



ENERGY AUDIT – FINAL REPORT

MILLVILLE BOARD OF EDUCATION

SENIOR HIGH SCHOOL

200 NORTH WADE BOULEVARD

MILLVILLE, NJ 08332

ATTN: TONI BASICH

ASSISTANT SCHOOL BOARD

SECRETARY/PURCHASING

CEG PROJECT No. 9C09072

CONCORD ENGINEERING GROUP



520 SOUTH BURNT MILL ROAD

VOORHEES, NJ 08043

TELEPHONE: (856) 427-0200

FACSIMILE: (856) 427-6529

WWW.CEG-INC.NET

CONTACT: RAYMOND JOHNSON, PRINCIPAL

EMAIL: rjohnson@ceg-inc.net

Table of Contents

I.	EXECUTIVE SUMMARY	3
II.	INTRODUCTION	7
III.	METHOD OF ANALYSIS.....	9
IV.	HISTORIC ENERGY CONSUMPTION/COST.....	11
A.	ENERGY USAGE / TARIFFS	11
B.	ENERGY USE INDEX (EUI).....	16
C.	EPA ENERGY BENCHMARKING SYSTEM.....	18
V.	FACILITY DESCRIPTION	19
VI.	MAJOR EQUIPMENT LIST	21
VII.	ENERGY CONSERVATION MEASURES.....	22
VIII.	RENEWABLE/DISTRIBUTED ENERGY MEASURES	30
IX.	ENERGY PURCHASING AND PROCUREMENT STRATEGY	33
X.	INSTALLATION FUNDING OPTIONS.....	33
XI.	ADDITIONAL RECOMMENDATIONS	40

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

REPORT DISCLAIMER

The information contained within this report, including any attachment(s), is intended solely for use by the named addressee(s). If you are not the intended recipient, or a person designated as responsible for delivering such messages to the intended recipient, you are not authorized to disclose, copy, distribute or retain this report, in whole or in part, without written authorization from Concord Engineering Group, Inc., 520 S. Burnt Mill Road, Voorhees, NJ 08043.

This report may contain proprietary, confidential or privileged information. If you have received this report in error, please notify the sender immediately. Thank you for your anticipated cooperation.

I. EXECUTIVE SUMMARY

This report presents the findings of the energy audit conducted for:

Millville Board of Education
Senior High School
200 North Wade Boulevard
Millville, NJ 08332

Municipal Contact Person: Toni Basich
Facility Contact Person: Esteban Garcia

This audit is performed in connection with the New Jersey Clean Energy - Local Government Energy Audit Program. The energy audit is conducted to promote the mission of the office of Clean Energy, which is to use innovation and technology to solve energy and environmental problems in a way that improves the State's economy. This can be achieved through the wiser and more efficient use of energy.

The annual energy costs at this facility are as follows:

Electricity	\$317,747
Natural Gas	\$137,857
Total	\$455,604

The potential annual energy cost savings for each energy conservation measure (ECM) and renewable energy measure (REM) are shown below in Table 1. Be aware that the ECM's and REM' are not additive because of the interrelation of some of the measures. This audit is consistent with an ASHRAE level 2 audit. The cost and savings for each measure is $\pm 20\%$. The evaluations are based on engineering estimations and industry standard calculation methods. More detailed analyses would require engineering simulation models, hard equipment specifications, and contractor bid pricing.

Table 1
Financial Summary Table

ENERGY CONSERVATION MEASURES (ECM's)					
ECM NO.	DESCRIPTION	NET INSTALLATION COST^A	ANNUAL SAVINGS^B	SIMPLE PAYBACK (Yrs)	SIMPLE LIFETIME ROI
ECM #1	Gymnasium Lighting Replacement	\$14,400	\$6,712	2.1	599.2%
ECM #2	Lighting Controls	\$18,330	\$4,775	3.8	290.8%
ECM #3	Hot Water Boiler Replacement	\$213,750	\$30,520	7.0	257.0%
ECM #4	Energy Recovery Installation	\$156,000	\$13,152	11.9	26.5%
RENEWABLE ENERGY MEASURES (REM's)					
ECM NO.	DESCRIPTION	NET INSTALLATION COST	ANNUAL SAVINGS	SIMPLE PAYBACK (Yrs)	SIMPLE LIFETIME ROI
REM #1	Photovoltaic Panel Installation	\$2,475,720	\$186,642	13.3	13.1%

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

The estimated demand and energy savings for each ECM and REM is shown below in Table 2. The descriptions in this table correspond to the ECM's and REM's listed in Table 1.

Table 2
Estimated Energy Savings Summary Table

ENERGY CONSERVATION MEASURES (ECM's)				
ECM NO.	DESCRIPTION	ANNUAL UTILITY REDUCTION		
		ELECTRIC DEMAND (KW)	ELECTRIC CONSUMPTION (KWH)	NATURAL GAS (THERMS)
ECM #1	Gymnasium Lighting Replacement	10.9	40,680.0	0.0
ECM #2	Lighting Controls	0.0	28,940.0	0.0
ECM #3	Hot Water Boiler Replacement	0.0	0.0	20,346.0
ECM #4	Energy Recovery Installation	0.0	2,554.0	8,488.0
RENEWABLE ENERGY MEASURES (REM's)				
ECM NO.	DESCRIPTION	ANNUAL UTILITY REDUCTION		
		ELECTRIC DEMAND (KW)	ELECTRIC CONSUMPTION (KWH)	NATURAL GAS (THERMS)
REM #1	Photovoltaic Panel Installation	0.0	362,411.0	0.0

Concord Engineering Group (CEG) recommends proceeding with the implementation of all ECM's that provide a calculated simple payback at or under ten (10) years. The following Energy Conservation Measures are recommended for the facility:

- **ECM #1:** Gymnasium Light Replacement
- **ECM #2:** Lighting Controls
- **ECM #3:** Hot Water Boiler Replacement

CEG also recommends the implementation of ECM #4 even though the payback is greater than ten (10) years. This ECM will yield substantial energy savings upon implementation, greater savings than what are shown are possible pending further research and modeling.

In addition to the ECMs, there are maintenance and operational measures that can provide significant energy savings and provide immediate benefit. The ECMs listed above represent investments that can be made to the facility which are justified by the savings seen overtime. However, the maintenance items and small operational improvements below are typically achievable with on site staff or maintenance contractors and in turn have the potential to provide substantial operational savings compared to the costs associated. The following are recommendations which should be considered a priority in achieving an energy efficient building:

1. Chemically clean the condenser and evaporator coils periodically to optimize efficiency. Poorly maintained heat transfer surfaces can reduce efficiency 5-10%.
2. Maintain all weather stripping on entrance doors.
3. Clean all light fixtures to maximize light output.
4. Provide more frequent air filter changes to decrease overall system power usage and maintain better IAQ.

All in all, incentives provide financial motivation and much needed support for the implementation of energy conservation measures. Along with the NJ Smart Start program, the Pay for Performance Program incentives, sponsored by NJ Clean Energy Program, are applicable for this facility. The existing average operating demand above 200 KW and high energy consumption qualifies for the Pay for Performance Program. The incentive based on a 15% electrical energy reduction for this facility would qualify for an additional \$20,270 in the Pay for Performance Program. If natural gas consumption could be reduced by 15% the resultant incentive would be approximately \$9,650. This would equate to a total incentive equal to approximately \$29,920. This option is one to consider for a whole-building approach to energy reduction. The Pay for Performance Program represents a significant commitment to energy reduction of a facility. This option should be reviewed in more detail with a Pay for Performance Program partner.

II. INTRODUCTION

The comprehensive energy audit covers the 169,500 square foot Senior High School, which includes the following spaces: classrooms, gymnasium, cafeterias, auditoriums, kitchen, administration/faculty offices, library, music room, science labs, technology labs and computer labs.

Electrical and natural gas utility information is collected and analyzed for one full year's energy use of the building. The utility information allows for analysis of the building's operational characteristics; calculate energy benchmarks for comparison to industry averages, estimated savings potential, and baseline usage/cost to monitor the effectiveness of implemented measures. A computer spreadsheet is used to calculate benchmarks and to graph utility information (see the utility profiles below).

The Energy Use Index (EUI) is established for the building. Energy Use Index (EUI) is expressed in British Thermal Units/square foot/year (BTU/ft²/yr), which is used to compare energy consumption to similar building types or to track consumption from year to year in the same building. The EUI is calculated by converting the annual consumption of all energy sources to BTU's and dividing by the area (gross square footage) of the building. Blueprints (where available) are utilized to verify the gross area of the facility. The EUI is a good indicator of the relative potential for energy savings. A low EUI indicates less potential for energy savings, while a high EUI indicates poor building performance therefore a high potential for energy savings.

Existing building architectural and engineering drawings (where available) are utilized for additional background information. The building envelope, lighting systems, HVAC equipment, and controls information gathered from building drawings allow for a more accurate and detailed review of the building. The information is compared to the energy usage profiles developed from utility data. Through the review of the architectural and engineering drawings a building profile can be defined that documents building age, type, usage, major energy consuming equipment or systems, etc.

The preliminary audit information is gathered in preparation for the site survey. The site survey provides critical information in deciphering where energy is spent and opportunities exist within a facility. The entire site is surveyed to inventory the following to gain an understanding of how each facility operates:

- Building envelope (roof, windows, etc.)
- Heating, ventilation, and air conditioning equipment (HVAC)
- Lighting systems and controls
- Facility-specific equipment

The building site visit is performed to survey all major building components and systems. The site visit includes detailed inspection of energy consuming components. Summary of building occupancy schedules, operating and maintenance practices, and energy management programs

provided by the building manager are collected along with the system and components to determine a more accurate impact on energy consumption.

III. METHOD OF ANALYSIS

Post site visit work includes evaluation of the information gathered, researching possible conservation opportunities, organizing the audit into a comprehensive report, and making recommendations on HVAC, lighting and building envelope improvements. Data collected is processed using energy engineering calculations to anticipate energy usage for each of the proposed energy conservation measures (ECMs). The actual building's energy usage is entered directly from the utility bills provided by the owner. The anticipated energy usage is compared to the historical data to determine energy savings for the proposed ECMs.

It is pertinent to note, that the savings noted in this report are not additive. The savings for each recommendation is calculated as standalone energy conservation measures. Implementation of more than one ECM may in some cases affect the savings of each ECM. The savings may in some cases be relatively higher if an individual ECM is implemented in lieu of multiple recommended ECMs. For example implementing reduced operating schedules for inefficient lighting will result in a greater relative savings. Implementing reduced operating schedules for newly installed efficient lighting will result in a lower relative savings, because there is less energy to be saved. If multiple ECM's are recommended to be implemented, the combined savings is calculated and identified appropriately.

ECMs are determined by identifying the building's unique properties and deciphering the most beneficial energy saving measures available that meet the specific needs of the facility. The building construction type, function, operational schedule, existing conditions, and foreseen future plans are critical in the evaluation and final recommendations. Energy savings are calculated base on industry standard methods and engineering estimations. Energy consumption is calculated based on manufacturer's cataloged information when new equipment is proposed.

Cost savings are calculated based on the actual historical energy costs for the facility. Installation costs include labor and equipment costs to estimate the full up-front investment required to implement a change. Costs are derived from Means Cost Data, industry publications, and local contractors and equipment suppliers. The NJ Smart Start Building® program incentives savings (where applicable) are included for the appropriate ECM's and subtracted from the installed cost. Maintenance savings are calculated where applicable and added to the energy savings for each ECM. The life-time for each ECM is estimated based on the typical life of the equipment being replaced or altered. The costs and savings are applied and a simple payback, simple lifetime savings, and simple return on investment are calculated. See below for calculation methods:

ECM Calculation Equations:

$$\text{Simple Payback} = \left(\frac{\text{Net Cost}}{\text{Yearly Savings}} \right)$$

$$\text{Simple Lifetime Savings} = (\text{Yearly Savings} \times \text{ECM Lifetime})$$

$$\text{Simple Lifetime ROI} = \frac{(\text{Simple Lifetime Savings} - \text{Net Cost})}{\text{Net Cost}}$$

$$\text{Lifetime Maintenance Savings} = (\text{Yearly Maintenance Savings} \times \text{ECM Lifetime})$$

$$\text{Internal Rate of Return} = \sum_{n=0}^N \left(\frac{\text{Cash Flow of Period}}{(1 + \text{IRR})^n} \right)$$

$$\text{Net Present Value} = \sum_{n=0}^N \left(\frac{\text{Cash Flow of Period}}{(1 + \text{DR})^n} \right)$$

Net Present Value calculations based on Interest Rate of 3%.

IV. HISTORIC ENERGY CONSUMPTION/COST

A. Energy Usage / Tariffs

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.

The electric usage profile represents the actual electrical usage for the facility. Atlantic City Electric provides electricity to the facility under their Basic General Service (BGS) rate structure. 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 shows the actual natural gas energy usage for the facility. South Jersey Natural Gas provides the natural gas to the facility under the Basic General Supply Service (BGSS) rate structures. 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.

The third party commodity provider PEPCO Energy Service, Co is responsible for providing the commodities of Natural Gas to the Board of Education. Commodity and delivery is billed separately for each respective utility service.

The overall cost for utilities is calculated by dividing the total cost by the total usage. Based on the utility history provided, the average cost for utilities at this facility is as follows:

<u>Description</u>	<u>Average</u>
Electricity	16.5¢ / kWh
Natural Gas	\$1.50 / Therm

Table 3
Electricity Billing Data

ELECTRIC USAGE SUMMARY			
Utility Provider: Atlantic City Electric Rate: Annual General Service (AGS) Meter No: 105748220 & 1229294 & 23677286 & 82471168 & 86422390 Customer ID No: - Third Party Utility - TPS Meter / Acct No: -			
MONTH OF USE	CONSUMPTION KWH	DEMAND	TOTAL BILL
Jan-09	201,793	638.9	\$47,781
Feb-09	191,048	510.8	\$25,453
Mar-09	167,259	548.1	\$22,361
Apr-09	152,586	569.6	\$39,444
May-09	154,536	560.1	\$23,576
Jun-08	150,443	584.4	\$24,244
Jul-08	129,775	412.2	\$21,410
Aug-08	112,841	372.2	\$18,634
Sep-08	154,926	530.0	\$24,549
Oct-08	152,730	544.0	\$21,207
Nov-08	166,385	561.2	\$22,555
Dec-08	196,340	541.3	\$26,535
Totals	1,930,662	638.9 Max	\$317,747
AVERAGE DEMAND 531.1 KW average AVERAGE RATE \$0.165 \$/kWh			

Figure 1
Electricity Usage Profile

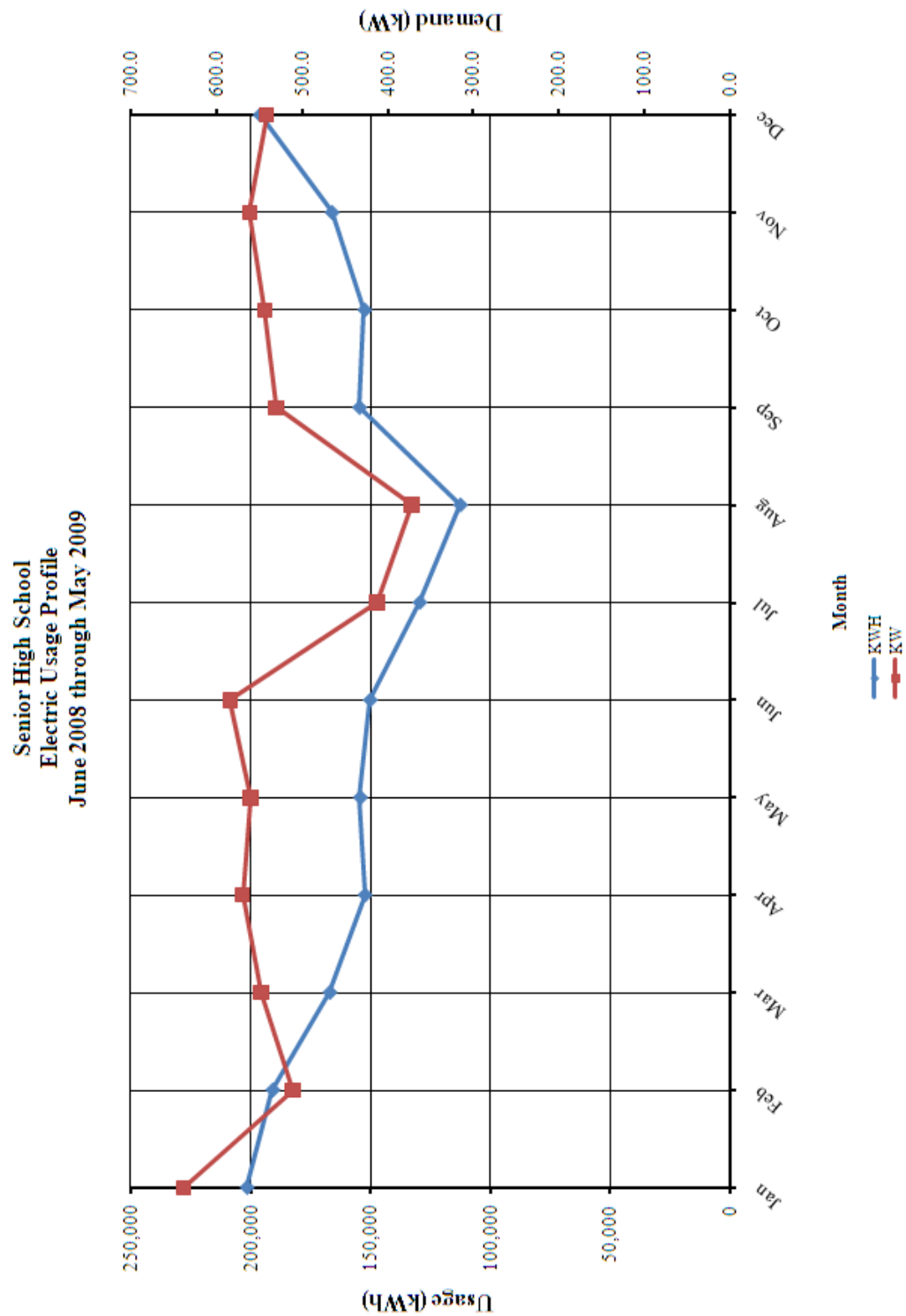
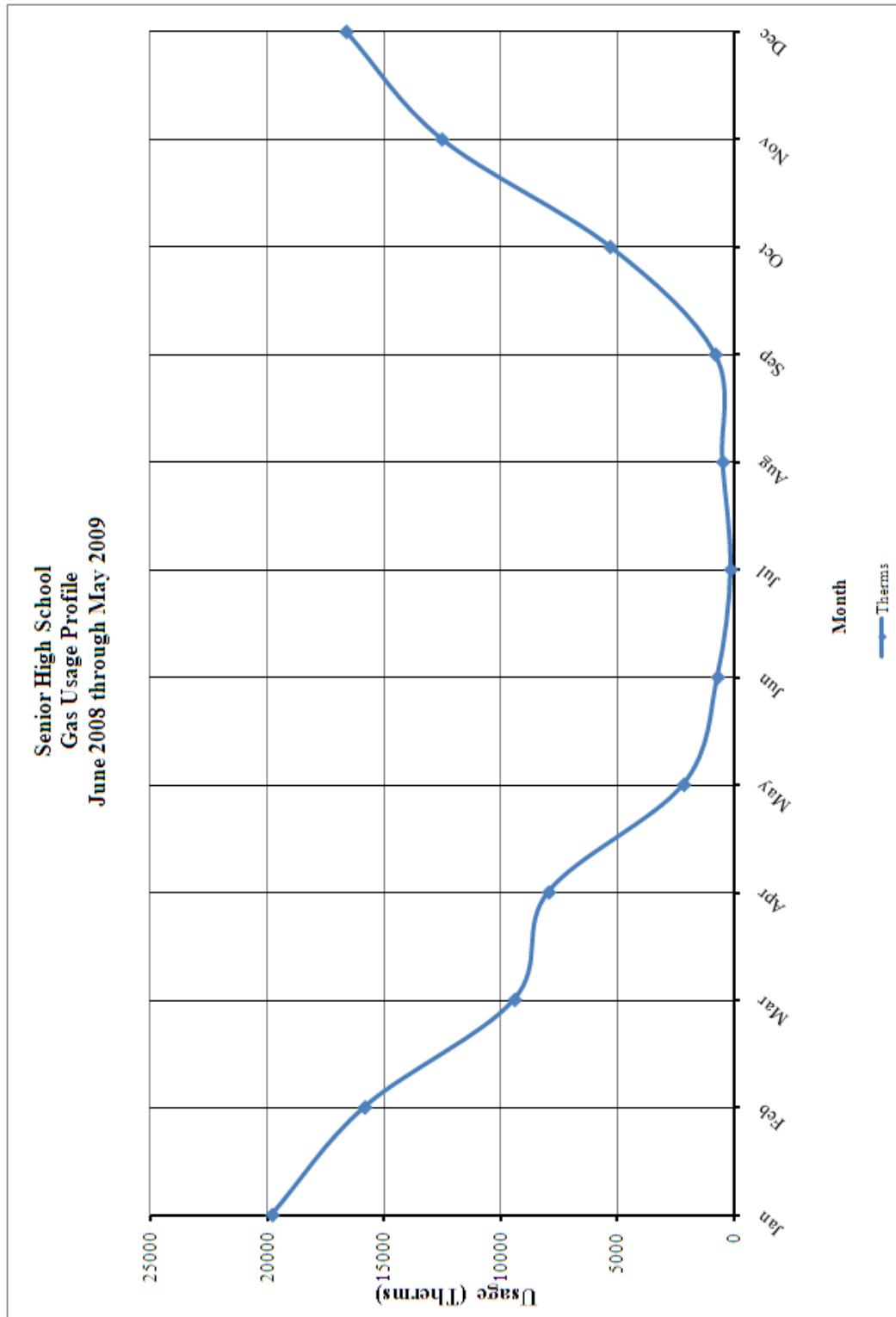


Table 4
Natural Gas Billing Data

NATURAL GAS USAGE SUMMARY		
Utility Provider: South Jersey Gas Rate: BGSS Meter No: 0210410 & 0254888 Point of Delivery ID: - Third Party Utility Provider: PEPCO Energy Service, Inc. TPS Meter No: -		
MONTH OF USE	CONSUMPTION (THERMS)	TOTAL BILL
Jan-09	19,803.00	\$29,471.17
Feb-09	15,841.00	\$24,115.46
Mar-09	9,419.00	\$14,345.19
Apr-09	7,960.00	\$12,164.37
May-09	2,172.00	\$3,343.71
Jun-08	719.00	\$1,387.18
Jul-08	155.00	\$333.20
Aug-08	499.00	\$824.79
Sep-08	819.00	\$1,272.09
Oct-08	5,330.00	\$7,434.01
Nov-08	12,539.00	\$18,548.61
Dec-08	16,634.00	\$24,617.43
TOTALS	91,890.00	\$137,857.21
AVERAGE RATE:	\$1.50	\$/THERM

Figure 2
Natural Gas Usage Profile



B. Energy Use Index (EUI)

Energy Use Index (EUI) is a measure of a building's annual energy utilization per square foot of building. This calculation is completed by converting all utility usage consumed by a building for one year, to British Thermal Units (BTU) and dividing this number by the building square footage. EUI is a good measure of a building's energy use and is utilized regularly for comparison of energy performance for similar building types. The Oak Ridge National Laboratory (ORNL) Buildings Technology Center under a contract with the U.S. Department of Energy maintains a Benchmarking Building Energy Performance Program. The ORNL website determines how a building's energy use compares with similar facilities throughout the U.S. and in a specific region or state.

Source use differs from site usage when comparing a building's energy consumption with the national average. Site energy use is the energy consumed by the building at the building site only. Source energy use includes the site energy use as well as all of the losses to create and distribute the energy to the building. Source energy represents the total amount of raw fuel that is required to operate the building. It incorporates all transmission, delivery, and production losses, which allows for a complete assessment of energy efficiency in a building. The type of utility purchased has a substantial impact on the source energy use of a building. The EPA has determined that source energy is the most comparable unit for evaluation purposes and overall global impact. Both the site and source EUI ratings for the building are provided to understand and compare the differences in energy use.

The site and source EUI for this facility is calculated as follows:

$$\text{Building Site EUI} = \frac{(\text{Electric Usage in kBtu} + \text{Gas Usage in kBtu})}{\text{Building Square Footage}}$$

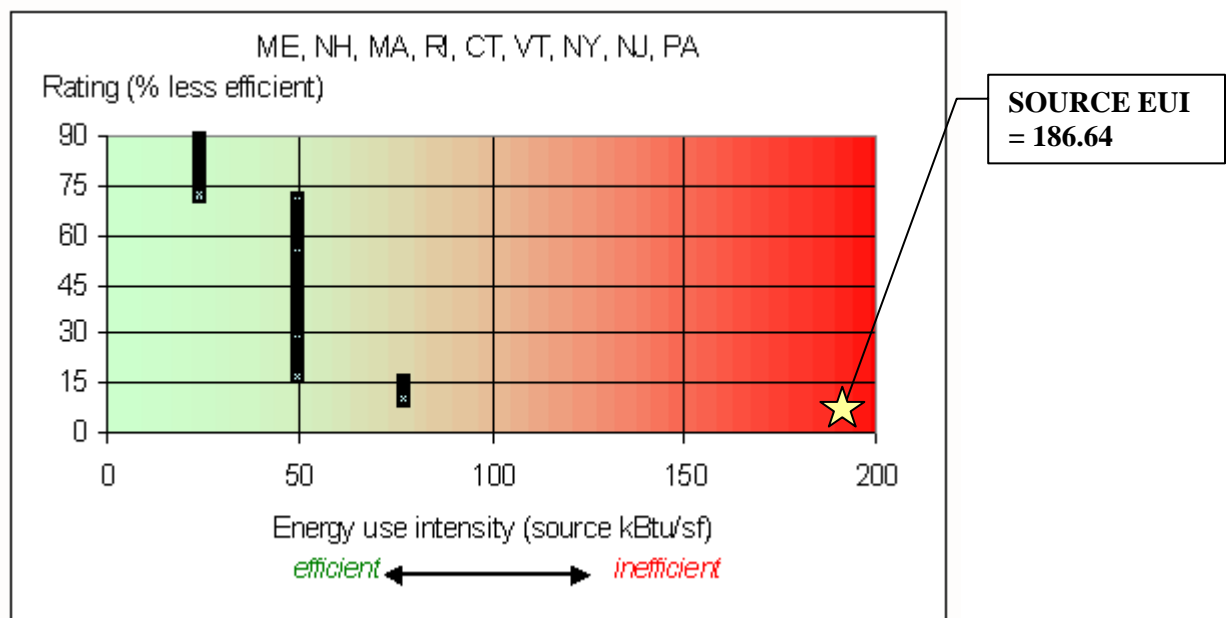
$$\text{Building Source EUI} = \frac{(\text{Electric Usage in kBtu} \times \text{SS Ratio} + \text{Gas Usage in kBtu} \times \text{SS Ratio})}{\text{Building Square Footage}}$$

Table 5
Facility Energy Use Index (EUI) Calculation

ENERGY USE INTENSITY CALCULATION						
ENERGY TYPE	BUILDING USE			SITE ENERGY kBtu	SITE-SOURCE RATIO	SOURCE ENERGY kBtu
	kWh	Therms	Gallons			
ELECTRIC	1930661.5			6,591,278	3.340	22,014,870
NATURAL GAS		91890.0		9,189,000	1.047	9,620,883
FUEL OIL			0.0	0	1.010	0
PROPANE			0.0	0	1.010	0
TOTAL				15,780,278		31,635,753
*Site - Source Ratio data is provided by the Energy Star Performance Rating Methodology for Incorporating Source Energy Use document issued Dec 2007.						
BUILDING AREA	169,500 SQUARE FEET					
BUILDING SITE EUI	93.10 kBtu/SF/YR					
BUILDING SOURCE EUI	186.64 kBtu/SF/YR					

Figure 3 below depicts a national EUI grading for the source use of High School.

Figure 3
Source Energy Use Intensity Distributions: High School



C. EPA Energy Benchmarking System

The United States Environmental Protection Agency (EPA) in an effort to promote energy management has created a system for benchmarking energy use amongst various end users. The benchmarking tool utilized for this analysis is entitled Portfolio Manager. The Portfolio Manager tool allows tracking and assessment of energy consumption via the template forms located on the ENERGY STAR website (www.energystar.gov). The importance of benchmarking for local government municipalities is becoming more important as utility costs continue to increase and emphasis is being placed on carbon reduction, greenhouse gas emissions and other environmental impacts.

Based on information gathered from the ENERGY STAR website, Government agencies spend more than \$10 billion a year on energy to provide public services and meet constituent needs. Furthermore, energy use in commercial buildings and industrial facilities is responsible for more than 50 percent of U.S. carbon dioxide emissions. It is vital that local government municipalities assess facility energy usage, benchmark energy usage utilizing Portfolio Manager, set priorities and goals to lessen energy usage and move forward with priorities and goals.

In accordance with the Local Government Energy Audit Program, CEG has created an ENERGY STAR account for the municipality to access and monitoring the facility's yearly energy usage as it compares to facilities of similar type. The login page for the account can be accessed at the following web address; the username and password are also listed below:

<https://www.energystar.gov/istar/pmpam/index.cfm?fuseaction=login.login>

User Name: millvilleboe
Password: lgeaceg2009

Security Question: What city were you born in?
Security Answer: "millville"

The utility bills and other information gathered during the energy audit process are entered into the Portfolio Manager. The following is a summary of the results for the facility:

Table 6
ENERGY STAR Performance Rating

ENERGY STAR PERFORMANCE RATING		
FACILITY DESCRIPTION	ENERGY PERFORMANCE RATING	NATIONAL AVERAGE
Senior High School	34	50

Refer to **Statement of Energy Performance Appendix** for the detailed energy summary.

V. FACILITY DESCRIPTION

The 169,500 SF Senior High School is a two story facility comprised of classrooms, gymnasium, cafeterias, auditoriums, kitchen, administration/faculty offices, library, music room, science labs, technology labs and computer labs. The typical hours of operation for this facility are between 7:00 am and 12:00 am. Exterior walls are brick and block construction with minimum insulation typical of the time period. The total amount of insulation within the wall is unknown. The windows throughout the facility are in fair condition and appear to be maintained to some extent. Typical windows throughout the facility are single pane, ¼” clear glass with aluminum frames. Blinds are utilized throughout the facility per occupant comfort. The blinds are valuable because they help to reduce heat loss in the winter and reduce solar heat gain in the summer. The roof is typical built up rubber construction with light tan stone covering. The amount of insulation below the roofing is unknown. The building was built in 1964 with no additions to the main school building since the original construction.

HVAC Systems

The school boiler room contains three (3) identical Superior fire tube boilers that supply heat to the various hot water heating systems throughout the school. Each boiler has an estimated gross heating output of 150 boiler horsepower approximately 5,000 MBH. It appears that the boiler capacity was designed with 100% redundancy. The boilers are 1963 vintage and have served the facility for forty-six (46) years, 11 years longer than their estimated thirty-five (35) year service life. This style and sizing of boiler plant was the bread and butter design for decades, due to outstanding reliability and ease of operation, although inefficient according to today’s standards. Hot water is distributed through the building via three (3) end-suction pumps, each with a 15 horsepower motor.

The school is heated via a standard two pipe heating system. All classroom and lab rooms are equipped with individual unit ventilators (UVs), which provide heating and ventilation to the spaces. A unit ventilator replacement occurred about 2004. At this time the existing UVs were replaced with new Trane models. The new model came equipped with a hot water heating coil and DX cooling coil. A phased approach was taken for the installation of each UV’s remote condensing unit to avoid the large cost premium of installing them all at once. Since the initial installation many of the condensing units have been installed with more planned for the future. All classrooms are slated to have air conditioning installed but a defined schedule has not yet been determined. The **Major Equipment List Appendix** details the number of condensing units currently installed.

Technology labs and locker rooms are heated by vertical indoor air handling units provided by the Trane Company. These units are equipped with hot water coils piped into the schools boilers loop and provide heating and ventilation to each space. A detailed list showing locations and capacities can be found in the **Major Equipment List Appendix**.

The gymnasium, cafeterias and multipurpose auditorium are provided heating and ventilation by AAF Central Station air handling units (AHUs). These are heating only units equipped with hot

water coils piped into the buildings hot water heating loop. A detailed list showing locations and capacities can be found in the **Major Equipment List Appendix**.

The auditorium is conditioned by two (2) McQuay roof top units (RTUs). Each unit uses a gas fired heat exchanger and DX cooling coil to condition the space. These units do not use the school's hot water heating plant. A detailed list showing locations and capacities can be found in the **Major Equipment List Appendix**.

The administration and library section of the school uses a standard VAV 4-pipe system for conditioning and ventilation. Hot water baseboard is used to heat the space while indoor air handlers are used to distribute chilled air. Two (2) Trane air handlers equipped with chilled water coils are piped to a Carrier water cooled chiller which has a remote condensing section located on the space's roof. A detailed list showing locations and capacities can be found in the **Major Equipment List Appendix**.

Entrance doorways are heated via hot water cabinet heaters.

HVAC System Controls

The HVAC systems throughout the building are monitored offsite by a Honeywell electronic control system. Each area of the school contains a remote Honeywell thermostat that controls the various heating, ventilating and cooling equipment.

Domestic Hot Water

Domestic hot water for the facility is provided by Paterson Kelly Thermifac Boiler which is a natural gas fired unit located in the boiler room. This boiler is connected to a large (approximately 750 gallon) hot water storage tank. The hot water boiler circulates the water in the main storage tank to maintain a constant temperature. Hot water supply is then drawn off the storage tank. The kitchen domestic hot water system is separate from the school's system. A 100 gallon AO Smith unit with input capacity of 200 MBH satisfies the kitchen's hot water needs. The domestic hot water piping insulation appeared to be in good condition.

Lighting

Typical lighting throughout the building is fluorescent tube lay-in fixtures with T-8 lamps and electronic ballasts. Storage rooms and closets are lit with a mixture of incandescent lamps and compact fluorescent lamps. All incandescent lamps throughout the facility should be replaced with their compact fluorescent equivalent. A detailed list containing all building light fixtures can be found in the **Investment Grade Lighting Audit Appendix** of this report.

VI. MAJOR EQUIPMENT LIST

The equipment list is considered major energy consuming equipment and through 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.

VII. ENERGY CONSERVATION MEASURES

ECM #1: Gymnasium Lighting Replacement

Description:

The existing Gymnasium lighting systems comprise of a total of forty-eight (48) 400-Watt Metal-Halide (MH) fixtures which have poor lumen maintenance (approximately 30% reduction in lighting output at 40% of rated lamp life). Also, the fixture ballast can be very noisy, require up to 10 minutes to re-strike after shutdown, and there is a noticeable color shift as the lamp approaches the end of its life. The current lighting system is inefficient compared to today's standard, the facility would benefit by replacing these lighting with a more efficient alternative

This ECM would replace each of the existing Gymnasium light fixtures with new T-5 high-bay fixtures with, 4-foot T5 High Output (HO) lamps. The T-5 HO lighting system will utilize 50% of the energy used by the metal halide fixtures. The T-5 HO lamps are rated for 20,000 hours versus the 10,000 hours for the 400-Watt MH lamps so there would be a savings in replacement cost/labor. In addition, the T-5 HO lamps have better lighting quality and lumen maintenance.

Energy Savings Calculations:

The SmartStart Building® incentive is \$100 per fixture which equates to: $\$100 \times 48 \text{ fixtures} = \$4,800$.

Refer to the **Investment Grade Lighting Audit Appendix** for a detailed energy savings calculation for the replacement of the gymnasium fixtures.

Energy Savings Summary:

ECM #1 - ENERGY SAVINGS SUMMARY	
Installation Cost (\$):	\$19,200
NJ Smart Start Equipment Incentive (\$):	\$4,800
Net Installation Cost (\$):	\$14,400
Maintenance Savings (\$/Yr):	\$0
Energy Savings (\$/Yr):	\$6,712
Total Yearly Savings (\$/Yr):	\$6,712
Estimated ECM Lifetime (Yr):	15
Simple Payback	2.1
Simple Lifetime ROI	599.2%
Simple Lifetime Maintenance Savings	\$0
Simple Lifetime Savings	\$100,680
Internal Rate of Return (IRR)	46%
Net Present Value (NPV)	\$65,727.42

ECM #2: Lighting Controls

Description:

In some areas the lighting is left on unnecessarily. In many cases the lights are left on because of the inconvenience to manually switch lights on when the room is first occupied. This is common in storage 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 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. Photocell control senses light levels and turn off or reduce lights when there is adequate daylight. Photocells are mostly used outside, but are becoming more popular in energy-efficient interior lighting designs as well.

ASHRAE Standard 90.1-2004, Appendix G is a reference standard for modeling building efficiency. The standard estimates that lighting controls provide a 10% reduction in lighting power usage for daytime occupancies in buildings over 5,000 SF, and 15% reduction in buildings under 5,000 SF. This ECM implements dual technology occupancy sensors in classrooms (that are not already controlled), offices, private study rooms and storage areas.

The ECM includes replacement of standard wall switches with sensors wall switches for individual rooms, ceiling mount sensors for large areas or restrooms. Sensors shall be manufactured by Sensorswitch, Watt Stopper or equivalent.

The “Investment Grade Lighting Audit” appendix of this indicates which areas of the facility would benefit from lighting control. The calculations adjust the lighting power usage by 10% for all areas that include occupancy sensor lighting controls.

Energy Savings Calculations:

$$\text{Energy Savings} = 10\% \times \text{Occupancy Sensored Light Energy (kWh / Yr)}$$

$$\text{Energy Savings} = 10\% \times 289,390 \text{ (kWh)} = 28,939 \text{ (kWh)}$$

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

$$\text{Savings} = 28,939 \text{ (kWh)} \times 0.165 \left(\frac{\$}{\text{kWh}} \right) = \$4,775$$

Installation cost per dual-technology sensor (Basis: Sensorswitch or equivalent) is \$160/unit including material and labor.

$$\text{Installation Cost} = (\# \text{ of sensors} \times \$ \text{ per sensor}) = (131 \times \$160) = \underline{\$ 20,960}$$

NJ Smart Start[®] Program Incentives are calculated as follows:

From Appendix C, the incentive for installing a lighting control is \$20 per controller.

$$\text{Smart Start}^{\text{®}} \text{ Incentive} = (\# \text{ of controller} \times \$ 20) = (131 \times \$ 20) = \underline{\$2,620}$$

Energy Savings Summary:

ECM #2 - ENERGY SAVINGS SUMMARY	
Installation Cost (\$):	\$20,950
NJ Smart Start Equipment Incentive (\$):	\$2,620
Net Installation Cost (\$):	\$18,330
Maintenance Savings (\$/Yr):	\$0
Energy Savings (\$/Yr):	\$4,775
Total Yearly Savings (\$/Yr):	\$4,775
Estimated ECM Lifetime (Yr):	15
Simple Payback	3.8
Simple Lifetime ROI	290.8%
Simple Lifetime Maintenance Savings	\$0
Simple Lifetime Savings	\$71,625
Internal Rate of Return (IRR)	25%
Net Present Value (NPV)	\$38,673.64

ECM #3: Hot Water Boiler Replacement

Description:

Heating is provided the facility by three (3) outdated Superior Hot Water gas fired boilers. The existing units are inefficient with an estimated combustion efficiency of 70% for heating, when new. The boilers are original to the school making them forty-five (45) years old. The boilers have exceeded their expected service life by ten (10) years this style of boiler has an expected service live of thirty-five (35) Years

This energy conservation measure will replace the gas fired boilers serving the facility. Based on review of the facility and boiler plant it is assumed the boilers were oversized when designed, more heating capacity exists then is needed. This calculation is based on a one for one replacement of the existing equipment; a Professional Engineer should verify sizing prior to boiler installation. Calculation is based on the following equipment: Aerco, Benchmark BMK-3.0LN condensing boiler or equivalent. The existing units will be replaced with high energy efficient units with capacities sized to meet the buildings heating requirements. Four (4) of the above mentioned boilers will be installed; a controller will interlink the boilers to correctly sequence firing, one (1) of the four (4) boilers has been added in for redundancy.

Energy Savings Calculations:

Existing Gas Fired Boilers

Rated Capacity of Plant = 15,000 MBh Input, 10,500 MBh Output (Natural Gas)

Combustion Efficiency = 70%

Age & Radiation Losses = 5%

Thermal Efficiency = 65%

Replacement Gas Fired Boiler

High-Efficiency Gas Fired Boiler

Rated Capacity of Plant (3 Boilers) = 9,000 MBh Input, 8,307 MBh Output (Natural Gas)

Combustion Efficiency = 92.3%

Radiation Losses = 0.5%

Thermal Efficiency = 91.8%

Operating Data

Heating Season Fuel Consumption = 82,700 Therms of natural (based on 90% natural gas billing data).

$$\text{Heating Energy Savings} = \text{Fuel Consumption} \times \frac{(\text{New Furnace Efficiency} - \text{Old Furnace Efficiency})}{(\text{New Furnace Efficiency})}$$

$$\text{Heating Energy Savings} = 82,700 \text{ Therms} \times (91.8\% - 65\%) / (91.8\%) = 20,346 \text{ Therms}$$

$$\text{Heating Energy Cost Savings} = \text{Annual Energy Savings} \times \$/\text{Therm}$$

$$\text{Heating Energy Cost Savings} = 20,346 \text{ Therms} \times \$1.50/\text{Therm} = \underline{\$30,520/\text{yr.}}$$

Equipment Incentives:

$$\text{Heating Smart Start Equipment Incentive} = \$1.00/\text{MBh for boilers} > 1,500 \text{ MBh.}$$

$$\text{Total Smart Start Equipment Incentive} = 3 \text{ Units} \times (\$1.00/\text{MBh} \times 3,000 \text{ MBh})$$

$$\text{Total Smart Start Equipment Incentive} = \$9,000$$

Energy Savings Summary:

ECM #3 - ENERGY SAVINGS SUMMARY	
Installation Cost (\$):	\$222,750
NJ Smart Start Equipment Incentive (\$):	\$9,000
Net Installation Cost (\$):	\$213,750
Maintenance Savings (\$/Yr):	\$0
Energy Savings (\$/Yr):	\$51,150
Total Yearly Savings (\$/Yr):	\$51,150
Estimated ECM Lifetime (Yr):	25
Simple Payback	4.2
Simple Lifetime ROI	498.2%
Simple Lifetime Maintenance Savings	\$0
Simple Lifetime Savings	\$1,278,750
Internal Rate of Return (IRR)	24%
Net Present Value (NPV)	\$676,932.50

ECM #4: Energy Recovery Unit Installation

Description:

The cafeterias and gymnasiums are conditioned by heating only AAF air handling units. Each of these spaces requires large quantities of outside air to satisfy space ventilation needs. The current arrangements utilize no energy recovery. The conditioned exhaust air is expelled from the space without ringing any of the heating energy out.

This ECM installs a static plate energy recovery unit for each of the four (4) air handling units serving the spaces, RenewAire of equivalent. This unit uses the exhaust air stream to pre-heat the incoming outdoor air, lowering the impact on the schools boiler. Energy savings calculations were performed using Trane Trace® 700 comprehensive building analysis software. Usage shown below is for all four (4) units.

Energy Savings Calculations:

Assumptions:

Area Served	Required Outdoor Air (CFM)	Total Air to Space (CFM)
Cafeteria A	4,500	5,000
Cafeteria B	4,500	5,000
Boys Gymnasium	6,000	18,000
Girls Gymnasium	6,000	18,000

Total Existing Electric Usage = 308,800 kWh
 Total Existing Natural Gas Usage = 24,242 Therms

Total New Electric Usage = 306,246 kWh
 Total New Natural Usage = 15,754 Therms

Electric Cost Savings = (Existing – New) x \$/kWh
 Electric Cost Savings = (308,800 kWh - 306,246 kWh) x \$0.165 = \$420

Natural Gas Cost Savings = (Existing – New) x \$/Therm
 Natural Gas Cost Savings = (24,242 Therms - 15,754 Therms) x \$1.50/Therm = \$12,732

Total Cost Savings = Electric Savings + Natural Gas Savings
 Total Cost Savings = \$420 + \$12,732 = \$13,152

Currently no Smart Start incentives are available for an energy recovery system.

Energy Savings Summary:

ECM #4 - ENERGY SAVINGS SUMMARY	
Installation Cost (\$):	\$156,000
NJ Smart Start Equipment Incentive (\$):	\$0
Net Installation Cost (\$):	\$156,000
Maintenance Savings (\$/Yr):	\$0
Energy Savings (\$/Yr):	\$13,152
Total Yearly Savings (\$/Yr):	\$13,152
Estimated ECM Lifetime (Yr):	15
Simple Payback	11.9
Simple Lifetime ROI	26.5%
Simple Lifetime Maintenance Savings	\$0
Simple Lifetime Savings	\$197,280
Internal Rate of Return (IRR)	3%
Net Present Value (NPV)	\$1,007.72

VIII. RENEWABLE/DISTRIBUTED ENERGY MEASURES

Globally, renewable energy has become a priority affecting international and domestic energy policy. The State of New Jersey has taken a proactive approach, and has recently adopted in its Energy Master Plan a goal of 30% renewable energy by 2020. To help reach this goal New Jersey created the Office of Clean Energy under the direction of the Board of Public Utilities and instituted a Renewable Energy Incentive Program to provide additional funding to private and public entities for installing qualified renewable technologies. A renewable energy source can greatly reduce a building's operating expenses while producing clean environmentally friendly energy. CEG has assessed the feasibility of installing renewable energy technologies for the Millville Board of Education, to evaluate if there is any potential for solar or wind energy generation.

Solar energy produces clean energy and reduces a building's carbon footprint. This is accomplished via photovoltaic panels which can be mounted on all south and southwestern facades of the building. Flat roof, as well as sloped areas can be utilized; flat areas will have the panels turned to an optimum solar absorbing angle. (A structural survey of the roof would be necessary before the installation of PV panels is considered). Parking lots can also be utilized for the installation of a solar array. A truss system can be installed that is high enough to park a vehicle under the array, this way no parking lot area is lost. The state of NJ has instituted a program in which one Solar Renewable Energy Certificate (SREC) is given to the Owner for every 1000 kWh of generation. SREC's can be sold anytime on the market at their current market value. The value of the credit varies upon the current need of the power companies. The average value per credit is around \$350, this value was used in our financial calculations. This equates to \$0.35 per kWh generated.

CEG has reviewed the facility and believes a roof mounted system is best suited. A depiction of the proposed area layouts is shown in **Renewable / Distributed Energy Measures Calculation, Appendix**. Based on measurements of the roof it was determined that a system size of 275 kilowatts could be installed. The total system has an estimated kilowatt hour production of 362,411 KWh annually, reducing the overall electric consumption by approximately 19%. A detailed financial analysis can be found in **Renewable / Distributed Energy Measures Calculation, Appendix**. This analysis illustrates the payback of the system over a 25 year period. The eventual degradation of the solar panels and the price of accumulated SREC's are factored into the payback.

The proposed photovoltaic array layout is designed based on the specifications for the Sun Power SPR-230 panel. This panel has a "DC" rated full load output of 230 watts, and has a total panel conversion efficiency of 18%. Although panels rated at higher wattages are available through Sun Power and other various manufacturers, in general most manufacturers who produce commercially available solar panels produce a similar panel in the 200 to 250 watt range. This provides more manufacturer options to the public entity if they wish to pursue the proposed solar recommendation without losing significant system capacity.

Estimated solar array generation was then calculated based on the National Renewable Energy Laboratory PVWatts Version 1.0 Calculator. In order to calculate the array generation an

appropriate location with solar data on file must be selected. In addition the system DC rated kilowatt (kW) capacity must be inputted, a DC to AC de-rate factor, panel tilt angle, and array azimuth angle. The DC to AC de-rate factor is based on the panel nameplate DC rating, inverter and transformer efficiencies (95%), mismatch factor (98%), diodes and connections (100%), dc and ac wiring (98%, 99%), soiling, (95%), system availability (95%), shading (if applicable), and age (new/100%). The overall DC to AC de-rate factor has been calculated at an overall rating of 81%. The PVWatts Calculator program then calculates estimated system generation based on average monthly solar irradiance and user provided inputs. The monthly energy generation and offset electric costs from the PVWatts calculator is shown in the Renewable/Distributed Energy Measures Calculation appendix.

The proposed solar array is qualified by the New Jersey Board of Public Utilities Net Metering Guidelines as a Class I Renewable Energy Source. These guidelines allow onsite customer generation using renewable energy sources such as solar and wind with a capacity of 2 megawatts (MW) or less. This limits a customer system design capacity to being a net user and not a net generator of electricity on an annual basis. Although these guidelines state that if a customer does net generate (produce more electricity than they use), the customer will be credited those kilowatt-hours generated to be carried over for future usage on a month to month basis. Then, on an annual basis if the customer is a net generator the customer will then be compensated by the utility the average annual PJM Grid LMP price per kilowatt-hour for the over generation. Due to the aforementioned legislation, the customer is at limited risk if they generate more than they use at times throughout the year. With the inefficiency of today's energy storage systems, such as batteries, the added cost of storage systems is not warranted and was not considered in the proposed design.

Direct purchase involves the BOE paying for 100% of the total project cost upfront via one of the methods noted in the Installation Funding Options section below. Calculations include a utility inflation rate as well as the degradation of the solar panels over time. Based on our calculations the following is the payback period:

FINANCIAL SUMMARY - PHOTOVOLTAIC SYSTEM				
PAYMENT TYPE	SIMPLE PAYBACK	SIMPLE ROI	NET PRESENT VALUE	INTERNAL RATE OF RETURN
Direct Purchase	13.3 Years	7.5%	\$2,619,306	6.3 %

*The solar energy measure is shown for reference in the executive summary REM table as REM#1.

Given the large amount of capital required by the BOE to invest in a solar system through a Direct Purchase CEG does not recommend the BOE pursue this route. It would be more advantageous for the BOE to solicit Power Purchase Agreement (PPA) Providers who will own, operate, and maintain the system for a period of 15 years. During this time the PPA Provider would sell all of the electric generated by Solar Arrays to the BOE at a reduced rate compared to their existing electric rate.

In addition to the Solar Analysis, CEG also conducted a review of the applicability of wind energy for the facility. Wind energy production is another option available through the Renewable Energy Incentive Program. Wind turbines of various types can be utilized to produce clean energy on a per building basis. Cash incentives are available per kWh of electric usage. CEG's review of the applicability of wind energy for the facility found; the low average wind speed and proximity to residential neighborhoods make facility a poor candidate for wind energy production.

IX. ENERGY PURCHASING AND PROCUREMENT STRATEGY

Load Profile:

Load Profile analysis was performed to determine the seasonal energy usage of the facility. Irregularities in the load profile will indicate potential problems within the facility. Consequently based on the profile a recommendation will be made to remedy the irregularity in energy usage. For this report, the facility's energy consumption data was gathered in table format and plotted in graph form to create the load profile. Refer to the Electric and Natural Gas Usage Profiles included within this report to reference the respective electricity and natural gas usage load profiles.

Electricity:

This facility is comprised of classrooms, gymnasium, cafeterias, auditoriums, kitchen, administration/faculty offices, library, music room, science labs, technology labs and computer labs. The typical hours of operation for this facility are between 7:00 am and 12:00 am. The building was built in 1964 with no additions to the main school building since the original construction.

The Electric Usage Profile demonstrates a fairly flat (consistent) load consumption profile for a school, and throughout the year. There is some consumption drop off June through August, with an increase September through May. The auditorium is conditioned by two (2) McQuay roof top units (RTUs). Each unit uses a gas fired heat exchanger and DX cooling coil to condition the space. These units do not use the school's hot water heating plant. The administration and library section of the school uses a standard VAV 4-pipe system for conditioning and ventilation. Hot water baseboard is used to heat the space while indoor air handlers are used to distribute chilled air. Two (2) Trane air handlers equipped with chilled water coils are piped to a Carrier water cooled chiller which has a remote condensing section located on the space's roof. This facility receives its electric delivery service via Atlantic City Electric (ACE) on an AGS and MGS rate schedule. This facility receives its electric commodity service from South Jersey Energy Company through the ACES agreement. A flat (base-load) shaping is important because it will yield more competitive pricing when shopping for alternative energy supply.

Natural Gas:

The Natural Gas Usage Profile demonstrates a very typical heating load profile, with increasing consumption in the winter months (October – March) and a dramatic drop in consumption in the summer months (May – September). Heating is the obvious reason for the winter consumption and in this facility heating is supplied via a boiler room. The school boiler room contains three (3) identical Superior fire tube boilers that supply heat to the various hot water heating systems throughout the school. Each boiler has an estimated gross heating output of 150 boiler horsepower equaling approximately 5,000 MBH. Hot water is distributed through the building via three (3) end-suction pumps, each with a 15 horsepower motor.

The school is heated via a standard two pipe heating system. All classroom and lab rooms are equipped with individual unit ventilators (UVs), which provide heating and ventilation to the spaces. A unit ventilator replacement occurred about 2004. At this time the existing UVs were replaced with new Trane models. The new model came equipped with a hot water heating coil and DX cooling coil. A phased approach was taken for the installation of each UV's remote condensing unit to avoid the large cost premium of installing them all at once. Since the initial installation many of the condensing units have been installed with more planned for the future.

Technology labs and locker rooms are heated by vertical indoor air handling units provided by the Trane Company. These units are equipped with hot water coils piped into the schools boilers loop and provide heating and ventilation to each space. The gymnasium, cafeterias and multipurpose auditorium are provided heating and ventilation by AAF Central Station air handling units (AHUs). These are heating only units equipped with hot water coils piped into the buildings hot water heating loop.

The auditorium is conditioned by two (2) McQuay roof top units (RTUs). Each unit uses a gas fired heat exchanger and DX cooling coil to condition the space. These units do not use the schools hot water heating plant.

Domestic hot water for the facility is provided by Paterson Kelly Thermific Boiler which is natural gas fired unit located in the boiler room. This boiler is connected to a large (approximately 750 gallon) hot water storage tank. The hot water boiler circulates the water in the main storage tank to maintain a constant temperature. Hot water supply is then drawn off the storage tank. The kitchen domestic hot water system is separate from the school's system. A 100 gallon AO Smith unit with input capacity of 200 MBH satisfies the kitchens hot water needs. Natural gas delivery service in this facility is provided by South Jersey Gas Company on a GSG rate schedule. The natural gas commodity service is provided by PEPCO Energy Services through the ACES agreement. A flat load profile will always allow for the most competitive price available when shopping for alternative energy supplies.

Tariff Analysis:

Electricity:

This facility receives electrical Delivery Service from Atlantic City Electric on an AGS Secondary (Annual General Service) and MGS (Monthly General Service) utility rate. The AGS rate is available at any point of Company's system where facilities of adequate character and capacity exist for the entire electric service requirements of any customer contracting for annual service delivered at one point and metered at or compensated to the voltage of delivery. This delivery service includes the following charges: Delivery Service Charges, Distribution Demand Charges, Reactive Demand Charges, Distribution Rates, Non-Utility Generation Charges, Societal Benefits Charges, Regulatory Assets Recovery Charges, Transition Bond Charges, Market Transition Charge Tax, Transmission Demand Charge, Regional Greenhouse Gas Initiative Recovery Charge, and Infrastructure Investment Surcharge.

The MGS rate is available at any point of Company's system where facilities of adequate character and capacity exist for the entire electric service requirements of any customer delivered at one point and metered at or compensated to the voltage of delivery. This schedule is not available to residential customers. This service includes the following charges: Delivery Service Charges, Distribution Demand Charges, Reactive Demand Charges, Non-Utility Generation Charges, Societal Benefits Charges, Regulatory Assets Recovery Charges, Transition Bond Charges, Market Transition Charge Tax, Transmission Demand Charge, Regional Greenhouse Gas Initiative Recovery Charge, and Infrastructure Investment Surcharge.

This facility receives electrical supply service through the ACES agreement (Alliance for Competitive Energy Services). ACES, is an alliance composed of the NJSBA and the NJASBO and is administered by Gable Associates. CEG believes that if the BOE wants to procure alternative energy, they must through the ACES agreement. CEG will make a recommendation that is counter to this agreement. The term of the ACES agreement is the first meter read date on or after April 30, 2009 until the last meter read date, May, 2011.

The ACES agreement provides for NJSBA to adopt a resolution for renewal for no more than a (5) consecutive year term. CEG will recommend against such renewal and believes that a 5 – year term may not be allowed under local government law.

Natural Gas:

This facility is serviced by South Jersey Gas Company (SJG) on its firm delivery rate, General Service Gas (GSG) from the utility and BGSS (Basic Generation Supply Service) when not being served by a Third Party Supplier (TPS). Currently The BOE is procuring natural gas from a Third Party Supplier (TPS), PEPCO Energy Services. This Delivery Rate has the following charges: Customer Charge, Delivery Charge, BSC Volume Charge and Commodity Charge under this rate structure. The BGSS Supply rates are designed to recover SJG's cost of gas applicable to customers who purchase gas from SJG. The company earns no profit from BGSS. BGSS consists of two (2) pricing mechanisms: Residential and Commercial customers that use less than 5,000 therms annually and Commercial and Industrial customers that consume at least 5,000 therms annually.

Imbalances occur when Third Party Suppliers (TPS) are used to supply natural gas and full-delivery is not made, and when a new supplier is contracted or the customer returns to the utility. Note: It is important when utilizing a Third Party Supplier, that an experienced regional supplier is used, otherwise, imbalances can occur, jeopardizing economics and scheduling. If the supplier does not deliver they can be placed on a very costly rate. A customer can automatically be put on an alternative supply rate by the utility.

A "firm account" refers to the type of interstate pipeline service that the utility has subscribed for and delivered on behalf of the customer. Much like the telecom industry, the pipeline space (capacity) has been deregulated. The pipeline capacity is broken down into reliability of service. "Firm service" is the highest level of reliability and is the last, in pecking order, for interruption.

Recommendations:

CEG recommends a global approach that will be consistent with all facilities within the scope of this project. Therefore, CEG recommends aggregating all energy loads. CEG's observations are seen in both the electric and natural gas costs. The average "price to compare" per kWh (kilowatt hour) for all buildings is \$.1058/ kWh (kWh is the common unit of electric measure). The average "price to compare" per decatherm for natural gas is \$10.90 /dth (dth is the common unit of measure). These Weighted Average Prices are as supplied via Third Party Suppliers (TPS) for electricity (South Jersey Energy Company) and for natural gas (PEPCO Energy services), as administered through the ACES (Alliance for Competitive Energy Services) and the lead agency, The New Jersey School Boards Association, with administration from Gable Associates.

Energy commodities are among the most volatile of all commodities, however at this point and time, energy is extremely competitive. The BOE could see significant savings if it were to take advantage of these current market prices quickly, before energy increases. Based on last year's historical consumption (January – December 2009) and current electric rates, the BOE could see an improvement of up to 15 % or up to \$150,000 in its electric costs annually. (Note: Savings were calculated using an Average Annual Consumption of 9,776,921 kWh and an Average fixed one-year commodity contract). CEG recommends aggregating the entire electric load to gain the most optimal energy costs. CEG recommends that the BOE seek an energy advisor to maximize energy savings and to apply a "managed approach" to procuring energy.

CEG's secondary recommendation coincides with the BOE's natural gas costs. Based on the current market, (which is very competitive), the BOE could see a savings of over 20% or up to \$90,000 annually in its natural gas expenditures. Again, CEG recommends the use of any energy advisor to review alternative energy sourcing strategies and to install a "managed approach" to energy procurement.

CEG also recommends that The BOE not renew its energy supply contract with the ACES aggregation and PEPCO Energy Services, and the ACES agreement with South Jersey Energy and its fixed price contract. The fixed priced contract does not accomplish the needs of the BOE. The BOE needs budget protection and CEG has shown that these energy prices are not competitive to the market. The ACES agreement has demonstrated that the price is much above market and the BOE has no way of adjusting the price should prices fall.

CEG further recommends that the BOE create an energy program through a "managed approach." The "managed approach" will take into account creating an "energy budget" that is in line with the BOE's budget year and risk tolerance. Risk tolerance is the appetite that a customer has for risk. Based on the reduced state and local government budgets and the general aversion for risk, the local government is required to manage this risk.

CEG recommends the BOE schedule a meeting with their current utility providers to review their utility charges and current tariff structures for electricity and natural gas. This meeting would provide insight regarding alternative procurement options that are currently available. Through its meeting with the Local Distribution Company (LDC), they will learn more about the

competitive supply process. They can acquire a list of approved Third Party Suppliers from the New Jersey Board of Public Utilities website at www.nj.gov/bpu, and should also consider using a billing-auditing service to further analyze the utility invoices, manage the data and use the data to manage ongoing demand-side management projects. Furthermore, CEG recommends special attention given to credit mechanisms, imbalances, balancing charges and commodity charges when meeting with their utility representative. In addition, the BOE should also ask the utility representative about alternative billing options. Some utilities allow for consolidated billing options when utilizing the service of a Third Party Supplier.

Finally, if the BOE frequently changes its supplier for energy, CEG recommends it closely monitor balancing, particularly when the contract is close to termination.

X. INSTALLATION FUNDING OPTIONS

CEG has reviewed various funding options for the facility owner to utilize in subsidizing the costs for installing the energy conservation measures noted within this report. Below are a few alternative funding methods:

- i. *Energy Savings Improvement Program (ESIP)* – Public Law 2009, Chapter 4 authorizes government entities to make energy related improvements to their facilities and pay for the costs using the value of energy savings that result from the improvements. The “Energy Savings Improvement Program (ESIP)” law provides a flexible approach that can allow all government agencies in New Jersey to improve and reduce energy usage with minimal expenditure of new financial resources.
- ii. *Municipal Bonds* – Municipal bonds are a bond issued by a city or other local government, or their agencies. Potential issuers of municipal bonds include cities, counties, redevelopment agencies, school districts, publicly owned airports and seaports, and any other governmental entity (or group of governments) below the state level. Municipal bonds may be general obligations of the issuer or secured by specified revenues. Interest income received by holders of municipal bonds is often exempt from the federal income tax and from the income tax of the state in which they are issued, although municipal bonds issued for certain purposes may not be tax exempt.
- iii. *Power Purchase Agreement* – Public Law 2008, Chapter 3 authorizes contractor of up to fifteen (15) years for contracts commonly known as “power purchase agreements.” These are programs where the contracting unit (Owner) procures a contract for, in most cases, a third party to install, maintain, and own a renewable energy system. These renewable energy systems are typically solar panels, windmills or other systems that create renewable energy. In exchange for the third party’s work of installing, maintaining and owning the renewable energy system, the contracting unit (Owner) agrees to purchase the power generated by the renewable energy system from the third party at agreed upon energy rates.
- iv. *Pay For Performance* – The New Jersey Smart Start Pay for Performance program includes incentives based on savings resulted from implemented ECMs. The program is available for all buildings with average demand loads above 200 KW. The facility’s participation in the program is assisted by an approved program partner. An “Energy Reduction Plan” is created with the facility and approved partner to show at least 15% reduction in the building’s current energy use. Multiple energy conservation measures implemented together are applicable toward the total savings of at least 15%. No more than 50% of the total energy savings can result from lighting upgrades / changes.

Total incentive is capped at 50% of the project cost. The program savings is broken down into three benchmarks; Energy Reduction Plan, Project

Implementation, and Measurement and Verification. Each step provides additional incentives as the energy reduction project continues. The benchmark incentives are as follows:

- 1. Energy Reduction Plan – Upon completion of an energy reduction plan by an approved program partner, the incentive will grant \$0.10 per square foot between \$5,000 and \$50,000, and not to exceed 50% of the facility's annual energy expense. (Benchmark #1 is not provided in addition to the local government energy audit program incentive.)*
- 2. Project Implementation – Upon installation of the recommended measures along with the "Substantial Completion Construction Report," the incentive will grant savings per KWH or Therm based on the program's rates. Minimum saving must be 15%. (Example \$0.11 / kWh for 15% savings, \$0.12/ kWh for 17% savings, ... and \$1.10 / Therm for 15% savings, \$1.20 / Therm for 17% saving, ...) Increased incentives result from projected savings above 15%.*
- 3. Measurement and Verification – Upon verification 12 months after implementation of all recommended measures, that actual savings have been achieved, based on a completed verification report, the incentive will grant additional savings per kWh or Therm based on the program's rates. Minimum savings must be 15%. (Example \$0.07 / kWh for 15% savings, \$0.08/ kWh for 17% savings, ... and \$0.70 / Therm for 15% savings, \$0.80 / Therm for 17% saving, ...) Increased incentives result from verified savings above 15%.*

CEG recommends the Owner review the use of the above-listed funding options in addition to utilizing their standard method of financing for facilities upgrades in order to fund the proposed energy conservation measures.

XI. 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. Confirm that outside air economizers on the rooftop units are functioning properly to take advantage of free cooling and avoid excess outside air during occupied periods.

ECM COST & SAVINGS BREAKDOWN
CONCORD ENGINEERING GROUP

Middle: Board of Education - Senior High School

ECM ENERGY AND FINANCIAL COSTS AND SAVINGS SUMMARY																
ECM NO.	DESCRIPTION	INSTALLATION COST				YEARLY SAVINGS				ECM LIFETIME	LIFETIME ENERGY SAVINGS (Yearly Saving * ECM Lifetime)	LIFETIME MAINTENANCE SAVINGS (Yearly Maint Saving * ECM Lifetime)	LIFETIME ROI (Lifetime Savings - Net Cost) / (Net Cost)	SIMPLE PAYBACK (Net cost / Yearly Savings)	INTERNAL RATE OF RETURN $\sum_{t=0}^N \frac{C_t}{(1 + IRR)^t}$	NET PRESENT VALUE (NPV) $\sum_{t=0}^N \frac{C_t}{(1 + IRR)^t}$
		MATERIAL	LABOR	REBATES, INCENTIVES	NET INSTALLATION COST	ENERGY	MAINT. / SREC		TOTAL							
							(\$)	(\$)								
ECM #1	Gymnasium Lighting Replacement	\$14,400	\$4,800	\$4,800	\$14,400	\$6,712	\$0	\$6,712	15	\$100,680	\$0	599.2%	2.1		46.46%	\$65,727.42
ECM #2	Lighting Controls	\$13,970	\$6,980	\$2,620	\$18,330	\$4,775	\$0	\$4,775	15	\$71,625	\$0	290.8%	3.8		25.15%	\$38,673.64
ECM #3	Hot Water Boiler Replacement	\$148,500	\$74,250	\$9,000	\$233,750	\$30,520	\$0	\$30,520	25	\$763,000	\$0	257.0%	7.0		13.70%	\$317,699.27
ECM #4	Energy Recovery Installation	\$104,000	\$52,000	\$0	\$156,000	\$13,152	\$0	\$13,152	15	\$197,280	\$0	26.5%	11.9		3.09%	\$1,007.72
RENEWABLE ENERGY AND FINANCIAL COSTS AND SAVINGS SUMMARY																
REM #1	Photovoltaic Panel Installation	\$1,650,480	\$825,240	\$0	\$2,475,720	\$89,798	\$126,644	\$186,642	15	\$2,799,630	\$1,002,660	13.1%	13.3		1.58%	(\$212,509.82)

Notes: 1) The variable C_t is the formulae for Internal Rate of Return and Net Present Value stands for the cash flow during each period.
2) The variable C₀ is the formulae for NPV equation stands for Discount Rate.
3) For NPV and IRR calculations: From t=0 to N periods where N is the lifetime of ECM and C₀ is the cash flow during each period.



Concord Engineering Group, Inc.

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

SmartStart Building Incentives

The NJ SmartStart Buildings Program offers financial incentives on a wide variety of building system equipment. The incentives were developed to help offset the initial cost of energy-efficient equipment. The following tables show the current available incentives as of January, 2009:

Electric Chillers

Water-Cooled Chillers	\$12 - \$170 per ton
Air-Cooled Chillers	\$8 - \$52 per ton

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 - \$93 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

Ground Source Heat Pumps

Closed Loop & Open Loop	\$370 per ton
-------------------------	---------------

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

Variable Frequency Drives

Variable Air Volume	\$65 - \$155 per hp
Chilled-Water Pumps	\$60 per hp
Compressors	\$5,250 to \$12,500 per drive

Natural Gas Water Heating

Gas Water Heaters ≤ 50 gallons	\$50 per unit
Gas-Fired Water Heaters >50 gallons	\$1.00 - \$2.00 per MBH
Gas-Fired Booster Water Heaters	\$17 - \$35 per MBH

Premium Motors

Three-Phase Motors	\$45 - \$700 per motor
--------------------	------------------------

Prescriptive Lighting

T-5 and T-8 Lamps w/Electronic Ballast in Existing Facilities	\$10 - \$30 per fixture, (depending on quantity)
Hard-Wired Compact Fluorescent	\$25 - \$30 per fixture
Metal Halide w/Pulse Start	\$25 per fixture
LED Exit Signs	\$10 - \$20 per fixture
T-5 and T-8 High Bay Fixtures	\$16 - \$284 per fixture

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

Other Equipment Incentives

Performance Lighting	\$1.00 per watt per SF below program incentive threshold, currently 5% more energy efficient than ASHRAE 90.1-2004 for New Construction and Complete Renovation
Custom Electric and Gas Equipment Incentives	not prescriptive



STATEMENT OF ENERGY PERFORMANCE

Senior High School

Building ID: 1875016
For 12-month Period Ending: May 31, 2009¹
Date SEP becomes ineligible: N/A

Date SEP Generated: October 12, 2009

Facility

Senior High School
 200 N. Wade Blvd.
 Millville, NJ 08332

Facility Owner

Millville Board of Education
 110 N. Third Street
 Millville, NJ 08332

Primary Contact for this Facility

Toni Basich
 110 N. Third Street
 Millville, NJ 08332

Year Built: 1964

Gross Floor Area (ft²): 169,500

Energy Performance Rating² (1-100) 34

Site Energy Use Summary³

Electricity - Grid Purchase(kBtu)	6,587,419
Natural Gas (kBtu) ⁴	9,189,000
Total Energy (kBtu)	15,776,419

Energy Intensity⁵

Site (kBtu/ft ² /yr)	93
Source (kBtu/ft ² /yr)	187

Emissions (based on site energy use)

Greenhouse Gas Emissions (MtCO ₂ e/year)	1,492
---	-------

Electric Distribution Utility

Atlantic City Electric Co

National Average Comparison

National Average Site EUI	81
National Average Source EUI	163
% Difference from National Average Source EUI	15%
Building Type	K-12 School

Stamp of Certifying Professional

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

Meets Industry Standards⁶ for Indoor Environmental Conditions:

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

Certifying Professional

Raymond Johnson
 520 South Burnt Mill Rd.
 Voorhees, NJ 08332

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. Natural Gas values in units of volume (e.g. cubic feet) are converted to kBtu with adjustments made for elevation based on Facility zip code.
5. Values represent energy intensity, annualized to a 12-month period.
6. Based on Meeting ASHRAE Standard 62 for ventilation for acceptable indoor air quality, ASHRAE Standard 55 for thermal comfort, and IESNA Lighting Handbook for lighting quality.

ENERGY STAR® Data Checklist for Commercial Buildings

In order for a building to qualify for the ENERGY STAR, a Professional Engineer (PE) 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 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	Senior 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	200 N. Wade Blvd., Millville, NJ 08332	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 acute care or children's hospitals) nor can they be submitted as representing only a portion of a building		<input type="checkbox"/>
Senior High School (K-12 School)				
CRITERION	VALUE AS ENTERED IN PORTFOLIO MANAGER	VERIFICATION QUESTIONS	NOTES	<input checked="" type="checkbox"/>
Gross Floor Area	169,500 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	377	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	60 %	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	N/A(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: Atlantic City Electric Co

Fuel Type: Electricity		
Meter: Electric Meter (kWh (thousand Watt-hours)) Space(s): Entire Facility Generation Method: Grid Purchase		
Start Date	End Date	Energy Use (kWh (thousand Watt-hours))
05/01/2009	05/31/2009	154,536.00
04/01/2009	04/30/2009	152,586.00
03/01/2009	03/31/2009	167,259.00
02/01/2009	02/28/2009	191,048.00
01/01/2009	01/31/2009	201,793.00
12/01/2008	12/31/2008	196,340.00
11/01/2008	11/30/2008	166,385.00
10/01/2008	10/31/2008	152,730.00
09/01/2008	09/30/2008	154,926.00
08/01/2008	08/31/2008	112,841.00
07/01/2008	07/31/2008	129,775.00
06/01/2008	06/30/2008	150,443.00
Electric Meter Consumption (kWh (thousand Watt-hours))		1,930,662.00
Electric Meter Consumption (kBtu (thousand Btu))		6,587,418.74
Total Electricity (Grid Purchase) Consumption (kBtu (thousand Btu))		6,587,418.74
Is this the total Electricity (Grid Purchase) consumption at this building including all Electricity meters?		<input type="checkbox"/>
Fuel Type: Natural Gas		
Meter: Natural Gas Meter (therms) Space(s): Entire Facility		
Start Date	End Date	Energy Use (therms)
05/01/2009	05/31/2009	2,172.00
04/01/2009	04/30/2009	7,960.00
03/01/2009	03/31/2009	9,419.00
02/01/2009	02/28/2009	15,841.00
01/01/2009	01/31/2009	19,803.00
12/01/2008	12/31/2008	16,634.00
11/01/2008	11/30/2008	12,539.00
10/01/2008	10/31/2008	5,330.00
09/01/2008	09/30/2008	819.00
08/01/2008	08/31/2008	499.00

07/01/2008	07/31/2008	155.00
06/01/2008	06/30/2008	719.00
Natural Gas Meter Consumption (therms)		91,890.00
Natural Gas Meter Consumption (kBtu (thousand Btu))		9,189,000.00
Total Natural Gas Consumption (kBtu (thousand Btu))		9,189,000.00
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 as the PE 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

Senior High School
200 N. Wade Blvd.
Millville, NJ 08332

Facility Owner

Millville Board of Education
110 N. Third Street
Millville, NJ 08332

Primary Contact for this Facility

Toni Basich
110 N. Third Street
Millville, NJ 08332

General Information

Senior High School	
Gross Floor Area Excluding Parking: (ft ²)	169,500
Year Built	1964
For 12-month Evaluation Period Ending Date:	May 31, 2009

Facility Space Use Summary

Senior High School	
Space Type	K-12 School
Gross Floor Area(ft ²)	169,500
Open Weekends?	Yes
Number of PCs	377
Number of walk-in refrigeration/freezer units	2
Presence of cooking facilities	Yes
Percent Cooled	60
Percent Heated	100
Months ^o	N/A
High School?	Yes
School District ^o	N/A

Energy Performance Comparison

Performance Metrics	Evaluation Periods		Comparisons		
	Current (Ending Date 05/31/2009)	Baseline (Ending Date 05/31/2009)	Rating of 75	Target	National Average
Energy Performance Rating	34	34	75	N/A	50
Energy Intensity					
Site (kBtu/ft ²)	93	93	63	N/A	81
Source (kBtu/ft ²)	187	187	127	N/A	163
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	1,492	1,492	1,018	N/A	1,301
kgCO ₂ e/ft ² /year	9	9	6	N/A	8

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 Average column presents energy performance data your building would have if your building had an average rating of 50.

Notes:

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

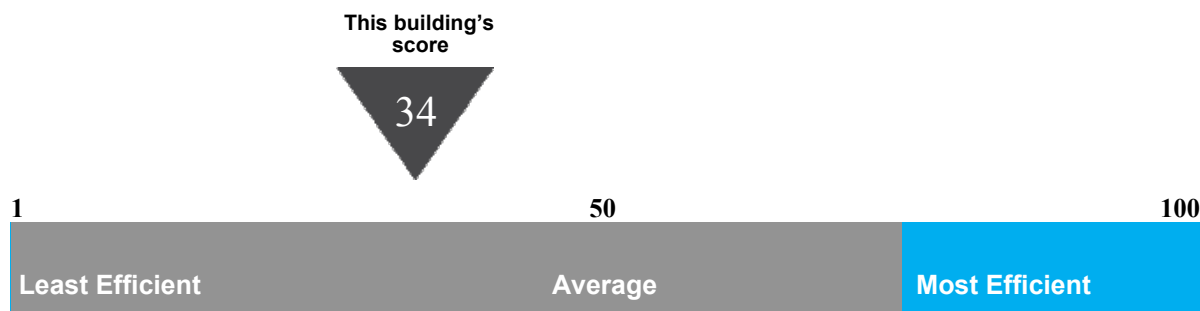
Statement of Energy Performance

2009

Senior High School
200 N. Wade Blvd.
Millville, NJ 08332

Portfolio Manager Building ID: 1875016

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 187 kBtu per square foot per year.*

*Based on source energy intensity for the 12 month period ending May 2009

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



MAJOR EQUIPMENT LIST

Concord Engineering Group

"Millville B.O.E. - Senior High School"

Boiler

Location	Area Served	Manufacturer	Qty.	Equipment Tag	Model #	Serial #	Input (MBH)	Output (MBH)	Efficiency (%)	Fuel	Approx. Age	ASHRAE Service Life	Remaining Life
Boiler Room	Entire School	Superior Hot Water	1	1	GC84RGH125A	4607-10255	5000	3500	70%	Nat. Gas	45	35	-10
Boiler Room	Entire School	Superior Hot Water	1	2	GC84RGH125A	367342	5000	3500	70%	Nat. Gas	45	35	-10
Boiler Room	Entire School	Superior Hot Water	1	3	GC84RGH125A	4607-10256	5000	3500	70%	Nat. Gas	45	35	-10

Boiler - Burner

Location	Area Served	Manufacturer	Qty.	Equipment Tag	Model #	Serial #	Input (MBH)	Fuel	Approx. Age	ASHRAE Service Life	Remaining Life
Boiler Room	Boiler 1	Superior Combustion	1	1	ABE-124-0AA5	ASBC-14597	5894	Nat. Gas	45	21	-25
Boiler Room	Boiler 2	Preferred Utilities	1	2	BHE-40-3M4	30248	5894	Nat. Gas	25	21	-4
Boiler Room	Boiler 3	Preferred Utilities	1	3	BHE-40-3M4	30202	5894	Nat. Gas	25	21	-4

Boiler - Pumps

Location	Area Served	Manufacturer	Qty.	Equipment Tag	Model #	Serial #	HP	RPM	GPM	Fl. In	Motor Efficiency	Frame Size	Volts	Phase	Hz	Approx. Age	ASHRAE Service Life	Remaining Life
Boiler Room	Entire School	Ball and Grovet	3	-	CS8942-022 J40	-	15	1800	450	70	71.05%	224T	208-230/460	3	60	3	20	11

Domestic Hot Water Heater

Location	Area Served	Manufacturer	Qty.	Equipment Tag	Model #	Serial #	Input (MBH)	Recovery (gal/hr)	Capacity (gal)	Efficiency (%)	Fuel	Approx. Age	ASHRAE Service Life	Remaining Life
Rear of Kitchen	Kitchen Dishwasher	AO Smith	1	-	BTR 200 110	RO480031349	199	192.96	100	80%	Nat. Gas	5	12	7
Boiler Room	Entire School	Parsons Kelly	1	-	-	-	-	-	-	-	Nat. Gas	5	25	20

Air Handling Units

Location	Area Served	Manufacturer	Qty.	Equipment Tag	Model #	Serial #	Cooling Coil	Cooling Eff. (EER)	Heating Type	Input (MBH)	CFM	Volts	Phase	Hz	Approx. Age	ASHRAE Service Life	Remaining Life
Little Theater Closet	Cafeteria 1	AAF	1	AH-16	N-2083-14Z	46911516	N/A	-	HW	136	5000	208-230	3	60	45	20	-25
Rear of Kitchen	Cafeteria 2	AAF	1	AH-7	-	-	N/A	-	HW	490	5000	208-230	3	60	45	20	-25
Rear of Kitchen	Cafeteria 2	AAF	1	AH-8	-	-	N/A	-	HW	490	5000	208-230	3	60	45	20	-25
C-114	C-114	Trane	1	TWD090A300DA	3241XN5H1	3241XN5H1	N/A	-	HW	490	5000	208-230	3	60	6	20	14
C-114	C-114	Trane	1	TWD090A300DA	3241XN5H1	3241XN5H1	N/A	-	HW	490	5000	208-230	3	60	6	20	14
Auto Shop	Auto Shop	Trane	1	TWD090A300DA	3241XN5H1	3241XN5H1	N/A	-	HW	490	5000	208-230	3	60	6	20	14
Boys Locker Room	Boys Locker Room	Trane	1	AH-9	TWD090A300DA	3241XN5H1	N/A	-	HW	490	5000	208-230	3	60	6	20	14
Girls Locker Room	Girls Locker Room	Trane	1	AH-10	TWD090A300DA	3191XN5K5H	N/A	-	HW	490	5000	208-230	3	60	6	20	14
Athletics Locker Room	Athletics Locker Room	Trane	1	AH-11	TWD090A300DA	3191XN5K5H	N/A	-	HW	720	18000	208-231	3	60	45	20	-25
Boys Gym Mezz	Boys Gym	AAF	1	AH-12	-	-	N/A	-	HW	720	18000	208-232	3	60	45	20	-25
Girls Gym Mezz	Girls Gym	AAF	1	AH-13	-	-	N/A	-	HW	720	18000	208-232	3	60	45	20	-25
Little Theater Mezz	Library	Trane	1	AH-15	BCH090H1A01AN50P	T03F38276	CW	See Chiller	7.5 Ton	162	3600	208-230	3	60	6	20	14
Little Theater Mezz	Main Office	Trane	1	AH-17	BCH072H1A0AN50P	T03F38278	CW	See Chiller	6 Ton	151	2040	208-230	3	60	6	20	14

Window Air Conditioners

Location	Area Served	Manufacturer	Qty.	Equipment Tag	Model #	Serial #	Cooling Capacity	Eff.	Refrigerant	Volts	Phase	Hr	Approx. Age	ASHRAE Service Life	Remaining Life
Coppy Work Room	Coppy Work Room	Frigidaire	1	-	FAC128N1A1	KK4070529	1 Ton	9.8 EER	R-22	115	1	60	2	10	8
Nurses Office	Nurses Office	GE	1	-	AGM12AH61	-	1 Ton	10.8 EER	R-22	115	1	60	4	10	6
Window AC	Various Spaces	GE	2	-	AGM10AH61	DH1201076	1 Ton	10.8 EER	R-22	115	1	60	4	10	6
Window AC	Various Spaces	GE	1	-	AGM10AH61	FN1201076	1 Ton	10.8 EER	R-22	115	1	60	4	10	6
C-114	C-114	GE	1	-	ADM518K1	DM888153	2 Ton	9.4 EER	R-22	208-230	1	60	3	10	8
Window AC	Various Spaces	Fiskars	12	-	ADY1187AJ	CT2025710Y3Y	1 1/2 Ton	9.7 EER	R-22	208-230	1	60	2	10	7

Split Systems and AC Condensers

Location	Area Served	Manufacturer	Qty.	Equipment Tag	Model #	Serial #	Cooling Capacity	Refrigerant	Volts	Phase	Hz	Approx. Age	ASHRAE Service Life	Remaining Life	Notes
C-105 Mezz	C-105 & C-103	Mac-Elec American	1	-	RUE031KGA	54301510800290	477334	R-22	208-230	1	60	7	20	13	
C-106 Mezz	C-106 & C-103	Mac-Elec American	1	-	SH2HAC	M01482FC060388	501302	R-22	208-230	1	60	8	20	12	
Offices	Offices	Sanyo	1	-	CN2412	00030311	3.5 Ton	R-22	208-230	1	60	6	20	14	Indoor MPKWS1211W
Coaches Locker Room	Coaches Locker Room	Sanyo	1	-	C1211	02032654	12,000 Btu	R-22	208-230	1	60	6	20	14	Indoor MPKWS1211W
D-114	D-114	Sanyo	1	-	C1148-1C	50408348	4 Ton	R-22	208-230	1	60	7	20	13	Indoor MPKWS1211W
Roof	Roof	Goodman	1	-	C1251	02110632	11,800 Btu	R-22	208-230	1	60	6	20	14	Indoor Unit MPKWS1251
Roof	-	International Comfort Product	1	-	NACD060KAS	E031318577	3 Ton	R-22	208-230	1	60	6	20	14	
Roof	-	Mitsubishi	1	-	5018K-031-501	1031318577	3 Ton	R-22	208-230	1	60	6	20	14	
Little Theater Roof	Administration Office Library	Mitsubishi	1	-	5018K-031-501	1031318577	3 Ton	R-22	208-230	3	60	6	20	14	
Roof	-	Mitsubishi	1	-	PUY-A36SH1A2	814222478	3 Ton	R-410A	208-230	1	60	1	20	19	Feeds Chiller in Little Theater Mezz
Roof and Grade	Classroom	Trane	12	-	2TTA30164	-	3 Ton	R-22	208-230	1	60	1	20	19	
Roof and Grade	Classroom	Trane	4	-	2TTA30164A0008BA	83210224H	3.5 Ton	R-22	208-230	3	60	1	20	19	
C-Wing Roof	-	Goodman	1	-	AC-C01	9706072790	4 Ton	R-22	208-230	1	60	3	20	17	
C-Wing Roof	-	Lemox	1	-	AC-C02	H81795154	17,000 Btu	R-22	208-230	1	60	14	20	6	
C-Wing Roof	-	Lemox	1	-	AC-C03	50120404-A	4 Ton	R-22	208-230	1	60	8	20	12	
C-Wing Roof	-	York	1	-	AC-C04	WH10015981	4 Ton	R-22	208-230	1	60	8	20	12	
D-Wing Roof	Coaches Locker Room	Sanyo	1	-	CH1232	60171121	12,000 Btu	R-22	208-230	1	60	9	20	11	

Heat Pumps

Location	Area Served	Manufacturer	Qty.	Equipment Tag	Model #	Serial #	Cooling Capacity	COP	Refrigerant	Volts	Phase	Hz	Approx. Age	ASHRAE Service Life	Remaining Life	Notes
C-103	C-103	Goodman Mini.	1	-	A49-20	9706142293	-	-	R-22	208-240	1	60	7	-	0	
Roof	-	Sanyo	1	-	CH1232	17121	11.7 MBtu	13.0 MBtu	R-22	208-240	1	60	-	-	-7	Indoor MPKHS1232

Unit Heaters

Location	Area Served	Manufacturer	Qty.	Equipment Tag	Model #	Serial #	Heating Coil	Capacity (Btu/h)	Fan HP	Fan RPM	Volts	Phase	Hz	Approx. Age	ASHRAE Service Remaining Life
Green House	Green House	Medline	2	-	F200A	0501AA088 & 0501AA088	Electric	SR-260 Btu	-	-	208	1	60	4	13
Green House	Green House	Medline	1	-	HE150A	0501AA088	Electric	51,195 Btu	-	-	208	1	60	4	9

Roof Top Units

Location	Area Served	Manufacturer	Qty.	Equipment Tag	Model #	Serial #	Cooling Coil	Cooling Eff.	Cooling Capacity (Btu/h)	Cooling Capacity (Tons)	Heating Type	Input (MBh)	Output (MBh)	Heating Eff.	Fuel	Volts	Phase	Hz	Approx. Age	ASHRAE Service Remaining Life
Auditorium Roof	Auditorium	McQuay	1	-	RPS049CCA	FB0402050580/00	DX R-22	11.1	41,100	46 Tons	Gas HX	740	600	81%	Nat. Gas	208	3	60	5	15
Auditorium Roof	Auditorium	McQuay	1	-	RF59606SA	FB0402050578/02	DX R-22	10.6	60 Tons	60 Tons	Gas HX	980	800	81%	Nat. Gas	208	3	60	5	15
D-Wing Roof	-	Trane	1	-	RTU-D01	F0303779	DX R-22	9.8	17 Ton	17 Ton	Gas HX	350	284	81%	Nat. Gas	208	3	60	6	15
Roof	Kitchen	Trane	1	-	AHAA300D000LN105M0	F0303779	DX R-22	9.8	17 Ton	17 Ton	Gas HX	350	284	81%	Nat. Gas	208	3	60	6	15
Roof	-	Trane	1	-	AHAA300D000LN102A0	F0303780	DX R-22	9.8	17 Ton	17 Ton	Gas HX	350	284	81%	Nat. Gas	208	3	60	6	15
A-Wing Roof	-	Trane	1	-	AHAA300D000LN102A0	F0303778	DX R-22	9.8	17 Ton	17 Ton	Gas HX	350	284	81%	Nat. Gas	208	3	60	6	15

General Exhaust Fans

Auditorium Roof	Auditorium	Loren Cook Co.	2	-	245C4B	1 1/2	1285	9000	208	3	60	45	25	-20
-----------------	------------	----------------	---	---	--------	-------	------	------	-----	---	----	----	----	-----

Chiller

Location	Area Served	Manufacturer	Qty.	Equipment Tag	Model #	Serial #	Cooling Capacity (Btu/h)	Eff.	Refrigerant	Volts	Phase	Hz	Approx. Age	ASHRAE Service Remaining Life
Little Theater Mezz	Administration Office Library	Carrier	1	-	30HW/0315-E-53HEG	2803Q02893	30 Ton	18.3	R-22	208-230	3	60	6	20

Chilled Water- Pumps

Location	Area Served	Manufacturer	Qty.	Equipment Tag	Model #	Serial #	HP	RPM	GPM	Fr. IM	Motor Efficiency	Frame Size	Volts	Phase	Hz	Approx. Age	ASHRAE Service Remaining Life
Little Theater Mezz	Administration Office Library	IRG	1	-	1510	CQ2610401 G30	5	1755	85	65	87.50%	184T	200	3	60	6	20

INVESTMENT GRADE LIGHTING AUDIT

CEG Job #: 9C09072
Project: Millville B.O.E.
Address: 200 N. Wade Blvd.
Millville, NJ 08332
Building SF: 169,500

"Millville - Senior High School"

KWH COST: \$0.465

EXISTING LIGHTING					PROPOSED LIGHTING										SAVINGS								
Line #	Fixture Location	Yearly Usage	No. Fixts	No. Lamps	Fixture Type	Fixt Watts	Total kW	kWh/Yr Fixtures	Yearly \$ Cost	No. Fixts	No. Lamps	Retro-Unit Description	Watts Used	Total kW	kWh/Yr Fixtures	Yearly \$ Cost	Unit Cost (INSTALLED)	Total Cost	kW Savings	kWh/Yr Savings	Yearly \$ Savings	Yearly Simple Payback	
1	Custodian Shop	3750	8	2	1' x 4', 2-Lamp, T8 32W, Electronic Ballast, Pendant Mount, Direct/Indirect Lens	58	0.46	1,740.0	\$287.10	0	0	No Change Required (NCR)	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00	
2		3750	2	4	1 vending soda/1 refrigerator, 4-Lamp, T8 32W, Electronic Ballast, Pendant Mount, Direct/Indirect Lens	109	0.22	817.5	\$134.89	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00	
3	Custodian Supply Room	3750	1	4	1' x 4', 1 Exit Sign, 4-Lamp, T8 32W, Electronic Ballast, Surface Mount, Direct/Indirect Lens	109	0.11	408.8	\$67.44	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
4	Custodian Supply	3750	1	1	3', 1-Lamp, T8 32W, Electronic Ballast, Surface Mount, Prismatic Lens	28	0.03	105.0	\$17.33	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
5	Bathroom	3750	1	1	4', 1-Lamp, T8 32W, Electronic Ballast, Surface Mount, Direct/Indirect Lens	28	0.03	105.0	\$17.33	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
6	Bathroom Emergency Light	3750	1	2	2-Lamp, Compact Fluorescent 16W, Electronic Ballast, Surface Mount, Prismatic Lens	32	0.03	120.0	\$19.80	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
7	Upstairs	3750	1	4	1' x 4', 4-Lamp, T8 32W, Electronic Ballast, Surface Mount, Direct/Indirect Lens	109	0.11	408.8	\$67.44	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
8	Trailer T111 Classroom	3750	16	2	1' x 4', 2-Lamp, T8 32W, Electronic Ballast, Surface Mount, Prismatic Lens	58	0.93	3,480.0	\$574.20	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
9	Trailer T112 Classroom	3750	16	2	1' x 4', 2-Lamp, T8 32W, Electronic Ballast, Surface Mount, Prismatic Lens	58	0.93	3,480.0	\$574.20	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
10	Trailer T114 Classroom	3750	16	2	1' x 4', 2-Lamp, T8 32W, Electronic Ballast, Surface Mount, Prismatic Lens	58	0.93	3,480.0	\$574.20	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
11	Trailer T116 Classroom	3750	16	2	1' x 4', 2-Lamp, T8 32W, Electronic Ballast, Surface Mount, Prismatic Lens	58	0.93	3,480.0	\$574.20	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
12	T113 Trailer	3750	16	2	1' x 4', 2-Lamp, T8 32W, Electronic Ballast, Surface Mount, Prismatic Lens	58	0.93	3,480.0	\$574.20	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00

INVESTMENT GRADE LIGHTING AUDIT

13	Janitor's Closet	3750	3	2	1' x 4', 2-Lamp, T8 32W, Electronic Ballast, Surface Mount, Prismatic Lens	58	0.17	652.5	\$107.66	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0.00
14	Corridor	3750	12	2	1' x 4', 6 Exit signs, 2- Lamp, T8 32W, Electronic Ballast, Surface Mount, Prismatic Lens	58	0.70	2,610.0	\$430.65	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0.00
15	Closet	3750	2	2	1' x 4', 2-Lamp, T8 32W, Electronic Ballast, Surface Mount, Prismatic Lens	58	0.12	435.0	\$71.78	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0.00
16	Boys Bathroom	3750	3	2	1' x 4', 2-Lamp, T8 32W, Electronic Ballast, Surface Mount, Prismatic Lens	58	0.17	652.5	\$107.66	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0.00
17	Girls Bathroom	3750	4	2	1' x 4', 2-Lamp, T8 32W, Electronic Ballast, Surface Mount, Prismatic Lens	58	0.23	870.0	\$143.55	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0.00
18	Women's Bathroom	3750	2	4	2' x 4', 4-Lamp, T8 32W, Recessed Mount, Prismatic Lens	109	0.22	817.5	\$134.89	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0.00
19	Faculty Bathroom	3750	1	4	2' x 4', 4-Lamp, T8 32W, Recessed Mount, Prismatic Lens	109	0.11	408.8	\$67.44	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0.00
20	Men's Bathroom	3750	2	4	2' x 4', 4-Lamp, T8 32W, Recessed Mount, Prismatic Lens	58	0.12	435.0	\$71.78	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0.00
21	IDF Janitor's Room	3750	1	2	2-Lamp, Incandescent 60W, Surface Mount, Direct/Indirect Lens	120	0.12	450.0	\$74.25	1	2	18 W CFL Lamp	32	0.03	120	\$19.80	\$20.00	\$20.00	0.09	0.37
22	T110 Classroom	3750	6	4	2' x 4', 4-Lamp, T8 32W, Recessed Mount, Prismatic Lens	109	0.65	2,452.5	\$404.66	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0.00
23	T108 Classroom	3750	6	4	2' x 4', 4-Lamp, T8 32W, Recessed Mount, Prismatic Lens	109	0.65	2,452.5	\$404.66	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0.00
24	T109 Classroom	3750	6	4	2' x 4', 4-Lamp, T8 32W, Recessed Mount, Prismatic Lens	109	0.65	2,452.5	\$404.66	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0.00
25	T107 Classroom	3750	6	4	2' x 4', 4-Lamp, T8 32W, Recessed Mount, Prismatic Lens	109	0.65	2,452.5	\$404.66	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0.00
26	T106 Classroom	3750	6	4	2' x 4', 4-Lamp, T8 32W, Recessed Mount, Prismatic Lens	109	0.65	2,452.5	\$404.66	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0.00
27	T104 Classroom	3750	6	4	2' x 4', 4-Lamp, T8 32W, Recessed Mount, Prismatic Lens	109	0.65	2,452.5	\$404.66	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0.00
28	T105 Classroom	3750	6	4	2' x 4', 4-Lamp, T8 32W, Recessed Mount, Prismatic Lens	109	0.65	2,452.5	\$404.66	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0.00
29	T102 Classroom	3750	6	4	2' x 4', 4-Lamp, T8 32W, Recessed Mount, Prismatic Lens	109	0.65	2,452.5	\$404.66	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0.00
30	T103 Classroom	3750	6	4	2' x 4', 4-Lamp, T8 32W, Recessed Mount, Prismatic Lens	109	0.65	2,452.5	\$404.66	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0.00
31	T101 Classroom	3750	6	4	2' x 4', 4-Lamp, T8 32W, Recessed Mount, Prismatic Lens	109	0.65	2,452.5	\$404.66	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0.00
32	T100 Classroom	3750	6	4	2' x 4', 4-Lamp, T8 32W, Recessed Mount, Prismatic Lens	109	0.65	2,452.5	\$404.66	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0.00

INVESTMENT GRADE LIGHTING AUDIT

33	Corridor	3750	12	4	2' x 4', 5 Exit signs, 4-Lamp, T8 32W, Recessed Mount, Prismatic Lens	109	1.31	4,905.0	\$809.33	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	\$0.00	0.00	
34	Boys Bathroom/Weight Room Bldg.	3750	2	2	1' x 4', 2-Lamp, T8 32W, Recessed Mount, Prismatic Lens	58	0.12	435.0	\$71.78	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	\$0.00	0.00	
35	Girls Bathroom/Weight Room Bldg.	3750	2	2	1' x 4', 2-Lamp, T8 32W, Recessed Mount, Prismatic Lens	58	0.12	435.0	\$71.78	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	\$0.00	0.00	
36	Weight Room Office	3750	2	2	1' x 4', Washer/Dryer/Ice Machine/T.V./Mini Refrigerator, 2-Lamp, T8 32W, Recessed Mount, Prismatic Lens	58	0.12	435.0	\$71.78	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	\$0.00	0.00	
37	Weight Room	3750	24	2	1' x 4', 4 TV's, 2-Lamp, T8 32W, Recessed Mount, Prismatic Lens	58	1.39	5,220.0	\$861.30	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	\$0.00	0.00	
38	Vocational Bldg.	3750	4	2	1' x 4', 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	0.23	870.0	\$143.55	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	\$0.00	0.00	
39	Vocational Bldg.	3750	2	2	8', 2-Lamp, T12 96W, Surface Mount, Direct/Indirect Lens	222	0.44	1,665.0	\$274.73	4	2	4' - 2-Lamp 32W T-8 Industrial Strip w/ Elect Ballast; Metalux MN SNF232	58	0.23	870	\$143.55	\$125.00	\$500.00	0.21	795	\$131.18
40	Vocational Bldg.	3750	3	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.33	1,226.3	\$202.33	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	\$0.00	0.00	
41	Office	3750	2	2	1' x 4', 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	0.12	435.0	\$71.78	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	\$0.00	0.00	
42	Middle Office	3750	2	2	1' x 4', 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	0.12	435.0	\$71.78	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	\$0.00	0.00	
43	Bathroom	3750	1	2	1' x 4', 2-Lamp, T8 32W, Surface Mount, Direct/Indirect Lens	58	0.06	217.5	\$35.89	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	\$0.00	0.00	
44		3750	1	4	2' x 4', 4-Lamp, T8 32W, Recessed Mount, Prismatic Lens	109	0.11	408.8	\$67.44	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	\$0.00	0.00	
45	Side Garage	3750	4	2	1' x 4', 2-Lamp, T8 32W, Pendant Mount, Direct/Indirect Lens	58	0.23	870.0	\$143.55	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	\$0.00	0.00	
46	C114 Graphic Arts	3750	25	2	1' x 4', 2 Exit signs, 2-Lamp, T8 32W, Pendant Mount, Direct/Indirect Lens	58	1.45	5,437.5	\$897.19	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	\$0.00	0.00	
47	C114 Upstairs Storage	3750	4	1	1-Lamp, T8 32W, Direct/Indirect Lens	28	0.11	420.0	\$69.30	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	\$0.00	0.00	
48	C114 Office	3750	2	4	1' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.22	817.5	\$134.89	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	\$0.00	0.00	
49	C111 Cabinet Making	3750	32	2	1' x 4', 2 Exit signs, 2-Lamp, T8 32W, Pendant Mount, Direct/Indirect Lens	58	1.86	6,960.0	\$1,148.40	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	\$0.00	0.00	
50	C111 Cabinet Upstairs	3750	3	2	1' x 4', 2-Lamp, T8 32W, Surface Mount, Direct/Indirect Lens	58	0.17	652.5	\$107.66	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	\$0.00	0.00	
51	C111 Cabinet Office	3750	4	2	1' x 4', 2-Lamp, T8 32W, Surface Mount, Direct/Indirect Lens	58	0.23	870.0	\$143.55	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	\$0.00	0.00	
52	Upstairs Bathroom 2nd Floor	3750	2	1	1' x 4', 1-Lamp, T8 32W, Surface Mount, Direct/Indirect Lens	28	0.06	210.0	\$34.65	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	\$0.00	0.00	

INVESTMENT GRADE LIGHTING AUDIT

53	Upstairs Wood Storage	3750	12	1	1' x 4', 1-Lamp, 1 Exit Sign, T8 32W, Surface Mount, Direct/Indirect Lens, (2 lights had 2 bulbs)	28	0.34	1,260.0	\$207.90	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0	\$0.00	0.00		
54	Sports Training Room	3750	8	4	1' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.87	3,270.0	\$539.55	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0	\$0.00	0.00		
55	C109 Health/Wrestling Room	3750	25	3	2' x 4', 2 Exit signs, 3-Lamp, T8 32W, Recessed Mount, Prismatic Lens	82	2.05	7,687.5	\$1,268.44	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0	\$0.00	0.00		
56	C112 Fine Arts	3750	24	2	1' x 4', 2 Exit signs, 2-Lamp, T8 32W, Pendant Mount, Direct/Indirect Lens	58	1.39	5,220.0	\$861.30	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0	\$0.00	0.00		
57	C112 Fine Arts Upstairs	3750	4	1	2" x 4', 1-Lamp, T8 32W, Surface Mount, Direct/Indirect Lens	28	0.11	420.0	\$69.30	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0	\$0.00	0.00		
58	C112 Bathroom	3750	1	2	1' bulb, 2-Lamp, T8, Surface Mount, Direct/Indirect Lens	34	0.03	127.5	\$21.04	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0	\$0.00	0.00		
59	C112 Bathroom Emergency Light	3750	1	2	2-Lamp, Compact Fluorescent, Surface Mount, Prismatic Lens	32	0.03	120.0	\$19.80	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0	\$0.00	0.00		
60	C114 Graphic Arts Bathroom	3750	2	2	1' x 4', 2-Lamp, T8 32W, Surface, Direct/Indirect Lens	58	0.12	435.0	\$71.78	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0	\$0.00	0.00		
61	C114 Emergency Light	3750	1	2	2-Lamp, Compact Fluorescent, Surface Mount, Prismatic Lens	32	0.03	120.0	\$19.80	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0	\$0.00	0.00		
62	Art Display in Hall	3750	3	1	1-Lamp, T12 34W, Surface Mount, Direct/Indirect Lens	50	0.15	562.5	\$92.81	3	1	4' 1-Lamp T-8 32W wall Mtd.Metallux BC132	28	0.08	315	\$51.98	\$150.00	\$450.00	0.07	247.5	\$40.84	11.02
63	2nd Art Display in Hall	3750	3	1	1-Lamp, T8 30W, Surface Mount, Direct/Indirect Lens	28	0.08	315.0	\$51.98	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0	\$0.00	0.00		
64	C110 Fine Arts	3750	20	2	1' x 4', 2-Lamp, T8 32W, Pendant Mount, Direct/Indirect Lens	58	1.16	4,350.0	\$717.75	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0	\$0.00	0.00		
65	C110 Bathroom	3750	1	1	2', 1-Lamp, T8 17W, Surface Mount, Prismatic Lens	20	0.02	75.0	\$12.38	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0	\$0.00	0.00		
66	C110 Bathroom Emergency Light	3750	1	2	2-Lamp, Compact Fluorescent, Surface Mount, Prismatic Lens	32	0.03	120.0	\$19.80	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0	\$0.00	0.00		
67	C107 Auto Shop	3750	32	2	1' x 4', 2 Exit signs, 2-Lamp, T8 32W, Pendant Mount, Direct/Indirect Lens	58	1.86	6,960.0	\$1,148.40	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0	\$0.00	0.00		
68	C107 Bathroom Lockers	3750	1	2	1' x 4', 2-Lamp, T8 32W, Surface Mount, Direct/Indirect Lens	58	0.06	217.5	\$35.89	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0	\$0.00	0.00		
69	C107 Upstairs Classroom	3750	6	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.65	2,452.5	\$404.66	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0	\$0.00	0.00		
70	C107 Upstairs Storage	3750	6	1	2' x 4', 1-Lamp, T8 32W, Surface Mount, Direct/Indirect Lens	28	0.17	630.0	\$103.95	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0	\$0.00	0.00		
71	C107 Tool Room	3750	1	2	1' x 4', 2-Lamp, T8 32W, Surface Mount, Direct/Indirect Lens	58	0.06	217.5	\$35.89	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0	\$0.00	0.00		
72	C107 Office	3750	2	2	1' x 4', 2-Lamp, T8 32W, Surface Mount, Direct/Indirect Lens	58	0.12	435.0	\$71.78	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0	\$0.00	0.00		

INVESTMENT GRADE LIGHTING AUDIT

73	C106 Office	3750	5	4	2" x 4", 4-Lamp, T8 32W, Recessed Mount, Prismatic Lens	109	0.55	2,043.8	\$337.22	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	0.00
74	Storage	3750	4	2	1" x 4", 2-Lamp, T8 32W, Pendant Mount, Direct/Indirect Lens	58	0.23	870.0	\$143.55	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	0.00
75	Storage Stairs	3750	2	1	4" Industrial bulbs, 1-Lamp, T8 32W, Surface Mount, Prismatic Lens	28	0.06	210.0	\$34.65	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	0.00
76	C104 Computer Lab	3750	24	2	1" x 4", 2 Exit signs, 2-Lamp, T8 32W, Pendant Mount, Direct/Indirect Lens	58	1.39	5,220.0	\$861.30	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	0.00
77	C104 Bathroom	3750	1	2	6" x 4", 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	0.06	217.5	\$35.89	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	0.00
78	C104 Bathroom Emergency Light	3750	1	2	2-Lamp, Compact Fluorescent, Surface Mount, Prismatic Lens	32	0.03	120.0	\$19.80	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	0.00
79	C104 Book Room	3750	2	2	1" x 4", 2-Lamp, T8 32W, Surface Mount, Direct/Indirect Lens	58	0.12	435.0	\$71.78	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	0.00
80	C104 Storage	3750	2	2	1" x 4", 2-Lamp, T8 32W, Surface Mount, Direct/Indirect Lens	58	0.12	435.0	\$71.78	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	0.00
81	C104 Small Office	3750	2	2	1" x 4" (1), 2 bulbs 2' light, 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	0.12	435.0	\$71.78	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	0.00
82	C104 IDF Room Upstairs	3750	5	4	2" x 4", 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.55	2,043.8	\$337.22	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	0.00
83	C105 Computer Room	3750	25	3	2" x 4", 2 Exit signs, 3-Lamp, T8 32W, Recessed Mount, Prismatic Lens	82	2.05	7,687.5	\$1,268.44	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	0.00
84	C105 Bathroom	3750	2	2	1" x 4", 2-Lamp, T8 32W, Surface Mount, Direct/Indirect Lens	58	0.12	435.0	\$71.78	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	0.00
85	Emergency Light	3750	1	2	2-Lamp, Compact Fluorescent, Surface Mount, Prismatic Lens	32	0.03	120.0	\$19.80	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	0.00
86	C105 Office	3750	1	2	1" x 4", 2-Lamp, T8 32W, Surface Mount, Direct/Indirect Lens	58	0.06	217.5	\$35.89	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	0.00
87	C105 Office	3750	2	2	6" x 4", 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	0.12	435.0	\$71.78	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	0.00
88	C105 Closer Air Unit	3750	1	2	6" x 4", 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	0.06	217.5	\$35.89	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	0.00
89		3750	2	1	2" x 4", 1-Lamp, T12 34W, Surface Mount, Direct/Indirect Lens	50	0.10	375.0	\$61.88	2	1	4" 1-Lamp T-8 32W wall Mid.Merlux BC132	28	0.06	210	\$34.65	\$150.00	\$300.00	11.02
90		3750	3	2	1" x 4", 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	0.17	652.5	\$107.66	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	0.00
91	Upstairs area above Computer Room	3750	2	1	2" x 4", 1-Lamp, T8 32W, Surface Mount, Direct/Indirect Lens	28	0.06	210.0	\$34.65	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	0.00
92		3750	3	4	1" x 4", 4-Lamp, T8 32W, Surface Mount, Direct/Indirect Lens	109	0.33	1,226.3	\$202.33	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	0.00

INVESTMENT GRADE LIGHTING AUDIT

93		3750	1	4	1' x 4', 3 Exit signs, 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.11	408.8	\$67.44	0	0	NCR	0	0.00	\$0.00	\$0.00	\$0.00	0	\$0.00	0.00
94	C102 Driver's Ed.	3750	24	2	1' x 4', 2-Lamp, T8 32W, Pendant, Direct/Indirect Lens	58	1.39	5,220.0	\$861.30	0	0	NCR	0	0.00	\$0.00	\$0.00	\$0.00	0	\$0.00	0.00
95	C102 Bathroom	3750	1	1	1' bulb, 1-Lamp, T8 17W, Surface Mount, Prismatic Lens	20	0.02	75.0	\$12.38	0	0	NCR	0	0.00	\$0.00	\$0.00	\$0.00	0	\$0.00	0.00
96	C102 Emergency Light Bathroom	3750	1	2	2-Lamp, Compact Fluorescent, Surface Mount, Prismatic Lens	32	0.03	120.0	\$19.80	0	0	NCR	0	0.00	\$0.00	\$0.00	\$0.00	0	\$0.00	0.00
97	C103 Tech. Lab	3750	25	4	2' x 4', 2 Exit signs, 4-Lamp, T8 32W, Recessed Mount, Prismatic Lens	109	2.73	10,218.8	\$1,686.09	0	0	NCR	0	0.00	\$0.00	\$0.00	\$0.00	0	\$0.00	0.00
98	C103 Storage	3750	1	4	1' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.11	408.8	\$67.44	0	0	NCR	0	0.00	\$0.00	\$0.00	\$0.00	0	\$0.00	0.00
99	C103 Storage	3750	1	4	1' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.11	408.8	\$67.44	0	0	NCR	0	0.00	\$0.00	\$0.00	\$0.00	0	\$0.00	0.00
100	C103 Bathroom	3750	1	4	2' x 4', 4-Lamp, T2 32W, Recessed Mount, Prismatic Lens	109	0.11	408.8	\$67.44	0	0	NCR	0	0.00	\$0.00	\$0.00	\$0.00	0	\$0.00	0.00
101	C103 Bathroom Emergency Light	3750	1	2	2-Lamp, Compact Fluorescent, Surface Mount, Prismatic Lens	32	0.03	120.0	\$19.80	0	0	NCR	0	0.00	\$0.00	\$0.00	\$0.00	0	\$0.00	0.00
102	C103 Toilet Room	3750	1	1	2' bulb, 1-Lamp, T12 20W, Surface Mount, Direct/Indirect Lens	30	0.03	112.5	\$18.56	0	0	NCR	0	0.00	\$0.00	\$0.00	\$0.00	0	\$0.00	0.00
103	C103 Stairway to Storage	3750	1	2	1' x 4', 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	0.06	217.5	\$35.89	0	0	NCR	0	0.00	\$0.00	\$0.00	\$0.00	0	\$0.00	0.00
104	Boiler Room	3750	27	2	1' x 4', 2 Exit Signs, 2-Lamp, T8 32W, Pendant Mount, Direct/Indirect Lens	58	1.57	5,872.5	\$968.96	0	0	NCR	0	0.00	\$0.00	\$0.00	\$0.00	0	\$0.00	0.00
105	Boiler Room	3750	1	1	1-Lamp, Incandescent 60W, Surface Mount, Direct/Indirect Lens	60	0.06	225.0	\$37.13	1	1	18 W CFL Lamp	18	0.02	67.5	\$11.14	\$10.00	157.5	\$25.99	0.38
106	C Corridor	3750	19	2	1' x 4', 3 Exit Signs, 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	1.10	4,132.5	\$681.86	0	0	NCR	0	0.00	\$0.00	\$0.00	\$0.00	0	\$0.00	0.00
107	Cafeteria's Corridor	3750	13	2	1' x 4', 3 Exit Signs, 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	0.75	2,827.5	\$466.54	0	0	NCR	0	0.00	\$0.00	\$0.00	\$0.00	0	\$0.00	0.00
108	Link (Gym)	3750	8	3	2' x 4', 2 Exit signs, 3-Lamp, T8 32W, Recessed Mount, Prismatic Lens	82	0.66	2,460.0	\$405.90	0	0	NCR	0	0.00	\$0.00	\$0.00	\$0.00	0	\$0.00	0.00
109	Link	3750	1	2	2' x 2', 2-Lamp, U-Lamp, T12, Recessed Mount, Prismatic Lens	58	0.06	217.5	\$35.89	1	2	2'x2' 2-Lamp T-8, Prism Lens Electronic Ballast, Architectural surface or Recessed static METALUX 2AC	34	0.03	127.5	\$21.04	\$200.00	90	\$14.85	13.47
110	Link Nurse's Office	3750	1	3	2' x 4', 3-Lamp, T8 32W, Recessed Mount, Prismatic Lens	82	0.08	307.5	\$50.74	0	0	NCR	0	0.00	\$0.00	\$0.00	\$0.00	0	\$0.00	0.00
111	Office	3750	1	3	2' x 4', 3-Lamp, T8 32W, Recessed Mount, Prismatic Lens	82	0.08	307.5	\$50.74	0	0	NCR	0	0.00	\$0.00	\$0.00	\$0.00	0	\$0.00	0.00

INVESTMENT GRADE LIGHTING AUDIT

112	Office	3750	1	3	2' x 4', 3-Lamp, T8 32W, Recessed Mount, Prismatic Lens	82	0.08	307.5	\$50.74	0	0	NCR	0	0.00	0	\$0.00	0.00	\$0.00	0	\$0.00	0.00
113	Gym Girls Locker Room	3750	14	2	1' x 4', 2 Exit signs, 2-Lamp, T8 32W, Pendant Mount, Direct/Indirect Lens	58	0.81	3,045.0	\$502.43	0	0	NCR	0	0.00	0	\$0.00	0.00	\$0.00	0	\$0.00	0.00
114	Female Coaches Room	3750	2	2	1' x 4', 2-Lamp, T8 32W, Pendant Mount, Direct/Indirect Lens	58	0.12	435.0	\$71.78	0	0	NCR	0	0.00	0	\$0.00	0.00	\$0.00	0	\$0.00	0.00
115	Shower Area	3750	4	1	1-Lamp, Incandescent 60W, Surface Mount, Prismatic Lens	60	0.24	900.0	\$148.50	4	1	18 W CFL Lamp	18	0.07	270	\$44.55	\$10.00	\$40.00	630	\$103.95	0.38
116	Bathroom Area	3750	3	2	1' x 4', 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	0.17	652.5	\$107.66	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0	\$0.00	0.00
117	Office	3750	2	2	1' x 4', 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	0.12	435.0	\$71.78	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0	\$0.00	0.00
118	Office Bathroom	3750	1	2	1' x 4', 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	0.06	217.5	\$35.89	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0	\$0.00	0.00
119	Bathroom	3750	2	2	1' x 4', 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	0.12	435.0	\$71.78	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0	\$0.00	0.00
120	Locker Entryway	3750	1	2	1' x 4', 2-Lamp, T8 32W, Surface Mount, Direct/Indirect Lens	58	0.06	217.5	\$35.89	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0	\$0.00	0.00
121	Main Gym	3750	48	1	1-Lamp, 400W, Metal Halide, Pendant Mount, Prismatic Lens	455	21.84	81,900.0	\$13,513.50	48	1	4-Lamp T1.5 HO Cooper F-Bay	229	10.99	41,220	\$6,801.30	\$400.00	\$19,200.00	40680	\$6,712.20	2.86
122	Gym 2 Units	3750	2	1	1-Lamp, Incandescent 60W, Recessed Mount, Direct/Indirect Lens	60	0.12	450.0	\$74.25	2	1	18 W CFL Lamp	18	0.04	135	\$22.28	\$1.00	\$2.00	0.08	\$51.98	0.04
123	Gym Equipment Storage	3750	1	1	1-Lamp, Incandescent 60W, Surface Mount, Direct/Indirect Lens	60	0.06	225.0	\$37.13	1	1	18 W CFL Lamp	18	0.02	67.5	\$11.14	\$1.00	\$1.00	0.04	\$25.99	0.04
124	Instructor's Office	3750	2	2	1' x 4', 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	0.12	435.0	\$71.78	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0	\$0.00	0.00
125	Instructor's Office Bathroom	3750	1	2	1' x 4', 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	0.06	217.5	\$35.89	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0	\$0.00	0.00
126	Boys Locker Room	3750	32	2	1' x 4', 5 Exit signs, 2-Lamp, T8 32W, Pendant Mount, Direct/Indirect Lens	58	1.86	6,960.0	\$1,148.40	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0	\$0.00	0.00
127	Boys Shower area	3750	4	1	1-Lamp, Incandescent 60W, Surface Mount, Prismatic Lens	60	0.24	900.0	\$148.50	4	1	18 W CFL Lamp	18	0.07	270	\$44.55	\$1.00	\$4.00	0.17	\$103.95	0.04
128	Closet entrance	3750	2	2	1' x 4', 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	0.12	435.0	\$71.78	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0	\$0.00	0.00
129	Gym Bathroom	3750	1	1	2' bulb, 1-Lamp, T8 17W, Surface Mount, Direct/Indirect Lens	20	0.02	75.0	\$12.38	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0	\$0.00	0.00
130	Gym Bathroom	3750	1	1	2' bulb, 1-Lamp, T8 17W, Surface Mount, Direct/Indirect Lens	20	0.02	75.0	\$12.38	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0	\$0.00	0.00
131	Gym Coaches Room	3750	3	2	1' x 4', 2-Lamp, T8 32W, Surface Mount, Direct/Indirect Lens	58	0.17	652.5	\$107.66	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0	\$0.00	0.00
132	Gym Back Room	3750	2	2	1' x 4', 2-Lamp, T8 32W, Surface Mount, Direct/Indirect Lens	58	0.12	435.0	\$71.78	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0	\$0.00	0.00

INVESTMENT GRADE LIGHTING AUDIT

133	Gym Hallway Girls Bathroom	3750	2	2	1' x 4', 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	0.12	435.0	\$71.78	0	0	NCR	0	0.00	0	\$0.00	0.00	0.00
134	Gym Hall Boys Bathroom	3750	2	2	1' x 4', 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	0.12	435.0	\$71.78	0	0	NCR	0	0.00	0	\$0.00	0.00	0.00
135	Gym Hall Trophy Case	3750	8	1	Trophy case, 4' bulbs, 1-Lamp, T8 32W, Recessed Mount, Prismatic Lens	28	0.22	840.0	\$138.60	0	0	NCR	0	0.00	0	\$0.00	0.00	0.00
136	Gym Hall Trophy Case	3750	2	2	1' x 4', 2-Lamp, T8 32W, Recessed Mount, Prismatic Lens	58	0.12	435.0	\$71.78	0	0	NCR	0	0.00	0	\$0.00	0.00	0.00
137	Small Office Peer Med.	3750	2	4	2' x 4', 4-Lamp, T8 32W, Recessed Mount, Prismatic Lens	109	0.22	817.5	\$134.89	0	0	NCR	0	0.00	0	\$0.00	0.00	0.00
138	Janitorial	3750	1	2	1' x 4', 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	0.06	217.5	\$35.89	0	0	NCR	0	0.00	0	\$0.00	0.00	0.00
139	Weight Room	3750	7	2	1' x 4', 1 Exit Sign, 2-Lamp, T8 32W, Pendant Mount, Direct/Indirect Lens	58	0.41	1,522.5	\$251.21	0	0	NCR	0	0.00	0	\$0.00	0.00	0.00
140	Football Gear Room	3750	2	1	1-Lamp, Incandescent 60W, Surface Mount, Direct/Indirect Lens	60	0.12	450.0	\$74.25	2	1	18 W CFL Lamp	18	0.04	135	\$22.28	\$1.00	\$2.00
141	Auditorium Projection Area	3750	1	2	1' x 4', 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	0.06	217.5	\$35.89	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00
142	Storage Equipment	3750	2	2	1' x 4', 2-Lamp, T8 32W, Surface Mount, Direct/Indirect Lens	58	0.12	435.0	\$71.78	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00
143		3750	3	1	Also, one flood light, 1-Lamp, Incandescent, Surface Mount, Direct/Indirect Lens	60	0.18	675.0	\$111.38	3	1	18 W CFL Lamp	18	0.05	202.5	\$33.41	\$1.00	\$3.00
144	Jersey Storage	3750	2	2	1' x 4', 2-Lamp, T8 32W, Pendant Mount, Direct/Indirect Lens	58	0.12	435.0	\$71.78	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00
145	Stairwell	3750	1	2	1' x 4', 2-Lamp, T8 32W, Wall Mount, Direct/Indirect Lens	58	0.06	217.5	\$35.89	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00
146	Athletic Director	3750	3	3	2' x 4', 1 copier, 3-Lamp, T8 32W, Recessed Mount, Prismatic Lens	82	0.25	922.5	\$152.21	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00
147	Gym Corridor	3750	28	2	6 Exit signs, 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	1.62	6,090.0	\$1,004.85	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00
148		3750	17	1	1-Lamp, Flood Light 75W, Recessed Mount, Direct/Indirect Lens	75	1.28	4,781.3	\$788.91	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00
149	Cafeteria Orange	3750	21	4	2' x 4', 3 Exit signs, 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	2.29	8,583.8	\$1,416.32	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00
150	Teacher's Dining Room	3750	6	4	2' x 4', 1 Exit Sign, 1 Vending Machine, 4-Lamp, T8 32W, Recessed Mount, Prismatic Lens	109	0.65	2,452.5	\$404.66	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00
151		3750	4	1	2' x 4', 1-Lamp, T8 32W, Surface Mount, Direct/Indirect Lens	28	0.11	420.0	\$69.30	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00

INVESTMENT GRADE LIGHTING AUDIT

152	Orange Sewing Area	3750	7	2	1' x 4', 2-Lamp, T8 32W, Recessed Mount, Prismatic Lens	58	0.41	1,522.5	\$251.21	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
153	Orange Dish Area	3750	2	2	1' x 4', 2-Lamp, T8 32W, Recessed Mount, Prismatic Lens	58	0.12	435.0	\$71.78	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
154	Kitchen Cooking	3750	26	2	1' x 4' (1 Surface Mount), 2-Lamp, T8 32W, Recessed Mount, Prismatic Lens	58	1.51	5,655.0	\$935.08	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
155	Janitor's Room	3750	1	2	1' x 4', 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	0.06	217.5	\$35.89	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
156	Office	3750	2	2	1' x 4', 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	0.12	435.0	\$71.78	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
157	Freezer	3750	2	1	2-Lamp, Incandescent 60W (each has 2 bulbs), Surface Mount, Direct/Indirect Lens	120	0.24	900.0	\$148.50	2	2	18 W CFL Lamp	32	0.06	240	\$39.60	\$20.00	\$40.00	\$108.90	0.18	660	0.37
158	Blue Sewing Area	3750	9	2	1' x 4', 2-Lamp, T8 32W, Recessed Mount, Prismatic Lens	58	0.52	1,957.5	\$322.99	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
159	Locker Room	3750	1	2	1' x 4', 2-Lamp, T8 32W, Pendant Mount, Direct/Indirect Lens	58	0.06	217.5	\$35.89	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
160		3750	1	1	2', 1-Lamp, T8 17W, Surface Mount, Prismatic Lens	20	0.02	75.0	\$12.38	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
161	Blue Cafeteria Dining Room A	3750	21	4	2' x 4', 3 Exit Sign, 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	2.29	8,583.8	\$1,416.32	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
162	Corridor	3750	13	2	1' x 4', 2 Exit Sign, 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	0.75	2,827.5	\$466.54	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
163	Corridor doorway	3750	2	4	2' x 2', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.22	817.5	\$134.89	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
164		3750	1	4	2' x 4', 4-Lamp, T8 32W, Recessed Mount, Prismatic Lens	109	0.11	408.8	\$67.44	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
165	B210 Classroom	3750	12	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	1.31	4,905.0	\$809.33	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
166	Prep. Office 210/208	3750	2	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.22	817.5	\$134.89	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
167	B208 Classroom	3750	9	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.98	3,678.8	\$606.99	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
168	B211 Classroom	3750	7	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.76	2,861.3	\$472.11	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
169	B209 Classroom	3750	7	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.76	2,861.3	\$472.11	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
170	B206 Classroom	3750	6	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.65	2,452.5	\$404.66	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
171	B207 Classroom	3750	7	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.76	2,861.3	\$472.11	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00

INVESTMENT GRADE LIGHTING AUDIT

172	B205 Classroom	3750	7	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.76	2,861.3	\$472.11	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00		
173	B204 Classroom	3750	7	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.76	2,861.3	\$472.11	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00		
174	B202 Classroom	3750	7	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.76	2,861.3	\$472.11	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00		
175	B203 Classroom	3750	7	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.76	2,861.3	\$472.11	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00		
176	B200 Classroom	3750	3	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.33	1,226.3	\$202.33	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00		
177	B201 Classroom	3750	7	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.76	2,861.3	\$472.11	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00		
178	Boys Bathroom	3750	2	2	1' x 4', 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	0.12	435.0	\$71.78	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00		
179		3750	1	2	bulb, 2-Lamp, T12 34W, Surface Mount, Direct/Indirect Lens	80	0.08	300.0	\$49.50	1	2	4' - 2-Lamp 32W T-8 Industrial Strip w/ Elec Ballast; Metalux MN SNF232	58	0.06	217.5	\$35.89	\$125.00	\$125.00	82.5	\$13.61	9.18
180	Janitor's Room	3750	2	2	1' x 4', 2-Lamp, T8 32W, Surface Mount, Direct/Indirect Lens	58	0.12	435.0	\$71.78	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00		
181	Girls Bathroom	3750	2	2	1' x 4', 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	0.12	435.0	\$71.78	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00		
182		3750	1	1	2' bulb, 1-Lamp, T8 20W, Surface Mount, Prismatic Lens	20	0.02	75.0	\$12.38	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00		
183	Corridor	3750	1	1	1-Lamp, T12 34W, Surface Mount, Prismatic Lens	50	0.05	187.5	\$30.94	1	1	4' 1-Lamp T-8 32W wall Mt; Metalux BC132	28	0.03	105	\$17.33	\$150.00	\$150.00	82.5	\$13.61	11.02
184		3750	14	2	1' x 4', 2 Exit signs, 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	0.81	3,045.0	\$502.43	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00		
185	B Stairwell	3750	3	2	1' x 4', 2-Lamp, T8 32W, Wall Mount, Prismatic Lens	58	0.17	652.5	\$107.66	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00		
186	B Stairwell Emergency Light	3750	1	2	Circle Light, 2-Lamp, Compact Fluorescent, Surface Mount, Prismatic Lens	32	0.03	120.0	\$19.80	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00		
187	B Stairwell	3750	5	1	Wall Mount, 1-Lamp, Incandescent 60W, Surface Mount, Prismatic Lens	60	0.30	1,125.0	\$185.63	5	1	18 W CFL Lamp	18	0.09	337.5	\$55.69	\$10.00	\$50.00	787.5	\$129.94	0.38
188	B111 Math/Sci. Office	3750	3	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.33	1,226.3	\$202.33	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0.00	
189	B108 Classroom	3750	9	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.98	3,678.8	\$606.99	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0.00	
190	B106/8 Prep. Room	3750	3	4	2' x 4', 4-Lamp, T8 32W, 2 Surface Mounts, 1 Recessed Mount, Prismatic Lens	109	0.33	1,226.3	\$202.33	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0.00	
191	B106 Classroom	3750	10	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	1.09	4,087.5	\$674.44	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0.00	

INVESTMENT GRADE LIGHTING AUDIT

192	B109 Classroom	3750	9	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.98	3,678.8	\$606.99	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00
193	B109 Office	3750	2	1	1-Lamp, Incandescent 60W, Surface Mount, Direct/Indirect Lens	109	0.22	817.5	\$134.89	2	1	18 W CFL Lamp	18	0.04	135	\$22.28	\$10.00	\$20.00	0.18
194	B109 Office	3750	1	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.11	408.8	\$67.44	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00
195	B104 Business Department Office	3750	3	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.33	1,226.3	\$202.33	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00
196	B107 Classroom	3750	7	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.76	2,861.3	\$472.11	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00
197	B105 Computer Room	3750	7	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.76	2,861.3	\$472.11	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00
198	B102 Classroom	3750	9	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.98	3,678.8	\$606.99	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00
199	B102 Greenhouse	3750	22	2	2' x 4', 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	1.28	4,785.0	\$789.53	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00
200	B102 Greenhouse Emergency Light	3750	2	2	Circle Light, 2-Lamp, Compact Fluorescent, Surface Mount, Prismatic Lens	32	0.06	240.0	\$39.60	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00
201	B102 Electric Room	3750	1	2	1' x 4', 2-Lamp, T8 32W, Surface Mount, Direct/Indirect Lens	58	0.06	217.5	\$35.89	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00
202	B102.0 Prep. Room	3750	3	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.33	1,226.3	\$202.33	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00
203	B100 Classroom	3750	9	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.98	3,678.8	\$606.99	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00
204	B103 Classroom	3750	7	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.76	2,861.3	\$472.11	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00
205	B101 Classroom	3750	7	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.76	2,861.3	\$472.11	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00
206	B Boys Room	3750	2	4	2' x 4', 4-Lamp, T8 32W, Recessed Mount, Prismatic Lens	109	0.22	817.5	\$134.89	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00
207		3750	1	1	4', 1-Lamp, T12 34W, Surface Mount, Prismatic Lens	50	0.05	187.5	\$30.94	1	1	4' 1-Lamp T-8 32W wall Mt. Metalux BC132	28	0.03	105	\$17.33	\$150.00	\$150.00	11.02
208	B Janitor's Room	3750	2	2	1' x 4', 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	0.12	435.0	\$71.78	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00
209	B Stairwell Middle of Corridor	3750	3	2	1' x 4', 1 Exit Sign, 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	0.17	652.5	\$107.66	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00
210		3750	5	1	Wall Mount, 1-Lamp, Incandescent 60W, Surface Mount, Prismatic Lens	60	0.30	1,125.0	\$185.63	5	1	18 W CFL Lamp	18	0.09	337.5	\$55.69	\$10.00	\$50.00	0.38
211	B Stairwell Emergency Light	3750	1	2	Circle Light, 2-Lamp, Compact Fluorescent, Surface Mount, Prismatic Lens	32	0.03	120.0	\$19.80	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00

INVESTMENT GRADE LIGHTING AUDIT

212	B Girls Bathroom	3750	2	4	2' x 4', 4-Lamp, T8 32W, Recessed Mount, Prismatic Lens	109	0.22	817.5	\$134.89	0	0	NCR	0	0.00	0	\$0.00	0.00	\$0.00	0.00
213		3750	1	1	4', 1-Lamp, T12 34W, Surface Mount, Prismatic Lens	50	0.05	187.5	\$30.94	1	1	4' 1-Lamp T-8 32W wall Mt;Medlux BC132	28	0.03	105	\$17.33	\$150.00	\$150.00	11.02
214	B Corridor	3750	18	2	1' x 4', 2 Exit signs, 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	1.04	3,915.0	\$645.98	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00
215	D106 Copy Room	3750	2	2	1' x 4', 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	0.12	435.0	\$71.78	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00
216	D105 Computer Room	3750	9	4	2' x 4' occupancy sensors, 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.98	3,678.8	\$606.99	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00
217	D104 Classroom	3750	9	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.98	3,678.8	\$606.99	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00
218	D Prop. Room	3750	4	1	1-Lamp, Incandescent 60W, Surface Mount, Direct/Indirect Lens	60	0.24	900.0	\$148.50	4	1	18 W CFL Lamp	18	0.07	270	\$44.55	\$10.00	\$40.00	0.38
219	D109 Home Economics Classroom	3750	9	4	2' x 4', 6 Range Oven, 1 Dishwasher, 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.98	3,678.8	\$606.99	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00
220	D109 Storage	3750	2	2	3 Refrigerators, 1 Washer/Dryer, 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	0.12	435.0	\$71.78	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00
221	C110 Classroom	3750	9	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.98	3,678.8	\$606.99	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00
222	C111 Classroom	3750	12	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	1.31	4,905.0	\$809.33	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00
223	D/C Corridor	3750	9	2	1' x 4', 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	0.52	1,957.5	\$322.99	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00
224	D/C Trophy Case	3750	1	2	1' x 4', 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	0.06	217.5	\$35.89	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00
225	D103 Classroom	3750	9	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.98	3,678.8	\$606.99	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00
226	D102 Classroom	3750	9	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.98	3,678.8	\$606.99	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00
227	D101 Classroom	3750	9	4	2' x 4' occupancy sensors, 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.98	3,678.8	\$606.99	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00
228	Trophy Case	3750	2	1	1' bulb, 1-Lamp, T8 32W, Surface Mount, Prismatic Lens	28	0.06	210.0	\$34.65	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00
229	D100 Classroom	3750	9	4	2' x 4' occupancy sensors, 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.98	3,678.8	\$606.99	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00
230	D Corridor	3750	12	2	1' x 4', 2 Exit signs, 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	0.70	2,610.0	\$430.65	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00

INVESTMENT GRADE LIGHTING AUDIT

231	D Corridor along corridor	3750	9	2	1' x 4', 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	0.52	1,957.5	\$322.99	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0.00		
232	D114 Music Room	3750	9	4	2' x 4', 1 Exit Sign, 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.98	3,678.8	\$606.99	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0.00		
233	Music Office	3750	4	2	1' x 4', 1 Copier/Mini Refrigerator, 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	0.23	870.0	\$143.55	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0.00		
234	Bathroom	3750	1	1	2' 1-Lamp, T12 34W, Surface Mount, Prismatic Lens	50	0.05	187.5	\$30.94	1	1	4' 1-Lamp T-8 32W wall Mtd.Metalux BC132	28	0.03	105	\$17.33	\$150.00	\$150.00	0.02	82.5	\$13.61	11.02
235	Storage	3750	1	2	1' x 4', 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	0.06	217.5	\$35.89	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
236		3750	1	2	1' x 4', 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	0.06	217.5	\$35.89	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
237	Bathroom	3750	1	1	2' 1-Lamp, T12 34W, Surface Mount, Prismatic Lens	50	0.05	187.5	\$30.94	1	1	4' 1-Lamp T-8 32W wall Mtd.Metalux BC132	28	0.03	105	\$17.33	\$150.00	\$150.00	0.02	82.5	\$13.61	11.02
238	D113 Music Room	3750	10	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	1.09	4,087.5	\$674.44	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
239	D113 Office	3750	2	2	1' x 4', 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	0.12	435.0	\$71.78	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
240	A Stairwell	3750	3	2	1' x 4', 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	0.17	652.5	\$107.66	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
241		3750	5	1	Wall Mount, 1-Lamp, Incandescent 60W, Prismatic Lens	60	0.30	1,125.0	\$185.63	5	1	18 W CFL Lamp	18	0.09	337.5	\$55.69	\$10.00	\$50.00	0.21	787.5	\$129.94	0.38
242	A Emergency Light	3750	1	2	Circle Light, 2-Lamp, Compact Fluorescent, Surface Mount, Prismatic Lens	32	0.03	120.0	\$19.80	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
243	A201 Classroom	3750	9	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.98	3,678.8	\$606.99	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
244	A201 Storage	3750	2	2	1' x 4', 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	0.12	435.0	\$71.78	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
245		3750	1	2	1' x 4', 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	0.06	217.5	\$35.89	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
246	A200 Classroom	3750	7	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.76	2,861.3	\$472.11	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
247	A202 Classroom	3750	7	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.76	2,861.3	\$472.11	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
248	A203 Classroom	3750	7	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.76	2,861.3	\$472.11	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
249	A205 Classroom	3750	7	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.76	2,861.3	\$472.11	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
250	A204 Classroom	3750	7	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.76	2,861.3	\$472.11	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
251	A206 Classroom	3750	7	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.76	2,861.3	\$472.11	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00

INVESTMENT GRADE LIGHTING AUDIT

252	A207 Classroom	3750	7	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.76	2,861.3	\$472.11	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00
253	A209 Classroom	3750	7	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.76	2,861.3	\$472.11	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00
254	A208 Classroom	3750	7	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.76	2,861.3	\$472.11	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00
255	A211 Office	3750	4	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.44	1,635.0	\$269.78	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00
256	A210 Classroom	3750	7	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.76	2,861.3	\$472.11	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00
257	A Boys Bathroom	3750	2	2	1' x 4', 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	0.12	435.0	\$71.78	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00
258	Janitor 3	3750	2	2	1' x 4', 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	0.12	435.0	\$71.78	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00
259	Girls Bathroom	3750	2	2	1' x 4', 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	0.12	435.0	\$71.78	0	0	NCR	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00

INVESTMENT GRADE LIGHTING AUDIT

260	A Corridor	3750	14	2	1' x 4', 2 Exit signs, 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	0.81	3,045.0	\$502.43	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	0	\$0.00	0.00
261	A Stairwell	3750	3	2	1' x 4', 1 Exit Sign, 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	0.17	652.5	\$107.66	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	0	\$0.00	0.00
262		3750	5	1	Wall Mount, 1-Lamp, Incandescent 60W, Prismatic Lens	60	0.30	1,125.0	\$185.63	5	1	18 W CFL Lamp	18	0.09	337.5	\$55.69	\$10.00	\$50.00	0.21	787.5	\$129.94
263	A Stairwell Emergency Light	3750	1	2	Circle Light, 2-Lamp, Compact Fluorescent, Surface Mount, Prismatic Lens	32	0.03	120.0	\$19.80	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	0	\$0.00	0.00
264	A Girls Bathroom	3750	2	4	2' x 4', 4-Lamp, T8 32W, Recessed Mount, Prismatic Lens	109	0.22	817.5	\$134.89	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	0	\$0.00	0.00
265		3750	1	1	2' 1-Lamp, T12 20W, Surface Mount, Prismatic Lens	80	0.08	300.0	\$49.50	1	1	4' 1-Lamp T-8 32W wall Mtd.Metallux BC132	28	0.03	105	\$17.33	\$150.00	\$150.00	0.05	195	\$32.18
266	Janitor's Room	3750	2	2	1' x 4' 2-Lamp, T8 32W, Surface Mount, Prismatic Lens	58	0.12	435.0	\$71.78	2	1	4' 1-Lamp T-8 32W wall Mtd.Metallux BC132	28	0.06	210	\$34.65	\$150.00	\$300.00	0.06	225	\$37.13
267	A Boys Bathroom	3750	2	4	2' x 4', 4-Lamp, T8 32W, Recessed Mount, Prismatic Lens	109	0.22	817.5	\$134.89	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	0	\$0.00	0.00
268	A110 Classroom	3750	7	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.76	2,861.3	\$472.11	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	0	\$0.00	0.00
269	A111 Office	3750	3	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.33	1,226.3	\$202.33	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	0	\$0.00	0.00
270	A108 Classroom	3750	7	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.76	2,861.3	\$472.11	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	0	\$0.00	0.00
271	A109 Classroom	3750	7	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.76	2,861.3	\$472.11	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	0	\$0.00	0.00
272	A107 Classroom	3750	7	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.76	2,861.3	\$472.11	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	0	\$0.00	0.00
273	A106 Classroom	3750	7	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.76	2,861.3	\$472.11	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	0	\$0.00	0.00
274	A104 Classroom	3750	7	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.76	2,861.3	\$472.11	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	0	\$0.00	0.00
275	A105 Classroom	3750	7	4	2' x 4', 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.76	2,861.3	\$472.11	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	0	\$0.00	0.00
276	A103 Classroom	3750	7	4	2' x 4' occupancy sensors, 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.76	2,861.3	\$472.11	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	0	\$0.00	0.00
277	A102 Classroom	3750	7	4	2' x 4' occupancy sensors, 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.76	2,861.3	\$472.11	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	0	\$0.00	0.00
278	A100 Classroom	3750	7	4	2' x 4' occupancy sensors, 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.76	2,861.3	\$472.11	0	0	NCR	0	0.00	0	\$0.00	\$0.00	0.00	0	\$0.00	0.00

INVESTMENT GRADE LIGHTING AUDIT

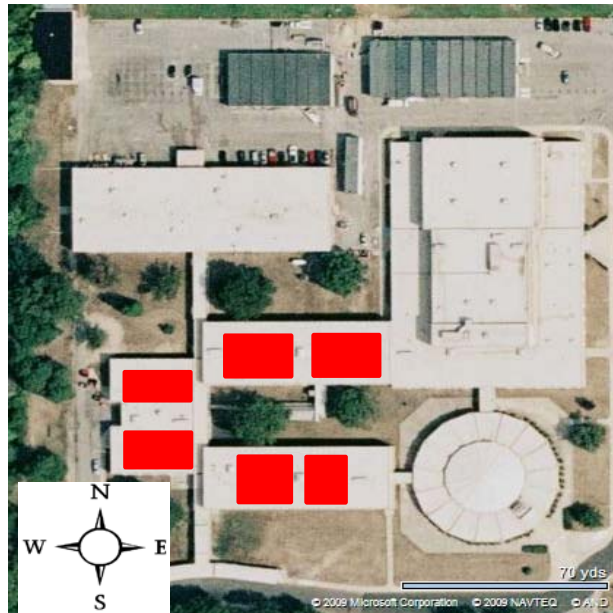
279	A101 Classroom	3750	7	4	2' x 4' occupancy sensors, 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.76	2,861.3	\$472.11	0	0	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0.00
280	Guidance Office	3750	3	4	2' x 4' occupancy sensors, 4-Lamp, T8 32W, Surface Mount, Prismatic Lens	109	0.33	1,226.3	\$202.33	0	0	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0.00
281	A Back Corridor	3750	14	2	1' x 4', 2 Exit signs, 2- Lamp, T8 32W, Surface Mount, Prismatic Lens	58	0.81	3,045.0	\$502.43	0	0	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0.00
Totals			1679	733			150.00	562,511.3	\$92,814.36	113	33	47062.5	12.55	51022.5	\$7,765.31	\$22,357.00	13.61	51022.5	\$8,418.71
		2.66																	

NOTES: 1. Simple Payback noted in this spreadsheet does not include Maintenance Savings and NJ Smart Start Incentives.
2. Lamp totals only include T-12 tube replacement calculations

Lighting Control Applicable

Project Name: Millville BOE - Senior High School							
Location: Millville, NJ 08332							
Description: Photovoltaic System - Direct Purchase							
Simple Payback Analysis							
		Photovoltaic System - Direct Purchase					
Total Construction Cost		\$2,475,720					
Annual kWh Production		362,411					
Annual Energy Cost Reduction		\$59,798					
Annual SREC Revenue		\$126,844					
First Cost Premium		\$2,475,720					
Simple Payback:		13.3					Years
Life Cycle Cost Analysis							
Analysis Period (years):		25		Financing %:		0%	
Financing Term (mths):		0		Maintenance Escalation Rate:		3.0%	
Average Energy Cost (\$/kWh)		\$0.165		Energy Cost Escalation Rate:		3.0%	
Financing Rate:		0.00%		SREC Value (\$/kWh)		\$0.350	
Period	Additional Cash Outlay	Energy kWh Production	Energy Cost Savings	Additional Maint Costs	SREC Revenue	Net Cash Flow	Cumulative Cash Flow
0	\$2,475,720	0	0	0	\$0	(2,475,720)	0
1	\$0	362,411	\$59,798	\$0	\$126,844	\$186,642	(\$2,289,078)
2	\$0	360,599	\$61,592	\$0	\$126,210	\$187,801	(\$2,101,277)
3	\$0	358,796	\$63,440	\$0	\$125,579	\$189,018	(\$1,912,259)
4	\$0	357,002	\$65,343	\$0	\$124,951	\$190,293	(\$1,721,965)
5	\$0	355,217	\$67,303	\$3,659	\$124,326	\$187,970	(\$1,533,995)
6	\$0	353,441	\$69,322	\$3,640	\$123,704	\$189,386	(\$1,344,609)
7	\$0	351,674	\$71,402	\$3,622	\$123,086	\$190,865	(\$1,153,744)
8	\$0	349,915	\$73,544	\$3,604	\$122,470	\$192,410	(\$961,334)
9	\$0	348,166	\$75,750	\$3,586	\$121,858	\$194,022	(\$767,312)
10	\$0	346,425	\$78,023	\$3,568	\$121,249	\$195,703	(\$571,609)
11	\$0	344,693	\$80,363	\$3,550	\$120,642	\$197,455	(\$374,154)
12	\$0	342,969	\$82,774	\$3,533	\$120,039	\$199,281	(\$174,873)
13	\$0	341,254	\$85,257	\$3,515	\$119,439	\$201,182	\$26,309
14	\$0	339,548	\$87,815	\$3,497	\$118,842	\$203,160	\$229,468
15	\$0	337,850	\$90,450	\$3,480	\$118,248	\$205,217	\$434,686
16	\$0	336,161	\$93,163	\$3,462	\$117,656	\$207,357	\$642,043
17	\$0	334,480	\$95,958	\$3,445	\$117,068	\$209,581	\$851,624
18	\$0	332,808	\$98,837	\$3,428	\$116,483	\$211,892	\$1,063,515
19	\$0	331,144	\$101,802	\$3,411	\$115,900	\$214,291	\$1,277,807
20	\$0	329,488	\$104,856	\$3,394	\$115,321	\$216,783	\$1,494,590
21	\$1	327,841	\$108,002	\$3,377	\$114,744	\$219,369	\$1,713,959
22	\$2	326,202	\$111,242	\$3,360	\$114,171	\$222,052	\$1,936,011
23	\$3	324,571	\$114,579	\$3,343	\$113,600	\$224,835	\$2,160,846
24	\$4	322,948	\$118,016	\$3,326	\$113,032	\$227,722	\$2,388,568
25	\$5	321,333	\$121,557	\$3,310	\$112,467	\$230,713	\$2,619,281
Totals:		6,914,042	\$1,606,790	\$56,395	\$2,419,915	\$5,095,001	\$3,970,310
Net Present Value (NPV)						\$2,619,306	
Internal Rate of Return (IRR)						6.3%	

Building	Roof Area (sq ft)	Panel	Qty	Panel Sq Ft	Panel Total Sq Ft	Total KW _{DC}	Total Annual kWh	Panel Weight (33 lbs)	W/SQFT
Senior High School	19530	Sunpower SPR230	1196	14.7	17,586	275.08	362,411	39,468	15.64



Station Identification	
City:	Atlantic_City
State:	New_Jersey
Latitude:	39.45° N
Longitude:	74.57° W
Elevation:	20 m
PV System Specifications	
DC Rating:	275.1 kW
DC to AC Derate Factor:	0.810
AC Rating:	222.8 kW
Array Type:	Fixed Tilt
Array Tilt:	39.5°
Array Azimuth:	180.0°
Energy Specifications	
Cost of Electricity:	16.5 ¢/kWh

Results			
Month	Solar Radiation (kWh m ² /day)	AC Energy (kWh)	Energy Value (\$)
1	3.61	25928	4278.12
2	4.20	26994	4454.01
3	4.78	32569	5373.89
4	5.23	33449	5519.09
5	5.44	35112	5793.48
6	5.48	32865	5422.73
7	5.55	33979	5606.53
8	5.41	33479	5524.03
9	5.23	32042	5286.93
10	4.60	29965	4944.23
11	3.59	23805	3927.83
12	3.17	22224	3666.96
Year	4.69	362411	59797.82

 := Proposed PV Layout

Notes:

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