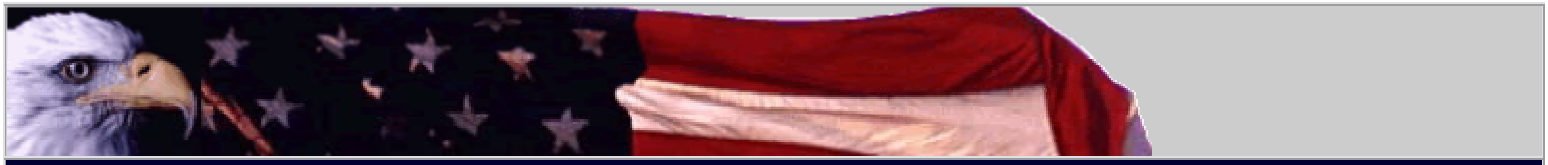


Indian Fields Elementary School, NJ

ENERGY AUDIT – FINAL REPORT
CEG PROJECT NO. 9C08134

SOUTH BRUNSWICK BOARD OF EDUCATION
PO BOX 181
MONMOUTH JUNCTION, NJ 08852
ATTN: MR. ANTHONY TONZINI
BUSINESS ADMINSTRATOR

CONCORD ENGINEERING GROUP

520 SOUTH BURNT MILL ROAD
VOORHEES, NJ 08043
TELEPHONE: (856) 427-0200
FACSIMILE: (856) 427-6529
WWW.CEG-INC.NET

CONTACTS:

RAYMOND JOHNSON
Cell: (609) 760-4057
rjohnson@ceg-inc.net

Table of Contents

REPORT DISCLAIMER

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

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

I. EXECUTIVE SUMMARY

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

Indian Fields Elementary School
Dayton James Road
South Brunswick, NJ 08852

Facility Contact Person: Tony Ferraro (on-site)
Anthony Tonzini (Board Administrator)

This audit was performed in connection with the New Jersey Clean Energy Local Government Energy Audit Program. These energy audits are conducted to promote the office of Clean Energy's mission, 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	$ 153,008
Natural Gas	$ 56,335
Total	$ 209,343

The potential annual energy cost savings are shown below in Table 1. The costs are inclusive of incentive dollars. The cost of each measure for this level of auditing is ± 20% until detailed engineering, specifications, and hard proposals are obtained. Refer to Section VII for a more detailed evaluation of the ECM's.

Table 1
Energy Conservation Measures (ECM's)

ECM #	Description	Total Project Cost, $	Annual Savings	Simple Payback (Years)
ECM #1	MAGNETIC BEARING CHILLER WITH COOLING TOWER	$529,300	$7,516	70.4
ECM #2	MAGNETIC BEARING CHILLER WITH GROUND LOOP	$825,600	$15,161	54.5
ECM #3	BOILER REPLACEMENT	$239,875	$19,446	12.3
ECM #4	VARIABLE FREQUENCY DRIVE PUMPS	$123,496	$37,133	3.3
ECM #5	LIGHTING RETROFIT	$87,457	$14,720	5.9
ECM #6	300 KW PV SOLAR	$2,440,000	$245,433	9.9

The estimated demand and energy savings are shown below in Table 2. The information in this table corresponds to the ECM's in Table 1.

Table 2
Estimated Energy Savings

		Annual Utility Reduction		
ECM #	Description	Demand Reduction (KW)	Consumption Reduction (KWH)	Consumption Reduction (Therms)
ECM #1	MAGNETIC BEARING CHILLER WITH COOLING TOWER	68	36,777	0
ECM #2	MAGNETIC BEARING CHILLER WITH GROUND LOOP	81	87,741	0
ECM #3	BOILER REPLACEMENT	0	7,483	10,331
ECM #4	VARIABLE FREQUENCY DRIVE PUMPS	16	240,891	0
ECM #5	LIGHTING RETROFIT	40	98,114	0
ECM #6	300 KW PV SOLAR	300	470,174	0

Concord Engineering recommends the implementation of all ECM's that provide a simple payback of seven to ten (7 to 10) years or less.

The following Energy Conservation Measures are recommended for Indian Fields Elementary School:

> ECM # 4 Variable Frequency Drive Pumps

> ECM # 5 Lighting Retrofit

> ECM # 5 300 KW PV Solar Panels

II. INTRODUCTION

The Indian Fields Elementary School is included in this energy audit. Based on our survey and the documentation available, it was determined that the building area is approximately 81,000 SF.

The first task was to collect and review two years worth of utility energy data for electricity and natural gas. This information was used to analyze operational characteristics, calculate energy benchmarks for comparison to industry averages, estimate savings potential, and establish a baseline to monitor the effectiveness of implemented measures. A computer spreadsheet was used to enter, sum, and calculate benchmarks and to graph utility information.

The Energy Use Index (EUI) is expressed in British Thermal Units/square foot/year (BTU/ft^2/yr) and can be 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 annual consumption of all fuels to BTU's then dividing by the area (gross square footage) of the building. EUI is a good indicator of the relative potential for energy savings. A comparatively low EUI indicates less potential for large energy savings. Blueprints obtained from the District were used to calculate the gross area of the three buildings.

Obtaining Architectural and Mechanical drawings, a building profile was created that included age, occupancy, description, and existing conditions of Architectural and Mechanical Systems. The profile noted the major energy – consuming equipment or systems and components that are inherently inefficient. Also, by reviewing the mechanical drawings and equipment schedules, questions regarding the lighting systems/controls, HVAC zone controls, or setback operations were noted.

The site visit was spent inspecting the actual systems and answering specific questions from the preliminary review. The building manager provided occupancy schedules, O & M practices, the building energy management program, and other information that has an impact on energy consumption.

The post-site work included evaluation of the information gathered during the site visit, researching possible conservation opportunities, organizing the audit into a comprehensive report, and making recommendations on mechanical and building envelope improvements.

III. METHOD OF ANALYSIS

The first step in the energy analysis is the site survey. The auditor walks the entire site to determine building size and to inventory the building envelope (roof, windows, etc.), the heating, ventilation, and air conditioning equipment (HVAC), the lighting equipment, other facility-specific equipment, and to gain an understanding of how each facility is used.

The collected data is then processed using engineering calculations, Microsoft Excel spread sheets and Trane Trace 700™ building simulation software that calculate the anticipated energy usage. The actual energy usage is entered directly from the utility bills. The anticipated energy usage is compared to the actual usage. If necessary, corrections are made to the site-collected data until the anticipated energy usage matches the actual usage. This process develops an end-use baseline for all of the fuels used at the facility. This baseline is used to calculate the energy savings for the measures that are recommended in this report.

The savings in this report are not duplicative. The savings for each recommendation may actually be higher if the individual recommendations were installed instead of the entire project. For example, the lighting module calculates the change in wattage and multiplies it by the new operating hours instead of the existing operating hours (if there was a change in the hours at all). The lighting controls module calculates the change in hours and multiplies it by the new system wattage instead of the existing wattage. Therefore, if you chose to install the recommended lighting system but not the lighting controls, the savings achieved with the new lighting system would actually be higher because there would have been no reduction in the hours of use.

The same principal follows for heating, cooling, and temperature recommendations – even with fuel switching. If there are recommendations to change the temperature settings to reduce fuel use, then the savings for the heating/cooling equipment recommendations are reduced, as well.

Our thermal module calculates the savings for temperature reductions utilizing Trane Trace 700™ building simulation software. The savings are calculated in "output" values – meaning energy, not fuel savings. To show fuel savings we multiply the energy values times the fuel conversion factor (these factors are different for electricity, natural gas, fuel oil, etc.) and also take into account the heating/cooling equipment efficiency. The temperature recommendation savings are lower when the heating/cooling equipment is more efficient or is using a cheaper fuel.

Thermal recommendations (insulation, windows, etc.) are evaluated by taking the difference in the thermal load due to reduced heat transfer. Again, the "thermal load" is the thermal load after the other recommendations have been accounted for.

Lastly, installation costs are then applied to each recommendation and simple paybacks are calculated. Costs are derived from Means Cost Data, other industry publications, and local contractors and suppliers. The New Jersey SmartStart$_{tm}$ Building program incentives (refer to Appendix C) are calculated for the appropriate ECM's and subtracted from the installed cost prior to calculation of the simple payback. In addition, where applicable, maintenance cost savings are estimated and applied to the net savings.

IV. HISTORIC ENERGY CONSUMPTION/COST

A. Energy Usage / Tariffs

Table 3 and Figure 1 represent the electrical usage for the surveyed facility from June 2007 to May 2008. The existing Facility is currently served electric under the Public Service Electric and Gas Company (PSEG) Large Power and Lighting (LPL) Tariff. This electric rate has a component for consumption that is measured in kilowatt-hours (kWh). It is calculated by multiplying the wattage of the equipment times the hours that it operates. For example, a 1,000 Watt lamp operating for 5 hours would measure 5,000 Watt-hours. Since one kilowatt is equal to 1,000 Watts, the measured consumption would be 5 kWh. 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 most current rate structure available.

Table 4 and Figure 2 show the natural gas energy usage for the surveyed facility from June 2007 to May 2008. Woodruff Energy supplies the natural gas and PSE&G delivers the fuel to the burner. Below is the average unit cost for the utilities at this facility.

Description	Average
Electricity	15¢/kWh
Natural Gas	$1.47 / Therm

Table 3
Electricity Billing Data

Month	Start Date	End Date	Account	Utility Type	Billing Days	Peak Demand	Units	Off Peak Usage	Units	On Peak Usage	Units	Total Consumption	Units	Total $
Jun-07	6/6/2007	7/5/2007	6201003150E	Electric	29	305	kw	40400	kwh	58800	kwh	99200	kwh	$ 17,529.44
Jul-07	7/5/2007	8/3/2007	6201003150E	Electric	29	305	kw	40200	kwh	49800	kwh	90000	kwh	$ 15,710.81
Aug-07	8/3/2007	9/4/2007	6201003150E	Electric	32	305	kw	42400	kwh	48400	kwh	90800	kwh	$ 16,250.54
Sep-07	9/4/2007	10/3/2007	6201003150E	Electric	29	305	kw	43000	kwh	68000	kwh	111000	kwh	$ 16,317.29
Oct-07	10/3/2007	11/2/2007	6201003150E	Electric	30	305	kw	36400	kwh	63800	kwh	100200	kwh	$ 12,776.20
Nov-07	11/2/2007	12/4/2007	6201003150E	Electric	32	305	kw	30000	kwh	44200	kwh	74200	kwh	$ 9,588.98
Dec-07	12/4/2007	1/4/2008	6201003150E	Electric	31	241	kw	24400	kwh	42200	kwh	66600	kwh	$ 8,887.04
Jan-08	1/4/2008	2/5/2008	6201003150E	Electric	32	241	kw	29200	kwh	49400	kwh	78600	kwh	$ 10,381.64
Feb-08	2/5/2008	3/5/2008	6201003150E	Electric	29	241	kw	25800	kwh	46400	kwh	72200	kwh	$ 9,966.30
Mar-08	3/5/2008	4/7/2008	6201003150E	Electric	33	241	kw	28000	kwh	44600	kwh	72600	kwh	$ 10,400.54
Apr-08	4/7/2008	5/5/2008	6201003150E	Electric	28	241	kw	27200	kwh	51000	kwh	78200	kwh	$ 10,454.67
May-08	5/5/2008	6/4/2008	6201003150E	Electric	30	241	kw	31200	kwh	57400	kwh	88600	kwh	$ 14,744.88
					Max Peak:	305	kw			12 Month Total:		1022200	kwh	$ 153,008.33
										Avg. Cost per kwh:		$ 0.15		

Figure 1
Electricity Usage Profile

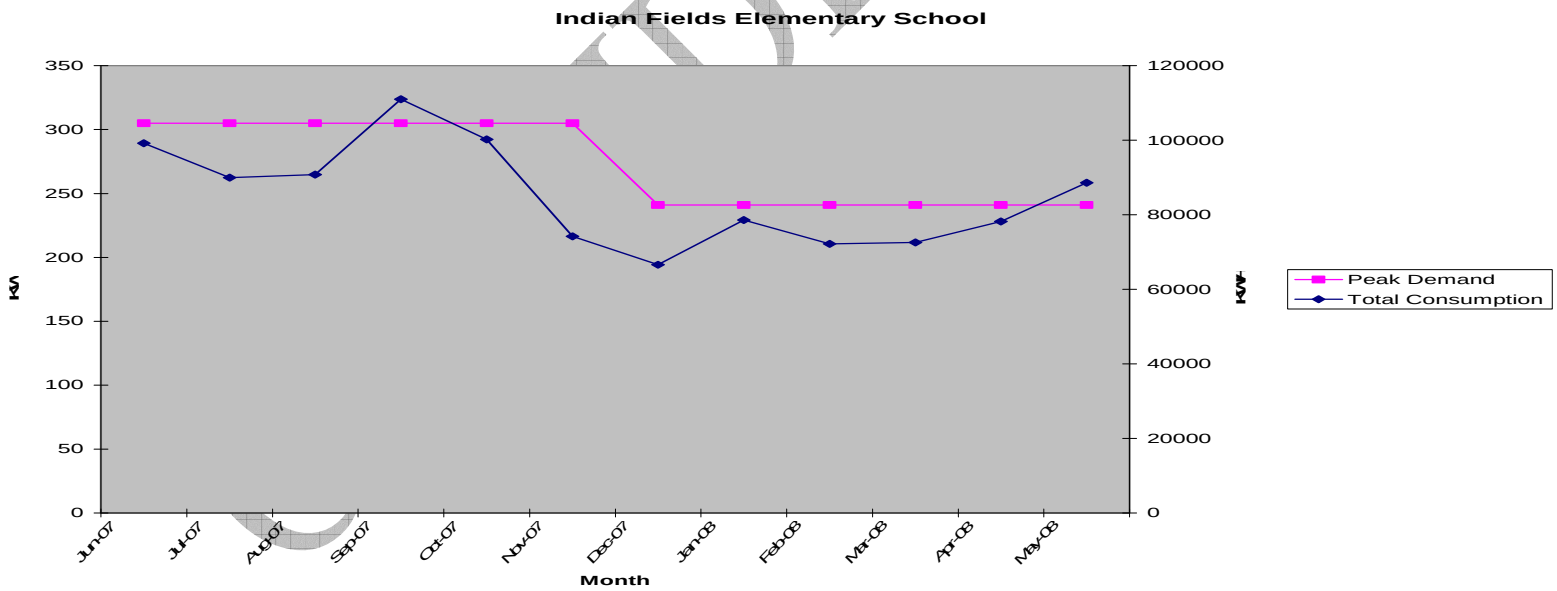
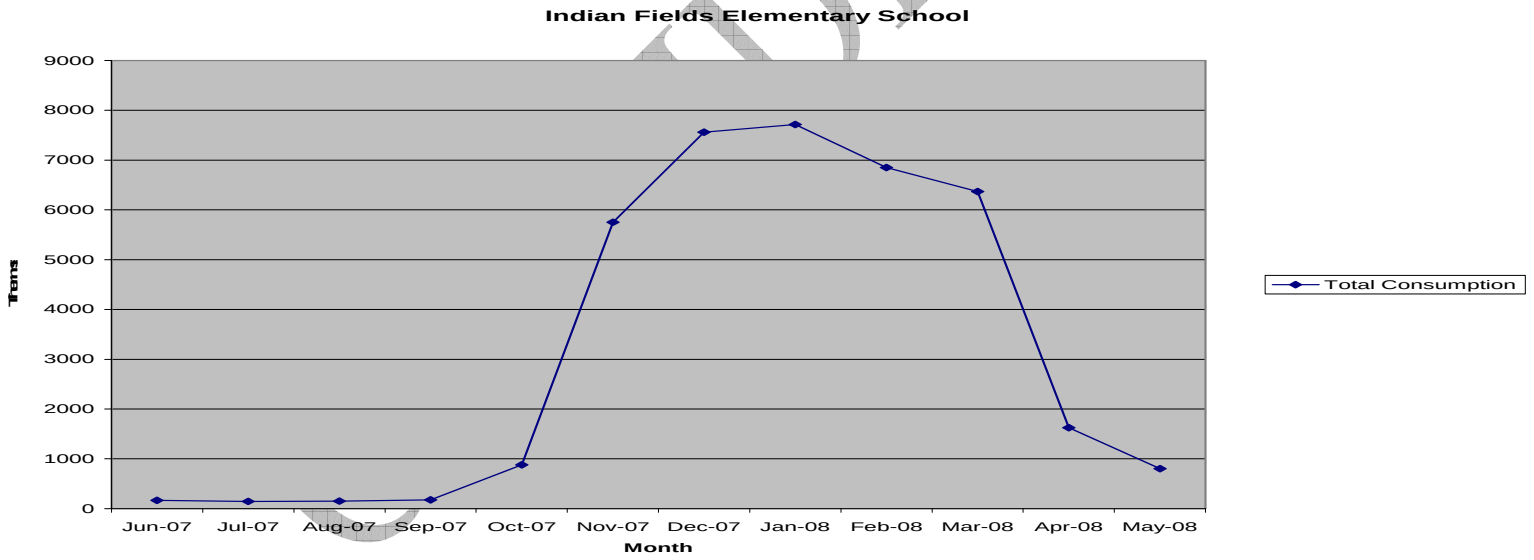


Table 4
Natural Gas Billing Data

Provider	Month	Start Date	End Date	Account	Utility Type	Billing Days	Consumption	Units	Total $
PSE&G CO (14105)	Jun-07	6/6/2007	7/5/2007	6201003150G	Gas	29	167	therms	$ 301.66
PSE&G CO (14105)	Jul-07	7/5/2007	8/3/2007	6201003150G	Gas	29	147	therms	$ 276.55
PSE&G CO (14105)	Aug-07	8/3/2007	9/4/2007	6201003150G	Gas	32	151	therms	$ 281.57
PSE&G CO (14105)	Sep-07	9/4/2007	10/3/2007	6201003150G	Gas	29	175	therms	$ 311.68
PSE&G CO (14105)	Oct-07	10/3/2007	11/2/2007	6201003150G	Gas	30	880	therms	$ 2,439.91
PSE&G CO (14105)	Nov-07	11/2/2007	12/4/2007	6201003150G	Gas	32	5751	therms	$ 8,873.67
PSE&G CO (14105)	Dec-07	12/4/2007	1/4/2008	6201003150G	Gas	31	7559	therms	$ 11,262.21
PSE&G CO (14105)	Jan-08	1/4/2008	2/5/2008	6201003150G	Gas	32	7715	therms	$ 11,467.61
PSE&G CO (14105)	Feb-08	2/5/2008	3/5/2008	6201003150G	Gas	29	6851	therms	$ 10,003.41
PSE&G CO (14105)	Mar-08	3/5/2008	4/7/2008	6201003150G	Gas	33	6369	therms	$ 7,915.60
PSE&G CO (14105)	Apr-08	4/7/2008	5/5/2008	6201003150G	Gas	28	1626	therms	$ 2,106.22
PSE&G CO (14105)	May-08	5/5/2008	6/4/2008	6201003150G	Gas	30	804	therms	$ 1,094.96
						12 Month Total:	38195	therms	$ 56,335.06
						Average Cost per therm:	$ 1.47		

Figure 2
Natural Gas Usage Profile



B. Energy Use Index (EUI)

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. Their website allows the user to determine how well the client's building energy use intensity (EUI) compares with similar facilities in the U.S. and NJ.

Elementary School EUI = (Electric Usage in kBtu/h + Gas Usage in kBtu/h) / SF

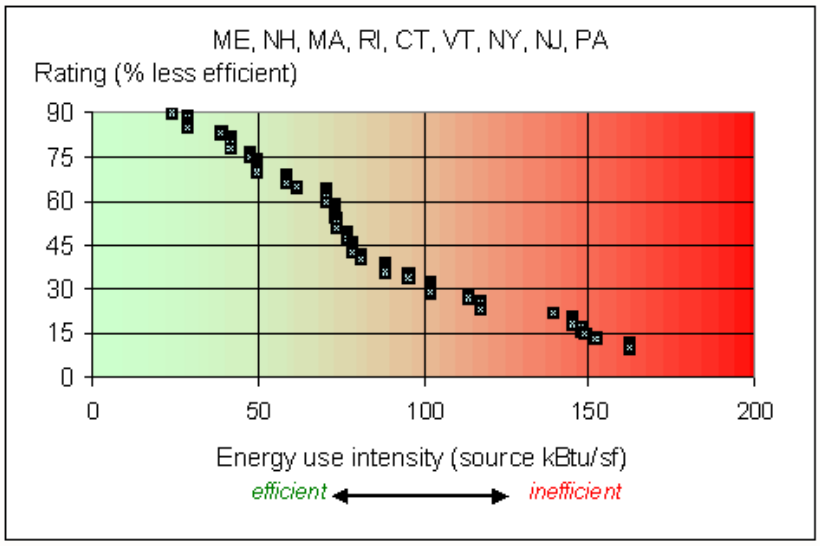
Electric = ((1,022,200 kWh) * (1000 W/kW) * (3.414 Btu/h / 1 W))/ (1000 Btu/h / 1 kBtu/h)
= 3,489,790.80 kBTU/h

Gas = ((38,195 therms) * (100,000 Btu/h / 1 W)) / (1000 Btu/h / 1 kBtu/h) = 3,819,500 kBtu/h

EUI = (3,489,790.80 KbTU/h + 3,819,500 kBtu/h) / (81,000 SF) = 90.2 kBtu/SF

School EUI = 85 kBtu/SF

Figure 3
Energy Use Intensity Distributions: 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 you to track and assess 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 more emphasis is being placed throughout multiple arenas 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. Therefore, it is vital that local government municipalities assess their energy usage, benchmark this usage utilizing Portfolio Manager, set priorities and goals to lessen their energy usage and move forward with these priorites and goals. Saving energy will in-turn save the environment.

In accordance with the Local Government Energy Audit Program, CEG has created an Energy Star account for the school district in order to allow the school district access to monitoring their yearly energy usage as it compares to facilities of similar type. The following is the user name and password for this account:

User Name:	Antcaucci
Password:	password

Utilizing the utility bills and other information gathered during the energy audit process, CEG entered the respective data into Portfolio Manager and the following is a summary of the results:

Table 5
ENERGY STAR Performance Rating

FACILITY DESCRIPTION	ENERGY PERFORMANCE RATING	NATIONAL AVERAGE
Indian Fields Elementary School	18	50

Specific building types are detailed on the ENERGY STAR website. Non-typical buildings are covered by an “Other” category. Refer to Appendix G for detailed energy benchmarking report entitled “STATEMENT OF ENERGY PERFORMANCE.”

V. FACILITY DESCRIPTION

The existing Facility is approximately 81,000 square feet and was constructed in 1991. It is occupied by approximately 550 students and 45 faculty personnel. The facility is open 6am – 10pm Monday through Friday, and 8am – 3pm on the weekends.

The original designers of the building separated the building into 4 areas which will be referenced in the report. Area 'A' is located at the front of the building and contains the Library, Mechanical Room, Storage Rooms, Cafe and the Gymnasium. Area 'B' consists of the front offices, Nurse's Office and 9 Classrooms. Area 'C' is located at the easterly corner of the building and consists of 9 Classrooms and a couple Small Group Rooms. Area 'D' is at the south end of the building and consists of 7 Classrooms and a couple Small Group Rooms.

The building is a single story structure of steel, brick and block construction with slab on grade. The roof is metal deck with rigid insulation covered by rubber membrane. Some areas of the building also have decorative standing seam metal roofing which is backed by rigid insulation and metal decking.

Overall the facility's construction is very tight and no major problems with the envelope were reported. The roofing material has been well maintained and has its original integrity with minimal patching. All of the penetrations were properly sealed. The windows and doors also seemed to be well maintained allowing minimal infiltration of outdoor air.

HVAC System

The "air side" of the HVAC system consists of floor and ceiling mounted unit ventilators, fan coil units, air handling units and roof mounted fans. All of the airside equipment has a hot water heating coil, chilled water cooling coil respectively along with a supply air fan. The coils are fed from the Central Plant and controlled by the Building Management System (BMS), both described later in the report.

The large rooms such as the Library, Music and Tech have ceiling mounted unit ventilators which are concealed in soffits. Their ductwork is distributed above the ceiling and out of ceiling mounted diffusers. Return air is received through a unit mounted louver and outside air is pulled through roof mounted intakes. Return and outdoor air dampers are motor operated and operate inversely to one another. Each unit also has a wall mounted thermostat for individual control.

Classrooms have floor mounted unit ventilators located on the exterior wall integrated into the cabinetry. Finned tube radiation is also housed in the cabinetry. The classroom units have wall louvers to allow for outside air intake.

The Gymnasium has (4) air handling units located in a Mezzanine area above the bathrooms in Area 'A'. 2 of the units have outside air connections through the roof with return air ducted to the gym. The other 2 units are recirculation units and don't have any outside air connections. There are 2 wall mounted thermostats controlling the 4 units respectively.

The Café and the Lobby are each serviced by an air handling unit adjacent to one another above the ceiling. Each unit's outside air is ducted together up through the roof to an intake. Each air handler has a wall mounted thermostat.

The Kitchen has a cooking line with a grease exhaust hood rated at 6000 cfm. The hood make-up air is provided by AH-4 and transfer air from the Café.

Bathrooms have roof mounted exhaust fans for ventilation and finned tube radiation sections for heating. The corridors have cabinet unit heaters located at the exit doors for heating. The bathrooms and corridors do not have cooling.

Central Plant - Heating

The facility is heated by (2) Weil McLain "88 Boilers" rated at 3103 MBH total input and 2132 MBH output (68% efficiency). The boilers were installed in 1992 when the building was built. It was reported that both boilers rarely operate together during the winter. We assume the boilers total 200% of the building's heating requirements.

The boilers operate as required to maintain a hot water loop temperature of 180ºF which is distributed throughout the building by six pumps. Pumps HWP-1 & HWP-2 service all of the unit ventilators, fan coil units and finned tube radiation. Pumps HWP-3 & HWP-4 service the gymnasium air handlers and pumps HWP-5 & HWP-6 service a couple unit heaters in Area 'A'. Each pumping "zone" has a standby pump which means only one of the two pumps are required to operate at once.

The terminal equipment (air handlers, etc.) tied into the heating hot water loop have 2-way control valves which control the flow of hot water through the coils. The valves modulate according to the room's desired temperature setpoint. The pumps are constant speed and the system has a bypass valve which allows system flow to remain constant even when control valves open and close throughout the building.

The finned tube radiation located along the exterior walls and in bathrooms throughout the school do not have control valves. The radiation receives full flow when the central hot water loop is activated. The boilers are activated on an outside air temperature of 59ºF or below. This setpoint is adjustable at the main BMS interface.

Central Plant – Cooling

The school is cooled by (2) Trane chillers with roof mounted air cooled condensers. The chillers operate on R-22 refrigerant and are rated at 120 Tons of cooling each. Each unit has (2) compressors. The chillers were installed in 1992 when the building was built. It was reported that both chillers run simultaneously on very hot days, otherwise only one chiller operates. We assume both chillers total about 150% of the building's cooling requirements.

The chillers operate as required to maintain a chilled water loop temperature of 45ºF which is distributed throughout the building by four pumps. Pumps CWP-1 & CWP-2 service the unit ventilators and the fan coil units. CWP-3 & CWP-4 service the air handling units. Each

pumping "zone" has a standby pump which means only one of the two pumps are required to operate at once.

The terminal equipment (air handlers, etc.) tied into the chilled water loop have 2-way control valves which control the flow of chilled water through the coils. The valves modulate according to the room's desired temperature setpoint. The pumps are constant speed and the system has a bypass valve which allows system flow to remain constant even when control valves open and close throughout the building.

The chillers operate according to the building's occupied schedule and activate on an outside air temperature of 62ºF. This setpoint is adjustable at the main BMS interface.

Controls System

All HVAC equipment is controlled by a Trane Tracker Building Management System (BMS). The BMS interface workstation is located in the Custodial Storage Room. It was reported that Trane representatives maintain and update the system every 6 months. The system has a graphics package and no problems were reported with its operation.

The BMS is set to keep all of the building's rooms at a temperature of 68ºF - 72ºF during the winter months and a range of 70ºF - 74ºF in the summertime. The air side equipment's local thermostats sense temperature and have a 2ºF plus or minus adjustment.

Domestic Hot Water

Domestic hot water for the school is provided by (2) PVI combination water heater/storage tanks. HWH-1 has a 90 gallon capacity with a burner rated at 200 MBH input. HWH-2 has a 125 gallon capacity with a burner rated at 200 MBH input. Both units have an operating efficiency of approx. 83%. There were no reported problems with the heaters.

VI. MAJOR EQUIPMENT LIST

Following the completion of the field survey a detailed equipment list was created. The equipment within this list is considered major energy consuming equipment whose replacement could yield substantial savings. In addition, 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 if a manufacturers 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.

Equipment denoted by an asterisk indicates an estimate of the equipment ratings due to equipment inaccessibility, worn nameplates, lack of nameplates, etc.

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

VII. ENERGY CONSERVATION MEASURES

Life cycle costing (LCC) is an integral part to energy auditing. The applicable costs reviewed in completing a life cycle costing analysis are as follows: utility costs, installation costs, maintenance costs, and equipment replacement costs. The NIST-BLCC 5.3™ program determines operation costs based on the energy use of the building systems (HVAC, lighting, etc.) in conjunction with the utility, installation and maintenance costs. The NIST-BLCC software is endorsed by the Federal Energy Management Program and is the approved software for all federal life cycle costing analysis. When calculating the LCC of a respective ECM, recurring costs for existing HVAC equipment replacement play a major role. The delineation of the respective costs is as follows:

Utility Rates

The utility rates for electric and natural gas are as noted in Section IV of this report.

Installed Costs – Construction Cost Estimate

The installed costs for the energy conservations measures have been completed utilizing RS Means estimating software, engineering estimates and contractor pricing.

Some initial cost can be avoided by utilizing the New Jersey SmartStart$_{tm}$ Financial Incentive program (www.njsmartbuildings.com). The program offers financial incentives on various types of building equipment. Incentives were utilized in CEG's Life Cycle Costing calculations detailed in the financial analysis.

Maintenance Costs

Maintenance costs are based on a variety of variables and are difficult to calculate, therefore it is an industry practice to develop these costs based on the methods established in ASHRAE Applications Handbook 2007, Chapter 36 or to estimate the numbers based on ASHRAE Research Data issued in peer-reviewed journals.

Recurring Costs – Equipment Replacement Costs

HVAC Equipment Replacement Costs are calculated utilizing the installation costs estimated by the cost consultant with an estimated inflation rate (approx. 2.0%) for the time of the study life that the replacement occurs. The recommended service life per ASHRAE Applications Handbook 2007, Chapter 36 has been used as the basis for the analysis software to determine equipment replacement frequency for the 20 year Life Cycle Cost Analysis. Refer to Appendix B for a listing of the recurring / replacement costs per ECM.

Economic Parameters

The LCC analysis was performed using a 20-year Study Life with a Cost of Capital equal to 5%. The project was not modeled as being financed because the project is privately funded. The utility costs, maintenance and replacement costs incorporate a 2.0% average long-term inflation rate calculated annually for the DOE/FEMP projects according to 10 CFR 436. Depending on any unforeseen changes in rate structure by the utility providers, this inflation rate is likely to increase.

Base Building Model

Base Case reflects existing equipment, operating conditions and energy consumption.

Base Building
Energy Consumption Summary

ENERGY CONSUMPTION SUMMARY

	Elect Cons. (kWh)	Gas Cons. (kBtu)	% of Total Building Energy	Total Building Energy (kBtu/yr)	Total Source Energy* (kBtu/yr)
ALT 1 – BASE CASE					
Primary heating					
Primary heating	58,212	3,741,213	55.8 %	3,939,890	4,534,211
Other Htg Accessories	98,085		4.7 %	334,764	1,004,394
Heating Subtotal	**156,297**	**3,741,213**	**60.5 %**	**4,274,655**	**5,538,605**
Primary cooling					
Cooling Compressor	97,381		4.7 %	332,362	997,187
Tower/Cond Fans	15,058		0.7 %	51,393	154,194
Condenser Pump			0.0 %	0	0
Other Clg Accessories	178,177		8.6 %	608,117	1,824,533
Cooling Subtotal....	**290,616**		**14.0 %**	**991,872**	**2,975,913**
Auxiliary					
Supply Fans	48,419		2.3 %	165,254	495,811
Pumps	489		0.0 %	1,670	5,012
Stand-alone Base Utilities	23,725		1.2 %	80,973	242,945
Aux Subtotal....	72,633		3.5 %	247,898	743,767
Lighting					
Lighting	366,572		17.7 %	1,251,110	3,753,707
Receptacle					
Receptacles	88,077		4.3 %	300,607	901,911
Cogeneration					
Cogeneration			0.0 %	0	0
Totals					
Totals**	**974,195**	**3,741,213**	**100.0 %**	**7,066,142**	**13,913,902**

* Note: Resource Utilization factors are included in the Total Source Energy value.
** Note: This report can display a maximum of 7 utilities. If additional utilities are used, they will be included in the total.

Project Name: Indian Fields Elementary
Dataset Name: P:\Projects 2009\BS09-002\Trace\IND_FIELDS_EL.TRC

TRACE® 700 v6.2 calculated at 09:27 AM on 03/26/2009
Alternative - 1 Energy Consumption Summary report page 1

ECM # 1: Magnetic Bearing Chiller and Cooling Tower

The existing chillers at the school were installed in 1992 when the building was originally constructed. The chillers have two 60 ton reciprocating compressors each. The compressors are air cooled by the existing roof mounted condensing units. Air cooled chillers are viewed as the least efficient chiller available. They are typically installed because of budget constraints.

In this alternative we are suggesting a McQuay 200 ton magnetic bearing chiller model WMC cooled remotely by a cooling tower. We envision a new cooling tower located on the roof in lieu of the remote condensers. Also, the new chillers would be located in place of the existing units. The magnetic bearing chiller would have two centrifugal compressors equal to one of the existing chillers' capacity. The benefits of this chiller are its reduced maintenance, high part load efficiency, contains minimal moving parts, has no oil lubricants and reduced maintenance. Also, this dual compressor chiller is capable of operating on one compressor with the other removed from the machine for maintenance.

A Baltimore Air Coil 200 ton open cooling tower would reject the chiller's heat. The two machines would be interconnected by water piping and condenser water pumps. The tower would be outfitted with a variable frequency drive to allow for partial loading during low load days. The cooling tower is more efficient than the air cooled remote condenser currently installed.

Based on the potential savings and construction costs the simple payback for this alternative is 70 years. The table below shows a summary of the energy consumption for this alternative.

ECM No. 1
Energy Consumption Summary

ENERGY CONSUMPTION SUMMARY

	Elect Cons. (kWh)	Gas Cons. (kBtu)	Water Cons. (1000 gals)	% of Total Building Energy	Total Building Energy (kBtu/yr)	Total Source Energy* (kBtu/yr)
ALT 2 – MAGNETIC BEARING CHILLER W/COOLING TOWER						
Primary heating						
Primary heating	58,212	3,741,213		56.8 %	3,939,890	4,534,211
Other Htg Accessories	98,085			4.8 %	334,764	1,004,394
Heating Subtotal	**156,297**	**3,741,213**		**61.6 %**	**4,274,655**	**5,538,605**
Primary cooling						
Cooling Compressor	36,153			1.8 %	123,391	370,209
Tower/Cond Fans	27,243		451	1.3 %	92,980	278,967
Condenser Pump	23,507			1.2 %	80,228	240,707
Other Clg Accessories	166,936			8.2 %	569,752	1,709,427
Cooling Subtotal....	**253,838**		**451**	**12.5 %**	**866,350**	**2,599,311**
Auxiliary						
Supply Fans	48,419			2.4 %	165,254	495,811
Pumps	489			0.0 %	1,670	5,012
Stand-alone Base Utilities	23,725			1.2 %	80,973	242,945
Aux Subtotal....	72,633			3.6 %	247,898	743,767
Lighting						
Lighting	366,572			18.0 %	1,251,110	3,753,707
Receptacle						
Receptacles	88,077			4.3 %	300,607	901,911
Cogeneration						
Cogeneration				0.0 %	0	0
Totals						
Totals**	**937,418**	**3,741,213**	**451**	**100.0 %**	**6,940,620**	**13,537,300**

* Note: Resource Utilization factors are included in the Total Source Energy value.
** Note: This report can display a maximum of 7 utilities. If additional utilities are used, they will be included in the total.

Project Name: Indian Fields Elementary
Dataset Name: P:\Projects 2009\BS09-002\Trace\IND_FIELDS_EL.TRC

TRACE® 700 v6.2 calculated at 09:27 AM on 03/26/2009
Alternative - 2 Energy Consumption Summary report page 1

ECM # 2: Magnetic Bearing Chiller and Ground Loop

This alternative is very similar to ECM # 1 except in lieu of a cooling tower we're suggesting a ground cooling loop. We've shown the same 200 ton magnetic bearing chiller as ECM # 2. The chiller would be connected via water piping to an underground web of piping which would reject its heat. Condenser water pumps would circulate the water through the chiller and ground loop. The ground acts a heat sink as opposed to operating water or air cooled equipment.

With this alternative the building experiences the benefits of the magnetic bearing chiller as well as an increased overall efficiency of the system.

Based on the potential savings and construction costs the simple payback for this alternative is 54 years. The table below shows a summary of the energy consumption for this alternative.

ECM No. 2
Energy Consumption Summary

ENERGY CONSUMPTION SUMMARY

	Elect Cons. (kWh)	Gas Cons. (kBtu)	Water Cons. (1000 gals)	% of Total Building Energy	Total Building Energy (kBtu/yr)	Total Source Energy* (kBtu/yr)
ALT 3 MAGNETIC BEARING CHILLER W/GROUND LOOP						
Primary heating						
Primary heating	58,212	3,741,213		58.2 %	3,939,890	4,534,211
Other Htg Accessories	98,085			5.0 %	334,764	1,004,394
Heating Subtotal	**156,297**	**3,741,213**		**63.2 %**	**4,274,655**	**5,538,605**
Primary cooling						
Cooling Compressor	34,924			1.8 %	119,196	357,623
Tower/Cond Fans	741		2	0.0 %	2,529	7,588
Condenser Pump	273			0.0 %	933	2,799
Other Clg Accessories	166,936			8.4 %	569,752	1,709,427
Cooling Subtotal....	**202,874**		**2**	**10.2 %**	**692,410**	**2,077,437**
Auxiliary						
Supply Fans	48,419			2.4 %	165,254	495,811
Pumps	489			0.0 %	1,670	5,012
Stand-alone Base Utilities	23,725			1.2 %	80,973	242,945
Aux Subtotal....	72,633			3.7 %	247,898	743,767
Lighting						
Lighting	366,572			18.5 %	1,251,110	3,753,707
Receptacle						
Receptacles	88,077			4.4 %	300,607	901,911
Cogeneration						
Cogeneration				0.0 %	0	0
Totals						
Totals**	**886,454**	**3,741,213**	**2**	**100.0 %**	**6,766,679**	**13,015,426**

* Note: Resource Utilization factors are included in the Total Source Energy value.
** Note: This report can display a maximum of 7 utilities. If additional utilities are used, they will be included in the total.

Project Name: Indian Fields Elementary
Dataset Name: P:\Projects 2009\BS09-002\Trace\IND_FIELDS_EL A.TRC

TRACE® 700 v6.2 calculated at 09:25 AM on 03/26/2009
Alternative - 2 Energy Consumption Summary report page 1

ECM # 3: Replace Boilers

The existing boilers heating the school are approximately 68% efficient and have a remaining useful life of about 6 more years. We are suggesting replacing the boilers with new 92% efficient (97% part load eff.) boilers with fully modulating capabilities. The existing boilers do not modulate. We recommend installing 3 new Lochinvar Intellifin IBN 1700 boilers with 1700 MBH input. The total boiler output would be about 4500 MBH.

Based on the potential savings and construction costs the simple payback for this alternative is 12.3 years. The table below shows a summary of the energy consumption for this alternative.

ECM No. 3
Energy Consumption Summary

ENERGY CONSUMPTION SUMMARY

	Elect Cons. (kWh)	Gas Cons. (kBtu)	% of Total Building Energy	Total Building Energy (kBtu/yr)	Total Source Energy* (kBtu/yr)
ALT 4 BOILER REPLACEMENT					
Primary heating					
Primary heating	58,212	2,708,074	48.4 %	2,906,752	3,446,697
Other Htg Accessories	90,602		5.2 %	309,225	927,767
Heating Subtotal	**148,814**	**2,708,074**	**53.5 %**	**3,215,977**	**4,374,464**
Primary cooling					
Cooling Compressor	97,381		5.5 %	332,362	997,187
Tower/Cond Fans	15,058		0.9 %	51,393	154,194
Condenser Pump			0.0 %	0	0
Other Clg Accessories	178,177		10.1 %	608,117	1,824,533
Cooling Subtotal....	**290,616**		**16.5 %**	**991,872**	**2,975,913**
Auxiliary					
Supply Fans	48,419		2.8 %	165,254	495,811
Pumps	489		0.0 %	1,670	5,012
Stand-alone Base Utilities	23,725		1.4 %	80,973	242,945
Aux Subtotal....	72,633		4.1 %	247,898	743,767
Lighting					
Lighting	366,572		20.8 %	1,251,110	3,753,707
Receptacle					
Receptacles	88,077		5.0 %	300,607	901,911
Cogeneration					
Cogeneration			0.0 %	0	0
Totals					
Totals**	**966,712**	**2,708,074**	**100.0 %**	**6,007,463**	**12,749,762**

* Note: Resource Utilization factors are included in the Total Source Energy value.
** Note: This report can display a maximum of 7 utilities. If additional utilities are used, they will be included in the total.

Project Name: Indian Fields Elementary
Dataset Name: P:\Projects 2009\BS09-002\Trace\IND_FIELDS_EL.TRC

TRACE® 700 v6.2 calculated at 09:27 AM on 03/26/2009
Alternative - 4 Energy Consumption Summary report page 1

ECM # 4: Variable Speed Pumping

The existing chilled water and hot water pumps are constant speed. Both systems have a bypass valve which allows for recirculation when terminal equipments' control valves close down. We suggest installing new pumps with variable frequency drives (VFD). The existing 2-way control valves at all of the terminal equipment can remain. The new pumps would be controlled by remote pressure sensors to keep the system charged properly. The VFD's modulate the pump's speed in order to maintain the necessary system pressure as prescribed at the BMS.

This is a very cost effective energy conservation measure and shows a simple payback of 3.3 years. The table below shows a summary of the energy consumption for this alternative.

ECM No. 4
Energy Consumption Summary

ENERGY CONSUMPTION SUMMARY
By CAE

	Elect Cons. (kWh)	Gas Cons. (kBtu)	% of Total Building Energy	Total Building Energy (kBtu/yr)	Total Source Energy* (kBtu/yr)
ALT 5 VARIABLE SPEED PUMPING					
Primary heating					
Primary heating	58,212	3,741,213	63.1 %	3,939,890	4,534,211
Other Htg Accessories	28,265		1.5 %	96,469	289,437
Heating Subtotal	**86,477**	**3,741,213**	**64.6 %**	**4,036,359**	**4,823,648**
Primary cooling					
Cooling Compressor	97,381		5.3 %	332,362	997,187
Tower/Cond Fans	15,058		0.8 %	51,393	154,194
Condenser Pump			0.0 %	0	0
Other Clg Accessories	7,105		0.4 %	24,250	72,757
Cooling Subtotal....	**119,544**		**6.5 %**	**408,005**	**1,224,138**
Auxiliary					
Supply Fans	48,419		2.7 %	165,254	495,811
Pumps	489		0.0 %	1,670	5,012
Stand-alone Base Utilities	23,725		1.3 %	80,973	242,945
Aux Subtotal....	72,633		4.0 %	247,898	743,767
Lighting					
Lighting	366,572		20.0 %	1,251,110	3,753,707
Receptacle					
Receptacles	88,077		4.8 %	300,607	901,911
Cogeneration					
Cogeneration			0.0 %	0	0
Totals					
Totals**	**733,304**	**3,741,213**	**100.0 %**	**6,243,980**	**11,447,170**

* Note: Resource Utilization factors are included in the Total Source Energy value.
** Note: This report can display a maximum of 7 utilities. If additional utilities are used, they will be included in the total.

Project Name: Indian Fields Elementary
Dataset Name: P:\Projects 2009\BS09-002\Trace\IND_FIELDS_EL A.TRC

TRACE® 700 v6.2 calculated at 09:25 AM on 03/26/2009
Alternative - 3 Energy Consumption Summary report page 1

ECM # 5: Lighting Upgrade

Upgrade the Fluorescent Lighting

High efficiency T8 fluorescent lamps and ballasts are available as direct replacements for the existing T12 lamps and ballasts. The new T8 lamps and ballasts fit the existing fixtures without any fixture modifications.

The T8 lamps also use phosphor coatings that improve the color rendering index (CRI). A T12 lamp typically has a CRI of about 55. A typical T8 lamp has a CRI of about 75.

Energy efficient electronic ballasts reduce lighting system costs by using less power and offer the ability to use fewer ballasts to serve the lighting system. The existing ballasts add wattage to the lighting system due to their operating characteristics. Electronic ballasts subtract wattage from the lighting system due to their operating characteristics. The existing ballasts can only operate up to two lamps. One electronic ballast can operate up to four lamps, resulting in fewer ballasts required to serve the lighting system. Further ballast reductions may be possible by "tandem wiring" the ballasts. Instead of using one ballast for every fixture, it may be feasible to use one ballast for every two or more fixtures. A single ballast can operate the lamps in adjacent light fixtures.

Install Compact Fluorescent Lighting

Compact fluorescent lamps (CFL's) were created as energy efficient replacements for standard incandescent lamps, commonly used for table lamps, spot lights, and hi-hats. The lamp manufacturer's average rated life for CFL's is typically 3 to 8 times longer than the average rated life of incandescent lamps, resulting in a maintenance cost reduction.

The color rendering index (CRI) of the CFL is much higher than standard fluorescent lighting, and therefore provides a much "truer" light. In some instances this is still not the desired lighting effect, but in most cases the significant energy savings offset the compromise in perceived light quality.

The CFL is also available for a number of "brightness colors", indicated by the lamp Kelvin rating (K). A 2700K CFL is the "warmest" color available and is closest in color to the incandescent lamp. 3000K, 3500K, and 4100K lamps are also available, with the 4100K providing the "brightest" or "coolest" output.

A CFL is available for almost any application. CFL's can be purchased to screw into existing fixtures, to be hardwired into existing fixtures, or a new CFL fixture can be purchased. Typical replacements sizes are: a 13-Watt CFL for a 60-Watt incandescent lamp, an 18-Watt CFL for a 75-Watt incandescent lamp, and a 25-Watt CFL for a 100-Watt incandescent lamp. The facility representative should become familiar with the various CFL sizes, shapes, types, and light output available prior to purchasing.

CFL's and fluorescent lamps currently manufactured contain mercury and should be disposed of in accordance with recommendations of the State and Environmental Protection Agency.

A detailed investment grade Lighting Audit is located in Appendix E.

Replace 400 watt metal halide fixtures

Replacement of the existing 400 watt metal halide fixtures in the gymnasium and cafeteria with T5HO fluorescent fixtures may offer energy savings. The T5HO fixtures use less power than the existing fixtures, but further investigation and analysis is required to determine if this energy conservation measure is feasible. Each existing fixture appears to use a 400 watt 277 volt metal halide lamp and up to three (3) 250 watt quartz lamps at 120 volts. The 400 watt metal halide lamp appears to supply general illumination during "normal" occupancy. Some of the 250 watt quartz lamps appear to provide egress illumination from the emergency generator. Some of the 250 watt quartz lamps appear to be provided with dimming capability for use during special events within these spaces. A thorough field survey will be needed to determine if the replacement fixtures are capable of providing the required lighting functions and whether they can be integrated into this multi-voltage, dimmable lighting control system.

Relamp Compact Fluorescent Exit Signs

Existing compact fluorescent lamps can be replaced with energy efficient LED lamps. The benefits of LED lamps are twofold. The lamps will last for 20-30 years, resulting in significant maintenance savings because the incandescent or fluorescent lamps currently used need to be replaced 1-5 times per year. The second benefit is that LED lamps use 2 watts, compared to 10-40 watts the existing lamps use. It is highly recommended that samples of the products to be purchased are installed and evaluated to confirm that they are compatible with the electrical system.

Install Lighting Controls to Reduce the Lighting Use

In some areas the lighting is left on unnecessarily. Many times this is due to the idea that it is better to keep the lights on rather than to continuously switch them on and off. The on/off dilemma was studied and it was found that the best option is to turn the lights off whenever possible. Although this does reduce the lamp life, the energy savings far outweigh the lamp replacement costs. The cutoff for when to turn the lights off is around two minutes. If the lights can be off for only a two minute interval, then it pays to shut them off.

Lighting controls come in many forms. Sometimes an additional switch is all it would take. Another type is the timeclock which allows the user to set an on/off schedule. Timeclocks can be a dial clock with on/off indicators on it, or a timeclock can be a small box the size of a thermostat where the user programs the on/off schedule in a digital format like setting the alarm on a wristwatch. Occupancy sensors detect motion and will switch the lights on when the room is occupied. They can either be mounted in place of the current wall switch, or they can be mounted on the ceiling to cover large areas. Lastly, photocells are a lighting control that sense

light levels and will turn the lights off when there is adequate daylight. These are mostly used outside, but they are becoming much more popular in energy-efficient office designs as well.

To determine an estimated savings for lighting controls, we used ASHAE 90.1-2004 (NJ Energy Code). Appendix G states that occupancy sensors have a 10% power adjustment factor for daytime occupancies for buildings over 5,000 SF. It is recommended that dual technology occupancy sensors be installed in private offices, conference rooms, restrooms, lunch rooms, storage rooms, lounges, file rooms, etc.

The calculated lighting power density (Watts/ft^2) of the facility is 1.56 Watts/ ft^2 (126,169 Watts / 81,000 Square Feet). Ten percent of this value is the resultant energy savings due to installation of occupancy sensors:

10% x 1.56 Watts/SF x 81,000 SF x 2,470 hrs/yr.

= 31,211 kWh x $0.15/kWh

Savings = $4681 / yr

Installation cost per dual-technology sensor is $206/unit. Total number of occupancy sensors to be retrofitted is 188. Total cost to install sensors is $38,728.

Simple Payback = 8.3 Years.

VIII. RENEWABLE/DISTRIBUTED ENERGY MEASURES (ECM # 6)

In recent years renewable energy has leaped into mainstream society affecting global 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 underneath the Board of Public Utilities and instituted a Renewable Energy Incentive Program to provide additional funding to private and public entities for installing qualified technologies. A renewable energy source can greatly reduce a building's operating expenses while producing clean environmentally friendly energy. CEG has assessed the feasibility of installing renewable energy technologies for Indian Fields Elementary, and concluded that there is a potential for solar energy generation.

Solar energy production is a great way to produce clean energy and reduce a buildings carbon footprint. In order to do this Photovoltaic panels will be mounted on all south and southwestern facets of the building. Flat roof, as well as slopped 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 value was used in our financial calculations. This equates to $0.35 per kWh generated.

CEG has reviewed the existing roof area of the building being audited for the purposes of determining a potential for a roof mounted photovoltaic system. A roof area of 64,000 S.F. can be utilized for a PV system on the Elementary School. A depiction of the area utilized is shown in Appendix F following the financial calculations. Using this square footage it was determined that a system size of 305 kilowatts could be installed. A system of this size has an estimated kilowatt hour production of 470,174 KWh annually, reducing the overall utility bill by almost 37 percent. Combining the overall utility bill savings with the renewable energy credits shows a net profit of about $32,000/year. A detailed financial analysis can be found in Appendix F. This analysis illustrates the payback of the system over a 25 year period. The eventual degradation of the solar panels and the price of accumulated SREC's are factored into the payback.

CEG has reviewed financing options for the owner. Two options were studied and they are as follows: Self-financed and direct purchase without finance. Self-finance was calculated with 90% of the total project cost financed at a 5% interest rate over 20 years. Direct purchase involves the local government paying 100% of the total cost upfront. Both of these calculations include utility inflation rate as well as the degradation of the solar panels over time. Based on our calculations the following are the payback periods for the respective method of payment:

Payment Type	Life Cycle Payback	IRR
Self-Finance	15 Years	27 %
Direct Purchase	10 Years	8.9 %

Wind energy production is another option available through the Renewable Energy Incentive Program. Small wind turbines can be utilized to produce clean energy on a per building basis. Cash incentives are available per kWh of electric usage. CEG has reviewed the applicability of wind energy for South Brunswick and has determined it is not a viable option. Low average wind speeds for the area are not adequate for wind turbine generation. Typical wind turbines start producing energy at 8 mph wind speeds. South Brunswick averages 4 mph wind speeds making this application impractical.

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 Section IV, Figures 1 and 2 included within this report to reference the respective electricity and natural gas usage load profile for June 2007 through May 2008.

Electricity:

Section IV, Figure 1 demonstrates a typical cooling profile, (April –October), complimenting the heating load. It is evident that there is a significant reduction in the On Peak Load from October 2007 to November 2007 and a substantial increase from March 2007 to April 2007. The Off Peak load is typical, with some expected increased consumption in the June-September period. The base-load shaping is important because a flat consumption profiles will yield more competitive pricing. There appears to be a large spike in consumption in September. This could be a late in the summer cooling load.

Natural Gas:

Section IV, Figure 2 demonstrates a typical heating load (November –March), and complimentary cooling load (April –October). Consequently there is a clear separation between summer and winter loads consistent with Wholesale Energy Pricing. Heating loads carry a much higher average cost because of the higher demand for natural gas during the winter.

Tariff Analysis:

Electricity:

South Brunswick – Indian Fields Elementary receives electrical service through Public Service Electric and Gas Company (PSE&G) on a LPL (Large Power and Lighting Service) rate. This utility tariff is for delivery service for general purposes at secondary distribution voltages where the customer's measured peak demand exceeds 150 kilowatts in any month and also at primary distribution charges. The rate schedule has a Delivery Charge, Societal Benefits Charge, Non-utility Generation Charge, Securitization Charge, System Control Charge, Customer Account Services Charge, Standby Fee, Base Rate Distribution Adjustment Charge, Solar Pilot Recovery Charge and RGGI Charge. The customer can elect to have the Commodity Charge serviced through the utility or by a Third Party Supplier (TPS).

Natural Gas:

South Brunswick – Indian Fields Elementary receives natural gas service through Public Service Electric and Gas Company (PSE&G) on a LVG (Large Volume Service) rate class, when not receiving commodity by a Third Party Supplier. This utility tariff is for firm delivery service for general purposes. This rate schedule has a Delivery Charge, Balancing Charge, Societal Benefits Charge, Realignment Adjustment Charge, Margin Adjustment Charge, RGGI Charge and Customer Account Service Charge. The customer can elect to have the Commodity Charge serviced through the utility or by a Third Party Supplier (TPS). It is pertinent to note, should the TPS not deliver, the customer may receive service from PSE&G under Emergency Sales Service. Emergency Sales Service carries an extremely high penalty cost of service.

CEG received an example bill for South Brunswick- Indian Fields Elementary School for the period of December 3 – December 30, 2008, to review current usage and TPS charges. It is pertinent to note, that the date range of this bill is different than the analyzed historical data period for the base analysis. In reviewing this bill, an imbalance has been applied to the natural gas account. The imbalance is for a volume of 188 therms. These imbalances occur when Third Party Suppliers are used to supply natural gas, full-delivery is not made, and when a new supplier is contracted or the customer returns to the utility. It is important when utilizing a Third Party Supplier, that an experienced regional supplier is used. Otherwise, imbalances can occur, jeopardizing economics and scheduling.

From review of the information provided by the School District, South Brunswick is utilizing the services of a Third Party Supplier, Woodruff Energy for natural gas service. The contract is administered through the Middlesex Regional Educational Services Commission (MRESC) for the term, August 1, 2008 through July 31, 2010. The agreement is between the MRESC and South Brunswick BOE and it does not define the full and final price. Based on the limited data available, it appears that South Brunswick is paying 25%-50% above market price.

Additionally, the MRESC charges $.0325 per dekatherm for administering this RFP. The South Brunswick BOE could realize additional savings by evaluating a new natural gas contract. It should be noted that there was not a Woodruff Energy Contract available for review, nor a complete delivered natural gas price.

Recommendations:

CEG recommends a global approach that will be consistent with all facilities within the South Brunswick School District. CEG's primary observation is seen in the electricity costs. South Brunswick's "weighted average price" per kWh (kilowatt hour) for all buildings is $.1614/kWh (kWh is the common unit of electric measure). The average price per dekatherm for natural gas is $12.50/dth. ($14.70 for this Indian Hills School). Energy commodities are among the most volatile of all commodities, however at this point and time, energy is extremely competitive. South Brunswick could see significant savings if it were to take advantage of these current market prices quickly, before energy increases. Based on last year's historical consumption (June 2007 through May 2008) and current electric rates, South Brunswick would see savings of over $500,000 per year (Note: Savings were calculated using South Brunswick High School's

Average Annual Consumption of 8,520,053 kWh and a variance of $.06/kWh utilizing a fixed one-year commodity contract). South Brunswick should aggregate its entire electric load to gain the most optimal energy costs. CEG recommends advisement for alternative sourcing and supply of energy on a "managed approach".

CEG's secondary recommendation coincides with South Brunswick's natural gas costs and the contract with MRESC and Woodruff Energy. CEG recognized a segment of the natural gas cost is not competitive with current market prices. Based on the current market, South Brunswick is paying approximately $1.717 per unit above market in the PSEG territory and about $.58 per unit above market in the Elizabethtown Gas and New Jersey Natural Gas territories. CEG recommends further advisement on these prices. South Brunswick should also consider procuring energy (natural gas) on its own. By procuring energy through the MRESC it is paying a premium of $.0325 per unit. CEG recommends alternative sourcing strategies.

CEG recommends that South Brunswick 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 might be available to South Brunswick. Through its meeting with the Local Distribution Company (LDC), South Brunswick will learn more about the competitive supply process. South Brunswick can acquire a list of approved Third Party Suppliers from the New Jersey Board of Public Utilities website at www.nj.gov/bpu. South Brunswick 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 South Brunswick pay attention to credit mechanisms, imbalances, balancing charges and commodity charges when meeting with their utility representative. In addition, South Brunswick 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 South Brunswick frequently changes its supplier for energy (natural gas), it needs to closely monitor balancing, particularly when the contract is close to termination.

X. INSTALLATION FUNDING OPTIONS

CEG has reviewed various funding options for the 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 par 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.

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 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. Use cog-belts instead of v-belts on all belt-driven fans, etc. These can reduce electrical consumption of the motor by 2-5%.

D. Repair/replace piping and ductwork insulation in the attic spaces.

E. Reduce lighting in specified areas where the foot-candle levels are above 70 in private offices and above 30 in corridor, lobbies, etc. During the site survey, many areas were measured at over 100 foot-candles.

F. Provide more frequent air filter changes to decrease overall fan horsepower requirements and maintain better IAQ.

G. Install a Vending Miser system to turn off vending machines when not in use.

H. Efficient parking lot lighting fixtures can reduce the energy use on the site without compromising safety or illumination. "Hockey puck" fixtures which use 175-Watt metal halide lamps use 70% less electricity than "cobra head" fixtures using 250-watt high pressure sodium lamps.

I. Clean all fixtures to maximize light output.

J. Feel for air drafts around electrical outlets. Inexpensive pads are available, as are plugs for unused sockets.

K. Confirm that outside air economizers on the air handling units are functioning properly to take advantage of free cooling.

In addition to the recommendations above CEG would also like to suggest Retro-Commissioning. Retro-Commissioning is a means to verify your current equipment is operating at their designed capacity, airflow, etc. Commissioning agents would use an independent balancing company to perform air and water balancing on the existing systems.

APPENDIX

Electric Cost Summary
Indian Fields
Elementary
PSE & G
Acct.No:6201003150E

Month	Jun-07	Jul-07	Aug-07	Sep-07	Oct-07	Nov-07	Dec-07	Jan-08	Feb-08	Mar-08	Apr-08	May-08	Total
Last Meter Read Date	6/6/2007	7/5/2007	8/3/2007	9/4/2007	10/3/2007	11/2/2007	12/4/2007	1/4/2008	2/5/2008	3/5/2008	4/7/2008	5/5/2008	6/6/2007
Current Meter Read Date	7/5/2007	8/3/2007	9/4/2007	10/3/2007	11/2/2007	12/4/2007	1/4/2008	2/5/2008	3/5/2008	4/7/2008	5/5/2008	6/4/2008	6/4/2008
Billing Days	29	29	32	29	30	32	31	32	29	33	28	30	364
KWH	99,200	90,000	90,800	111,000	100,200	74,200	66,600	78,600	72,200	72,600	78,200	88,600	1,022,200
KW	305	305	305	305	305	305	241	241	241	241	241	241	305
Monthly Load Factor	47%	42%	39%	52%	46%	32%	37%	42%	43%	38%	48%	51%	43%
Electric Delivery, $	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Delivery $/kwh	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0
Electric Supply, $	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Supply $/kwh	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0
Total Cost, $	$17,529	$15,711	$16,251	$16,317	$12,776	$9,589	$8,887	$10,382	$9,966	$10,401	$10,455	$14,745	$153,008
$/KWH	$0.1767	$0.1746	$0.1790	$0.1470	$0.1275	$0.1292	$0.1334	$0.1321	$0.1380	$0.1433	$0.1337	$0.1664	$0.1497

Natural Gas Cost Summary
Indian Fields
Elementary
PSE & G
Acct. No.6201003150G

Month	Jun-07	Jul-07	Aug-07	Sep-07	Oct-07	Nov-07	Dec-07	Jan-08	Feb-08	Mar-08	Apr-08	May-08	Total
Billing Days	29	29	32	29	30	32	31	32	29	33	28	30	364
Last Meter Read Date	6/6/2007	7/5/2007	8/3/2007	9/4/2007	10/3/2007	11/2/2007	12/4/2007	1/4/2008	2/5/2008	3/5/2008	4/7/2008	5/5/2008	6/6/2007
Current Meter Read Date	7/5/2007	8/3/2007	9/4/2007	10/3/2007	11/2/2007	12/4/2007	1/4/2008	2/5/2008	3/5/2008	4/7/2008	5/5/2008	6/4/2008	6/4/2008
Gas Used per 100 cu ft	0	0	0	0	0	0	0	0	0	0	0	0	0
BTU Factor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Therms (Burner Tip)	167	147	151	175	880	5,751	7,559	7,715	6,851	6,369	1,626	804	38,195
Total Distribution Cost	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Cost per Therm	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000
Total Commodity Cost	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Cost per Therm	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Total Cost	$302	$277	$282	$312	$2,440	$8,874	$11,262	$11,468	$10,003	$7,916	$2,106	$1,095	$56,335
Cost per Therm	$1.81	$0.00	$0.00	$0.00	$2.77	$1.54	$1.49	$1.49	$1.46	$1.24	$1.30	$1.36	$1.47

CONSTRUCTION COST AND REBATES

BASE CASE - EXISTING EQUIPMENT	Qty	Unit Cost $	Material $	Labor $	Total $
Total Cost			$0	$0	**$0**

ECM # 1 - WATER COOLED MAGNETIC BEARING CHILLER W/COOLING TOWER	Qty	Unit Cost $	Material $	Labor $	Total $
200 Ton Magnetic Bearing Chiller	1	$115,000	$115,000	$201,250	$316,250
Cooling Tower	1	$32,000	$32,000	$56,000	$88,000
Condenser Water Pump	2	$8,500	$17,000	$29,750	$46,750
Piping	1		$15,000	$26,250	$41,250
Demo Old Chiller & Condensers	1			$15,000	$15,000
Controls	1		$15,000	$26,250	$41,250
Chiller Rebate ($96/Ton)					$19,200
Total after Rebate					**$529,300**

ECM # 2 - WATER COOLED MAGNETIC BEARING CHILLER W/GROUND LOOP	Qty	Unit Cost $	Material $	Labor $	Total $
200 Ton Magnetic Bearing Chiller	1	$115,000	$115,000	$201,250	$316,250
Ground Loop	210	$800	$168,000	$294,000	$462,000
Condenser Water Pump	2	$8,500	$17,000	$29,750	$46,750
Piping	1		$15,000	$26,250	$41,250
Demo Old Chiller & Condensers	1			$15,000	$15,000
Controls	1		$15,000	$26,250	$41,250
Ground Loop Rebate ($370/ton)					$77,700
Chiller Rebate ($96/Ton)					$19,200
Total after Rebate					**$825,600**

ECM # 3 - REPLACE BOILERS	Qty	Unit Cost $	Material $	Labor $	Total $
1700 MBH Input Lochinvar Boiler (97% Eff.)	3	$27,500	$82,500	$144,375	$226,875
Demo Old Boilers				$10,000	$10,000
Controls	3	$1,000	$3,000	$5,250	$8,250
Boiler Rebate					$5,250
Total after Rebate					**$239,875**

ECM # 4 - VARIABLE SPEED PUMPING	Qty	Unit Cost $	Material $	Labor $	Total $
Chilled Water Pump (5 HP)	2	$1,500	$3,000	$5,250	$8,250
Chilled Water Pump (20 HP)	2	$3,500	$7,000	$12,250	$19,250
Hot Water Pump (7.5 HP)	2	$2,000	$4,000	$7,000	$11,000
Hot Water Pump (3 HP)	2	$1,000	$2,000	$3,500	$5,500
Hot Water Pump (0.5 HP)	2	$750	$1,500	$2,625	$4,125
Variable Frequency Drive < 5HP	4	$1,500	$6,000	$10,500	$16,500
Variable Frequency Drive > 5HP	6	$2,500	$15,000	$26,250	$41,250
Controls	10	$250	$2,500	$4,375	$6,875
Piping			$5,000	$8,750	$13,750
VFD Rebate ($60/HP above 20HP)					$2,400
Premium Eff Motor Rebate					$604
Total after Rebate					**$123,496**

ECM # 5 - LIGHTING RETROFIT	Qty	Unit Cost $	Material $	Labor $	Total $
Lighting Retrofit	1	$41,467	$41,467	$64,720	$106,187
Lighting Rebate					$18,730
Total after Rebate					**$87,457**

ECM # 6 - PV SOLAR	Qty	Unit Cost $	Material $	Labor $	Total $
PV Solar	1,000	$1,525	$1,525,000	$915,000	$2,440,000
Total					**$2,440,000**

EQUIPMENT REPLACEMENT COST FOR EACH ALTERNATE

BASE CASE - EXISTING EQUIPMENT

	$	Life	Yr Incurred
Existing Trane Air Cooled Split Chiller	$130,000	20	2
Existing WeilMcLain Boilers	$35,000	25	6
Existing Constant Speed Pumps	$17,500	20	2
New Magnetic Bearing Chiller w/Cooling Tower	$0	20	20
New Magnetic Bearing Chiller w/Ground Loop	$0	25	25
New Lochinvar Boilers	$0	24	24
New Variable Speed Pumps	$0	20	20

ECM # 1 - MAGNETIC BEARING CHILLER W/COOLING TOWER

	$	Life	Yr Incurred
Existing Trane Air Cooled Split Chiller	$0	20	2
Existing WeilMcLain Boilers	$35,000	25	6
Existing Constant Speed Pumps	$17,500	20	2
New Magnetic Bearing Chiller w/Cooling Tower	$115,000	20	20
New Magnetic Bearing Chiller w/Ground Loop	$0	25	25
New Lochinvar Boilers	$0	24	24
New Variable Speed Pumps	$0	20	20

ECM # 2 - MAGNETIC BEARING CHILLER W/GROUND COOLING LOOP

	$	Life	Yr Incurred
Existing Trane Air Cooled Split Chiller	$0	20	2
Existing WeilMcLain Boilers	$35,000	25	6
Existing Constant Speed Pumps	$17,500	20	2
New Magnetic Bearing Chiller w/Cooling Tower	$0	20	20
New Magnetic Bearing Chiller w/Ground Loop	$115,000	25	25
New Lochinvar Boilers	$0	24	24
New Variable Speed Pumps	$0	20	20

ECM # 3 - HIGH EFFICIENCY BOILERS

	$	Life	Yr Incurred
Existing Trane Air Cooled Split Chiller	$130,000	20	2
Existing WeilMcLain Boilers	$0	25	6
Existing Constant Speed Pumps	$17,500	20	2
New Magnetic Bearing Chiller w/Cooling Tower	$0	20	20
New Magnetic Bearing Chiller w/Ground Loop	$0	25	25
New Lochinvar Boilers	$82,500	24	24
New Variable Speed Pumps	$0	20	20

ECM # 4 - VARIABLE SPEED PUMPS

	$	Life	Yr Incurred
Existing Trane Air Cooled Split Chiller	$130,000	20	2
Existing WeilMcLain Boilers	$35,000	25	6
Existing Constant Speed Pumps	$0	20	2
New Magnetic Bearing Chiller w/Cooling Tower	$0	20	20
New Magnetic Bearing Chiller w/Ground Loop	$0	25	25
New Lochinvar Boilers	$0	24	24
New Variable Speed Pumps	$39,000	20	20

Annual Maintenance Cost				
ECM	**Base**	**Additional**	**Solar PV**	**Total**
BASE CASE - EXISTING EQUIPMENT	$20,000	$0	$0	$20,000
ECM # 1 - WATER COOLED MAGNETIC BEARING CHILLER W/COOLING TOWER	$20,000	-$2,000	$0	$18,000
ECM # 2 - WATER COOLED MAGNETIC BEARING CHILLER W/GROUND COOLING LOOP	$20,000	-$2,000	$0	$18,000
ECM # 3 - REPLACE BOILERS	$20,000	-$2,000	$0	$18,000
ECM # 4 - VARIABLE SPEED PUMPING	$20,000	-$1,000	$0	$19,000
ECM # 5 - LIGHTING RETROFIT	$20,000	$0	$0	$20,000
ECM # 6 - SOLAR PV SYSTEM	$20,000	$0	$1,500	$21,500

Concord Engineering Group, Inc.

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

SmartStart Building Incentives

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

Electric Chillers

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

Gas Cooling

Gas Absorption Chillers	$185 - $400 per ton
Gas Engine-Driven Chillers	Calculated through custom measure path)

Desiccant Systems

	$1.00 per cfm – gas or electric

Electric Unitary HVAC

Unitary AC and Split Systems	$73 - $93 per ton
Air-to-Air Heat Pumps	$73 - $92 per ton
Water-Source Heat Pumps	$81 per ton
Packaged Terminal AC & HP	$65 per ton
Central DX AC Systems	$40- $72 per ton
Dual Enthalpy Economizer Controls	$250

Ground Source Heat Pumps

Closed Loop & Open Loop	$370 per ton

Gas Heating

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

Variable Frequency Drives

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

Natural Gas Water Heating

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

Premium Motors

Three-Phase Motors	$45 - $700 per motor

Prescriptive Lighting

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

Lighting Controls – Occupancy Sensors

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

Lighting Controls – HID or Fluorescent Hi-Bay Controls

Occupancy hi-low	$75 per fixture controlled
Daylight Dimming	$75 per fixture controlled

Other Equipment Incentives

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

TAG	MAKE	MODEL	TYPE	CAPACITY	EFFICIENCY	SERVES	LOCATION	REMAINING USEFUL LIFE	NOTES
AH-1A	TRANE	HDTCC-17	HORIZONTAL AIR HANDLER	9200 CFM, 25 TONS COOLING, 260 MBH HTG	N/A	GYM	MEZZ FAN ROOM - NEXT O GYM	3 YEARS	COOLING & HEATING COILS, MIXING BOX/FILTER, FAN, AND CARBON FILTERS.
AH-1B	TRANE	HDTCC-17	HORIZONTAL AIR HANDLER	9200 CFM, 25 TONS COOLING, 260 MBH HTG	N/A	GYM	MEZZ FAN ROOM	3 YEARS	COOLING & HEATING COILS, MIXING BOX/FILTER, FAN, AND CARBON FILTERS.
AH-2A	TRANE	HDTCC-17	HORIZONTAL AIR HANDLER	9200 CFM, NO COILS	N/A	GYM	MEZZ FAN ROOM	3 YEARS	MIXING BOX/FILTER AND FAN. NO COILS. 100% RETURN AIR.
AH-2B	TRANE	HDTCC-17	HORIZONTAL AIR HANDLER	9200 CFM, NO COILS	N/A	GYM	MEZZ FAN ROOM - NEXT O GYM	3 YEARS	MIXING BOX/FILTER AND FAN. NO COILS. 100% RETURN AIR.
AH-3	TRANE	HDTCC-14	HORIZONTAL AIR HANDLER	7000 CFM, 20 TONS COOLING, 220 MBH HTG	N/A	CAFÉ	MEZZ FAN ROOM ABOVE MUSIC ROOM	2 YEARS	MIXING BOX/FILTER, FAN AND COOLING & HEATING COILS.
AH-4	TRANE	HDTCC-12	HORIZONTAL AIR HANDLER	6000 CFM, 440 MBH HTG, NO COOLING	N/A	KITCHEN	ABOVE CEILING - RECEIVING	3 YEARS	MIXING BOX/FILTER, FAN AND HEATING COIL. NO COOLING
AH-5	TRANE	HDTCC-8	HORIZONTAL AIR HANDLER	3400 CFM, 10 TONS COOLING, 120 MBH HTG	N/A	LOBBY	MEZZ FAN ROOM ABOVE MUSIC ROOM	3 YEARS	MIXING BOX/FILTER, FAN AND COOLING & HEATING COILS.
UV-1	TRANE	-	HORIZONTAL RECESSED UNIT VENTILATOR	1500 CFM	N/A	LARGE CLASSROOMS	ABOVE CEILING IN CLASSROOM	3 YEARS	HORIZONTAL UNIT RECESSED WITH EXPOSED FACE, INTEGRAL RETURN GRILLE, COOLING AND HEATING COILS, FAN AND RETURN & OUTSIDE AIR DAMPERS.
UV-2	TRANE	-	VERTICAL UNIT VENTILATOR	1000 CFM	N/A	CLASSROOMS	FLOOR MTD ON OUTSIDE WALL IN CLASSROOM	3 YEARS	VERTICAL EXPOSED CABINET WITH INTEGRAL RETURN GRILLE, COOLING AND HEATING COILS, FAN AND OUTSIDE AIR DAMPER.
UV-3	TRANE	-	VERTICAL UNIT VENTILATOR	1250 CFM	N/A	CLASSROOMS	FLOOR MTD ON OUTSIDE WALL IN CLASSROOM	3 YEARS	VERTICAL EXPOSED CABINET WITH INTEGRAL RETURN GRILLE, COOLING AND HEATING COILS, FAN AND OUTSIDE AIR DAMPER.
UV-4	TRANE	-	HORIZONTAL RECESSED UNIT VENTILATOR	1250 CFM	N/A	CLASSROOMS	FLOOR MTD ON OUTSIDE WALL IN CLASSROOM	3 YEARS	HORIZONTAL UNIT RECESSED WITH EXPOSED FACE, INTEGRAL RETURN GRILLE, COOLING AND HEATING COILS, FAN AND RETURN & OUTSIDE AIR DAMPERS.
UV-5	TRANE	-	VERTICAL UNIT VENTILATOR	1250 CFM	N/A	CLASSROOMS	FLOOR MTD ON OUTSIDE WALL IN CLASSROOM	3 YEARS	VERTICAL EXPOSED CABINET WITH INTEGRAL RETURN GRILLE, COOLING AND HEATING COILS, FAN AND OUTSIDE AIR DAMPER.
UV-6	TRANE	-	VERTICAL UNIT VENTILATOR	1500 CFM	N/A	CLASSROOMS	FLOOR MTD ON OUTSIDE WALL IN CLASSROOM	3 YEARS	VERTICAL EXPOSED CABINET WITH INTEGRAL RETURN GRILLE, COOLING AND HEATING COILS, FAN AND OUTSIDE AIR DAMPER.
UV-7	TRANE	-	VERTICAL UNIT VENTILATOR	1000 CFM	N/A	CLASSROOMS	FLOOR MTD ON OUTSIDE WALL IN CLASSROOM	3 YEARS	VERTICAL EXPOSED CABINET WITH INTEGRAL RETURN GRILLE, COOLING AND HEATING COILS, FAN AND OUTSIDE AIR DAMPER.
UV-8	TRANE	-	HORIZONTAL RECESSED UNIT VENTILATOR	2000 CFM	N/A	CLASSROOMS	ABOVE CEILING IN CLASSROOM	3 YEARS	HORIZONTAL UNIT RECESSED WITH EXPOSED FACE, INTEGRAL RETURN GRILLE, COOLING AND HEATING COILS, FAN AND RETURN & OUTSIDE AIR DAMPERS.
UV-9	TRANE	-	HORIZONTAL RECESSED UNIT VENTILATOR	2000 CFM	N/A	CLASSROOMS	ABOVE CEILING IN CLASSROOM	3 YEARS	HORIZONTAL UNIT RECESSED WITH EXPOSED FACE, INTEGRAL RETURN GRILLE, COOLING AND HEATING COILS, FAN AND RETURN & OUTSIDE AIR DAMPERS.
UV-10	TRANE	-	VERTICAL UNIT VENTILATOR	750 CFM	N/A	CLASSROOMS	FLOOR MTD AGAINST OUTSIDE WALL IN CLASSROOM	3 YEARS	VERTICAL EXPOSED CABINET WITH INTEGRAL RETURN GRILLE, COOLING AND HEATING COILS, FAN AND OUTSIDE AIR DAMPER.
FC-1	TRANE	B-04	VERTICAL FAN COIL UNIT	400 CFM	N/A	CLASSROOMS	FLOOR MTD ON OUTSIDE WALL IN CLASSROOM	3 YEARS	VERTICAL EXPOSED CABINET WITH INTEGRAL RETURN GRILLE, COOLING AND HEATING COILS, FAN AND OUTSIDE AIR DAMPER.
FC-2	TRANE	B-06	VERTICAL FAN COIL UNIT	600 CFM	N/A	CLASSROOMS	FLOOR MTD ON OUTSIDE WALL IN CLASSROOM	3 YEARS	VERTICAL EXPOSED CABINET WITH INTEGRAL RETURN GRILLE, COOLING AND HEATING COILS, FAN AND OUTSIDE AIR DAMPER.
FC-3	TRANE	B-04	VERTICAL FAN COIL UNIT	400 CFM	N/A	CLASSROOMS	FLOOR MTD ON OUTSIDE WALL IN CLASSROOM	3 YEARS	VERTICAL EXPOSED CABINET WITH INTEGRAL RETURN GRILLE, COOLING AND HEATING COILS, FAN AND OUTSIDE AIR DAMPER.
FC-4	TRANE	B-04	VERTICAL FAN COIL UNIT	600 CFM	N/A	CLASSROOMS	FLOOR MTD ON OUTSIDE WALL IN CLASSROOM	3 YEARS	VERTICAL EXPOSED CABINET WITH INTEGRAL RETURN GRILLE, COOLING AND HEATING COILS, FAN AND OUTSIDE AIR DAMPER.

TAG	MAKE	MODEL	TYPE	CAPACITY	EFFICIENCY	SERVES	LOCATION	REMAINING USEFUL LIFE	NOTES
FC-5	TRANE	B-06	VERTICAL FAN COIL UNIT	800 CFM	N/A	CLASSROOMS	FLOOR MTD ON OUTSIDE WALL IN CLASSROOM	3 YEARS	VERTICAL EXPOSED CABINET WITH INTEGRAL RETURN GRILLE, COOLING AND HEATING COILS, FAN AND OUTSIDE AIR DAMPER.
FC-6	TRANE	B-03	VERTICAL FAN COIL UNIT	300 CFM	N/A	CLASSROOMS	FLOOR MTD ON OUTSIDE WALL IN CLASSROOM	3 YEARS	VERTICAL EXPOSED CABINET WITH INTEGRAL RETURN GRILLE, COOLING AND HEATING COILS, FAN AND OUTSIDE AIR DAMPER.
FC-8	TRANE	E36-04	HORIZONTAL RECESSED FAN COIL UNIT	400 CFM	N/A	CLASSROOMS	ABOVE CEILING IN CLASSROOM	3 YEARS	HORIZONTAL UNIT RECESSED WITH EXPOSED FACE, INTEGRAL RETURN GRILLE, COOLING AND HEATING COILS, FAN AND RETURN & OUTSIDE AIR DAMPERS.
B-1	WEIL MCLAIN	1088	HOT WATER BOILER	3103 MBH INPUT	68%	BUILDING HOT WATER LOOP	MECHANICAL ROOM	7 YEARS	B-1 & B-2, SEQUENCED FOR EQUAL OPERATING TIME.
B-2	WEIL MCLAIN	1088	HOT WATER BOILER	3103 MBH INPUT	68%	BUILDING HOT WATER LOOP	MECHANICAL ROOM	7 YEARS	B-1 & B-2, SEQUENCED FOR EQUAL OPERATING TIME.
HWP-1	TACO	-	BASE MOUNTED END SUCTION - CONSTANT SPEED	7.5 HP	N/A	UV'S & FC'S	MECHANICAL ROOM	3 YEARS	LEAD / LAG HOT WATER PUMPS RUN WITH HEATING LOAD. ONE PUMP IS STAND-BY.
HWP-2	TACO	-	BASE MOUNTED END SUCTION - CONSTANT SPEED	7.5 HP	N/A	UV'S & FC'S	MECHANICAL ROOM	3 YEARS	LEAD / LAG HOT WATER PUMPS RUN WITH HEATING LOAD. ONE PUMP IS STAND-BY.
HWP-3	TACO	-	BASE MOUNTED END SUCTION - CONSTANT SPEED	3 HP	N/A	AIR HANDLERS	MECHANICAL ROOM	3 YEARS	LEAD / LAG HOT WATER PUMPS RUN WITH HEATING LOAD. ONE PUMP IS STAND-BY.
HWP-4	TACO	-	BASE MOUNTED END SUCTION - CONSTANT SPEED	3 HP	N/A	AIR HANDLERS	MECHANICAL ROOM	3 YEARS	LEAD / LAG HOT WATER PUMPS RUN WITH HEATING LOAD. ONE PUMP IS STAND-BY.
HWP-5	TACO	-	INLINE CONSTANT SPEED	0.5 HP	N/A	UH'S	MECHANICAL ROOM	3 YEARS	LEAD / LAG HW PUMPS RUN WITH HEATING LOAD. ONE PUMP IS STAND-BY.
HWP-6	TACO	-	INLINE CONSTANT SPEED	0.5 HP	N/A	UH'S	MECHANICAL ROOM	3 YEARS	LEAD / LAG HW PUMPS RUN WITH HEATING LOAD. ONE PUMP IS STAND-BY.
CH-1	TRANE	CCACD121	RECIPROCATING COMPRESSOR	120 TONS	10 EER	BUILDING CHILLED WATER LOOP	MECHANICAL ROOM	3 YEARS	DUAL COMPRESSOR , R-22
CH-2	TRANE	CCACD121	RECIPROCATING COMPRESSOR	120 TONS	10 EER	BUILDING CHILLED WATER LOOP	MECHANICAL ROOM	3 YEARS	DUAL COMPRESSOR , R-22
CU-1	TRANE	CAUCD124	AIR COOLED CONDENSER	120 TONS	N/A	PIPED TO CH-1	ROOF-NORTHWEST SIDE	3 YEARS	MATCHED & PIPED TO CH-1, (12) 1 HP FANS ON EACH.
CU-2	TRANE	CAUCD124	AIR COOLED CONDENSER	120 TONS	N/A	PIPED TO CH-1	ROOF-NORTHWEST SIDE	3 YEARS	MATCHED & PIPED TO CH-2, (12) 1 HP FANS ON EACH.
CWP-1	TACO	-	BASE MOUNTED END SUCTION - CONSTANT SPEED	5 HP	N/A	AIR HANDLERS	MECHANICAL ROOM	3 YEARS	LEAD / LAG CHW PUMPS, ONE PUMP IS STANDBY.
CHW-2	TACO	-	BASE MOUNTED END SUCTION - CONSTANT SPEED	5 HP	N/A	AIR HANDLERS	MECHANICAL ROOM	3 YEARS	LEAD / LAG CHW PUMPS, ONE PUMP IS STANDBY.
CWP-3	TACO	-	BASE MOUNTED END SUCTION - CONSTANT SPEED	20 HP	N/A	UV'S & FC'S	MECHANICAL ROOM	3 YEARS	LEAD / LAG CHW PUMPS, ONE PUMP IS STANDBY.
CHW-4	TACO	-	BASE MOUNTED END SUCTION - CONSTANT SPEED	20 HP	N/A	UV'S & FC'S	MECHANICAL ROOM	3 YEARS	LEAD / LAG CHW PUMPS, ONE PUMP IS STANDBY.
HWH-1	PVI	20N125APG	DOMESTIC WATER HEATER & STORAGE TANK	200 MBH INPUT	83%	SCHOOL	MECHANICAL ROOM	7 YEARS	90 GAL. STORAGE, 239 GPH RECOVERY
HWH-2	PVI	20N125APG	DOMESTIC WATER HEATER & STORAGE TANK	200 MBH INPUT	83%	SCHOOL	MECHANICAL ROOM	7 YEARS	125 GAL. STORAGE, 239 GPH RECOVERY

Existing Fixtures									Proposed Fixtures										Fixtures Retrofitted			Unit Installation Cost								
Room Number	Room Name	Lighting Fixture Description	Lamps per Fixture	Foot Candles	Voltage	Watts	Qty of Fixtures	Total Watts	Existing/Replace	Description	Lamps per Fixture	Foot Candles	Watts	Qty of Fixtures	Total Watts	Wattage Reduction	Average Burn Hours	Ave $/kwh	Energy Savings, kWh	Energy Savings, $	Qty	Material Each	Labor Each	Total Each	Total Materials	Total Labor	Total All	Rebate Estimate	Simple Payback
First Floor																													
No ID	Exit Sign	2L-CFL-7W-Exit Sign	2	Existing to Remain	120	8	79	632	Relamp	2W LED	2	Unchanged	2	79	158	474	2470	$0.15	1,171	$175.62	79	$ 14.80	$ 10.00	$ 24.80	$ 1,169.20	$ 790.00	$ 1,959.20	$ -	11.2
No ID	Elec. Cl.	2L-T12-2'x4'	2	Existing to Remain	277	77	1	77	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	1	48	29	2470	$0.15	72	$10.74	1	$ 25.05	$ 60.00	$ 85.05	$ 25.05	$ 60.00	$ 85.05	$ 10.00	7.0
No ID	Gazebo	2L-Fluor.-9W	2	Existing to Remain	277	20	8	160	Existing to Remain	Existing to Remain	2	Unchanged	20	8	160	0	2470	$0.15	0	$0.00	0	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
No ID	Corridor	2L-T12-2'x2' U-Tube	2	Existing to Remain	277	77	13	1001	Relamp, Reballast	32w-T8-U energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	55	13	715	286	2470	$0.15	706	$105.96	13	$ 49.88	$ 60.00	$ 109.88	$ 648.44	$ 780.00	$ 1,428.44	$ 130.00	12.3
		2L-T12-2'x2' U-Tube	2	Existing to Remain	277	77	4	308	Relamp, Reballast	32w-T8-U energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	55	4	220	88	2470	$0.15	217	$32.60	4	$ 49.88	$ 60.00	$ 109.88	$ 199.52	$ 240.00	$ 439.52	$ 40.00	12.3
		100w HPS Dn. Lt. w/120V 100w Quartz Emerg. Lamp	1	Existing to Remain	277/120	120	1	120	Existing to Remain	Existing to Remain	1	Unchanged	120	1	120	0	2470	$0.15	0	$0.00	0	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
No ID	Covered Entrance	100w HPS-Wall Pack w/100w Quartz Emerg. Lamp	1	Existing to Remain	277	120	4	480	Existing to Remain	Existing to Remain	1	Unchanged	120	4	480	0	2470	$0.15	0	$0.00	0	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
No ID	Entry Corridor	2L-T12-2'x2' U-Tube	2	Existing to Remain	277	77	7	539	Relamp, Reballast	32w-T8-U energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	55	7	385	154	2470	$0.15	380	$57.06	7	$ 49.88	$ 60.00	$ 109.88	$ 349.16	$ 420.00	$ 769.16	$ 70.00	12.3
		2L-T12-2'x2' U-Tube	2	Existing to Remain	277	77	4	308	Relamp, Reballast	32w-T8-U energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	55	4	220	88	2470	$0.15	217	$32.60	4	$ 49.88	$ 60.00	$ 109.88	$ 199.52	$ 240.00	$ 439.52	$ 40.00	12.3
		2L-T12-1'x4'	2	Existing to Remain	277	77	16	1232	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	16	768	464	2470	$0.15	1,146	$171.91	16	$ 25.05	$ 60.00	$ 85.05	$ 400.80	$ 960.00	$ 1,360.80	$ 160.00	7.0
		2L-CFL-Down Lt	2	Existing to Remain	277	28	4	112	Existing to Remain	Existing to Remain	2	Unchanged	28	4	112	0	2470	$0.15	0	$0.00	0	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
No ID	Vestibule	2L-T12-2'x2' U-Tube	2	Existing to Remain	277	77	1	77	Relamp, Reballast	32w-T8-U energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	55	1	55	22	2470	$0.15	54	$8.15	1	$ 49.88	$ 60.00	$ 109.88	$ 49.88	$ 60.00	$ 109.88	$ 10.00	12.3
		2L-T12-2'x2' U-Tube	2	Existing to Remain	277	77	1	77	Relamp, Reballast	32w-T8-U energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	55	1	55	22	2470	$0.15	54	$8.15	1	$ 49.88	$ 60.00	$ 109.88	$ 49.88	$ 60.00	$ 109.88	$ 10.00	12.3
		100w HPS Dn. Lt. w/120V 100w Quartz Emerg. Lamp	1	Existing to Remain	277/120	120	1	120	Existing to Remain	Existing to Remain	1	Unchanged	120	1	120	0	2470	$0.15	0	$0.00	0	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
No ID	Loading Dock	100w HPS Dn. Lt	1	Existing to Remain	277	120	3	360	Existing to Remain	Existing to Remain	1	Unchanged	120	3	360	0	2470	$0.15	0	$0.00	0	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
		100w HPS Dn. Lt. w/120V 100w Quartz Emerg. Lamp	1	Existing to Remain	277/120	120	1	120	Existing to Remain	Existing to Remain	1	Unchanged	120	1	120	0	2470	$0.15	0	$0.00	0	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
No ID	Storage Rm.	2L-T12-1'x4'	2	Existing to Remain	277	77	2	154	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	2	96	58	2470	$0.15	143	$21.49	2	$ 25.05	$ 60.00	$ 85.05	$ 50.10	$ 120.00	$ 170.10	$ 20.00	7.0
No ID	Storage Rm.	2L-T12-2'x4'	2	Existing to Remain	277	77	1	77	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	1	48	29	2470	$0.15	72	$10.74	1	$ 25.05	$ 60.00	$ 85.05	$ 25.05	$ 60.00	$ 85.05	$ 10.00	7.0
No ID	Library	3L-Com. Fluor-Biax-2'x2'	3	Existing to Remain	277	128	24	3072	Existing to Remain	Existing to Remain	3	Unchanged	128	24	3072	0	2470	$0.15	0	$0.00	0	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
		3L-Comp. Fluor-Biax-2'x2' w/120V PL9 Emerg. Lamp	3	Existing to Remain	277	128	6	768	Existing to Remain	Existing to Remain	3	Unchanged	128	6	768	0	2470	$0.15	0	$0.00	0	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
		M.H. 175W Pendant Mount	1	Existing to Remain	277	210	14	2940	Existing to Remain	Existing to Remain	1	Unchanged	210	14	2940	0	2470	$0.15	0	$0.00	0	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
		1L-T12 Strip Lt.	1	Existing to Remain	277	44	24	1056	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	1	Unchanged	25	24	600	456	2470	$0.15	1,126	$168.95	24	$ 21.43	$ 60.00	$ 81.43	$ 514.32	$ 1,440.00	$ 1,954.32	$ 240.00	10.1
		1L-Halogen Par30L-Track Lt	1	Existing to Remain	120	75	6	450	Existing to Remain	Existing to Remain	1	Unchanged	75	6	450	0	2470	$0.15	0	$0.00	0	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
101, 128, 197	Corridor	2L-T12-2'x2' U-Tube	2	Existing to Remain	277	77	19	1463	Relamp, Reballast	32w-T8-U energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	55	19	1045	418	2470	$0.15	1,032	$154.87	19	$ 49.88	$ 60.00	$ 109.88	$ 947.72	$ 1,140.00	$ 2,087.72	$ 190.00	12.3
		2L-T12-2'x2' U-Tube	2	Existing to Remain	277	77	9	693	Relamp, Reballast	32w-T8-U energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	55	9	495	198	2470	$0.15	489	$73.36	9	$ 49.88	$ 60.00	$ 109.88	$ 448.92	$ 540.00	$ 988.92	$ 90.00	12.3
		100w HPS Dn. Lt. w/120V 100w Quartz Emerg. Lamp	1	Existing to Remain	277/120	120	1	120	Existing to Remain	Existing to Remain	1	Unchanged	120	1	120	0	2470	$0.15	0	$0.00	0	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
102	Classroom	3L-T12-2'x4'	3	Existing to Remain	277	121	12	1452	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	3	Unchanged	73	12	876	576	2470	$0.15	1,423	$213.41	12	$ 28.65	$ 60.00	$ 88.65	$ 343.80	$ 720.00	$ 1,063.80	$ 240.00	3.9
		2L-T12-2'x2' U-Tube	2	Existing to Remain	277	77	2	154	Relamp, Reballast	32w-T8-U energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	55	2	110	44	2470	$0.15	109	$16.30	2	$ 49.88	$ 60.00	$ 109.88	$ 99.76	$ 120.00	$ 219.76	$ 20.00	12.3
		2L-T12-2'x4'	2	Existing to Remain	277	77	2	154	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	2	96	58	2470	$0.15	143	$21.49	2	$ 25.05	$ 60.00	$ 85.05	$ 50.10	$ 120.00	$ 170.10	$ 20.00	7.0

Existing Fixtures									Proposed Fixtures										Fixtures Retrofitted			Unit Installation Cost								
Room Number	Room Name	Lighting Fixture Description	Lamps per Fixture	Foot Candles	Voltage	Watts	Qty of Fixtures	Total Watts	Existing/Replace	Description	Lamps per Fixture	Foot Candles	Watts	Qty of Fixtures	Total Watts	Wattage Reduction	Average Burn Hours	Ave $/kwh	Energy Savings, kWh	Energy Savings, $	Qty	Material Each	Labor Each	Total Each	Total Materials	Total Labor	Total All	Rebate Estimate	Simple Payback
105	Classroom	3L-T12-2'x4'	3	Existing to Remain	277	121	12	1452	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	3	Unchanged	73	12	876	576	2470	$0.15	1,423	$213.41	12	$ 28.65	$ 60.00	$ 88.65	$ 343.80	$ 720.00	$ 1,063.80	$ 240.00	3.9
		2L-T12-2'x2' U-Tube	2	Existing to Remain	277	77	2	154	Relamp, Reballast	32w-T8-U energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	55	2	110	44	2470	$0.15	109	$16.30	2	$ 49.88	$ 60.00	$ 109.88	$ 99.76	$ 120.00	$ 219.76	$ 20.00	12.3
		2L-T12-2'x4'	2	Existing to Remain	277	77	2	154	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	2	96	58	2470	$0.15	143	$21.49	2	$ 25.05	$ 60.00	$ 85.05	$ 50.10	$ 120.00	$ 170.10	$ 20.00	7.0
108	Classroom	3L-T12-2'x4'	3	Existing to Remain	277	121	12	1452	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	3	Unchanged	73	12	876	576	2470	$0.15	1,423	$213.41	12	$ 28.65	$ 60.00	$ 88.65	$ 343.80	$ 720.00	$ 1,063.80	$ 240.00	3.9
		2L-T12-2'x2' U-Tube	2	Existing to Remain	277	77	2	154	Relamp, Reballast	32w-T8-U energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	55	2	110	44	2470	$0.15	109	$16.30	2	$ 49.88	$ 60.00	$ 109.88	$ 99.76	$ 120.00	$ 219.76	$ 20.00	12.3
		2L-T12-2'x4'	2	Existing to Remain	277	77	2	154	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	2	96	58	2470	$0.15	143	$21.49	2	$ 25.05	$ 60.00	$ 85.05	$ 50.10	$ 120.00	$ 170.10	$ 20.00	7.0
111	Classroom	3L-T12-2'x4'	3	Existing to Remain	277	121	12	1452	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	3	Unchanged	73	12	876	576	2470	$0.15	1,423	$213.41	12	$ 28.65	$ 60.00	$ 88.65	$ 343.80	$ 720.00	$ 1,063.80	$ 240.00	3.9
		2L-T12-2'x2' U-Tube	2	Existing to Remain	277	77	2	154	Relamp, Reballast	32w-T8-U energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	55	2	110	44	2470	$0.15	109	$16.30	2	$ 49.88	$ 60.00	$ 109.88	$ 99.76	$ 120.00	$ 219.76	$ 20.00	12.3
		2L-T12-2'x4'	2	Existing to Remain	277	77	2	154	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	2	96	58	2470	$0.15	143	$21.49	2	$ 25.05	$ 60.00	$ 85.05	$ 50.10	$ 120.00	$ 170.10	$ 20.00	7.0
114	Classroom	3L-T12-2'x4'	3	Existing to Remain	277	121	12	1452	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	3	Unchanged	73	12	876	576	2470	$0.15	1,423	$213.41	12	$ 28.65	$ 60.00	$ 88.65	$ 343.80	$ 720.00	$ 1,063.80	$ 240.00	3.9
		2L-T12-2'x2' U-Tube	2	Existing to Remain	277	77	2	154	Relamp, Reballast	32w-T8-U energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	55	2	110	44	2470	$0.15	109	$16.30	2	$ 49.88	$ 60.00	$ 109.88	$ 99.76	$ 120.00	$ 219.76	$ 20.00	12.3
		2L-T12-2'x4'	2	Existing to Remain	277	77	2	154	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	2	96	58	2470	$0.15	143	$21.49	2	$ 25.05	$ 60.00	$ 85.05	$ 50.10	$ 120.00	$ 170.10	$ 20.00	7.0
117	Classroom	3L-T12-2'x4'	3	Existing to Remain	277	121	12	1452	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	3	Unchanged	73	12	876	576	2470	$0.15	1,423	$213.41	12	$ 28.65	$ 60.00	$ 88.65	$ 343.80	$ 720.00	$ 1,063.80	$ 240.00	3.9
		2L-T12-2'x2' U-Tube	2	Existing to Remain	277	77	2	154	Relamp, Reballast	32w-T8-U energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	55	2	110	44	2470	$0.15	109	$16.30	2	$ 49.88	$ 60.00	$ 109.88	$ 99.76	$ 120.00	$ 219.76	$ 20.00	12.3
		2L-T12-2'x4'	2	Existing to Remain	277	77	2	154	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	2	96	58	2470	$0.15	143	$21.49	2	$ 25.05	$ 60.00	$ 85.05	$ 50.10	$ 120.00	$ 170.10	$ 20.00	7.0
120	Classroom	3L-T12-2'x4'	3	Existing to Remain	277	121	12	1452	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	3	Unchanged	73	12	876	576	2470	$0.15	1,423	$213.41	12	$ 28.65	$ 60.00	$ 88.65	$ 343.80	$ 720.00	$ 1,063.80	$ 240.00	3.9
		2L-T12-2'x2' U-Tube	2	Existing to Remain	277	77	2	154	Relamp, Reballast	32w-T8-U energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	55	2	110	44	2470	$0.15	109	$16.30	2	$ 49.88	$ 60.00	$ 109.88	$ 99.76	$ 120.00	$ 219.76	$ 20.00	12.3
		2L-T12-2'x4'	2	Existing to Remain	277	77	2	154	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	2	96	58	2470	$0.15	143	$21.49	2	$ 25.05	$ 60.00	$ 85.05	$ 50.10	$ 120.00	$ 170.10	$ 20.00	7.0
125	Classroom	3L-T12-2'x4'	3	Existing to Remain	277	121	12	1452	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	3	Unchanged	73	12	876	576	2470	$0.15	1,423	$213.41	12	$ 28.65	$ 60.00	$ 88.65	$ 343.80	$ 720.00	$ 1,063.80	$ 240.00	3.9
		2L-T12-2'x2' U-Tube	2	Existing to Remain	277	77	2	154	Relamp, Reballast	32w-T8-U energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	55	2	110	44	2470	$0.15	109	$16.30	2	$ 49.88	$ 60.00	$ 109.88	$ 99.76	$ 120.00	$ 219.76	$ 20.00	12.3
		2L-T12-2'x4'	2	Existing to Remain	277	77	2	154	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	2	96	58	2470	$0.15	143	$21.49	2	$ 25.05	$ 60.00	$ 85.05	$ 50.10	$ 120.00	$ 170.10	$ 20.00	7.0
127	Spec. Proj.	2L-T12-2'x4'	2	Existing to Remain	277	77	24	1848	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	24	1152	696	2470	$0.15	1,719	$257.87	24	$ 25.05	$ 60.00	$ 85.05	$ 601.20	$ 1,440.00	$ 2,041.20	$ 240.00	7.0
129	Storage Rm.	2L-T12-2'x4'	2	Existing to Remain	277	77	1	77	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	1	48	29	2470	$0.15	72	$10.74	1	$ 25.05	$ 60.00	$ 85.05	$ 25.05	$ 60.00	$ 85.05	$ 10.00	7.0
130	Elec. Cl.	2L-T12-2'x4'	2	Existing to Remain	277	77	1	77	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	1	48	29	2470	$0.15	72	$10.74	1	$ 25.05	$ 60.00	$ 85.05	$ 25.05	$ 60.00	$ 85.05	$ 10.00	7.0
131	Sm. Group	2L-T12-2'x4'	2	Existing to Remain	277	77	6	462	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	6	288	174	2470	$0.15	430	$64.47	6	$ 25.05	$ 60.00	$ 85.05	$ 150.30	$ 360.00	$ 510.30	$ 60.00	7.0
132	Sm. Group	3L-T12-2'x4'	3	Existing to Remain	277	121	4	484	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	3	Unchanged	73	4	292	192	2470	$0.15	474	$71.14	4	$ 28.65	$ 60.00	$ 88.65	$ 114.60	$ 240.00	$ 354.60	$ 80.00	3.9

Existing Fixtures									Proposed Fixtures										Fixtures Retrofitted			Unit Installation Cost								
Room Number	Room Name	Lighting Fixture Description	Lamps per Fixture	Foot Candles	Voltage	Watts	Qty of Fixtures	Total Watts	Existing/Replace	Description	Lamps per Fixture	Foot Candles	Watts	Qty of Fixtures	Total Watts	Wattage Reduction	Average Burn Hours	Ave $/kwh	Energy Savings, kWh	Energy Savings, $	Qty	Material Each	Labor Each	Total Each	Total Materials	Total Labor	Total All	Rebate Estimate	Simple Payback
133, 148	Corridor	2L-T12-2'x2' U-Tube	2	Existing to Remain	277	77	11	847	Relamp, Reballast	32w-T8-U energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	55	11	605	242	2470	$0.15	598	$89.66	11	$ 49.88	$ 60.00	$ 109.88	$ 548.68	$ 660.00	$ 1,208.68	$ 110.00	12.3
		2L-T12-2'x2' U-Tube	2	Existing to Remain	277	77	4	308	Relamp, Reballast	32w-T8-U energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	55	4	220	88	2470	$0.15	217	$32.60	4	$ 49.88	$ 60.00	$ 109.88	$ 199.52	$ 240.00	$ 439.52	$ 40.00	12.3
		100w HPS Dn. Lt. w/120V 100w Quartz Emerg. Lamp	1	Existing to Remain	277/120	120	1	120	Existing to Remain	Existing to Remain	1	Unchanged	120	1	120	0	2470	$0.15	0	$0.00	0	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
135	Classroom	3L-T12-2'x4'	3	Existing to Remain	277	121	15	1815	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	3	Unchanged	73	15	1095	720	2470	$0.15	1,778	$266.76	15	$ 28.65	$ 60.00	$ 88.65	$ 429.75	$ 900.00	$ 1,329.75	$ 300.00	3.9
136	Classroom	3L-T12-2'x4'	3	Existing to Remain	277	121	15	1815	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	3	Unchanged	73	15	1095	720	2470	$0.15	1,778	$266.76	15	$ 28.65	$ 60.00	$ 88.65	$ 429.75	$ 900.00	$ 1,329.75	$ 300.00	3.9
137	Classroom	3L-T12-2'x4'	3	Existing to Remain	277	121	15	1815	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	3	Unchanged	73	15	1095	720	2470	$0.15	1,778	$266.76	15	$ 28.65	$ 60.00	$ 88.65	$ 429.75	$ 900.00	$ 1,329.75	$ 300.00	3.9
138	Classroom	3L-T12-2'x4'	3	Existing to Remain	277	121	15	1815	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	3	Unchanged	73	15	1095	720	2470	$0.15	1,778	$266.76	15	$ 28.65	$ 60.00	$ 88.65	$ 429.75	$ 900.00	$ 1,329.75	$ 300.00	3.9
139	Classroom	3L-T12-2'x4'	3	Existing to Remain	277	121	15	1815	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	3	Unchanged	73	15	1095	720	2470	$0.15	1,778	$266.76	15	$ 28.65	$ 60.00	$ 88.65	$ 429.75	$ 900.00	$ 1,329.75	$ 300.00	3.9
140	Classroom	3L-T12-2'x4'	3	Existing to Remain	277	121	15	1815	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	3	Unchanged	73	15	1095	720	2470	$0.15	1,778	$266.76	15	$ 28.65	$ 60.00	$ 88.65	$ 429.75	$ 900.00	$ 1,329.75	$ 300.00	3.9
142	Classroom	3L-T12-2'x4'	3	Existing to Remain	277	121	15	1815	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	3	Unchanged	73	15	1095	720	2470	$0.15	1,778	$266.76	15	$ 28.65	$ 60.00	$ 88.65	$ 429.75	$ 900.00	$ 1,329.75	$ 300.00	3.9
143	Classroom	3L-T12-2'x4'	3	Existing to Remain	277	121	15	1815	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	3	Unchanged	73	15	1095	720	2470	$0.15	1,778	$266.76	15	$ 28.65	$ 60.00	$ 88.65	$ 429.75	$ 900.00	$ 1,329.75	$ 300.00	3.9
144	Sm. Group	2L-T12-2'x4'	2	Existing to Remain	277	77	6	462	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	6	288	174	2470	$0.15	430	$64.47	6	$ 25.05	$ 60.00	$ 85.05	$ 150.30	$ 360.00	$ 510.30	$ 60.00	7.0
145	Teachers	3L-T12-2'x4'	3	Existing to Remain	277	121	4	484	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	3	Unchanged	73	4	292	192	2470	$0.15	474	$71.14	4	$ 28.65	$ 60.00	$ 88.65	$ 114.60	$ 240.00	$ 354.60	$ 80.00	3.9
146	Storage Rm.	2L-T12-2'x4'	2	Existing to Remain	277	77	1	77	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	1	48	29	2470	$0.15	72	$10.74	1	$ 25.05	$ 60.00	$ 85.05	$ 25.05	$ 60.00	$ 85.05	$ 10.00	7.0
147	Elec. Cl.	2L-T12-2'x4'	2	Existing to Remain	277	77	1	77	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	1	48	29	2470	$0.15	72	$10.74	1	$ 25.05	$ 60.00	$ 85.05	$ 25.05	$ 60.00	$ 85.05	$ 10.00	7.0
149	Special Proj.	2L-T12-2'x4'	2	Existing to Remain	277	77	24	1848	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	24	1152	696	2470	$0.15	1,719	$257.87	24	$ 25.05	$ 60.00	$ 85.05	$ 601.20	$ 1,440.00	$ 2,041.20	$ 240.00	7.0
151	Corridor	2L-T12-2'x2' U-Tube	2	Existing to Remain	277	77	19	1463	Relamp, Reballast	32w-T8-U energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	55	19	1045	418	2470	$0.15	1,032	$154.87	19	$ 49.88	$ 60.00	$ 109.88	$ 947.72	$ 1,140.00	$ 2,087.72	$ 190.00	12.3
		2L-T12-2'x2' U-Tube	2	Existing to Remain	277	77	5	385	Relamp, Reballast	32w-T8-U energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	55	5	275	110	2470	$0.15	272	$40.76	5	$ 49.88	$ 60.00	$ 109.88	$ 249.40	$ 300.00	$ 549.40	$ 50.00	12.3
		2L-CFL-Down Lt	2	Existing to Remain	277	28	2	56	Existing to Remain	Existing to Remain	2	Unchanged	28	2	56	0	2470	$0.15	0	$0.00	0	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
152	Cust.	2L-T12-2'x4'	2	Existing to Remain	277	77	1	77	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	1	48	29	2470	$0.15	72	$10.74	1	$ 25.05	$ 60.00	$ 85.05	$ 25.05	$ 60.00	$ 85.05	$ 10.00	7.0
153	Boys Toilet Rm.	2L-T12-1'x4'	2	Existing to Remain	277	77	9	693	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	9	432	261	2470	$0.15	645	$96.70	9	$ 25.05	$ 60.00	$ 85.05	$ 225.45	$ 540.00	$ 765.45	$ 90.00	7.0
		2L-T12-1'x3'	2	Existing to Remain	277	70	2	140	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	43	2	86	54	2470	$0.15	133	$20.01	2	$ 28.61	$ 60.00	$ 88.61	$ 57.22	$ 120.00	$ 177.22	$ 20.00	7.9
154	Girls Toilet Rm.	2L-T12-2'x4'	2	Existing to Remain	277	77	1	77	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	1	48	29	2470	$0.15	72	$10.74	1	$ 25.05	$ 60.00	$ 85.05	$ 25.05	$ 60.00	$ 85.05	$ 10.00	7.0
		3L-T12-2'x4'	3	Existing to Remain	277	121	4	484	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	3	Unchanged	73	4	292	192	2470	$0.15	474	$71.14	4	$ 28.65	$ 60.00	$ 88.65	$ 114.60	$ 240.00	$ 354.60	$ 80.00	3.9
		2L-T12-1'x3'	2	Existing to Remain	277	70	3	210	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	43	3	129	81	2470	$0.15	200	$30.01	3	$ 28.61	$ 60.00	$ 88.61	$ 85.83	$ 180.00	$ 265.83	$ 30.00	7.9
155	Toilet Rm.	2L-T12-2'x4'	2	Existing to Remain	277	77	1	77	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	1	48	29	2470	$0.15	72	$10.74	1	$ 25.05	$ 60.00	$ 85.05	$ 25.05	$ 60.00	$ 85.05	$ 10.00	7.0

Existing Fixtures									Proposed Fixtures										Fixtures Retrofitted			Unit Installation Cost								
Room Number	Room Name	Lighting Fixture Description	Lamps per Fixture	Foot Candles	Voltage	Watts	Qty of Fixtures	Total Watts	Existing/Replace	Description	Lamps per Fixture	Foot Candles	Watts	Qty of Fixtures	Total Watts	Wattage Reduction	Average Burn Hours	Ave $/kwh	Energy Savings, kWh	Energy Savings, $	Qty	Material Each	Labor Each	Total Each	Total Materials	Total Labor	Total All	Rebate Estimate	Simple Payback
156	Projects	3L-T12-2'x4'	3	Existing to Remain	277	121	3	363	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	3	Unchanged	73	3	219	144	2470	$0.15	356	$53.35	3	$ 28.65	$ 60.00	$ 88.65	$ 85.95	$ 180.00	$ 265.95	$ 60.00	3.9
157	Art Classroom	M.H. 175W Pendant Mount	1	Existing to Remain	277	210	10	2100	Existing to Remain	Existing to Remain	1	Unchanged	210	10	2100	0	2470	$0.15	0	$0.00	0	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
		1L-T12 Strip Lt.	1	Existing to Remain	277	44	14	616	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	1	Unchanged	25	14	350	266	2470	$0.15	657	$98.55	14	$ 21.43	$ 60.00	$ 81.43	$ 300.02	$ 840.00	$ 1,140.02	$ 140.00	10.1
		3L-Com. Fluor-Biax-2'x2'	3	Existing to Remain	277	128	6	768	Existing to Remain	Existing to Remain	3	Unchanged	128	6	768	0	2470	$0.15	0	$0.00	0	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
		3L-Comp. Fluor-Biax-2'x2' w/120V PL9 Emerg. Lamp	3	Existing to Remain	277	128	4	512	Existing to Remain	Existing to Remain	3	Unchanged	128	4	512	0	2470	$0.15	0	$0.00	0	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
158	Girls Toilet Rm.	2L-T12-2'x4'	2	Existing to Remain	277	77	1	77	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	1	48	29	2470	$0.15	72	$10.74	1	$ 25.05	$ 60.00	$ 85.05	$ 25.05	$ 60.00	$ 85.05	$ 10.00	7.0
		3L-T12-2'x4'	3	Existing to Remain	277	121	4	484	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	3	Unchanged	73	4	292	192	2470	$0.15	474	$71.14	4	$ 28.65	$ 60.00	$ 88.65	$ 114.60	$ 240.00	$ 354.60	$ 80.00	3.9
		2L-T12-1'x3'	2	Existing to Remain	277	70	3	210	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	43	3	129	81	2470	$0.15	200	$30.01	3	$ 28.61	$ 60.00	$ 88.61	$ 85.83	$ 180.00	$ 265.83	$ 30.00	7.9
159	Boys Toilet Rm.	2L-T12-1'x4'	2	Existing to Remain	277	77	10	770	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	10	480	290	2470	$0.15	716	$107.45	10	$ 25.05	$ 60.00	$ 85.05	$ 250.50	$ 600.00	$ 850.50	$ 100.00	7.0
		2L-T12-1'x3'	2	Existing to Remain	277	70	2	140	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	43	2	86	54	2470	$0.15	133	$20.01	2	$ 28.61	$ 60.00	$ 88.61	$ 57.22	$ 120.00	$ 177.22	$ 20.00	7.9
160	Cust.	2L-T12-2'x4'	2	Existing to Remain	277	77	1	77	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	1	48	29	2470	$0.15	72	$10.74	1	$ 25.05	$ 60.00	$ 85.05	$ 25.05	$ 60.00	$ 85.05	$ 10.00	7.0
161	Classroom	3L-T12-2'x4'	3	Existing to Remain	277	121	8	968	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	3	Unchanged	73	8	584	384	2470	$0.15	948	$142.27	8	$ 28.65	$ 60.00	$ 88.65	$ 229.20	$ 480.00	$ 709.20	$ 160.00	3.9
162	Corridor	2L-T12-2'x2' U-Tube	2	Existing to Remain	277	77	9	693	Relamp, Reballast	32w-T8-U energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	55	9	495	198	2470	$0.15	489	$73.36	9	$ 49.88	$ 60.00	$ 109.88	$ 448.92	$ 540.00	$ 988.92	$ 90.00	12.3
		2L-T12-2'x2' U-Tube	2	Existing to Remain	277	77	3	231	Relamp, Reballast	32w-T8-U energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	55	3	165	66	2470	$0.15	163	$24.45	3	$ 49.88	$ 60.00	$ 109.88	$ 149.64	$ 180.00	$ 329.64	$ 30.00	12.3
165	Teachers	2L-T12-2'x4'	2	Existing to Remain	277	77	4	308	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	4	192	116	2470	$0.15	287	$42.98	4	$ 25.05	$ 60.00	$ 85.05	$ 100.20	$ 240.00	$ 340.20	$ 40.00	7.0
166	Teachers	2L-T12-2'x4'	2	Existing to Remain	277	77	6	462	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	6	288	174	2470	$0.15	430	$64.47	6	$ 25.05	$ 60.00	$ 85.05	$ 150.30	$ 360.00	$ 510.30	$ 60.00	7.0
167	Storage Rm.	2L-T12-2'x4'	2	Existing to Remain	277	77	1	77	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	1	48	29	2470	$0.15	72	$10.74	1	$ 25.05	$ 60.00	$ 85.05	$ 25.05	$ 60.00	$ 85.05	$ 10.00	7.0
168	Spec. Proj.	2L-T12-2'x4'	2	Existing to Remain	277	77	24	1848	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	24	1152	696	2470	$0.15	1,719	$257.87	24	$ 25.05	$ 60.00	$ 85.05	$ 601.20	$ 1,440.00	$ 2,041.20	$ 240.00	7.0
169-174	Classroom	3L-T12-2'x4'	3	Existing to Remain	277	121	90	10890	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	3	Unchanged	73	90	6570	4320	2470	$0.15	10,670	$1,600.56	90	$ 28.65	$ 60.00	$ 88.65	$ 2,578.50	$ 5,400.00	$ 7,978.50	$ 1,800.00	3.9
177	Toilet Rm.	2L-T12-2'x4'	2	Existing to Remain	277	77	1	77	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	1	48	29	2470	$0.15	72	$10.74	1	$ 25.05	$ 60.00	$ 85.05	$ 25.05	$ 60.00	$ 85.05	$ 10.00	7.0
178	Toilet Rm.	2L-T12-2'x4'	2	Existing to Remain	277	77	1	77	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	1	48	29	2470	$0.15	72	$10.74	1	$ 25.05	$ 60.00	$ 85.05	$ 25.05	$ 60.00	$ 85.05	$ 10.00	7.0
180	Work Room	3L-T12-2'x4'	3	Existing to Remain	277	121	4	484	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	3	Unchanged	73	4	292	192	2470	$0.15	474	$71.14	4	$ 28.65	$ 60.00	$ 88.65	$ 114.60	$ 240.00	$ 354.60	$ 80.00	3.9
181	Corridor	2L-T12-2'x2' U-Tube	2	Existing to Remain	277	77	8	616	Relamp, Reballast	32w-T8-U energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	55	8	440	176	2470	$0.15	435	$65.21	8	$ 49.88	$ 60.00	$ 109.88	$ 399.04	$ 480.00	$ 879.04	$ 80.00	12.3
		2L-T12-2'x2' U-Tube	2	Existing to Remain	277	77	6	462	Relamp, Reballast	32w-T8-U energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	55	6	330	132	2470	$0.15	326	$48.91	6	$ 49.88	$ 60.00	$ 109.88	$ 299.28	$ 360.00	$ 659.28	$ 60.00	12.3
182	Technology	2L-T12-2'x4'	2	Existing to Remain	277	77	24	1848	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	24	1152	696	2470	$0.15	1,719	$257.87	24	$ 25.05	$ 60.00	$ 85.05	$ 601.20	$ 1,440.00	$ 2,041.20	$ 240.00	7.0
184	Storage Rm.	2L-T12-2'x4'	2	Existing to Remain	277	77	3	231	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	3	144	87	2470	$0.15	215	$32.23	3	$ 25.05	$ 60.00	$ 85.05	$ 75.15	$ 180.00	$ 255.15	$ 30.00	7.0
185	Work Room	2L-T12-2'x2' U-Tube	2	Existing to Remain	277	77	3	231	Relamp, Reballast	32w-T8-U energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	55	3	165	66	2470	$0.15	163	$24.45	3	$ 49.88	$ 60.00	$ 109.88	$ 149.64	$ 180.00	$ 329.64	$ 30.00	12.3

Existing Fixtures									Proposed Fixtures										Fixtures Retrofitted			Unit Installation Cost							
Room Number	Room Name	Lighting Fixture Description	Lamps per Fixture	Foot Candles	Voltage	Watts	Qty of Fixtures	Total Watts	Existing/Replace	Description	Lamps per Fixture	Foot Candles	Watts	Qty of Fixtures	Total Watts	Wattage Reduction	Average Burn Hours	Ave $/kwh	Energy Savings, kWh	Energy Savings, $	Qty	Material Each	Labor Each	Total Each	Total Materials	Total Labor	Total All	Rebate Estimate	Simple Payback
187	Spec. Ed.	2L-T12-2'x4'	2	Existing to Remain	277	77	9	693	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	9	432	261	2470	$0.15	645	$96.70	9	$ 25.05	$ 60.00	$ 85.05	$ 225.45	$ 540.00	$ 765.45	$ 90.00	7.0
		2L-T12-2'x2' U-Tube	2	Existing to Remain	277	77	1	77	Relamp, Reballast	32w-T8-U energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	55	1	55	22	2470	$0.15	54	$8.15	1	$ 49.88	$ 60.00	$ 109.88	$ 49.88	$ 60.00	$ 109.88	$ 10.00	12.3
188	Tel. Rm.	2L-T12-2'x4'	2	Existing to Remain	277	77	1	77	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	1	48	29	2470	$0.15	72	$10.74	1	$ 25.05	$ 60.00	$ 85.05	$ 25.05	$ 60.00	$ 85.05	$ 10.00	7.0
189	Storage Rm.	2L-T12-2'x4'	2	Existing to Remain	277	77	2	154	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	2	96	58	2470	$0.15	143	$21.49	2	$ 25.05	$ 60.00	$ 85.05	$ 50.10	$ 120.00	$ 170.10	$ 20.00	7.0
190	Spec. Ed.	3L-T12-2'x4'	3	Existing to Remain	277	121	6	726	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	3	Unchanged	73	6	438	288	2470	$0.15	711	$106.70	6	$ 28.65	$ 60.00	$ 88.65	$ 171.90	$ 360.00	$ 531.90	$ 120.00	3.9
191	Recpt.	2L-T12-2'x2' U-Tube	2	Existing to Remain	277	77	3	231	Relamp, Reballast	32w-T8-U energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	55	3	165	66	2470	$0.15	163	$24.45	3	$ 49.88	$ 60.00	$ 109.88	$ 149.64	$ 180.00	$ 329.64	$ 30.00	12.3
		2L-T12-2'x2' U-Tube	2	Existing to Remain	277	77	2	154	Relamp, Reballast	32w-T8-U energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	55	2	110	44	2470	$0.15	109	$16.30	2	$ 49.88	$ 60.00	$ 109.88	$ 99.76	$ 120.00	$ 219.76	$ 20.00	12.3
192	Speech	3L-T12-2'x4'	3	Existing to Remain	277	121	4	484	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	3	Unchanged	73	4	292	192	2470	$0.15	474	$71.14	4	$ 28.65	$ 60.00	$ 88.65	$ 114.60	$ 240.00	$ 354.60	$ 80.00	3.9
193	Pysch.	3L-T12-2'x4'	3	Existing to Remain	277	121	4	484	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	3	Unchanged	73	4	292	192	2470	$0.15	474	$71.14	4	$ 28.65	$ 60.00	$ 88.65	$ 114.60	$ 240.00	$ 354.60	$ 80.00	3.9
194	LOTC	3L-T12-2'x4'	3	Existing to Remain	277	121	4	484	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	3	Unchanged	73	4	292	192	2470	$0.15	474	$71.14	4	$ 28.65	$ 60.00	$ 88.65	$ 114.60	$ 240.00	$ 354.60	$ 80.00	3.9
195	Conf. Room	3L-T12-2'x4'	3	Existing to Remain	277	121	4	484	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	3	Unchanged	73	4	292	192	2470	$0.15	474	$71.14	4	$ 28.65	$ 60.00	$ 88.65	$ 114.60	$ 240.00	$ 354.60	$ 80.00	3.9
196	Guid.	3L-T12-2'x4'	3	Existing to Remain	277	121	4	484	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	3	Unchanged	73	4	292	192	2470	$0.15	474	$71.14	4	$ 28.65	$ 60.00	$ 88.65	$ 114.60	$ 240.00	$ 354.60	$ 80.00	3.9
198	Vestibule	100w HPS Dn. Lt	1	Existing to Remain	277	120	11	1320	Existing to Remain	Existing to Remain	1	Unchanged	120	11	1320	0	2470	$0.15	0	$0.00	0	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
		100w HPS Dn. Lt. w/120V 100w Quartz Emerg. Lamp	1	Existing to Remain	277/120	120	5	600	Existing to Remain	Existing to Remain	1	Unchanged	120	5	600	0	2470	$0.15	0	$0.00	0	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
		2L-T12-2'x2' U-Tube	2	Existing to Remain	277	77	2	154	Relamp, Reballast	32w-T8-U energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	55	2	110	44	2470	$0.15	109	$16.30	2	$ 49.88	$ 60.00	$ 109.88	$ 99.76	$ 120.00	$ 219.76	$ 20.00	12.3
		2L-T12-2'x2' U-Tube	2	Existing to Remain	277	77	1	77	Relamp, Reballast	32w-T8-U energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	55	1	55	22	2470	$0.15	54	$8.15	1	$ 49.88	$ 60.00	$ 109.88	$ 49.88	$ 60.00	$ 109.88	$ 10.00	12.3
199	Spec. Inst.	2L-T12-2'x4'	2	Existing to Remain	277	77	6	462	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	6	288	174	2470	$0.15	430	$64.47	6	$ 25.05	$ 60.00	$ 85.05	$ 150.30	$ 360.00	$ 510.30	$ 60.00	7.0
200	Toilet Rm.	2L-T12-2'x4'	2	Existing to Remain	277	77	1	77	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	1	48	29	2470	$0.15	72	$10.74	1	$ 25.05	$ 60.00	$ 85.05	$ 25.05	$ 60.00	$ 85.05	$ 10.00	7.0
202	Toilet Rm.	2L-T12-2'x4'	2	Existing to Remain	277	77	1	77	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	1	48	29	2470	$0.15	72	$10.74	1	$ 25.05	$ 60.00	$ 85.05	$ 25.05	$ 60.00	$ 85.05	$ 10.00	7.0
203	Nurse	2L-T12-2'x4'	2	Existing to Remain	277	77	2	154	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	2	96	58	2470	$0.15	143	$21.49	2	$ 25.05	$ 60.00	$ 85.05	$ 50.10	$ 120.00	$ 170.10	$ 20.00	7.0
		2L-T12	2	Existing to Remain	277	77	2	154	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	2	96	58	2470	$0.15	143	$21.49	2	$ 25.05	$ 60.00	$ 85.05	$ 50.10	$ 120.00	$ 170.10	$ 20.00	7.0
		3L-T12-2'x4'	3	Existing to Remain	277	121	4	484	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	3	Unchanged	73	4	292	192	2470	$0.15	474	$71.14	4	$ 28.65	$ 60.00	$ 88.65	$ 114.60	$ 240.00	$ 354.60	$ 80.00	3.9
		2L-T12-2'x2' U-Tube	2	Existing to Remain	277	77	1	77	Relamp, Reballast	32w-T8-U energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	55	1	55	22	2470	$0.15	54	$8.15	1	$ 49.88	$ 60.00	$ 109.88	$ 49.88	$ 60.00	$ 109.88	$ 10.00	12.3
208	Waiting	2L-CFL-Down Lt	2	Existing to Remain	277	26	4	104	Existing to Remain	Existing to Remain	2	Unchanged	26	4	104	0	2470	$0.15	0	$0.00	0	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
208	Janitor Closet	2L-T12-2'x4'	2	Existing to Remain	277	77	1	77	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	1	48	29	2470	$0.15	72	$10.74	1	$ 25.05	$ 60.00	$ 85.05	$ 25.05	$ 60.00	$ 85.05	$ 10.00	7.0
210	V. Prin. Office	3L-T12-2'x4'	3	Existing to Remain	277	121	8	968	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	3	Unchanged	73	8	584	384	2470	$0.15	948	$142.27	8	$ 28.65	$ 60.00	$ 88.65	$ 229.20	$ 480.00	$ 709.20	$ 160.00	3.9
211	Conf. Room	2L-CFL-Down Lt	2	Existing to Remain	277	26	6	156	Existing to Remain	Existing to Remain	2	Unchanged	26	6	156	0	2470	$0.15	0	$0.00	0	$ -	$ -	$ -	$ -	$ -	$ -	$ -	

Existing Fixtures									Proposed Fixtures										Fixtures Retrofitted			Unit Installation Cost								
Room Number	Room Name	Lighting Fixture Description	Lamps per Fixture	Foot Candles	Voltage	Watts	Qty of Fixtures	Total Watts	Existing/Replace	Description	Lamps per Fixture	Foot Candles	Watts	Qty of Fixtures	Total Watts	Wattage Reduction	Average Burn Hours	Ave $/kwh	Energy Savings, kWh	Energy Savings, $	Qty	Material Each	Labor Each	Total Each	Total Materials	Total Labor	Total All	Rebate Estimate	Simple Payback
		2L-T12-1'x4'	2	Existing to Remain	277	77	8	616	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	8	384	232	2470	$0.15	573	$85.96	8	$ 25.05	$ 60.00	$ 85.05	$ 200.40	$ 480.00	$ 680.40	$ 80.00	7.0
212	Prin. Office	3L-T12-2'x4'	3	Existing to Remain	277	121	8	968	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	3	Unchanged	73	8	584	384	2470	$0.15	948	$142.27	8	$ 28.65	$ 60.00	$ 88.65	$ 229.20	$ 480.00	$ 709.20	$ 160.00	3.9
213	Toilet Rm.	2L-T12-2'x4'	2	Existing to Remain	277	77	1	77	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	1	48	29	2470	$0.15	72	$10.74	1	$ 25.05	$ 60.00	$ 85.05	$ 25.05	$ 60.00	$ 85.05	$ 10.00	7.0
214	Toilet Rm.	2L-T12-2'x4'	2	Existing to Remain	277	77	1	77	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	1	48	29	2470	$0.15	72	$10.74	1	$ 25.05	$ 60.00	$ 85.05	$ 25.05	$ 60.00	$ 85.05	$ 10.00	7.0
215	Work Room	2L-T12-2'x2' U-Tube	2	Existing to Remain	277	77	3	231	Relamp, Reballast	32w-T8-U energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	55	3	165	66	2470	$0.15	163	$24.45	3	$ 49.88	$ 60.00	$ 109.88	$ 149.64	$ 180.00	$ 329.64	$ 30.00	12.3
216	Mail Rm	3L-T12-2'x4'	3	Existing to Remain	277	121	1	121	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	3	Unchanged	73	1	73	48	2470	$0.15	119	$17.78	1	$ 28.65	$ 60.00	$ 88.65	$ 28.65	$ 60.00	$ 88.65	$ 20.00	3.9
218	Gen. Office	3L-T12-2'x4'	3	Existing to Remain	277	121	8	968	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	3	Unchanged	73	8	584	384	2470	$0.15	948	$142.27	8	$ 28.65	$ 60.00	$ 88.65	$ 229.20	$ 480.00	$ 709.20	$ 160.00	3.9
		2L-CFL-Down Lt	2	Existing to Remain	277	26	8	208	Existing to Remain	Existing to Remain	2	Unchanged	26	8	208	0	2470	$0.15	0	$0.00	0	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
		2L-T12-2'x2' U-Tube	2	Existing to Remain	277	77	4	308	Relamp, Reballast	32w-T8-U energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	55	4	220	88	2470	$0.15	217	$32.60	4	$ 49.88	$ 60.00	$ 109.88	$ 199.52	$ 240.00	$ 439.52	$ 40.00	12.3
		2L-T12-2'x2' U-Tube	2	Existing to Remain	277	77	3	231	Relamp, Reballast	32w-T8-U energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	55	3	165	66	2470	$0.15	163	$24.45	3	$ 49.88	$ 60.00	$ 109.88	$ 149.64	$ 180.00	$ 329.64	$ 30.00	12.3
223	Storage Rm.	2L-T12-2'x4'	2	Existing to Remain	277	77	2	154	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	2	96	58	2470	$0.15	143	$21.49	2	$ 25.05	$ 60.00	$ 85.05	$ 50.10	$ 120.00	$ 170.10	$ 20.00	7.0
224	Toilet Rm.	2L-T12-1'x4'	2	Existing to Remain	277	77	1	77	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	1	48	29	2470	$0.15	72	$10.74	1	$ 25.05	$ 60.00	$ 85.05	$ 25.05	$ 60.00	$ 85.05	$ 10.00	7.0
225	Toilet Rm.	2L-T12-1'x4'	2	Existing to Remain	277	77	1	77	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	1	48	29	2470	$0.15	72	$10.74	1	$ 25.05	$ 60.00	$ 85.05	$ 25.05	$ 60.00	$ 85.05	$ 10.00	7.0
226	Classroom	3L-T12-2'x4'	3	Existing to Remain	277	121	19	2299	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	3	Unchanged	73	19	1387	912	2470	$0.15	2,253	$337.90	19	$ 28.65	$ 60.00	$ 88.65	$ 544.35	$ 1,140.00	$ 1,684.35	$ 380.00	3.9
227	Storage Rm.	3L-T12-2'x4'	3	Existing to Remain	277	121	6	726	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	3	Unchanged	73	6	438	288	2470	$0.15	711	$106.70	6	$ 28.65	$ 60.00	$ 88.65	$ 171.90	$ 360.00	$ 531.90	$ 120.00	3.9
230	Mech/Elec. Rm.	2L-T12-2'x4'	2	Existing to Remain	277	77	5	385	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	5	240	145	2470	$0.15	358	$53.72	5	$ 25.05	$ 60.00	$ 85.05	$ 125.25	$ 300.00	$ 425.25	$ 50.00	7.0
231	Storage Rm.	2L-T12-2'x4'	2	Existing to Remain	277	77	6	462	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	6	288	174	2470	$0.15	430	$64.47	6	$ 25.05	$ 60.00	$ 85.05	$ 150.30	$ 360.00	$ 510.30	$ 60.00	7.0
233	Mech/Elec. Rm.	2L-T12-1'x4'	2	Existing to Remain	277	77	8	616	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	8	384	232	2470	$0.15	573	$85.96	8	$ 25.05	$ 60.00	$ 85.05	$ 200.40	$ 480.00	$ 680.40	$ 80.00	7.0
234	Receiving	2L-T12-1'x4'	2	Existing to Remain	277	77	4	308	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	4	192	116	2470	$0.15	287	$42.98	4	$ 25.05	$ 60.00	$ 85.05	$ 100.20	$ 240.00	$ 340.20	$ 40.00	7.0
235	Generator	2L-T12-1'x4'	2	Existing to Remain	277	77	4	308	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	4	192	116	2470	$0.15	287	$42.98	4	$ 25.05	$ 60.00	$ 85.05	$ 100.20	$ 240.00	$ 340.20	$ 40.00	7.0
236	Mech/Elec. Rm.	2L-T12-1'x4'	2	Existing to Remain	277	77	9	693	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	9	432	261	2470	$0.15	645	$96.70	9	$ 25.05	$ 60.00	$ 85.05	$ 225.45	$ 540.00	$ 765.45	$ 90.00	7.0
		3L-T12-1'x4'	3	Existing to Remain	277	121	3	363	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	3	Unchanged	73	3	219	144	2470	$0.15	356	$53.35	3	$ 28.65	$ 60.00	$ 88.65	$ 85.95	$ 180.00	$ 265.95	$ 60.00	3.9
222, 237	Corridor	2L-T12-2'x2' U-Tube	2	Existing to Remain	277	77	9	693	Relamp, Reballast	32w-T8-U energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	55	9	495	198	2470	$0.15	489	$73.36	9	$ 49.88	$ 60.00	$ 109.88	$ 448.92	$ 540.00	$ 988.92	$ 90.00	12.3
		2L-T12-2'x2' U-Tube	2	Existing to Remain	277	77	5	385	Relamp, Reballast	32w-T8-U energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	55	5	275	110	2470	$0.15	272	$40.76	5	$ 49.88	$ 60.00	$ 109.88	$ 249.40	$ 300.00	$ 549.40	$ 50.00	12.3
238	Dishwash	2L-T12-1'x4'	2	Existing to Remain	277	77	2	154	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	2	96	58	2470	$0.15	143	$21.49	2	$ 25.05	$ 60.00	$ 85.05	$ 50.10	$ 120.00	$ 170.10	$ 20.00	7.0
239	Toilet Rm.	2L-T12-2'x2' U-Tube	2	Existing to Remain	277	77	1	77	Relamp, Reballast	32w-T8-U energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	55	1	55	22	2470	$0.15	54	$8.15	1	$ 49.88	$ 60.00	$ 109.88	$ 49.88	$ 60.00	$ 109.88	$ 10.00	12.3

Existing Fixtures									Proposed Fixtures										Fixtures Retrofitted			Unit Installation Cost								
Room Number	Room Name	Lighting Fixture Description	Lamps per Fixture	Foot Candles	Voltage	Watts	Qty of Fixtures	Total Watts	Existing/Replace	Description	Lamps per Fixture	Foot Candles	Watts	Qty of Fixtures	Total Watts	Wattage Reduction	Average Burn Hours	Ave $/kwh	Energy Savings, kWh	Energy Savings, $	Qty	Material Each	Labor Each	Total Each	Total Materials	Total Labor	Total All	Rebate Estimate	Simple Payback
240	Storage Rm.	2L-T12-1'x4'	2	Existing to Remain	277	77	1	77	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	1	48	29	2470	$0.15	72	$10.74	1	$ 25.05	$ 60.00	$ 85.05	$ 25.05	$ 60.00	$ 85.05	$ 10.00	7.0
243	Office	2L-T12-2'x4'	2	Existing to Remain	277	77	1	77	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	1	48	29	2470	$0.15	72	$10.74	1	$ 25.05	$ 60.00	$ 85.05	$ 25.05	$ 60.00	$ 85.05	$ 10.00	7.0
244	Kitchen	2L-T12-1'x4'	2	Existing to Remain	277	77	27	2079	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	27	1296	783	2470	$0.15	1,934	$290.10	27	$ 25.05	$ 60.00	$ 85.05	$ 676.35	$ 1,620.00	$ 2,296.35	$ 270.00	7.0
		100w-Incand. A21- 10" Recessed Fresnel Dn. Lt.	1	Existing to Remain	120	100	8	800	Replace Fixture	2L-18w-CFL Downlight w/ Electronic High Efficiency Ballast	2	Unchanged	45	8	360	440	2470	$0.15	1,087	$163.02	8	$ 150.00	$ 60.00	$ 210.00	$ 1,200.00	$ 480.00	$ 1,680.00	$ 200.00	9.1
246	Faculty Dining	2L-T12-2'x2' U-Tube	2	Existing to Remain	277	77	4	308	Relamp, Reballast	32w-T8-U energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	55	4	220	88	2470	$0.15	217	$32.60	4	$ 49.88	$ 60.00	$ 109.88	$ 199.52	$ 240.00	$ 439.52	$ 40.00	12.3
		2L-T12-2'x2' U-Tube	2	Existing to Remain	277	77	3	231	Relamp, Reballast	32w-T8-U energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	55	3	165	66	2470	$0.15	163	$24.45	3	$ 49.88	$ 60.00	$ 109.88	$ 149.64	$ 180.00	$ 329.64	$ 30.00	12.3
248	Stage/Cafeteria	M.H. 400W Recessed 2'x2' w/(2)250W Quartz Restrike	1	Existing to Remain	277/120	458	2	916	Replace Fixture	6-54w T5HO lamps with acrylic lens, heavy duty wire guard, emergency ballast, dimmable ballast, and occupancy sensor	6	Unchanged	354	2	708	208	2470	$0.15	514	$77.06	2	$ 230.00	$ 112.50	$ 342.50	$ 460.00	$ 225.00	$ 685.00	$ 200.00	6.3
		M.H. 400W Recessed 2'x2' w/(1)250W Quartz Restrike	1	Existing to Remain	277/120	458	4	1832	Replace Fixture	6-54w T5HO lamps with acrylic lens, heavy duty wire guard, emergency ballast, dimmable ballast, and occupancy sensor	6	Unchanged	354	4	1416	416	2470	$0.15	1,028	$154.13	4	$ 230.00	$ 112.50	$ 342.50	$ 920.00	$ 450.00	$ 1,370.00	$ 400.00	6.3
		M.H. 400W Recessed 2'x2' w/(3)250W Quartz Restrike	1	Existing to Remain	277/120	458	5	2290	Replace Fixture	6-54w T5HO lamps with acrylic lens, heavy duty wire guard, emergency ballast, dimmable ballast, and occupancy sensor	6	Unchanged	354	5	1770	520	2470	$0.15	1,284	$192.66	5	$ 230.00	$ 112.50	$ 342.50	$ 1,150.00	$ 562.50	$ 1,712.50	$ 500.00	6.3
249	Music Classroom	2L-T12-2'x4'	2	Existing to Remain	277	77	13	1001	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	13	624	377	2470	$0.15	931	$139.68	13	$ 25.05	$ 60.00	$ 85.05	$ 325.65	$ 780.00	$ 1,105.65	$ 130.00	7.0
		2L-T12-2'x2' U-Tube	2	Existing to Remain	277	77	1	77	Relamp, Reballast	32w-T8-U energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	55	1	55	22	2470	$0.15	54	$8.15	1	$ 49.88	$ 60.00	$ 109.88	$ 49.88	$ 60.00	$ 109.88	$ 10.00	12.3
252	Dimmer Rm.	2L-T12-2'x4'	2	Existing to Remain	277	77	1	77	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	1	48	29	2470	$0.15	72	$10.74	1	$ 25.05	$ 60.00	$ 85.05	$ 25.05	$ 60.00	$ 85.05	$ 10.00	7.0
253	Office	3L-T12-2'x4'	3	Existing to Remain	277	121	4	484	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	3	Unchanged	73	4	292	192	2470	$0.15	474	$71.14	4	$ 28.65	$ 60.00	$ 88.65	$ 114.60	$ 240.00	$ 354.60	$ 80.00	3.9
		2L-T12-1'x4'	2	Existing to Remain	277	77	2	154	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	2	96	58	2470	$0.15	143	$21.49	2	$ 25.05	$ 60.00	$ 85.05	$ 50.10	$ 120.00	$ 170.10	$ 20.00	7.0
255	Janitor Closet	2L-T12-2'x4'	2	Existing to Remain	277	77	1	77	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	1	48	29	2470	$0.15	72	$10.74	1	$ 25.05	$ 60.00	$ 85.05	$ 25.05	$ 60.00	$ 85.05	$ 10.00	7.0
256	Girls Toilet Rm.	2L-T12-1'x4'	2	Existing to Remain	277	77	5	385	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	5	240	145	2470	$0.15	358	$53.72	5	$ 25.05	$ 60.00	$ 85.05	$ 125.25	$ 300.00	$ 425.25	$ 50.00	7.0
		2L-T12-6"x48"	2	Existing to Remain	277	77	2	154	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	2	96	58	2470	$0.15	143	$21.49	2	$ 25.05	$ 60.00	$ 85.05	$ 50.10	$ 120.00	$ 170.10	$ 20.00	7.0
257	Boys Toilet Rm.	2L-T12-1'x4'	2	Existing to Remain	277	77	5	385	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	5	240	145	2470	$0.15	358	$53.72	5	$ 25.05	$ 60.00	$ 85.05	$ 125.25	$ 300.00	$ 425.25	$ 50.00	7.0
		2L-T12-6"x48"	2	Existing to Remain	277	77	2	154	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	2	96	58	2470	$0.15	143	$21.49	2	$ 25.05	$ 60.00	$ 85.05	$ 50.10	$ 120.00	$ 170.10	$ 20.00	7.0
258	Storage Rm.	2L-T12-2'x4'	2	Existing to Remain	277	77	6	462	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	6	288	174	2470	$0.15	430	$64.47	6	$ 25.05	$ 60.00	$ 85.05	$ 150.30	$ 360.00	$ 510.30	$ 60.00	7.0
259	Gymnasium	M.H. 400W Recessed 2'x2' w/(2)250W Quartz Restrike	1	Existing to Remain	277/120	458	1	458	Replace Fixture	6-54w T5HO lamps with acrylic lens, heavy duty wire guard, emergency ballast, dimmable ballast, and occupancy sensor	6	Unchanged	354	1	354	104	2470	$0.15	257	$38.53	1	$ 230.00	$ 112.50	$ 342.50	$ 230.00	$ 112.50	$ 342.50	$ 100.00	6.3
		M.H. 400W Recessed 2'x2' w/(3)250W Quartz Restrike	1	Existing to Remain	277/120	458	2	916	Replace Fixture	6-54w T5HO lamps with acrylic lens, heavy duty wire guard, emergency ballast, dimmable ballast, and occupancy sensor	6	Unchanged	354	2	708	208	2470	$0.15	514	$77.06	2	$ 230.00	$ 112.50	$ 342.50	$ 460.00	$ 225.00	$ 685.00	$ 200.00	6.3

Existing Fixtures									Proposed Fixtures										Fixtures Retrofitted			Unit Installation Cost								
Room Number	Room Name	Lighting Fixture Description	Lamps per Fixture	Foot Candles	Voltage	Watts	Qty of Fixtures	Total Watts	Existing/Replace	Description	Lamps per Fixture	Foot Candles	Watts	Qty of Fixtures	Total Watts	Wattage Reduction	Average Burn Hours	Ave $/kwh	Energy Savings, kWh	Energy Savings, $	Qty	Material Each	Labor Each	Total Each	Total Materials	Total Labor	Total All	Rebate Estimate	Simple Payback
		M.H. 400W Recessed 2'x2' w/(2)250W Quartz Restrike	1	Existing to Remain	277/120	458	6	2748	Replace Fixture	6-54w T5HO lamps with acrylic lens, heavy duty wire guard, emergency ballast, dimmable ballast, and occupancy sensor	6	Unchanged	354	6	2124	624	2470	$0.15	1,541	$231.19	6	$ 230.00	$ 112.50	$ 342.50	$ 1,380.00	$ 675.00	$ 2,055.00	$ 600.00	6.3
		M.H. 400W Recessed 2'x2' w/(2)250W Quartz Restrike	1	Existing to Remain	277/120	458	6	2748	Replace Fixture	6-54w T5HO lamps with acrylic lens, heavy duty wire guard, emergency ballast, dimmable ballast, and occupancy sensor	6	Unchanged	354	6	2124	624	2470	$0.15	1,541	$231.19	6	$ 230.00	$ 112.50	$ 342.50	$ 1,380.00	$ 675.00	$ 2,055.00	$ 600.00	6.3
		M.H. 400W Recessed 2'x2' w/(1)250W Quartz Restrike	1	Existing to Remain	277/120	458	10	4580	Replace Fixture	6-54w T5HO lamps with acrylic lens, heavy duty wire guard, emergency ballast, dimmable ballast, and occupancy sensor	6	Unchanged	354	10	3540	1040	2470	$0.15	2,569	$385.32	10	$ 230.00	$ 112.50	$ 342.50	$ 2,300.00	$ 1,125.00	$ 3,425.00	$ 1,000.00	6.3
		2L-T12-1'x4'	2	Existing to Remain	277	77	2	154	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	Unchanged	48	2	96	58	2470	$0.15	143	$21.49	2	$ 25.05	$ 60.00	$ 85.05	$ 50.10	$ 120.00	$ 170.10	$ 20.00	7.0
							25							25															
Total First Floor							**1268**	**126248**						**1268**	**86519**	**39729**			**98,131**	**$14,719.59**	**1113**				**$ 41,466.69**	**$ 64,720.00**	**$ 106,186.69**	**$ 17,940.00**	
Exterior																													
No Id		100w HPS-Wall Pack w/100w Quartz Emerg. Lamp	1	Existing to Remain	277	120	17	2040	Existing to Remain	Existing to Remain	1	Unchanged	120	17	2040	0	2470	$0.15	0	$0.00	0	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
No Id		1L-HPS-Wall Pack	1	Existing to Remain	277	188	25	4700	Existing to Remain	Existing to Remain	1	Unchanged	188	25	4700	0	2470	$0.15	0	$0.00	0	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
No Id		2L-HPS-Pole Mount	2	Existing to Remain	277	920	4	3680	Existing to Remain	Existing to Remain	2	Unchanged	920	4	3680	0	2470	$0.15	0	$0.00	0	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
No Id		1L-HPS-Pole Mount	1	Existing to Remain	277	460	14	6440	Existing to Remain	Existing to Remain	1	Unchanged	460	14	6440	0	2470	$0.15	0	$0.00	0	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
Total Exterior							**60**	**16860**						**60**	**16860**	**0**			**0**	**$0.00**	**0**				**$ -**	**$ -**	**$ -**	**0**	

Indian Fields Elementary School - PV Solar Financials
Self Financed 90%-20 Year Term-5.0% Interest Rate

Total Project Cost	$2,440,000	System Size (kW)	305	Tax Rate	0.0%
		Utility Rate ($/kWh)	$0.1500		
Net Project Cost	$2,440,000	Utility Rate Inflation	3.00%		
Percent Financed	**90%**	REC Value ($/kWh)	$0.350		
Capital Outlay	$244,000	Term (years)	**20**		
Financing Principal	$2,196,000	Rate	**5.0%**		

Year	0	1	2	3	4	5	6	7	8	9	10	11	12
Solar Generation (kWh)		470,174	467,823	465,484	463,157	460,841	458,537	456,244	453,963	451,693	449,434	447,187	444,951
Utility Rate per kWh		$0.150	$0.155	$0.159	$0.164	$0.169	$0.174	$0.179	$0.184	$0.190	$0.196	$0.202	$0.208
Federal Tax Credit		$0											
Cash effect of depreciation		$0	$0	$0	$0	$0	$0						
Avoided Utility Pmnt (from Solar Generation)		$70,526	$72,279	$74,075	$75,916	$77,802	$79,735	$81,717	$83,748	$85,829	$87,961	$90,147	$92,388
Revenue from REC Sale		$164,561	$163,738	$162,919	$162,105	$161,294	$160,488	$159,685	$158,887	$158,093	$157,302	$156,516	$155,733
Subtotal		$235,087	$236,017	$236,994	$238,020	$239,096	$240,223	$241,402	$242,634	$243,921	$245,264	$246,663	$248,120
Finance payment		($176,213)	($176,213)	($176,213)	($176,213)	($176,213)	($176,213)	($176,213)	($176,213)	($176,213)	($176,213)	($176,213)	($176,213)
Interest expense		($109,800)	($106,479)	($102,993)	($99,332)	($95,488)	($91,451)	($87,213)	($82,763)	($78,091)	($73,185)	($68,033)	($62,624)
Operations & Maintenance		$0	$0	$0	$0	$0	$2,293	$2,384	$2,480	$2,579	$2,682	$2,789	$2,901
Subtotal		($109,800)	($106,479)	($102,993)	($99,332)	($95,488)	($89,159)	($84,829)	($80,284)	($75,512)	($70,503)	($65,244)	($59,723)
Net Savings		$125,287	$129,537	$134,002	$138,689	$143,609	$151,065	$156,573	$162,351	$168,409	$174,761	$181,419	$188,397
Taxes on net savings (no tax on principle payment)		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Net savings after taxes		$125,287	$129,537	$134,002	$138,689	$143,609	$151,065	$156,573	$162,351	$168,409	$174,761	$181,419	$188,397
Principal Payment		($66,413)	($69,733)	($73,220)	($76,881)	($80,725)	($84,761)	($88,999)	($93,449)	($98,122)	($103,028)	($108,179)	($113,588)
Net Cash Flow After Taxes	($244,000)	$58,874	$59,804	$60,781	$61,808	$62,884	$66,303	$67,574	$68,902	$70,287	$71,733	$73,240	$74,809
Cumulative savings before taxes		$125,287	$254,824	$388,826	$527,515	$671,123	$822,188	$978,761	$1,141,112	$1,309,521	$1,484,282	$1,665,701	$1,854,098

Year	13	14	15	16	17	18	19	20	21	22	23	24	25
Solar Generation (kWh)	442,727	440,513	438,310	436,119	433,938	431,769	429,610	427,462	425,324	423,198	421,082	418,976	416,881
Utility Rate per kWh	$0.214	$0.220	$0.227	$0.234	$0.241	$0.248	$0.255	$0.263	$0.271	$0.279	$0.287	$0.296	$0.305
Federal Tax Credit													
Subtotal													
Avoided Utility Pmnt (from Solar Generation)	$94,683	$97,036	$99,448	$101,919	$104,452	$107,047	$109,707	$112,433	$115,227	$118,091	$121,025	$124,033	$127,115
Revenue from REC sale	$154,954	$154,180	$153,409	$152,642	$151,878	$151,119	$150,363	$149,612	$148,864	$148,119	$147,379	$146,642	$145,908
Subtotal	$249,638	$251,216	$252,856	$254,560	$256,330	$258,166	$260,071	$262,045	$264,091	$266,210	$268,404	$270,675	$273,024
Finance payment	($176,213)	($176,213)	($176,213)	($176,213)	($176,213)	($176,213)	($176,213)	($176,213)	$0	$0	$0	$0	$0
Interest expense	($56,945)	($50,982)	($44,720)	($38,145)	($31,242)	($23,994)	($16,383)	($8,391)	$0	$0	$0	$0	$0
Operations & Maintenance	$3,017	$3,138	$3,263	$3,394	$3,529	$3,671	$3,817	$3,970	$4,129	$4,294	$4,466	$4,645	$4,830
Subtotal	($53,928)	($47,844)	($41,457)	($34,752)	($27,713)	($20,323)	($12,565)	($4,421)	$4,129	$4,294	$4,466	$4,645	$4,830
Net Savings	$195,710	$203,372	$211,399	$219,809	$228,617	$237,843	$247,506	$257,624	$268,220	$270,504	$272,870	$275,319	$277,854
Taxes on net savings (no tax on principle payment)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Net savings after taxes	$195,710	$203,372	$211,399	$219,809	$228,617	$237,843	$247,506	$257,624	$268,220	$270,504	$272,870	$275,319	$277,854
Principal Payment	($119,268)	($125,231)	($131,493)	($138,067)	($144,971)	($152,219)	($159,830)	($167,822)	$0	$0	$0	$0	$0
Net Cash Flow After Taxes	$76,442	$78,141	$79,907	$81,741	$83,647	$85,624	$87,675	$89,803	$268,220	$270,504	$272,870	$275,319	$277,854
Cumulative savings before taxes	$2,049,808	$2,253,179	$2,464,579	$2,684,387	$2,913,005	$3,150,848	$3,398,354	$3,655,978	$3,924,198	$4,194,702	$4,467,572	$4,742,891	$5,020,745

Internal Rate of Return After Taxes	27%
NPV of After Tax Cash Flows	$617,674
NPV Discount Rate	8.00%

These Figures are estimates for discussion only.

Indian Fields Elementary School - PV Solar Financials
Purchase

Total Project Cost	**$2,440,000**	**System Size (kW)**	**305**	Tax Rate	0.0%
		Utility Rate ($/kWh)	$0.1500		
		Utility Rate Inflation	3.00%		
		REC Value ($/kWh) year 1-25	$0.350		
Capital Outlay	$2,440,000				

Year	0	1	2	3	4	5	6	7	8	9	10	11	12
Solar Generation (kWh)		470,174	467,823	465,484	463,157	460,841	458,537	456,244	453,963	451,693	449,434	447,187	444,951
Utility Rate per kWh		$0.150	$0.155	$0.159	$0.164	$0.169	$0.174	$0.179	$0.184	$0.190	$0.196	$0.202	$0.208
Capital Outlay	($2,440,000)												
Tax Credit		$0											
Cash effect of depreciation		$0	$0	$0	$0	$0	$0						
Avoided Utility Pmnt (from Solar Generation)		$70,526	$72,279	$74,075	$75,916	$77,802	$79,735	$81,717	$83,748	$85,829	$87,961	$90,147	$92,388
Revenue from REC Sale		$164,561	$163,738	$162,919	$162,105	$161,294	$160,488	$159,685	$158,887	$158,093	$157,302	$156,516	$155,733
Subtotal		$235,087	$236,017	$236,994	$238,020	$239,096	$240,223	$241,402	$242,634	$243,921	$245,264	$246,663	$248,120
Operations & Maintenance		$0	$0	$0	$0	$0	$2,293	$2,384	$2,480	$2,579	$2,682	$2,789	$2,901
Subtotal		$0	$0	$0	$0	$0	$2,293	$2,384	$2,480	$2,579	$2,682	$2,789	$2,901
Net Savings		$235,087	$236,017	$236,994	$238,020	$239,096	$242,516	$243,787	$245,114	$246,500	$247,946	$249,452	$251,021
Taxes on net savings		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Net Savings after taxes	($2,440,000)	$235,087	$236,017	$236,994	$238,020	$239,096	$242,516	$243,787	$245,114	$246,500	$247,946	$249,452	$251,021
Cumulative Savings	$0	$235,087	$471,104	$708,098	$946,118	$1,185,215	$1,427,731	$1,671,517	$1,916,631	$2,163,132	$2,411,077	$2,660,530	$2,911,551

Year	13	14	15	16	17	18	19	20	21	22	23	24	25
Solar Generation (kWh)	442,727	440,513	438,310	436,119	433,938	431,769	429,610	427,462	425,324	423,198	421,082	418,976	416,881
Utility Rate per kWh	$0.214	$0.220	$0.227	$0.234	$0.241	$0.248	$0.255	$0.263	$0.271	$0.279	$0.287	$0.296	$0.305
Avoided Utility Pmnt (from Solar Generation)	$94,683	$97,036	$99,448	$101,919	$104,452	$107,047	$109,707	$112,433	$115,227	$118,091	$121,025	$124,033	$127,115
Revenue from REC sale	$154,954	$154,180	$153,409	$152,642	$151,878	$151,119	$150,363	$149,612	$148,864	$148,119	$147,379	$146,642	$145,908
Subtotal	$249,638	$251,216	$252,856	$254,560	$256,330	$258,166	$260,071	$262,045	$264,091	$266,210	$268,404	$270,675	$273,024
Operations & Maintenance	$3,017	$3,138	$3,263	$3,394	$3,529	$3,671	$3,817	$3,970	$4,129	$4,294	$4,466	$4,645	$4,830
Subtotal	$3,017	$3,138	$3,263	$3,394	$3,529	$3,671	$3,817	$3,970	$4,129	$4,294	$4,466	$4,645	$4,830
Net Savings	$252,655	$254,353	$256,119	$257,954	$259,859	$261,837	$263,888	$266,015	$268,220	$270,504	$272,870	$275,319	$277,854
Taxes on net savings	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Net savings after taxes	$252,655	$254,353	$256,119	$257,954	$259,859	$261,837	$263,888	$266,015	$268,220	$270,504	$272,870	$275,319	$277,854
Cumulative Savings	$3,164,206	$3,418,559	$3,674,678	$3,932,633	$4,192,492	$4,454,329	$4,718,217	$4,984,232	$5,252,452	$5,522,956	$5,795,826	$6,071,145	$6,348,999

After Tax IRR	8.9%
NPV of Net Savings After Taxes	$186,268
NPV Discount Rate	8.00%

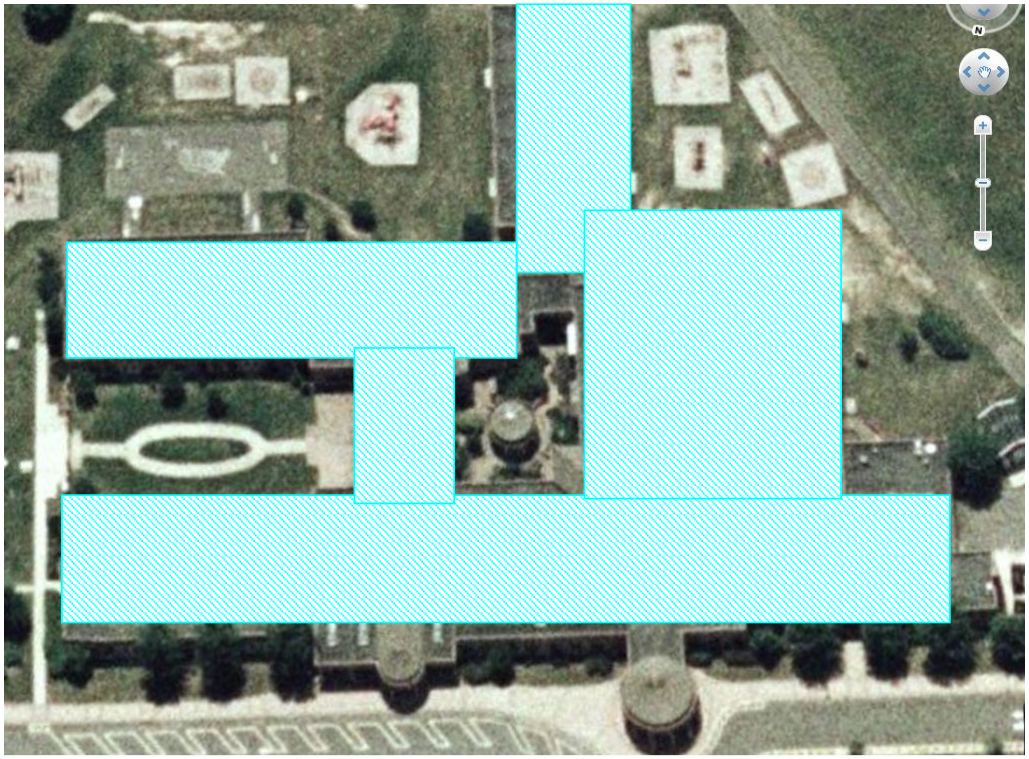
Indian Fields Elementary School - PV Solar Financials
Depreciation Calculations

Project Cost	$2,440,000
NJ BPU Grant	$0
Net Project Cost	$2,440,000
Federal Tax Credit	$0
Federal Depreciation Basis	$0
Federal Tax Rate	0%

Year	0	1	2	3	4	5	6	7	8	9	10	11	12
Depreciation percentage - Federal		20.00%	32.00%	19.20%	11.52%	11.52%	5.76%						
MACRS Depreciation Amount - Federal		$0	$0	$0	$0	$0	$0						
Federal Tax Credit		$0											
Cash effect of Federal depreciation		$0	$0	$0	$0	$0	$0						
Total Annual tax savings on depreciation		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0

These figures are estimates for discussion only. Actual results and depreciation methods may vary.

Building	Roof Area (sq ft)	Panel	Qty	Panel Sq Ft	Panel Total Sq Ft	Total KW	Total Annual kWh	Panel Weight (33 lbs)	W/SQFT
Indian Fields Elementary	64,000	Sunpower SPR305-WHT	1000	19.3	19,272	305.00	470,174	33,000	15.83



NORTH

OMB No. 2060-0347

STATEMENT OF ENERGY PERFORMANCE
Indian Fields Elementary School

Building ID: 1694732
For 12-month Period Ending: May 31, 2008[1]
Date SEP becomes ineligible: N/A

Date SEP Generated: April 02, 2009

Facility
Indian Fields Elementary School
Dayton James Road
South Brunswick, NJ 08852

Facility Owner
N/A

Primary Contact for this Facility
N/A

Year Built: 1990
Gross Floor Area (ft²): 81,000

Energy Performance Rating[2] (1-100) 18

Site Energy Use Summary[3]

Natural Gas (kBtu)[4]	3,819,500
Electricity (kBtu)	3,487,746
Total Energy (kBtu)	7,307,246

Energy Intensity[5]

Site (kBtu/ft²/yr)	90
Source (kBtu/ft²/yr)	193

Emissions (based on site energy use)

Greenhouse Gas Emissions ($MtCO_2e$/year)	734

Electric Distribution Utility
PSE&G - Public Service Elec & Gas Co

National Average Comparison

National Average Site EUI	66
National Average Source EUI	142
% Difference from National Average Source EUI	36%
Building Type	K-12 School

Stamp of Certifying Professional

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

Certifying Professional
N/A

Meets Industry Standards[6] **for Indoor Environmental Conditions:**

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

Notes:
1. Application for the ENERGY STAR must be submitted to EPA within 4 months of the Period Ending date. Award of the ENERGY STAR is not final until approval is received from EPA.
2. The EPA Energy Performance Rating is based on total source energy. A rating of 75 is the minimum to be eligible for the ENERGY STAR.
3. Values represent energy consumption, annualized to a 12-month period.
4. 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	☑
Building Name	Indian Fields Elementary School	Is this the official building name to be displayed in the ENERGY STAR Registry of Labeled Buildings?		☐
Type	K-12 School	Is this an accurate description of the space in question?		☐
Location	Dayton James Road, South Brunswick, NJ 08852	Is this address accurate and complete? Correct weather normalization requires an accurate zip code.		☐
Single Structure	Single Facility	Does this SEP represent a single structure? SEPs cannot be submitted for multiple-building campuses (with the exception of acute care or children's hospitals) nor can they be submitted as representing only a portion of a building		☐

Elementary School (K-12 School)

CRITERION	VALUE AS ENTERED IN PORTFOLIO MANAGER	VERIFICATION QUESTIONS	NOTES	☑
Gross Floor Area	81,000 Sq. Ft.	Does this square footage include all supporting functions such as kitchens and break rooms used by staff, storage areas, administrative areas, elevators, stairwells, atria, vent shafts, etc. Also note that existing atriums should only include the base floor area that it occupies. Interstitial (plenum) space between floors should not be included in the total. Finally gross floor area is not the same as leasable space. Leasable space is a subset of gross floor area.		☐
Open Weekends?	Yes	Is this building normally open at all on the weekends? This includes activities beyond the work conducted by maintenance, cleaning, and security personnel. Weekend activity could include any time when the space is used for classes, performances or other school or community activities. If the building is open on the weekend as part of the standard schedule during one or more seasons, the building should select ?yes? for open weekends. The ?yes? response should apply whether the building is open for one or both of the weekend days.		☐
Number of PCs	50	Is this the number of personal computers in the K12 School?		☐
Number of walk-in refrigeration/freezer units	1	Is this the total number of commercial walk-in type freezers and coolers? These units are typically found in storage and receiving areas.		☐
Presence of cooking facilities	Yes	Does this school have a dedicated space in which food is prepared and served to students? If the school has space in which food for students is only kept warm and/or served to students, or has only a galley that is used by teachers and staff then the answer is "no".		☐
Percent Cooled	100 %	Is this the percentage of the total floor space within the facility that is served by mechanical cooling equipment?		☐
Percent Heated	100 %	Is this the percentage of the total floor space within the facility that is served by mechanical heating equipment?		☐

Months	12 (Optional)	Is this school in operation for at least 8 months of the year?		☐
High School?	Yes	Is this building a high school (teaching grades 10, 11, and/or 12)? If the building teaches to high school students at all, the user should check 'yes' to 'high school'. For example, if the school teaches to grades K-12 (elementary/middle and high school), the user should check 'yes' to 'high school'.		☐

ENERGY STAR® Data Checklist for Commercial Buildings

Energy Consumption

Power Generation Plant or Distribution Utility: PSE&G - Public Service Elec & Gas Co

Fuel Type: Electricity

Meter: Electic Meter (kWh)
Space(s): Entire Facility

Start Date	End Date	Energy Use (kWh)
05/01/2008	05/31/2008	88,600.00
04/01/2008	04/30/2008	78,200.00
03/01/2008	03/31/2008	72,600.00
02/01/2008	02/29/2008	72,200.00
01/01/2008	01/31/2008	78,600.00
12/01/2007	12/31/2007	66,600.00
11/01/2007	11/30/2007	74,200.00
10/01/2007	10/31/2007	100,200.00
09/01/2007	09/30/2007	111,000.00
08/01/2007	08/31/2007	90,800.00
07/01/2007	07/31/2007	90,000.00
06/01/2007	06/30/2007	99,200.00
Electic Meter Consumption (kWh)		**1,022,200.00**
Electic Meter Consumption (kBtu)		**3,487,746.40**
Total Electricity Consumption (kBtu)		**3,487,746.40**
Is this the total Electricity consumption at this building including all Electricity meters?		☐

Fuel Type: Natural Gas

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

Start Date	End Date	Energy Use (therms)
05/01/2008	05/31/2008	804.00
04/01/2008	04/30/2008	1,626.00
03/01/2008	03/31/2008	6,369.00
02/01/2008	02/29/2008	6,851.00
01/01/2008	01/31/2008	7,715.00
12/01/2007	12/31/2007	7,559.00
11/01/2007	11/30/2007	5,751.00
10/01/2007	10/31/2007	880.00
09/01/2007	09/30/2007	175.00

08/01/2007	08/31/2007	151.00
07/01/2007	07/31/2007	147.00
06/01/2007	06/30/2007	167.00
Gas Meter Consumption (therms)		**38,195.00**
Gas Meter Consumption (kBtu)		**3,819,500.00**
Total Natural Gas Consumption (kBtu)		**3,819,500.00**
Is this the total Natural Gas consumption at this building including all Natural Gas meters?		☐

Additional Fuels	
Do the fuel consumption totals shown above represent the total energy use of this building? Please confirm there are no additional fuels (district energy, generator fuel oil) used in this facility.	☐

Certifying Professional

(When applying for the ENERGY STAR, this must be the same 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
Indian Fields Elementary School
Dayton James Road
South Brunswick, NJ 08852

Facility Owner
N/A

Primary Contact for this Facility
N/A

General Information

Indian Fields Elementary School	
Gross Floor Area Excluding Parking: (ft^2)	81,000
Year Built	1990
For 12-month Evaluation Period Ending Date:	May 31, 2008

Facility Space Use Summary

Elementary School	
Space Type	K-12 School
Gross Floor Area(ft^2)	81,000
Open Weekends?	Yes
Number of PCs	50
Number of walk-in refrigeration/freezer units	1
Presence of cooking facilities	Yes
Percent Cooled	100
Percent Heated	100
Months[o]	12
High School?	Yes
School District[o]	South Brunswick

Energy Performance Comparison

	Evaluation Periods		Comparisons		
Performance Metrics	**Current** (Ending Date 05/31/2008)	**Baseline** (Ending Date 05/31/2008)	**Rating of 75**	**Target**	**National Average**
Energy Performance Rating	18	18	75	N/A	50
Energy Intensity					
Site (kBtu/ft^2)	90	90	52	N/A	66
Source (kBtu/ft^2)	193	193	111	N/A	142
Energy Cost					
$/year	N/A	N/A	N/A	N/A	N/A
$/$ft^2$/year	N/A	N/A	N/A	N/A	N/A
Greenhouse Gas Emissions					
$MtCO_2e$/year	734	734	421	N/A	539
$kgCO_2e/ft^2$/year	9	9	5	N/A	7

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