation Rate Occupied (lbs/hr) | 154.19 | 154.19 | 0.00 |
| Evaporation Rate Unoccupied (lbs/hr) | 58.93 | 44.20 | 14.73 |
| Occupied Hours per Year | 1,340 | | |
| Unoccupied Hours per Year | 7,420 | | |
| Pool Heater Efficiency | 85.0% | | |
| Occupied Losses (kBtu) | 224,091 | 224,091 | 0 |
| Unoccupied Losses (kBtu) | 474,256 | 355,692 | 118,564 |
| Natural Gas Cost (\$/therm) | \$0.91 | \$0.91 | |
| Water Cost (\$/1000gal) | \$5.00 | \$5.00 | |
| ENERGY SAVINGS CALCULATIONS | | | |
| ECM RESULTS | EXISTING | PROPOSED | SAVINGS |
| Natural Gas Usage (therm) | 6,983 | 5,798 | 1,186 |
| Water Usage (1,000 gallons) | 77 | 64 | 13 |
| Energy Cost (\$) | \$6,741 | \$5,597 | \$1,145 |
| COMMENTS: | | | |

Energy Savings Summary:

| ECM #14 - ENERGY SAVINGS SUMMARY | |
|---|---------------------|
| Installation Cost (\$): | \$16,451 |
| NJ Smart Start Equipment Incentive (\$): | \$0 |
| Net Installation Cost (\$): | \$16,451 |
| Maintenance Savings (\$/Yr): | \$0 |
| Energy Savings (\$/Yr): | \$1,145 |
| Total Yearly Savings (\$/Yr): | \$1,145 |
| Estimated ECM Lifetime (Yr): | 16 |
| Simple Payback | 14.4 |
| Simple Lifetime ROI | 11.4% |
| Simple Lifetime Maintenance Savings | \$0 |
| Simple Lifetime Savings | \$18,320 |
| Internal Rate of Return (IRR) | 1% |
| Net Present Value (NPV) | (\$2,068.54) |

REM #1: 782.55 kW Solar System**Description:**

North Brunswick Township High School has available roof and parking lot space that could accommodate a significant amount of solar generation. Based on the available areas a 782.55 KW DC solar array could be installed, assuming the existing roof structure is capable of supporting an array. The array will produce approximately 914,714 kilowatt-hours annually that will reduce the overall electric usage of the facility by 16.4%.

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 | |
|---|-------------------------|
| Installation Cost (\$): | \$4,890,344 |
| NJ Smart Start Equipment Incentive (\$): | \$0 |
| Net Installation Cost (\$): | \$4,890,344 |
| Maintenance Savings (\$/Yr): | \$174,788 |
| Energy Savings (\$/Yr): | \$108,851 |
| Total Yearly Savings (\$/Yr): | \$283,639 |
| Estimated ECM Lifetime (Yr): | 15 |
| Simple Payback | 17.2 |
| Simple Lifetime ROI | -13.0% |
| Simple Lifetime Maintenance Savings | \$2,621,820 |
| Simple Lifetime Savings | \$4,254,585 |
| Internal Rate of Return (IRR) | -2% |
| Net Present Value (NPV) | (\$1,504,280.03) |

V. ADDITIONAL RECOMMENDATIONS

The following recommendations include no cost/low cost measures, Operation & Maintenance (O&M) items, and water conservation measures with attractive paybacks. These measures are not eligible for the Smart Start Buildings incentives from the office of Clean Energy but save energy none the less.

- A. Chemically clean the condenser and evaporator coils periodically to optimize efficiency. Poorly maintained heat transfer surfaces can reduce efficiency 5-10%.
- B. Maintain all weather stripping on windows and doors.
- C. Clean all light fixtures to maximize light output.
- D. Provide more frequent air filter changes to decrease overall system power usage and maintain better IAQ.
- E. Ensure outside air dampers are functioning properly and only open during occupied mode.

APPENDIX A

ECM COST & SAVINGS BREAKDOWN

CONCORD ENGINEERING GROUP

North Brunswick Township BOE - High School

ECM ENERGY AND FINANCIAL COSTS AND SAVINGS SUMMARY

| ECM NO. | DESCRIPTION | INSTALLATION COST | | | | YEARLY SAVINGS | | | ECM LIFETIME | LIFETIME ENERGY SAVINGS | LIFETIME MAINTENANCE SAVINGS | LIFETIME ROI | SIMPLE PAYBACK | INTERNAL RATE OF RETURN (IRR) | NET PRESENT VALUE (NPV) |
|---|--|-------------------|-----------|---------------------|-----------------------|----------------|---------------|-----------|--------------|--------------------------------|--------------------------------------|--|-----------------------------|--------------------------------------|-------------------------------------|
| | | MATERIAL | LABOR | REBATES, INCENTIVES | NET INSTALLATION COST | ENERGY | MAINT. / SREC | TOTAL | | (Yearly Saving * ECM Lifetime) | (Yearly Maint Saving * ECM Lifetime) | (Lifetime Savings - Net Cost) / (Net Cost) | (Net cost / Yearly Savings) | $\sum_{n=0}^N \frac{C_n}{(1+IRR)^n}$ | $\sum_{n=0}^N \frac{C_n}{(1+DR)^n}$ |
| | | (\$) | (\$) | (\$) | (\$) | (\$/Yr) | (\$/Yr) | (\$/Yr) | | (Yr) | (\$) | (\$) | (%) | (Yr) | (\$) |
| ECM #1 | Lighting Upgrade | \$38,465 | \$24,540 | \$0 | \$63,005 | \$11,344 | \$0 | \$11,344 | 15 | \$170,160 | \$0 | 170.1% | 5.6 | 16.08% | \$72,418.94 |
| ECM #2 | Lighting Controls | \$20,700 | \$3,750 | \$1,615 | \$22,835 | \$4,239 | \$0 | \$4,239 | 15 | \$63,585 | \$0 | 178.5% | 5.4 | 16.74% | \$27,769.91 |
| ECM #3 | NEMA Premium Pump Motors | \$2,538 | \$1,368 | \$180 | \$3,726 | \$153 | \$0 | \$153 | 15 | \$2,295 | \$0 | -38.4% | 24.4 | -5.52% | (\$1,899.50) |
| ECM #4 | Boiler Replacement - 500 Wing | \$42,844 | \$36,314 | \$3,182 | \$75,976 | \$941 | \$0 | \$941 | 25 | \$23,525 | \$0 | -69.0% | 80.7 | -7.53% | (\$59,590.17) |
| ECM #5 | Domestic Hot Water Boiler Replacement | \$29,144 | \$23,582 | \$1,855 | \$50,871 | \$2,754 | \$0 | \$2,754 | 25 | \$68,850 | \$0 | 35.3% | 18.5 | 2.48% | (\$2,915.13) |
| ECM #6 | Pool Boiler Replacement | \$24,994 | \$22,835 | \$1,855 | \$45,974 | \$406 | \$0 | \$406 | 25 | \$10,150 | \$0 | -77.9% | 113.2 | -9.33% | (\$38,904.20) |
| ECM #7 | Air Cooled Chiller Replacement - 500 Wine | \$48,100 | \$42,500 | \$3,000 | \$87,600 | \$5,722 | \$0 | \$5,722 | 20 | \$114,440 | \$0 | 30.6% | 15.3 | 2.69% | (\$2,471.09) |
| ECM #8 | Rooftop Unit Replacement | \$925,000 | \$878,750 | \$44,240 | \$1,759,510 | \$64,432 | \$0 | \$64,432 | 15 | \$966,480 | \$0 | -45.1% | 27.3 | -6.70% | (\$990,324.97) |
| ECM #9 | Split System AC Unit Replacement (Ductless Splits) | \$21,267 | \$26,881 | \$2,070 | \$46,078 | \$2,342 | \$0 | \$2,342 | 15 | \$35,130 | \$0 | -23.8% | 19.7 | -3.21% | (\$18,119.27) |
| ECM #10 | Domestic Water VFD Booster Skid | \$18,113 | \$9,775 | \$0 | \$27,888 | \$1,853 | \$0 | \$1,853 | 15 | \$27,795 | \$0 | -0.3% | 15.0 | 0.00% | \$0.00 |
| ECM #11 | Vending Machine Controls | \$1,611 | \$0 | \$0 | \$1,611 | \$2,140 | \$0 | \$2,140 | 15 | \$32,104 | \$0 | 1892.8% | 0.8 | 0.00% | \$0.00 |
| ECM #12 | CRT Computer Monitor Replacement | \$3,510 | \$0 | \$0 | \$3,510 | \$337 | \$0 | \$337 | 15 | \$5,055 | \$0 | 44.0% | 10.4 | 0.00% | \$0.00 |
| ECM #13 | Set Computers to Automatic Stand-by or Hibernate Modes | \$0 | \$2,770 | \$0 | \$2,770 | \$6,116 | \$0 | \$6,116 | 15 | \$91,740 | \$0 | 3211.9% | 0.5 | 0.00% | \$0.00 |
| ECM #14 | Pool Cover | \$16,451 | \$0 | \$0 | \$16,451 | \$1,145 | \$0 | \$1,145 | 16 | \$18,320 | \$0 | 11.4% | 14.4 | 0.00% | \$0.00 |
| REM RENEWABLE ENERGY AND FINANCIAL COSTS AND SAVINGS SUMMARY | | | | | | | | | | | | | | | |
| REM #1 | 782.55 KW Solar Array | \$4,890,344 | \$0 | \$0 | \$4,890,344 | \$108,851 | \$174,788 | \$283,639 | 15 | \$4,254,585 | \$2,621,820 | -13.0% | 17.2 | -1.69% | (\$1,504,280.03) |

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

APPENDIX B

Concord Engineering Group, Inc.

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SmartStart Building Incentives

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

North Brunswick BOE - NBT High School

Building ID: 3316285
For 12-month Period Ending: July 31, 2012¹
Date SEP becomes ineligible: N/A

Date SEP Generated: November 07, 2012

Facility

North Brunswick BOE - NBT High School
 98 Raider Road
 North Brunswick, NJ 08902

Facility Owner

North Brunswick Township Board of
 Education
 300 Old Georges Road
 North Brunswick, NJ 08902

Primary Contact for this Facility

Susan Irons
 300 Old Georges Road
 North Brunswick, NJ 08902

Year Built: 1970

Gross Floor Area (ft²): 387,456

Energy Performance Rating² (1-100) 41

Site Energy Use Summary³

| | |
|-----------------------------------|------------|
| Electricity - Grid Purchase(kBtu) | 18,919,890 |
| Natural Gas (kBtu) ⁴ | 10,167,410 |
| Total Energy (kBtu) | 29,087,300 |

Energy Intensity⁴

| | |
|-----------------------------------|-----|
| Site (kBtu/ft ² /yr) | 75 |
| Source (kBtu/ft ² /yr) | 191 |

Emissions (based on site energy use)

| | |
|---|-------|
| Greenhouse Gas Emissions (MtCO ₂ e/year) | 3,220 |
|---|-------|

Electric Distribution Utility

Public Service Electric & Gas Co

National Median Comparison

| | |
|--|----------------|
| National Median Site EUI | 70 |
| National Median Source EUI | 177 |
| % Difference from National Median Source EUI | 8% |
| 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 |

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.

| |
|--|
| |
| 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

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 | North Brunswick BOE - NBT High 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 | 98 Raider Road, North Brunswick, NJ 08902 | 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"/> |
| NBT High School (K-12 School) | | | | |
| CRITERION | VALUE AS ENTERED IN PORTFOLIO MANAGER | VERIFICATION QUESTIONS | NOTES | <input checked="" type="checkbox"/> |
| Gross Floor Area | 387,456 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? | Yes | Is this building normally open at all on the weekends? This includes activities beyond the work conducted by maintenance, cleaning, and security personnel. Weekend activity could include any time when the space is used for classes, performances or other school or community activities. If the building is open on the weekend as part of the standard schedule during one or more seasons, the building should select "yes" for open weekends. The "yes" response should apply whether the building is open for one or both of the weekend days. | | <input type="checkbox"/> |
| Number of PCs | 420 | 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 | 90 % | 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? | Yes | Is this building a high school (teaching grades 10, 11, and/or 12)? If the building teaches to high school students at all, the user should check 'yes' to 'high school'. For example, if the school teaches to grades K-12 (elementary/middle and high school), the user should check 'yes' to 'high school'. | | <input type="checkbox"/> |
|---------------------|-----|--|--|--------------------------|

ENERGY STAR® Data Checklist for Commercial Buildings

Energy Consumption

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

| Fuel Type: Electricity | | |
|---|------------|--|
| Meter: electric (kWh (thousand Watt-hours)) Space(s): Entire Facility Generation Method: Grid Purchase | | |
| Start Date | End Date | Energy Use (kWh (thousand Watt-hours)) |
| 06/29/2012 | 07/28/2012 | 548,747.00 |
| 05/29/2012 | 06/28/2012 | 502,633.00 |
| 04/29/2012 | 05/28/2012 | 447,552.00 |
| 03/29/2012 | 04/28/2012 | 372,397.00 |
| 02/29/2012 | 03/28/2012 | 455,076.00 |
| 01/29/2012 | 02/28/2012 | 528,635.00 |
| 12/29/2011 | 01/28/2012 | 497,787.00 |
| 11/29/2011 | 12/28/2011 | 443,603.00 |
| 10/29/2011 | 11/28/2011 | 411,251.00 |
| 09/29/2011 | 10/28/2011 | 390,835.00 |
| 08/29/2011 | 09/28/2011 | 488,985.00 |
| electric Consumption (kWh (thousand Watt-hours)) | | 5,087,501.00 |
| electric Consumption (kBtu (thousand Btu)) | | 17,358,553.41 |
| Total Electricity (Grid Purchase) Consumption (kBtu (thousand Btu)) | | 17,358,553.41 |
| 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) |
| 06/29/2012 | 07/28/2012 | 0.00 |
| 05/29/2012 | 06/28/2012 | 0.00 |
| 04/29/2012 | 05/28/2012 | 2,240.00 |
| 03/29/2012 | 04/28/2012 | 6,826.00 |
| 02/29/2012 | 03/28/2012 | 3,285.00 |
| 01/29/2012 | 02/28/2012 | 26,352.00 |
| 12/29/2011 | 01/28/2012 | 24,517.00 |
| 11/29/2011 | 12/28/2011 | 15,624.00 |
| 10/29/2011 | 11/28/2011 | 12,151.00 |
| 09/29/2011 | 10/28/2011 | 1,712.00 |
| 08/29/2011 | 09/28/2011 | 1,446.00 |

| | |
|--|--------------------------|
| gas Consumption (therms) | 94,153.00 |
| gas Consumption (kBtu (thousand Btu)) | 9,415,300.00 |
| Total Natural Gas Consumption (kBtu (thousand Btu)) | 9,415,300.00 |
| 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

North Brunswick BOE - NBT High School
98 Raider Road
North Brunswick, NJ 08902

Facility Owner

North Brunswick Township Board of Education
300 Old Georges Road
North Brunswick, NJ 08902

Primary Contact for this Facility

Susan Irons
300 Old Georges Road
North Brunswick, NJ 08902

General Information

| North Brunswick BOE - NBT High School | |
|--|---------------|
| Gross Floor Area Excluding Parking: (ft ²) | 387,456 |
| Year Built | 1970 |
| For 12-month Evaluation Period Ending Date: | July 31, 2012 |

Facility Space Use Summary

| NBT High School | |
|---|---------------------|
| Space Type | K-12 School |
| Gross Floor Area (ft ²) | 387,456 |
| Open Weekends? | Yes |
| Number of PCs | 420 |
| Number of walk-in refrigeration/freezer units | 2 |
| Presence of cooking facilities | Yes |
| Percent Cooled | 90 |
| Percent Heated | 100 |
| Months ° | 10 |
| High School? | Yes |
| School District ° | North Brunswick Twp |

Energy Performance Comparison

| Performance Metrics | Evaluation Periods | | Comparisons | | |
|---|-------------------------------------|--------------------------------------|--------------|--------|-----------------|
| | Current (Ending Date 07/31/2012) | Baseline (Ending Date 07/31/2012) | Rating of 75 | Target | National Median |
| Energy Performance Rating | 41 | 41 | 75 | N/A | 50 |
| Energy Intensity | | | | | |
| Site (kBtu/ft ²) | 75 | 75 | 54 | N/A | 70 |
| Source (kBtu/ft ²) | 191 | 191 | 138 | N/A | 177 |
| 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 | 3,220 | 3,220 | 2,333 | N/A | 2,983 |
| kgCO ₂ e/ft ² /year | 8 | 8 | 6 | N/A | 7 |

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

Notes:

- o - This attribute is optional.
- d - A default value has been supplied by Portfolio Manager.

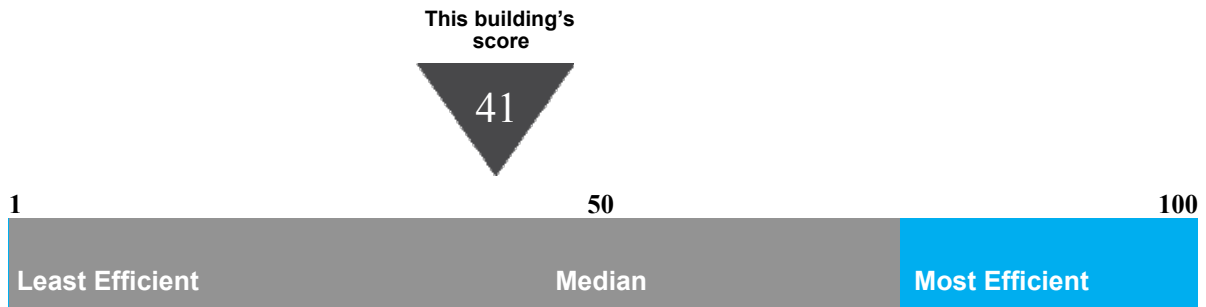
Statement of Energy Performance

2012

North Brunswick BOE - NBT High School
98 Raider Road
North Brunswick, NJ 08902

Portfolio Manager Building ID: 3316285

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 191 kBtu per square foot per year.*

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

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

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

Date of certification



APPENDIX D

MAJOR EQUIPMENT LIST

Concord Engineering Group

North Brunswick Township High School

AC Units

| Tag | RTU-14 | RTU-13 | RTU-2,6,8 |
|--------------------------------------|-----------------------|-----------------------|------------------------|
| Unit Type | Packaged Rooftop Unit | Packaged Rooftop Unit | Packaged Rooftop Unit |
| Qty | 1 | 1 | 3 |
| Location | Roof | Roof | Roof |
| Area Served | 2006 Addition | 2006 Addition | 2006 Addition |
| Manufacturer | AAON | AAON | Seasons 4 |
| Model # | RM-005-3-0-AA01-329 | RM-008-3-0-AA02-339 | 3MJK25-0372-MN7.0-13SE |
| Serial # | 200404-AMGE05186 | 200403-AMGH0508 | A8066-0203RTU-8 |
| Cooling Type | DX, R410A | DX, R410A | DX, R-22 |
| Cooling Capacity (Tons) | 5 Tons | 8 Tons | 25 Tons |
| Cooling Efficiency (SEER/EER) | 12.2 SEER | 11.2 EER | 10 EER |
| Heating Type | Gas HX | Gas HX | Gas HX |
| Heating Input (MBH) | 90 MBH | 180 MBH | 700 MBH |
| Efficiency | 81% | 81% | 80% |
| Fuel | Natural Gas | Natural Gas | Natural Gas |
| Approx Age | 6 | 6 | 6 |
| ASHRAE Service Life | 15 | 15 | 15 |
| Remaining Life | 9 | 9 | 9 |
| Comments | | | |

Note:

"N/A" = Not Applicable.

"-" = Info Not Available

AC Units

| Tag | SS-1 | RTU-7 | RTU-4A,4B,5 |
|--|---------------------------------|----------------------------|----------------------------|
| Unit Type | Split System Condensing Unit | Packaged Rooftop Unit | Packaged Rooftop Unit |
| Qty | 11 | 1 | 3 |
| Location | Roof | Roof | Roof |
| Area Served | Data Closet | 2006 Addition | 2006 Addition |
| Manufacturer | EMI | Seasons 4 | Seasons 4 |
| Model # | SCC12DM0000AA0A | 3MPK27-0582-MN10.- 20SE | 3MJK25-0392-MN7.0- 13SE |
| Serial # | 1-03-B-3974-08 | A8066-0205RTU-7 | A8066-0205RTU-4B |
| Cooling Type | DX, R-22 | DX, R-22 | DX, R-22 |
| Cooling Capacity (Tons) | 1 Ton | 27 Tons | 25 Tons |
| Cooling Efficiency (SEER/EER) | 13 SEER / 11.7 EER | 10 EER | 10 EER |
| Heating Type | N/A | Gas HX | Gas HX |
| Heating Input (MBH) | N/A | 1040 MBH | 700 MBH |
| Efficiency | N/A | 80% | 80% |
| Fuel | N/A | Natural Gas | Natural Gas |
| Approx Age | 9 | 6 | 6 |
| ASHRAE Service Life | 15 | 15 | 15 |
| Remaining Life | 6 | 9 | 9 |
| Comments | | | |

Note:

"N/A" = Not Applicable.

"-" = Info Not Available

AC Units

| Tag | RTU-3 | RTU-1 | RT5,RT6,RT10,RT11 |
|--------------------------------------|-------------------------|------------------------|----------------------------------|
| Unit Type | Packaged Rooftop Unit | Packaged Rooftop Unit | Packaged Multi-Zone Rooftop Unit |
| Qty | 1 | 1 | 4 |
| Location | Roof | Roof | Roof |
| Area Served | 2006 Addition | 2006 Addition | Original Bldg, Classrooms |
| Manufacturer | Seasons 4 | Seasons 4 | Nesbitt |
| Model # | 3MJK25-00402-MN7.0-14SE | 3PJK27-0482-MN9.8-17SE | RMA100NG5C3215H B10B17000B0B |
| Serial # | A8066-0205RTU-4B | A8066-0205RTU-1 | 9507-61362 |
| Cooling Type | DX, R-22 | DX, R-22 | DX, R-22 |
| Cooling Capacity (Tons) | 25 Tons | 27 Tons | 32 Tons |
| Cooling Efficiency (SEER/EER) | 10 EER | 10 EER | 9 EER |
| Heating Type | Gas HX | Gas HX | Gas HX |
| Heating Input (MBH) | 700 MBH | 975 MBH | 500 MBH |
| Efficiency | 80% | 80% | 80% |
| Fuel | Natural Gas | Natural Gas | Natural Gas |
| Approx Age | 6 | 6 | 22 |
| ASHRAE Service Life | 15 | 15 | 15 |
| Remaining Life | 9 | 9 | (7) |
| Comments | | | |

Note:

"N/A" = Not Applicable.

"-" = Info Not Available

AC Units

| Tag | RT7 | RT14 | RT18 |
|--------------------------------------|----------------------------------|----------------------------------|----------------------------------|
| Unit Type | Packaged Multi-Zone Rooftop Unit | Packaged Multi-Zone Rooftop Unit | Packaged Multi-Zone Rooftop Unit |
| Qty | 1 | 1 | 1 |
| Location | Roof | Roof | Roof |
| Area Served | Original Bldg, Classrooms | Original Bldg, Classrooms | Original Bldg, Classrooms |
| Manufacturer | Nesbitt | Nesbitt | Nesbitt |
| Model # | RMA100NG5C3010G B8B1700B0B | RMA100NG8C321 | RMA100NG3C24H5G B07B1700B0B |
| Serial # | 9506-61364 | 9507-31371 | 9507-61375 |
| Cooling Type | DX, R-22 | DX, R-22 | DX, R-22 |
| Cooling Capacity (Tons) | 30 Tons | 32 Tons | 24 Tons |
| Cooling Efficiency (SEER/EER) | 9 EER | 9 EER | 9 EER |
| Heating Type | Gas HX | Gas HX | Gas HX |
| Heating Input (MBH) | 500 MBH | 800 MBH | 300 MBH |
| Efficiency | 80% | 80% | 80% |
| Fuel | Natural Gas | Natural Gas | Natural Gas |
| Approx Age | 22 | 22 | 22 |
| ASHRAE Service Life | 15 | 15 | 15 |
| Remaining Life | (7) | (7) | (7) |
| Comments | | | |

Note:

"N/A" = Not Applicable.

"-" = Info Not Available

AC Units

| Tag | RT17 | RT15,RT16 | RT12 |
|--------------------------------------|----------------------------------|----------------------------------|----------------------------------|
| Unit Type | Packaged Multi-Zone Rooftop Unit | Packaged Multi-Zone Rooftop Unit | Packaged Multi-Zone Rooftop Unit |
| Qty | 1 | 2 | 1 |
| Location | Roof | Roof | Roof |
| Area Served | Original Bldg, Classrooms | Original Bldg, Classrooms | Original Bldg, Classrooms |
| Manufacturer | Nesbitt | Nesbitt | Nesbitt |
| Model # | RMA100NG4C30H7G B05B1700B0B | RSA100NG5C30H5G B01B1700B0B | RMA100NG5C32H0H B0681700B0B |
| Serial # | 9507-61374 | 9507-61373 | 9507-61369 |
| Cooling Type | DX, R-22 | DX, R-22 | DX, R-22 |
| Cooling Capacity (Tons) | 30 Tons | 30 Tons | 32 Tons |
| Cooling Efficiency (SEER/EER) | 9 EER | 9 EER | 9 EER |
| Heating Type | Gas HX | Gas HX | Gas HX |
| Heating Input (MBH) | 400 MBH | 500 MBH | 500 MBH |
| Efficiency | 80% | 80% | 80% |
| Fuel | Natural Gas | Natural Gas | Natural Gas |
| Approx Age | 22 | 22 | 22 |
| ASHRAE Service Life | 15 | 15 | 15 |
| Remaining Life | (7) | (7) | (7) |
| Comments | | | |

Note:

"N/A" = Not Applicable.

"-" = Info Not Available

AC Units

| Tag | RT9, RT20 | RT13 | RT8 |
|--------------------------------------|----------------------------------|----------------------------------|----------------------------------|
| Unit Type | Packaged Multi-Zone Rooftop Unit | Packaged Multi-Zone Rooftop Unit | Packaged Multi-Zone Rooftop Unit |
| Qty | 2 | 1 | 1 |
| Location | Roof | Roof | Roof |
| Area Served | Original Bldg, Classrooms | Original Bldg, Classrooms | Original Bldg, Classrooms |
| Manufacturer | Nesbitt | Nesbitt | Nesbitt |
| Model # | RMA100NG5C30H0H B09B1700B0B | RMA100NG4C32H0H B08B1700B0B | RMA100NG6C3215H5 10B1700B0B |
| Serial # | 9507-61366 | 950761370 | 9507-61365 |
| Cooling Type | DX, R-22 | DX, R-22 | DX, R-22 |
| Cooling Capacity (Tons) | 30 Tons | 32 Tons | 32 Tons |
| Cooling Efficiency (SEER/EER) | 9 EER | 9 EER | 9 EER |
| Heating Type | Gas HX | Gas HX | Gas HX |
| Heating Input (MBH) | 500 MBH | 500 MBH | 600 MBH |
| Efficiency | 80% | 80% | 80% |
| Fuel | Natural Gas | Natural Gas | Natural Gas |
| Approx Age | 22 | 22 | 22 |
| ASHRAE Service Life | 15 | 15 | 15 |
| Remaining Life | (7) | (7) | (7) |
| Comments | | | |

Note:

"N/A" = Not Applicable.

"-" = Info Not Available

AC Units

| Tag | RT19 | RT1,RT2,RT3,RT4 | |
|--------------------------------------|----------------------------------|--------------------------------|-------------------------|
| Unit Type | Packaged Multi-Zone Rooftop Unit | Packaged Rooftop Unit | Remote Condensing Unit |
| Qty | 1 | 4 | 1 |
| Location | Roof | Roof | Roof |
| Area Served | Original Bldg, Classrooms | Main Gymnasium | Dehumidification Unit |
| Manufacturer | Nesbitt | Nesbitt | Dectron |
| Model # | RMA100NG4C3215H B05B1700B0B | RSA100NG6C3215GB 01B1700B0B | KVG116-9-2-2C- R410A |
| Serial # | 950761376 | 9506-61361 | D 2009090338 |
| Cooling Type | DX, R-22 | | DX, R410A |
| Cooling Capacity (Tons) | 32 Tons | 32 Tons | 35 Tons |
| Cooling Efficiency (SEER/EER) | 9 EER | 9 EER | - |
| Heating Type | Gas HX | Gas HX | N/A |
| Heating Input (MBH) | 400 MBH | 600 MBH | N/A |
| Efficiency | 80% | 80% | N/A |
| Fuel | Natural Gas | Natural Gas | N/A |
| Approx Age | 22 | 22 | 3 |
| ASHRAE Service Life | 15 | 15 | 15 |
| Remaining Life | (7) | (7) | 12 |
| Comments | | | |

Note:

"N/A" = Not Applicable.

"-" = Info Not Available

AC Units

| Tag | | RT25 | MUA-1 |
|--------------------------------------|--------------------------------|-----------------------|---------------------|
| Unit Type | Dehumidification Unit | Packaged Rooftop Unit | Make Up Air Unit |
| Qty | 1 | 1 | 1 |
| Location | Roof | Roof | Roof |
| Area Served | Pool | | |
| Manufacturer | Dectron | York | Cleanair Designs |
| Model # | RSH-122-7 | D_00 N300 | AH 600V |
| Serial # | A2009100007 | - | 0204V191 |
| Cooling Type | Connected to Dectron KVG116 | DX, R-22 | See York HA300 Unit |
| Cooling Capacity (Tons) | Connected to Dectron KVG116 | - | See York HA300 Unit |
| Cooling Efficiency (SEER/EER) | Connected to Dectron KVG116 | - | See York HA300 Unit |
| Heating Type | - | Gas HX | Gas HX |
| Heating Input (MBH) | - | 300 MBH | 320 MBH |
| Efficiency | - | 80% | 80% |
| Fuel | - | Natural Gas | Natural Gas |
| Approx Age | 3 | | 8 |
| ASHRAE Service Life | 15 | 15 | 15 |
| Remaining Life | 12 | 15 | 7 |
| Comments | | | |

Note:

"N/A" = Not Applicable.

"-" = Info Not Available

AC Units

| Tag | MUA-1 | RT21, 22 | |
|-------------------------------|------------------------|--------------------------------|-----------------------------|
| Unit Type | Remote Condensing Unit | Packaged Rooftop Unit | Split System Condenser |
| Qty | 1 | 2 | 3 |
| Location | Roof | Low Roof | Roof |
| Area Served | MUA-1 | Cafeteria | Computer Labs |
| Manufacturer | York | Nesbitt | APCO |
| Model # | HA300C00A4AAA2B | RMA100NG6C3015H B08B1700B0B | RCU948-4L / 3165-16- 40A |
| Serial # | (s)NMMM126900 | 9507-61378 | 28907 223812 |
| Cooling Type | DX, R-22 | DX, R-22 | DX, R-22 |
| Cooling Capacity (Tons) | 25 Tons | 30 Tons | 4 Tons |
| Cooling Efficiency (SEER/EER) | 11.5 EER | 9 EER | - |
| Heating Type | N/A | Gas HX | N/A |
| Heating Input (MBH) | N/A | 600 MBH | N/A |
| Efficiency | N/A | 80% | N/A |
| Fuel | N/A | Natural Gas | N/A |
| Approx Age | 8 | 22 | 23 |
| ASHRAE Service Life | 15 | 15 | 15 |
| Remaining Life | 7 | (7) | (8) |
| Comments | | | |

Note:

"N/A" = Not Applicable.

"-" = Info Not Available

AC Units

| Tag | RTU-9 | RTU-10 | |
|-------------------------------|------------------------|-----------------------|------------------------|
| Unit Type | Packaged Rooftop Unit | Packaged Rooftop Unit | Split System Condenser |
| Qty | 1 | 1 | 2 |
| Location | Roof | Roof | Roof |
| Area Served | Classrooms 574-579 | Classroom 560 | |
| Manufacturer | Seasons 4 | AAON | APCO |
| Model # | 3MJK25-0292-MN7.0-11SE | RM-007-3-0-AA01-339 | RCU924-1L / 3161-7-40A |
| Serial # | B8067-0703 RTU-9 | 200402-AMGG05183 | 28907 213082 |
| Cooling Type | DX, R-22 | DX, R-22 | DX, R-22 |
| Cooling Capacity (Tons) | 25 Tons | 7 Tons | 2 Tons |
| Cooling Efficiency (SEER/EER) | 10 EER | 10.3 EER | - |
| Heating Type | Gas HX | Gas HX | N/A |
| Heating Input (MBH) | 700 MBH | 180 MBH | N/A |
| Efficiency | 80% | 80% | N/A |
| Fuel | Natural Gas | Natural Gas | N/A |
| Approx Age | 6 | 6 | 23 |
| ASHRAE Service Life | 15 | 15 | 15 |
| Remaining Life | 9 | 9 | (8) |
| Comments | | | |

Note:

"N/A" = Not Applicable.

"-" = Info Not Available

AC Units

| | | | |
|--------------------------------------|------------------------|------------------------|--|
| Tag | | | |
| Unit Type | Split System Condenser | Split System Condenser | |
| Qty | 1 | 1 | |
| Location | On Grade | On Grade | |
| Area Served | Kitchen | Kitchen | |
| Manufacturer | WITT | WITT | |
| Model # | GLS200H22-E | WDL6L44-E | |
| Serial # | A04236935-0201 | A04236935-0301 | |
| Cooling Type | DX, R-22 | R-404A | |
| Cooling Capacity (Tons) | 2 Tons | 4.5 Tons | |
| Cooling Efficiency (SEER/EER) | - | - | |
| Heating Type | N/A | N/A | |
| Heating Input (MBH) | N/A | N/A | |
| Efficiency | N/A | N/A | |
| Fuel | N/A | N/A | |
| Approx Age | 8 | 8 | |
| ASHRAE Service Life | 15 | 15 | |
| Remaining Life | 7 | 7 | |
| Comments | | | |

Note:

"N/A" = Not Applicable.

"-" = Info Not Available

MAJOR EQUIPMENT LIST

Concord Engineering Group

North Brunswick Township High School

Boilers

| | | | |
|---------------------------------------|--------------------------|--------------------------|--|
| Tag | | | |
| Unit Type | Gas Fired Heating Boiler | Gas Fired Heating Boiler | |
| Qty | 1 | 2 | |
| Location | Mech Room | Rooftop Penthouse | |
| Area Served | Pool | Hot Water Loop | |
| Manufacturer | P-K Thermific | Teledyne | |
| Model # | D-1000 | - | |
| Serial # | - | NB53426 | |
| Input Capacity (Btu/Hr) | 1000 MBH | - | |
| Rated Output Capacity (Btu/Hr) | 850 MBH | 870 MBH | |
| Approx. Efficiency % | 85.0% | 80.0% | |
| Fuel | Natural Gas | Natural Gas | |
| Approx Age | 22 | 17 | |
| ASHRAE Service Life | 24 | 24 | |
| Remaining Life | 2 | 7 | |
| Comments | | | |

Note:

"N/A" = Not Applicable.

"-" = Info Not Available

MAJOR EQUIPMENT LIST

Concord Engineering Group

North Brunswick Township High School

Cooling Tower

| | | | |
|------------------------------------|--------------------------|--|--|
| Tag | | | |
| Unit Type | Air Cooled Water Chiller | | |
| Qty | 1 | | |
| Location | Roof | | |
| Area Served | | | |
| Manufacturer | Snyder General (McQuay) | | |
| Model # | ALR060C | | |
| Serial # | 5UH0168600 | | |
| Refrigerant | R-22 | | |
| Cooling Capacity (Tons) | 60 Tons | | |
| Cooling Efficiency (KW/Ton) | 10 EER | | |
| Volts / Phase / Hz | 460/3/60 | | |
| Fuel | Electric | | |
| Chilled Water GPM / ΔT | - | | |
| Condenser Water GPM / ΔT | N/A | | |
| Approx Age | 22 | | |
| ASHRAE Service Life | 20 | | |
| Remaining Life | (2) | | |
| Comments | | | |

Note:

"N/A" = Not Applicable.

"-" = Info Not Available

MAJOR EQUIPMENT LIST

Concord Engineering Group

North Brunswick Township High School

Domestic Water Heaters

| | | | |
|--------------------------------|-------------------------------------|-------------------------------------|----|
| Tag | | | |
| Unit Type | Gas Fired Domestic hot Water Heater | Gas Fired Domestic hot Water Heater | |
| Qty | 1 | 1 | |
| Location | 212 Custodian | | |
| Area Served | | | |
| Manufacturer | A.O. Smith | Patterson Kelley P-K Thermific | |
| Model # | BTH 150 970 | N-1900-2 | |
| Serial # | MC040004662 | - | |
| Size (Gallons) | 100 Gallons | Large Storage Tank | |
| Input Capacity (MBH/KW) | 150 MBH | 1,900 MBH | |
| Recovery (Gal/Hr) | 170.9 GPH | - | |
| Efficiency % | 95% | 85% | |
| Fuel | Natural Gas | Natural Gas | |
| Approx Age | 8 | 17 | |
| ASHRAE Service Life | 12 | 24 | 12 |
| Remaining Life | 4 | 7 | 12 |
| Comments | | | |

Note:

"N/A" = Not Applicable.

"-" = Info Not Available

MAJOR EQUIPMENT LIST

Concord Engineering Group

North Brunswick Township High School

Pumps

| Tag | P-1,2 | P-3 | P-4 |
|----------------------------|--------------------------|-------------------|---|
| Unit Type | Base Mounted End Suction | In-line | Base Mounted End Suction |
| Qty | 2 | 1 | 1 |
| Location | Rooftop Penthouse | Rooftop Penthouse | Rooftop Penthouse |
| Area Served | Two Pipe System | Heat Exchanger | Pool Filter |
| Manufacturer | - | - | - |
| Model # | - | - | - |
| Serial # | - | - | - |
| Horse Power | 5 HP | 2 HP | 7.5 |
| Flow | - | - | - |
| Motor Info | Marathon | Marathon | Cleaver Brooks |
| Electrical Power | 208-230/460/3/60 | 208-230/460/3/60 | 200-230/460 |
| RPM | 1740 RPM | 1740 RPM | 3490 RPM |
| Motor Efficiency % | 85.5% | 81.5% | 88.5% |
| Approx Age | 15 | 10 | 10 |
| ASHRAE Service Life | 20 | 20 | 20 |
| Remaining Life | 5 | 10 | 10 |
| Comments | | | Highest Motor Efficiency Available for 2-Pole Motor |

Note:

"N/A" = Not Applicable.

"-" = Info Not Available

Pumps

| | | | |
|----------------------------|-------------------------|--|--|
| Tag | DWP-1 | | |
| Unit Type | Packaged Pumping System | | |
| Qty | 3 | | |
| Location | Mechanical Room | | |
| Area Served | Domestic Water | | |
| Manufacturer | Canariis | | |
| Model # | TS-225-50 | | |
| Serial # | - | | |
| Horse Power | 5 | | |
| Flow | - | | |
| Motor Info | US Electric Motors | | |
| Electrical Power | 208-230/460/3/60 | | |
| RPM | 3495 RPM | | |
| Motor Efficiency % | 85.5% | | |
| Approx Age | 17 | | |
| ASHRAE Service Life | 20 | | |
| Remaining Life | 3 | | |
| Comments | | | |

Note:

"N/A" = Not Applicable.

"-" = Info Not Available

APPENDIX E

| Fixture Reference # | Location | Average Item Hours | Existing Fixtures | | | | | Proposed Fixtures Retrofit | | | | | Retrofit Energy Savings | | | Lighting Retrofit Costs | | | | Simple Payback | Control Ref # | 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, \$ | Material | | | Total Labor | Total All | Rebate Estimate | Controls Description | Qty of Controls | Hour Reduction % | Energy Savings, kWh | Energy Savings, \$ |
| 231.33 | Classroom 723 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mt., Direct/Indirect | 3 | 86 | 29 | 2.49 | 6,484 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 2.49 | 6,484 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Classroom 722 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mt., Direct/Indirect | 3 | 86 | 19 | 1.63 | 4,248 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 1.63 | 4,248 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Classroom 721 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mt., Direct/Indirect | 3 | 86 | 18 | 1.55 | 4,025 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 1.55 | 4,025 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 222.21 | Work Room | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 10 | 0.62 | 1,612 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.62 | 1,612 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 4 | Dual Technology Occupancy Sensor - Remote Mt. | 1 | 20.0% | 322 | \$38 |
| 222.21 | Kitchenette 719 | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 5 | 0.31 | 806 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.31 | 806 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 5 | Dual Technology Occupancy Sensor - Switch Mt. | 1 | 20.0% | 161 | \$19 |
| 222.21 | Classroom 717 | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 16 | 0.99 | 2,579 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.99 | 2,579 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 4 | Dual Technology Occupancy Sensor - Remote Mt. | 1 | 20.0% | 516 | \$61 |
| 222.21 | Classroom 716 | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 15 | 0.93 | 2,418 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.93 | 2,418 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 4 | Dual Technology Occupancy Sensor - Remote Mt. | 1 | 20.0% | 484 | \$58 |
| 222.21 | Prep Room | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 5 | 0.31 | 806 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.31 | 806 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 5 | Dual Technology Occupancy Sensor - Switch Mt. | 1 | 20.0% | 161 | \$19 |
| 222.21 | Office 720 | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 4 | 0.25 | 645 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.25 | 645 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 5 | Dual Technology Occupancy Sensor - Switch Mt. | 1 | 20.0% | 129 | \$15 |
| 221.34 | Book Room / Electrical Room 714 | 1200 | 1x4, 2 Lamp, 32w T8, Elect. Ballast, Pendant Mt., No Lens | 2 | 62 | 9 | 0.56 | 670 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.56 | 670 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 221.34 | Book Room / Electrical Room 714 | 1200 | 1x4, 2 Lamp, 32w T8, Elect. Ballast, Pendant Mt., No Lens | 2 | 62 | 27 | 1.67 | 2,009 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 1.67 | 2,009 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Math Department 711 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mt., Direct/Indirect | 3 | 86 | 31 | 2.67 | 6,932 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 2.67 | 6,932 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 222.21 | Men's Restroom | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 1 | 0.06 | 161 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.06 | 161 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 222.21 | Women's Restroom | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 1 | 0.06 | 161 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.06 | 161 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Conference Room 712 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mt., Direct/Indirect | 3 | 86 | 6 | 0.52 | 1,342 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 0.52 | 1,342 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Math Supervisor 710 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mt., Direct/Indirect | 3 | 86 | 4 | 0.34 | 894 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 0.34 | 894 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 222.21 | Classroom 708 | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 8 | 0.50 | 1,290 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.50 | 1,290 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 4 | Dual Technology Occupancy Sensor - Remote Mt. | 1 | 20.0% | 258 | \$31 |
| 222.21 | Classroom 707 | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 8 | 0.50 | 1,290 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.50 | 1,290 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 4 | Dual Technology Occupancy Sensor - Remote Mt. | 1 | 20.0% | 258 | \$31 |
| 222.21 | Classroom 706 | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 8 | 0.50 | 1,290 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.50 | 1,290 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 4 | Dual Technology Occupancy Sensor - Remote Mt. | 1 | 20.0% | 258 | \$31 |
| 222.21 | Classroom 704 | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 8 | 0.50 | 1,290 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.50 | 1,290 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 4 | Dual Technology Occupancy Sensor - Remote Mt. | 1 | 20.0% | 258 | \$31 |
| 222.21 | Classroom 703 | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 8 | 0.50 | 1,290 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.50 | 1,290 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 4 | Dual Technology Occupancy Sensor - Remote Mt. | 1 | 20.0% | 258 | \$31 |
| 231.33 | AP Office 702 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mt., Direct/Indirect | 3 | 86 | 21 | 1.81 | 4,696 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 1.81 | 4,696 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | AP Office 701 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mt., Direct/Indirect | 3 | 86 | 6 | 0.52 | 1,342 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 0.52 | 1,342 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Learning Center 625 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mt., Direct/Indirect | 3 | 86 | 40 | 3.44 | 8,944 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 3.44 | 8,944 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Conference Room 625A | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mt., Direct/Indirect | 3 | 86 | 4 | 0.34 | 894 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 0.34 | 894 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Kitchenette 719 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mt., Direct/Indirect | 3 | 86 | 4 | 0.34 | 894 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 0.34 | 894 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |

| Fixture Reference # | Location | Average Item Hours | Existing Fixtures | | | | | Proposed Fixtures Retrofit | | | | | Retrofit Energy Savings | | | Lighting Retrofit Costs | | | | Simple Payback | Control Ref # | 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, \$ | Material | | | Total Labor | Total All | Rebate Estimate | Controls Description | Qty of Controls | Hour Reduction % | Energy Savings, kWh |
| 222.21 | Women's Restroom | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 1 | 0.06 | 161 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.06 | 161 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 222.21 | Men's Restroom | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 1 | 0.06 | 161 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.06 | 161 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 222.21 | Classroom 624 | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 6 | 0.37 | 967 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.37 | 967 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 4 | Dual Technology Occupancy Sensor - Remote Mt. | 1 | 20.0% | 193 | \$23 |
| 247.21 | Classroom 624 | 2600 | 2x2, 4 Lamp, 17w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 4 | 68 | 4 | 0.27 | 707 | Existing to Remain | Existing to Remain | 4 | 68 | 0 | 0.27 | 707 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 5 | Dual Technology Occupancy Sensor - Switch Mt. | 1 | 20.0% | 141 | \$17 |
| 222.21 | Classroom 621 | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 8 | 0.50 | 1,290 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.50 | 1,290 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 4 | Dual Technology Occupancy Sensor - Remote Mt. | 1 | 20.0% | 258 | \$31 |
| 222.21 | Classroom 620 | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 8 | 0.50 | 1,290 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.50 | 1,290 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 4 | Dual Technology Occupancy Sensor - Remote Mt. | 1 | 20.0% | 258 | \$31 |
| 222.21 | Classroom 618 | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 8 | 0.50 | 1,290 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.50 | 1,290 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 4 | Dual Technology Occupancy Sensor - Remote Mt. | 1 | 20.0% | 258 | \$31 |
| 222.21 | Classroom 617 | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 8 | 0.50 | 1,290 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.50 | 1,290 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 4 | Dual Technology Occupancy Sensor - Remote Mt. | 1 | 20.0% | 258 | \$31 |
| 222.21 | Classroom 615 | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 14 | 0.87 | 2,257 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.87 | 2,257 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 222.21 | Faculty 612 | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 6 | 0.37 | 967 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.37 | 967 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 4 | Dual Technology Occupancy Sensor - Remote Mt. | 1 | 20.0% | 193 | \$23 |
| 100 | Women's Restroom | 2600 | 2 Vanity Light, 2-Lamp, 20w T12, Mag. Ballast, Wall Mt., Glass Lens | 2 | 42 | 1 | 0.04 | 109 | Reballast & Relamp | Reballast & Relamp: 17w T8 Elec. Ballast | 33 | 1 | 0.03 | 86 | 0.01 | 23 | \$3 | \$30.00 | \$80.00 | \$80.00 | \$0.00 | 28.73 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 227.21 | Women's Restroom | 2600 | 2x2, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 73 | 1 | 0.07 | 190 | Existing to Remain | Existing to Remain | 2 | 73 | 0 | 0.07 | 190 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 222.21 | Women's Restroom | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 1 | 0.06 | 161 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.06 | 161 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 222.21 | Men's Restroom | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 1 | 0.06 | 161 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.06 | 161 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 222.21 | Classroom 612 | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 10 | 0.62 | 1,612 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.62 | 1,612 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 4 | Dual Technology Occupancy Sensor - Remote Mt. | 1 | 20.0% | 322 | \$38 |
| 222.21 | Prep Room | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 4 | 0.25 | 645 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.25 | 645 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 5 | Dual Technology Occupancy Sensor - Switch Mt. | 1 | 20.0% | 129 | \$15 |
| 222.21 | Classroom 609 | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 8 | 0.50 | 1,290 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.50 | 1,290 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 4 | Dual Technology Occupancy Sensor - Remote Mt. | 1 | 20.0% | 258 | \$31 |
| 222.21 | Classroom 608 | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 8 | 0.50 | 1,290 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.50 | 1,290 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 4 | Dual Technology Occupancy Sensor - Remote Mt. | 1 | 20.0% | 258 | \$31 |
| 222.21 | Classroom 607 | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 8 | 0.50 | 1,290 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.50 | 1,290 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 4 | Dual Technology Occupancy Sensor - Remote Mt. | 1 | 20.0% | 258 | \$31 |
| 222.21 | Classroom 606 | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 8 | 0.50 | 1,290 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.50 | 1,290 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 4 | Dual Technology Occupancy Sensor - Remote Mt. | 1 | 20.0% | 258 | \$31 |
| 231.33 | Classroom 605 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mt., Direct/Indirect | 3 | 86 | 19 | 1.63 | 4,248 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 1.63 | 4,248 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Work Room 601 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mt., Direct/Indirect | 3 | 86 | 32 | 2.75 | 7,155 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 2.75 | 7,155 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Copy | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mt., Direct/Indirect | 3 | 86 | 4 | 0.34 | 894 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 0.34 | 894 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 222.21 | Kitchenette / Hall | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 3 | 0.19 | 484 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.19 | 484 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Conference Room 601B | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mt., Direct/Indirect | 3 | 86 | 4 | 0.34 | 894 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 0.34 | 894 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 222.21 | Women's Restroom | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 1 | 0.06 | 161 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.06 | 161 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |

| Fixture Reference # | Location | Average Item Hours | Existing Fixtures | | | | | | Proposed Fixtures Retrofit | | | | | | Retrofit Energy Savings | | | Lighting Retrofit Costs | | | | Simple Payback | Control Ref # | 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, \$ | Material | Total Labor | Total All | | | Rebate Estimate | Controls Description | Qty of Controls | Hour Reduction % | Energy Savings, kWh |
| 222.21 | Men's REstroom | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Prismatic Lens | 2 | 62 | 1 | 0.06 | 161 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.06 | 161 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Classroom 828 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 14 | 1.20 | 3,130 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 1.20 | 3,130 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Classroom 827 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 14 | 1.20 | 3,130 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 1.20 | 3,130 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 222.21 | Classroom 824 | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Prismatic Lens | 2 | 62 | 8 | 0.50 | 1,290 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.50 | 1,290 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 4 | Dual Technology Occupancy Sensor - Remote Mat. | 1 | 20.0% | 258 | \$31 |
| 222.21 | Classroom 823 | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Prismatic Lens | 2 | 62 | 8 | 0.50 | 1,290 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.50 | 1,290 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 4 | Dual Technology Occupancy Sensor - Remote Mat. | 1 | 20.0% | 258 | \$31 |
| 222.21 | Classroom 822 | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Prismatic Lens | 2 | 62 | 8 | 0.50 | 1,290 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.50 | 1,290 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 4 | Dual Technology Occupancy Sensor - Remote Mat. | 1 | 20.0% | 258 | \$31 |
| 222.21 | Classroom 819 | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Prismatic Lens | 2 | 62 | 10 | 0.62 | 1,612 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.62 | 1,612 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 4 | Dual Technology Occupancy Sensor - Remote Mat. | 1 | 20.0% | 322 | \$38 |
| 222.21 | Prep Room | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Prismatic Lens | 2 | 62 | 4 | 0.25 | 645 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.25 | 645 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 5 | Dual Technology Occupancy Sensor - Switch Mat. | 1 | 20.0% | 129 | \$15 |
| 231.33 | Classroom 817 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 8 | 0.69 | 1,789 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 0.69 | 1,789 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 222.21 | Classroom 815 | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Prismatic Lens | 2 | 62 | 18 | 1.12 | 2,902 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 1.12 | 2,902 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 3 | Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mat. | 1 | 20.0% | 580 | \$69 |
| 222.21 | Chem Storage | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Prismatic Lens | 2 | 62 | 3 | 0.19 | 484 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.19 | 484 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 5 | Dual Technology Occupancy Sensor - Switch Mat. | 1 | 20.0% | 97 | \$12 |
| 222.21 | Room 810 | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Prismatic Lens | 2 | 62 | 5 | 0.31 | 806 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.31 | 806 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 5 | Dual Technology Occupancy Sensor - Switch Mat. | 1 | 20.0% | 161 | \$19 |
| 222.21 | Classroom 805 | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Prismatic Lens | 2 | 62 | 20 | 1.24 | 3,224 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 1.24 | 3,224 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 3 | Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mat. | 1 | 20.0% | 645 | \$77 |
| 222.21 | Classroom 804 | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Prismatic Lens | 2 | 62 | 21 | 1.30 | 3,385 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 1.30 | 3,385 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 3 | Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mat. | 1 | 20.0% | 677 | \$81 |
| 222.21 | Room 802 | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Prismatic Lens | 2 | 62 | 4 | 0.25 | 645 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.25 | 645 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 5 | Dual Technology Occupancy Sensor - Switch Mat. | 1 | 20.0% | 129 | \$15 |
| 222.21 | Prep Room | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Prismatic Lens | 2 | 62 | 3 | 0.19 | 484 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.19 | 484 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 5 | Dual Technology Occupancy Sensor - Switch Mat. | 1 | 20.0% | 97 | \$12 |
| 231.33 | SGI 801 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 8 | 0.69 | 1,789 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 0.69 | 1,789 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | SGI 800 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 8 | 0.69 | 1,789 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 0.69 | 1,789 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Classroom 901 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 13 | 1.12 | 2,907 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 1.12 | 2,907 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Conference Room 902 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 7 | 0.60 | 1,565 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 0.60 | 1,565 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Conference Room 910 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 24 | 2.06 | 5,366 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 2.06 | 5,366 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Conference Room 913 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 9 | 0.77 | 2,012 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 0.77 | 2,012 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Conference Room 915 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 24 | 2.06 | 5,366 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 2.06 | 5,366 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Conference Room 906 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 7 | 0.60 | 1,565 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 0.60 | 1,565 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Classroom 908 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 13 | 1.12 | 2,907 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 1.12 | 2,907 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Classroom 914 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 19 | 1.63 | 4,248 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 1.63 | 4,248 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |

| Fixture Reference # | Location | Average Item Hours | Existing Fixtures | | | | | | Proposed Fixtures Retrofit | | | | | | Retrofit Energy Savings | | | | Lighting Retrofit Costs | | | | 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, \$ | Material | Total Labor | Total All | Rebate Estimate | Simple Payback | Control Ref # | Controls Description | Qty of Controls | Hour Reduction % | Energy Savings, kWh | Energy Savings, \$ |
| 231.33 | Classroom 912 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 19 | 1.63 | 4,248 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 1.63 | 4,248 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 222.21 | 2nd Floor Corridor | 3000 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Prismatic Lens | 2 | 62 | 211 | 13.08 | 39,246 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 13.08 | 39,246 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 221.21 | Boy's Restroom | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Prismatic Lens | 2 | 62 | 3 | 0.19 | 484 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.19 | 484 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 221.14 | Electrical Room | 2600 | 1x4, 2 Lamp, 32w T8, Elect. Ballast, Surface Mnt., No Lens | 2 | 62 | 1 | 0.06 | 161 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.06 | 161 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 221.21 | Girl's Restroom | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Prismatic Lens | 2 | 62 | 3 | 0.19 | 484 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.19 | 484 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 221.14 | Custodial Closet | 1200 | 1x4, 2 Lamp, 32w T8, Elect. Ballast, Surface Mnt., No Lens | 2 | 62 | 1 | 0.06 | 74 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.06 | 74 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 241.11 | Electrical Closet 703 | 1200 | 1x4, 4 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic Lens | 4 | 107 | 2 | 0.21 | 257 | Existing to Remain | Existing to Remain | 4 | 107 | 0 | 0.21 | 257 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 241.11 | Storage 705 | 1200 | 1x4, 4 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic Lens | 4 | 107 | 2 | 0.21 | 257 | Existing to Remain | Existing to Remain | 4 | 107 | 0 | 0.21 | 257 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 227.21 | IDF 811 | 1200 | 2x2, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Prismatic Lens | 2 | 73 | 1 | 0.07 | 88 | Existing to Remain | Existing to Remain | 2 | 73 | 0 | 0.07 | 88 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 221.21 | Boy's Restroom | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Prismatic Lens | 2 | 62 | 3 | 0.19 | 484 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.19 | 484 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 221.21 | Girl's Restroom | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Prismatic Lens | 2 | 62 | 3 | 0.19 | 484 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.19 | 484 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 221.14 | Utilities | 1200 | 1x4, 2 Lamp, 32w T8, Elect. Ballast, Surface Mnt., No Lens | 2 | 62 | 1 | 0.06 | 74 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.06 | 74 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 221.31 | Water Heater 880 | 1200 | 1x4, 2 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Prismatic Lens | 2 | 62 | 1 | 0.06 | 74 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.06 | 74 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Classroom 874 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 29 | 2.49 | 6,484 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 2.49 | 6,484 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Classroom 878 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 30 | 2.58 | 6,708 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 2.58 | 6,708 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Prep 876 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 9 | 0.77 | 2,012 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 0.77 | 2,012 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Classroom 879 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 29 | 2.49 | 6,484 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 2.49 | 6,484 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Classroom 875 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 29 | 2.49 | 6,484 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 2.49 | 6,484 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Prep 877 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 8 | 0.69 | 1,789 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 0.69 | 1,789 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Classroom 873 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 19 | 1.63 | 4,248 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 1.63 | 4,248 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Classroom 871 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 18 | 1.55 | 4,025 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 1.55 | 4,025 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Prep | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 8 | 0.69 | 1,789 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 0.69 | 1,789 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 222.21 | Chem Storage 872 | 1200 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Prismatic Lens | 2 | 62 | 3 | 0.19 | 223 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.19 | 223 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 222.21 | Electrical room 870 | 1200 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Prismatic Lens | 2 | 62 | 6 | 0.37 | 446 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.37 | 446 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Classroom 868 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 24 | 2.06 | 5,366 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 2.06 | 5,366 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 70 | Lecture Hall 869 | 2600 | Combination Light, (2) 90w PAR38, (1) 40w Bux | 3 | 345 | 15 | 5.18 | 13,455 | Relamp | (2) 20w LED PAR38, Dimmable | 3 | 85 | 15 | 1.28 | 3,315 | 3.90 | 10,140 | \$1,207 | \$1,350.00 | \$1,350.00 | \$2,700.00 | \$0.00 | 2.24 | 4 | Dual Technology Occupancy Sensor - Remote Mat. | 1 | 20.0% | 663 | \$79 |

| Fixture Reference # | Location | Average Item Hours | Existing Fixtures | | | | | Proposed Fixtures Retrofit | | | | | Retrofit Energy Savings | | | Lighting Retrofit Costs | | | | Simple Payback | Control Ref # | 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, \$ | Material | | | Total Labor | Total All | Rebate Estimate | Controls Description | Qty of Controls | Hour Reduction % | Energy Savings, kWh | Energy Savings, \$ |
| 80 | Lecture Hall 869 | 2600 | Step Light, 20w | 1 | 20 | 8 | 0.16 | 416 | Relamp | 6w LED Retrofit Kit | 1 | 6 | 8 | 0.05 | 125 | 0.11 | 291 | \$35 | \$360.00 | \$320.00 | \$680.00 | \$0.00 | 19.62 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 222.21 | Control Room | 1200 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Prismatic Lens | 2 | 62 | 8 | 0.50 | 595 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.50 | 595 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Classroom 866 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 15 | 1.29 | 3,354 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 1.29 | 3,354 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Classroom 865 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 19 | 1.63 | 4,248 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 1.63 | 4,248 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 70 | Lecture Hall 863 | 2600 | Combination Light, (2) 90w PAR38, (1) 40w Bi-x | 3 | 345 | 15 | 5.18 | 13,455 | Relamp | (2) 20w LED PAR38, Dimmable | 3 | 85 | 15 | 1.28 | 3,315 | 3.90 | 10,140 | \$1,207 | \$1,350.00 | \$1,350.00 | \$2,700.00 | \$0.00 | 2.24 | 4 | Dual Technology Occupancy Sensor - Remote Mat. | 1 | 20.0% | 663 | \$79 |
| 80 | Lecture Hall 863 | 2600 | Step Light, 20w | 1 | 20 | 8 | 0.16 | 416 | Relamp | 6w LED Retrofit Kit | 1 | 6 | 8 | 0.05 | 125 | 0.11 | 291 | \$35 | \$360.00 | \$320.00 | \$680.00 | \$0.00 | 19.62 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Classroom 864 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 17 | 1.46 | 3,801 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 1.46 | 3,801 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 222.21 | Girl's Restroom | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Prismatic Lens | 2 | 62 | 4 | 0.25 | 645 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.25 | 645 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 222.21 | Custodial Closet 860 | 1200 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Prismatic Lens | 2 | 62 | 1 | 0.06 | 74 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.06 | 74 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 222.21 | Boy's Restroom | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Prismatic Lens | 2 | 62 | 4 | 0.25 | 645 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.25 | 645 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Work Room 840 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 24 | 2.06 | 5,366 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 2.06 | 5,366 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Office 842 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 4 | 0.34 | 894 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 0.34 | 894 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 222.21 | Electrical / IDF 841 | 1200 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Prismatic Lens | 2 | 62 | 7 | 0.43 | 521 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.43 | 521 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Offices 844 A+B | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 8 | 0.69 | 1,789 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 0.69 | 1,789 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Office 844 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 5 | 0.43 | 1,118 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 0.43 | 1,118 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Classroom 843 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 18 | 1.55 | 4,025 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 1.55 | 4,025 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Classroom 845 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 18 | 1.55 | 4,025 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 1.55 | 4,025 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Classroom 847 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 18 | 1.55 | 4,025 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 1.55 | 4,025 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Classroom 849 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 18 | 1.55 | 4,025 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 1.55 | 4,025 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Classrooms 851 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 18 | 1.55 | 4,025 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 1.55 | 4,025 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Classroom 856 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 20 | 1.72 | 4,472 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 1.72 | 4,472 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Classroom 854 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 18 | 1.55 | 4,025 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 1.55 | 4,025 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Classroom 853 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 18 | 1.55 | 4,025 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 1.55 | 4,025 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Classroom 855 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 18 | 1.55 | 4,025 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 1.55 | 4,025 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 222.21 | Stairwell E | 3000 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Prismatic Lens | 2 | 62 | 8 | 0.50 | 1,488 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.50 | 1,488 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 222.21 | Stairwell E | 3000 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Prismatic Lens | 2 | 62 | 2 | 0.12 | 372 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.12 | 372 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |

| Fixture Reference # | Location | Average Item Hours | Existing Fixtures | | | | | Proposed Fixtures Retrofit | | | | | Retrofit Energy Savings | | | Lighting Retrofit Costs | | | | Simple Payback | 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, \$ | Material | | Total Labor | Total All | Rebate Estimate | Control Ref # | Controls Description | Qty of Controls | Hour Reduction % | Energy Savings, kWh | Energy Savings, \$ |
| 222.21 | IDF 232 | 1200 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Prismatic Lens | 2 | 62 | 2 | 0.12 | 149 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.12 | 149 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 | |
| 768 | Stage 230 | 2600 | 400w MH, H6 Bay | 1 | 465 | 4 | 1.86 | 4,836 | Remove and Return | 1x4, 4 Lamp, 54w TSHO, Elect. Ballast, Lo Bay | 4 | 213 | 4 | 0.85 | 2,215 | 1.01 | 2,621 | \$312 | \$800.00 | \$720.00 | \$1,520.00 | \$0.00 | 4.87 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 80 | Stage 230 | 2600 | Step Light, 20w | 1 | 20 | 6 | 0.12 | 312 | Relamp | 6w LED Retrofit Kit | 1 | 6 | 6 | 0.04 | 94 | 0.08 | 218 | \$26 | \$270.00 | \$240.00 | \$510.00 | \$0.00 | 19.62 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 221.11 | Tech Storage | 1200 | 1x4, 2 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic Lens | 2 | 62 | 4 | 0.25 | 298 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.25 | 298 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 | |
| 227.22 | Classroom 249 | 2600 | 2x2, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Parabolic Lens | 2 | 73 | 26 | 1.90 | 4,935 | Existing to Remain | Existing to Remain | 2 | 73 | 0 | 1.90 | 4,935 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 | |
| 231.33 | Classroom 249 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 20 | 1.72 | 4,472 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 1.72 | 4,472 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 | |
| 222.21 | Hall | 3000 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Prismatic Lens | 2 | 62 | 4 | 0.25 | 744 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.25 | 744 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 | |
| 232.22 | Office 249A | 2600 | 2x4, 3 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Parabolic Lens | 3 | 86 | 4 | 0.34 | 894 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 0.34 | 894 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 | |
| 232.22 | Office 247 | 2600 | 2x4, 3 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Parabolic Lens | 3 | 86 | 4 | 0.34 | 894 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 0.34 | 894 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 | |
| 232.22 | Office 245A | 2600 | 2x4, 3 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Parabolic Lens | 3 | 86 | 4 | 0.34 | 894 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 0.34 | 894 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 | |
| 222.21 | Hall | 3000 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Prismatic Lens | 2 | 62 | 5 | 0.31 | 930 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.31 | 930 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 | |
| 227.22 | Classroom 245 | 2600 | 2x2, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Parabolic Lens | 2 | 73 | 26 | 1.90 | 4,935 | Existing to Remain | Existing to Remain | 2 | 73 | 0 | 1.90 | 4,935 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 | |
| 231.33 | Classroom 245 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 20 | 1.72 | 4,472 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 1.72 | 4,472 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 | |
| 231.33 | Classroom 243 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 26 | 2.24 | 5,814 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 2.24 | 5,814 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 | |
| 231.33 | Classroom 241 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 28 | 2.41 | 6,261 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 2.41 | 6,261 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 | |
| 232.22 | Office 241A | 2600 | 2x4, 3 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Parabolic Lens | 3 | 86 | 4 | 0.34 | 894 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 0.34 | 894 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 | |
| 222.21 | Stairwell F | 3000 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Prismatic Lens | 2 | 62 | 8 | 0.50 | 1,488 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.50 | 1,488 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 | |
| 222.21 | Stairwell F | 3000 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Prismatic Lens | 2 | 62 | 2 | 0.12 | 372 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.12 | 372 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 | |
| 222.21 | Storage 255A | 1200 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Prismatic Lens | 2 | 62 | 4 | 0.25 | 298 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.25 | 298 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 | |
| 221.31 | Studio 255 | 2600 | 1x4, 2 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Prismatic Lens | 2 | 62 | 12 | 0.74 | 1,934 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.74 | 1,934 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 | |
| 222.21 | Control Room 253 | 1200 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Prismatic Lens | 2 | 62 | 4 | 0.25 | 298 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.25 | 298 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 | |
| 222.21 | Radio Equipment 256 | 1200 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Prismatic Lens | 2 | 62 | 2 | 0.12 | 149 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.12 | 149 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 | |
| 222.21 | Radio 254 | 1200 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Prismatic Lens | 2 | 62 | 2 | 0.12 | 149 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.12 | 149 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 | |
| 222.21 | Radio 252 | 1200 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Prismatic Lens | 2 | 62 | 2 | 0.12 | 149 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.12 | 149 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 | |
| 222.21 | Office 250 | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Prismatic Lens | 2 | 62 | 2 | 0.12 | 322 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.12 | 322 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 | |
| 231.33 | Classroom 251 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 18 | 1.55 | 4,025 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 1.55 | 4,025 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 | |

| Fixture Reference # | Location | Average Room Hours | Existing Fixtures | | | | | Proposed Fixtures Retrofit | | | | | Retrofit Energy Savings | | | Lighting Retrofit Costs | | | | Simple Payback | Control Ref # | 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, \$ | Material | | | Total Labor | Total All | Rebate Estimate | Controls Description | Qty of Controls | Hour Reduction % | Energy Savings, kWh | Energy Savings, \$ |
| 231.33 | Editing 251A | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mt., Direct/Indirect | 3 | 86 | 3 | 0.26 | 671 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 0.26 | 671 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Editing 251B | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mt., Direct/Indirect | 3 | 86 | 3 | 0.26 | 671 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 0.26 | 671 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 222.21 | Women's Restroom | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 4 | 0.25 | 645 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.25 | 645 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 222.21 | Electrical Room 246 | 1200 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 2 | 0.12 | 149 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.12 | 149 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 222.21 | Men's Restroom | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 4 | 0.25 | 645 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.25 | 645 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Classroom 220 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mt., Direct/Indirect | 3 | 86 | 40 | 3.44 | 8,944 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 3.44 | 8,944 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 222.21 | Classroom 222 | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 6 | 0.37 | 967 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.37 | 967 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Classroom 224 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mt., Direct/Indirect | 3 | 86 | 41 | 3.53 | 9,168 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 3.53 | 9,168 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Classroom 226 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mt., Direct/Indirect | 3 | 86 | 41 | 3.53 | 9,168 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 3.53 | 9,168 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 222.21 | Electrical Room 228 | 1200 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 2 | 0.12 | 149 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.12 | 149 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 232.21 | Green Room | 2600 | 2x4, 3 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 3 | 86 | 6 | 0.52 | 1,342 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 0.52 | 1,342 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 232.21 | Dressing Room | 2600 | 2x4, 3 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 3 | 86 | 6 | 0.52 | 1,342 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 0.52 | 1,342 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 232.21 | Dressing Room | 2600 | 2x4, 3 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 3 | 86 | 6 | 0.52 | 1,342 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 0.52 | 1,342 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 221.14 | Display 219 | 3000 | 1x4, 2 Lamp, 32w T8, Elect. Ballast, Surface Mt., No Lens | 2 | 62 | 6 | 0.37 | 1,116 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.37 | 1,116 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 563 | Auditorium Lobby | 3000 | Recessed Down Light, (2)26w Quad CFL Lamp | 2 | 52 | 86 | 4.47 | 13,416 | Existing to Remain | Existing to Remain | 2 | 52 | 0 | 4.47 | 13,416 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Classroom 260 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mt., Direct/Indirect | 3 | 86 | 16 | 1.38 | 3,578 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 1.38 | 3,578 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 60 | Cafeteria | 2600 | Pendant Mount, 8 Lamp, 40w Fluor | 8 | 350 | 26 | 9.10 | 23,660 | Existing to Remain | Existing to Remain | 8 | 350 | 0 | 9.10 | 23,660 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 221.21 | Servey | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 36 | 2.23 | 5,803 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 2.23 | 5,803 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 232.22 | CST 204 | 2600 | 2x4, 3 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Parabolic Lens | 3 | 86 | 5 | 0.43 | 1,118 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 0.43 | 1,118 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 232.22 | CST Side Offices (*) | 2600 | 2x4, 3 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Parabolic Lens | 3 | 86 | 24 | 2.06 | 5,366 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 2.06 | 5,366 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Guidance 200 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mt., Direct/Indirect | 3 | 86 | 32 | 2.75 | 7,155 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 2.75 | 7,155 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 222.21 | Kitchenette | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 4 | 0.25 | 645 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.25 | 645 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 232.22 | Guidance Side Offices (10) | 2600 | 2x4, 3 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Parabolic Lens | 3 | 86 | 28 | 2.41 | 6,261 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 2.41 | 6,261 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 222.21 | Girl's Cafeteria Restroom | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 5 | 0.31 | 806 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.31 | 806 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 222.21 | Boy's Cafeteria Restroom | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 5 | 0.31 | 806 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.31 | 806 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 221.11 | Kitchen | 2600 | 1x4, 2 Lamp, 32w T8, Elect. Ballast, Surface Mt., Prismatic Lens | 2 | 62 | 52 | 3.22 | 8,382 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 3.22 | 8,382 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |

| Fixture Reference # | Location | Average Item Hours | Existing Fixtures | | | | | Proposed Fixtures Retrofit | | | | | Retrofit Energy Savings | | | Lighting Retrofit Costs | | | | Simple Payback | Control Ref # | 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, \$ | Material | | | Total Labor | Total All | Rebate Estimate | Controls Description | Qty of Controls | Hour Reduction % | Energy Savings, kWh | Energy Savings, \$ |
| 221.34 | Laundry | 1200 | 1x4, 2 Lamp, 32w T8, Elect. Ballast, Pendant Mt., No Lens | 2 | 62 | 3 | 0.19 | 223 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.19 | 223 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 222.21 | Kit. Rec. | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 5 | 0.31 | 806 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.31 | 806 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 232.22 | Tech Repair | 2600 | 2x4, 3 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Parabolic Lens | 3 | 86 | 10 | 0.86 | 2,236 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 0.86 | 2,236 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 221.31 | Ship + Rec - 280 | 1200 | 1x4, 2 Lamp, 32w T8, Elect. Ballast, Pendant Mt., Prismatic Lens | 2 | 62 | 30 | 1.86 | 2,232 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 1.86 | 2,232 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 551 | Stairwell B | 3000 | Recessed Down Light, 90w Lamp | 1 | 90 | 20 | 1.80 | 5,400 | Relamp | 18w LED PAR38 | 1 | 18 | 20 | 0.36 | 1,080 | 1.44 | 4,320 | \$514 | \$1,700.00 | \$1,000.00 | \$2,700.00 | \$0.00 | 5.25 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 211.43 | Stairwell B | 3000 | 1x4, 1 Lamp, 32w T8, Elect. Ballast, Wall Mt., Direct/Indirect | 1 | 28 | 6 | 0.17 | 504 | Existing to Remain | Existing to Remain | 1 | 28 | 0 | 0.17 | 504 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 221.34 | Custodial Office 430 | 3000 | 1x4, 2 Lamp, 32w T8, Elect. Ballast, Pendant Mt., No Lens | 2 | 62 | 7 | 0.43 | 1,302 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.43 | 1,302 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 222.21 | Classrooms 400 | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 16 | 0.99 | 2,579 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.99 | 2,579 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 4 | Dual Technology Occupancy Sensor - Remote Mt. | 1 | 20.0% | 516 | \$61 |
| 222.21 | Room 423 | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 15 | 0.93 | 2,418 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.93 | 2,418 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 4 | Dual Technology Occupancy Sensor - Remote Mt. | 1 | 20.0% | 484 | \$58 |
| 242.21 | Office 401 | 2600 | 2x4, 4 Lamp, 32w T8, Elect. Ballast, Surface Mt., Prismatic Lens | 4 | 107 | 3 | 0.32 | 835 | Existing to Remain | Existing to Remain | 4 | 107 | 0 | 0.32 | 835 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 5 | Dual Technology Occupancy Sensor - Switch Mt. | 1 | 20.0% | 167 | \$20 |
| 222.21 | Copy 402 | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 7 | 0.43 | 1,128 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.43 | 1,128 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 5 | Dual Technology Occupancy Sensor - Switch Mt. | 1 | 20.0% | 226 | \$27 |
| 221.21 | Women's Restroom | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 5 | 0.31 | 806 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.31 | 806 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 5 | Dual Technology Occupancy Sensor - Switch Mt. | 1 | 20.0% | 161 | \$19 |
| 221.31 | Girl's Locker Room | 2600 | 1x4, 2 Lamp, 32w T8, Elect. Ballast, Pendant Mt., Prismatic Lens | 2 | 62 | 44 | 2.73 | 7,093 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 2.73 | 7,093 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 4 | Dual Technology Occupancy Sensor - Remote Mt. | 3 | 20.0% | 1,419 | \$169 |
| 221.341 | Main Gym | 2600 | (5) 1x4, 2 Lamp, 32w T8, Elect. Ballast, Pendant Mt., No Lens | 10 | 315 | 35 | 11.03 | 28,665 | Remove and Return | (1) 6 Lamp, 54w TSHO, No Lens | 6 | 315 | 35 | 11.03 | 28,665 | 0.00 | 0 | \$0 | \$7,700.00 | \$6,300.00 | \$14,000.00 | \$0.00 | - | 4 | Dual Technology Occupancy Sensor - Remote Mt. | 6 | 20.0% | 5,733 | \$682 |
| 221.34 | Pump Room | 1200 | 1x4, 2 Lamp, 32w T8, Elect. Ballast, Pendant Mt., No Lens | 2 | 62 | 6 | 0.37 | 446 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.37 | 446 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 342.34 | Aux Gym 2 530 | 2600 | 2x4, 4 Lamp, 54w TSHO Fixture | 4 | 230 | 40 | 9.20 | 23,920 | Existing to Remain | Existing to Remain | 4 | 230 | 0 | 9.20 | 23,920 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 4 | Dual Technology Occupancy Sensor - Remote Mt. | 4 | 20.0% | 4,784 | \$569 |
| 222.21 | Men's REstroom | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 1 | 0.06 | 161 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.06 | 161 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 222.21 | Women's REstroom | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 1 | 0.06 | 161 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.06 | 161 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 222.21 | Trainer 540 | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 16 | 0.99 | 2,579 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.99 | 2,579 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 222.21 | Boy's Team Room | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 16 | 0.99 | 2,579 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.99 | 2,579 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 4 | Dual Technology Occupancy Sensor - Remote Mt. | 1 | 20.0% | 516 | \$61 |
| 221.11 | Girl's Team Room | 2600 | 1x4, 2 Lamp, 32w T8, Elect. Ballast, Surface Mt., Prismatic Lens | 2 | 62 | 20 | 1.24 | 3,224 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 1.24 | 3,224 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 4 | Dual Technology Occupancy Sensor - Remote Mt. | 1 | 20.0% | 645 | \$77 |
| 221.34 | Custodial Closet | 1200 | 1x4, 2 Lamp, 32w T8, Elect. Ballast, Pendant Mt., No Lens | 2 | 62 | 9 | 0.56 | 670 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.56 | 670 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 4 | Dual Technology Occupancy Sensor - Remote Mt. | 1 | 20.0% | 134 | \$16 |
| 690 | Pool | 2600 | (2) 90w PAR38, Architectural Wall Mt. | 1 | 92 | 21 | 1.93 | 5,023 | Relamp | 18w LED PAR38 | 1 | 18 | 21 | 0.38 | 983 | 1.55 | 4,040 | \$481 | \$1,785.00 | \$1,050.00 | \$2,835.00 | \$0.00 | 5.90 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 221.11 | Boy's Locker Room | 2600 | 1x4, 2 Lamp, 32w T8, Elect. Ballast, Surface Mt., Prismatic Lens | 2 | 62 | 18 | 1.12 | 2,902 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 1.12 | 2,902 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 4 | Dual Technology Occupancy Sensor - Remote Mt. | 1 | 20.0% | 580 | \$69 |
| 222.21 | Boy's PE Office | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 2 | 0.12 | 322 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.12 | 322 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 5 | Dual Technology Occupancy Sensor - Switch Mt. | 1 | 20.0% | 64 | \$8 |
| 221.34 | Mezz Storage | 600 | 1x4, 2 Lamp, 32w T8, Elect. Ballast, Pendant Mt., No Lens | 2 | 62 | 4 | 0.25 | 149 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.25 | 149 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |

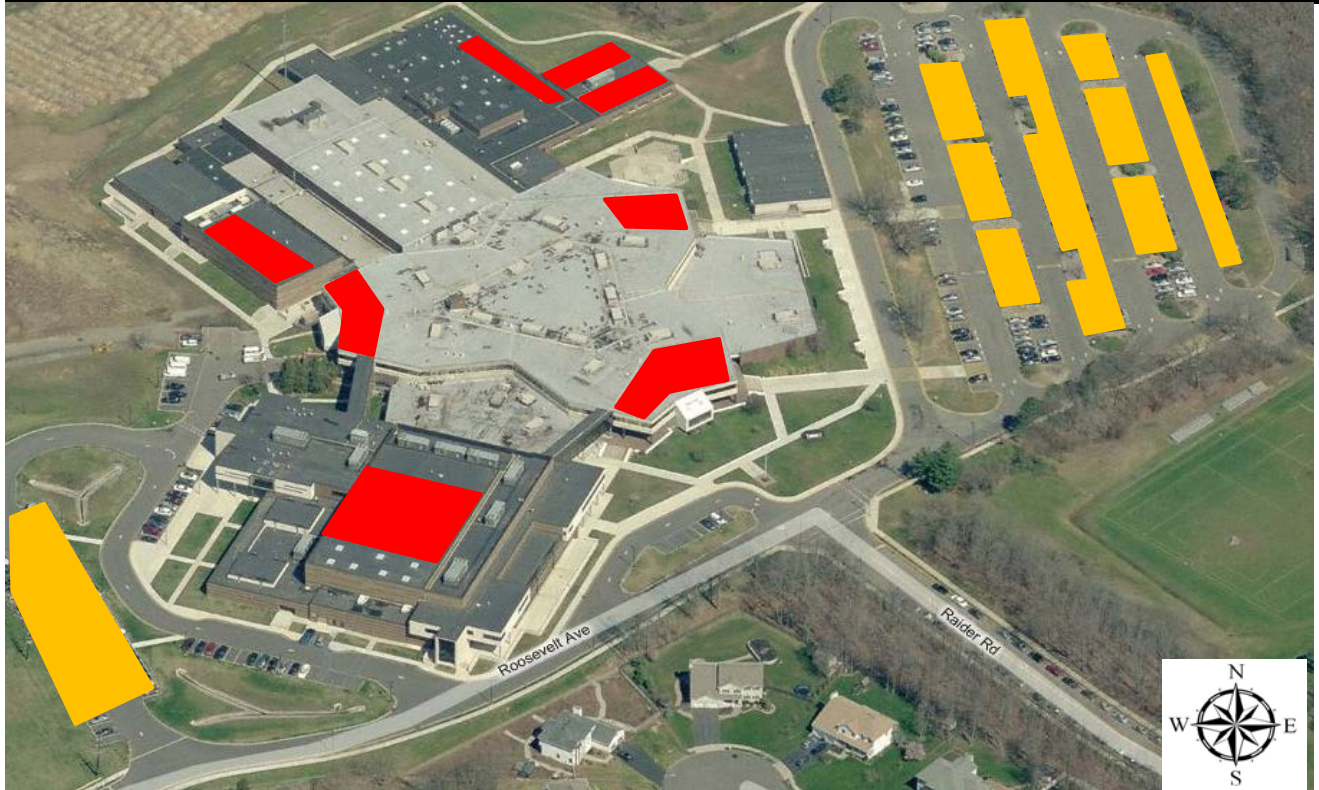
| Fixture Reference # | Location | Average Item Hours | Existing Fixtures | | | | | | Proposed Fixtures Retrofit | | | | | | Retrofit Energy Savings | | | Lighting Retrofit Costs | | | | Simple Payback | Control Ref # | Proposed Lighting Controls | | | | | |
|---------------------|----------------------|--------------------|---|-------------------|-------------------|-----------------|----------|--------------|----------------------------|---|-------------------|-------------------|-----------------|----------|-------------------------|--------------------|---------------------|-------------------------|------------|-------------|------------|----------------|---------------|----------------------------|---|-----------------|------------------|---------------------|--------------------|
| | | | 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, \$ | Material | Total Labor | Total All | | | Rebate Estimate | Controls Description | Qty of Controls | Hour Reduction % | Energy Savings, kWh | Energy Savings, \$ |
| 222.21 | Classroom 596 | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 16 | 0.99 | 2,579 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.99 | 2,579 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 222.21 | Comms 597 | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 3 | 0.19 | 484 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.19 | 484 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 222.21 | Classroom 598 | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 16 | 0.99 | 2,579 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.99 | 2,579 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 242.21 | Classroom 593 | 2600 | 2x4, 4 Lamp, 32w T8, Elect. Ballast, Surface Mt., Prismatic Lens | 4 | 107 | 16 | 1.71 | 4,451 | Existing to Remain | Existing to Remain | 4 | 107 | 0 | 1.71 | 4,451 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 242.21 | Work Room 591 | 2600 | 2x4, 4 Lamp, 32w T8, Elect. Ballast, Surface Mt., Prismatic Lens | 4 | 107 | 12 | 1.28 | 3,338 | Existing to Remain | Existing to Remain | 4 | 107 | 0 | 1.28 | 3,338 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 4 | Dual Technology Occupancy Sensor - Remote Mt. | 1 | 20.0% | 668 | \$79 |
| 242.21 | Prep 592 | 2600 | 2x4, 4 Lamp, 32w T8, Elect. Ballast, Surface Mt., Prismatic Lens | 4 | 107 | 2 | 0.21 | 556 | Existing to Remain | Existing to Remain | 4 | 107 | 0 | 0.21 | 556 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 5 | Dual Technology Occupancy Sensor - Switch Mt. | 1 | 20.0% | 111 | \$13 |
| 242.21 | Prep 590 | 2600 | 2x4, 4 Lamp, 32w T8, Elect. Ballast, Surface Mt., Prismatic Lens | 4 | 107 | 3 | 0.32 | 835 | Existing to Remain | Existing to Remain | 4 | 107 | 0 | 0.32 | 835 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 5 | Dual Technology Occupancy Sensor - Switch Mt. | 1 | 20.0% | 167 | \$20 |
| 231.33 | AD Office 584 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mt., Direct/Indirect | 3 | 86 | 6 | 0.52 | 1,342 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 0.52 | 1,342 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Classroom 583 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mt., Direct/Indirect | 3 | 86 | 18 | 1.55 | 4,025 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 1.55 | 4,025 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 242.21 | Classroom 582 | 2600 | 2x4, 4 Lamp, 32w T8, Elect. Ballast, Surface Mt., Prismatic Lens | 4 | 107 | 16 | 1.71 | 4,451 | Existing to Remain | Existing to Remain | 4 | 107 | 0 | 1.71 | 4,451 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 769 | Aux Gym 2 530 | 2600 | 400w MH, H6- Bay | 1 | 465 | 18 | 8.37 | 21,762 | Remove and Return | 1x4, 6 Lamp, 54w TSHO. Elect. Dimming Ballast, Lo Bay | 6 | 315 | 18 | 5.67 | 14,742 | 2.70 | 7,020 | \$835 | \$3,960.00 | \$3,240.00 | \$7,200.00 | \$0.00 | 8.62 | 4 | Dual Technology Occupancy Sensor - Remote Mt. | 2 | 20.0% | 2,948 | \$351 |
| 242.21 | Classroom 581 | 2600 | 2x4, 4 Lamp, 32w T8, Elect. Ballast, Surface Mt., Prismatic Lens | 4 | 107 | 12 | 1.28 | 3,338 | Existing to Remain | Existing to Remain | 4 | 107 | 0 | 1.28 | 3,338 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 242.21 | Classroom 580 | 2600 | 2x4, 4 Lamp, 32w T8, Elect. Ballast, Surface Mt., Prismatic Lens | 4 | 107 | 12 | 1.28 | 3,338 | Existing to Remain | Existing to Remain | 4 | 107 | 0 | 1.28 | 3,338 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Classroom 575 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mt., Direct/Indirect | 3 | 86 | 18 | 1.55 | 4,025 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 1.55 | 4,025 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Classroom 577 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mt., Direct/Indirect | 3 | 86 | 18 | 1.55 | 4,025 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 1.55 | 4,025 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Classroom 579 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mt., Direct/Indirect | 3 | 86 | 18 | 1.55 | 4,025 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 1.55 | 4,025 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Classroom 578 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mt., Direct/Indirect | 3 | 86 | 18 | 1.55 | 4,025 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 1.55 | 4,025 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Classroom 576 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mt., Direct/Indirect | 3 | 86 | 18 | 1.55 | 4,025 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 1.55 | 4,025 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Classroom 574 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mt., Direct/Indirect | 3 | 86 | 18 | 1.55 | 4,025 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 1.55 | 4,025 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 222.21 | Classroom 573 | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 12 | 0.74 | 1,934 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.74 | 1,934 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 222.21 | Classroom 572 | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 12 | 0.74 | 1,934 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.74 | 1,934 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Classroom 571 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mt., Direct/Indirect | 3 | 86 | 24 | 2.06 | 5,366 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 2.06 | 5,366 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | SGI 570 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mt., Direct/Indirect | 3 | 86 | 10 | 0.86 | 2,236 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 0.86 | 2,236 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 222.21 | Room 563 | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 7 | 0.43 | 1,128 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.43 | 1,128 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 5 | Dual Technology Occupancy Sensor - Switch Mt. | 1 | 20.0% | 226 | \$27 |
| 231.33 | Room 563 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mt., Direct/Indirect | 3 | 86 | 24 | 2.06 | 5,366 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 2.06 | 5,366 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 3 | Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mt. | 1 | 20.0% | 1,073 | \$128 |
| 231.33 | Conference Room 560B | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mt., Direct/Indirect | 3 | 86 | 4 | 0.34 | 894 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 0.34 | 894 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |

| Fixture Reference # | Location | Average Item Hours | Existing Fixtures | | | | | Proposed Fixtures Retrofit | | | | | Retrofit Energy Savings | | | Lighting Retrofit Costs | | | | Simple Payback | Control Ref # | 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, \$ | Material | | | Total Labor | Total All | Rebate Estimate | Controls Description | Qty of Controls | Hour Reduction % | Energy Savings, kWh | Energy Savings, \$ |
| 231.33 | Conference Room 560A | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 4 | 0.34 | 894 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 0.34 | 894 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | 0 | 0.0% | 0 | \$0 | | | |
| 222.21 | Classroom 418 | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Prismatic Lens | 2 | 62 | 24 | 1.49 | 3,869 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 1.49 | 3,869 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | 3 | Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mat. | 1 | 20.0% | 774 | \$92 | |
| 222.21 | Office 421 | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Prismatic Lens | 2 | 62 | 2 | 0.12 | 322 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.12 | 322 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 | |
| 222.21 | Marketing 420 | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Prismatic Lens | 2 | 62 | 16 | 0.99 | 2,579 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.99 | 2,579 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | 4 | Dual Technology Occupancy Sensor - Remote Mat. | 1 | 20.0% | 516 | \$61 | |
| 242.21 | Store 404 | 2600 | 2x4, 4 Lamp, 32w T8, Elect. Ballast, Surface Mat., Prismatic Lens | 4 | 107 | 6 | 0.64 | 1,669 | Existing to Remain | Existing to Remain | 4 | 107 | 0 | 0.64 | 1,669 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | 4 | Dual Technology Occupancy Sensor - Remote Mat. | 1 | 20.0% | 334 | \$40 | |
| 232.22 | Nurse Waiting | 2600 | 2x4, 3 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Parabolic Lens | 3 | 86 | 3 | 0.26 | 671 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 0.26 | 671 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | 5 | Dual Technology Occupancy Sensor - Switch Mat. | 1 | 20.0% | 134 | \$16 | |
| 231.33 | Nurse Waiting | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 22 | 1.89 | 4,919 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 1.89 | 4,919 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 | |
| 231.33 | Nurse's Office | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 3 | 0.26 | 671 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 0.26 | 671 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 | |
| 231.33 | Nurse's Exam Room | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 3 | 0.26 | 671 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 0.26 | 671 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 | |
| 221.31 | Wood Shop 128 | 2600 | 1x4, 2 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Prismatic Lens | 2 | 62 | 43 | 2.67 | 6,932 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 2.67 | 6,932 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 | |
| 221.31 | Classroom 127 | 2600 | 1x4, 2 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Prismatic Lens | 2 | 62 | 21 | 1.30 | 3,385 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 1.30 | 3,385 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | 3 | Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mat. | 1 | 20.0% | 677 | \$81 | |
| 221.31 | Classroom 126 | 2600 | 1x4, 2 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Prismatic Lens | 2 | 62 | 36 | 2.23 | 5,803 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 2.23 | 5,803 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | 4 | Dual Technology Occupancy Sensor - Remote Mat. | 2 | 20.0% | 1,161 | \$138 | |
| 551 | Stairwell C | 3000 | Recessed Down Light, 90w Lamp | 1 | 90 | 20 | 1.80 | 5,400 | Relamp | 18w LED PAR38 | 1 | 18 | 20 | 0.36 | 1,080 | 1.44 | 4,320 | \$514 | \$1,700.00 | \$1,000.00 | \$2,700.00 | \$0.00 | 5.25 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 211.43 | Stairwell C | 3000 | 1x4, 1 Lamp, 32w T8, Elect. Ballast, Wall Mat., Direct/Indirect | 1 | 28 | 6 | 0.17 | 504 | Existing to Remain | Existing to Remain | 1 | 28 | 0 | 0.17 | 504 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 | |
| 60 | Media Center 114 | 2600 | Pendant Mount, 8 Lamp, 40w Biac | 8 | 350 | 45 | 15.75 | 40,950 | Existing to Remain | Existing to Remain | 8 | 350 | 0 | 15.75 | 40,950 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 | |
| 221.22 | Media Center 114 | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Parabolic Lens | 2 | 62 | 73 | 4.53 | 11,768 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 4.53 | 11,768 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 | |
| 563 | Media Center 114 | 2600 | Recessed Down Light, (2)25w Quad CFL Lamp | 2 | 52 | 8 | 0.42 | 1,082 | Existing to Remain | Existing to Remain | 2 | 52 | 0 | 0.42 | 1,082 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 | |
| 231.33 | Classroom 115 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 18 | 1.55 | 4,025 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 1.55 | 4,025 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 | |
| 221.31 | Classroom 125 | 2600 | 1x4, 2 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Prismatic Lens | 2 | 62 | 42 | 2.60 | 6,770 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 2.60 | 6,770 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 | |
| 231.33 | Classroom 124 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 32 | 2.75 | 7,155 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 2.75 | 7,155 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 | |
| 221.22 | Work Room 113 | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Parabolic Lens | 2 | 62 | 11 | 0.68 | 1,773 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.68 | 1,773 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 | |
| 221.22 | Work Room 111 | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Parabolic Lens | 2 | 62 | 11 | 0.68 | 1,773 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.68 | 1,773 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 | |
| 232.22 | Periodicals 110 | 2600 | 2x4, 3 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Parabolic Lens | 3 | 86 | 9 | 0.77 | 2,012 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 0.77 | 2,012 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 | |
| 231.33 | Prof. Lib. 114A | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mat., Direct/Indirect | 3 | 86 | 14 | 1.20 | 3,130 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 1.20 | 3,130 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 | |
| 227.22 | SGI 114B | 2600 | 2x2, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Parabolic Lens | 2 | 73 | 6 | 0.44 | 1,139 | Existing to Remain | Existing to Remain | 2 | 73 | 0 | 0.44 | 1,139 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 | |
| 222.21 | Break Room 109 | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mat., Prismatic Lens | 2 | 62 | 6 | 0.37 | 967 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.37 | 967 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 | |

| Fixture Reference # | Location | Average Item Hours | Existing Fixtures | | | | | Proposed Fixtures Retrofit | | | | | Retrofit Energy Savings | | | Lighting Retrofit Costs | | | | 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, \$ | Material | Total Labor | Total All | Rebate Estimate | Simple Payback | Control Ref # | Controls Description | Qty of Controls | Hour Reduction % | Energy Savings, kWh | Energy Savings, \$ |
| 231.33 | Principal's Office | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mt., Direct/Indirect | 3 | 86 | 43 | 3.70 | 9,615 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 3.70 | 9,615 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Conference Room 108 | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mt., Direct/Indirect | 3 | 86 | 10 | 0.86 | 2,236 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 0.86 | 2,236 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Principal's Office | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mt., Direct/Indirect | 3 | 86 | 12 | 1.03 | 2,683 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 1.03 | 2,683 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 222.21 | Electrical Closet 107D | 1200 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 3 | 0.19 | 223 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.19 | 223 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 222.21 | Men's Restroom | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 1 | 0.06 | 161 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.06 | 161 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 222.21 | Women's Restroom | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 1 | 0.06 | 161 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.06 | 161 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 222.21 | Work Room 102A | 2600 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 5 | 0.31 | 806 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.31 | 806 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | AP Office 101A | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mt., Direct/Indirect | 3 | 86 | 6 | 0.52 | 1,342 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 0.52 | 1,342 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 231.33 | Office 101A | 2600 | 1x4, 3 Lamp, 32w T8, Elect. Ballast, Pendant Mt., Direct/Indirect | 3 | 86 | 4 | 0.34 | 894 | Existing to Remain | Existing to Remain | 3 | 86 | 0 | 0.34 | 894 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 222.21 | Stairwell M | 3000 | 2x4, 2 Lamp, 32w T8, Elect. Ballast, Recessed Mt., Prismatic Lens | 2 | 62 | 3 | 0.19 | 558 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.19 | 558 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 767 | Exterior | 4000 | 400w Probe Start MH "Shoobox" Parking Lot Light | 1 | 465 | 29 | 13.49 | 53,940 | Relamp | New-Tech NT-4293-TR-HO, 93w LED Retrofit | 1 | 93 | 29 | 2.70 | 10,788 | 10.79 | 43,152 | \$5,135 | \$13,050.00 | \$5,800.00 | \$18,850.00 | \$0.00 | 3.67 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 738 | Exterior | 4000 | 250w MH Shoobox Walk Light | 1 | 285 | 9 | 2.57 | 10,260 | Relamp | New-Tech NT-4293-TR-HO, 73w LED Retrofit | 1 | 42 | 9 | 0.38 | 1,512 | 2.19 | 8,748 | \$1,041 | \$4,050.00 | \$1,800.00 | \$5,850.00 | \$0.00 | 5.62 | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| PODS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 221.11 | Hall | 2000 | 1x4, 2 Lamp, 32w T8, Elect. Ballast, Surface Mt., Prismatic Lens | 2 | 62 | 12 | 0.74 | 1,488 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.74 | 1,488 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 221.11 | Office T1 | 2000 | 1x4, 2 Lamp, 32w T8, Elect. Ballast, Surface Mt., Prismatic Lens | 2 | 62 | 8 | 0.50 | 992 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.50 | 992 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 221.11 | Classroom T 2 | 800 | 1x4, 2 Lamp, 32w T8, Elect. Ballast, Surface Mt., Prismatic Lens | 2 | 62 | 12 | 0.74 | 595 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.74 | 595 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 221.11 | Classroom T 3 | 800 | 1x4, 2 Lamp, 32w T8, Elect. Ballast, Surface Mt., Prismatic Lens | 2 | 62 | 12 | 0.74 | 595 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.74 | 595 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 221.11 | Classroom T 4 | 800 | 1x4, 2 Lamp, 32w T8, Elect. Ballast, Surface Mt., Prismatic Lens | 2 | 62 | 12 | 0.74 | 595 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.74 | 595 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 221.11 | Classroom T 5 | 800 | 1x4, 2 Lamp, 32w T8, Elect. Ballast, Surface Mt., Prismatic Lens | 2 | 62 | 12 | 0.74 | 595 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.74 | 595 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| 221.11 | Classroom T 6 | 800 | 1x4, 2 Lamp, 32w T8, Elect. Ballast, Surface Mt., Prismatic Lens | 2 | 62 | 12 | 0.74 | 595 | Existing to Remain | Existing to Remain | 2 | 62 | 0 | 0.74 | 595 | 0.00 | 0 | \$0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | - | 0 | No New Controls | 0 | 0.0% | 0 | \$0 |
| TOTAL | | | | | | | 3,705 | 340 | 896,694 | | | | 209 | 311 | 801,368 | 29 | 95,325 | 11,344 | 38,465 | 24,540 | 63,005 | 0 | 5.55 | | | 78 | | 35,359 | 4,196 |

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 |
|-----------------------------|--------------|-----------------|------|-------------|-------------------|------------------------|------------------|------------------------|-------------------------|--------|
| North Brunswick High School | 61700 | SHARP NU-U235F2 | 3330 | 17.5 | 58,411 | 782.55 | 914,714 | 633.9 | 139,527 | 13.40 |



= Proposed PV Layout = Proposed Parking PV Layout

Notes:

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

| Project Name: LGEA Solar PV Project - North Brunswick High School Location: North Brunswick, NJ Description: Photovoltaic System 100% Financing - 15 year | | | | | | | | | |
|--|------------------------|---|---------------------|------------------------|--------------|------------------------------|----------------------|---------------|----------------------|
| Simple Payback Analysis | | | | | | | | | |
| | | Photovoltaic System 100% Financing - 15 year | | | | | | | |
| Total Construction Cost | | \$4,890,344 | | | | | | | |
| Annual kWh Production | | 914,714 | | | | | | | |
| Annual Energy Cost Reduction | | \$108,851 | | | | | | | |
| Average Annual SREC Revenue | | \$174,788 | | | | | | | |
| Simple Payback: | | 17.24 Years | | | | | | | |
| Life Cycle Cost Analysis | | | | | | | | | |
| Analysis Period (years): | | 15 | | | | Financing %: | | 100% | |
| Discount Rate: | | 3% | | | | Maintenance Escalation Rate: | | 3.0% | |
| Average Energy Cost (\$/kWh) | | \$0.119 | | | | 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 | 914,714 | \$108,851 | \$0 | \$228,679 | \$287,778 | \$207,432 | (\$157,681) | (\$157,681) |
| 2 | \$0 | 910,140 | \$112,116 | \$0 | \$227,535 | \$274,984 | \$220,226 | (\$155,558) | (\$313,239) |
| 3 | \$0 | 905,590 | \$115,480 | \$0 | \$226,397 | \$261,401 | \$233,809 | (\$153,333) | (\$466,572) |
| 4 | \$0 | 901,062 | \$118,944 | \$0 | \$225,265 | \$246,980 | \$248,230 | (\$151,000) | (\$617,572) |
| 5 | \$0 | 896,556 | \$122,513 | \$9,235 | \$224,139 | \$231,670 | \$263,540 | (\$157,793) | (\$775,365) |
| 6 | \$0 | 892,074 | \$126,188 | \$9,188 | \$178,415 | \$215,415 | \$279,795 | (\$199,796) | (\$975,160) |
| 7 | \$0 | 887,613 | \$129,974 | \$9,142 | \$177,523 | \$198,158 | \$297,052 | (\$196,856) | (\$1,172,016) |
| 8 | \$0 | 883,175 | \$133,873 | \$9,097 | \$176,635 | \$179,837 | \$315,374 | (\$193,799) | (\$1,365,815) |
| 9 | \$0 | 878,759 | \$137,889 | \$9,051 | \$175,752 | \$160,385 | \$334,825 | (\$190,620) | (\$1,556,435) |
| 10 | \$0 | 874,366 | \$142,026 | \$9,006 | \$131,155 | \$139,734 | \$355,476 | (\$231,035) | (\$1,787,471) |
| 11 | \$0 | 869,994 | \$146,287 | \$8,961 | \$130,499 | \$117,809 | \$377,401 | (\$227,385) | (\$2,014,856) |
| 12 | \$0 | 865,644 | \$150,675 | \$8,916 | \$129,847 | \$94,531 | \$400,679 | (\$223,604) | (\$2,238,460) |
| 13 | \$0 | 861,316 | \$155,195 | \$8,872 | \$129,197 | \$69,818 | \$425,392 | (\$219,689) | (\$2,458,149) |
| 14 | \$0 | 857,009 | \$159,851 | \$8,827 | \$85,701 | \$43,581 | \$451,629 | (\$258,485) | (\$2,716,634) |
| 15 | \$0 | 852,724 | \$164,647 | \$8,783 | \$85,272 | \$15,726 | \$479,484 | (\$254,074) | (\$2,970,708) |
| Totals: | | 13,250,736 | \$2,024,510 | \$99,078 | \$2,532,011 | \$2,537,807 | \$4,890,344 | (\$2,970,708) | (\$21,586,134) |
| Net Present Value (NPV) | | | | | | | (\$2,180,549) | | |