



LOCAL GOVERNMENT ENERGY AUDIT PROGRAM: ENERGY AUDIT REPORT

PREPARED FOR: WINSLOW HIGH SCHOOL
10 Coopers Folly Rd.
Atco, NJ 08004

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Table of Contents

I.	EXECUTIVE SUMMARY	3
II.	INTRODUCTION	8
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	22
VII.	ENERGY CONSERVATION MEASURES.....	23
VIII.	RENEWABLE/DISTRIBUTED ENERGY MEASURES	32
IX.	ENERGY PURCHASING AND PROCUREMENT STRATEGY	33
X.	INSTALLATION FUNDING OPTIONS.....	36
XI.	ADDITIONAL RECOMMENDATIONS	38

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

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I. EXECUTIVE SUMMARY

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

Winslow Township Board of Education
High School
10 Coopers Folly Rd.
Atco, NJ 08004

Municipal and Facility Contact Person: Robert W. Austin

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	\$ 318,909
Natural Gas	\$ 161,192
<hr/>	
Total	\$ 480,101

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'S 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	Lighting Upgrade	\$140	\$44	3.2	153.3%
ECM #2	Replace Unit Ventilators	\$182,000	\$14,101	12.9	16.2%
ECM #3	Install DDC Controls	\$163,800	\$17,403	9.4	59.4%
ECM #4	NEMA High Efficiency Pump Motor Replacement	\$18,177	\$2,798	6.5	130.9%

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	LightingUpgrade	0.6	287.0	0.0
ECM #2	Replace Unit Ventilators	2.0	2483.0	9230.0
ECM #3	Install DDC Controls	0.0	52565.0	5334.0
ECM #4	NEMA High Efficiency Pump Motor Replacement	7.9	20424.0	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:** Lighting Upgrade
- **ECM #3:** Install DDC Controls
- **ECM #4:** NEMA High Efficiency Pump Motor Replacement

Although ECM #2 does not provide a payback less than 10 years, it is recommended to proceed with the installation of new unit ventilators in the original building classrooms since the existing units are original to the building, and have far surpassed their useful service life.

- **ECM #2:** Replace unit Ventilators

The major energy consuming equipment for this facility is all relatively new and is in good condition. This equipment was added around 2000 as part of the High School expansion/renovation project. This includes the boilers and all of the packaged rooftop heating and cooling units. Replacement and/or major upgrades to this equipment would not be economically feasible at this time. However, the building energy consumption is considered to be high compared to the performance of an Energy Star benchmark High School. The implementation of the ECM's recommended above would increase the overall efficiency of the building, however, the operation of the existing building mechanical systems should be reviewed to ensure that the existing systems' energy efficiency potential is being maximized. This includes reviewing existing equipment operational schedules and room/space temperature set points.

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.
5. 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.
6. Confirm operation schedules and temperature set points of existing equipment currently controlled by the Building Management System. It is recommended that cooling

temperatures should be set to 74 °F during occupied mode and 85 °F during unoccupied mode. Also, heating temperature set points should be 72 °F during occupied mode and 55 °F during unoccupied mode.

II. INTRODUCTION

The comprehensive energy audit covers the 204,262 square foot High School which includes the following spaces: the main building, modular library and special education office.

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 Annual General Service 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 Gas provides natural gas to the facility under the Firm Transportation rate structure. 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.

It should be noted that at the time this report was compiled, complete billing history was not available to the auditors. Complete electric utility information was available, however the gas bill data was incomplete. Based on previous gas bills that were available, the school district purchased gas from a Third Party Supplier (TPS). As of March, 2008 this provider was Hess Company. However, for the span of time that our analysis was completed, the TPS bills were not available. Because of this, it was assumed that the TPS rate was the same as the Hess rate from March of 2008 and this rate was applied to the gas usage that was known to calculate the total gas costs for the facility.

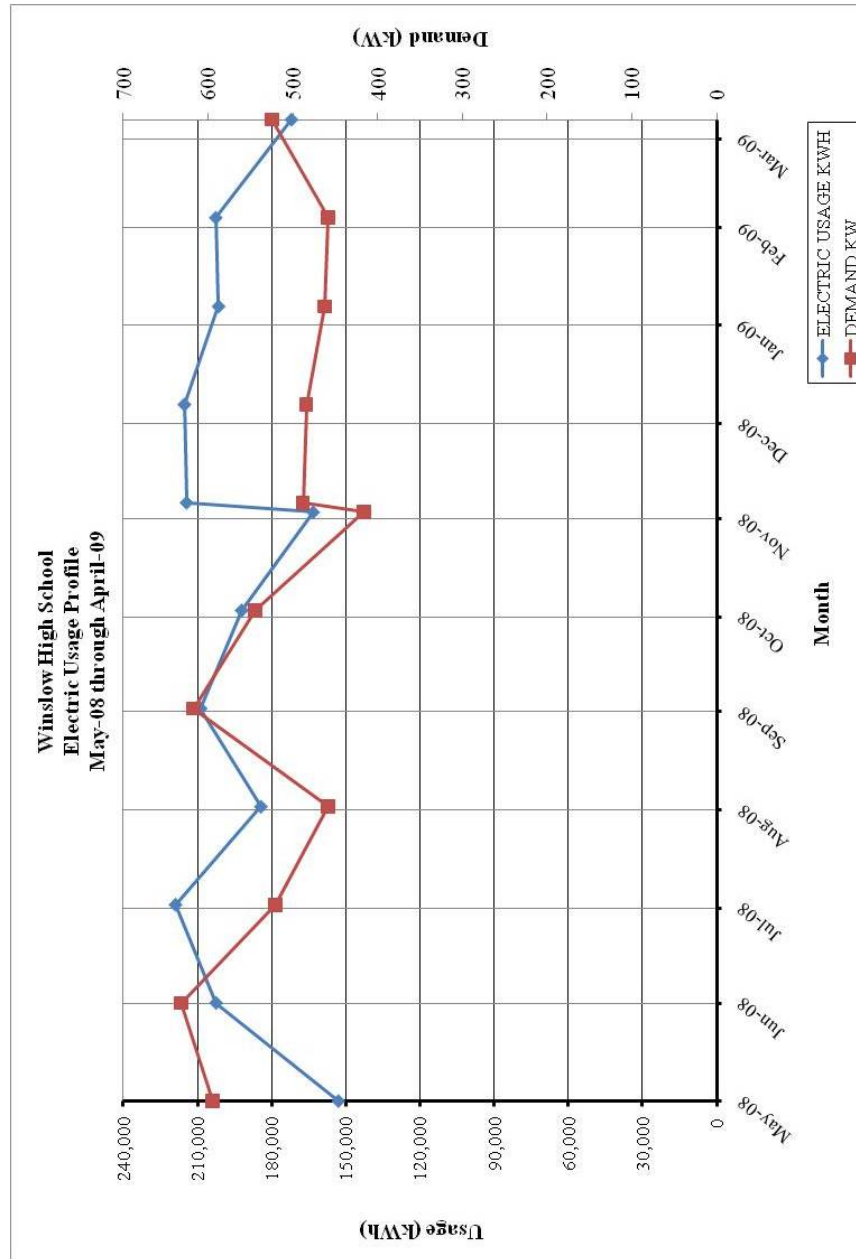
The overall cost for utilities is calculated by dividing the total cost by the total usage. Based on the utility history provided, the average cost for utilities at this facility is as follows:

<u>Description</u>	<u>Average</u>
Electricity	13.7¢ / kWh
Natural Gas	\$1.35 / Therm

**Table 3
Electricity Billing Data**

ELECTRIC USAGE SUMMARY			
Utility Provider: Atlantic City Electric			
Rate: Annual General Service			
Meter No: 83996261			
Customer ID No: 3138 6929 9997			
Third Party Utility			
TPS Meter / Acct No:			
MONTH OF USE	CONSUMPTION KWH	DEMAND	TOTAL BILL
May-08	152,980	595.0	\$21,143
Jun-08	202,565	632.0	\$30,841
Jul-08	219,023	521.0	\$33,382
Aug-08	184,391	458.0	\$28,372
Sep-08	208,842	617.0	\$32,190
Oct-08	192,209	544.0	\$25,895
Nov-08	163,238	416.0	\$21,467
Dec-08	214,518	488.0	\$27,604
Jan-09	215,400	484.0	\$27,544
Feb-09	201,554	462.0	\$26,086
Mar-09	202,679	458.0	\$26,334
Apr-09	172,028	525.0	\$18,051
Totals	2,329,427	632.0 Max	\$318,909
AVERAGE DEMAND		516.7 KW average	
AVERAGE RATE		\$0.137 \$/kWh	

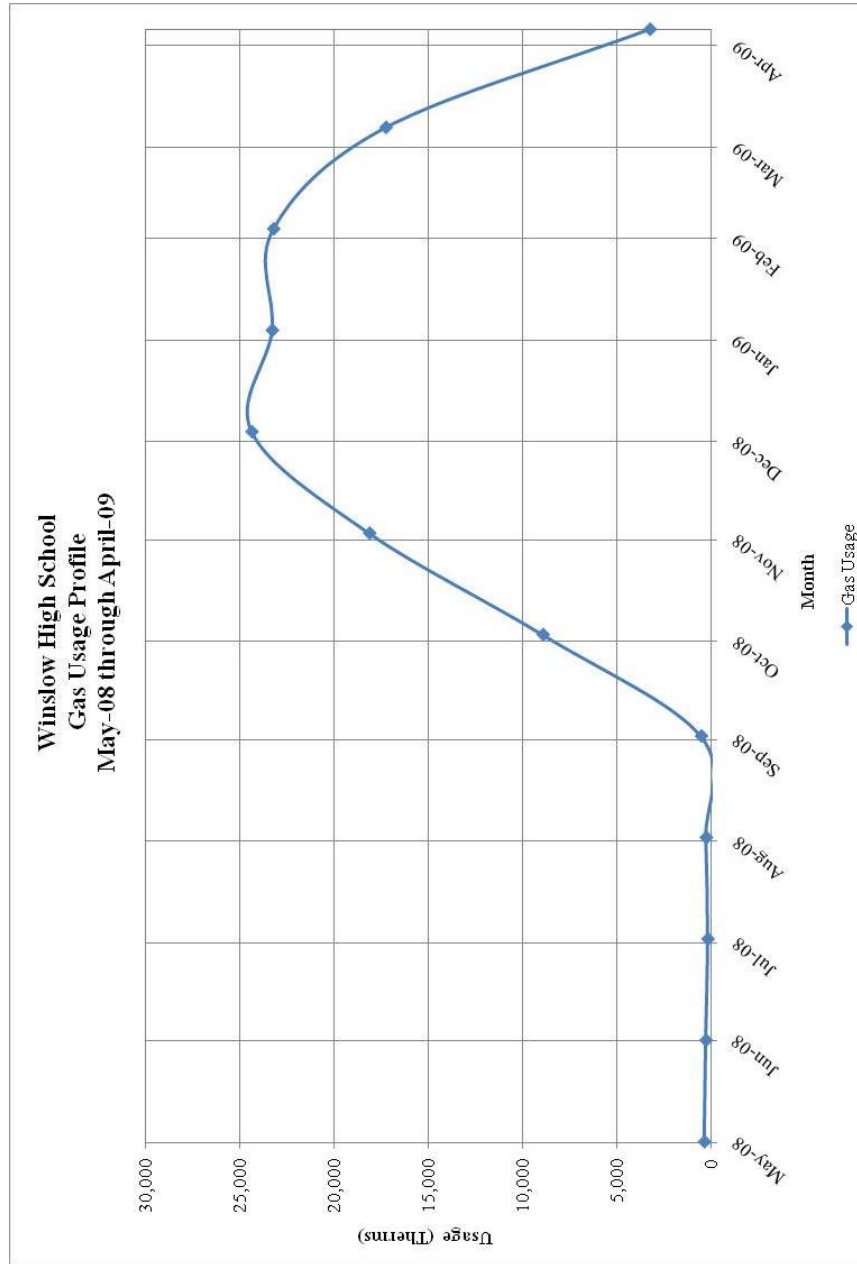
Figure 1
Electricity Usage Profile



**Table 4
Natural Gas Billing Data**

NATURAL GAS USAGE SUMMARY		
Utility Provider: South Jersey Gas		
Rate: Firm Transportation		
Meter No: 232142		
Point of Delivery ID:		
Third Party Utility Provider:		
TPS Meter No:		
MONTH OF USE	CONSUMPTION (THERMS)	TOTAL BILL
May-08	350.00	\$470.58
Jun-08	270.00	\$363.02
Jul-08	170.00	\$228.57
Aug-08	260.00	\$349.57
Sep-08	520.00	\$699.14
Oct-08	8,910.00	\$11,979.50
Nov-08	18,110.00	\$24,348.90
Dec-08	24,350.00	\$32,738.58
Jan-09	23,270.00	\$31,286.52
Feb-09	23,200.00	\$31,192.40
Mar-09	17,240.00	\$23,179.18
Apr-09	3,240.00	\$4,356.18
TOTALS	119,890.00	\$161,192.11
AVERAGE RATE:	\$1.345	\$/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:

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

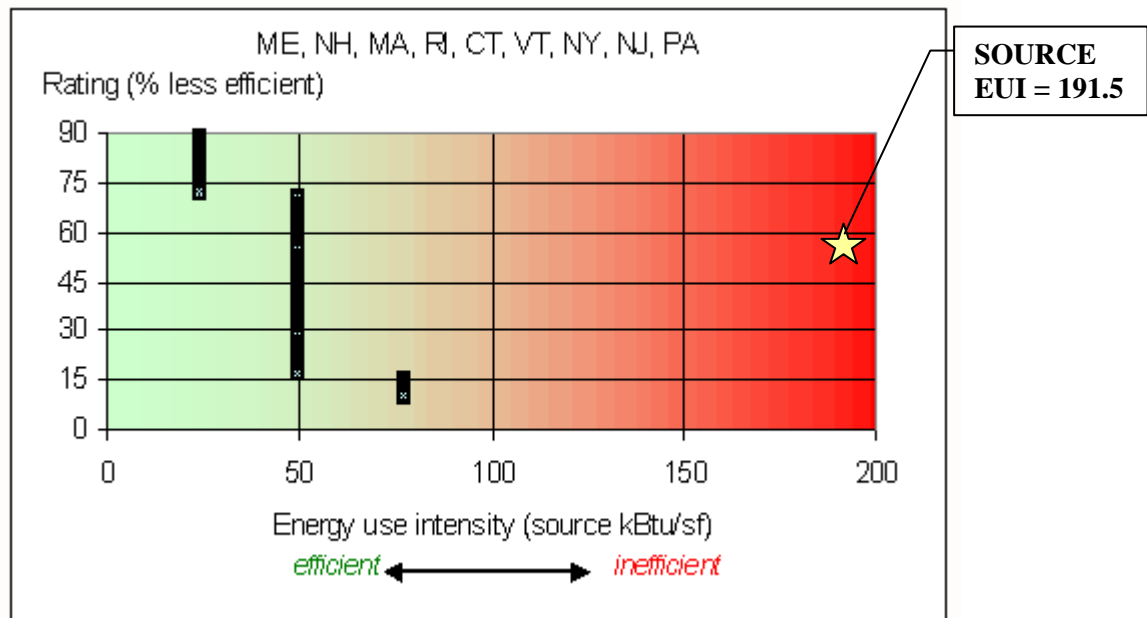
$$\text{Building Source EUI} = \frac{(\text{Electric Usage in kBtu} \times \text{SS Ratio} + \text{Gas Usage in kBtu} \times \text{SS Ratio})}{\text{Building Square Footage}}$$

**Table 5
Facility Energy Use Index (EUI) Calculation**

ENERGY USE INTENSITY CALCULATION						
ENERGY TYPE	BUILDING USE			SITE ENERGY	SITE-SOURCE RATIO	SOURCE ENERGY
	kWh	Therms	Gallons	kBtu		kBtu
ELECTRIC	2329427.0			7,952,664	3.340	26,561,897
NATURAL GAS		119890.0		11,989,000	1.047	12,552,483
FUEL OIL			0.0	0	1.010	0
PROPANE			0.0	0	1.010	0
TOTAL				19,941,664		39,114,380
*Site - Source Ratio data is provided by the Energy Star Performance Rating Methodology for Incorporating Source Energy Use document issued Dec 2007.						
BUILDING AREA	204,262		SQUARE FEET			
BUILDING SITE EUI	97.63		kBtu/SF/YR			
BUILDING SOURCE EUI	191.49		kBtu/SF/YR			

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

**Figure 3
Source Energy Use Intensity Distributions: High Schools**



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: winslowboe
 Password: lgeaceg2009
 Security Question: What city were you born in?
 Security Answer: "winslow"

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
High School	12	50

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

V. FACILITY DESCRIPTION

The High School is a two story facility. The original section of the High School was built in 1957. In 2000, an 8 classroom addition was constructed on the East side of the existing building. In 2001, there was a large scale project to renovate the existing school and add approximately 64,000 SF consisting of additional classrooms and a new gymnasium. The existing gymnasium was converted to cafeteria usage and the existing cafeteria was converted to a library/media room as part of this renovation. The school hours are from 7:15 am to 1:45 pm. Normal hours of operation of the facility are approximately 6:30 am to 2:30 pm. There are also sporting events that take place in the gymnasium during the winter months. These events are not on a regular schedule, but generally take place during the evening hours and weekends.

The exterior walls of the building are a combination of 12” concrete masonry unit block with no insulation and 4” face brick with 1-1/2” rigid insulation on 8” concrete masonry unit block. The roof construction of the original portions of the building, not including the 2001 addition, are built-up roofing with a light stone covering on a 1” layer of rigid insulation and 1-1/2” metal decking. This roof is scheduled to be replaced in the summer of 2010 with an SBS modified roofing membrane on felt plies and a tapered rigid insulation. The original 1-1/2” steel deck is to remain. The roof over the 2001 addition is modified bituminous roofing over a minimum of 4” of tapered rigid insulation and a 1-1/2” metal deck.

HVAC Systems

The classrooms of the building, not including the 2001 addition, are conditioned by through the wall unit ventilators. These units are original to the building and provide heating via hot water coils and ventilation only. The classrooms are also heated by perimeter finned tube radiation. The unit ventilators and hot water finned tube radiation are controlled locally by pneumatic thermostats. Cooling is not provided to these classrooms. These unit ventilators are vintage Trane units that are original to the building and are in fair to poor condition. These units are approximately thirty eight (38) years past their useful service life as defined by ASHRAE. According to the original data on these units, they are all 1000 CFM units of varying heating capacity, ranging from 61 to 70 MBH. The 2001 renovation and expansion project included replacement of these units to Marv-air heating and cooling unit ventilators, but this work was never completed.

The new sections of the building are served by packaged rooftop units. The new library/media center is served by a single zone rooftop unit, Seasons Four Model 3SRP63-0822. This unit is provided with six (6) D/X cooling circuits for staged cooling, hot water heating coils and integral heat recovery wheel and economizer section. The new science addition is served by a multi-zone rooftop unit, Seasons Four Model 3MRP65-0062. This unit has 13 zones consisting of classrooms and administrative offices and is provided with six (6) D/X cooling circuits for staged cooling, hot water heating coils and integral heat recovery wheel and economizer section. In addition to the multi zone unit, the science classrooms are also served by three (3) above ceiling make-up air units. These units are interlocked with the science lab fume hoods and provide heated or un-tempered make-up air to the classrooms when the associated exhaust fans are energized. The new gymnasium addition is served by a single zone rooftop unit, Seasons Four Model 3SRP43-HW9. This unit is provided with a hot water heating coils and an integral heat

recovery wheel. This unit provides ventilation and heating only to the gymnasiums, weight room and locker rooms. The cafeteria, which as renovated in 2001, is served by a Lennox packaged D/X single zone rooftop unit with hot water heating coils. The kitchen and food service areas are served by a Lennox packaged, single zone D/X rooftop unit with hot water heating coils. This unit also provides make-up air and is interlocked with exhaust fans EF-4, 5, 6 & 7. EF-4 serves the kitchen exhaust hood. The restrooms and faculty dining area adjacent to the cafeteria are served by a Lennox, packaged D/X single zone rooftop unit with hot water heating coil. The school store and the office areas adjacent to the cafeteria are each served by a Lennox, packaged D/X single zone rooftop unit with hot water heating coils.

All of the rooftop units of the facility were installed as part of the 2001 renovation/expansion project and are high efficiency units that are still within their useful service life, per ASHRAE standards.

The entrances of the facility are conditioned by ceiling mounted cabinet unit heaters with hot water heating coils. These units provide heating to the entrances and exits of the facility during the winter months to help control draft and infiltration. These units were installed in 2001 and are in good condition.

Heating hot water is supplied to the building via two (2) Weil Mclain Model P-1588-W boilers. These boilers are rated for 3,820 MBH output each and were installed in 2001 during the expansion/renovation project. Heating hot water is circulated by a combination of 200 GPM in-line pumps, located on each boiler, two (2) primary 450 GPM base mounted pumps, two (2) secondary 160 GPM base mounted pumps and one (1) secondary 200 GPM base mounted pump. The two main 450 GPM circulation pumps and the two in-line boiler pumps were installed in 2001 during the building renovation/expansion and are in fair condition. The remainder of the pumps were installed in 1993.

The boilers are controlled by hot water reset. This control function modulates the hot water supply temperature based on the outside air temperature. When the outside air temperature is at or below 0°F, the boilers run at full capacity, or 190 °F supply. When the outside air temperature is at 60°F, the hot water temperature shall be reset to 110°F.

Exhaust System

Air is exhausted from the toilet rooms through the roof exhausters. The fans over the cafeteria, science addition, library and media center and gymnasium are all newer and were installed in 2001 as part of the renovation/expansion project. The remaining roof exhaust fans that serve the original building are being replaced as part of the roof replacement project scheduled for the summer of 2010.

HVAC System Controls

The HVAC systems within the facility are controlled via two types of control systems. The original sections of the building are controlled mainly by pneumatic controllers (thermostats, actuators and valves). These devices are connected to a main control panel located in the boiler room. Compressed air is delivered to the control system by a 2 HP FS Curtis compressor. The

original section of the building is divided into nine pneumatic control zones with settings of occupied, unoccupied and automatic. The pneumatic controls consist of room thermostats to control unit ventilator and exhaust fan operation. In addition to the pneumatic control system, the new sections of the facility, in addition to the rooftop units in the renovated cafeteria section, are controlled via a direct digital control (DDC) building management system (BMS). The BMS controls the air conditioning devices and the temperature limits. The units are controlled by locally mounted space temperature sensors and thermostats to provide the end user limited control capabilities with the high and low temperature limits as well as operational schedule controlled by the BMS.

Domestic Hot Water

Domestic hot water for the entire facility except for the kitchen is provided by a PVI Turbopower natural gas fired hot water heater. This hot water heater generates hot water that is stored in two large storage tanks located in the mechanical room. The domestic hot water is circulated via two Bell and Gossett 1 HP circulation pumps, also located in the mechanical room. The kitchen area is served by a 140 gallon, natural gas fired hot water heater. This hot water heater is located in room C104N.

Lighting

Typical lighting throughout the classrooms and offices of the facility are fluorescent tube lay-in fixtures with T-8 lamps and electronic ballasts. Storage rooms and closets lit with a mixture of incandescent lamps and compact fluorescent lamps. The parking lot is lit with light poles and high pressure sodium lamps.

VI. MAJOR EQUIPMENT LIST

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

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

VII. ENERGY CONSERVATION MEASURES

ECM #1: Lighting Upgrades

Description:

The lighting in the High School is primarily made up of fluorescent fixtures with T-8 lamps with electronic ballasts. There are a few storage rooms and closets with incandescent lighting.

This ECM includes replacement of all incandescent lamps to compact fluorescent lamps. The energy usage of an incandescent compared to a compact fluorescent approximately 3 to 4 times greater. In addition to the energy savings, compact fluorescent fixtures burn-hours are 8 to 15 times longer than incandescent fixtures ranging from 6,000 to 15,000 burn-hours compared to incandescent fixtures ranging from 750 to 1000 burn-hours.

Energy Savings Calculations:

The **Investment Grade Lighting Audit Appendix** outlines the proposed retrofits, costs, savings, and payback periods.

From the Smart Start Incentive appendix, there is no incentive for replacing incandescent lamps with compact fluorescent lamps. The incentive is only available if the entire light fixture is replaced. In most cases, the existing fixtures can be re-lamped by the facility's staff to obtain the energy savings without the expense of a new fixture and the involvement of an electrician to install a new fixture.

Energy Savings Summary:

ECM #1 - ENERGY SAVINGS SUMMARY	
Installation Cost (\$):	\$140
NJ Smart Start Equipment Incentive (\$):	\$0
Net Installation Cost (\$):	\$140
Maintenance Savings (\$/Yr):	\$5
Energy Savings (\$/Yr):	\$39
Total Yearly Savings (\$/Yr):	\$44
Estimated ECM Lifetime (Yr):	8
Simple Payback	3.2
Simple Lifetime ROI	153.3%
Simple Lifetime Maintenance Savings	\$40
Simple Lifetime Savings	\$355
Internal Rate of Return (IRR)	27%
Net Present Value (NPV)	\$171.11

ECM #2 - Replace Unit Ventilators

The classrooms in the original section of the High School are heated and ventilated by vintage unit ventilators that consist of hot water coils, fans, and pneumatic controls. These units are beyond their expected service life as outlined in Chapter 36 of the 2007 ASHRAE Applications Handbook. Based on field surveys and review of existing building drawings, there are a total of fifty two (52) classroom unit ventilators. Due to escalating owning and maintenance costs, these unit ventilators should be replaced.

This ECM would replace the unit ventilators with high-efficiency units that feature a face and bypass damper to allow a variable portion of the mixed return and ventilation air to flow over the heating coil. This method of capacity control also allows for free cooling when the outdoor air is relatively cool and full-stream cooling is not necessary. These unit ventilators would be equipped with DDC controllers that would communicate with the room thermostats (changed to DDC) and other equipment such as the boilers indicating when to supply hot water for heating demand. To make this energy conservation measure viable, it would be necessary to convert the existing pneumatic controls in each classroom to DDC.

Estimated Energy Savings

The analysis is based on the following assumptions for a typical existing unit ventilator:

- Typical 1,000SF classroom (UA=210 Btuh/°F)
- 21 person occupancy
- 0.97 watt per square foot lighting load
- Winslow, NJ weather
- Classroom occupied 7 hours per day, 180 days per year
- Thermostat setting of 70°F occupied and no night time setback
- 80% efficient gas-fired boiler
- \$0.137/kWh for electrical cost
- \$1.35 per therm of natural gas cost
- Ventilation rate of 15cfm per person
- Unit Ventilator total air supply rate = 1,000 cfm
- Unit ventilator fan static pressure = 0.25" w.g.
- Unit Ventilator fan/motor efficiency = 25%
- Classroom exhaust system flow rate = 310 cfm
- Classroom exhaust system static pressure = 0.5" w.g.
- Classroom exhaust fan efficiency = 30%

During the occupied hours of the classroom, internal heat gains from people, lights, and computer (9,500 Btu/hr) effectively lowers the heating requirements by 17°F. When the thermostat is set to 70°F, the classroom does not need heat until the outside temperature drops to 53°F (assuming no gains from solar heating). During unoccupied hours, the thermostat should be

set to 55°F, but there are no heat gains to lower the heating requirement, hence the classroom space needs heating whenever the outside temperature drops below 55°F.

Using the assumptions listed above, the existing unit ventilator uses approximately 148 kWh/yr during occupied hours and 43 kWh/yr during unoccupied hours. This equates to a total unit ventilator electrical consumption of approximately 191 kWh/yr. The total electrical cost for the unit ventilator is \$26.17/yr.

The existing unit ventilator also requires approximately 254 Therms of natural gas to produce the required heating hot water during the occupied period and approximately 456 Therms of natural gas to heat during the unoccupied period of the heating season for a total of 710 Therms per year to heat a typical classroom with the existing unit ventilators. This equates to a fuel cost of \$958.50/yr per unit ventilator.

By installing a high-efficiency unit ventilator with a DDC controller, a digital thermostat and an unoccupied setpoint of 55°F, it is estimated that the energy savings per unit ventilator would be approximately 25%.

Total energy savings = 25% x [\$26.17/yr + \$958.50/yr] = \$246.17/yr per unit ventilator.

It is also assumed that the replacement of the old unit ventilators with newer, more efficient units will save approximately \$1,300 per year in maintenance costs.

The installed cost of a 1,000 CFM high-efficiency unit ventilator = \$3,500

Because these units are heating and ventilating units only, they do not qualify for the NJ Smart Start Rebate for Unitary HVAC Equipment.

Energy Savings Summary:

ECM #2 - ENERGY SAVINGS SUMMARY	
Installation Cost (\$):	\$182,000
NJ Smart Start Equipment Incentive (\$):	\$0
Net Installation Cost (\$):	\$182,000
Maintenance Savings (\$/Yr):	\$1,300
Energy Savings (\$/Yr):	\$12,801
Total Yearly Savings (\$/Yr):	\$14,101
Estimated ECM Lifetime (Yr):	15
Simple Payback	12.9
Simple Lifetime ROI	16.2%
Simple Lifetime Maintenance Savings	\$19,500
Simple Lifetime Savings	\$211,515
Internal Rate of Return (IRR)	2%
Net Present Value (NPV)	(\$13,663.18)

ECM #3: Install DDC Controls

Description:

The original section of the High School is controlled by outdated ATC pneumatic controls for all of their unitary HVAC equipment. The use of manual control of HVAC systems is inaccurate and can be neglected due to human error. Also, due to the age of the current system, the local controllers could be out of calibration or broken. Also, the current setup with manual control does not allow for night time temperature setback. In addition, the absence of controllers doesn't allow the building to maintain the temperature at set-point under changing load conditions.

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

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

Savings resulting from the implementation of this ECM for energy management controls are estimated to be 5% of the total energy cost for the facility. This is because the major mechanical components (boilers and rooftop units) are already controlled by the existing DDC system.

Energy Savings Calculations:

Studies have shown that the installation of a full DDC system could save as much as an estimated 15% of the total energy costs for this facility. Since the new addition of the facility is currently controlled via DDC, we estimated that the total savings in energy costs for the older section of the building being converted to DDC would be approximately 5% of the energy consumption of this portion of the facility. It is estimated that the energy consumption of the original sections of the building not currently controlled by DDC controls is approximately 60% of the total building energy consumption, or \$288,061.

Annual Savings = 5% x \$288,061 = \$14,403.

Assuming one-half of the total energy savings is natural gas and the other half is electric savings, this equates to 52,565 kWh and 5,334 Therms saved. We have also assumed a maintenance savings of \$3,000 per year for the pneumatic devices.

The cost of a DDC system with new field devices, wiring, thermostats, controllers, engineering, etc. is approximately \$3,150 per control zone based on recent project cost data and a control

contractor's budget pricing. For the original section of the facility, the estimated cost of adding on the existing DDC system is approximately \$163,800 (based on fifty two (52) control zones).

Energy Savings Summary:

ECM #3 - ENERGY SAVINGS SUMMARY	
Installation Cost (\$):	\$163,800
NJ Smart Start Equipment Incentive (\$):	\$0
Net Installation Cost (\$):	\$163,800
Maintenance Savings (\$/Yr):	\$3,000
Energy Savings (\$/Yr):	\$14,403
Total Yearly Savings (\$/Yr):	\$17,403
Estimated ECM Lifetime (Yr):	15
Simple Payback	9.4
Simple Lifetime ROI	59.4%
Simple Lifetime Maintenance Savings	\$45,000
Simple Lifetime Savings	\$261,045
Internal Rate of Return (IRR)	6%
Net Present Value (NPV)	\$43,955.88

ECM #4: Install NEMA Premium Efficient Pump Motor

Description:

Replacing the pump motors with new efficient motors is a simple change that can provide substantial savings.

The existing electric motors have an efficiency ranging from 58% to 77.5%. The improved efficiency of the NEMA premium efficient motors is primarily due to better designs with use of better materials to reduce losses. Surprisingly, the electricity used to power a motor represents 95 % of its total lifetime operating cost. Because many motors operate 40-80 hours per week, even small increases in efficiency can yield substantial energy and dollar savings.

This energy conservation measure would replace all motors with NEMA Premium® Efficient Motors. NEMA Premium® is the most efficient motor designation in the marketplace today.

Energy Savings Calculations:

Given:

Annual Hours of Operations = 2,600 (Average)

1 HP = 0.746 Watt

Load Factor = 75%

Cost of electricity = \$0.137 / kWh

The following table outlines the NEMA Premium® Efficiency Motor replacement energy savings for this facility:

NEMA PREMIUM EFFICIENT MOTOR REPLACEMENT					
MOTOR HP	EXISTING EFFECIENCY	NEMA PREMIUM EFFECIENCY	KW SAVINGS	KWH SAVINGS	COST SAVINGS
2	58.0%	86.5%	0.64	1,653	\$226
2	58.0%	86.5%	0.64	1,653	\$226
5	77.5%	89.5%	0.48	1,258	\$172
5	77.5%	89.5%	0.48	1,258	\$172
7 1/2	77.5%	91.0%	0.80	2,088	\$286
20	77.5%	93.0%	2.41	6,257	\$857
20	77.5%	93.0%	2.41	6,257	\$857
			7.9	20,424	\$2,798

The following table outlines the motor replacement plan for this facility:

MOTOR REPLACEMENT PLAN							
MOTOR HP	QTY	ENCL. TYPE	NO. OF POLES	INSTALLED COST **	TOTAL COST	TOTAL SAVINGS	SIMPLE PAYBACK
2	2	ODP	4-Pole	\$1,096	\$2,192	\$452.85	4.8
5	2	ODP	4-Pole	\$2,771	\$5,542	\$344.79	16.1
7 1/2	1	ODP	4-Pole	\$3,169	\$3,169	\$286.12	11.1
20	2	ODP	4-Pole	\$3,637	\$7,274	\$1,714.36	4.2
Totals:					\$18,177	\$2,798	6.5

** Net Cost after the SmartStart Buildings® incentive is applied.

Energy Savings Summary:

ECM #4 - ENERGY SAVINGS SUMMARY	
Installation Cost (\$):	\$18,700
NJ Smart Start Equipment Incentive (\$):	\$523
Net Installation Cost (\$):	\$18,177
Maintenance Savings (\$/Yr):	\$0
Energy Savings (\$/Yr):	\$2,839
Total Yearly Savings (\$/Yr):	\$2,839
Estimated ECM Lifetime (Yr):	15
Simple Payback	6.4
Simple Lifetime ROI	134.3%
Simple Lifetime Maintenance Savings	\$0
Simple Lifetime Savings	\$42,585
Internal Rate of Return (IRR)	13%
Net Present Value (NPV)	\$15,714.80

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.

Solar energy produces clean energy and reduces a building's carbon footprint. This is accomplished via photovoltaic panels which will 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). 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 equates to \$0.35 per kWh generated.

At the time of this report, the Winslow Board of Education had already contracted with an outside party to design and install a roof mounted Solar PV array to provide power to the High School. Because of this, a Solar Energy Analysis was not performed on this building.

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. Based on CEG's review of the applicability of wind energy for the facility, it was determined that the average wind speed is not adequate for purchase of a commercial wind turbine. Therefore, wind energy is not a viable option to implement.

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:

The Electric Usage Profile is fairly consistent throughout the year dependent on season. Through the months where heating is the priority (Oct through Apr) the demand is very consistent as well as the consumption month-to-month. This similarity occurs between the months of June through August which are predominately cooling. There are two points along the profile that require further study. These points are the demand drop in November and the high demand/low consumption point in May. Looking at the facility as a whole, these two instances do not have a straight forward answer to their occurrence.

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). The main central heating equipment and domestic hot water equipment for this facility consists entirely of gas-fired equipment hence the noted profile.

Tariff Analysis:

Electricity:

This facility receives electrical Delivery Service from Atlantic City Electric on an AGS Secondary (Annual 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.

Natural Gas:

This facility has natural gas 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) commodity when not being served by a Third Party Supplier (TPS). Currently the Township is procuring natural gas from a Third Party Supplier (TPS), Woodruff Energy. 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 \$.145/ kWh (kWh is the common unit of electric measure). The average "price to compare" per deca-therm for natural gas is \$14.80 /dth (dth is the common unit of measure). These Weighted Average Prices are as supplied via current BOE utility suppliers.

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 the study period's historical consumption (May 2008 to April 2009) and current electric rates, the BOE could see an improvement of up to 15 % or up to \$135,000 in its electric costs annually. (Note: Savings were calculated using an Average Annual Consumption of 6,217,580 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 \$156,000 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 review their current energy supply contracts with their current suppliers in order to gain a better idea of the options. The BOE has procured natural gas commodity via Hess Corporation and has knowledge of the general procedures. However, CEG highly recommends the BOE utilize a consultant to ensure "best practice" is utilized when joining into a fixed term pricing contract for commodity. 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%.
- v. *Direct Install Program* – The New Jersey Clean Energy’s Direct Install Program is a state funded program that targets small commercial and industrial facilities with peak demand of less than 200 kW. This turnkey program is aimed at providing owners a seamless, comprehensive process for analysis, equipment replacement and financial incentives to reduce consumption, lower utility costs and improve profitability. The program covers up to 80% of the cost for eligible upgrades including lighting, lighting controls, refrigeration, HVAC, motors, variable speed drives, natural gas and food service. Participating contractors (refer to www.njcleanenergy.com) conduct energy assessments in addition to your standard local government energy audit and install the cost-effective measures.

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

Winslow Township High School

ECM ENERGY AND FINANCIAL COSTS AND SAVINGS SUMMARY															
ECM NO.	DESCRIPTION	INSTALLATION COST				YEARLY SAVINGS			ECM LIFETIME (Yr)	LIFETIME ENERGY SAVINGS	LIFETIME MAINTENANCE SAVINGS	LIFETIME ROI	SIMPLE PAYBACK	INTERNAL RATE OF RETURN (IRR)	NET PRESENT VALUE (NPV)
		MATERIAL	LABOR	REBATES, INCENTIVES	NET INSTALLATION COST	ENERGY	MAINT. / SREC	TOTAL		(Yearly Saving * ECM Lifetime)	(Yearly Maint Saving * ECM Lifetime)	(Lifetime Savings - Net Cost) / (Net Cost)	(Net cost / Yearly Savings)	$\sum_{n=0}^N \frac{C_n}{(1 + IRR)^n}$	$\sum_{n=0}^N \frac{C_n}{(1 + DR)^n}$
		(\$)	(\$)	(\$)	(\$)	(\$/Yr)	(\$/Yr)	(\$/Yr)		(\$)	(\$)	(%)	(Yr)	(\$)	(\$)
ECM #1	Lighting Upgrade	\$140	\$0	\$0	\$140	\$39	\$5	\$44	8	\$355	\$40	153.3%	3.2	26.97%	\$171.11
ECM #2	Replace Unit Ventilators	\$182,000	\$0	\$0	\$182,000	\$12,801	\$1,300	\$14,101	15	\$211,515	\$19,500	16.2%	12.9	1.94%	(\$13,663.18)
ECM #3	Install DDC Controls	\$163,800	\$0	\$0	\$163,800	\$14,403	\$3,000	\$17,403	15	\$261,045	\$45,000	59.4%	9.4	6.48%	\$43,955.88
ECM #4	NEMA High Efficiency Pump Motor Replacement	\$18,700	\$0	\$523	\$18,177	\$2,798	\$0	\$2,798	15	\$41,970	\$0	130.9%	6.5	12.90%	\$15,225.34

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



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SmartStart Building Incentives

The NJ SmartStart Buildings Program offers financial incentives on a wide variety of building system equipment. The incentives were developed to help offset the initial cost of energy-efficient equipment. The following tables show the current available incentives as of February, 2010:

Electric Chillers

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

Energy Efficiency must comply with ASHRAE 90.1-2004

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
Occupancy Controlled Thermostat (Hospitality & Institutional Facility)	\$75 per thermostat

Energy Efficiency must comply with ASHRAE 90.1-2004

Ground Source Heat Pumps

Closed Loop & Open Loop	\$450 per ton, EER ≥ 16
	\$600 per ton, EER ≥ 18
	\$750 per ton, EER ≥ 20

Energy Efficiency must comply with ASHRAE 90.1-2004

Gas Heating

Gas Fired Boilers < 300 MBH	\$300 per unit
Gas Fired Boilers ≥ 300 - 1500 MBH	\$1.75 per MBH
Gas Fired Boilers ≥1500 - ≤ 4000 MBH	\$1.00 per MBH
Gas Fired Boilers > 4000 MBH	(Calculated through Custom Measure Path)
Gas Furnaces	\$300 - \$400 per unit, AFUE ≥ 92%

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
Gas Fired Tankless Water Heaters	\$300 per unit

Premium Motors

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

Prescriptive Lighting

T-5 and T-8 Lamps w/Electronic Ballast in Existing Facilities	\$15 per fixture (1-4 lamps)
T-8 reduced Wattage (28w/25w 4', 1-4 lamps) Lamp & ballast replacement	\$10 per fixture
Hard-Wired Compact Fluorescent	\$25 - \$30 per fixture
Metal Halide w/Pulse Start	\$25 per fixture
LED Exit Signs	\$10 - \$20 per fixture
T-5 and T-8 High Bay Fixtures	\$16 - \$284 per fixture
HID ≥ 100w Retrofit with induction lamp, power coupler and generator (must be 30% less watts/fixture than HID system)	\$50 per fixture
HID ≥ 100w Replacement with new HID ≥ 100w	\$70 per fixture
LED Refrigerator/Freezer case lighting replacement of fluorescent in medium and low temperature display case	\$42 per 5 foot \$65 per 6 foot

Lighting Controls – Occupancy Sensors

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

Lighting Controls – HID or Fluorescent Hi-Bay Controls

Occupancy hi-low	\$75 per fixture controlled
Daylight Dimming	\$75 per fixture controlled
Daylight Dimming - office	\$50 per fixture controlled

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
Custom Measures	\$0.16 KWh and \$1.60/Therm of 1st year savings, or a buy down to a 1 year payback on estimated savings. Minimum required savings of 75,000 KWh or 1,500 Therms and a IRR of at least 10%.
Multi Measures Bonus	15%



STATEMENT OF ENERGY PERFORMANCE

High School

Building ID: 2052619
For 12-month Period Ending: April 30, 2009¹
Date SEP becomes ineligible: N/A

Date SEP Generated: February 16, 2010

Facility
 High School
 10 Coopers Folly Road
 Atco, NJ 08004

Facility Owner
 Winslow Board Of Education
 20 Coopers Folly Road
 Atco, NJ 08004

Primary Contact for this Facility
 Robert Austin
 20 Coopers Folly Road
 Atco, NJ 08004

Year Built: 1957
Gross Floor Area (ft²): 204,262

Energy Performance Rating² (1-100) 12

Site Energy Use Summary³

Electricity - Grid Purchase(kBtu)	7,948,005
Natural Gas (kBtu) ⁴	11,979,000
Total Energy (kBtu)	19,927,005

Energy Intensity⁵

Site (kBtu/ft ² /yr)	98
Source (kBtu/ft ² /yr)	191

Emissions (based on site energy use)

Greenhouse Gas Emissions (MtCO ₂ e/year)	1,848
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Electric Distribution Utility

Pepco - Atlantic City Electric Co

National Average Comparison

National Average Site EUI	66
National Average Source EUI	129
% Difference from National Average Source EUI	48%
Building Type	K-12 School

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

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

Certifying Professional
 Michael Fischette
 520 South Burnt Mill Road
 Voorhees, NJ 08043

Notes:

1. Application for the ENERGY STAR must be submitted to EPA within 4 months of the Period Ending date. Award of the ENERGY STAR is not final until approval is received from EPA.
2. The EPA Energy Performance Rating is based on total source energy. A rating of 75 is the minimum to be eligible for the ENERGY STAR.
3. Values represent energy consumption, annualized to a 12-month period.
4. 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	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	10 Coopers Folly Road, Atco, NJ 08004	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"/>
High School (K-12 School)				
CRITERION	VALUE AS ENTERED IN PORTFOLIO MANAGER	VERIFICATION QUESTIONS	NOTES	<input checked="" type="checkbox"/>
Gross Floor Area	204,262 Sq. Ft.	Does this square footage include all supporting functions such as kitchens and break rooms used by staff, storage areas, administrative areas, elevators, stairwells, atria, vent shafts, etc. Also note that existing atriums should only include the base floor area that it occupies. Interstitial (plenum) space between floors should not be included in the total. Finally gross floor area is not the same as leasable space. Leasable space is a subset of gross floor area.		<input type="checkbox"/>
Open Weekends?	No	Is this building normally open at all on the weekends? This includes activities beyond the work conducted by maintenance, cleaning, and security personnel. Weekend activity could include any time when the space is used for classes, performances or other school or community activities. If the building is open on the weekend as part of the standard schedule during one or more seasons, the building should select ?yes? for open weekends. The ?yes? response should apply whether the building is open for one or both of the weekend days.		<input type="checkbox"/>
Number of PCs	357 (Default)	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	50 %	Is this the percentage of the total floor space within the facility that is served by mechanical cooling equipment?		<input type="checkbox"/>
Percent Heated	80 %	Is this the percentage of the total floor space within the facility that is served by mechanical heating equipment?		<input type="checkbox"/>
Months	10(Optional)	Is this school in operation for at least 8 months of the year?		<input type="checkbox"/>

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

Energy Consumption

Power Generation Plant or Distribution Utility: Pepco - Atlantic City Electric Co

Fuel Type: Electricity		
Meter: HS Electric (kWh (thousand Watt-hours)) Space(s): Entire Facility Generation Method: Grid Purchase		
Start Date	End Date	Energy Use (kWh (thousand Watt-hours))
04/01/2009	04/30/2009	172,028.00
03/01/2009	03/31/2009	202,679.00
02/01/2009	02/28/2009	201,554.00
01/01/2009	01/31/2009	215,400.00
12/01/2008	12/31/2008	214,518.00
11/01/2008	11/30/2008	163,238.00
10/01/2008	10/31/2008	192,209.00
09/01/2008	09/30/2008	208,842.00
08/01/2008	08/31/2008	184,391.00
07/01/2008	07/31/2008	219,023.00
06/01/2008	06/30/2008	202,565.00
05/01/2008	05/31/2008	152,980.00
HS Electric Consumption (kWh (thousand Watt-hours))		2,329,427.00
HS Electric Consumption (kBtu (thousand Btu))		7,948,004.92
Total Electricity (Grid Purchase) Consumption (kBtu (thousand Btu))		7,948,004.92
Is this the total Electricity (Grid Purchase) consumption at this building including all Electricity meters?		<input type="checkbox"/>
Fuel Type: Natural Gas		
Meter: HS Gas (therms) Space(s): Entire Facility		
Start Date	End Date	Energy Use (therms)
04/01/2009	04/30/2009	3,240.00
03/01/2009	03/31/2009	17,240.00
02/01/2009	02/28/2009	23,200.00
01/01/2009	01/31/2009	23,270.00
12/01/2008	12/31/2008	24,350.00
11/01/2008	11/30/2008	18,110.00
10/01/2008	10/31/2008	8,910.00
09/01/2008	09/30/2008	520.00
08/01/2008	08/31/2008	260.00
07/01/2008	07/31/2008	170.00

06/01/2008	06/30/2008	270.00
05/01/2008	05/31/2008	250.00
HS Gas Consumption (therms)		119,790.00
HS Gas Consumption (kBtu (thousand Btu))		11,979,000.00
Total Natural Gas Consumption (kBtu (thousand Btu))		11,979,000.00
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
High School
10 Coopers Folly Road
Atco, NJ 08004

Facility Owner
Winslow Board Of Education
20 Coopers Folly Road
Atco, NJ 08004

Primary Contact for this Facility
Robert Austin
20 Coopers Folly Road
Atco, NJ 08004

General Information

High School	
Gross Floor Area Excluding Parking: (ft ²)	204,262
Year Built	1957
For 12-month Evaluation Period Ending Date:	April 30, 2009

Facility Space Use Summary

High School	
Space Type	K-12 School
Gross Floor Area(ft ²)	204,262
Open Weekends?	No
Number of PCs ^d	357
Number of walk-in refrigeration/freezer units	2
Presence of cooking facilities	Yes
Percent Cooled	50
Percent Heated	80
Months ^o	10
High School?	Yes
School District ^o	Winslow

Energy Performance Comparison

Performance Metrics	Evaluation Periods		Comparisons		
	Current (Ending Date 04/30/2009)	Baseline (Ending Date 04/30/2009)	Rating of 75	Target	National Average
Energy Performance Rating	12	12	75	N/A	50
Energy Intensity					
Site (kBtu/ft ²)	98	98	52	N/A	66
Source (kBtu/ft ²)	191	191	101	N/A	129
Energy Cost					
\$/year	\$ 480,101.14	\$ 480,101.14	\$ 253,681.98	N/A	\$ 324,397.98
\$/ft ² /year	\$ 2.35	\$ 2.35	\$ 1.24	N/A	\$ 1.59
Greenhouse Gas Emissions					
MtCO ₂ e/year	1,848	1,848	976	N/A	1,249
kgCO ₂ e/ft ² /year	9	9	5	N/A	6

More than 50% of your building is defined as K-12 School. Please note that your rating accounts for all of the spaces listed. The National 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.

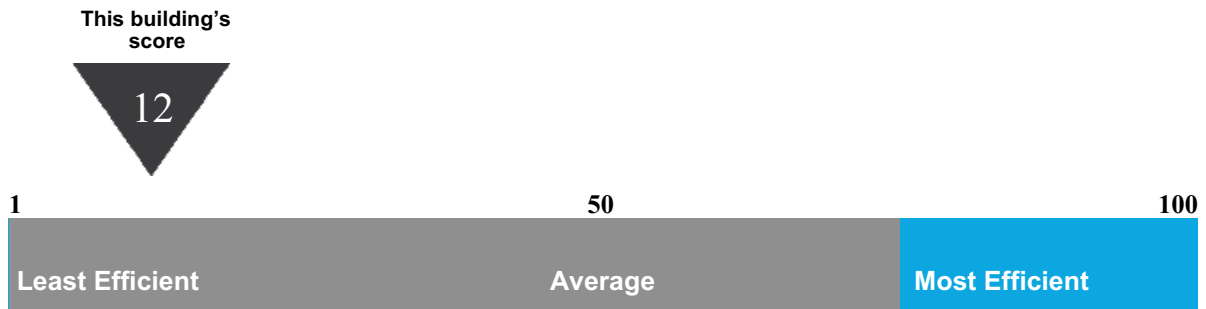
Statement of Energy Performance

2009

High School
10 Coopers Folly Road
Atco, NJ 08004

Portfolio Manager Building ID: 2052619

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



This building uses 191 kBtu per square foot per year.*

*Based on source energy intensity for the 12 month period ending April 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
WINSLOW TOWNSHIP BOE HIGH SCHOOL

Boiler

Tag	Location	Area Served	Manufacturer	Qty.	Model #	Serial #	Input (Lt Oil)	Input (MBh)	Output (MBh)	Efficiency (%)	Fuel	Approx. Age	ASHRAE Service Life	Remaining Life	Notes
B-1	Mechanical Rm	Whole building	Weil Mclain	1	P-1588-W	CP4081385	33 GPH	4763	3820	80	Nat gas/No.2 Oil	9	35	26	
B-2	Mechanical Rm	Whole building	Weil Mclain	1	P-1588-W	CP4091384	33GPH	4763	3820	80	Nat gas/No.2 Oil	9	35	26	

Boiler - Burner

Tag	Location	Area Served	Manufacturer	Qty.	Model #	Serial #	Input (MBh)	Efficiency (%)	Fuel	Approx. Age	ASHRAE Service Life	Remaining Life	Notes
	Mechanical Rm	B-1	Webster	1	JB2G20	U60244A-01	4763	80	Natural gas	9	21	12	
	Mechanical Rm	B-2	Webster	1	JB2G20	U60244A-02	4763	80	Natural gas	9	21	12	

Boiler - Pumps

Tag	Location	Area Served	Manufacturer	Qty.	Model #	Serial #	HP	RPM	GPM	Ft. Hd	Frame Size	Volts / Phase	Approx. Age	ASHRAE Service Life	Remaining Life	Notes
P-1	Mechanical Rm	Boilers	Bell& Gossett	1	1510-3E	2278176	20	1750	450	105	256T	480/3	9	20	11	
P-2	Mechanical Rm	Boilers	Bell& Gossett	1	1510-3E	2278177	20	1750	450	105	256T	480/3	9	20	11	
P-3	Mechanical Rm	Boilers	Bell& Gossett	1	1531	1789990	5	1750	160	67		480/3	17	20	3	
P-4	Mechanical Rm	Boilers	Bell& Gossett	1	1531	1789992	5	1750	160	67		480/3	17	20	3	
P-5	Mechanical Rm	Boilers	Bell& Gossett	1	1531	1790775	7.5	1800	200	87		480/3	17	20	3	
P-6	Mechanical Rm	B-1	Paco	1	VL3070-7		2	1750	200	17		480/3	9	10	1	
P-7	Mechanical Rm	B-2	Paco	1	VL3070-7		2	1750	200	17		480/3	9	10	1	

Domestic Hot Water Heater

Tag	Location	Area Served	Manufacturer	Qty	Model #	Serial #	Input (MBh)	Recovery (gal/h)	Capacity (gal)	Efficiency (%)	Fuel	Approx. Age	ASHRAE Service Life	Remaining Life	Notes
HWH-1	Mechanical Rm	Building	PVI - Turbopower	1	1000P-400A-TP	101102898	800	1000	400	80	Nat. gas	9	35	26	HWH-1 is a hot water generator with two storage tanks
HWH-2	C104N	Kitchen		1			540	140	80	Nat. gas	9	35	26		

DHW - Pumps

Tag	Location	Area Served	Manufacturer	Qty.	Model #	Serial #	HP	Volts / Phase	Amps	Approx. Age	ASHRAE Service Life	Remaining Life	Notes
	Mechanical Rm	HWH-1	Bell & Gossett	2	1531 5 125 BF	1792978	1	230/3		9	20	11	

Air Handling Units

Tag	Location	Area Served	Manufacturer	Qty	Model #	Serial #	Cooling Coil	Cooling Eff. (EER)	Cooling Capacity	Heating Type	Input (MBh)	Output (MBh)	Heating Eff. (%)	Fuel	Volts / Phase	Amps	Approx. Age	ASHRAE Service Life	Remaining Life	Notes
RTU-1	Roof	Cafeteria	Lennox	1			D/X		309	Hot Water		340		Hot water	480-3		9	15	6	
RTU-2	Roof	Kitchen	Lennox	1			D/X		300	Hot Water		300		Hot water	480-3		9	15	6	
RTU-5	Roof	LMC	Seasons Four	1	3SRP63-0822		D/X		980	Hot Water		698		Hot water	480-3		9	15	6	
RTU-6	Roof	Science Addition	Seasons Four	1	3MRP65-0062		D/X		794	Hot Water		528		Hot water	480-3		9	15	6	
RTU-7	Roof	Gym Addition	Seasons Four	1	3SRP43-HW9		N/A		N/A	Hot Water		931		Hot water	480-3		9	15	6	
RTU-8	Roof	Restroom	Lennox	1			D/X		68.5	Hot Water		116.4		Hot water	480-3		9	15	6	
RTU-9	Roof	School Store	Lennox	1			D/X		36.7	Hot Water		58.4		Hot water	480-3		9	15	6	
RTU-10	Roof	Office Area	Lennox	1			D/X		36.7	Hot Water		58.4		Hot water	480-3		9	15	6	
MUA-1	Ceiling	Restrooms		3			N/A		N/A	Hot Water		250		Hot water	480-3		9	15	6	

Unit Heaters and Cabinet Unit Heaters

Tag	Location	Area Served	Manufacturer	Qty.	Model #	Serial #	Heating Type	Heating Capacity (MBH)	CFM	RPM / HP	GPM	Approx. Age	ASHRAE Service Life	Remaining Life	Notes
UH-1	Wall	Storage	Berko	3			Elec	3.0 kW	350	1800	n/a	9	20	11	
CUH-1	Ceiling	Entrances	Sterling	14			Hot Water	29.8	430	1/15	3	9	20	11	

Air Compressor

Tag	Location	Area Served	Manufacturer	Qty.	Model #	Serial #	HP	Pressure	Capacity	Volts / Phase	FLA	Approx. Age	ASHRAE Service Life	Remaining Life	Notes
	Mechanical Rm	Controls	FS Curtis	1	VM731	35L411R620117	2			208/230-3		1	20	19	

Kitchen Hood

Tag	Location	Area Served	Manufacturer	Qty.	Model #	Serial #	Fan HP	Fan RPM	Volts/Phase	Amps	Approx. Age	ASHRAE Service Life	Remaining Life	Notes
EF-4	Kitchen	Range	Ventmaster	1	CM-EX-B		3	943	480/3		9	20	11	Greenheck roof mounted exhaust fans
EF-3	Science Labs	Fume Hoods		3			1-1/2	1725	480/3		9	20	11	

CEG Job #: **9C09026**
 Project: Winslow Township High School
 Address: 30 Coopers Folly Road
 Atco, NJ 08004

"Winslow Township High School"

KWH COST: **\$0.137**

Building SF: 204,762

ECM #1: Lighting Upgrade - General

EXISTING LIGHTING							PROPOSED LIGHTING											SAVINGS					
CEG Fix. #	Room No.	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
5.11	B200	Home Ec.	1880	11	4	1x4 4 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	109	1.20	2,254.1	\$308.81	11	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
5.11	B202	Sewing	1880	10	4	1x4 4 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	109	1.09	2,049.2	\$280.74	10	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
5.11	B201	Classroom	1880	12	4	1x4 4 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	109	1.31	2,459.0	\$336.89	12	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
1.11	B204	Computer Lab	1880	20	2	1x4 2 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	58	1.16	2,180.8	\$298.77	20	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
18	B203A	Custodial Closet	500	1	1	Porcelain Socket, (1) 100w A19	100	0.10	50.0	\$6.85	1	1	18w CFL	18	0.02	9	\$1.23	\$20.00	\$20.00	0.08	41	\$5.62	3.56
17.11	B203B	Girl's Lav.	3200	3	2	2x2 2 Lamp, 17w T8, Elect. Ballast, Surface Mnt., Prismatic	34	0.10	326.4	\$44.72	3	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
8.21		2nd Floor Corridor	3200	28	2	2x2 2 Lamp, 32w T8 Utube, Elect. Ballast, Recessed, Prismatic	58	1.62	5,196.8	\$711.96	28	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
5.11	B205	Classroom	1880	6	4	1x4 4 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	109	0.65	1,229.5	\$168.44	6	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
1.11	B206	Classroom	1880	12	2	1x4 2 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	58	0.70	1,308.5	\$179.26	12	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
4.21	B207	Classroom	1880	9	4	2x4 4 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	109	0.98	1,844.3	\$252.67	9	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
1.11	B206A	Copy Room	1880	2	2	1x4 2 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	58	0.12	218.1	\$29.88	2	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
19	B206B	Restroom	500	3	1	1x1 Square Recessed Down Light, (1) 26w CFL Lamp	26	0.08	39.0	\$5.34	3	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
5.11	B208	Classroom	1880	8	4	1x4 4 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	109	0.87	1,639.4	\$224.59	8	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
17.11			1880	1	2	2x2 2 Lamp, 17w T8, Elect. Ballast, Surface Mnt., Prismatic	34	0.03	63.9	\$8.76	1	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
4.21	B209	Classroom	1880	9	4	2x4 4 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	109	0.98	1,844.3	\$252.67	9	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
4.21	B211	Classroom	1880	12	4	2x4 4 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	109	1.31	2,459.0	\$336.89	12	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
18	B210B	Custodial Closet	500	1	1	Porcelain Socket, (1) 100w A19	100	0.10	50.0	\$6.85	1	1	18w CFL	18	0.02	9	\$1.23	\$20.00	\$20.00	0.08	41	\$5.62	3.56
4.21	B210	Classroom	1880	8	4	2x4 4 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	109	0.87	1,639.4	\$224.59	8	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00

19	B210A	Women's Restroom	500	2	1	1x1 Square Recessed Down Light, (1) 26w CFL Lamp	26	0.05	26.0	\$3.56	2	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
20			500	1	1	4' Wall Mt., (1) 32w T8, Elect. Ballast, White Prismatic Cover	28	0.03	14.0	\$1.92	1	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
131	B212	Classroom	1880	8	4	2x4, 4 Lamp 54w T5HO, Pendant Mt., No Lens	229	1.83	3,444.2	\$471.85	8	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
1.11	B214	Classroom	1880	12	2	1x4 2 Lamp, 32w T8, Elect. Ballast, Surface Mt., Prismatic	58	0.70	1,308.5	\$179.26	12	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
5.11	B213	Classroom	1880	12	4	1x4 4 Lamp, 32w T8, Elect. Ballast, Surface Mt., Prismatic	109	1.31	2,459.0	\$336.89	12	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
1.11	B216	Classroom	1880	12	2	1x4 2 Lamp, 32w T8, Elect. Ballast, Surface Mt., Prismatic	58	0.70	1,308.5	\$179.26	12	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
1.11	B215	Classroom	1880	12	2	1x4 2 Lamp, 32w T8, Elect. Ballast, Surface Mt., Prismatic	58	0.70	1,308.5	\$179.26	12	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
5.11	B218	Classroom	1880	12	4	1x4 4 Lamp, 32w T8, Elect. Ballast, Surface Mt., Prismatic	109	1.31	2,459.0	\$336.89	12	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
17.11	B217	Boy's Lav.	500	1	2	2x2 2 Lamp, 17w T8, Elect. Ballast, Surface Mt., Prismatic	34	0.03	17.0	\$2.33	1	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
18	B217A	Custodial Closet	500	1	1	Porcelain Socket, (1) 100w A19	100	0.10	50.0	\$6.85	1	1	18w CFL	18	0.02	9	\$1.23	\$20.00	\$20.00	0.08	41	\$5.62	3.56
5.11	B217B	Copy Room	2200	1	4	1x4 4 Lamp, 32w T8, Elect. Ballast, Surface Mt., Prismatic	109	0.11	239.8	\$32.85	1	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
1.11	B217C	Storage Closet	500	1	2	1x4 2 Lamp, 32w T8, Elect. Ballast, Surface Mt., Prismatic	58	0.06	29.0	\$3.97	1	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
5.11	B220	Classroom	1880	9	4	1x4 4 Lamp, 32w T8, Elect. Ballast, Surface Mt., Prismatic	109	0.98	1,844.3	\$252.67	9	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
5.11	B219	Classroom	1880	20	4	1x4 4 Lamp, 32w T8, Elect. Ballast, Surface Mt., Prismatic	109	2.18	4,098.4	\$561.48	20	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
5.11	B219A	Chemical Storage	1880	1	4	1x4 4 Lamp, 32w T8, Elect. Ballast, Surface Mt., Prismatic	109	0.11	204.9	\$28.07	1	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
5.11	B219B	Chemical Storage	1880	2	4	1x4 4 Lamp, 32w T8, Elect. Ballast, Surface Mt., Prismatic	109	0.22	409.8	\$56.15	2	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
1.11	B222	Classroom	1880	12	2	1x4 2 Lamp, 32w T8, Elect. Ballast, Surface Mt., Prismatic	58	0.70	1,308.5	\$179.26	12	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
17.11		Stairwell - Café Side	3200	4	2	2x2 2 Lamp, 17w T8, Elect. Ballast, Surface Mt., Prismatic	34	0.14	435.2	\$59.62	4	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
17.11		Stairwell - Aud. Side	3200	4	2	2x2 2 Lamp, 17w T8, Elect. Ballast, Surface Mt., Prismatic	34	0.14	435.2	\$59.62	4	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
3.21	C111	Classroom	1880	6	3	2x4 3 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	82	0.49	925.0	\$126.72	6	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
8.21		C111 Corridor	3200	4	2	2x2 2 Lamp, 32w T8 Utube, Elect. Ballast, Recessed, Prismatic	58	0.23	742.4	\$101.71	4	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00

8.21		Café Corridor	3200	6	2	2x2 2 Lamp, 32w T8 Utube, Elect. Ballast, Recessed, Prismatic	58	0.35	1,113.6	\$152.56	6	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
3.21	C108	Boy's Lav.	3200	2	3	2x4 3 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	82	0.16	524.8	\$71.90	2	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
3.21	C107	Girl's Lav.	3200	2	3	2x4 3 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	82	0.16	524.8	\$71.90	2	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
3.21	C105	Faculty Dining	2200	8	3	2x4 3 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	82	0.66	1,443.2	\$197.72	8	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
3.21	C106	Faculty Planning	2200	6	3	2x4 3 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	82	0.49	1,082.4	\$148.29	6	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
21	C103	Cafeteria	1880	15	1	Pendant Mt., 250w MH	295	4.43	8,319.0	\$1,139.70	15	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
8			1880	8	3	2x4 4 Lamp, 54w T5, Elect. Ballast, Pendant Mt., No Lens	182	1.46	2,737.3	\$375.01	8	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
22		Serving Lines - Right	1880	11	2	6'x4 2 Lamp, 32w T8, Elect. Ballast, Pendant Mt., Parabolic	58	0.64	1,199.4	\$164.32	11	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
22		Serving Lines - Left	1880	11	2	6'x4 2 Lamp, 32w T8, Elect. Ballast, Pendant Mt., Parabolic	58	0.64	1,199.4	\$164.32	11	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
3.21		Cashier - Right	1880	1	3	2x4 3 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	82	0.08	154.2	\$21.12	1	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
3.21		Cashier - Left	1880	1	3	2x4 3 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	82	0.08	154.2	\$21.12	1	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
3.21	C104C	Dish Room	1880	4	3	2x4 3 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	82	0.33	616.6	\$84.48	4	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
3.21		Hall	3200	2	3	2x4 3 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	82	0.16	524.8	\$71.90	2	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
23		Kitchen Serving Area	1880	12	3	1x4 3 Lamp, 32w T8, Elect. Ballast, Surface Mt., Prismatic	82	0.98	1,849.9	\$253.44	12	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
23		Kitchen	1880	18	3	1x4 3 Lamp, 32w T8, Elect. Ballast, Surface Mt., Prismatic	82	1.48	2,774.9	\$380.16	18	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
23	C104B	Concession Stand	600	6	3	1x4 3 Lamp, 32w T8, Elect. Ballast, Surface Mt., Prismatic	82	0.49	295.2	\$40.44	6	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
23	C104F	Dry Storage	500	4	3	1x4 3 Lamp, 32w T8, Elect. Ballast, Surface Mt., Prismatic	82	0.33	164.0	\$22.47	4	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
8.21		104 Corridor	3200	4	2	2x2 2 Lamp, 32w T8 Utube, Elect. Ballast, Recessed, Prismatic	58	0.23	742.4	\$101.71	4	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
3.21	C104N	Wash Room	2200	1	3	2x4 3 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	82	0.08	180.4	\$24.71	1	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
3.21	C104M	Restroom	500	1	3	2x4 3 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	82	0.08	41.0	\$5.62	1	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
3.21	C103K	Locker Room	500	1	3	2x4 3 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	82	0.08	41.0	\$5.62	1	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00

3.21	C104J	Office	2200	2	3	2x4 3 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	82	0.16	360.8	\$49.43	2	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
8.21		Café Lobby	3200	7	2	2x2 2 Lamp, 32w T8 Utube, Elect. Ballast, Recessed, Prismatic	58	0.41	1,299.2	\$177.99	7	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
13			3200	8	1	Recessed Down Light, (1) 26w CFL	26	0.21	665.6	\$91.19	8	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
3.21	C110	Vending	3200	2	3	2x4 3 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	82	0.16	524.8	\$71.90	2	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
3.21	C109	Office	2200	2	3	2x4 3 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	82	0.16	360.8	\$49.43	2	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
3.21		Main Office	2200	12	3	2x4 3 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	82	0.98	2,164.8	\$296.58	12	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
8.21			2200	4	2	2x2 2 Lamp, 32w T8 Utube, Elect. Ballast, Recessed, Prismatic	58	0.23	510.4	\$69.92	4	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
4.21		Principal's Office	2200	4	4	2x4 4 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	109	0.44	959.2	\$131.41	4	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
4.21	116	Conf. Room	2200	3	4	2x4 4 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	109	0.33	719.4	\$98.56	3	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
4.21	118	Assistant Principal Office	2200	4	4	2x4 4 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	109	0.44	959.2	\$131.41	4	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
4.21	AP3	Assistant Principal Office	2200	3	4	2x4 4 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	109	0.33	719.4	\$98.56	3	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
4.21	AP2	Assistant Principal Office	2200	3	4	2x4 4 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	109	0.33	719.4	\$98.56	3	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
4.21	AP1	Assistant Principal Office	2200	3	4	2x4 4 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	109	0.33	719.4	\$98.56	3	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
3.21		Server Room	1400	2	3	2x4 3 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	82	0.16	229.6	\$31.46	2	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
20	B106B	Restroom	3200	1	1	4' Wall Mnt., (1) 32w T8, Elect. Ballast, White Prismatic Cover	28	0.03	89.6	\$12.28	1	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
8.21	B106C	Restroom	3200	1	2	2x2 2 Lamp, 32w T8 Utube, Elect. Ballast, Recessed, Prismatic	58	0.06	185.6	\$25.43	1	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
17.11		Stairwell - Center	3200	4	2	2x2 2 Lamp, 17w T8, Elect. Ballast, Surface Mnt., Prismatic	34	0.14	435.2	\$59.62	4	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
3.12	B106	Main Office Reception Area	2200	11	2	2x4 2 Lamp, 32w T8, Elect. Ballast, Recessed, Parabolic	58	0.64	1,403.6	\$192.29	11	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
3.12	B104	Computer Lab	1880	14	2	2x4 2 Lamp, 32w T8, Elect. Ballast, Recessed, Parabolic	58	0.81	1,526.6	\$209.14	14	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
3.21		Office	2200	1	3	2x4 3 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	82	0.08	180.4	\$24.71	1	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
16	B104A	Storage Closet	500	1	1	Porcelain Socket, (1) 26w CFL	26	0.03	13.0	\$1.78	1	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
5.11	B100	Computer Lab	1880	12	4	1x4 4 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	109	1.31	2,459.0	\$336.89	12	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00

5.11	B102	Computer Lab	1880	12	4	1x4 4 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	109	1.31	2,459.0	\$336.89	12	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
1.11	B101	JROTC Supply	500	4	2	1x4 2 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	58	0.23	116.0	\$15.89	4	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
17.11	B101D	Men's Lav.	500	2	2	2x2 2 Lamp, 17w T8, Elect. Ballast, Surface Mnt., Prismatic	34	0.07	34.0	\$4.66	2	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
17.11	B101F	Boy's Lav.	3200	3	2	2x2 2 Lamp, 17w T8, Elect. Ballast, Surface Mnt., Prismatic	34	0.10	326.4	\$44.72	3	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
18	B101E	Custodial Closet	500	1	1	Porcelain Socket, (1) 100w A19	100	0.10	50.0	\$6.85	1	1	18w CFL	18	0.02	9	\$1.23	\$20.00	\$20.00	0.08	41	\$5.62	3.56
5.11	B103	Classroom	1880	12	4	1x4 4 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	109	1.31	2,459.0	\$336.89	12	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
5.11	B105	Classroom	1880	12	4	1x4 4 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	109	1.31	2,459.0	\$336.89	12	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
5.11	B107	Classroom	1880	12	4	1x4 4 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	109	1.31	2,459.0	\$336.89	12	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
8.21		Front Lobby	3200	10	2	2x2 2 Lamp, 32w T8 Utube, Elect. Ballast, Recessed, Prismatic	58	0.58	1,856.0	\$254.27	10	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
5.11	B109	Classroom	1880	12	4	1x4 4 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	109	1.31	2,459.0	\$336.89	12	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
5.11	B111	Classroom	1880	12	4	1x4 4 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	109	1.31	2,459.0	\$336.89	12	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
5.11	B113	Classroom	1880	12	4	1x4 4 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	109	1.31	2,459.0	\$336.89	12	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
17.11	B115A	Girl's Lav.	3200	3	2	2x2 2 Lamp, 17w T8, Elect. Ballast, Surface Mnt., Prismatic	34	0.10	326.4	\$44.72	3	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
18	B115B	Custodial Closet	500	1	1	Porcelain Socket, (1) 100w A19	100	0.10	50.0	\$6.85	1	1	18w CFL	18	0.02	9	\$1.23	\$20.00	\$20.00	0.08	41	\$5.62	3.56
17.11	B115C	Women's Restroom	500	2	2	2x2 2 Lamp, 17w T8, Elect. Ballast, Surface Mnt., Prismatic	34	0.07	34.0	\$4.66	2	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
1.11	B115	Storage Closet	500	4	2	1x4 2 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	58	0.23	116.0	\$15.89	4	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
1.11	F100	Classroom	1880	12	2	1x4 2 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	58	0.70	1,308.5	\$179.26	12	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
5.11	F102	Classroom	1880	6	4	1x4 4 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	109	0.65	1,229.5	\$168.44	6	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
5.11	F104	Classroom	1880	6	4	1x4 4 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	109	0.65	1,229.5	\$168.44	6	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
5.11	F106	Classroom	1880	6	4	1x4 4 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	109	0.65	1,229.5	\$168.44	6	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
5.11	F108	Classroom	1880	6	4	1x4 4 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	109	0.65	1,229.5	\$168.44	6	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
5.11	F110	Classroom	1880	6	4	1x4 4 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	109	0.65	1,229.5	\$168.44	6	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00

5.11	F112	Classroom	1880	6	4	1x4 4 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	109	0.65	1,229.5	\$168.44	6	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
5.11	F111	Classroom	1880	6	4	1x4 4 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	109	0.65	1,229.5	\$168.44	6	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
5.11	F109	Classroom	1880	6	4	1x4 4 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	109	0.65	1,229.5	\$168.44	6	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
5.11	F107	Classroom	1880	6	4	1x4 4 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	109	0.65	1,229.5	\$168.44	6	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
5.11	F105	Classroom	1880	6	4	1x4 4 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	109	0.65	1,229.5	\$168.44	6	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
5.11	F103	Classroom	1880	6	4	1x4 4 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	109	0.65	1,229.5	\$168.44	6	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
5.11	F101	Classroom	1880	6	4	1x4 4 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	109	0.65	1,229.5	\$168.44	6	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
17.11	B115E	Men's Lav.	500	1	2	2x2 2 Lamp, 17w T8, Elect. Ballast, Surface Mnt., Prismatic	34	0.03	17.0	\$2.33	1	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
19	I15D	Boy's Lav.	3200	4	1	1x1 Square Recessed Down Light, (1) 26w CFL Lamp	26	0.10	332.8	\$45.59	4	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
1.11	B115	Computer Main Frame	1400	6	2	1x4 2 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	58	0.35	487.2	\$66.75	6	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
8.21		Auditorium Entrance	3200	11	2	2x2 2 Lamp, 32w T8 Utube, Elect. Ballast, Recessed, Prismatic	58	0.64	2,041.6	\$279.70	11	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
17.11	A110C	Girl's Lav.	3200	4	2	2x2 2 Lamp, 17w T8, Elect. Ballast, Surface Mnt., Prismatic	34	0.14	435.2	\$59.62	4	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
18	A110B	Custodial Closet	500	1	1	Porcelain Socket, (1) 100w A19	100	0.10	50.0	\$6.85	1	1	18w CFL	18	0.02	9	\$1.23	\$20.00	\$20.00	0.08	41	\$5.62	3.56
17.11	A110A	Boy's Lav.	3200	3	2	2x2 2 Lamp, 17w T8, Elect. Ballast, Surface Mnt., Prismatic	34	0.10	326.4	\$44.72	3	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
1.11	A110	JROTC Arts Room	1400	1	2	1x4 2 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	58	0.06	81.2	\$11.12	1	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
5.11	A106	Classroom	1880	6	4	1x4 4 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	109	0.65	1,229.5	\$168.44	6	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
5.11		Choir	1880	8	4	1x4 4 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	109	0.87	1,639.4	\$224.59	8	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
17.11		106 Hall	3200	2	2	2x2 2 Lamp, 17w T8, Elect. Ballast, Surface Mnt., Prismatic	34	0.07	217.6	\$29.81	2	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
17.11	A102	4 Small Offices	1880	4	2	2x2 2 Lamp, 17w T8, Elect. Ballast, Surface Mnt., Prismatic	34	0.14	255.7	\$35.03	4	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
5.11		Band	1880	12	4	1x4 4 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	109	1.31	2,459.0	\$336.89	12	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
1.11		Band Storage	500	2	2	1x4 2 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	58	0.12	58.0	\$7.95	2	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00

4.21	A100	Classroom	1880	12	4	2x4 4 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	109	1.31	2,459.0	\$336.89	12	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
17.11	A101	Dressing Rooms	500	6	2	2x2 2 Lamp, 17w T8, Elect. Ballast, Surface Mnt., Prismatic	34	0.20	102.0	\$13.97	6	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
1.31	A101	Stage	1880	18	2	1x4 2 Lamp, 32w T8, Elect. Ballast, Pendant Mnt., Prismatic	58	1.04	1,962.7	\$268.89	18	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
24	A103	Auditorium	1880	12	5	HiBay, (5) 55w Long Twin Tube Biax Lamps	250	3.00	5,640.0	\$772.68	12	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
1.31	A105	Boiler Room	8700	25	2	1x4 2 Lamp, 32w T8, Elect. Ballast, Pendant Mnt., Prismatic	58	1.45	12,615.0	\$1,728.26	25	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
1.31	A107	Storage Room	500	3	2	1x4 2 Lamp, 32w T8, Elect. Ballast, Pendant Mnt., Prismatic	58	0.17	87.0	\$11.92	3	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
3.21	A109	Classroom	1880	9	3	2x4 3 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	82	0.74	1,387.4	\$190.08	9	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
5.11	A108	Office	2200	8	4	1x4 4 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	109	0.87	1,918.4	\$262.82	8	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
16	B100A	Storage Closet	500	1	1	Porcelain Socket, (1) 26w CFL	26	0.03	13.0	\$1.78	1	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
5.11	E101	Classroom	1880	12	4	1x4 4 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	109	1.31	2,459.0	\$336.89	12	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
17.11	B101A	Women's Restroom	500	2	2	2x2 2 Lamp, 17w T8, Elect. Ballast, Surface Mnt., Prismatic	34	0.07	34.0	\$4.66	2	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
19	B101B	Storage Closet	500	2	1	1x1 Square Recessed Down Light, (1) 26w CFL Lamp	26	0.05	26.0	\$3.56	2	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
5.11	E100	Classroom	1880	4	4	1x4 4 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	109	0.44	819.7	\$112.30	4	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
5.11	E103	Classroom	1880	12	4	1x4 4 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	109	1.31	2,459.0	\$336.89	12	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
5.11	E102	Classroom	1880	12	4	1x4 4 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	109	1.31	2,459.0	\$336.89	12	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
4.21	D106	Classroom	1880	6	4	2x4 4 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	109	0.65	1,229.5	\$168.44	6	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
4.21	D104	Classroom	1880	6	4	2x4 4 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	109	0.65	1,229.5	\$168.44	6	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
4.21	D105	Classroom	1880	6	4	2x4 4 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	109	0.65	1,229.5	\$168.44	6	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
4.21	D107	Classroom	1880	6	4	2x4 4 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	109	0.65	1,229.5	\$168.44	6	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
4.21	D102	Classroom	1880	6	4	2x4 4 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	109	0.65	1,229.5	\$168.44	6	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
4.21	D100	Classroom	1880	6	4	2x4 4 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	109	0.65	1,229.5	\$168.44	6	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00

4.21	D101	Classroom	1880	6	4	2x4 4 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	109	0.65	1,229.5	\$168.44	6	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
4.21	D103	Classroom	1880	6	4	2x4 4 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	109	0.65	1,229.5	\$168.44	6	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
5.11	E104	Classroom	1880	6	4	1x4 4 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	109	0.65	1,229.5	\$168.44	6	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
5.11	E105	Classroom	1880	12	4	1x4 4 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	109	1.31	2,459.0	\$336.89	12	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
5.11	E106	Classroom	1880	12	4	1x4 4 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	109	1.31	2,459.0	\$336.89	12	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
5.11	E107	Computer Lab	1880	12	4	1x4 4 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	109	1.31	2,459.0	\$336.89	12	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
5.11	E108	Classroom	1880	12	4	1x4 4 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	109	1.31	2,459.0	\$336.89	12	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
1.31	H102	Classroom	1880	22	2	1x4 2 Lamp, 32w T8, Elect. Ballast, Pendant Mnt., Prismatic	58	1.28	2,398.9	\$328.65	22	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
2.21	H100	Admin. Office	2200	9	2	2x4 2 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	58	0.52	1,148.4	\$157.33	9	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
2.21	S148A	Office	2200	4	2	2x4 2 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	58	0.23	510.4	\$69.92	4	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
1.11	S148D	Office	2200	2	2	1x4 2 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	58	0.12	255.2	\$34.96	2	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
3.21	S148C	Office	2200	2	3	2x4 3 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	82	0.16	360.8	\$49.43	2	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
1.21	S148G	Office	2200	3	2	1x4 2 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	58	0.17	382.8	\$52.44	3	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
1.21	S148H	Office	2200	3	2	1x4 2 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	58	0.17	382.8	\$52.44	3	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
1.21	S148I	Office	2200	3	2	1x4 2 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	58	0.17	382.8	\$52.44	3	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
1.21	S148J	Office	2200	3	2	1x4 2 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	58	0.17	382.8	\$52.44	3	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
1.21	148	Lower Level Sitting Area	2200	4	2	1x4 2 Lamp, 32w T8, Elect. Ballast, Surface Mnt., Prismatic	58	0.23	510.4	\$69.92	4	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
20	S148B	Restroom	500	1	1	4' Wall Mnt., (1) 32w T8, Elect. Ballast, White Prismatic Cover	28	0.03	14.0	\$1.92	1	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
1.31	H101	Shop	1880	50	2	1x4 2 Lamp, 32w T8, Elect. Ballast, Pendant Mnt., Prismatic	58	2.90	5,452.0	\$746.92	50	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
1.31	H101A	Storage	500	6	2	1x4 2 Lamp, 32w T8, Elect. Ballast, Pendant Mnt., Prismatic	58	0.35	174.0	\$23.84	6	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
18	E112	Custodial Closet	500	1	1	Porcelain Socket, (1) 100w A19	100	0.10	50.0	\$6.85	1	1	18w CFL	18	0.02	9	\$1.23	\$20.00	\$20.00	0.08	41	\$5.62	3.56

17.21		Corridor H	3200	7	2	2x2 2 Lamp, 17w T8, Elect. Ballast, Recessed, Prismatic	34	0.24	761.6	\$104.34	7	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
8.21		Corridor D	3200	10	2	2x2 2 Lamp, 32w T8 Utube, Elect. Ballast, Recessed, Prismatic	58	0.58	1,856.0	\$254.27	10	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
8.21		Corridor A	3200	22	2	2x2 2 Lamp, 32w T8 Utube, Elect. Ballast, Recessed, Prismatic	58	1.28	4,083.2	\$559.40	22	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
8.21		Corridor E	3200	28	2	2x2 2 Lamp, 32w T8 Utube, Elect. Ballast, Recessed, Prismatic	58	1.62	5,196.8	\$711.96	28	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
17.21		Corridor F	3200	28	2	2x2 2 Lamp, 17w T8, Elect. Ballast, Recessed, Prismatic	34	0.95	3,046.4	\$417.36	28	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
3.21	J105	Classroom	2080	16	3	2x4 3 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	82	1.31	2,729.0	\$373.87	16	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
3.21	J106	Classroom	2080	12	3	2x4 3 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	82	0.98	2,046.7	\$280.40	12	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
3.21	J107	Classroom	2080	16	3	2x4 3 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	82	1.31	2,729.0	\$373.87	16	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
3.21	J109	Classroom	2080	16	3	2x4 3 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	82	1.31	2,729.0	\$373.87	16	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
3.21	J111	Classroom	2080	16	3	2x4 3 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	82	1.31	2,729.0	\$373.87	16	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
3.21	J112	Classroom	2080	16	3	2x4 3 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	82	1.31	2,729.0	\$373.87	16	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
3.21	J113	Classroom	2080	16	3	2x4 3 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	82	1.31	2,729.0	\$373.87	16	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
3.21	J116	Classroom	2080	16	3	2x4 3 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	82	1.31	2,729.0	\$373.87	16	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
26		Aux Gym	2080	28	4	2x4, 4 Lamp 54w T5HO, Pendant Mnt., No Lens	229	6.41	13,337.0	\$1,827.16	28	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
26		Gym	2080	28	4	2x4, 4 Lamp 54w T5HO, Pendant Mnt., No Lens	229	6.41	13,337.0	\$1,827.16	28	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
2.21		Locker Room	2080	8	2	2x4 2 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	58	0.46	965.1	\$132.22	8	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
2.21		Locker Room	2080	8	2	2x4 2 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	58	0.46	965.1	\$132.22	8	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
2.21		Training Room	2080	6	2	2x4 2 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	58	0.35	723.8	\$99.17	6	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
3.21		Coach'e Office	2080	2	3	2x4 3 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	82	0.16	341.1	\$46.73	2	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
3.21		Coach'e Office	2080	2	3	2x4 3 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	82	0.16	341.1	\$46.73	2	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
3.21	J123	Classroom	2080	8	3	2x4 3 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	82	0.66	1,364.5	\$186.93	8	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00

3.21	J122	Classroom	2080	8	3	2x4 3 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	82	0.66	1,364.5	\$186.93	8	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
3.21	J119	Classroom	2080	8	3	2x4 3 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	82	0.66	1,364.5	\$186.93	8	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
3.21	J118	Classroom	2080	8	3	2x4 3 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	82	0.66	1,364.5	\$186.93	8	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
2.21		AD Office	2200	4	2	2x4 2 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	58	0.23	510.4	\$69.92	4	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
3.21	J114	Classroom	2080	16	3	2x4 3 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	82	1.31	2,729.0	\$373.87	16	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
3.21	J110	Classroom	2080	16	3	2x4 3 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	82	1.31	2,729.0	\$373.87	16	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
16		Custodial Closet	500	1	1	Porcelain Socket, (1) 26w CFL	26	0.03	13.0	\$1.78	1	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
2.21		Electrical Closet	500	1	2	2x4 2 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	58	0.06	29.0	\$3.97	1	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
3.21	J108	Classroom	2080	8	3	2x4 3 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	82	0.66	1,364.5	\$186.93	8	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
3.21		Corridor J	3200	44	3	2x4 3 Lamp, 32w T8, Elect. Ballast, Recessed, Prismatic	82	3.61	11,545.6	\$1,581.75	44	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00
Totals				86	15			6.97	18,410	\$2,522.17	86	0			0.13	63	\$8.63		\$140.00	0.57	287	\$39.32	3.56

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