ROXBURY TOWNSHIP BOARD OF EDUCATION
JEFFERSON ELEMENTARY SCHOOL
ENERGY ASSESSMENT

for

NEW JERSEY
BOARD OF PUBLIC UTILITIES

CHA PROJECT NO. 24454

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REPORT DISCLAIMER

This audit was conducted in accordance with the standards developed by the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) for a Level II audit. Cost and savings calculations for a given measure were estimated to within ±20%, and are based on data obtained from the owner, data obtained during site observations, professional experience, historical data, and standard engineering practice. Cost data does not include soft costs such as engineering fees, legal fees, project management fees, financing, etc.

A thorough walkthrough of the facility was performed, which included gathering nameplate information and operating parameters for all accessible equipment and lighting systems. Unless otherwise stated, model, efficiency, and capacity information included in this report were collected directly from equipment nameplates and /or from documentation provided by the owner during the site visit. Typical operation and scheduling information was obtained from interviewing facility staff and spot measurements taken in the field.

1.0 EXECUTIVE SUMMARY

The Roxbury Board of Education recently engaged CHA to perform an energy audit in connection with the New Jersey Board of Public Utilities' Local Government Energy Audit Program. This report details the results of the energy audit conducted for:

Building Name	Address	Square Feet	Construction Date
Jefferson Elementary School	Corn Hollow Road, Succasunna, NJ 07876	46,870	Original: 1963 Addition: 2006

The Energy Conservation Measures (ECMs) identified in this report will allow for a more efficient use of energy and if pursued have the opportunity to qualify for the New Jersey SmartStart Buildings Program. Potential annual savings of $14,500 for the recommended ECMs may be realized with a combined payback of 3.6 years. A summary of the costs, savings, and paybacks for the recommended ECMs follows:

Summary of Energy Conservation Measures							
Energy Conservation Measure		Approx. Costs ($)	Approx. Savings ($/year)	Payback (Years) w/o Incentive	Potential Incentive ($)*	Payback (Years) w/ Incentive	Recommended For Implementation
ECM-1	Install Condensing Boilers	75,000	1,400	>20	1,300	>20	
ECM-2	Replace Electric DHW Heaters with Condensing Tankless DHW	23,000	8,400	2.7	3,700	2.3	X
ECM-3	Install Demand Control Ventilation in Gymnasium	9,000	1,100	8.2	100	8.1	X
ECM-4	Install a Network Computer Power Management System	2,000	1,200	1.7	0	1.7	X
ECM-5	Replace Existing Windows With Higher Thermal Efficiency	286,000	1,600	>20	0	>20	
ECM-6	Replace Existing Roof	937,000	1,900	>20	0	>20	
ECM-7	Lighting Replacement / Upgrades	6,000	3,800	1.6	1,040	1.3	X
ECM-8	Install Lighting Controls (Occupancy Sensors)	32,000	5,900	5.4	5,600	4.5	
ECM-9	Lighting Replacements with Lighting Controls (Occupancy Sensors)	38,000	9,200	4.1	6,600	3.4	
ECM-10	Install Low Flow Fixtures	65,000	700	>20	0	>20	

2.0 INTRODUCTION AND BACKGROUND

New Jersey's Clean Energy Program, funded by the New Jersey Board of Public Utilities, supports energy efficiency and sustainability for Municipal and Local Government Energy Audits. Through the support of a utility trust fund, New Jersey is able to assist state and local authorities in reducing energy consumption while increasing comfort.

The Jefferson Elementary School is a pre-k through fourth grade school located in Succasunna, NJ. It is a 46,870 square foot, single story structure with exterior block facing. The building was constructed with single pane aluminum framed windows and a flat, rubber membrane type roof. Some windows have been upgraded to double pane aluminum frame windows. The building was constructed in 1963. Cooling is provided by a number of roof-top units that serve various areas of the school. Heating is provided by two Burderus hot water boilers located in the main boiler room. There are two electric domestic hot water heaters that serve the school. Occupancy includes approximately 450 students and 60 employees, totaling 510 people. The building is assumed fully occupied from 8:00 am to 3:30 pm during the weekdays, with some maintenance and cleaning personnel operating later.

3.0 EXISTING CONDITIONS

3.1 Building - General

Built in 1963 with one renovation in 2006, the Jefferson Elementary School is a 46,870 square foot, single-story facility with office space, classrooms, gymnasium and auditorium. The building can be assumed to be fully occupied until 3:30 pm during the week. Custodial staff is typically in the building after hours during the week. The hours of operation are:

- Monday through Friday 8:00 am to 3:30 pm
- Saturday & Sunday, open as needed

The building is constructed of block walls and brick veneer with an air space between. The interior walls are a mixture of painted block walls and framed walls filled with fiberglass insulation and finished with gypsum board. The building is typical square shaped with main hallways and classrooms on either side. There is a courtyard in the center of the building. The building has exposed walls in all directions, and appeared to be in good condition at the time of the site visit. The windows include single pane aluminum frame windows in the original construction and double pane thermally sealed windows in the 2006 addition.

3.2 Utility Usage

Utilities include electricity, natural gas, and potable water. Electricity is delivered by Jersey Central Power & Light and supplied by Direct Energy. Electricity supply bills were not obtained and therefore the electricity rate is skewed. Natural gas supplied by Hess and delivered by New Jersey Natural Gas. Water is paid for through New Jersey American Water.

The building has one electric meter serving the site. From June 2011 through May 2012, the electric usage for the facility was as follows:

Actual Cost & Site Usage by Utility

Electric		
Annual Usage	342,000	kWh/yr
Annual Cost	80,185	$
Blended Rate	0.234	$/kWh
Supply Rate	0.215	$/kWh
Demand Rate	4.57	$/kW
Peak Demand	143.4	kW
Min. Demand	107.1	kW
Avg. Demand	120.6	kW
Natural Gas		
Annual Usage	11,322	therms/yr
Annual Cost	14,295	$
Rate	1.26	$/Therm

Electrical usage was generally higher in the summer months when air conditioning equipment was operational. Natural gas consumption was highest in winter months for heating. See Appendix A for a detailed utility analysis.

Under New Jersey's energy deregulation law, the supply portion of the electric (or natural gas) bill is separated from the delivery portion. With the supply portion open to competition, customers can shop around for the best price on their energy supplies. Their electric and natural gas distribution utilities will still deliver those supplies through their wires and pipes – and respond to emergencies, should they arise – regardless of where those supplies are purchased. Purchasing your energy supplies from a company other than your electric or gas utility is purely an economic decision; it has no impact on the reliability or safety of your service. Additional information on selecting a third party energy supplier is available here: http://www.state.nj.us/bpu/commercial/shopping.html. See Appendix A for a list of third-party energy suppliers licensed by the Board of Public Utilities to sell within the building's service area.

3.3 HVAC Systems

Heat is provided by two Buderus 378 MBH boilers which were installed in 1996. They are located in the main boiler room within the facility. These units have a rated efficiency of 83%. The boilers provide heating hot water to the school's Lennox rooftop units. Cooling is provided by direct expansion (DX) units on the roof that were installed in 2006. There is a total of 25 tons of cooling within the school.

Heating hot water is distributed throughout the building with two Armstrong G158 5 HP pumps. The pumps operate in lead/lag fashion.

Typically each classroom is served by a unit ventilator, which consists of heating/cooling coils, a circulation fan, outdoor air and return air dampers and temperature controls. During our audit we found that the unit ventilators are turned off due to comfort and/ or noise issues. When the units are "off", the dampers are closed and no outdoor air is being introduced through the unit, therefore the heating load on the unit is much diminished. Replacing the existing unit ventilators with new units would require that the outside air quantity be provided to each classroom to meet the present code requirements which would result in an increase in energy use verses the current units. Although modern controls can help reduce the amount of energy used, ultimately the new unit ventilators will consume more energy than the present units.

The restrooms, classrooms and corridors are ventilated using roof mounted exhaust fans.

More details on the mechanical equipment can be found within Appendix B.

3.4 Lighting/Electrical Systems

Since building construction, the facility has re-ballasted and re-lamped some of their fixtures. A mixture of T8 bulbs, compact fluorescent twin biaxial bulbs and compact fluorescent spiral bulbs are utilized. Older style incandescent bulbs are also used in select areas. The gymnasium uses 1000 W metal halide lighting. The primary source of control for the lights is switches manually turned off at the end of the day.

3.5 Plumbing Systems

3.6.1 Domestic Hot Water System

Domestic hot water is provided by two separate tank-type electric domestic hot water heaters located in different parts of the building. The main unit is a 50 kW 200 gallon Hubbell water heater. There is also one 15 kW A.O. Smith electric water heater that has a 120 gal tank.

3.6.2 Plumbing Fixtures

The school toilet room fixtures are original high flow units. replaced are standard plumbing fixtures. In general, lavatories are 2.5 GPM with push type faucets, water closets are 1.6 GPF, and urinals are 1.0 GPF.

ENERGY CONSERVATION MEASURES

3.6 ECM-1 Install Condensing Boilers

The building is heated with hot water supplied by two Buderus 378 MBH hot water boilers. The boilers are non-condensing with an efficiency of 83%.

Due to the low efficiency of the existing boilers and piping system, an evaluation was performed for adding high efficiency condensing boilers to provide the heating hot water for the building during the heating months.

It was assumed that all of the facilities natural gas is used for heating as both the kitchen equipment and domestic hot water systems are electric. The boiler fuel consumption was calculated from the natural gas used annually for the entire year per utility bills and boiler efficiency. This was then compared to the efficiency of a new condensing boiler at the improved operating efficiency. The difference in fuel usage was the savings.

The implementation cost and savings related to this ECM are presented in Appendix C and summarized below:

ECM-1 HVAC Condensing Boilers Addition

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric kWh	Electric kW	Nat Gas Therms	Total $						
$					$	$		$	Years	Years
75,000	0	0	1,100	1,400	0	1,400	(0.5)	1,300	>20	>20

* Incentive shown is per the New Jersey Smart Start Program. See section 5.0 for other incentive opportunities.

Expected Life: 25 years

Lifetime Savings: 0 kWh 27,500 therms $35,000

This measure is not recommended.

3.7 ECM-2 Replace Electric DHW Heaters with Condensing Natural Gas Fired Water Heaters

The facility utilizes two electric water heaters to produce domestic hot water. The main DHW heater is a 50 kW Hubbell heater. The capacity is 200 gallons. The secondary DHW heater is an A.O. Smith 15 kW unit with 120 gallon capacity. These water heaters use a substantial amount of electricity to heat water that is not used. Based on actual usage of the areas served these units could be replaced with instantaneous tankless units. Converting to lower cost natural gas will result in fuel savings. This ECM assesses replacing the electric powered DHW heaters that serve school with high efficiency condensing gas water heaters. To implement this ECM, piping and electrical wiring will need to be modified as well as new venting installed. The electrical power currently supplied to these units could be used to power other equipment.

The implementation cost and savings related to this ECM are presented in Appendix C and summarized below:

ECM-2 Replace Electric Domestic Hot Water Heaters with Natural Gas

Budgetary Cost	Annual Utility Savings					Estimated Maintenance Savings	Total Savings	ROI	Potential Incentive*	Payback (without Incentive)	Payback (with Incentive)
	Electricity		Natural Gas	Water	Total						
$	kW	kWh	Therms	KGals	$	$	$		$	Years	Years
23,000	70	27,100	(800)	0	8,400	0	8,400	6.3	3,700	2.7	2.3

* Incentive shown is per the New Jersey SmartStart Program. See section 5.0 for other incentive opportunities.

Expected Life: 20 years

Lifetime Savings: 542,000 kWh -16,000 therms 168,000

This measure is recommended.

3.8 ECM-3 Install Demand Control Ventilation in the Gymnasium

A packaged rooftop unit serves the gymnasium (RTU-2). It is assumed the unit provides the minimum design outdoor air volume. Reducing outside air during occupied time periods will reduce heating and cooling energy used. This can be accomplished using carbon dioxide sensor to monitor air quality. The quantity of ventilation will be based on maintaining an acceptable carbon dioxide (CO_2) level in the space as an indicator of indoor air quality. A limit of 1000 PPM of CO_2 is recommended in ASHRAE Standard 62-2010, Ventilation for Acceptable Indoor Air Quality. Sensors will be installed to measure the building air CO_2 concentration, and the control sequence of operation programmed into the BAS. During unoccupied periods the outside air dampers should be closed.

Equipment supply and outside airflows were obtained from existing design drawings where possible, or from vendors per serial/model numbers found in the field. For the analysis, estimated savings for demand control ventilation are based on reducing the outdoor air from the design conditions to 15%. The energy savings are the differences in thermal energy and motor horse power electricity usage.

The implementation cost and savings related to this ECM are presented in Appendix C and summarized below:

ECM-3 HVAC Demand Control Ventilation

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
9,000	1,700	0	600	1,100	0	1,100	0.9	100	8.2	8.1

* Incentive shown is per the New Jersey Smart Start Program. See section 5.0 for other incentive opportunities.

Expected Life: 15 years

Lifetime Savings: 22,500 kWh 9,000 therms $16,500

This measure is recommended.

3.9 ECM-4 Network Controller Software

Personal computers can consume large amounts of electricity unnecessarily if left on for long periods of time when not in use, even in sleep mode. This measure assessed implementation of proprietary network manager software that monitors the usage and shuts off all computers and monitors that are inactive. This software does not effect on daily network operation and does not compromise security firewalls.

The implementation cost and savings related to this ECM are presented in Appendix C and summarized below:

ECM-4 Network Controller Software

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive*	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
2,000	5,300	0	0	1,200	0	1,200	2.6	0	1.7	1.7

* There are currently no incentives available for this measure

Expected Life: 5 years

Lifetime Savings: 26,500 kWh 0 therms $6,000

This measure is recommended.

3.10 ECM-5 Replace Single Pane Windows with Thermal Efficient Windows

The facility has 2,900 square feet of window area in the original construction. These windows are constructed with aluminum frames and single pane glazing. Due to age, construction type, and condition, the windows incur excess air infiltration and provide average thermal resistance to heat transfer. An assessment considered installing aluminum frame with triple pane glazing with internal blinds to decrease energy losses.

The calculation uses bin hours to estimate the occupied and unoccupied bin hours. This is converted to existing energy for the occupied and unoccupied cases using the existing window U-factor and the heating and cooling temperature. The two are summed together to create the annual utility usage for the

baseline. The same steps are done to calculate the proposed utility usage. The difference in heating losses through the windows resulted in annual heating and cooling savings.

The implementation cost and savings related to this ECM are presented in Appendix C and summarized as follow:

ECM-5 Replace Existing Windows With Higher Thermal Efficiency

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
286,000	1,100	0	1,100	1,600	0	1,600	(0.8)	0	>20	>20

Expected Life: 30 years

Lifetime Savings: 33,000 kWh 33,000 therms $ 48,000

This measure is not recommended.

3.11 ECM-6 Roof Replacement

The roof is constructed of metal roof decking, insulation, and a rubber mat system. The roof has surpassed its useful life and should be replaced. This ECM addresses replacing the roof to minimize heating and cooling energy losses.

To calculate the savings, the heat losses through the roof assembly of the facility was found using the existing roof's R-value of 13.0 and bin weather data for nearby Newark, NJ. The values were totaled to determine the existing annual energy losses. Heating and cooling energy loss values were then determined with a thermal resistance which included the replacement roof R-value of 18.0. The annual energy savings of replacing the roof is detailed in the summary table below.

The implementation cost and savings related to this ECM are presented in Appendix C and summarized below:

ECM-6 Replace Existing Roof

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
937,000	500	0	1,400	1,900	0	1,900	(0.9)	0	>20	>20

Expected Life: 30 years

Lifetime Savings: 15,000 kWh 42,000 therms $ 57,000

This measure is not recommended.

3.12 ECM-7 Lighting Replacement

Modern fluorescent lamps convert electrical power into useful light more efficiently than an incandescent lamp or metal halides. A comprehensive fixture survey was conducted of the entire building. Each switch and circuit was identified, and the number of fixtures, locations, and existing wattage established (Appendix C). There is an opportunity to reduce consumption by upgrading the existing metal halide fixtures to T-5 fixtures and incandescent to more efficient fluorescent fixtures. Supporting calculations, including assumptions for lighting hours and annual energy usage for each fixture, are provided in Appendix C.

The implementation cost and savings related to this ECM are presented in Appendix C and summarized below:

ECM 7-Lighting Replacement

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
6,000	15,700	10	0	3,800	0	3,800	8.9	1,040	1.6	1.3

* Incentive shown is per the New Jersey Smart Start Program. See section 5.0 for other incentive opportunities.

Expected Life: 15 years

Lifetime Savings: 235,500 kWh 0 therms $57,000

This measure is not recommended in lieu of ECM-9.

3.13 ECM-8 Install Occupancy Sensors

The current lighting is controlled by manual switches. Lights are generally turned on in the morning and shut off at night. During occupied times, there are rooms that are not occupied; however, the lights remain on. Adding occupancy controls to the individual rooms will automatically control the lights based on occupancy. The occupancy sensor can be wall mounted near the switch or placed at the ceiling for larger room coverage. All occupancy sensors are equipped with a manual override feature. These sensors are generally not recommended in public toilet rooms.

The implementation cost and savings related to this ECM are presented in Appendix C and summarized below:

ECM-8 Install Lighting Controls (Occupancy Sensors)

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
32,000	25,300	0	0	5,900	0	5,900	1.8	5,600	5.4	4.5

* Incentive shown is per the New Jersey Smart Start Program. See section 5.0 for other incentive opportunities.

Expected Life: 15 years

Lifetime Savings: 379,500 kWh 0 therms $88,500

This measure is not recommended in lieu of ECM-9.

3.14 ECM-9 Lighting Replacements with Occupancy Sensors

Due to interactive effects, the energy and cost savings for occupancy sensors and lighting upgrades are not cumulative. This measure is a combination of ECM-7 and ECM-8 to reflect actual expected energy and demand reduction.

The implementation cost and savings related to this ECM are presented in Appendix C and summarized as follows:

ECM-9 Lighting Replacements with Lighting Controls (Occupancy Sensors)

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
38,000	40,800	10	0	9,200	0	9,200	2.6	6,600	4.1	3.4

* Incentive shown is per the New Jersey Smart Start Program. See section 5.0 for other incentive opportunities.

Expected Life: 15 years

Lifetime Savings: 612,000 kWh 0 therms $138,000

This measure is recommended.

3.15 ECM -10 Install Low Flow Fixtures

The existing toilet room fixtures consume more water than modern plumbing fixtures. It was determined that the current toilets and urinals with an average water use of 1.6 gal/flush for toilets and 1.6 gal/flush for urinals and 2.2 gallons per minute for faucets. Based on the number of occupants, it was estimated that each toilet and faucet is utilized approximately three times per day.The water savings associated from replacing these fixtures with low-flow fixtures was calculated by taking the difference of the annual water usage for the proposed and base case. The basis of this calculation is the number of times each fixture is used, gallons per use, and number of fixtures. Replacing the existing fixtures in the restrooms with 1.28 gals/flush toilets and 0.5 gal/flush urinals and 0.5 gallon per minute faucets.

The implementation cost and savings related to this ECM are presented in Appendix C and summarized as follows

ECM-10 Install Low Flow Fixtures

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
65,000	0	0	0	700	0	700	(0.8)	0	>20	>20

Expected Life: 15 years

Lifetime Savings: 0 kWh 0 therms $ 10,500

4.0 PROJECT INCENTIVES

4.1 Incentives Overview

4.1.1 New Jersey Pay For Performance Program

The facility will be eligible for incentives from the New Jersey Office of Clean Energy. The most significant incentives are available from the New Jersey Pay for Performance (P4P) Program. The P4P program is designed for qualified energy conservation projects applied to facilities whose demand in any of the preceding 12 months exceeds 100 kW. This average minimum has been waived for buildings owned by local governments or municipalities and non-profit organizations, however. Facilities that meet this criterion must also achieve a minimum performance target of 15% energy reduction by using the EPA Portfolio Manager benchmarking tool before and after implementation of the measure(s). If the participant is a municipal electric company customer, and a customer of a regulated gas New Jersey Utility, only gas measures will be eligible under the Program. Available incentives are as follows:

Incentive #1: Energy Reduction Plan – This incentive is designed to offset the cost of services associated with the development of the Energy Reduction Plan (ERP).

- Incentive Amount: $0.10/SF
- Minimum incentive: $5,000
- Maximum Incentive: $50,000 or 50% of Facility annual energy cost

The standard incentive pays $0.10 per square foot, up to a maximum of $50,000, not to exceed 50% of facility annual energy cost, paid after approval of application. For building audits funded by the New Jersey Board of Public Utilities, which receive an initial 75% incentive toward performance of the energy audit, facilities are only eligible for an additional $0.05 per square foot, up to a maximum of $25,000, rather than the standard incentive noted above.

Incentive #2: Installation of Recommended Measures – This incentive is based on projected energy savings as determined in Incentive #1 (Minimum 15% savings must be achieved), and is paid upon successful installation of recommended measures.

Electric

- Base incentive based on 15% savings: $0.09/ per projected kWh saved.
- For each % over 15% add: $0.005 per projected kWh saved.
- Maximum incentive: $0.11/ kWh per projected kWh saved

Gas

- Base incentive based on 15% savings: $0.90/ per projected Therm saved.
- For each % over 15% add: $0.05 per projected Therm saved.
- Maximum incentive: $1.25 per projected Therm saved

Incentive cap: 25% of total project cost

Incentive #3: Post-Construction Benchmarking Report – This incentive is paid after acceptance of a report proving energy savings over one year utilizing the Environmental Protection Agency (EPA) Portfolio Manager benchmarking tool.

Electric

- Base incentive based on 15% savings: $0.09/ per projected kWh saved.
- For each % over 15% add: $0.005 per projected kWh saved.
- Maximum incentive: $0.11/ kWh per projected kWh saved

Gas

- Base incentive based on 15% savings: $0.90/ per projected Therm saved.
- For each % over 15% add: $0.05 per projected Therm saved.
- Maximum incentive: $1.25 per projected Therm saved

Incentives #2 and #3 can be combined to yield additive savings.

The table below shows the summary of incentives available through the Pay for Performance program for this building. The total ECM savings did not meet the minimum 15% annual savings required to obtain incentives # 2 and #3, hence they are zero. Detailed calculations can be found in Appendix D.

	Incentives $		
	Elec	Gas	Total
Incentive #1	$0	$0	$5,000
Incentive #2	$0	$0	$0
Incentive #3	$0	$0	$0
Total All Incentives	**$0**	**$0**	**$5,000**

The current ECM's does not meet the minimum savings of 15% and therefore the building will not be eligible for incentives #2 and #3. See Appendix D for additional details.

4.1.2 New Jersey Smart Start Program

For this program, specific incentives for energy conservation measures are calculated on an individual basis utilizing the 2011 New Jersey Smart Start incentive program. This program provides incentives dependent upon mechanical and electrical equipment. If applicable, incentives from this program are reflected in the ECM summaries and attached appendices.

If the complex qualifies and enters into the New Jersey Pay for Performance Program, all energy savings will be included in the total site energy reduction, and savings will be applied towards the Pay for Performance incentive. A project is not applicable for both New Jersey incentive programs.

4.1.3 Direct Install Program

The Direct Install Program targets small and medium sized facilities where the peak electrical demand does not exceed 150 kW in any of the previous 12 months. Buildings must be located in New Jersey and served by one of the state's public, regulated electric or natural gas utility companies.

Direct Install is funded through New Jersey's Clean Energy Program and is designed to provide capital for building energy upgrade projects to fast track implementation. The program will pay up to 70% of the costs for lighting, HVAC, motors, natural gas, refrigeration, and other equipment upgrades with higher efficiency alternatives. If a building is eligible for this funding, the Direct Install Program can significantly reduce the implementation cost of energy conservation projects.

The program pays 70% of each project cost up to $75,000 per electrical utility account; total funding for each year is capped at $250,000 per customer. Installations must be completed by a Direct Install participating contractor, a list of which can be found on the New Jersey Clean Energy Website at

http://www.njcleanenergy.com. Contractors will coordinate with the applicant to arrange installation of recommended measures identified in a previous energy assessment, such as this document.

The facility is potentially eligible to receive funding from the Direct Install Program. The total implementation cost for all ECMs potentially eligible for Direct Install funding is $101,500, and includes replacing the existing boiler with a condensing hot water boiler, domestic water heater with a natural gas unit, demand control ventilation; lighting replacements, upgrades and controls in select areas. The program normally has a potential to pay 70% of the initial costs, leaving 30% to be paid out of pocket. Direct Install funding has the potential to significantly reduce the payback period of Energy Conservation Measures.

4.1.4 Energy Savings Improvement Plans (ESIP)

The Energy Savings Improvement Program (ESIP) allows government agencies to make energy related improvements to their facilities and pay for the costs using the value of energy savings that result from the improvements. Under the recently enacted Chapter 4 of the Laws of 2009 (the law), the ESIP provides all government agencies in New Jersey with a flexible tool to improve and reduce energy usage with minimal expenditure of new financial resources.

ESIP allows local units to use “energy savings obligations” to pay for the capital costs of energy improvements to their facilities. This can be done over a maximum term of 15 years. Energy savings obligations are not considered “new general obligation debt” of a local unit and do not count against debt limits or require voter approval. They may be issued as refunding bonds or leases. Savings generated from the installation of energy conservation measures pay the principal of and interest on the bonds; for that reason, the debt service created by the ESOs is not paid from the debt service fund, but is paid from the general fund.

For local governments interested in pursuing an ESIP, the first step is to perform an energy audit. Pursuing a Local Government Energy Audit through New Jersey's Clean Energy Program is a valuable first step to the ESIP approach. The “Local Finance Notice” outlines how local governments can develop and implement an ESIP for their facilities (see Appendix E). The ESIP can be prepared internally if the entity has qualified staff. If not, the ESIP must be implemented by an independent contractor and not by the energy savings company producing the Energy Reduction Plan.

The ESIP approach may not be appropriate for all energy conservation and energy efficiency improvements. Local units should carefully consider all alternatives to develop an approach that best meets their needs.

5.0 ALTERNATIVE ENERGY SCREENING EVALUATION

5.1 Solar

5.1.1 Photovoltaic Rooftop Solar Power Generation

The facility was evaluated for the potential to install rooftop photovoltaic (PV) solar panels for power generation. Present technology incorporates the use of solar cell arrays that produce direct current (DC) electricity. This DC current is converted to alternating current (AC) with the use of an electrical device known as an inverter. The building's roof has sufficient room to install a large solar cell array. All rooftop areas have been replaced, and are in good condition. It is recommended to install a permanent PV array at this time.

The PVWATTS solar power generation model was utilized to calculate PV power generation. The closest city available in the model is Newark, New Jersey and a fixed tilt array type was utilized to calculate energy production. The PVWATT solar power generation model is provided in Appendix F.

Federal tax credits are also available for renewable energy projects up to 30% of installation cost. Since the facility is a non-profit organization, federal taxes are paid and this project is eligible for this incentive.

Installation of (PV) arrays in the state New Jersey will allow the owner to participate in the New Jersey solar renewable energy certificates program (SREC). This is a program that has been set up to allow entities with large amounts of environmentally unfriendly emissions to purchase credits from zero emission (PV) solar-producers. One SREC credit is equivalent to 1000 kilowatt hours of PV electrical production; these credits can be traded for period of 15 years from the date of installation. The average SREC value per credit is estimated to be about $65/ SREC per year based on current market data, and this number was utilized in the cash flow for this report.

The system costs for PV installations were derived from contractor budgetary pricing in the state of New Jersey for estimates of total cost of system installation. It should be noted that the cost of installation is currently about $4.00 per watt or $4,000 per kW of installed system. Other cost considerations will also need to be considered. PV panels have an approximate 20 year life span; however, the inverter device that converts DC electricity to AC has a life span of 10 to 12 years and will need to be replaced multiple times during the useful life of the PV system.

The implementation cost and savings related to this ECM are presented in Appendix F and summarized as follows:

Photovoltaic (PV) Solar Power Generation - Screening Assessment

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	Federal Tax Credit	New Jersey Renewable ** SREC	Payback (without incentive)	Payback (with incentive)
$	kW	kWh	therms	$	$	$	$	$	Years	Years
$640,000	**160**	**199,800**	**0**	**$46,900**	**0**	**$46,900**	**$0**	**$13,000**	**13.7**	**10.7**

* No federal tax credit currently available.
** Solar Renewable Energy Certificate Program (SREC) for 2012 is $65/1000kwh

This measure is not recommended due to the long expected payback.

5.1.2 Solar Thermal Hot Water Plant

Active solar thermal systems use solar collectors to gather the sun's energy to heat water, another fluid, or air. An absorber in the collector converts the sun's energy into heat. The heat is then transferred by circulating water, antifreeze, or sometimes air to another location for immediate use or storage for later utilization. Applications for active solar thermal energy include providing hot water, heating swimming pools, space heating, and preheating air in residential and commercial buildings.

A standard solar hot water system is typically composed of solar collectors, heat storage vessel, piping, circulators, and controls. Systems are typically integrated to work alongside a conventional heating system that provides heat when solar resources are not sufficient. The solar collectors are usually placed on the roof of the building, oriented south, and tilted around the site's latitude, to maximize the amount of radiation collected on a yearly basis.

Several options exist for using active solar thermal systems for space heating. The most common method involves using glazed collectors to heat a liquid held in a storage tank (similar to an active solar hot water system). The most practical system would transfer the heat from the panels to thermal storage tanks and transfer solar produced thermal energy to use for domestic hot water production. DHW is presently produced by gas-fired water heaters and, therefore, this measure would offer natural gas utility savings.

6.0 EPA PORTFOLIO MANAGER

The EPA Portfolio Manager benchmarking tool was used to assess the building's energy performance. Portfolio Manager provides a Site and Source Energy Use Intensity (EUI), as well as an Energy Star performance rating for qualifying building types. The EUIs are provided in kBtu/ft^2/year, and the performance rating represents how energy efficient a building is on a scale of 1 to 100, with 100 being the most efficient. In order for a building to receive and Energy Star label, the energy benchmark rating must be at least 75. As energy use decreases from implementation of the proposed ECMs, the Energy Star rating will increase.

The Site EUI is the amount of heat and electricity consumed by a building as reflected in utility bills. Site energy may be delivered to a facility in the form of primary energy, which is raw fuel burned to create heat or electricity (such as natural gas or oil), or as secondary energy, which is the product created from a raw fuel (such as electricity or district steam). Site EUI is a measure of a building's annual energy utilization per square foot. Site EUI is a good measure of a building's energy use and is utilized regularly for comparison of energy performance for similar building types.

$$\textbf{\textit{Site Energy Intensity}} = \frac{(\textit{Electric Usage in kBtu + Natural Gas in kBtu})}{\textit{Building Square Footage}}$$

To provide an equitable comparison for different buildings with varying proportions of primary and secondary energy consumption, the Portfolio Manager uses the convention of Source EUIs. The source energy also accounts for all losses incurred in production, storage, transmission, and delivery of energy to the site; which provides an equivalent measure for various types of buildings with different energy sources.

$$\textbf{\textit{Source Energy Intensity}} = \frac{(\textit{Electric Usage in kBtu X Site/Source Ratio + Natural Gas in kBtu X Site/Source Ratio})}{\textit{Building Square Footage}}$$

The EPA Score, Site EUI, and Source EUI for Jefferson Elementary School are as follows:

Energy Intensity	Jefferson Elementary School	National Average
EPA Score	84	50
Site (kBtu/sf/year)	49	63
Source (kBtu/sf/year)	108	115

To be eligible to receive a national Energy Star score, a building must meet all three of these requirements:

1. Building designation – More than 50 percent of the building's gross floor area must be one of the spaces eligible to receive an Energy Star score. The remainder of the building must abide by specific rules for each space type.
2. Operating characteristics – To ensure the building is consistent with the peer group used for comparison, each space in your building must meet certain minimum and maximum thresholds for key operating characteristics.
3. Energy data – At least 12 full consecutive calendar months for all active meters, accounting for all energy use (regardless of fuel type) in the building.

In addition, a Licensed Professional (meaning a Professional Engineer or Registered Architect) must verify that all energy use is accounted for accurately, that the building characteristics have been properly reported (including the square footage of the building), that the building is fully functional in accordance with industry standards, and that each of the indoor environment criteria has been met.

For the School to qualify for the Energy Star label the EPA score is required to be above 75. There are several energy conservation measures recommended in this report, that if implemented will further reduce the energy use intensity and increase the EPA score of the Elementary School. This building could be eligible for Energy Star certification pending the most up-to-date information is inputted by Board of Education personnel.

The Portfolio Manager account can be accessed by entering the username and password shown below at the login screen of the Portfolio Manager website (https://www.energystar.gov/istar/pmpam/).

A full EPA Energy Star Portfolio Manager Report is located in Appendix G.

The user name ("*roxburyboe*") and password ("*energystar*") for the building's EPA Portfolio Manager Account has been provided to the Roxbury Township Board of Education.

7.0 CONCLUSIONS & RECOMMENDATIONS

The energy audit conducted by CHA at the Jefferson School identified potential ECMs for lighting and control replacement, HVAC replacement, DHW replacement, demand controlled ventilation. Potential annual savings of $14,500 may be realized for the recommended ECMs, with a summary of the costs, savings, and paybacks as follows:

ECM-2 Replace Electric DHW Heaters with Condensing Tankless DHW

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
23,000	27,100	70	-800	8,400	0	8,400	6.3	3,700	2.7	2.3

Expected Life: 20 years
Lifetime Savings: 542,000 kWh -16,000 therms $ 168,000

ECM-3 Install Demand Control Ventilation in Gymnasium

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
9,000	1,700	0	600	1,100	0	1,100	0.9	100	8.2	8.1

Expected Life: 15 years
Lifetime Savings: 25,500 kWh 9,000 therms $ 16,500

ECM-4 Install a Network Computer Power Management System

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
2,000	5,300	0	0	1,200	0	1,200	2.6	0	1.7	1.7

Expected Life: 5 years
Lifetime Savings: 26,500 kWh 0 therms $ 6,000

ECM-7 Lighting Replacement / Upgrades

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
6,000	15,700	10	0	3,800	0	3,800	8.9	1,040	1.6	1.3

Expected Life: 15 years

Lifetime Savings: 235,500 kWh 0 therms $ 57,000

APPENDIX A

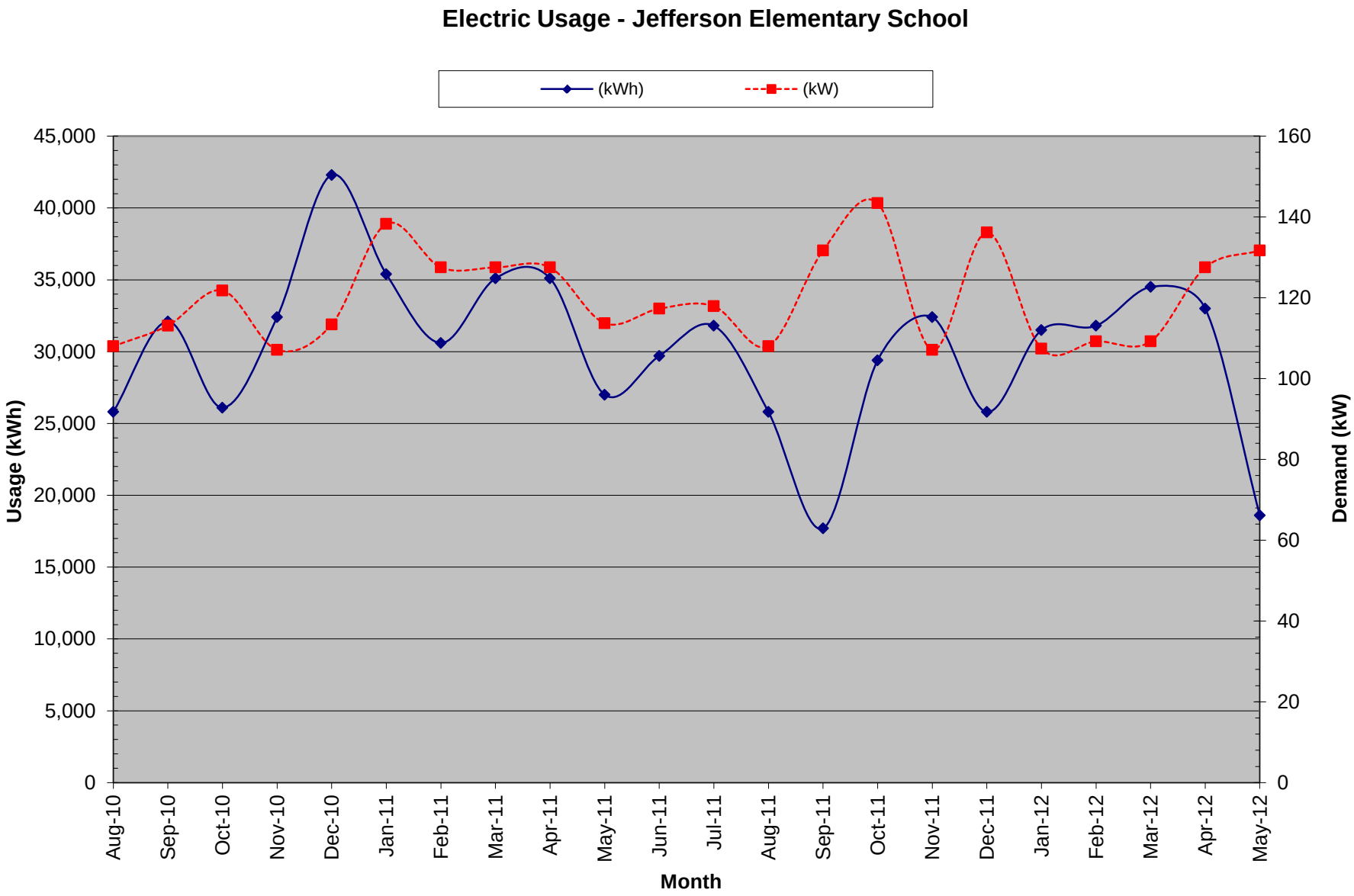
Utility Usage Analysis

Roxbury Township BOE
42 Hillside Ave.
Succasunna, NJ 07876

Electric Service
Delivery - JCP&L
Supplier -

For Service at: **Jefferson Elementary School**
Account No.: **100000-07-3484**
Meter No.: **07009850**

			Charges			Unit Costs			Demand	Consumption
Month	Consumption (kWh)	Demand (kW)	Total ($)	Delivery ($)	Supply ($)	Blended Rate ($/kWh)	Consumption ($/kWh)	Demand ($/kW)	($)	($)
August-10	25,800	108.00	$ 6,644.89			$ 0.258	$ 0.258	$ -		$ 6,644.89
September-10	32,100	113.10	$ 8,119.38			$ 0.253	$ 0.253	$ -		$ 8,119.38
October-10	26,100	121.80	$ 6,752.02			$ 0.259	$ 0.259	$ -		$ 6,752.02
November-10	32,400	107.10	$ 8,098.35			$ 0.250	$ 0.250	$ -		$ 8,098.35
December-10	42,300	113.40	$ 10,403.55			$ 0.246	$ 0.246	$ -		$ 10,403.55
January-11	35,400	138.30	$ 8,987.63			$ 0.254	$ 0.254	$ -		$ 8,987.63
February-11	30,600	127.50	$ 7,820.72			$ 0.256	$ 0.256	$ -		$ 7,820.72
March-11	35,100	127.50	$ 8,671.68			$ 0.247	$ 0.247	$ -		$ 8,671.68
April-11	35,100	127.50	$ 8,548.21			$ 0.244	$ 0.244	$ -		$ 8,548.21
May-11	27,000	113.70	$ 6,330.96			$ 0.234	$ 0.234	$ -		$ 6,330.96
June-11	29,700	117.30	$ 6,968.64			$ 0.235	$ 0.235	$ -		$ 6,968.64
July-11	31,800	117.90	$ 7,406.73			$ 0.233	$ 0.233	$ -		$ 7,406.73
August-11	25,800	108.00	$ 6,095.25			$ 0.236	$ 0.236	$ -		$ 6,095.25
September-11	17,700	131.70	$ 4,582.03			$ 0.259	$ 0.211	$ 6.41	$ 844.60	$ 3,737.43
October-11	29,400	143.40	$ 7,019.24			$ 0.239	$ 0.209	$ 6.02	$ 863.10	$ 6,156.14
November-11	32,400	107.10	$ 7,414.94			$ 0.229	$ 0.209	$ 5.87	$ 628.24	$ 6,786.70
December-11	25,800	136.20	$ 6,240.63			$ 0.242	$ 0.210	$ 5.99	$ 816.51	$ 5,424.12
January-12	31,500	107.40	$ 7,225.62			$ 0.229	$ 0.209	$ 5.87	$ 630.18	$ 6,595.44
February-12	31,800	109.20	$ 7,406.97	$ 4,358.83	$ 3,048.14	$ 0.233	$ 0.137	$ 5.88	$ 641.82	$ 6,765.15
March-12	34,500	109.20	$ 7,737.84	$ 4,559.35	$ 3,178.49	$ 0.224	$ 0.132	$ 5.88	$ 641.82	$ 7,096.02
April-12	33,000	127.50	$ 7,481.59	$ 4,441.66	$ 3,039.93	$ 0.227	$ 0.135	$ 5.96	$ 760.23	$ 6,721.36
May-12	18,600	131.70	$ 4,605.53	$ 2,891.91	$ 1,713.62	$ 0.248	$ 0.155	$ 5.98	$ 787.40	$ 3,818.13
Total (12-months)	**342,000**	**143.40**	**$80,185.01**	**$16,251.75**	**$10,980.18**	**$ 0.234**	**$ 0.215**	**$ 4.57**	**$6,613.90**	**$73,571.11**


Electric Usage - Jefferson Elementary School
(kWh)
(kW)
45,000
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
160
140
120
100
80
60
40
20
0
Usage (kWh)
Demand (kW)
Aug-10
Sep-10
Oct-10
Nov-10
Dec-10
Jan-11
Feb-11
Mar-11
Apr-11
May-11
Jun-11
Jul-11
Aug-11
Sep-11
Oct-11
Nov-11
Dec-11
Jan-12
Feb-12
Mar-12
Apr-12
May-12
Month

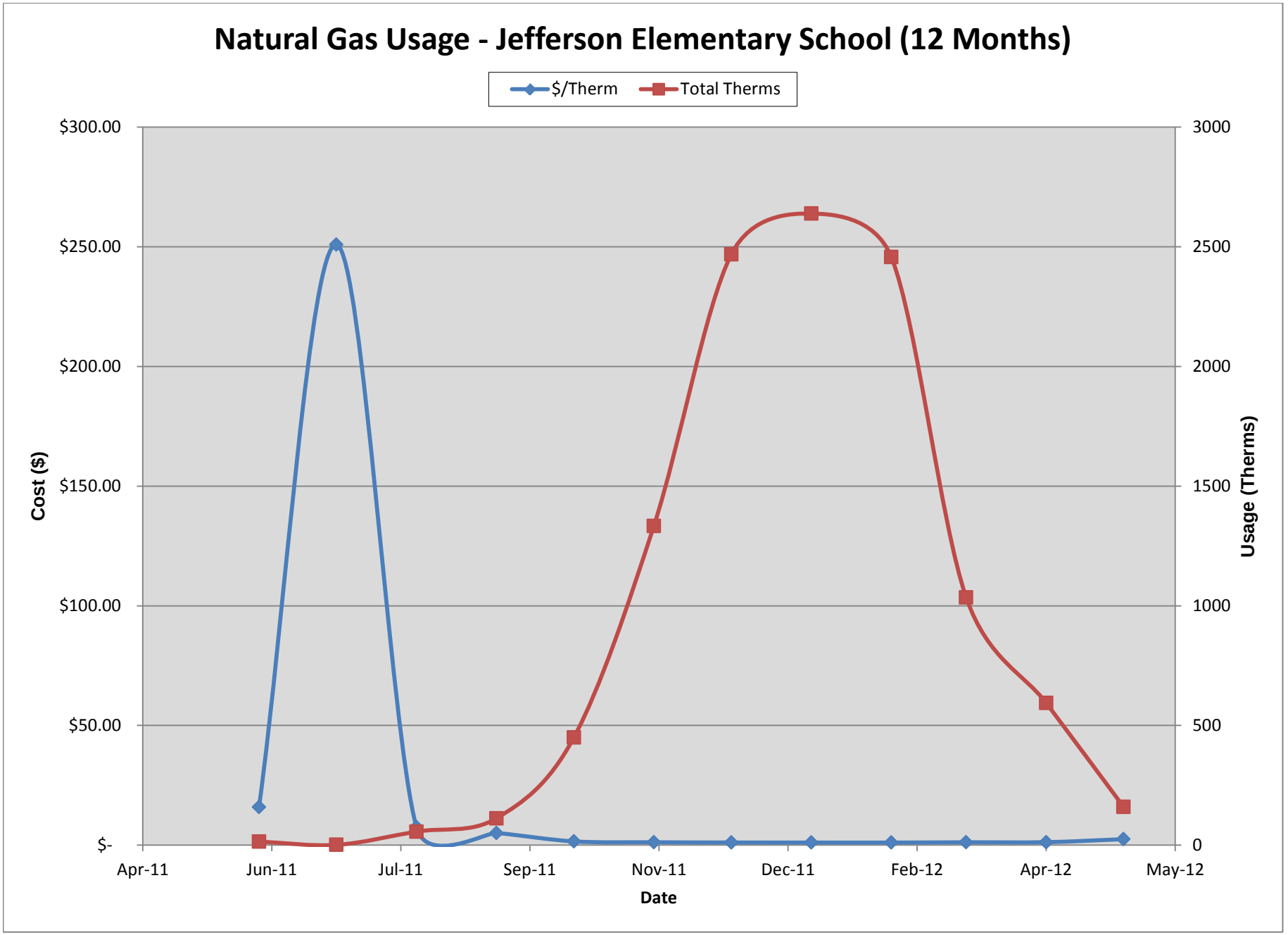
Roxbury Township BOE
42 Hillside Ave.
Succasunna, NJ 07876

Gas Service
Delivery - NJNG
Supplier -

For Service at: Jefferson Elementary School
Account No.: 02-1108-6563-13
Meter No.: 00657687

Month	Total ($)	Delivery ($)	Supply ($)	Total Therms	$/Therm
Aug-10	$ 372.20			95.1	$ 3.91
Sep-10	$ 413.01			151.3	$ 2.73
Oct-10	$ 1,088.49			794.3	$ 1.37
Nov-10	$ 2,351.05			2049.1	$ 1.15
Dec-10	$ 4,511.24			4086	$ 1.10
Jan-11	$ 5,318.31			4889.4	$ 1.09
Feb-11	$ 3,840.58			3458.9	$ 1.11
Mar-11	$ 2,648.90			2302.9	$ 1.15
Apr-11	$ 1,221.29			922.7	$ 1.32
May-11	$ 371.82			97.1	$ 3.83
Jun-11	$ 234.64			14.8	$ 15.85
Jul-11	$ 276.01			1.1	$ 250.92
Aug-11	$ 423.23			56.65	$ 7.47
Sep-11	$ 570.45			112.2	$ 5.08
Oct-11	$ 700.94			449.7	$ 1.56
Nov-11	$ 1,596.86			1333.9	$ 1.20
Dec-11	$ 2,699.38			2468.4	$ 1.09
Jan-12	$ 2,827.75			2638.8	$ 1.07
Feb-12	$ 2,609.13			2457.1	$ 1.06
Mar-12	$ 1,226.02			1035	$ 1.18
Apr-12	$ 734.19			594.2	$ 1.24
May-12	$ 396.09			159.7	$ 2.48
Total (12-months)	**$ 14,294.69**	**$ -**	**$ -**	**11321.55**	**$ 1.26**

Denotes an averaged value where no data has been given


Natural Gas Usage - Jefferson Elementary School (12 Months)
$/Therm
Total Therms
$300.00
$250.00
$200.00
$150.00
$100.00
$50.00
$-
3000
2500
2000
1500
1000
500
0
Cost ($)
Usage (Therms)
Apr-11
Jun-11
Jul-11
Sep-11
Nov-11
Dec-11
Feb-12
Apr-12
May-12
Date

APPENDIX B

Equipment Inventory

New Jersey BPU Energy Audit Program
CHA #24454
Roxbury BOE
Jefferson Elementary School
Original Construction Date: 1963
Renovation/Addtion Date: 2006

Description	QTY	Manufacturer Name	Model No.	Serial No.	Equipment Type / Utility	Capacity/Size/Efficiency	Location	Areas/Equipment Served	Date Installed	Remaining Useful Life (years)	Other Info.
RTU-1	1	Lenox	LGA102H2BHG	5604E11027	AHU NG/DX	240/192 MBH / 3 HP / 8.5 Tons Cooling	Roof	School	2006	9	
RTU-2	1	Lenox	LGA060H2BH	5604E10861	AHU NG/DX	125/100 MBH / 2 HP / 5 Tons Cooling	Roof	School	2006	9	
RTU-3	1	Lenox	LGA048H2BH	5604E11219	AHU NG/DX	240/192 MBH / 7.5 Tons Cooling	Roof	Library	2006	9	
RTU-4	1	Lenox	LGA090H2BH	5604E11045	AHU NG/DX	125/100 MBH / 1.5 HP / 4 Tons Cooling	Roof	School	2006	9	
AC	15				Window AC		School	School	1993	-4	
ACCU-1	1	Airedale	SCC090MA0A0AA0A	1-04-D-7963-18	Condenser	1/8 HP	Outside	School Office	1996	4	
B-1	1	Buderus	G334	08249822-00-2291-00348	Boiler / NG	Input: 378 MBH / Output: 314 MBH	MER	School	1996	9	
B-2	1	Buderus	G334	08249822-00-3097-0021	Boiler / NG	Input: 378 MBH / Output: 314 MBH	MER	School	1996	0	
SP	1	Armstrong			In-Line HW Pump	5 HP Lead/Lag 81.5 Eff.	MER	School	1996	-6	
PP	1	Armstrong	G158	DJ5S2AMR	Boiler Primary Pump	1/8 HP	MER	School	1996	-6	
DHW-1	1	AO Smith			DHW / Electric	15 kW / 120 Gal.	Custodian Closet	School	1963	-24	
DHW-2	1	Hubbell	SH200100M	24721	DHW / Electric	50 kW / 200 Gal.	Custodian Room	School	1963	-24	
Dish Washer	1	Jackson	150B	2150	Dishwasher / Electric	1 HP	Kitchen	Kitchen	1993	-4	
Oven	2	Duke	E101-E		Oven / Electric		Kitchen	Kitchen	1993	-4	
Refrigerator	3	Traulsen			Refrigerator		Kitchen	Kitchen	1993	-4	
Freezer	1	Traulsen			Walk-In Freezer		Kitchen	Kitchen	1993	-4	

APPENDIX C

ECM Calculations

Summary of Energy Conservation Measures							
Energy Conservation Measure		**Approx. Costs ($)**	**Approx. Savings ($/year)**	**Payback (Years) w/o Incentive**	**Potential Incentive ($)***	**Payback (Years) w/ Incentive**	**Recommended For Implementation**
ECM-1	Install Condensiong Boilers	75,000	1,400	>20	1,300	>20	
ECM-2	Replace Electric DHW Heaters with Condensing Tankless DHW	23,000	8,400	2.7	3,700	2.3	X
ECM-3	Install Demand Control Ventilation in Gymnasium	9,000	1,100	8.2	100	8.1	X
ECM-4	Install a Network Computer Power Management System	2,000	1,200	1.7	0	1.7	X
ECM-5	Replace Existing Windows With Higher Thermal Efficiency	286,000	1,600	>20	0	>20	
ECM-6	Replace Existing Roof	937,000	1,900	>20	0	>20	
ECM-7	Lighting Replacement / Upgrades	6,000	3,800	1.6	1,040	1.3	X
ECM-8	Install Lighting Controls (Occupancy Sensors)	32,000	5,900	5.4	5,600	4.5	
ECM-9	Lighting Replacements with Lighting Controls (Occupancy Sensors)	38,000	9,200	4.1	6,600	3.4	

Roxbury Board of Education - NJBPU
CHA Project #24454
Jefferson Elementary School

ECM Summary Sheet

ECM-1 Install Condensiong Boilers

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
75,000	0	0	1,100	1,400	0	1,400	(0.5)	1,300	>20	>20

Expected Life: 25 years
Lifetime Savings: 0 kWh 27,500 therms $ 35,000

ECM-2 Replace Electric DHW Heaters with Condensing Tankless DHW

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
23,000	27,100	70	-800	8,400	0	8,400	6.3	3,700	2.7	2.3

Expected Life: 20 years
Lifetime Savings: 542,000 kWh -16,000 therms $ 168,000

ECM-3 Install Demand Control Ventilation in Gymnasium

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
9,000	1,700	0	600	1,100	0	1,100	0.9	100	8.2	8.1

Expected Life: 15 years
Lifetime Savings: 25,500 kWh 9,000 therms $ 16,500

ECM-4 Install a Network Computer Power Management System

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
2,000	5,300	0	0	1,200	0	1,200	2.6	0	1.7	1.7

Expected Life: 5 years
Lifetime Savings: 26,500 kWh 0 therms $ 6,000

ECM-5 Replace Existing Windows With Higher Thermal Efficiency

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
286,000	1,100	0	1,100	1,600	0	1,600	(0.8)	0	>20	>20

Expected Life: 30 years
Lifetime Savings: 33,000 kWh 33,000 therms $ 48,000

ECM-6 Replace Existing Roof

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
937,000	500	0	1,400	1,900	0	1,900	(0.9)	0	>20	>20

Expected Life: 30 years
Lifetime Savings: 15,000 kWh 42,000 therms $ 57,000

ECM-7 Lighting Replacement / Upgrades

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
6,000	15,700	10	0	3,800	0	3,800	8.9	1,040	1.6	1.3

Expected Life: 15 years
Lifetime Savings: 235,500 kWh 0 therms $ 57,000

ECM-8 Install Lighting Controls (Occupancy Sensors)

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
32,000	25,300	0	0	5,900	0	5,900	1.8	5,600	5.4	4.5

Expected Life: 15 years
Lifetime Savings: 379,500 kWh 0 therms $ 88,500

ECM-9 Lighting Replacements with Lighting Controls (Occupancy Sensors)

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
38,000	40,800	10	0	9,200	0	9,200	2.6	6,600	4.1	3.4

Expected Life: 15 years
Lifetime Savings: 612,000 kWh 0 therms $ 138,000

Roxbury Board of Education - NJBPU
CHA Project #24454

Utility Costs		Yearly Usage	MTCDE	Building Area	Annual Utility Cost	
$ 0.234	$/kWh blended		0.00042021	46,870	Electric	Natural Gas
$ 0.215	$/kWh supply	342,000	0.00042021		$ 80,185	$ 14,295
$ 4.57	$/kW	1,447	0			
$ 1.26	$/Therm	11,322	0.00533471			
	$/kgals		0			

Jefferson Elementary School

	Item	Savings						Cost	Simple Payback	MTCDE	Life Expectancy	NJ Smart Start Incentives	Direct Install Eligible (Y/N)*	Direct Install Incentives**	Max Incentives	Payback w/ Incentives***	Simple Projected Lifetime Savings						ROI
		kW	kWh	therms	cooling kWh	kgal/yr	$										kW	kWh	therms	cooling	kgal/yr	$	
ECM-1	Install Condensiong Boilers	0.0	0	1,108	0	0	$ 1,400	$ 74,800	53.4	5.9	25	$ 1,313	Y	$ 52,400	$ 1,313	52.5	0.0	0	27,689	0	0	$ 34,960	(0.5)
ECM-2	Replace Electric DHW Heaters with Condensing Tankless DHW	65.0	27,105	(778)	0	0	$ 8,400	$ 23,145	2.8	7.2	20	$ 3,700	Y	$ 16,200	$ 3,700	2.3	1,300.0	542,105	(15,570)	0	0	$ 168,283	6.3
ECM-3	Install Demand Control Ventilation in Gymnasium	0.0	1,653	584	0	0	$ 1,100	$ 8,850	8.0	3.8	15	$ 75	Y	$ 6,200	$ 75	8.0	0.0	24,800	8,753	0	0	$ 16,866	0.9
ECM-4	Install a Network Computer Power Management System	0.0	5,250	0	0	0	$ 1,200	$ 1,700	1.4	2.2	5			$ -	$ -	1.4	0.0	26,250	0	0	0	$ 6,155	2.6
ECM-5	Replace Existing Windows With Higher Thermal Efficiency	0.0	0	1,093	1,092	0	$ 1,600	$ 285,750	178.6	6.3	30			$ -	$ -	178.6	0.0	0	32,778	32,772	0	$ 49,069	(0.8)
ECM-6	Replace Existing Roof	0.0	0	1,387	514	0	$ 1,900	$ 937,400	493.4	7.6	30			$ -	$ -	493.4	0.0	0	41,612	15,423	0	$ 56,155	(0.9)
ECM-7	Lighting Replacement / Upgrades	7.9	15,676	0	0	0	$ 3,800	$ 5,753	1.5	6.6	15	$ 1,040	Y	$ 4,000	$ 1,040	1.2	118.0	235,146	0	0	0	$ 57,056	8.9
ECM-8	Install Lighting Controls (Occupancy Sensors)	0.0	25,345	0	0	0	$ 5,900	$ 32,400	5.5	10.7	15	$ 5,600	Y	$ 22,700	$ 5,600	4.5	0.0	380,182	0	0	0	$ 89,137	1.8
ECM-9	Lighting Replacements with Lighting Controls (Occupancy Sensors)	7.9	40,835	0	0	0	$ 9,200	$ 38,153	4.1	17.2	15	$ 6,640	Y	$ 26,700	$ 6,640	3.4	118.0	612,520	0	0	0	$ 138,237	2.6
	Total (Does Not Include ECM-7 & ECM-8)	**72.9**	**74,843**	**3,392**	**1,606**	**0**	**$ 24,800**	**$ 1,369,798**	55.2		20.0	$ 11,728		$ 101,500	$ 11,728	54.8	1,418.0	1,205,675	95,262	48,195	0	$ 469,726	(0.7)
	Total Measures with Payback <10	**72.9**	**74,843**	**(195)**	**0**	**0**	**$ 19,900**	**$ 71,848**	3.6		14.2	$ 10,415		$ 49,100	$ 10,415	3.1	1,418.0	1,205,675	(6,817)	0	0	$ 329,541	3.6
	% of Existing	**5%**	**22%**	**30%**	**0%**	**#DIV/0!**																	

ECM-M3A: Boiler Replacement

Existing Fuel Nat.Gas

Proposed Fuel Nat.Gas

B-1

Item	Value	Units	Formula/Comments
Baseline Fuel Cost	$ 1.26	/ Therm	
Proposed Fuel Cost	$ 1.26	/ Therm	
Baseline Fuel Use	11,322	Therms	Based on historical utility data
Existing Boiler Plant Efficiency	83%		Estimated or Measured
Baseline Boiler Load	939,689	Mbtu/yr	Baseline Fuel Use x Existing Efficiency x 100 Mbtu/Therms
Baseline Fuel Cost	$ 14,295		
Proposed Boiler Plant Efficiency	92%		New Boiler Efficiency
Proposed Fuel Use	10,214	Therms	Baseline Boiler Load / Proposed Efficiency / 100 Mbtu/Therms
Proposed Fuel Cost	$ 12,896		

*Note to engineer: Link savings back to summary sheet in appropriate column.

BOILER REPLACEMENT SAVINGS SUMMARY					
	Electric Demand	Electric Usage	Nat Gas Usage	Maint.	Total Cost
	(kW)	(kWh)	(Therms)	($)	($)
Savings	**0**	**0**	**1,108**	**$0**	**$1,398**

Multipliers	
Material:	1.00
Labor:	1.25
Equipment:	1.00

ECM-M3A: Boiler Replacement - Cost

Description	QTY	UNIT	UNIT COSTS			SUBTOTAL COSTS			TOTAL COST	REMARKS
			MAT.	LABOR	EQUIP.	MAT.	LABOR	EQUIP.		
750 MBH NG Condensing Boiler	1	EA				$ -	$ -	$ -	$ 17,500	Vendor Quote
Flue Installation	25	LF	$ 75.0	$ 15.00		$ 1,869	$ 467	$ -	$ 2,300	
Reprogram DDC system	1	EA	$ 100.0	$ 350.00		$ 100	$ 436	$ -	$ 500	
Miscellaneous Electrical	1	LS	$ 500	$ 250		$ 499	$ 312	$ -	$ 800	
Miscellaneous HW Piping	1	LS	$ 2,000	$ 1,000		$ 1,994	$ 1,246	$ -	$ 3,200	
Boiler room/space construction	1	LS	$ 20,000	$ 10,000		$ 19,940	$ 12,460	$ -	$ 32,400	
						$ -	$ -	$ -	$ -	
						$ -	$ -	$ -	$ -	
						$ -	$ -	$ -	$ -	
						$ -	$ -	$ -	$ -	
						$ -	$ -	$ -	$ -	

$ 56,700	Subtotal
$ 5,670.00	10% Contingency
$ 12,474.00	20% Contractor O&P
$ -	
$ 74,800	**Total**

ECM-M14B: Replace Electric DHW Heater w/ Tankless Condensing Gas-Fired DHW Heater

Summary

* Replace Electric DHW Heater w/ Instantaneous, Condensing, Gas-Fired DHW Heater

Item	Value	Units	Formula/Comments
Occupied days per week	5	days/wk	
Water supply Temperature	55	˚F	Termperature of water coming into building
Hot Water Temperature	120	˚F	
Hot Water Usage per day	318	gal/day	Calculated from usage below
Annual Hot Water Energy Demand	44,763	MBTU/yr	Energy required to heat annual quantity of hot water to setpoint
Existing Tank Size	200	Gallons	Per manufacturer nameplate
Hot Water Temperature	140	˚F	Per building personnel
Average Room Temperature	70	˚F	
Standby Losses (% by Volume)	0.5%		Based off manufacturers nameplate
Standby Losses (Heat Loss)	0.6	MBH	
Annual Standby Hot Water Load	5,314	MBTU/yr	
Total Annual Hot Water Demand (w/ standby losses)	50,077	Mbtu/yr	Building demand plus standby losses
Existing Water Heater Efficiency	95%		Per Manufacturer
Total Annual Energy Required	52,713	Mbtu/yr	
Total Annual Electric Required	**15,445**	**kWh/yr**	**Electrical Savings**
Average Annual Electric Demand	1.76	kW	
Peak Electric Demand	**50.00**	**kW**	**Per Manufacturer's Nameplate (Demand Savings)**
New Tank Size	0	Gallons	tankless
Hot Water Temperature	140	˚F	
Average Room Temperature	70	˚F	
Standby Losses (% by Volume)	2.5%		(2.5% of stored capacity per hour, per U.S. Department of Energy)
Standby Losses (Heat Loss)	0.0	MBH	
Annual Standby Hot Water Load	0	MBTU/yr	
Prop Annual Hot Water Demand (w/ standby losses)	44,763	MBTU/yr	
Proposed Avg. Hot water heater efficiency	92%		Based on Navien CR180 instantaneous, condensing DHW Heater
Proposed Total Annual Energy Required	48,655	MBTU/yr	
Proposed Fuel Use	487	Therms/yr	Standby Losses and inefficient DHW heater eliminated
Elec Utility Demand Unit Cost	$4.57	$/kW	
Elec Utility Supply Unit Cost	$0.22	$/kWh	
NG Utility Unit Cost	$1.26	$/Therm	
Existing Operating Cost of DHW	$6,066	$/yr	
Proposed Operating Cost of DHW	$614	$/yr	
Annual Utility Cost Savings	**$5,451**	**$/yr**	

170,600 btuh
1,706.0 mbh

Item	Value	Units	Formula/Comments
Occupied days per week	5	days/wk	
Water supply Temperature	55	˚F	Termperature of water coming into building
Hot Water Temperature	120	˚F	
Hot Water Usage per day	191	gal/day	Calculated from usage below
Annual Hot Water Energy Demand	26,858	MBTU/yr	Energy required to heat annual quantity of hot water to setpoint
Existing Tank Size	120	Gallons	Per manufacturer nameplate
Hot Water Temperature	120	˚F	Per building personnel
Average Room Temperature	70	˚F	
Standby Losses (% by Volume)	2.5%		(2.5% of stored capacity per hour, per U.S. Department of Energy)
Standby Losses (Heat Loss)	1.3	MBH	
Annual Standby Hot Water Load	10,950	MBTU/yr	
Total Annual Hot Water Demand (w/ standby losses)	37,808	Mbtu/yr	Building demand plus standby losses
Existing Water Heater Efficiency	95%		Per Manufacturer
Total Annual Energy Required	39,797	Mbtu/yr	
Total Annual Electric Required	**11,661**	**kWh/yr**	**Electrical Savings**
Average Annual Electric Demand	1.33	kW	
Peak Electric Demand	**15.00**	**kW**	**Per Manufacturer's Nameplate (Demand Savings)**
New Tank Size	0	Gallons	tankless
Hot Water Temperature	120	˚F	
Average Room Temperature	70	˚F	
Standby Losses (% by Volume)	2.5%		(2.5% of stored capacity per hour, per U.S. Department of Energy)
Standby Losses (Heat Loss)	0.0	MBH	
Annual Standby Hot Water Load	0	MBTU/yr	
Prop Annual Hot Water Demand (w/ standby losses)	26,858	MBTU/yr	
Proposed Avg. Hot water heater efficiency	92%		Based on Navien CR180 instantaneous, condensing DHW Heater
Proposed Total Annual Energy Required	29,193	MBTU/yr	
Proposed Fuel Use	292	Therms/yr	Standby Losses and inefficient DHW heater eliminated
Elec Utility Demand Unit Cost	$4.57	$/kW	
Elec Utility Supply Unit Cost	$0.22	$/kWh	
NG Utility Unit Cost	$1.26	$/Therm	
Existing Operating Cost of DHW	$3,331	$/yr	
Proposed Operating Cost of DHW	$369	$/yr	
Annual Utility Cost Savings	**$2,963**	**$/yr**	

51,180 btuh
51 mbh

Daily Hot Water Demand

FIXTURE	*BASE WATER USE GPM	DURATION OF USE (MIN)	#USES PER DAY MALE	#USES PER DAY FEMALE	FULL TIME OCCUPANTS** MALE	FULL TIME OCCUPANTS** FEMALE	TOTAL GAL/DAY	% HOT WATER	TOTAL HW GAL/DAY
LAVATORY (Low-Flow Lavs use 0.5 GPM)	2.5	0.25	3	3	255	255	956	50%	478
SHOWER	2.5	5	1	1	0	0	0	75%	0
KITCHEN SINK	2.5	0.5	1	1	3	3	8	75%	6
MOP SINK	2.5	2	1	1	2	2	20	75%	15
Dishwasher (gal per u	10	1	1	0	1		10	100%	10
						TOTAL	984		**509**

Multipliers	
Material:	1.00
Labor:	1.25
Equipment:	1.00

Description	QTY	UNIT	UNIT COSTS			SUBTOTAL COSTS			TOTAL COST	REMARKS
			MAT.	LABOR	EQUIP.	MAT.	LABOR	EQUIP.		
Gas-Fired DHW Heater Removal	2	LS		$ 50		$ -	$ 125	$ -	$ 125	
50 MBH High Efficiency Gas-Fired DHW Heater	1	LS	$ 5,000	$ 280		$ 4,985	$ 349	$ -	$ 5,334	
1,700 MBH High Efficiency Gas-Fired DHW Heater	1	LS	$ 10,000	$ 280		$ 9,970	$ 349	$ -	$ 10,319	
Miscellaneous Electrical	1	LS	$ 300			$ 299	$ -	$ -	$ 299	
Venting Kit	1	EA	$ 450	$ 650		$ 449	$ 810	$ -	$ 1,259	
Miscellaneous Piping and Valves	1	LS	$ 200			$ 199	$ -	$ -	$ 199	
						$ -	$ -	$ -	$ -	
						$ -	$ -	$ -	$ -	
						$ -	$ -	$ -	$ -	
						$ -	$ -	$ -	$ -	

$ 17,534	Subtotal
$ 1,753	10% Contingency
$ 3,858	20% Contractor O&P
$ -	
$ 23,145	**Total**

ECM-3: Network Controller Savings Calculations

Notes:

1. Savings are for the installation of a centralized computer management system installed on the client server that will centralize the power management functions that are native to the Windows environment.
2. Energy savings per computer are based on historical information from previous installations encompassing tens of thousands of computers.
3. There are approximately 75 computers in all

Background Data Average Consumption and Savings Figures	kWh
Average Total Consumption per PC per Year	500-700
Average Energy and Cost Waste per PC per Year	350-450
Average savings per PC	70
Average savings per IMac	50

Number of PCs	75
Number of IMac's	0

Return on Investment Analysis	kWh
Annual Energy Savings	5,250
Annual Cost Savings	$1,231

HEATING PENALTY			Comments
Total kWh		5,250	This is the total kWh reduction.
Htg. Season		55%	The percentage of the kWh reduction that occurs when heat is required.
Conducted/Convected Heat		30%	Use Standard Fluorescent fixture
Regained		70%	Percentage regained. Assumed that RTUs bring in a minimum of 30% OA
Net kWh		260	Resultant kWh from percentage reductions.
Net btu		886,953	Conversion of kWh to btu's.
Therms		(9)	Conversion of btu's to Therms
Htg. Eff.		80%	Heating system efficiency.
Net Penalty		(11.1)	Therms
$/Therm	$	1.26	Cost per Therm
Penalty	$	(14)	Final heating reduction penalty.

ALL ESTIMATES ARE +/- 80% ACCURATE -DO NOT USE FOR PROCUREMENT

Note: pricing is for energy calculations only -do not use for procurement

ECM-16: Window Replacement

Existing: Windows are not energy efficiency single paned windows
Proposed: Install energy efficient vinyl windows

Linear Feet of window Edge	3,302.0 LF	Cooling System Efficiency	1.2 kW/ton	Heating System Efficiency	80%			
Area of window glass	2,857.5 SF	Ex Occupied Clng Temp.	74 *F	Heating On Temp.	60 *F			
Existing Infiltration Factor	**0.20 cfm/LF**	Ex Unoccupied Clng Temp.	78 *F	Ex Occupied Htg Temp.	68 *F			
Proposed Infiltration Factor	**0.10 cfm/LF**	Cooling Occ Enthalpy Setpoint	27.5 Btu/lb	Ex Unoccupied Htg Temp.	60 *F			
Existing U Value	**0.60 Btuh/SF/°F**	Cooling Unocc Enthalpy Setpoint	27.5 Btu/lb	Electricity	$ 0.234	$/kWh		
Proposed U Value	**0.45 Btuh/SF/°F**			Natural Gas	$ 1.26	$/therm		

					EXISTING LOADS		PROPOSED LOADS		COOLING ENERGY		HEATING ENERGY	
					Occupied	Unoccupied	Occupied	Unoccupied				
Avg Outdoor Air Temp. Bins °F	**Avg Outdoor Air Enthalpy**	**Existing Equipment Bin Hours**	**Occupied Equipment Bin Hours**	**Unoccupied Equipment Bin Hours**	**Window Infiltration & Heat Load BTUH**	**Window Infiltration & Heat Load BTUH**	**Window Infiltration & Heat Load BTUH**	**Window Infiltration & Heat Load BTUH**	**Existing Cooling Energy kWh**	**Proposed Cooling Energy kWh**	**Existing Heating Energy Therms**	**Proposed Heating Energy Therms**
A		**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**
102.5	50.1	0	0	0	-116,026	-109,168	-70,229	-65,085	0	0	0	0
97.5	42.5	3	1	2	-84,868	-78,010	-52,507	-47,363	24	15	0	0
92.5	39.5	34	11	23	-67,380	-60,522	-41,619	-36,476	213	130	0	0
87.5	36.6	131	43	88	-50,189	-43,331	-30,881	-25,738	597	359	0	0
82.5	34.0	500	164	336	-33,890	-27,032	-20,588	-15,445	1464	856	0	0
77.5	31.6	620	203	417	-18,185	0	-10,593	0	369	215	0	0
72.5	29.2	664	217	447	0	0	0	0	0	0	0	0
67.5	27.0	854	280	574	0	0	0	0	0	0	0	0
62.5	24.5	927	303	624	0	0	0	0	0	0	0	0
57.5	21.4	600	196	404	25,491	6,069	17,246	4,106	0	0	93	63
52.5	18.7	610	200	410	37,630	18,208	25,459	12,319	0	0	187	127
47.5	16.2	611	200	411	49,769	30,347	33,671	20,531	0	0	280	190
42.5	14.4	656	215	441	61,907	42,485	41,884	28,744	0	0	401	271
37.5	12.6	1,023	335	688	74,046	54,624	50,096	36,956	0	0	780	528
32.5	10.7	734	240	494	86,184	66,763	58,308	45,169	0	0	671	454
27.5	8.6	334	109	225	98,323	78,901	66,521	53,381	0	0	356	241
22.5	6.8	252	83	170	110,462	91,040	74,733	61,593	0	0	307	208
17.5	5.5	125	41	84	122,600	103,179	82,946	69,806	0	0	171	116
12.5	4.1	47	15	32	134,739	115,317	91,158	78,018	0	0	71	48
7.5	2.6	22	7	15	146,878	127,456	99,371	86,231	0	0	37	25
2.5	1.0	13	4	9	159,016	139,595	107,583	94,443	0	0	24	16
0.0	0.0	0	0	0	165,086	145,664	111,689	98,549	0	0	0	0
TOTALS		**8,760**	**2,868**	**5,892**					2668	1575	**3,378**	**2,285**

Existing Window Infiltration	**660 cfm**	**Savings**	**1,093**	**Therms**	**$**	**1,380**
Existing Window Heat Transfer	**1,715 Btuh/°F**		**1,092**	**kWh**	**$**	**256**
Proposed Window Infiltration	**330 cfm**				**$**	**1,636**
Proposed Window Heat Transfer	**1,286 Btuh/°F**					

Window ID	Location	Quantity	Width (ft)	Height (ft)	Linear Feet (LF)	Area (SF)	Infiltration Rate (CFM/LF)	U Value (Btuh/SF/°F)	Infiltration (CFM)	Heat Transfer (Btuh/°F)
1	North	8	4	4	128.0	128.0	0.2	0.6	25.6	76.8
2	North	100	3.5	3.5	1400.0	1225.0	0.2	0.6	280.0	735.0
3	South	112	3.5	3.5	1568.0	1372.0	0.2	0.6	313.6	823.2
5	East	10	3.5	1	90.0	35.0	0.2	0.6	18.0	21.0
6	East	3	2	8	60.0	48.0	0.2	0.6	12.0	28.8
7	East	2	3.5	2.5	24.0	17.5	0.2	0.6	4.8	10.5
8	West	2	4	4	32.0	32.0	0.2	0.6	6.4	19.2
Total		**237**	**24**	**26.5**	**3,302.0**	**2,857.5**	**0.20**	**0.60**	**660.4**	**1714.5**

Note: pricing is for energy calculations only -do not use for procurement

ECM-17 Roof Replacement

Existing: Ceiling can lead to increased energy consumption due to infiltration/exfiltration and heat gain/loss.
Proposed: Install EPDM roofing membrane system to reduce heat transfer.

Area of ceiling	46,870 SF	Cooling System Efficiency	1.2 kW/ton	Heating System Efficiency	80%		
Existing Infiltration Factor	**0.20 cfm/SF**	Ex Occupied Clng Temp.	74 *F	Heating On Point	58 *F		
Proposed Infiltration Factor	**0.20 cfm/SF**	Ex Unoccupied Clng Temp.	78 *F	Ex Occupied Htg Temp.	68 *F		
Existing U Value	**0.077 Btuh/SF/°F**	Cooling Occ Enthalpy Setpoint	27.5 Btu/lb	Ex Unoccupied Htg Temp.	60 *F		
Proposed U Value	**0.056 Btuh/SF/°F**	Cooling Unocc Enthalpy Setpoint	27.5 Btu/lb	Electricity	$ 0.234	$/kWh	
(Loose-Fill R-2.7/inch)				Natural Gas	$ 1.26	$/Therm	

					EXISTING LOADS		PROPOSED LOADS		COOLING ENERGY		HEATING ENERGY	
					Occupied	Unoccupied	Occupied	Unoccupied				
Avg Outdoor Air Temp. Bins °F	**Avg Outdoor Air Enthalpy**	**Existing Equipment Bin Hours**	**Occupied Equipment Bin Hours**	**Unoccupied Equipment Bin Hours**	**Wall Infiltration & Heat Load BTUH**	**Wall Infiltration & Heat Load BTUH**	**Wall Infiltration & Heat Load BTUH**	**Wall Infiltration & Heat Load BTUH**	**Existing Cooling Energy kWh**	**Proposed Cooling Energy kWh**	**Existing Heating Energy Therm**	**Proposed Heating Energy Therm**
A		**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**
97.5	42.5	0	0	0	(717,472)	(703,050)	(693,936)	(683,521)	-	-	-	-
92.5	39.5	36	10	26	(572,896)	(558,474)	(554,368)	(543,952)	2,024	1,968	-	-
87.5	36.6	123	33	90	(432,538)	(418,116)	(419,018)	(408,602)	5,190	5,060	-	-
82.5	34.0	477	128	349	(304,835)	(290,414)	(296,323)	(285,907)	14,037	13,771	-	-
77.5	31.6	656	176	480	(185,569)	0	(182,064)	0	3,261	3,199	-	-
72.5	29.2	742	199	543	0	0	0	0	-	-	-	-
67.5	27.0	784	210	574	0	0	0	0	-	-	-	-
62.5	24.5	983	263	720	0	0	0	0	-	-	-	-
57.5	21.4	625	167	458	144,158	34,323	133,642	31,820	-	-	498	462
52.5	18.7	438	117	321	212,804	102,970	197,281	95,459	-	-	725	672
47.5	16.2	559	150	409	281,451	171,616	260,920	159,098	-	-	1,405	1,302
42.5	14.4	671	180	491	350,097	240,263	324,559	222,737	-	-	2,262	2,097
37.5	12.6	1,067	286	781	418,744	308,909	388,198	286,376	-	-	4,512	4,183
32.5	10.7	685	183	502	487,390	377,556	451,837	350,015	-	-	3,485	3,231
27.5	8.6	369	99	270	556,037	446,202	515,476	413,654	-	-	2,194	2,034
22.5	6.8	321	86	235	624,683	514,849	579,115	477,293	-	-	2,184	2,025
17.5	5.5	184	49	135	693,330	583,495	642,754	540,932	-	-	1,410	1,307
12.5	4.1	40	11	29	761,976	652,142	706,393	604,571	-	-	341	316
7.5	2.6	0	0	0	830,623	720,788	770,032	668,210	-	-	-	-
2.5	1.0	0	0	0	899,269	789,435	833,671	731,849	-	-	-	-
-2.5	0.0	0	0	0	967,916	858,082	897,311	795,488	-	-	-	-
-7.5	-1.5	0	0	0	1,036,562	926,728	960,950	859,127	-	-	-	-
-12.5	-2.8	0	0	0	1,105,209	995,375	1,024,589	922,766	-	-	-	-
TOTALS		**8,760**	**2,346**	**6,414**					24,512	23,998	**19,015**	**17,628**

Existing Ceiling Infiltration	**9,374 cfm**		
Existing Ceiling Heat Transfer	**3,605 Btuh/°F**		
Proposed Ceiling Infiltration	**9,374 cfm**		
Proposed Ceiling Heat Transfer	**2,604 Btuh/°F**		

Savings	**1,387**	**Therm**	**$ 1,751**
	514	**kWh**	**$ 121**
			$ 1,872

ECM-M8A: Install Demand Control Ventilation

Description:
Outside air can be significantly reduced for most of the time that the building is occupied.
Savings will result from the avoided heating and cooling of excessive outside air.

Method:
The outdoor air introduced into the spaces is currently constant based on design occupancy conditions.
This ECM proposes the installation of CO2 sensors in the space to allow for reduced outdoor air flows when conditions allow.
An average reduction of 50% is assumed possible with the implementation of DCV
The DCV system will automatically adjust the outdoor air damper position through the EMS to reduce outdoor air flows based on indoor CO2 levels.
This ECM has been interacted with the new boiler ECMs and accounts for the reduced operating hours of the unit via EMS scheduling.

RTU-2

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
			Existing					Proposed Demand Ventilation					Savings	
Avg. DB Bin Temp °F	OA Enthalpy Btu/lb	Occupied Bin HOURS	OA CFM	Cooling Load MBH	Heating Load MBH	Cooling kWh	Heating therms	Derated O.A. CFM	Cooling Load MBH	Heating Load MBH	Cooling kWh	Heating therms	Cooling kWh	Heating therms
102.5	49.1	-	2,000	204	0	0	-	1,000	102	0	0	-	0	-
97.5	42.5	1	2,000	145	0	14	-	1,000	72	0	7	-	7	-
92.5	39.5	11	2,000	118	0	131	-	1,000	59	0	66	-	66	-
87.5	36.6	43	2,000	92	0	394	-	1,000	46	0	197	-	197	-
82.5	34	164	2,000	68	0	1,119	-	1,000	34	0	560	-	560	-
77.5	31.6	203	2,000	47	0	950	-	1,000	23	0	475	-	475	-
72.5	29.2	217	2,000	25	0	548	-	1,000	13	0	274	-	274	-
67.5	27	280	2,000	5	0	151	-	1,000	3	0	75	-	75	-
62.5	24.5	303	2,000	0	0	0	-	1,000	0	0	0	-	0	-
57.5	21.4	196	2,000	0	0	0	-	1,000	0	0	0	-	0	-
52.5	18.7	200	2,000	0	33	0	84	1,000	0	17	0	42	0	42
47.5	16.2	200	2,000	0	44	0	111	1,000	0	22	0	55	0	55
42.5	14.4	215	2,000	0	55	0	148	1,000	0	28	0	74	0	74
37.5	12.6	335	2,000	0	66	0	276	1,000	0	33	0	138	0	138
32.5	10.7	240	2,000	0	77	0	230	1,000	0	38	0	115	0	115
27.5	8.6	109	2,000	0	87	0	120	1,000	0	44	0	60	0	60
22.5	6.8	83	2,000	0	98	0	101	1,000	0	49	0	51	0	51
17.5	5.5	41	2,000	0	109	0	56	1,000	0	55	0	28	0	28
12.5	4.1	15	2,000	0	120	0	23	1,000	0	60	0	12	0	12
7.5	2.6	7	2,000	0	131	0	12	1,000	0	65	0	6	0	6
2.5	1	4	2,000	0	141	0	8	1,000	0	71	0	4	0	4
-2.5	0	-	2,000	0	152	0	-	1,000	0	76	0	-	0	-
-7.5	-1.5	-	2,000	0	163	0	-	1,000	0	82	0	-	0	-
Total		**2,868**		**705**		**3,307**	**1,167**		**352**		**1,653**	**584**	**1,653**	**584**

	Total CFM	O.A. CFM	O.A. %
Org. scheduled CFM	6,665	2,000	30%
Derated CFM	6,665	1,000	15%
SA Enthalpy	26.4	BTU/lbma	
SA Set point, Winter	68.0	°F	
SA Set point, Summer	74.0	°F	
Heating "On" Point	55.0	°F	
Cooling System Eff.	1.20	kW/Ton	
Heating System Eff.	80%		

DEMAND CONTROL VENTILATION SAVINGS SUMMARY					
	Electric Demand	Electric Usage	Nat Gas Usage	Maint.	Total Cost
	(kW)	(kWh)	(Therms)	($)	($)
Savings		**1,653**	**584**	**$0**	**$737**

Multipliers	
Material:	1.00
Labor:	1.25
Equipment:	1.00

ECM-M8A: Install Demand Control Ventilation - Cost

Description	QTY	UNIT	UNIT COSTS			SUBTOTAL COSTS			TOTAL COST	REMARKS
			MAT.	LABOR	EQUIP.	MAT.	LABOR	EQUIP.		
CO2 sensor	1	ea	$ 400	$ 100	$ -	$ 399	$ 125	$ -	$ 500	
Replace damper actuators	1	ea	$ 100	$ 50	$ -	$ 100	$ 62	$ -	$ 200	
Control system programming	1	ls	$ 500	$ 1,000	$ -	$ 499	$ 1,246	$ -	$ 1,700	
electrical/wiring	1	ls	$ 1,000	$ 2,000	$ -	$ 997	$ 2,492	$ -	$ 3,500	

$ 5,900	Subtotal
$ 1,180	20% Contingency
$ 885	15% Contractor O&P
$ 885	15% Engineering
$ 8,850	**Total**

ECM-1 Lighting Replacements

Budgetary	Annual Utility Savings				Estimated	Total	New Jersey	Payback	Payback
Cost					Maintenance	Savings	Incentive	(without incentive)	(with incentive)
					Savings				
$	kW	kWh	therms	$	$	$	$	Years	Years
$5,753	**7.9**	**15,676**	**0**	**$2,313**	**0**	**$2,313**	**$1,040**	**2.5**	**2.0**

*Incentive based on New Jersey Smart Start Prescriptive Lighting Measures

ECM-2 Install Occupancy Sensors

Budgetary	Annual Utility Savings				Estimated	Total	New Jersey	Payback	Payback
Cost					Maintenance	Savings	Incentive	(without incentive)	(with incentive)
					Savings				
$	kW	kWh	therms	$	$	$	$	Years	Years
$32,400	**0.0**	**25,345**	**0**	**$2,712**	**0**	**$2,712**	**$5,600**	**11.9**	**9.9**

*Incentive based on New Jersey Smart Start Prescriptive Lighting Measures

ECM-3 Lighting Replacements with Occupancy Sensors

Budgetary	Annual Utility Savings				Estimated	Total	New Jersey	Payback	Payback
Cost					Maintenance	Savings	Incentive	(without incentive)	(with incentive)
					Savings				
$	kW	kWh	therms	$	$	$	$	Years	Years
$38,153	**7.9**	**40,835**	**0**	**$5,005**	**0**	**$5,005**	**$6,640**	**7.6**	**6.3**

*Incentive based on New Jersey Smart Start Prescriptive Lighting Measures

Energy Audit of Jefferson Elementary School

CHA Project No.24454

Existing Lighting

Cost of Electricity: **$0.107** **$/kWh**

$6.74 **$/kW**

			EXISTING CONDITIONS									
	Area Description	**Usage**	**No. of Fixtures**	**Standard Fixture Code**	**Fixture Code**	**Watts per Fixture**	**kW/Space**	**Exist Control**	**Annual Hours**	**Retrofit Control**	**Annual kWh**	
213	Main Office	Offices	12	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	1.08	SW	2400	C-OCC	2,592	
254	Principal's Office	Offices	2	T 32 R F 4 (ELE)	F44LL	118	0.24	SW	2400	C-OCC	566	
213	Conference Room	Offices	4	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.36	SW	2400	C-OCC	864	
15	Main Office Bathroom	Bath Room	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	2000	SW	120	
15	Main Office Area Closet	Storage Areas	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	1000	SW	60	
245	Library	Classrooms	32	T 32 R F 3 (ELE)	F43LE	110	3.52	SW	2400	C-OCC	8,448	
1	Library	Classrooms	8	SQ 13 W CF 2 (MAG)	CFQ13/2	31	0.25	SW	2400	C-OCC	595	
5	Library	Classrooms	2	2T 32 R F 2 (u) (ELE)	FU2LL	60	0.12	SW	2400	C-OCC	288	
245	Library Office 1	Offices	1	T 32 R F 3 (ELE)	F43LE	110	0.11	SW	2400	C-OCC	264	
254	Library Office 2	Offices	2	T 32 R F 4 (ELE)	F44LL	118	0.24	SW	2400	C-OCC	566	
254	Computer Room	Classrooms	12	T 32 R F 4 (ELE)	F44LL	118	1.42	SW	2400	C-OCC	3,398	
15	Central Mechanical	Storage Areas	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	1000	SW	120	
15	Central Electrical	Storage Areas	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	1000	SW	120	
15	Central Storage	Storage Areas	4	S 32 C F 2 (ELE)	F42LL	60	0.24	SW	1000	SW	240	
20	Room 1	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384	
15	Room 1	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288	
20	Room 1	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384	
20	Room 1	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384	
15	Room 1	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288	
20	Room 1	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384	
20	Room 2	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384	
15	Room 2	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288	
20	Room 2	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384	
15	Room 2	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288	
20	Room 2	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384	
20	Room 3	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384	
15	Room 3	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288	
20	Room 3	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384	
20	Room 3	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384	
15	Room 3	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288	
20	Room 3	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384	
20	Room 4	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384	
15	Room 4	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288	
20	Room 4	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384	
20	Room 4	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384	
15	Room 4	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288	
20	Room 4	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384	
20	Room 5	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384	
15	Room 5	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288	
20	Room 5	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384	
20	Room 5	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384	
15	Room 5	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288	
20	Room 5	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384	
20	Room 6	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384	
15	Room 6	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288	
20	Room 6	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384	
20	Room 6	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384	
15	Room 6	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288	
20	Room 6	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384	
20	Room 7	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384	
15	Room 7	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288	
20	Room 7	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384	
20	Room 7	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384	
15	Room 7	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288	

Energy Audit of Jefferson Elementary School

CHA Project No.24454

Existing Lighting

Cost of Electricity: **$0.107** **$/kWh**

$6.74 **$/kW**

			EXISTING CONDITIONS									
	Area Description	**Usage**	**No. of Fixtures**	**Standard Fixture Code**	**Fixture Code**	**Watts per Fixture**	**kW/Space**	**Exist Control**	**Annual Hours**	**Retrofit Control**	**Annual kWh**	
20	Room 7	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384	
20	W. Boy's Bathroom	Bath Room	2	S 32 C F 1 (ELE)	F41LL	32	0.06	SW	2000	SW	128	
20	W. Girl's Bathroom	Bath Room	2	S 32 C F 1 (ELE)	F41LL	32	0.06	SW	2000	SW	128	
20	W. Closet	Storage Areas	1	S 32 C F 1 (ELE)	F41LL	32	0.03	SW	1000	SW	32	
20	Room 8	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384	
15	Room 8	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288	
20	Room 8	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384	
20	Room 8	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384	
15	Room 8	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288	
20	Room 8	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384	
108	Room 8 Bathroom	Bath Room	1	I 65	I65/1	65	0.07	SW	2000	SW	130	
20	Room 9	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384	
15	Room 9	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288	
20	Room 9	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384	
20	Room 9	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384	
15	Room 9	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288	
20	Room 9	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384	
108	Room 9 Bathroom	Bath Room	1	I 65	I65/1	65	0.07	SW	2000	SW	130	
20	Room 10	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384	
15	Room 10	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288	
20	Room 10	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384	
20	Room 10	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384	
15	Room 10	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288	
20	Room 10	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384	
108	Room 10 Bathroom	Bath Room	1	I 65	I65/1	65	0.07	SW	2000	SW	130	
20	Room 11	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384	
15	Room 11	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288	
20	Room 11	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384	
20	Room 11	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384	
15	Room 11	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288	
20	Room 11	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384	
108	Room 11 Bathroom	Bath Room	1	I 65	I65/1	65	0.07	SW	2000	SW	130	
20	Room 12	Classrooms	15	S 32 C F 1 (ELE)	F41LL	32	0.48	SW	2400	C-OCC	1,152	
15	Room 12	Classrooms	4	S 32 C F 2 (ELE)	F42LL	60	0.24	SW	2400	C-OCC	576	
20	Room 12	Classrooms	3	S 32 C F 1 (ELE)	F41LL	32	0.10	SW	2400	C-OCC	230	
108	Room 12 Bathroom	Bath Room	1	I 65	I65/1	65	0.07	SW	2000	SW	130	
20	Room 14	Classrooms	15	S 32 C F 1 (ELE)	F41LL	32	0.48	SW	2400	C-OCC	1,152	
15	Room 14	Classrooms	4	S 32 C F 2 (ELE)	F42LL	60	0.24	SW	2400	C-OCC	576	
20	Room 14	Classrooms	3	S 32 C F 1 (ELE)	F41LL	32	0.10	SW	2400	C-OCC	230	
108	Room 14 Bathroom	Bath Room	1	I 65	I65/1	65	0.07	SW	2000	SW	130	
4	Faculty Room	Offices	4	2B 34 R F 2 (u) (MAG)	FU2EE	72	0.29	SW	2400	C-OCC	691	
15	Faculty Room Men's Bathroom	Bath Room	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2000	SW	240	
15	Faculty Room Women's Bathroom	Bath Room	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2000	SW	240	
20	Nurse	Offices	10	S 32 C F 1 (ELE)	F41LL	32	0.32	SW	2400	C-OCC	768	
15	Nurse Bathroom	Bath Room	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	2000	SW	120	
213	Art Room	Classrooms	15	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	1.35	SW	2400	C-OCC	3,240	
245	Art Room A	Offices	1	T 32 R F 3 (ELE)	F43LE	110	0.11	C-OCC	2400	C-OCC	264	
245	Art Room B	Offices	1	T 32 R F 3 (ELE)	F43LE	110	0.11	C-OCC	2400	C-OCC	264	
213	Art Room Area Office	Offices	2	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.18	SW	2400	C-OCC	432	
213	Room 39	Offices	4	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.36	SW	2400	C-OCC	864	
119A	Room 39 A	Offices	1	6 Lamp 32 Square	F46LL	182	0.18	SW	2400	C-OCC	437	
213	38	Offices	4	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.36	SW	2400	C-OCC	864	
20	Room G	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384	
20	Room 13	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384	
15	Room 13	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288	

Energy Audit of Jefferson Elementary School

CHA Project No.24454

Existing Lighting

Cost of Electricity: **$0.107** **$/kWh**

$6.74 **$/kW**

			EXISTING CONDITIONS								
	Area Description	**Usage**	**No. of Fixtures**	**Standard Fixture Code**	**Fixture Code**	**Watts per Fixture**	**kW/Space**	**Exist Control**	**Annual Hours**	**Retrofit Control**	**Annual kWh**
20	Room 13	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384
20	Room 13	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384
15	Room 13	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288
20	Room 13	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384
20	Room 15	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384
15	Room 15	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288
20	Room 15	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384
20	Room 15	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384
15	Room 15	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288
20	Room 15	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384
20	Room 16	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384
15	Room 16	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288
20	Room 16	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384
20	Room 16	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384
15	Room 16	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288
20	Room 16	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384
20	Room 17	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384
15	Room 17	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288
20	Room 17	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384
20	Room 17	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384
15	Room 17	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288
20	Room 17	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384
20	Room 18	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384
15	Room 18	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288
20	Room 18	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384
20	Room 18	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384
15	Room 18	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288
20	Room 18	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384
20	Room 19	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384
15	Room 19	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288
20	Room 19	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384
20	Room 19	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384
15	Room 19	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288
20	Room 19	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384
20	Room 20	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384
15	Room 20	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288
20	Room 20	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384
20	Room 20	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384
15	Room 20	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288
20	Room 20	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384
20	Room 22	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384
15	Room 22	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288
20	Room 22	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384
20	Room 22	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384
15	Room 22	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288
20	Room 22	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384
20	Room 24	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384
15	Room 24	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288
20	Room 24	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384
20	Room 24	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384
15	Room 24	Classrooms	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288
20	Room 24	Classrooms	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	C-OCC	384
213	Room 35-36	Classrooms	6	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.54	SW	2400	C-OCC	1,296
213	Room 35-36	Classrooms	6	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.54	SW	2400	C-OCC	1,296
20	Room 35-36 Storage	Storage Areas	3	S 32 C F 1 (ELE)	F41LL	32	0.10	SW	1000	SW	96

Energy Audit of Jefferson Elementary School

CHA Project No.24454

Existing Lighting

Cost of Electricity: $0.107 $/kWh
$6.74 $/kW

			EXISTING CONDITIONS								
	Area Description	**Usage**	**No. of Fixtures**	**Standard Fixture Code**	**Fixture Code**	**Watts per Fixture**	**kW/Space**	**Exist Control**	**Annual Hours**	**Retrofit Control**	**Annual kWh**
20	E. Boy's Bathroom	Bath Room	2	S 32 C F 1 (ELE)	F41LL	32	0.06	SW	2000	SW	128
20	E. Girl's Bathroom	Bath Room	2	S 32 C F 1 (ELE)	F41LL	32	0.06	SW	2000	SW	128
20	E. Closet	Storage Areas	1	S 32 C F 1 (ELE)	F41LL	32	0.03	SW	1000	SW	32
20	E. Custodian Room	Storage Areas	3	S 32 C F 1 (ELE)	F41LL	32	0.10	SW	1000	SW	96
20	E. Custodian Room	Storage Areas	1	S 32 C F 1 (ELE)	F41LL	32	0.03	SW	1000	SW	32
20	Cafeteria	Cafeteria	8	S 32 C F 1 (ELE)	F41LL	32	0.26	SW	1600	C-OCC	410
20	Cafeteria	Cafeteria	8	S 32 C F 1 (ELE)	F41LL	32	0.26	SW	1600	C-OCC	410
20	Cafeteria	Cafeteria	8	S 32 C F 1 (ELE)	F41LL	32	0.26	SW	1600	C-OCC	410
20	Kitchen	Cafeteria	18	S 32 C F 1 (ELE)	F41LL	32	0.58	SW	1600	C-OCC	922
15	Kitchen Office	Offices	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	C-OCC	288
108	Kitchen Bathroom	Bath Room	1	I 65	I65/1	65	0.07	SW	2000	SW	130
108	Kitchen Bathroom	Bath Room	1	I 65	I65/1	65	0.07	SW	2000	SW	130
198	Kitchen Bathroom	Bath Room	1	2T 17 R F 2 (ELE)	F22LL	31	0.03	SW	2000	SW	62
108	Kitcehn Closet	Storage Areas	1	I 65	I65/1	65	0.07	SW	1000	SW	65
108	Kitcehn Closet	Storage Areas	1	I 65	I65/1	65	0.07	SW	1000	SW	65
198	Kitcehn Closet	Storage Areas	1	2T 17 R F 2 (ELE)	F22LL	31	0.03	SW	1000	SW	31
20	Music Room	Classrooms	12	S 32 C F 1 (ELE)	F41LL	32	0.38	SW	2400	C-OCC	922
20	Music Room	Classrooms	4	S 32 C F 1 (ELE)	F41LL	32	0.13	SW	2400	C-OCC	307
20	Music Room	Classrooms	2	S 32 C F 1 (ELE)	F41LL	32	0.06	SW	2400	C-OCC	154
108	Music Room Closet	Storage Areas	1	I 65	I65/1	65	0.07	SW	1000	SW	65
10	Gym	Gynasium	2	High Bay MH 1000	MH1000/1	1080	2.16	SW	2000	C-OCC	4,320
10	Gym	Gynasium	2	High Bay MH 1000	MH1000/1	1080	2.16	SW	2000	C-OCC	4,320
10	Gym	Gynasium	2	High Bay MH 1000	MH1000/1	1080	2.16	SW	2000	C-OCC	4,320
10	Gym	Gynasium	2	High Bay MH 1000	MH1000/1	1080	2.16	SW	2000	C-OCC	4,320
10	Gym	Gynasium	2	High Bay MH 1000	MH1000/1	1080	2.16	SW	2000	C-OCC	4,320
191	Stage	Storage Areas	1	S 60 C F 2 (ELE) 8'	F82EE	123	0.12	SW	1000	SW	123
20	Gym Boy's Bathroom	Bath Room	4	S 32 C F 1 (ELE)	F41LL	32	0.13	SW	2000	SW	256
20	Gym Girl's Bathroom	Bath Room	4	S 32 C F 1 (ELE)	F41LL	32	0.13	SW	2000	SW	256
20	Gym Storage Closet Large	Storage Areas	10	S 32 C F 1 (ELE)	F41LL	32	0.32	SW	1000	SW	320
20	Gym Area Storage	Storage Areas	3	S 32 C F 1 (ELE)	F41LL	32	0.10	SW	1000	SW	96
15	Main Hallway	Hallways	38	S 32 C F 2 (ELE)	F42LL	60	2.28	SW	2280	SW	5,198
15	Front Hallway	Hallways	10	S 32 C F 2 (ELE)	F42LL	60	0.60	SW	2280	SW	1,368
254	Gym Hallway	Hallways	5	T 32 R F 4 (ELE)	F44LL	118	0.59	SW	2280	SW	1,345
15	Rear Entrance Hallway	Hallways	3	S 32 C F 2 (ELE)	F42LL	60	0.18	SW	2280	SW	410
	Total		**853**				**51**				**112,721**

Energy Audit of Jefferson Elementary School

CHA Project No.24454

ECM-1 Lighting Replacements

Cost of Electricity: **$0.107 $/kWh**

$6.74 $/kW

		EXISTING CONDITIONS								RETROFIT CONDITIONS								COST & SAVINGS ANALYSIS						
	Area Description	No. of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Exist Control	Annual Hours	Annual kWh	Number of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Retrofit Control	Annual Hours	Annual kWh	Annual kWh Saved	Annual kW Saved	Annual $ Saved	Retrofit Cost	NJ Smart Start Lighting Incentive	Simple Payback With Out Incentive	Simple Payback
213	Main Office	12	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	1.1	SW	2400	2,592	12	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	1.08	SW	2400	2592	0.00	0.00	$ -	$ -	$ -		
254	Principal's Office	2	T 32 R F 4 (ELE)	F44LL	118	0.2	SW	2400	566	2	T 32 R F 4 (ELE)	F44LL	118	0.236	SW	2400	566.4	0.00	0.00	$ -	$ -	$ -		
213	Conference Room	4	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.4	SW	2400	864	4	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.36	SW	2400	864	0.00	0.00	$ -	$ -	$ -		
15	Main Office Bathroom	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	2000	120	0.00	0.00	$ -	$ -	$ -		
15	Main Office Area Closet	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	1000	60	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	1000	60	0.00	0.00	$ -	$ -	$ -		
245	Library	32	T 32 R F 3 (ELE)	F43LE	110	3.5	SW	2400	8,448	32	T 32 R F 3 (ELE)	F43LE	110	3.52	SW	2400	8448	0.00	0.00	$ -	$ -	$ -		
1	Library	8	SQ 13 W CF 2 (MAG)	CFQ13/2	31	0.2	SW	2400	595	8	SQ 13 W CF 2 (MAG)	CFQ13/2	31	0.248	SW	2400	595.2	0.00	0.00	$ -	$ -	$ -		
5	Library	2	2T 32 R F 2 (u) (ELE)	FU2LL	60	0.1	SW	2400	288	2	2T 32 R F 2 (u) (ELE)	FU2LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
245	Library Office 1	1	T 32 R F 3 (ELE)	F43LE	110	0.1	SW	2400	264	1	T 32 R F 3 (ELE)	F43LE	110	0.11	SW	2400	264	0.00	0.00	$ -	$ -	$ -		
254	Library Office 2	2	T 32 R F 4 (ELE)	F44LL	118	0.2	SW	2400	566	2	T 32 R F 4 (ELE)	F44LL	118	0.236	SW	2400	566.4	0.00	0.00	$ -	$ -	$ -		
254	Computer Room	12	T 32 R F 4 (ELE)	F44LL	118	1.4	SW	2400	3,398	12	T 32 R F 4 (ELE)	F44LL	118	1.416	SW	2400	3398.4	0.00	0.00	$ -	$ -	$ -		
15	Central Mechanical	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	1000	120	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	1000	120	0.00	0.00	$ -	$ -	$ -		
15	Central Electrical	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	1000	120	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	1000	120	0.00	0.00	$ -	$ -	$ -		
15	Central Storage	4	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	1000	240	4	S 32 C F 2 (ELE)	F42LL	60	0.24	SW	1000	240	0.00	0.00	$ -	$ -	$ -		
20	Room 1	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
15	Room 1	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	Room 1	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
20	Room 1	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
15	Room 1	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	Room 1	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
20	Room 2	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
15	Room 2	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	Room 2	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
20	Room 2	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
15	Room 2	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	Room 2	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
20	Room 3	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
15	Room 3	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	Room 3	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
20	Room 3	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
15	Room 3	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	Room 3	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
20	Room 4	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
15	Room 4	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	Room 4	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
20	Room 4	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
15	Room 4	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	Room 4	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
20	Room 5	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
15	Room 5	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	Room 5	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
15	Room 5	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	Room 5	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
20	Room 6	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
15	Room 6	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	Room 6	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
20	Room 6	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
15	Room 6	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	Room 6	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
20	Room 7	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
15	Room 7	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	Room 7	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
20	Room 7	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
15	Room 7	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	Room 7	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
20	W. Boy's Bathroom	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2000	128	2	S 32 C F 1 (ELE)	F41LL	32	0.064	SW	2000	128	0.00	0.00	$ -	$ -	$ -		
20	W. Girl's Bathroom	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2000	128	2	S 32 C F 1 (ELE)	F41LL	32	0.064	SW	2000	128	0.00	0.00	$ -	$ -	$ -		
20	W. Closet	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32	1	S 32 C F 1 (ELE)	F41LL	32	0.032	SW	1000	32	0.00	0.00	$ -	$ -	$ -		
20	Room 8	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
15	Room 8	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	Room 8	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
20	Room 8	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
15	Room 8	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	Room 8	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
108	Room 8 Bathroom	1	I 65	I65/1	65	0.1	SW	2000	130	1	CF 26	CFQ26/1-L	27	0.027	SW	2000	54	76.00	0.04	$ 11.21	$ 20.25	$ -	1.8	0.3
20	Room 9	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
15	Room 9	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	Room 9	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
20	Room 9	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
15	Room 9	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	Room 9	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
108	Room 9 Bathroom	1	I 65	I65/1	65	0.1	SW	2000	130	1	CF 26	CFQ26/1-L	27	0.027	SW	2000	54	76.00	0.04	$ 11.21	$ 20.25	$ -	1.8	0.3
20	Room 10	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
15	Room 10	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	Room 10	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
20	Room 10	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
15	Room 10	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	Room 10	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
108	Room 10 Bathroom	1	I 65	I65/1	65	0.1	SW	2000	130	1	CF 26	CFQ26/1-L	27	0.027	SW	2000	54	76.00	0.04	$ 11.21	$ 20.25	$ -	1.8	0.3
20	Room 11	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
15	Room 11	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	Room 11	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
20	Room 11	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
15	Room 11	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	Room 11	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
108	Room 11 Bathroom	1	I 65	I65/1	65	0.1	SW	2000	130	1	CF 26	CFQ26/1-L	27	0.027	SW	2000	54	76.00	0.04	$ 11.21	$ 20.25	$ -	1.8	0.3
20	Room 12	15	S 32 C F 1 (ELE)	F41LL	32	0.5	SW	2400	1,152	15	S 32 C F 1 (ELE)	F41LL	32	0.48	SW	2400	1152	0.00	0.00	$ -	$ -	$ -		
15	Room 12	4	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	2400	576	4	S 32 C F 2 (ELE)	F42LL	60	0.24	SW	2400	576	0.00	0.00	$ -	$ -	$ -		
20	Room 12	3	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	230	3	S 32 C F 1 (ELE)	F41LL	32	0.096	SW	2400	230.4	0.00	0.00	$ -	$ -	$ -		
108	Room 12 Bathroom	1	I 65	I65/1	65	0.1	SW	2000	130	1	CF 26	CFQ26/1-L	27	0.027	SW	2000	54	76.00	0.04	$ 11.21	$ 20.25	$ -	1.8	0.3
20	Room 14	15	S 32 C F 1 (ELE)	F41LL	32	0.5	SW	2400	1,152	15	S 32 C F 1 (ELE)	F41LL	32	0.48	SW	2400	1152	0.00	0.00	$ -	$ -	$ -		
15	Room 14	4	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	2400	576	4	S 32 C F 2 (ELE)	F42LL	60	0.24	SW	2400	576	0.00	0.00	$ -	$ -	$ -		

Energy Audit of Jefferson Elementary School

CHA Project No.24454

ECM-1 Lighting Replacements

Cost of Electricity: **$0.107 $/kWh**

$6.74 $/kW

		EXISTING CONDITIONS								RETROFIT CONDITIONS								COST & SAVINGS ANALYSIS						
	Area Description	No. of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Exist Control	Annual Hours	Annual kWh	Number of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Retrofit Control	Annual Hours	Annual kWh	Annual kWh Saved	Annual kW Saved	Annual $ Saved	Retrofit Cost	NJ Smart Start Lighting Incentive	Simple Payback With Out Incentive	Simple Payback
20	Room 14	3	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	230	3	S 32 C F 1 (ELE)	F41LL	32	0.096	SW	2400	230.4	0.00	0.00	$ -	$ -	$ -		
108	Room 14 Bathroom	1	I 65	I65/1	65	0.1	SW	2000	130	1	CF 26	CFQ26/1-L	27	0.027	SW	2000	54	76.00	0.04	$ 11.21	$ 20.25	$ -	1.8	0.3
4	Faculty Room	4	2B 34 R F 2 (u) (MAG)	FU2EE	72	0.3	SW	2400	691	4	2T 17 R F 2 (ELE)	F22ILL	33	0.132	SW	2400	316.8	374.40	0.16	$ 52.68	$ 405.00	$ 40.00	7.7	1.0
15	Faculty Room Men's Bathroom	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2000	240	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2000	240	0.00	0.00	$ -	$ -	$ -		
15	Faculty Room Women's Bathroom	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2000	240	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2000	240	0.00	0.00	$ -	$ -	$ -		
20	Nurse	10	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	2400	768	10	S 32 C F 1 (ELE)	F41LL	32	0.32	SW	2400	768	0.00	0.00	$ -	$ -	$ -		
15	Nurse Bathroom	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	2000	120	0.00	0.00	$ -	$ -	$ -		
213	Art Room	15	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	1.4	SW	2400	3,240	15	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	1.35	SW	2400	3240	0.00	0.00	$ -	$ -	$ -		
245	Art Room A	1	T 32 R F 3 (ELE)	F43LE	110	0.1	C-OCC	2400	264	1	T 32 R F 3 (ELE)	F43LE	110	0.11	C-OCC	2400	264	0.00	0.00	$ -	$ -	$ -		
245	Art Room B	1	T 32 R F 3 (ELE)	F43LE	110	0.1	C-OCC	2400	264	1	T 32 R F 3 (ELE)	F43LE	110	0.11	C-OCC	2400	264	0.00	0.00	$ -	$ -	$ -		
213	Art Room Area Office	2	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.2	SW	2400	432	2	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.18	SW	2400	432	0.00	0.00	$ -	$ -	$ -		
213	Room 39	4	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.4	SW	2400	864	4	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.36	SW	2400	864	0.00	0.00	$ -	$ -	$ -		
119A	Room 39 A	1	6 Lamp 32 Square	F46LL	182	0.2	SW	2400	437	1	6 Lamp 32 Square	F46LL	182	0.182	SW	2400	436.8	0.00	0.00	$ -	$ -	$ -		
213	38	4	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.4	SW	2400	864	4	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.36	SW	2400	864	0.00	0.00	$ -	$ -	$ -		
20	Room G	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
20	Room 13	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
15	Room 13	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	Room 13	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
20	Room 13	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
15	Room 13	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	Room 13	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
20	Room 15	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
15	Room 15	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	Room 15	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
20	Room 15	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
15	Room 15	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	Room 15	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
20	Room 16	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
15	Room 16	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	Room 16	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
20	Room 16	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
15	Room 16	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	Room 16	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
20	Room 17	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
15	Room 17	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	Room 17	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
20	Room 17	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
15	Room 17	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	Room 17	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
20	Room 18	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
15	Room 18	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	Room 18	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
20	Room 18	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
15	Room 18	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	Room 18	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
20	Room 19	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
15	Room 19	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	Room 19	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
20	Room 19	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
15	Room 19	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	Room 19	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
20	Room 20	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
15	Room 20	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	Room 20	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
20	Room 20	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
15	Room 20	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	Room 20	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
20	Room 22	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
15	Room 22	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	Room 22	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
20	Room 22	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
15	Room 22	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	Room 22	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
20	Room 24	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
15	Room 24	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	Room 24	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
20	Room 24	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
15	Room 24	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
20	Room 24	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	0.00	0.00	$ -	$ -	$ -		
213	Room 35-36	6	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.5	SW	2400	1,296	6	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.54	SW	2400	1296	0.00	0.00	$ -	$ -	$ -		
213	Room 35-36	6	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.5	SW	2400	1,296	6	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.54	SW	2400	1296	0.00	0.00	$ -	$ -	$ -		
20	Room 35-36 Storage	3	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	1000	96	3	S 32 C F 1 (ELE)	F41LL	32	0.096	SW	1000	96	0.00	0.00	$ -	$ -	$ -		
20	E. Boy's Bathroom	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2000	128	2	S 32 C F 1 (ELE)	F41LL	32	0.064	SW	2000	128	0.00	0.00	$ -	$ -	$ -		
20	E. Girl's Bathroom	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2000	128	2	S 32 C F 1 (ELE)	F41LL	32	0.064	SW	2000	128	0.00	0.00	$ -	$ -	$ -		
20	E. Closet	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32	1	S 32 C F 1 (ELE)	F41LL	32	0.032	SW	1000	32	0.00	0.00	$ -	$ -	$ -		
20	E. Custodian Room	3	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	1000	96	3	S 32 C F 1 (ELE)	F41LL	32	0.096	SW	1000	96	0.00	0.00	$ -	$ -	$ -		
20	E. Custodian Room	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32	1	S 32 C F 1 (ELE)	F41LL	32	0.032	SW	1000	32	0.00	0.00	$ -	$ -	$ -		
20	Cafeteria	8	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	1600	410	8	S 32 C F 1 (ELE)	F41LL	32	0.256	SW	1600	409.6	0.00	0.00	$ -	$ -	$ -		
20	Cafeteria	8	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	1600	410	8	S 32 C F 1 (ELE)	F41LL	32	0.256	SW	1600	409.6	0.00	0.00	$ -	$ -	$ -		
20	Cafeteria	8	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	1600	410	8	S 32 C F 1 (ELE)	F41LL	32	0.256	SW	1600	409.6	0.00	0.00	$ -	$ -	$ -		
20	Kitchen	18	S 32 C F 1 (ELE)	F41LL	32	0.6	SW	1600	922	18	S 32 C F 1 (ELE)	F41LL	32	0.576	SW	1600	921.6	0.00	0.00	$ -	$ -	$ -		
15	Kitchen Office	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2400	288	0.00	0.00	$ -	$ -	$ -		
108	Kitchen Bathroom	1	I 65	I65/1	65	0.1	SW	2000	130	1	CF 26	CFQ26/1-L	27	0.027	SW	2000	54	76.00	0.04	$ 11.21	$ 20.25	$ -	1.8	0.3
108	Kitchen Bathroom	1	I 65	I65/1	65	0.1	SW	2000	130	1	CF 26	CFQ26/1-L	27	0.027	SW	2000	54	76.00	0.04	$ 11.21	$ 20.25	$ -	1.8	0.3
198	Kitchen Bathroom	1	2T 17 R F 2 (ELE)	F22LL	31	0.0	SW	2000	62	1	2T 17 R F 2 (ELE)	F22LL	31	0.031	SW	2000	62	0.00	0.00	$ -	$ -	$ -		
108	Kitcehn Closet	1	I 65	I65/1	65	0.1	SW	1000	65	1	CF 26	CFQ26/1-L	27	0.027	SW	1000	27	38.00	0.04	$ 7.14	$ 20.25	$ -	2.8	0.5
108	Kitcehn Closet	1	I 65	I65/1	65	0.1	SW	1000	65	1	CF 26	CFQ26/1-L	27	0.027	SW	1000	27	38.00	0.04	$ 7.14	$ 20.25	$ -	2.8	0.5
198	Kitcehn Closet	1	2T 17 R F 2 (ELE)	F22LL	31	0.0	SW	1000	31	1	2T 17 R F 2 (ELE)	F22LL	31	0.031	SW	1000	31	0.00	0.00	$ -	$ -	$ -		
20	Music Room	12	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	922	12	S 32 C F 1 (ELE)	F41LL	32	0.384	SW	2400	921.6	0.00	0.00	$ -	$ -	$ -		
20	Music Room	4	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	307	4	S 32 C F 1 (ELE)	F41LL	32	0.128	SW	2400	307.2	0.00	0.00	$ -	$ -	$ -		
20	Music Room	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	154	2	S 32 C F 1 (ELE)	F41LL	32	0.064	SW	2400	153.6	0.00	0.00	$ -	$ -	$ -		
108	Music Room Closet	1	I 65	I65/1	65	0.1	SW	1000	65	1	CF 26	CFQ26/1-L	27	0.027	SW	1000	27	38.00	0.04	$ 7.14	$ 20.25	$ -	2.8	0.5
10	Gym	2	High Bay MH 1000	MH1000/1	1080	2.2	SW	2000	4,320	2	C 54 C F 6	F46GHL	351	0.702	SW	2000	1404	2916.00	1.46	$ 429.94	$ 1,025.00	$ 200.00	2.4	0.3

Energy Audit of Jefferson Elementary School

CHA Project No.24454 **Cost of Electricity:** **$0.107 $/kWh**

ECM-1 Lighting Replacements **$6.74 $/kW**

		EXISTING CONDITIONS							
	Area Description	No. of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Exist Control	Annual Hours	Annual kWh
10	Gym	2	High Bay MH 1000	MH1000/1	1080	2.2	SW	2000	4,320
10	Gym	2	High Bay MH 1000	MH1000/1	1080	2.2	SW	2000	4,320
10	Gym	2	High Bay MH 1000	MH1000/1	1080	2.2	SW	2000	4,320
10	Gym	2	High Bay MH 1000	MH1000/1	1080	2.2	SW	2000	4,320
191	Stage	1	S 60 C F 2 (ELE) 8'	F82EE	123	0.1	SW	1000	123
20	Gym Boy's Bathroom	4	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2000	256
20	Gym Girl's Bathroom	4	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2000	256
20	Gym Storage Closet Large	10	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	1000	320
20	Gym Area Storage	3	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	1000	96
15	Main Hallway	38	S 32 C F 2 (ELE)	F42LL	60	2.3	SW	2280	5,198
15	Front Hallway	10	S 32 C F 2 (ELE)	F42LL	60	0.6	SW	2280	1,368
254	Gym Hallway	5	T 32 R F 4 (ELE)	F44LL	118	0.6	SW	2280	1,345
15	Rear Entrance Hallway	3	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	2280	410
	Total	**853**				**51**			**112,721**

		RETROFIT CONDITIONS								COST & SAVINGS ANALYSIS						
	Area Description	Number of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Retrofit Control	Annual Hours	Annual kWh	Annual kWh Saved	Annual kW Saved	Annual $ Saved	Retrofit Cost	NJ Smart Start Lighting Incentive	Simple Payback With Out Incentive	Simple Payback
10	Gym	2	C 54 C F 6	F46GHL	351	0.702	SW	2000	1404	2916.00	1.46	$ 429.94	$ 1,025.00	$ 200.00	2.4	0.3
10	Gym	2	C 54 C F 6	F46GHL	351	0.702	SW	2000	1404	2916.00	1.46	$ 429.94	$ 1,025.00	$ 200.00	2.4	0.3
10	Gym	2	C 54 C F 6	F46GHL	351	0.702	SW	2000	1404	2916.00	1.46	$ 429.94	$ 1,025.00	$ 200.00	2.4	0.3
10	Gym	2	C 54 C F 6	F46GHL	351	0.702	SW	2000	1404	2916.00	1.46	$ 429.94	$ 1,025.00	$ 200.00	2.4	0.3
191	Stage	1	S 60 C F 2 (ELE) 8'	F82EE	123	0.123	SW	1000	123	0.00	0.00	$ -	$ -	$ -		
20	Gym Boy's Bathroom	4	S 32 C F 1 (ELE)	F41LL	32	0.128	SW	2000	256	0.00	0.00	$ -	$ -	$ -		
20	Gym Girl's Bathroom	4	S 32 C F 1 (ELE)	F41LL	32	0.128	SW	2000	256	0.00	0.00	$ -	$ -	$ -		
20	Gym Storage Closet Large	10	S 32 C F 1 (ELE)	F41LL	32	0.32	SW	1000	320	0.00	0.00	$ -	$ -	$ -		
20	Gym Area Storage	3	S 32 C F 1 (ELE)	F41LL	32	0.096	SW	1000	96	0.00	0.00	$ -	$ -	$ -		
15	Main Hallway	38	S 32 C F 2 (ELE)	F42LL	60	2.28	SW	2280	5198.4	0.00	0.00	$ -	$ -	$ -		
15	Front Hallway	10	S 32 C F 2 (ELE)	F42LL	60	0.6	SW	2280	1368	0.00	0.00	$ -	$ -	$ -		
254	Gym Hallway	5	T 32 R F 4 (ELE)	F44LL	118	0.59	SW	2280	1345.2	0.00	0.00	$ -	$ -	$ -		
15	Rear Entrance Hallway	3	S 32 C F 2 (ELE)	F42LL	60	0.18	SW	2280	410.4	0.00	0.00	$ -	$ -	$ -		
	Total	**853**			**10,807**	**43**			**97044.6**	**15,676**	**8**	**$ 2,313.42**	**$ 5,752.75**	**$ 1,040.00**		
									Demand Savings			**7.9**	**$ 636.04**			
									kWh Savings			**15,676**	**$ 1,677.37**			
									Total savings				**$ 2,313.42**		**2.5**	**2.0**

Energy Audit of Jefferson Elementary School

CHA Project No.24454 **Cost of Electricity:** **$0.107 $/kWh**

ECM-2 Install Occupancy Sensors **$6.74 $/kW**

		EXISTING CONDITIONS								RETROFIT CONDITIONS								COST & SAVINGS ANALYSIS						
	Area Description	No. of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Exist Control	Annual Hours	Annual kWh	Number of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Retrofit Control	Annual Hours	Annual kWh	Annual kWh Saved	Annual kW Saved	Annual $ Saved	Retrofit Cost	NJ Smart Start Lighting Incentive	Simple Payback With Out Incentive	Simple Payback
213	Main Office	12	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	1.1	SW	2400	2,592.0	12	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	1.1	C-OCC	1200	1296	1296.00	0.00	$ 138.67	$ 202.50	$ 35.00	1.5	1.2
254	Principal's Office	2	T 32 R F 4 (ELE)	F44LL	118	0.2	SW	2400	566.4	2	T 32 R F 4 (ELE)	F44LL	118	0.2	C-OCC	1200	283.2	283.20	0.00	$ 30.30	$ 202.50	$ 35.00	6.7	5.5
213	Conference Room	4	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.4	SW	2400	864.0	4	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.4	C-OCC	1200	432	432.00	0.00	$ 46.22	$ 202.50	$ 35.00	4.4	3.6
15	Main Office Bathroom	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2000	120.0	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2000	120	0.00	0.00	$ -	$ -	$ -		
15	Main Office Area Closet	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	1000	60.0	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	1000	60	0.00	0.00	$ -	$ -	$ -		
245	Library	32	T 32 R F 3 (ELE)	F43LE	110	3.5	SW	2400	8,448.0	32	T 32 R F 3 (ELE)	F43LE	110	3.5	C-OCC	1680	5913.6	2534.40	0.00	$ 271.18	$ 202.50	$ 35.00	0.7	0.6
1	Library	8	SQ 13 W CF 2 (MAG)	CFQ13/2	31	0.2	SW	2400	595.2	8	SQ 13 W CF 2 (MAG)	CFQ13/2	31	0.2	C-OCC	1680	416.64	178.56	0.00	$ 19.11	$ 202.50	$ 35.00	10.6	8.8
5	Library	2	2T 32 R F 2 (u) (ELE)	FU2LL	60	0.1	SW	2400	288.0	2	2T 32 R F 2 (u) (ELE)	FU2LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
245	Library Office 1	1	T 32 R F 3 (ELE)	F43LE	110	0.1	SW	2400	264.0	1	T 32 R F 3 (ELE)	F43LE	110	0.1	C-OCC	1200	132	132.00	0.00	$ 14.12	$ 202.50	$ 35.00	14.3	11.9
254	Library Office 2	2	T 32 R F 4 (ELE)	F44LL	118	0.2	SW	2400	566.4	2	T 32 R F 4 (ELE)	F44LL	118	0.2	C-OCC	1200	283.2	283.20	0.00	$ 30.30	$ 202.50	$ 35.00	6.7	5.5
254	Computer Room	12	T 32 R F 4 (ELE)	F44LL	118	1.4	SW	2400	3,398.4	12	T 32 R F 4 (ELE)	F44LL	118	1.4	C-OCC	1680	2378.88	1019.52	0.00	$ 109.09	$ 202.50	$ 35.00	1.9	1.5
15	Central Mechanical	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	1000	120.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	1000	120	0.00	0.00	$ -	$ -	$ -		
15	Central Electrical	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	1000	120.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	1000	120	0.00	0.00	$ -	$ -	$ -		
15	Central Storage	4	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	1000	240.0	4	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	1000	240	0.00	0.00	$ -	$ -	$ -		
20	Room 1	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 1	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 1	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 1	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 1	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 1	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 2	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 2	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 2	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 2	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 2	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 2	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 3	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 3	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 3	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 3	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 3	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 3	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 4	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 4	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 4	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 4	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 4	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 4	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 5	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 5	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 5	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 5	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 5	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 5	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 6	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 6	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 6	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 6	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 6	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 6	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 7	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 7	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 7	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 7	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 7	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 7	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	W. Boy's Bathroom	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2000	128.0	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2000	128	0.00	0.00	$ -	$ -	$ -		
20	W. Girl's Bathroom	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2000	128.0	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2000	128	0.00	0.00	$ -	$ -	$ -		
20	W. Closet	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32.0	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32	0.00	0.00	$ -	$ -	$ -		
20	Room 8	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 8	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 8	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 8	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 8	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 8	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
108	Room 8 Bathroom	1	I 65	I65/1	65	0.1	SW	2000	130.0	1	I 65	I65/1	65	0.1	SW	2000	130	0.00	0.00	$ -	$ -	$ -		
20	Room 9	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 9	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 9	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 9	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 9	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 9	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
108	Room 9 Bathroom	1	I 65	I65/1	65	0.1	SW	2000	130.0	1	I 65	I65/1	65	0.1	SW	2000	130	0.00	0.00	$ -	$ -	$ -		
20	Room 10	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 10	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 10	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 10	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 10	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 10	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
108	Room 10 Bathroom	1	I 65	I65/1	65	0.1	SW	2000	130.0	1	I 65	I65/1	65	0.1	SW	2000	130	0.00	0.00	$ -	$ -	$ -		
20	Room 11	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 11	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 11	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 11	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 11	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 11	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
108	Room 11 Bathroom	1	I 65	I65/1	65	0.1	SW	2000	130.0	1	I 65	I65/1	65	0.1	SW	2000	130	0.00	0.00	$ -	$ -	$ -		
20	Room 12	15	S 32 C F 1 (ELE)	F41LL	32	0.5	SW	2400	1,152.0	15	S 32 C F 1 (ELE)	F41LL	32	0.5	C-OCC	1680	806.4	345.60	0.00	$ 36.98	$ 202.50	$ 35.00	5.5	4.5
15	Room 12	4	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	2400	576.0	4	S 32 C F 2 (ELE)	F42LL	60	0.2	C-OCC	1680	403.2	172.80	0.00	$ 18.49	$ 202.50	$ 35.00	11.0	9.1
20	Room 12	3	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	230.4	3	S 32 C F 1 (ELE)	F41LL	32	0.1	C-OCC	1680	161.28	69.12	0.00	$ 7.40	$ 202.50	$ 35.00	27.4	22.6
108	Room 12 Bathroom	1	I 65	I65/1	65	0.1	SW	2000	130.0	1	I 65	I65/1	65	0.1	SW	2000	130	0.00	0.00	$ -	$ -	$ -		
20	Room 14	15	S 32 C F 1 (ELE)	F41LL	32	0.5	SW	2400	1,152.0	15	S 32 C F 1 (ELE)	F41LL	32	0.5	C-OCC	1680	806.4	345.60	0.00	$ 36.98	$ 202.50	$ 35.00	5.5	4.5
15	Room 14	4	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	2400	576.0	4	S 32 C F 2 (ELE)	F42LL	60	0.2	C-OCC	1680	403.2	172.80	0.00	$ 18.49	$ 202.50	$ 35.00	11.0	9.1

Energy Audit of Jefferson Elementary School

CHA Project No.24454 **Cost of Electricity:** **$0.107 $/kWh**

ECM-2 Install Occupancy Sensors **$6.74 $/kW**

		EXISTING CONDITIONS								RETROFIT CONDITIONS									COST & SAVINGS ANALYSIS					
	Area Description	No. of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Exist Control	Annual Hours	Annual kWh	Number of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Retrofit Control	Annual Hours	Annual kWh	Annual kWh Saved	Annual kW Saved	Annual $ Saved	Retrofit Cost	NJ Smart Start Lighting Incentive	Simple Payback With Out Incentive	Simple Payback
20	Room 14	3	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	230.4	3	S 32 C F 1 (ELE)	F41LL	32	0.1	C-OCC	1680	161.28	69.12	0.00	$ 7.40	$ 202.50	$ 35.00	27.4	22.6
108	Room 14 Bathroom	1	I 65	I65/1	65	0.1	SW	2000	130.0	1	I 65	I65/1	65	0.1	SW	2000	130	0.00	0.00	$ -	$ -	$ -		
4	Faculty Room	4	2B 34 R F 2 (u) (MAG)	FU2EE	72	0.3	SW	2400	691.2	4	2B 34 R F 2 (u) (MAG)	FU2EE	72	0.3	C-OCC	1200	345.6	345.60	0.00	$ 36.98	$ 202.50	$ 35.00	5.5	4.5
15	Faculty Room Men's Bathroom	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2000	240.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2000	240	0.00	0.00	$ -	$ -	$ -		
15	Faculty Room Women's Bathroom	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2000	240.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2000	240	0.00	0.00	$ -	$ -	$ -		
20	Nurse	10	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	2400	768.0	10	S 32 C F 1 (ELE)	F41LL	32	0.3	C-OCC	1200	384	384.00	0.00	$ 41.09	$ 202.50	$ 35.00	4.9	4.1
15	Nurse Bathroom	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2000	120.0	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2000	120	0.00	0.00	$ -	$ -	$ -		
213	Art Room	15	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	1.4	SW	2400	3,240.0	15	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	1.4	C-OCC	1680	2268	972.00	0.00	$ 104.00	$ 202.50	$ 35.00	1.9	1.6
245	Art Room A	1	T 32 R F 3 (ELE)	F43LE	110	0.1	C-OCC	2400	264.0	1	T 32 R F 3 (ELE)	F43LE	110	0.1	C-OCC	1200	132	132.00	0.00	$ 14.12	$ 202.50	$ 35.00	14.3	11.9
245	Art Room B	1	T 32 R F 3 (ELE)	F43LE	110	0.1	C-OCC	2400	264.0	1	T 32 R F 3 (ELE)	F43LE	110	0.1	C-OCC	1200	132	132.00	0.00	$ 14.12	$ 202.50	$ 35.00	14.3	11.9
213	Art Room Area Office	2	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.2	SW	2400	432.0	2	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.2	C-OCC	1200	216	216.00	0.00	$ 23.11	$ 202.50	$ 35.00	8.8	7.2
213	Room 39	4	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.4	SW	2400	864.0	4	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.4	C-OCC	1200	432	432.00	0.00	$ 46.22	$ 202.50	$ 35.00	4.4	3.6
119A	Room 39 A	1	6 Lamp 32 Square	F46LL	182	0.2	SW	2400	436.8	1	6 Lamp 32 Square	F46LL	182	0.2	C-OCC	1200	218.4	218.40	0.00	$ 23.37	$ 202.50	$ 35.00	8.7	7.2
213	38	4	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.4	SW	2400	864.0	4	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.4	C-OCC	1200	432	432.00	0.00	$ 46.22	$ 202.50	$ 35.00	4.4	3.6
20	Room G	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 13	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 13	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 13	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 13	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 13	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 13	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 15	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 15	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 15	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 15	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 15	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 15	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 16	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 16	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 16	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 16	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 16	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 16	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 17	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 17	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 17	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 17	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 17	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 17	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 18	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 18	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 18	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 18	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 18	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 18	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 19	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 19	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 19	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 19	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 19	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 19	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 20	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 20	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 20	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 20	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 20	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 20	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 22	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 22	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 22	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 22	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 22	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 22	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 24	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 24	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 24	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 24	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 24	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 24	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384.0	5	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
213	Room 35-36	6	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.5	SW	2400	1,296.0	6	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.5	C-OCC	1680	907.2	388.80	0.00	$ 41.60	$ 202.50	$ 35.00	4.9	4.0
213	Room 35-36	6	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.5	SW	2400	1,296.0	6	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.5	C-OCC	1680	907.2	388.80	0.00	$ 41.60	$ 202.50	$ 35.00	4.9	4.0
20	Room 35-36 Storage	3	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	1000	96.0	3	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	1000	96	0.00	0.00	$ -	$ -	$ -		
20	E. Boy's Bathroom	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2000	128.0	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2000	128	0.00	0.00	$ -	$ -	$ -		
20	E. Girl's Bathroom	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2000	128.0	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2000	128	0.00	0.00	$ -	$ -	$ -		
20	E. Closet	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32.0	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32	0.00	0.00	$ -	$ -	$ -		
20	E. Custodian Room	3	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	1000	96.0	3	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	1000	96	0.00	0.00	$ -	$ -	$ -		
20	E. Custodian Room	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32.0	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32	0.00	0.00	$ -	$ -	$ -		
20	Cafeteria	8	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	1600	409.6	8	S 32 C F 1 (ELE)	F41LL	32	0.3	C-OCC	1200	307.2	102.40	0.00	$ 10.96	$ 202.50	$ 35.00	18.5	15.3
20	Cafeteria	8	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	1600	409.6	8	S 32 C F 1 (ELE)	F41LL	32	0.3	C-OCC	1200	307.2	102.40	0.00	$ 10.96	$ 202.50	$ 35.00	18.5	15.3
20	Cafeteria	8	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	1600	409.6	8	S 32 C F 1 (ELE)	F41LL	32	0.3	C-OCC	1200	307.2	102.40	0.00	$ 10.96	$ 202.50	$ 35.00	18.5	15.3
20	Kitchen	18	S 32 C F 1 (ELE)	F41LL	32	0.6	SW	1600	921.6	18	S 32 C F 1 (ELE)	F41LL	32	0.6	C-OCC	1200	691.2	230.40	0.00	$ 24.65	$ 202.50	$ 35.00	8.2	6.8
15	Kitchen Office	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1200	144	144.00	0.00	$ 15.41	$ 202.50	$ 35.00	13.1	10.9
108	Kitchen Bathroom	1	I 65	I65/1	65	0.1	SW	2000	130.0	1	I 65	I65/1	65	0.1	SW	2000	130	0.00	0.00	$ -	$ -	$ -		
108	Kitchen Bathroom	1	I 65	I65/1	65	0.1	SW	2000	130.0	1	I 65	I65/1	65	0.1	SW	2000	130	0.00	0.00	$ -	$ -	$ -		
198	Kitchen Bathroom	1	2T 17 R F 2 (ELE)	F22LL	31	0.0	SW	2000	62.0	1	2T 17 R F 2 (ELE)	F22LL	31	0.0	SW	2000	62	0.00	0.00	$ -	$ -	$ -		
108	Kitcehn Closet	1	I 65	I65/1	65	0.1	SW	1000	65.0	1	I 65	I65/1	65	0.1	SW	1000	65	0.00	0.00	$ -	$ -	$ -		
108	Kitcehn Closet	1	I 65	I65/1	65	0.1	SW	1000	65.0	1	I 65	I65/1	65	0.1	SW	1000	65	0.00	0.00	$ -	$ -	$ -		
198	Kitcehn Closet	1	2T 17 R F 2 (ELE)	F22LL	31	0.0	SW	1000	31.0	1	2T 17 R F 2 (ELE)	F22LL	31	0.0	SW	1000	31	0.00	0.00	$ -	$ -	$ -		
20	Music Room	12	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	921.6	12	S 32 C F 1 (ELE)	F41LL	32	0.4	C-OCC	1680	645.12	276.48	0.00	$ 29.58	$ 202.50	$ 35.00	6.8	5.7
20	Music Room	4	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	307.2	4	S 32 C F 1 (ELE)	F41LL	32	0.1	C-OCC	1680	215.04	92.16	0.00	$ 9.86	$ 202.50	$ 35.00	20.5	17.0
20	Music Room	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	153.6	2	S 32 C F 1 (ELE)	F41LL	32	0.1	C-OCC	1680	107.52	46.08	0.00	$ 4.93	$ 202.50	$ 35.00	41.1	34.0
108	Music Room Closet	1	I 65	I65/1	65	0.1	SW	1000	65.0	1	I 65	I65/1	65	0.1	SW	1000	65	0.00	0.00	$ -	$ -	$ -		
10	Gym	2	High Bay MH 1000	MH1000/1	1080	2.2	SW	2000	4,320.0	2	High Bay MH 1000	MH1000/1	1080	2.2	C-OCC	2000	4320	0.00	0.00	$ -	$ 202.50	$ 35.00		

Energy Audit of Jefferson Elementary School

CHA Project No.24454 **Cost of Electricity:** **$0.107 $/kWh**

ECM-2 Install Occupancy Sensors **$6.74 $/kW**

		EXISTING CONDITIONS								RETROFIT CONDITIONS								COST & SAVINGS ANALYSIS						
	Area Description	No. of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Exist Control	Annual Hours	Annual kWh	Number of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Retrofit Control	Annual Hours	Annual kWh	Annual kWh Saved	Annual kW Saved	Annual $ Saved	Retrofit Cost	NJ Smart Start Lighting Incentive	Simple Payback With Out Incentive	Simple Payback
10	Gym	2	High Bay MH 1000	MH1000/1	1080	2.2	SW	2000	4,320.0	2	High Bay MH 1000	MH1000/1	1080	2.2	C-OCC	2000	4320	0.00	0.00	$ -	$ 202.50	$ 35.00		
10	Gym	2	High Bay MH 1000	MH1000/1	1080	2.2	SW	2000	4,320.0	2	High Bay MH 1000	MH1000/1	1080	2.2	C-OCC	2000	4320	0.00	0.00	$ -	$ 202.50	$ 35.00		
10	Gym	2	High Bay MH 1000	MH1000/1	1080	2.2	SW	2000	4,320.0	2	High Bay MH 1000	MH1000/1	1080	2.2	C-OCC	2000	4320	0.00	0.00	$ -	$ 202.50	$ 35.00		
10	Gym	2	High Bay MH 1000	MH1000/1	1080	2.2	SW	2000	4,320.0	2	High Bay MH 1000	MH1000/1	1080	2.2	C-OCC	2000	4320	0.00	0.00	$ -	$ 202.50	$ 35.00		
191	Stage	1	S 60 C F 2 (ELE) 8'	F82EE	123	0.1	SW	1000	123.0	1	S 60 C F 2 (ELE) 8'	F82EE	123	0.1	SW	1000	123	0.00	0.00	$ -	$ -	$ -		
20	Gym Boy's Bathroom	4	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2000	256.0	4	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2000	256	0.00	0.00	$ -	$ -	$ -		
20	Gym Girl's Bathroom	4	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2000	256.0	4	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2000	256	0.00	0.00	$ -	$ -	$ -		
20	Gym Storage Closet Large	10	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	1000	320.0	10	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	1000	320	0.00	0.00	$ -	$ -	$ -		
20	Gym Area Storage	3	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	1000	96.0	3	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	1000	96	0.00	0.00	$ -	$ -	$ -		
15	Main Hallway	38	S 32 C F 2 (ELE)	F42LL	60	2.3	SW	2280	5,198.4	38	S 32 C F 2 (ELE)	F42LL	60	2.3	SW	2280	5198.4	0.00	0.00	$ -	$ -	$ -		
15	Front Hallway	10	S 32 C F 2 (ELE)	F42LL	60	0.6	SW	2280	1,368.0	10	S 32 C F 2 (ELE)	F42LL	60	0.6	SW	2280	1368	0.00	0.00	$ -	$ -	$ -		
254	Gym Hallway	5	T 32 R F 4 (ELE)	F44LL	118	0.6	SW	2280	1,345.2	5	T 32 R F 4 (ELE)	F44LL	118	0.6	SW	2280	1345.2	0.00	0.00	$ -	$ -	$ -		
15	Rear Entrance Hallway	3	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	2280	410.4	3	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	2280	410.4	0.00	0.00	$ -	$ -	$ -		
	Total	**853**				**51**			**112,721**	**853**				**51**			**87,376**	**25,345**	**0**	**$ 2,711.96**	**$ 32,400.00**	**$ 5,600.00**		
																	Demand Savings			**0.0**	**$ -**			
																	kWh Savings			**25,345**	**$ 2,711.96**			
																	Total Savings				**$ 2,711.96**		**11.9**	**9.9**

Energy Audit of Jefferson Elementary School

CHA Project No.24454 **Cost of Electricity:** **$0.107 $/kWh**

ECM-3 Lighting Replacements with Occupancy Sensors **$6.74 $/kW**

		EXISTING CONDITIONS								RETROFIT CONDITIONS								COST & SAVINGS ANALYSIS						
	Area Description	No. of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Exist Control	Annual Hours	Annual kWh	Number of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Retrofit Control	Annual Hours	Annual kWh	Annual kWh Saved	Annual kW Saved	Annual $ Saved	Retrofit Cost	NJ Smart Start Lighting Incentive	Simple Payback With Out Incentive	Simple Payback
213	Main Office	12	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	1.1	SW	2400	2,592	12	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	1.08	C-OCC	1,200	1296	1296.00	0.00	$ 138.67	$ 202.50	$ 35.00	1.5	1.2
254	Principal's Office	2	T 32 R F 4 (ELE)	F44LL	118	0.2	SW	2400	566	2	T 32 R F 4 (ELE)	F44LL	118	0.236	C-OCC	1,200	283.2	283.20	0.00	$ 30.30	$ 202.50	$ 35.00	6.7	5.5
213	Conference Room	4	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.4	SW	2400	864	4	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.36	C-OCC	1,200	432	432.00	0.00	$ 46.22	$ 202.50	$ 35.00	4.4	3.6
15	Main Office Bathroom	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	2,000	120	0.00	0.00	$ -	$ -	$ -		
15	Main Office Area Closet	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	1000	60	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	1,000	60	0.00	0.00	$ -	$ -	$ -		
245	Library	32	T 32 R F 3 (ELE)	F43LE	110	3.5	SW	2400	8,448	32	T 32 R F 3 (ELE)	F43LE	110	3.52	C-OCC	1,680	5913.6	2534.40	0.00	$ 271.18	$ 202.50	$ 35.00	0.7	0.6
1	Library	8	SQ 13 W CF 2 (MAG)	CFQ13/2	31	0.2	SW	2400	595	8	SQ 13 W CF 2 (MAG)	CFQ13/2	31	0.248	C-OCC	1,680	416.64	178.56	0.00	$ 19.11	$ 202.50	$ 35.00	10.6	8.8
5	Library	2	2T 32 R F 2 (u) (ELE)	FU2LL	60	0.1	SW	2400	288	2	2T 32 R F 2 (u) (ELE)	FU2LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
245	Library Office 1	1	T 32 R F 3 (ELE)	F43LE	110	0.1	SW	2400	264	1	T 32 R F 3 (ELE)	F43LE	110	0.11	C-OCC	1,200	132	132.00	0.00	$ 14.12	$ 202.50	$ 35.00	14.3	11.9
254	Library Office 2	2	T 32 R F 4 (ELE)	F44LL	118	0.2	SW	2400	566	2	T 32 R F 4 (ELE)	F44LL	118	0.236	C-OCC	1,200	283.2	283.20	0.00	$ 30.30	$ 202.50	$ 35.00	6.7	5.5
254	Computer Room	12	T 32 R F 4 (ELE)	F44LL	118	1.4	SW	2400	3,398	12	T 32 R F 4 (ELE)	F44LL	118	1.416	C-OCC	1,680	2378.88	1019.52	0.00	$ 109.09	$ 202.50	$ 35.00	1.9	1.5
15	Central Mechanical	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	1000	120	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	1,000	120	0.00	0.00	$ -	$ -	$ -		
15	Central Electrical	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	1000	120	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	1,000	120	0.00	0.00	$ -	$ -	$ -		
15	Central Storage	4	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	1000	240	4	S 32 C F 2 (ELE)	F42LL	60	0.24	SW	1,000	240	0.00	0.00	$ -	$ -	$ -		
20	Room 1	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 1	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 1	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 1	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 1	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 1	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 2	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 2	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 2	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 2	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 2	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 2	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 3	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 3	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 3	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 3	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 3	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 3	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 4	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 4	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 4	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 4	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 4	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 4	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 5	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 5	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 5	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 5	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 5	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 5	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 6	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 6	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 6	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 6	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 6	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 6	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 7	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 7	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 7	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 7	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 7	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 7	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	W. Boy's Bathroom	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2000	128	2	S 32 C F 1 (ELE)	F41LL	32	0.064	SW	2,000	128	0.00	0.00	$ -	$ -	$ -		
20	W. Girl's Bathroom	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2000	128	2	S 32 C F 1 (ELE)	F41LL	32	0.064	SW	2,000	128	0.00	0.00	$ -	$ -	$ -		
20	W. Closet	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32	1	S 32 C F 1 (ELE)	F41LL	32	0.032	SW	1,000	32	0.00	0.00	$ -	$ -	$ -		
20	Room 8	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 8	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 8	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 8	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 8	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 8	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
108	Room 8 Bathroom	1	I 65	I65/1	65	0.1	SW	2000	130	1	CF 26	CFQ26/1-L	27	0.027	SW	2,000	54	76.00	0.04	$ 11.21	$ 20.25	$ -	1.8	1.8
20	Room 9	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 9	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 9	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 9	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 9	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 9	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
108	Room 9 Bathroom	1	I 65	I65/1	65	0.1	SW	2000	130	1	CF 26	CFQ26/1-L	27	0.027	SW	2,000	54	76.00	0.04	$ 11.21	$ 20.25	$ -	1.8	1.8
20	Room 10	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 10	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 10	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 10	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 10	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 10	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
108	Room 10 Bathroom	1	I 65	I65/1	65	0.1	SW	2000	130	1	CF 26	CFQ26/1-L	27	0.027	SW	2,000	54	76.00	0.04	$ 11.21	$ 20.25	$ -	1.8	1.8
20	Room 11	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 11	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 11	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 11	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 11	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 11	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
108	Room 11 Bathroom	1	I 65	I65/1	65	0.1	SW	2000	130	1	CF 26	CFQ26/1-L	27	0.027	SW	2,000	54	76.00	0.04	$ 11.21	$ 20.25	$ -	1.8	1.8
20	Room 12	15	S 32 C F 1 (ELE)	F41LL	32	0.5	SW	2400	1,152	15	S 32 C F 1 (ELE)	F41LL	32	0.48	C-OCC	1,680	806.4	345.60	0.00	$ 36.98	$ 202.50	$ 35.00	5.5	4.5
15	Room 12	4	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	2400	576	4	S 32 C F 2 (ELE)	F42LL	60	0.24	C-OCC	1,680	403.2	172.80	0.00	$ 18.49	$ 202.50	$ 35.00	11.0	9.1
20	Room 12	3	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	230	3	S 32 C F 1 (ELE)	F41LL	32	0.096	C-OCC	1,680	161.28	69.12	0.00	$ 7.40	$ 202.50	$ 35.00	27.4	22.6
108	Room 12 Bathroom	1	I 65	I65/1	65	0.1	SW	2000	130	1	CF 26	CFQ26/1-L	27	0.027	SW	2,000	54	76.00	0.04	$ 11.21	$ 20.25	$ -	1.8	1.8
20	Room 14	15	S 32 C F 1 (ELE)	F41LL	32	0.5	SW	2400	1,152	15	S 32 C F 1 (ELE)	F41LL	32	0.48	C-OCC	1,680	806.4	345.60	0.00	$ 36.98	$ 202.50	$ 35.00	5.5	4.5
15	Room 14	4	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	2400	576	4	S 32 C F 2 (ELE)	F42LL	60	0.24	C-OCC	1,680	403.2	172.80	0.00	$ 18.49	$ 202.50	$ 35.00	11.0	9.1

Energy Audit of Jefferson Elementary School

CHA Project No.24454 **Cost of Electricity:** **$0.107 $/kWh**

ECM-3 Lighting Replacements with Occupancy Sensors **$6.74 $/kW**

		EXISTING CONDITIONS								RETROFIT CONDITIONS								COST & SAVINGS ANALYSIS						
	Area Description	No. of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Exist Control	Annual Hours	Annual kWh	Number of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Retrofit Control	Annual Hours	Annual kWh	Annual kWh Saved	Annual kW Saved	Annual $ Saved	Retrofit Cost	NJ Smart Start Lighting Incentive	Simple Payback With Out Incentive	Simple Payback
20	Room 14	3	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	230	3	S 32 C F 1 (ELE)	F41LL	32	0.096	C-OCC	1,680	161.28	69.12	0.00	$ 7.40	$ 202.50	$ 35.00	27.4	22.6
108	Room 14 Bathroom	1	I 65	I65/1	65	0.1	SW	2000	130	1	CF 26	CFQ26/1-L	27	0.027	SW	2,000	54	76.00	0.04	$ 11.21	$ 20.25	$ -	1.8	1.8
4	Faculty Room	4	2B 34 R F 2 (u) (MAG)	FU2EE	72	0.3	SW	2400	691	4	2T 17 R F 2 (ELE)	F22ILL	33	0.132	C-OCC	1,200	158.4	532.80	0.16	$ 69.63	$ 607.50	$ 75.00	8.7	7.6
15	Faculty Room Men's Bathroom	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2000	240	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2,000	240	0.00	0.00	$ -	$ -	$ -		
15	Faculty Room Women's Bathroom	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2000	240	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	2,000	240	0.00	0.00	$ -	$ -	$ -		
20	Nurse	10	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	2400	768	10	S 32 C F 1 (ELE)	F41LL	32	0.32	C-OCC	1,200	384	384.00	0.00	$ 41.09	$ 202.50	$ 35.00	4.9	4.1
15	Nurse Bathroom	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	2,000	120	0.00	0.00	$ -	$ -	$ -		
213	Art Room	15	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	1.4	SW	2400	3,240	15	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	1.35	C-OCC	1,680	2268	972.00	0.00	$ 104.00	$ 202.50	$ 35.00	1.9	1.6
245	Art Room A	1	T 32 R F 3 (ELE)	F43LE	110	0.1	C-OCC	2400	264	1	T 32 R F 3 (ELE)	F43LE	110	0.11	C-OCC	1,200	132	132.00	0.00	$ 14.12	$ 202.50	$ 35.00	14.3	11.9
245	Art Room B	1	T 32 R F 3 (ELE)	F43LE	110	0.1	C-OCC	2400	264	1	T 32 R F 3 (ELE)	F43LE	110	0.11	C-OCC	1,200	132	132.00	0.00	$ 14.12	$ 202.50	$ 35.00	14.3	11.9
213	Art Room Area Office	2	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.2	SW	2400	432	2	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.18	C-OCC	1,200	216	216.00	0.00	$ 23.11	$ 202.50	$ 35.00	8.8	7.2
213	Room 39	4	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.4	SW	2400	864	4	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.36	C-OCC	1,200	432	432.00	0.00	$ 46.22	$ 202.50	$ 35.00	4.4	3.6
119A	Room 39 A	1	6 Lamp 32 Square	F46LL	182	0.2	SW	2400	437	1	6 Lamp 32 Square	F46LL	182	0.182	C-OCC	1,200	218.4	218.40	0.00	$ 23.37	$ 202.50	$ 35.00	8.7	7.2
213	38	4	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.4	SW	2400	864	4	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.36	C-OCC	1,200	432	432.00	0.00	$ 46.22	$ 202.50	$ 35.00	4.4	3.6
20	Room G	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 13	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 13	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 13	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 13	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 13	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 13	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 15	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 15	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 15	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 15	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 15	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 15	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 16	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 16	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 16	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 16	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 16	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 16	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 17	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 17	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 17	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 17	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 17	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 17	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 18	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 18	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 18	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 18	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 18	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 18	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 19	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 19	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 19	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 19	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 19	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 19	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 20	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 20	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 20	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 20	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 20	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 20	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 22	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 22	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 22	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 22	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 22	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 22	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 24	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 24	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 24	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
20	Room 24	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
15	Room 24	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,680	201.6	86.40	0.00	$ 9.24	$ 202.50	$ 35.00	21.9	18.1
20	Room 24	5	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	384	5	S 32 C F 1 (ELE)	F41LL	32	0.16	C-OCC	1,680	268.8	115.20	0.00	$ 12.33	$ 202.50	$ 35.00	16.4	13.6
213	Room 35-36	6	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.5	SW	2400	1,296	6	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.54	C-OCC	1,680	907.2	388.80	0.00	$ 41.60	$ 202.50	$ 35.00	4.9	4.0
213	Room 35-36	6	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.5	SW	2400	1,296	6	T 32 R F 3 (ELE) (TWO SWITCH)	F43ILL/2	90	0.54	C-OCC	1,680	907.2	388.80	0.00	$ 41.60	$ 202.50	$ 35.00	4.9	4.0
20	Room 35-36 Storage	3	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	1000	96	3	S 32 C F 1 (ELE)	F41LL	32	0.096	SW	1,000	96	0.00	0.00	$ -	$ -	$ -		
20	E. Boy's Bathroom	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2000	128	2	S 32 C F 1 (ELE)	F41LL	32	0.064	SW	2,000	128	0.00	0.00	$ -	$ -	$ -		
20	E. Girl's Bathroom	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2000	128	2	S 32 C F 1 (ELE)	F41LL	32	0.064	SW	2,000	128	0.00	0.00	$ -	$ -	$ -		
20	E. Closet	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32	1	S 32 C F 1 (ELE)	F41LL	32	0.032	SW	1,000	32	0.00	0.00	$ -	$ -	$ -		
20	E. Custodian Room	3	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	1000	96	3	S 32 C F 1 (ELE)	F41LL	32	0.096	SW	1,000	96	0.00	0.00	$ -	$ -	$ -		
20	E. Custodian Room	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32	1	S 32 C F 1 (ELE)	F41LL	32	0.032	SW	1,000	32	0.00	0.00	$ -	$ -	$ -		
20	Cafeteria	8	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	1600	410	8	S 32 C F 1 (ELE)	F41LL	32	0.256	C-OCC	1,200	307.2	102.40	0.00	$ 10.96	$ 202.50	$ 35.00	18.5	15.3
20	Cafeteria	8	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	1600	410	8	S 32 C F 1 (ELE)	F41LL	32	0.256	C-OCC	1,200	307.2	102.40	0.00	$ 10.96	$ 202.50	$ 35.00	18.5	15.3
20	Cafeteria	8	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	1600	410	8	S 32 C F 1 (ELE)	F41LL	32	0.256	C-OCC	1,200	307.2	102.40	0.00	$ 10.96	$ 202.50	$ 35.00	18.5	15.3
20	Kitchen	18	S 32 C F 1 (ELE)	F41LL	32	0.6	SW	1600	922	18	S 32 C F 1 (ELE)	F41LL	32	0.576	C-OCC	1,200	691.2	230.40	0.00	$ 24.65	$ 202.50	$ 35.00	8.2	6.8
15	Kitchen Office	2	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	S 32 C F 2 (ELE)	F42LL	60	0.12	C-OCC	1,200	144	144.00	0.00	$ 15.41	$ 202.50	$ 35.00	13.1	10.9
108	Kitchen Bathroom	1	I 65	I65/1	65	0.1	SW	2000	130	1	CF 26	CFQ26/1-L	27	0.027	SW	2,000	54	76.00	0.04	$ 11.21	$ 20.25	$ -	1.8	1.8
108	Kitchen Bathroom	1	I 65	I65/1	65	0.1	SW	2000	130	1	CF 26	CFQ26/1-L	27	0.027	SW	2,000	54	76.00	0.04	$ 11.21	$ 20.25	$ -	1.8	1.8
198	Kitchen Bathroom	1	2T 17 R F 2 (ELE)	F22LL	31	0.0	SW	2000	62	1	2T 17 R F 2 (ELE)	F22LL	31	0.031	SW	2,000	62	0.00	0.00	$ -	$ -	$ -		
108	Kitcehn Closet	1	I 65	I65/1	65	0.1	SW	1000	65	1	CF 26	CFQ26/1-L	27	0.027	SW	1,000	27	38.00	0.04	$ 7.14	$ 20.25	$ -	2.8	2.8
108	Kitcehn Closet	1	I 65	I65/1	65	0.1	SW	1000	65	1	CF 26	CFQ26/1-L	27	0.027	SW	1,000	27	38.00	0.04	$ 7.14	$ 20.25	$ -	2.8	2.8
198	Kitcehn Closet	1	2T 17 R F 2 (ELE)	F22LL	31	0.0	SW	1000	31	1	2T 17 R F 2 (ELE)	F22LL	31	0.031	SW	1,000	31	0.00	0.00	$ -	$ -	$ -		
20	Music Room	12	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	922	12	S 32 C F 1 (ELE)	F41LL	32	0.384	C-OCC	1,680	645.12	276.48	0.00	$ 29.58	$ 202.50	$ 35.00	6.8	5.7
20	Music Room	4	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	307	4	S 32 C F 1 (ELE)	F41LL	32	0.128	C-OCC	1,680	215.04	92.16	0.00	$ 9.86	$ 202.50	$ 35.00	20.5	17.0
20	Music Room	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2400	154	2	S 32 C F 1 (ELE)	F41LL	32	0.064	C-OCC	1,680	107.52	46.08	0.00	$ 4.93	$ 202.50	$ 35.00	41.1	34.0
108	Music Room Closet	1	I 65	I65/1	65	0.1	SW	1000	65	1	CF 26	CFQ26/1-L	27	0.027	SW	1,000	27	38.00	0.04	$ 7.14	$ 20.25	$ -	2.8	2.8
10	Gym	2	High Bay MH 1000	MH1000/1	1080	2.2	SW	2000	4,320	2	C 54 C F 6	F46GHL	351	0.702	C-OCC	2,000	1404	2916.00	1.46	$ 429.94	$ 1,227.50	$ 235.00	2.9	2.3

Energy Audit of Jefferson Elementary School

CHA Project No.24454 **Cost of Electricity:** **$0.107 $/kWh**

ECM-3 Lighting Replacements with Occupancy Sensors **$6.74 $/kW**

		EXISTING CONDITIONS								RETROFIT CONDITIONS								COST & SAVINGS ANALYSIS						
	Area Description	No. of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Exist Control	Annual Hours	Annual kWh	Number of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Retrofit Control	Annual Hours	Annual kWh	Annual kWh Saved	Annual kW Saved	Annual $ Saved	Retrofit Cost	NJ Smart Start Lighting Incentive	Simple Payback With Out Incentive	Simple Payback
10	Gym	2	High Bay MH 1000	MH1000/1	1080	2.2	SW	2000	4,320	2	C 54 C F 6	F46GHL	351	0.702	C-OCC	2,000	1404	2916.00	1.46	$ 429.94	$ 1,227.50	$ 235.00	2.9	2.3
10	Gym	2	High Bay MH 1000	MH1000/1	1080	2.2	SW	2000	4,320	2	C 54 C F 6	F46GHL	351	0.702	C-OCC	2,000	1404	2916.00	1.46	$ 429.94	$ 1,227.50	$ 235.00	2.9	2.3
10	Gym	2	High Bay MH 1000	MH1000/1	1080	2.2	SW	2000	4,320	2	C 54 C F 6	F46GHL	351	0.702	C-OCC	2,000	1404	2916.00	1.46	$ 429.94	$ 1,227.50	$ 235.00	2.9	2.3
10	Gym	2	High Bay MH 1000	MH1000/1	1080	2.2	SW	2000	4,320	2	C 54 C F 6	F46GHL	351	0.702	C-OCC	2,000	1404	2916.00	1.46	$ 429.94	$ 1,227.50	$ 235.00	2.9	2.3
191	Stage	1	S 60 C F 2 (ELE) 8'	F82EE	123	0.1	SW	1000	123	1	S 60 C F 2 (ELE) 8'	F82EE	123	0.123	SW	1,000	123	0.00	0.00	$ -	$ -	$ -		
20	Gym Boy's Bathroom	4	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2000	256	4	S 32 C F 1 (ELE)	F41LL	32	0.128	SW	2,000	256	0.00	0.00	$ -	$ -	$ -		
20	Gym Girl's Bathroom	4	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2000	256	4	S 32 C F 1 (ELE)	F41LL	32	0.128	SW	2,000	256	0.00	0.00	$ -	$ -	$ -		
20	Gym Storage Closet Large	10	S 32 C F 1 (ELE)	F41LL	32	0.3	SW	1000	320	10	S 32 C F 1 (ELE)	F41LL	32	0.32	SW	1,000	320	0.00	0.00	$ -	$ -	$ -		
20	Gym Area Storage	3	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	1000	96	3	S 32 C F 1 (ELE)	F41LL	32	0.096	SW	1,000	96	0.00	0.00	$ -	$ -	$ -		
15	Main Hallway	38	S 32 C F 2 (ELE)	F42LL	60	2.3	SW	2280	5,198	38	S 32 C F 2 (ELE)	F42LL	60	2.28	SW	2,280	5198.4	0.00	0.00	$ -	$ -	$ -		
15	Front Hallway	10	S 32 C F 2 (ELE)	F42LL	60	0.6	SW	2280	1,368	10	S 32 C F 2 (ELE)	F42LL	60	0.6	SW	2,280	1368	0.00	0.00	$ -	$ -	$ -		
254	Gym Hallway	5	T 32 R F 4 (ELE)	F44LL	118	0.6	SW	2280	1,345	5	T 32 R F 4 (ELE)	F44LL	118	0.59	SW	2,280	1345.2	0.00	0.00	$ -	$ -	$ -		
15	Rear Entrance Hallway	3	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	2280	410	3	S 32 C F 2 (ELE)	F42LL	60	0.18	SW	2,280	410.4	0.00	0.00	$ -	$ -	$ -		
	Total	**853**				**50.6**			**112,721**	**853**				**42.7**			**71,886**		**7.9**	**$ 5,005.35**	**$ 38,152.75**	**$ 6,640.00**		
																	Demand Savings			**7.9**	**$ 636.04**			
																	kWh Savings			**40835**	**$ 4,369.31**			
																	Total Savings				**$ 5,005.35**		**7.6**	**6.3**

APPENDIX D

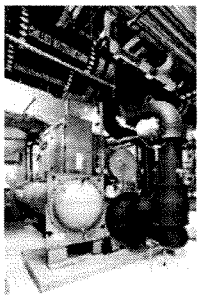
New Jersey Pay For Performance Incentive Program

Pay for Performance - Existing Buildings

Download program applications and incentive forms.

The Greater the Savings, the Greater Your Incentives

Take a comprehensive, whole-building approach to saving energy in your existing facilities and earn incentives that are directly linked to your savings. Pay for Performance relies on a network of program partners who provide technical services under direct contract to you. Acting as your energy expert, your partner will develop an energy reduction plan for each project with a whole-building technical component of a traditional energy audit, a financial plan for funding the energy efficient measures and a construction schedule for installation.



Eligibility

Existing commercial, industrial and institutional buildings with a peak demand over 100 kW for any of the preceding twelve months are eligible to participate including hotels and casinos, large office buildings, multi-family buildings, supermarkets, manufacturing facilities, schools, shopping malls and restaurants. Buildings that fall into the following five customer classes are not required to meet the 100 kW demand in order to participate in the program: hospitals, public colleges and universities, 501(c)(3) non-profits, affordable multifamily housing, and local governmental entities. Your energy reduction plan must define a comprehensive package of measures capable of reducing the existing energy consumption of your building by 15% or more.

Exceptions to the 15% threshold requirement may be made for certain industrial, manufacturing, water treatment and datacenter building types whose annual energy consumption is heavily weighted on process loads. Details are available in the high energy intensity section of the FAQ page.

ENERGY STAR Portfolio Manager

Pay for Performance takes advantage of the ENERGY STAR Program with Portfolio Manager, EPA's interactive tool that allows facility managers to track and evaluate energy and water consumption across all of their buildings. The tool provides the opportunity to load in the characteristics and energy usage of your buildings and determine an energy performance benchmark score. You can then assess energy management goals over time, identify strategic opportunities for savings, and receive EPA recognition for superior energy performance.

This rating system assesses building performance by tracking and scoring energy use in your facilities and comparing it to similar buildings. That can be a big help in locating opportunities for cost-justified energy efficiency upgrades. And, based on our findings, you may be invited to participate in the Building Performance with ENERGY STAR initiative and receive special recognition as an industry leader in energy efficiency.

Incentives

Pay for Performance incentives are awarded upon the satisfactory completion of three program milestones:

Incentive #1 - Submittal of complete energy reduction plan prepared by an approved program partner - Contingent on moving forward, incentives will be between $5,000 and $50,000 based on approximately $.10 per square foot, not to exceed 50% of the facility's annual energy expense.

Incentive #2 - Installation of recommended measures - Incentives are based on the projected level of electricity and natural gas savings resulting from the installation of comprehensive energy-efficiency measures.

Incentive #3 - Completion of Post-Construction Benchmarking Report - A completed report verifying energy reductions based on one year of post-implementation results. Incentives for electricity and natural gas savings will be paid based on actual savings, provided that the minimum performance threshold of 15% savings has been achieved.

CONTACT US

A detailed Incentive Structure document is available on the applications and forms page.

Energy Efficiency Revolving Loan Fund (EE RLF)

New Jersey-based commercial, institutional or industrial entities (including 501(c)(3) organizations) that have received an approved energy reduction plan under Pay for Performance may be eligible for supplemental financing through the EE RLF. The financing, in the form of low-interest loans, can be used to support up to 80% of total eligible project costs, not to exceed $2.5 million or 100% of total eligible project costs from all public state funding sources. Visit the NJ EDA website for details.

Steps to Participation

Click here for a step-by-step description of the program.

New Jersey's Clean Energy PROGRAM
Your Power to Save
njcleanenergy.com

New Jersey SmartStart BUILDINGS®

BPU

2012 PAY FOR PERFORMANCE PROGRAM
Existing Buildings Incentive Structure

Incentive #1: Energy Reduction Plan

Incentive Amount: ..... $0.10 per sq ft
Minimum Incentive: $5,000
Maximum Incentive:: ..... $50,000 or 50% of facility annual energy cost (whichever is less)

This incentive is designed to offset the cost of services associated with the development of the Energy Reduction Plan (ERP) and is paid upon ERP approval. Incentive is contingent on implementation of recommended measures outlined in the ERP.

Incentive #2: Installation of Recommended Measures

Minimum Performance Target: 15%

Electric Incentives

Base Incentive based on 15% savings: ..... $0.09 per projected kWh saved
For each % over 15% add: ..... $0.005 per projected kWh saved
Maximum Incentive: ..... $0.11 per projected kWh saved

Gas Incentives

Base Incentive based on 15% savings: ..... $0.90 per projected Therm saved
For each % over 15% add: ..... $0.05 per projected Therm saved
Maximum Incentive: ..... $1.25 per projected Therm saved

Incentive Cap: ..... 25% of total project cost

This incentive is based on projected energy savings outlined in the ERP. Incentive is paid upon successful installation of recommended measures.

Incentive #3: Post-Construction Benchmarking Report

Minimum Performance Target: 15%

Electric Incentives

Base Incentive based on 15% savings: ..... $0.09 per actual kWh saved
For each % over 15% add: ..... $0.005 per actual kWh saved
Maximum Incentive: ..... $0.11 per actual kWh saved

Gas Incentives

Base Incentive based on 15% savings: ..... $0.90 per actual Therm saved
For each % over 15% add: ..... $0.05 per actual Therm saved
Maximum Incentive: ..... $1.25 per actual Therm saved

Incentive Cap: ..... 25% of total project cost

This incentive will be released upon submittal of a Post-Construction Benchmarking Report that verifies that the level of savings actually achieved by the installed measures meets or exceeds the minimum performance threshold. To validate the savings and achievement of the Energy Target, the EPA Portfolio Manager shall be used. Savings should be rounded to the nearest percent. Total value of Incentive #2 and Incentive #3 may not exceed 50% of the total project cost. Incentives will be limited to $1 million per gas and electric account per building; maximum of $2 million per project. See Participation Agreement for details.

New Jersey Pay For Performance Incentive Program

Note: The following calculation is based on the New Jersey Pay For Performance Incentive Program per April, 2012.
Building must have a minimum average electric demand of 100 kW. This minimum is waived for buildings owned by local governements or non-profit organizations.
Values used in this calculation are for measures with a positive return on investment (ROI) only.

Total Building Area (Square Feet)	46,870
Is this audit funded by NJ BPU (Y/N)	Yes

Board of Public Utilites (BPU)

Incentive #1		
Audit is funded by NJ BPU	$0.10	$/sqft

	Annual Utilities	
	kWh	Therms
Existing Cost (from utility)	$80,185	$14,295
Existing Usage (from utility)	342,000	11,322
Proposed Savings	74,843	-195
Existing Total MMBtus	2,299	
Proposed Savings MMBtus	236	
% Energy Reduction	**10.3%**	
Proposed Annual Savings	$19,900	

	Min (Savings = 15%)		Increase (Savings > 15%)		Max Incentive		Achieved Incentive	
	$/kWh	$/therm	$/kWh	$/therm	$/kWh	$/therm	$/kWh	$/therm
Incentive #2	$0.09	$0.90	$0.005	$0.05	$0.11	$1.25	$0.00	$0.00
Incentive #3	$0.09	$0.90	$0.005	$0.05	$0.11	$1.25	$0.00	$0.00

	Incentives $		
	Elec	Gas	Total
Incentive #1	$0	$0	$5,000
Incentive #2	$0	$0	$0
Incentive #3	$0	$0	$0
Total All Incentives	**$0**	**$0**	**$5,000**

Total Project Cost	$71,848

		Allowable Incentive
% Incentives #1 of Utility Cost*	5.3%	$5,000
% Incentives #2 of Project Cost**	0.0%	$0
% Incentives #3 of Project Cost**	0.0%	$0
Total Eligible Incentives***	**$5,000**	
Project Cost w/ Incentives	$66,848	

Project Payback (years)	
w/o Incentives	w/ Incentives
3.6	3.4

* Maximum allowable incentive is 50% of annual utility cost if not funded by NJ BPU, and %25 if it is.

** Maximum allowable amount of Incentive #2 is 25% of total project cost.
Maximum allowable amount of Incentive #3 is 25% of total project cost.

*** Maximum allowable amount of Incentive #1 is $50,000 if not funded by NJ BPU, and $25,000 if it is.
Maximum allowable amount of Incentive #2 & #3 is $1 million per gas account and $1 million per electric account; maximum 2 million per project

APPENDIX E

Energy Savings Improvement Plan Information

COMMERCIAL, INDUSTRIAL AND LOCAL GOVERNMENT

- PROGRAMS
  - NJ SMARTSTART BUILDINGS
  - PAY FOR PERFORMANCE
  - COMBINED HEAT & POWER AND FUEL CELLS
  - LOCAL GOVERNMENT ENERGY AUDIT
  - LARGE ENERGY USERS PILOT
  - ENERGY SAVINGS IMPROVEMENT PLAN
  - DIRECT INSTALL
  - ENERGY BENCHMARKING
  - T-12 SCHOOLS LIGHTING INITIATIVE
  - OIL, PROPANE & MUNICIPAL ELECTRIC CUSTOMERS
  - EDA PROGRAMS
  - TEACH
  - ARRA
- TECHNOLOGIES
- TOOLS AND RESOURCES
- PROGRAM UPDATES
- CONTACT US

Home » Commercial & Industrial » Programs

Energy Savings Improvement Plan

A new State law allows government agencies to make energy related improvements to their facilities and pay for the costs using the value of energy savings that result from the improvements. Under the recently enacted Chapter 4 of the Laws of 2009 (the law), the "Energy Savings Improvement Program" (ESIP), provides all government agencies in New Jersey with a flexible tool to improve and reduce energy usage with minimal expenditure of new financial resources.

This Local Finance Notice outlines how local governments can develop and implement an ESIP for their facilities. Below are two sample RFPs:

- Local Government
- School Districts (K-12)

The Board also adopted protocols to measure energy savings.

The ESIP approach may not be appropriate for all energy conservation and energy efficiency improvements. Local units should carefully consider all alternatives to develop an approach that best meets their needs. Local units considering an ESIP should carefully review the Local Finance Notice, the law, and consult with qualified professionals to determine how they should approach the task.

FIRST STEP – ENERGY AUDIT

For local governments interested in pursuing an ESIP, the first step is to perform an energy audit. As explained in the Local Finance Notice, this may be done internally if an agency has qualified staff to conduct the audit. If not, the audit must be implemented by an independent contractor and not by the energy savings company producing the Energy Reduction Plan.

Pursuing a Local Government Energy Audit through New Jersey's Clean Energy Program is a valuable first step to the ESIP approach - and it's free. **Incentives provide 100% of the cost of the audit.**

ENERGY REDUCTION PLANS

If you have an ESIP plan you would like to submit to the Board of Public Utilities, please email it to ESIP@bpu.state.nj.us. Please limit the file size to 3MB (or break it into smaller files).

- Frankford Township School District
- Northern Hunterdon-Voorhees Regional High School
- Manalapan Township ***(180 MB** - Right Click, Save As)*

Program Updates

- Board Order - Standby Charges for Distributed Generation Customers
- T-12 Schools Lighting Replacement Initiative - Funding Allocation Reached

Other updates posted.

APPENDIX F

Photovoltaic (PV) Rooftop Solar Power Generation

Roxbury Township Board of Education
Jefferson Elementary School

Cost of Electricity	$0.234	/kWh
Electricity Usage	342,000	kWh/yr
System Unit Cost	$4,000	/kW

Photovoltaic (PV) Solar Power Generation - Screening Assessment

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	Federal Tax Credit	New Jersey Renewable ** SREC	Payback (without incentive)	Payback (with incentive)
$	kW	kWh	therms	$	$	$	$	$	Years	Years
$640,000	**160.0**	**199,834**	**0**	**$46,853**	**0**	**$46,853**	**$0**	**$12,989**	**13.7**	**10.7**

** Estimated Solar Renewable Energy Certificate Program (SREC) SREC for 15 Years= $65 /1000kwh

Area Output*
2,792 m2
30,058 ft2

Perimeter Output*
162 m
532 ft

Available Roof Space for PV:
(Area Output - 10 ft x Perimeter) x 85%
21,024 ft2

Approximate System Size: Is the roof flat? (Yes/No) Yes

8 watt/ft2
168,195 DC watts
160 kW Enter into PV Watts

PV Watts Inputs***

Array Tilt Angle	20	Enter into PV Watts (always 20 if flat, if pitched - enter estimated roof angle)
Array Azimuth	180	Enter into PV Watts (default)
Zip Code	07876	Enter into PV Watts
DC/AC Derate Factor	0.83	Enter info PV Watts

PV Watts Output
199,834 annual kWh calculated in PV Watts program

% Offset Calc

Usage	342,000	(from utilities)
PV Generation	199,834	(generated using PV Watts)
% offset	58%	

* http://www.freemaptools.com/area-calculator.htm
** http://www.flettexchange.com
*** http://gisatnrel.nrel.gov/PVWatts_Viewer/index.html

PVWatts * * * AC Energy & Cost Savings

Cautions for Interpreting the Results

(Type comments here to appear on printout; maximum 1 row of 80 characters.)

Station Identification	
City:	Newark
State:	New_Jersey
Latitude:	40.70° N
Longitude:	74.17° W
Elevation:	9 m
PV System Specifications	
DC Rating:	160.0 kW
DC to AC Derate Factor:	0.830
AC Rating:	132.8 kW
Array Type:	Fixed Tilt
Array Tilt:	20.0°
Array Azimuth:	180.0°
Energy Specifications	
Cost of Electricity:	23.4 ¢/kWh

Results			
Month	Solar Radiation (kWh/m ^{2}/day)	AC Energy (kWh)	Energy Value ($)
1	2.78	11687	2734.76
2	3.54	13466	3151.04
3	4.35	17827	4171.52
4	4.95	18897	4421.90
5	5.69	21940	5133.96
6	5.86	21222	4965.95
7	5.73	21188	4957.99
8	5.47	20016	4683.74
9	4.91	17932	4196.09
10	3.99	15554	3639.64
11	2.68	10440	2442.96
12	2.35	9667	2262.08
Year	4.36	199834	46761.16

Output Hourly Performance Data * Output Results as Text

About the Hourly Performance Data Saving Text from a Browser

Run PVWATTS v.1 for another US location or an International location
Run PVWATTS v.2 (US only)

Please send questions and comments regarding PVWATTS to Webmaster

Disclaimer and copyright notice

RReDC Return to RReDC home page (*http://www.nrel.gov/rredc*)

APPENDIX G

EPA Portfolio Manager

OMB No. 2060-0347

STATEMENT OF ENERGY PERFORMANCE
Jefferson Elementary School

Building ID: 3210011
For 12-month Period Ending: May 31, 2012[1]
Date SEP becomes ineligible: N/A

Date SEP Generated: August 17, 2012

Facility
Jefferson Elementary School
Cornhollow Rd
Succasunna, NJ 07876

Facility Owner
N/A

Primary Contact for this Facility
N/A

Year Built: 1963
Gross Floor Area (ft²): 46,870

Energy Performance Rating[2] (1-100) 84

Site Energy Use Summary[3]

Electricity - Grid Purchase(kBtu)	1,166,904
Natural Gas (kBtu)[4]	1,126,490
Total Energy (kBtu)	2,293,394

Energy Intensity[4]

Site (kBtu/ft²/yr)	49
Source (kBtu/ft²/yr)	108

Emissions (based on site energy use)

Greenhouse Gas Emissions ($MtCO_2e$/year)	225

Electric Distribution Utility
Jersey Central Power & Light Co [FirstEnergy Corp]

National Median Comparison

National Median Site EUI	72
National Median Source EUI	159
% Difference from National Median Source EUI	-32%
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[5] **for Indoor Environmental Conditions:**

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

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

ENERGY STAR® Data Checklist for Commercial Buildings

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

Please complete and sign this checklist and include it with the stamped, signed Statement of Energy Performance.
NOTE: You must check each box to indicate that each value is correct, OR include a note.

CRITERION	VALUE AS ENTERED IN PORTFOLIO MANAGER	VERIFICATION QUESTIONS	NOTES	☑
Building Name	Jefferson 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	Cornhollow Rd, Succasunna, NJ 07876	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 a hospital, k-12 school, hotel and senior care facility) nor can they be submitted as representing only a portion of a building.		☐
School (K-12 School)				
CRITERION	**VALUE AS ENTERED IN PORTFOLIO MANAGER**	**VERIFICATION QUESTIONS**	**NOTES**	☑
Gross Floor Area	46,870 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?	No (Default)	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	82 (Default)	Is this the number of personal computers in the K12 School?		☐
Number of walk-in refrigeration/freezer units	0 (Default)	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 (Default)	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 % (Default)	Is this the percentage of the total floor space within the facility that is served by mechanical cooling equipment?		☐
Percent Heated	100 % (Default)	Is this the percentage of the total floor space within the facility that is served by mechanical heating equipment?		☐
Months	N/A(Optional)	Is this school in operation for at least 8 months of the year?		☐

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

ENERGY STAR® Data Checklist for Commercial Buildings

Energy Consumption

Power Generation Plant or Distribution Utility: Jersey Central Power & Light Co [FirstEnergy Corp]

Fuel Type: Electricity

Meter: Electricity (kWh (thousand Watt-hours))
Space(s): Entire Facility
Generation Method: Grid Purchase

Start Date	End Date	Energy Use (kWh (thousand Watt-hours))
05/01/2012	05/31/2012	18,600.00
04/01/2012	04/30/2012	33,000.00
03/01/2012	03/31/2012	34,500.00
02/01/2012	02/29/2012	31,800.00
01/01/2012	01/31/2012	31,500.00
12/01/2011	12/31/2011	25,800.00
11/01/2011	11/30/2011	32,400.00
10/01/2011	10/31/2011	29,400.00
09/01/2011	09/30/2011	17,700.00
08/01/2011	08/31/2011	25,800.00
07/01/2011	07/31/2011	31,800.00
06/01/2011	06/30/2011	29,700.00
Electricity Consumption (kWh (thousand Watt-hours))		**342,000.00**
Electricity Consumption (kBtu (thousand Btu))		**1,166,904.00**
Total Electricity (Grid Purchase) Consumption (kBtu (thousand Btu))		**1,166,904.00**
Is this the total Electricity (Grid Purchase) consumption at this building including all Electricity meters?		☐

Fuel Type: Natural Gas

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

Start Date	End Date	Energy Use (therms)
05/01/2012	05/31/2012	159.70
04/01/2012	04/30/2012	594.20
03/01/2012	03/31/2012	1,035.00
02/01/2012	02/29/2012	2,457.10
01/01/2012	01/31/2012	2,638.80
12/01/2011	12/31/2011	2,468.40
11/01/2011	11/30/2011	1,333.90
10/01/2011	10/31/2011	449.70
08/01/2011	09/30/2011	112.20
07/01/2011	07/31/2011	1.10

06/01/2011	06/30/2011	14.80
Natural Gas Consumption (therms)		**11,264.90**
Natural Gas Consumption (kBtu (thousand Btu))		**1,126,490.00**
Total Natural Gas Consumption (kBtu (thousand Btu))		**1,126,490.00**
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.	☐

On-Site Solar and Wind Energy	
Do the fuel consumption totals shown above include all on-site solar and/or wind power located at your facility? Please confirm that no on-site solar or wind installations have been omitted from this list. All on-site systems must be reported.	☐

Certifying Professional

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

Name: _____ Date: _____

Signature: _____

Signature is required when applying for the ENERGY STAR.

FOR YOUR RECORDS ONLY. DO NOT SUBMIT TO EPA.

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

Facility
Jefferson Elementary School
Cornhollow Rd
Succasunna, NJ 07876

Facility Owner
N/A

Primary Contact for this Facility
N/A

General Information

Jefferson Elementary School	
Gross Floor Area Excluding Parking: (ft^2)	46,870
Year Built	1963
For 12-month Evaluation Period Ending Date:	May 31, 2012

Facility Space Use Summary

School	
Space Type	K-12 School
Gross Floor Area (ft^2)	46,870
Open Weekends? [d]	No
Number of PCs [d]	82
Number of walk-in refrigeration/freezer units [d]	0
Presence of cooking facilities [d]	Yes
Percent Cooled [d]	100
Percent Heated [d]	100
Months [o]	N/A
High School?	No
School District [o]	N/A

Energy Performance Comparison

	Evaluation Periods		Comparisons		
Performance Metrics	**Current** (Ending Date 05/31/2012)	**Baseline** (Ending Date 07/31/2011)	**Rating of 75**	**Target**	**National Median**
Energy Performance Rating	84	68	75	N/A	50
Energy Intensity					
Site (kBtu/ft^2)	49	68	56	N/A	72
Source (kBtu/ft^2)	108	135	124	N/A	159
Energy Cost					
$/year	$ 94,056.47	$ 117,400.30	$ 107,858.34	N/A	$ 137,922.58
$/$ft^2$/year	$ 2.01	$ 2.50	$ 2.30	N/A	$ 2.95
Greenhouse Gas Emissions					
$MtCO_2e$/year	225	286	258	N/A	330
$kgCO_2e/ft^2$/year	5	6	6	N/A	7

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

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

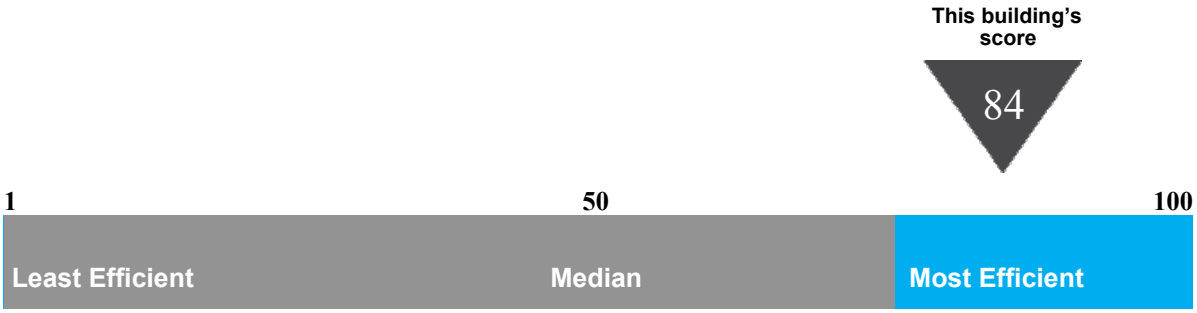
Statement of Energy Performance

2012

Jefferson Elementary School
Cornhollow Rd
Succasunna, NJ 07876

Portfolio Manager Building ID: 3210011

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



This building uses 108 kBtu per square foot per year.*

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

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

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

Date of certification

EPA United States Environmental Protection Agency

Date Generated: 08/17/2012