HOLMDEL TOWNSHIP BOARD OF EDUCATION
I N D I A N H I L L S C H O O L
E N E R G Y A S S E S S M E N T

FOR
NEW JERSEY
BOARD OF PUBLIC UTILITIES

FEBRUARY 2013

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CHA PROJECT NO. 24988

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APPENDICES

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 school 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 staff and spot measurements taken in the field.

1.0 EXECUTIVE SUMMARY

This energy audit is performed by CHA in connection with the New Jersey Board of Public Utilities' Local Government Energy Audit Program for the Holmdel Township Board of Education. The purpose of this report is to identify energy savings opportunities associated with major energy consumers and inefficient practices. This report details the results of the energy audit conducted for:

Building Name	Address	Square Feet	Construction Date
Indian Hill School	735 Holmdel Road Holmdel, NJ 07733	127,000	1956, 1962, 1968, 1997

The potential annual energy and cost savings for each energy conservation measure (ECM) is shown below in Table 1. Each individual measure's annual savings are dependent on that measure alone, there are no interactive effects calculated. There are three options shown for Lighting ECM savings; only one option can be chosen. Incentives shown (if any) are based only on the SmartStart Incentive Program. Other NJBPU or local utility incentives may also be available/ applicable and are discussed in Section 5.0.

Each measure recommended by CHA typically has a simple payback period of 15 years or less to be consistent with the requirements of the Energy Savings Improvement Plan (ESIP) which has a maximum payback period of 15 years. Occasionally, we will recommend an ECM that has a longer payback period, based on the need to replace that piece(s) of equipment, such as a boiler for example. If the recommended measures are implemented a total potential annual savings of $30,700 may be realized with an average simple payback period of 29.1 years.

Table 1: Summary of Energy Conservation Measures

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**
ECM 1	Window Replacement & Reduced Glazing for Classrooms 1-20	451,000	1,200	>20	0	>20	X
ECM 2	Interlock HW Piping & Relocate Boilers to Boiler Room B	138,000	400	>20	0	>20	X
ECM 3	Install VSD's & Premium Motors on HW Pumps (in Boiler Room A)	18,000	3,100	5.8	2,900	4.9	X
ECM 4	Replace Chiller	230,000	6,000	>20	34,000	>20	X
ECM 5	DCV Controls (Gymnasium & Cafeteria)	20,000	8,600	2.3	0	2.3	X
ECM 6	Replace Domestic Hot Water with Gas-Fired Tankless Heater	8,000	300	>20	300	>20	
ECM 7	Replace Existing Boiler for DHW w/ Condensing Boiler	181,000	700	>20	4,000	>20	
ECM 8	Install Kitchen Hood VSD / Controller	35,000	200	>20	0	>20	
ECM 9	Install Walk-in Cooler / Freezer Controls	15,000	1,300	11.5	0	11.5	X
ECM 10	Lighting Replacement / Upgrades	29,000	1,600	18.1	5,200	14.9	
ECM 11	Install Lighting Controls (occupancy sensors)	17,000	4,600	3.7	2,700	3.1	
ECM 12	Lighting Replacement s with Lighting Controls	46,000	5,000	9.2	7,900	7.6	X
ECM 13	Exterior Lighting Replacements with LED	26,000	5,100	5.1	3,100	4.5	X

2.0 INTRODUCTION AND BACKGROUND

The Indian Hill School is a 93,000 square foot building consisting of two floors. The building was originally constructed in 1956, with subsequent additions in 1962, 1968, and 1997. The school includes the following spaces: classrooms, offices, (2) gymnasium, storage, music rooms, lunchroom, toilet rooms and a kitchen. The school hours of operation are from 9:05 AM – 3:35 PM Monday through Friday, with various after-school activities. The school is open on Saturday from 8 AM- 4 PM for various activities. The school has approximately 734 students and 125 faculty and staff members. The school has 243 desktop computers and 87 notebooks.

Figure 1: Indian Hill School

3.0 UTILITY

Utilities include electricity and natural gas. Electricity is delivered Jersey Central Power & Light (JCP&L) and is currently supplied by South Jersey Energy. Natural gas is delivered by New Jersey Natural Gas and supplied by Hess. The school district is charged for water/ sewer which is provided by Shorelands Water Co., Inc.

For the 12-month period ending in September 2012, the utilities usage for the building was as follows:

Table 2: Actual Cost & Site Utility Usage

Electric		
Annual Usage	895,360	kWh/year
Annual Cost	117,400	$
Blended Rate	0.131	$/kWh
Supply Rate	0.098	$/kWh
Demand Rate	6.41	$/kW
Peak Demand	484.8	kW
Min. Demand	256.0	kW
Avg. Demand	383.2	kW
Natural Gas		
Annual Usage	31,329	Therms/year
Annual Cost	45,364	$
Rate	1.448	$/Therm

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

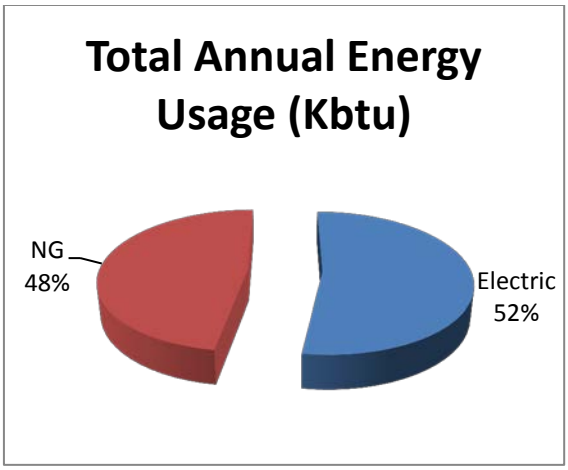


Figure 2: Annual Site Energy Usage

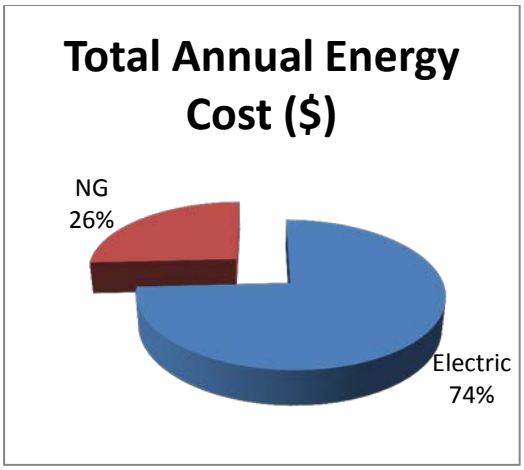


Figure 3: Annual Energy Cost

Under New Jersey's energy deregulation law, the supply portion of the electric (or natural gas) bill is separated from the delivery portion. The supply portion is open to competition, and customers can shop around for the best price for their energy suppliers. The electric and natural gas distribution utilities will still deliver the gas/ electric supplies through their wires and pipes – and respond to emergencies, should they arise – regardless of where those supplies are purchased. Purchasing the 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 the 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.

4.0 EXISTING CONDITIONS

4.1 Building Envelope

The original building is built of face brick, air space, and concrete masonry units. The interior walls are painted block walls. There is currently no insulation in the walls of the original school. The 1997 addition is constructed of sheet rock, insulation, and concrete masonry units. The 1962 and 1968 additions are built in the same fashion as the original school. Typically, these walls cannot be insulated without adding on to the interior resulting in a decrease of room area. It was decided that this measure was not practical.

Windows throughout the 1956, 1962, and 1968 portions of the school building are operable aluminum framed, single glazed windows. These windows are fair condition with the exception of the windows in classrooms 1 – 20, which are in poor condition. It was reported by the maintenance director that these rooms have a high infiltration rate due to the condition of the windows. The 1997 addition has double glazed windows. These windows are in good condition. The doors were installed at the same time as the windows. They are in fair condition as well. The maintenance staff did not report any issues with the doors. Seals were in good condition and no cracks were discovered during the field visit.

The school has a flat roof consisting of steel decking and rubber membrane on the 1997 addition. The other additions are a tectum roofing system. During the site visit it was noted that the roof was in good condition. The roof has undergone repairs and structural reinforcement to install the fixed solar panels.

4.2 HVAC Systems

4.2.a Heating Systems

Indian Hill School has three (3) natural gas fired hot water boilers manufactured by Aerco. These boilers were installed in 1997 and have a heating input capacity of 2,000,000, output capacity of 1,800,000 MBH with a thermal efficiency to be 90% that serve the 1997 addition. The boilers are controlled using an OA temperature reset schedule. The boilers operate in a lead / lag fashion. Hot water is pumped by two (2) 5.0 HP and two (2) 7.5 HP Taco pumps that operate in lead/lag to provide heating to this area. The space has a varying load while the system is constant volume with 2-way valves. Utilizing VSDs on the pumps is an energy cost measure that will be analyzed in the report. P-5 – P-8 are 1/3 HP inline pumps that serve classrooms 16-20, 10-14, 4-5, and 21-22.

In Mechanical Room B there are seven (7) A.O. Smith model LB 750 boilers serving the remainder of the school. The boilers were installed in 1988 and have a heating input capacity of 750,000, an output of 650,000, and a thermal efficiency to be 86%. Hot water is pumped by (2) 15.0 HP Taco pumps that operate in lead/lag to provide heating to this area. The space has a varying load while the system is constant volume with 2-way valves. Utilizing VSDs on the pumps is an energy cost measure that will be analyzed in the report.
There are two boiler rooms in the school. Boiler Room A has three (3) Aerco Benchmark gas fired condensing boilers that currently serve hot water to the 1997 addition. Boiler

Room B has seven (7) A.O. Smith that serve hot water to the rest of the school. The boilers in the Boiler Room A are newer and have a higher efficiency. According to the Maintenance Director the school has confirmed that the entire school could be run the piping system associated with Boiler Room A but Boiler Room B could not accomplish feed the entire school due to pipe size. This ECM addresses moving the Benchmark Boilers to Boiler Room B, adding an additional boiler to the header and connecting the piping from the 1997 addition to the loop that serves the original building. The pumps will remain in boiler room A to feed that section of the building. Boiler Room B will keep their pumps as well. Further engineering study would be needed to properly size and design the system.

Specifics on mechanical equipment can be found within the equipment inventory located in Appendix B.

4.2.b Cooling Systems

The school has a chilled water plant that consist of a 320-ton Trane screw chiller, Marley cross directional cooling tower and four (4) 25 HP pumps. The Chiller is oversized and has VSDs on the compressor of chiller. There is an opportunity to resize the chiller and add some redundancy to the system in the event the chiller goes offline.

Cooling is provided to spaces of the high school by dedicated rooftops with heating and cooling coils. Rooftop units AHU-D1 & AHU-D2 serve the new gymnasium. AHU-D3 cools the library. AHU-4 cools the cafeteria. There were two other rooftop units labeled C-1 & C-2 but it was unsure what they were serving.

Various spaces have dedicated electric DX cooling split systems. The condenser is on the roof and the blower section is in the space. CU-1 is a 2.5-ton unit that serves IDF. CU-2 is a 4.0-ton unit that serves main office. CU-3 is a 1.5-ton unit that serves principal office. CU-4 is a 2.0-ton unit that serves the conference room. CU-5 is a 2.5-ton unit that serves the room 26. A tagless unit serves room 27. CU-6 is a 2.0-ton unit that serves the lobby. Rooms 24, 25 and the conference room are served from independent 3-ton units labeled CU-9-11. CU-8 is a 4.0-ton unit that serves Music A. Rooms 1-3 are served from independent 1-ton units labeled CU-12-14. CU-15 is a 2.5-ton unit that serves room 4. Rooms 5, 6-9, & 15-20 are served from independent 3-ton units labeled CU-16-26. CU-27 is a 4.0-ton unit that serves room 10. CU-30 is a 1.5-ton unit that serves the copy room. CU-31 is a 4.0-ton unit that serves the nurse. Rooms 13-14 are served from independent 3.5-ton units labeled CU-28-29. Room 16A is served by a tagless unit.

Rooms 16-20, 10-14, 4, 5, 21 & 22 have a unit ventilator retrofitted with a remote condenser to provide cooling to these classrooms.

Specifics on mechanical equipment can be found within the equipment inventory located in Appendix B.

4.2.c Ventilation Systems

The old gymnasium is heated by (1) Petra heating & ventilation (HV) units. The unit is tagless and capacities could not be found.

There are other HV Units that are passed their useful life. The useful life according to ASHRAE in no way is a correlation to the condition of the equipment. The school has maintained certain equipment better than others and has an overall HVAC implementation plan. CHA looked at the replacement of these units and it was determined that some units had no energy savings due to similar efficiencies, EER values, lack of natural gas in an area . These units should be replaced through attrition as they fail or according to the school's overall HVAC plan.

Specifics on mechanical equipment can be found within the equipment inventory located in Appendix B.

4.2.d Exhaust Systems

The school utilizes exhaust fans of various sizes located on the roof to exhaust restrooms and storage areas.
The kitchen has a 16.0'x 8.0' hood. The hood is a 2 HP hood that exhaust 3,500 CFM. The hood is interlocked with a makeup air unit (MUA) that supplies 2,800 CFM.

Specifics on mechanical equipment can be found within the equipment inventory located in Appendix B.

4.3 Control Systems

The school has an assortment of different controls systems that include Automated Logic and Honeywell electric controls. The Honeywell controls system controls the new wing of the school. The Automated Logic control system controls the remainder of the building. During the occupied times (day), the units are operated to provide 70 ^{o}F heating and 75 ^{o}F cooling (where cooling is provided). After 4:30 pm, the HVAC systems are essentially shut off until 7:30 am the next day. If a space requires heating or cooling, re-activation of the HVAC equipment can be done through the operations office. Individual controls are provided to most spaces and adjustability by the staff limited. Teachers can adjust temperature +/- 3 degrees from the set point. Any other changes must go through maintenance and changed in the mainframe computer.

The boiler plants are provided with their own stand-alone controls systems that control boiler/pump start/stop (based on outdoor air temperatures) and hot water reset, also based on outdoor air temperatures.

4.4 Domestic Hot Water System

The 1997 addition is served by an AO Smith hot water heater with an input of 197 MBH installed in 1997 with a capacity of 100 gallons and 80% efficiency. An Energy savings measure is to replace this domestic water heater with a gas fired instantaneous one. The rest of the school is served by a A.O. Smith VW-500 Boiler with (2) storage tanks. The boiler has an input of 500,000 BTU and an output of 421,000 BTU. There is also a potential energy savings from replacing this boiler.

Specifics on mechanical equipment can be found within the equipment inventory located in Appendix B.

4.5 Kitchen Equipment

The kitchen has a 16.0'x 8.0' hood. The hood is a 2 HP hood that exhaust 3,500 CFM. The hood is interlocked with a makeup air unit (MUA) that supplies 2,800 CFM.

The kitchen has (1) 10'x10' walk-in freezer and (1) 10'x10' walk-in refrigerator.

4.6 Plumbing Systems

The plumbing fixtures varied in age with the age of the additions. The faucets are Chicago metered faucets and have full shut off capability. In 2001 the toilets were retrofitted with Sloan flush meters. There are 4 waterless urinals as well. The school has been proactive in reducing their water usage over the years.

4.7 Lighting/Electrical Systems

The school has compact florescent lighting (CFLs). The ballasts are electronic. A majority of the lighting fixtures in instructional areas, office spaces, corridors, etc., are T8 fluorescent fixtures, with specialty lighting in the gymnasiums and building exterior. The gymnasiums and exterior wall packs use 400W metal halides. A few spaces use compact fluorescent spiral bulbs. The lights are switched manually; exception is the gymnasium.

Parking lot lighting consists of pole mounted high pressure sodium light fixtures which are on a timer. These lamps are a combination of 250W single pole HPS fixtures.

5.0 ENERGY CONSERVATION MEASURES

Energy conservation measures (ECM's) are energy savings recommendations that typically require a financial investment. Energy savings can be in the form of electrical demand (KW=kilowatts), electrical usage (Kwh=Kilowatt-hour), natural gas (Therms=100,000 BTU), and water (KGAL=1000 gallons).

These recommendations are influenced by the time period that it takes to "break even "referred to as Simple Payback. Simple payback is calculated by dividing the cost of implementing the ECM by the energy cost savings (in dollars) of that ECM.

Two other financial analysis included in this report are Internal Rate of Return (IRR) and Net Present Value (NPV). Internal Rate of Return is the discount rate at which the present value of a project costs equals the present value of the project savings. Net Present Value is the difference between present value of an investment's future net cash flows and the initial investment. If the NPV equals "0", the project would equate to investing the same amount of dollars at the desired rate. NPV is sometimes referred to as Net Present Worth. These values are provided in the summary in appendix C.

5.1.1 ECM-1 Window Replacement & Reduced Glazing for Classrooms 1-20

The facility has 4,176 square feet of window area. 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 to decrease energy losses.

The seals around exterior windows and doors over time fail. This leads to unwanted infiltration of unconditioned outside air and exfiltration of conditioned air resulting in increased heating energy usage. This measure calls for the replacement of all exterior window and door seals. Replacement of these seals will result in a reduction of the buildings heating and cooling loads, therefore providing natural gas and electricity savings.

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

ECM-1 Window Replacements and Reduced Glazing for Classroom 1-20

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Potential Incentive *	Payback (without Incentive)	Payback (with Incentive)
	Electricity		Natural Gas	Total						
$	kW	kWh	Therms	$	$	$		$	Years	Years
451,000	0	1,100	900	1,200	0	1,200	(0.9)	0	>20	>20

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

Expected Life: 30 years

Lifetime Savings: 33,000 kWh 27,000 therms $ 36,000

This measure is not recommended.

5.1.2 ECM-2 Interlock HW Piping and relocate Boilers to Boiler Room B

There are two boiler rooms in the school. Mechanical Room A has three (3) Aerco Benchmark gas fired condensing boilers that currently serve hot water to the 1997 addition. Mechanical Room B has seven (7) A.O. Smith that serve hot water to the rest of the school. The boilers in the Mechanical Room A are newer and have a higher efficiency. According to the Maintenance Director the school has confirmed that the entire school could be run the piping system associated with Boiler Room A but Mechanical Room B could not accomplish feed the entire school due to pipe size. This ECM addresses moving the Benchmark Boilers to Mechanical Room B, adding an additional boiler to the header and connecting the piping from the 1997 addition to the loop that serves the original building. The pumps will remain in boiler room A to feed that section of the building. Boiler Room B will keep their pumps as well. Further engineering study would be needed to properly size and design the system.

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

ECM-2 Interlock HW Piping and relocate Boilers to Boiler Room B

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Potential Incentive *	Payback (without Incentive)	Payback (with Incentive)
	Electricity		Natural Gas	Total						
$	kW	kWh	Therms	$	$	$		$	Years	Years
138,000	0	0	200	400	0	400	(0.9)	2,000	>20	>20

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

Expected Life: 25 years

Lifetime Savings: 0 kWh 5,000 therms $10,000

This measure is recommended.

5.1.3 ECM-3 Install VSD's and Premium Motors on HW pumps (in Boiler room A)

The 1997 addition's hot water system is served by two (2) 5.0 HP and two (2) 7.5 HP pumps. The pumps are constant volume with standard efficiency motors. The hot water system pumps operate at a constant speed (constant water flows) even though the building load does not require all of the flow to maintain temperatures. By adding variable speed drives (VSDs) and inverter duty premium efficiency motors, and reducing the flow (by slowing the motors down), significant electrical energy can be saved.

The calculation use a system "on" set point of 55°F and bin weather data to estimate the heating hours of the building for the year. It was calculated that the heating hours are 4,887. The assumption of this calculation is that the operating hours, motor horsepower, and capacity stay the same.

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

ECM-3 Install VSD's and Premium Motors on HW pumps (in Boiler room A)

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Potential Incentive *	Payback (without Incentive)	Payback (with Incentive)
	Electricity		Natural Gas	Total						
$	kW	kWh	Therms	$	$	$		$	Years	Years
18,000	0	23,300	0	3,100	0	3,100	1.6	2,900	5.8	4.9

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

Expected Life: 15 years

Lifetime Savings: 349,500 kWh _____ therms $46,500

This measure is recommended.

5.1.4 ECM-4 Replace Chiller

The school has an existing water cooled chiller that has a capacity rating of 320 tons. This chiller is oversized due to the original design having cooling loads for the gymnasium and other areas that were taken out later due to value engineering. A consultant hired by the school, Dome-Tech, confirmed the oversizing and recommended the chiller be resized. This ECM assesses replacing the existing chiller with (2) 100-ton chillers. The (25) HP pumps will have to have the motors changed and VSD's added. By adding variable speed drives (VSDs) and inverter duty premium efficiency motors, and reducing the flow (by slowing the motors down), significant electrical energy can be saved. In addition the cooling tower will have to be replaced. These changes will provide the school with an energy savings.

The calculation use a system "on" set point of 70°F and bin weather data to estimate the heating hours of the building for the year. It was calculated that the cooling hours are 169. The assumption of this calculation is that the operating hours, motor horsepower, and capacity stay the same.

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

ECM-4 Replace Chiller

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Potential Incentive *	Payback (without Incentive)	Payback (with Incentive)
	Electricity		Natural Gas	Total						
$	kW	kWh	Therms	$	$	$		$	Years	Years
230,000	0	45,700	0	6,000	0	6,000	(0.3)	34,000	>20	>20

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

Expected Life: 25 years

Lifetime 1,142,500 kWh _____ therms $ _____

Savings: _____ _____ 150,000

This measure is recommended.

5.1.1 ECM-5 DCV Controls (Gymnasium & Cafeteria)

The has gymnasium (2) dedicated gas-fired DX cooling rooftop units and the cafeteria has one gas-fired DX cooling rooftop unit which are designed to provide ventilation based on maximum occupancy. This occurs infrequently and reducing the amount of ventilation will result in energy savings. Installation of carbon dioxide (CO2) sensors will allow for a reduction of outside air during periods of low occupancy. The quantity of ventilation air will be based on maintaining an acceptable 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 changed. During unoccupied periods, the outside air dampers should be closed.
Bin weather data was utilized to obtain the annual operating hours required to maintain the current setpoint of 70°F. The BTU/Hr rating is calculated from the OA conditions and CFM. It is assumed that installing the controls will reduce the amount of OA to be conditioned by 20%. The annual thermal usage was estimated. The energy saving is the difference in natural gas usage.

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

ECM-5 DCV Controls (Gymnasium & Cafeteria)

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Potential Incentive *	Payback (without Incentive)	Payback (with Incentive)
	Electricity		Natural Gas	Total						
$	kW	kWh	Therms	$	$	$		$	Years	Years
20,000	0	29,100	3,300	8,600	0	8,600	5.5	0	2.3	2.3

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

Expected Life: 15 years
Lifetime Savings: 436,500 kWh 49,500 therms $129,000

This measure is recommended.

5.1.2 ECM-6 Replace Domestic Hot Water Heater w/ Gas-Fired Tankless Heater

The 1997 addition is served by an AO Smith hot water heater with an input of 197 MBH installed in 1997 with a capacity of 100 gallons and 80% efficiency. This ECM assesses replacing the domestic hot water heater with a gas fired tankless heater..

According to the U.S. Department of Energy, 2.5% of stored capacity is lost every hour during DHW heater standby. This value was applied to the total volume to determine annual standby losses. Proposed efficiency was based on a typical high efficiency

natural gas condensing type hot water heater. The new water heater will require water and gas piping modifications, venting, and electrical connections.
The implementation cost and savings related to this ECM are presented in Appendix C and summarized below:

ECM-6 Replace Domestic Hot Water w/ Gas-Fired Tankless Heater

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Potential Incentive *	Payback (without Incentive)	Payback (with Incentive)
	Electricity		Natural Gas	Total						
$	kW	kWh	Therms	$	$	$		$	Years	Years
8,000	0	0	200	300	0	300	0.0	300	>20	>20

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

Expected Life: 12 years

Lifetime Savings: 0 kWh 2,400 therms $3,600

This measure is recommended.

5.1.3 ECM-7 Replace Existing Boiler for DHW w/ Condensing Boiler

The majority of the school is served by a A.O. Smith VW-500 Boiler with (2) storage tanks. The boiler has an input of 500,000 BTU, an output of 421,000 BTU and is 84% efficient. This ECM assesses replacing the domestic hot water boiler with a gas fired condensing one.

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

ECM-7 Replace Existing Boiler for DHW w/ Condensing Boiler

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Potential Incentive *	Payback (without Incentive)	Payback (with Incentive)
	Electricity		Natural Gas	Total						
$	kW	kWh	Therms	$	$	$		$	Years	Years
181,000	0	0	500	700	0	700	(0.9)	4,000	>20	>20

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

Expected Life: 25 years

Lifetime Savings: 0 kWh 12,500 therms $17,500

This measure is recommended.

5.1.4 ECM-8 Install Kitchen Hood / VFD Controller

The cafeteria kitchen contains a 16.0'x 8.0' kitchen hood with one 2 HP motors for exhaust fan and 2 HP make up air unit that run continuously during the school day. Installing a control system was evaluated. Upon activation, the hood lights turn on and the fans reach a preset minimum speed of between 10 and 50 percent. When

the cooking applications are turned on, the fan speed increases based on exhaust air temperature. During actual cooking, the speed increases to 100 percent until smoke and heat are removed. The control will also send a signal to the kitchen air handler to modulate the speed on the supply fan drive based on exhaust air quantity.

Energy saving is calculated from reduction of exhaust and makeup fan speed.

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

ECM-8 Install Kitchen / VFD Controller

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Potential Incentive *	Payback (without Incentive)	Payback (with Incentive)
	Electricity		Natural Gas	Total						
$	kW	kWh	Therms	$	$	$		$	Years	Years
35,000	0	500	100	200	0	200	(0.9)	0	>20	>20

* Does not qualify for an Incentive per the New Jersey SmartStart Program. See section 5.0 for other incentive opportunities.

Expected Life: 15 years

Lifetime Savings: 7,500 kWh 1,500 therms $3,000

This measure is not recommended.

5.1.5 ECM-9 Install Walk-in Cooler / Freezer Controls

The cafeteria kitchen contains (1) 10'x10' freezer and (1) 10'x10' walk-in refrigerator. These do not have controls and run continuously throughout the day. Installing a CoolTrol® Cooler Control System to reduce run time of evaporator fans, and door and frame heaters was assessed.

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

ECM-9 Install Walk-in Cooler / Freezer Controls

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Potential Incentive *	Payback (without Incentive)	Payback (with Incentive)
	Electricity		Natural Gas	Total						
$	kW	kWh	Therms	$	$	$		$	Years	Years
15,000	0	9,700	0	1,300	0	1,300	0.3	0	11.5	11.5

* Does not qualify for an Incentive per the New Jersey SmartStart Program. See section 5.0 for other incentive opportunities.

Expected Life: 15 years

Lifetime Savings: 145,500 kWh 0 therms $19,500

This measure is recommended.

5.1.6 ECM-10 Lighting Replacement / Upgrades

The school has compact florescent lighting (CFLs). The ballasts are electronic. A majority of the lighting fixtures in instructional areas, office spaces, corridors, etc., are T8 fluorescent fixtures, with specialty lighting in the gymnasiums and building exterior. The gymnasiums and exterior wall packs use 400W metal halides. A few spaces use compact fluorescent spiral bulbs. The lights are switched manually; exception is the gymnasium.

Energy savings for this measure were calculated by applying the existing and proposed fixture wattages to estimated times of operation. These calculations are based upon 1 to 1 replacements with the fixtures. They do not take into account lumen output and square footage. A more comprehensive study may be performed to determine correct lighting levels.

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-10 Lighting Replacement / Upgrades

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Potential Incentive *	Payback (without Incentive)	Payback (with Incentive)
	Electricity		Natural Gas	Total						
$	kW	kWh	Therms	$	$	$		$	Years	Years
29,000	5.8	11,400	0	1,600	0	1,600	0.0	5,200	18.1	14.9

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

Expected Life: 15 years

Lifetime Savings: 171,000 kWh 0 therms $24,000

This measure is not recommended in lieu of ECM-12.

5.1.7 ECM-11 Install Lighting Controls (Occupancy Sensors)

There aren't any occupancy sensors in the school. The school is interested in putting ceiling mounted occupancy sensors in spaces with the exception of mechanical rooms, gymnasiums, and bathrooms.

Review of the comprehensive lighting survey determined that lighting in classrooms and various other spaces are typically operational, regardless of occupancy. Therefore, installing an occupancy sensor in these spaces to turn off lights when the areas are unoccupied was assessed.
This measure recommends installing occupancy sensors for the current lighting system. Using a process similar to that utilized in section 4.7.1, the energy savings for this

measure was calculated by applying the known fixture wattages in the space to the estimated existing and proposed times of operation for each fixture.

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

ECM-11 Install Lighting Controls (Occupancy Sensors)

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Potential Incentive *	Payback (without Incentive)	Payback (with Incentive)
	Electricity		Natural Gas	Total						
$	kW	kWh	Therms	$	$	$		$	Years	Years
17,000	0.0	35,200	0	4,600	0	4,600	3.0	2,700	3.7	3.1

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

Expected Life: 15 years

Lifetime Savings: 528,000 kWh 0 therms $69,000

This measure is not recommended in lieu of ECM-12.

5.1.8 ECM-12 Lighting Replacements with Controls (Occupancy Sensors)

This measure is a combination of ECM-10 and ECM-11; recommending replace/upgrade the current lighting fixtures to more efficient ones and installing occupancy sensors on the new lights. Interactive effects of the higher efficiency lights and occupancy sensors lead the energy and cost savings for this measure to not be cumulative or equivalent to the sum of replacing the lighting fixtures alone and installing occupancy sensors without the lighting upgrade.

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

ECM-12 Lighting Replacements with Controls (Occupancy Sensors)

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Potential Incentive *	Payback (without Incentive)	Payback (with Incentive)
	Electricity		Natural Gas	Total						
$	kW	kWh	Therms	$	$	$		$	Years	Years
46,000	5.8	46,600	0	5,000	0	5,000	1.1	7,900	9.2	7.6

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

Expected Life: 15 years

Lifetime Savings: 699,000 kWh 0 therms $75,000

This measure is recommended.

5.1.9 ECM-13 Exterior Lighting Replacements with LED lighting

Parking lot lighting consists of pole mounted high pressure sodium light fixtures which are on a timer. These lamps are 250W single pole HPS fixtures. The exterior light are 400W metal halide wall packs.

Energy savings for this measure were calculated by applying the existing and proposed fixture wattages to estimated times of operation. These calculations are based upon 1 to 1 replacements with the fixtures. They do not take into account lumen output and square footage. A more comprehensive study may be performed to determine correct lighting levels.

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-13 Exterior Lighting Replacement with LED Lighting

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Potential Incentive *	Payback (without Incentive)	Payback (with Incentive)
	Electricity		Natural Gas	Total						
$	kW	kWh	Therms	$	$	$		$	Years	Years
26,000	10.0	44,900	0	5,100	0	5,100	2.8	3,100	5.1	4.5

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

Expected Life: 15 years

Lifetime Savings: 673,500 kWh 0 therms $76,500

This measure is recommended.

6.0 PROJECT INCENTIVES

6.1 Incentives Overview

6.1.1 New Jersey Smart Start Program

For this energy audit, The New Jersey Smart Start Incentives are used in the energy savings calculations, where applicable. This program is intended for medium and large energy users and provides incentives for:

- Electric Chillers
- Gas Chillers
- Gas Heating
- Unitary HVAC
- Ground Source Heat Pumps
- Variable frequency Drives/ motors
- Refrigeration
- Prescriptive and performance lighting and lighting controls

The equipment is procured using a typical bid- build method, installed and paid for and then the incentives are reimbursed to the school.

If the School District wishes to and is eligible to participate in the Energy Savings Improvement Plan (ESIP) program and/or the Pay for Performance Incentive Program (P4P), It cannot participate in either the Smart Start or Direct Install Programs. Refer to appendix D for more information on the Smart Start program.

6.1.2 Direct Install Program

The Direct Install Program applies to smaller facilities that have a peak electrical demand of 150 kW or less 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 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, refrigeration, and other equipment upgrades with higher efficiency alternatives. If a building is eligible for this funding, the Direct Install Program can reduce the implementation cost of energy conservation projects.

The Direct install program has specific HVAC equipment and lighting requirements and are generally applicable only to smaller package HVAC units, small boilers and lighting retrofits.

The program pays a maximum amount of $75,000 per building, and up to $250,000 per customer per year. Installations must be completed by an approved Direct Install participating contractor, a list of which can be found on the New Jersey Clean Energy Website. Contractors will coordinate with the applicant to arrange installation of

recommended measures identified in a previous energy assessment, such as this energy audit. The incentive is reimbursed to the school upon successful replacement and payment of the equipment.

This school is not eligible to receive funding from the Direct Install Program because the electrical demand is more than the maximum peak electrical demand of 150 kW in the last 12 month period.

Refer to appendix D for more information on this program.

6.1.3 New Jersey Pay For Performance Program (P4P)

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.

<u>Electric</u>

- 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

<u>Gas</u>

- 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

Combining incentives #2 and #3 will provide a total of $0.18/ kWh and $1.8/therm not to exceed 50% of total project cost. Additional incentives for #2 and #3 are increased by $0.005/kWh and $0.05/therm for each percentage increase above the 15% minimum target to 20%, calculated with the EPA Portfolio Manager benchmarking tool, not to exceed 50% of total project cost.

Total P4P incentives are summarized below:

	Incentives $		
	Electric	**Gas**	**Total**
Incentive #1	$0	$0	$12,700
Incentive #2	$20,938	$4,401	$25,339
Incentive #3	$20,938	$4,401	$25,339
Total	**$41,876**	**$8,803**	**$63,379**

For the purpose of demonstrating the eligibility of the ECM's to meet the minimum savings requirement of 15% for the Pay for Performance Program, all ECM's (both recommended and not recommend) have been included in the incentive calculations. Based on this, the Indian Hills school building would be eligible for incentives#1, #2 and #3.

Refer to appendix D for more information on this program.

6.1.4 Energy Savings Improvement Plan (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. 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. Refer to appendix D for more information on this program.

7.0 ALTERNATIVE ENERGY SCREENING EVALUATION

7.1 Solar

7.1.1 Photovoltaic Rooftop Solar Power Generation

The school has entered into a power purchase agreement with Hudson Energy for installation of rooftop photovoltaic (PV) solar panels for power generation. The agreement is Hudson Energy will furnish and maintain the solar panels and the school will purchase the power generated from the panels. The goal is to have 50% of the power consumption come from the power generated from the solar panels. The size of the system implemented is 434 kW.

7.1.2 Solar Thermal Hot Water Generation

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.

It is a school and classes are not held in the summer months, the effectiveness of the solar thermal hot water would not maximize and therefore this measure is not recommended.

7.2 Combined Heat and Power Generation (CHP)

Combined heat and power, cogeneration, is self-production of electricity on-site with beneficial recovery of the heat byproduct from the electrical generator. Common CHP equipment includes reciprocating engine-driven, micro turbines, steam turbines, and fuel cells. Typical CHP customers include industrial, commercial, institutional, educational institutions, and multifamily residential facilities. CHP systems that are commercially viable at the present time are sized approximately 50 kW and above, with numerous options in blocks grouped around 300 kW, 800 kW, 1,200 kW and larger. Typically,

CHP systems are used to produce a portion of the electricity needed by a facility some or all of the time, with the balance of electric needs satisfied by purchase from the grid.

Any proposed CHP project will need to consider many factors, such as existing system load, use of thermal energy produced, system size, natural gas fuel availability, and proposed plant location. The facility has sufficient need for electrical generation and the ability to use most of the thermal byproduct during the winter, thermal usage during the summer months is low. Thermal energy produced by the CHP plant in the warmer months will be wasted. An absorption chiller could be installed to utilize the heat to produce chilled water; however, there is no chilled water distribution system in the building. The most viable selection for a CHP plant at this location would be a reciprocating engine natural gas-fired unit. Purchasing this system and performing modifications to the existing HVAC and electrical systems would greatly outweigh the savings over the life of the equipment.

This measure is not recommended due to a lack of usable rejection heat and limited summertime occupancy.

7.3 Demand Response Curtailment

Presently, Electricity is delivered by Jersey Central Power & Lights (JCP&L), which receives the electricity from regional power grid RFC East. PJM Interconnection is the regional transmission organization (RTO) that coordinates the movement of wholesale electricity in all or parts of 13 states and the District of Columbia including the State of New Jersey.
Utility Curtailment is an agreement with the utility provider's regional transmission organization and an approved Curtailment Service Provider (CSP) to shed electrical load by either turning major equipment off or energizing all or part of a facility utilizing an emergency generator; therefore, reducing the electrical demand on the utility grid. This program is to benefit the utility company during high demand periods and utility provider offers incentives to the CSP to participate in this program. Enrolling in the program will require program participants to drop electrical load or turn on emergency generators during high electrical demand conditions or during emergencies. Part of the program also will require that program participants reduce their required load or run emergency generators with notice to test the system.

A pre-approved CSP will require a minimum of 100 kW of load reduction to participate in any curtailment program. From July 2011 through September 2012 the facility had a peak electricity demand of 484.8 kW and a minimum of 256.0 kW. The monthly average over the observed 12 month period was 383.2 kW.

This measure is not recommended.

8.0 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 measures, 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. To provide an equitable comparison for different buildings with varying proportions of primary and secondary energy consumption, Portfolio Manager uses the convention of source EUIs. The source energy also accounts for losses incurred in production, storage, transmission, and delivery of energy to the site, which provide an equivalent measure for various types of buildings with differing energy sources. The results of the Portfolio Manager benchmarking tool are contained in the table below.

Building	Site EUI kBtu/ft^2/yr	Source EUI Btu/ft^2/yr	Energy Star Rating (1-100)
Indian Hill School	49	106	85

The Indian Hills School has a below average site EUI and therefore an above average Energy Star Rating Score of 85 (50 being the median score). This is most likely attributed to the poor windows and antiquated boilers. By implementing the measures discussed in this report, it is expected that the EUI can be reduced and the Energy Star Rating increased.

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/).

Username: balickiw
Password: chester1

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

The user name and password for the building's EPA Portfolio Manager Account has been provided to Bill Balicki, Director of Operations.

9.0 CONCLUSIONS & RECOMMENDATIONS

The LGEA energy audit conducted by CHA at the Indian Hill School identified potential annual savings of $30,700 may be realized for the recommended ECMs, with a summary of the costs, savings, and paybacks as 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**
ECM 1	Window Replacement & Reduced Glazing for Classrooms 1-20	451,000	1,200	>20	0	>20	X
ECM 2	Interlock HW Piping & Relocate Boilers to Boiler Room B	138,000	400	>20	0	>20	X
ECM 3	Install VSD's & Premium Motors on HW Pumps (in Boiler Room A)	18,000	3,100	5.8	2,900	4.9	X
ECM 4	Replace Chiller	230,000	6,000	>20	34,000	>20	X
ECM 5	DCV Controls (Gymnasium & Cafeteria)	20,000	8,600	2.3	0	2.3	X
ECM 9	Install Walk-in Cooler / Freezer Controls	15,000	1,300	11.5	0	11.5	X
ECM 12	Lighting Replacement s with Lighting Controls	46,000	5,000	9.2	7,900	7.6	X
ECM 13	Exterior Lighting Replacements with LED	26,000	5,100	5.1	3,100	4.5	X

APPENDIX A

Utility Usage Analysis

Holmdel Township BOE
Indian Hill School

Annual Utilities

12-month Summary

Electric		
Annual Usage	895,360	kWh/yr
Annual Cost	117,400	$
Blended Rate	0.131	$/kWh
Consumption Rate	0.098	$/kWh
Demand Rate	6.41	$/kW
Peak Demand	484.8	kW
Min. Demand	256.0	kW
Avg. Demand	383.2	kW
Natural Gas		
Annual Usage	31,329	Therms/yr
Annual Cost	45,364	$
Rate	1.448	$/Therm

Holmdel Township BOE
Indian Hill School

Utility Bills: Account Numbers

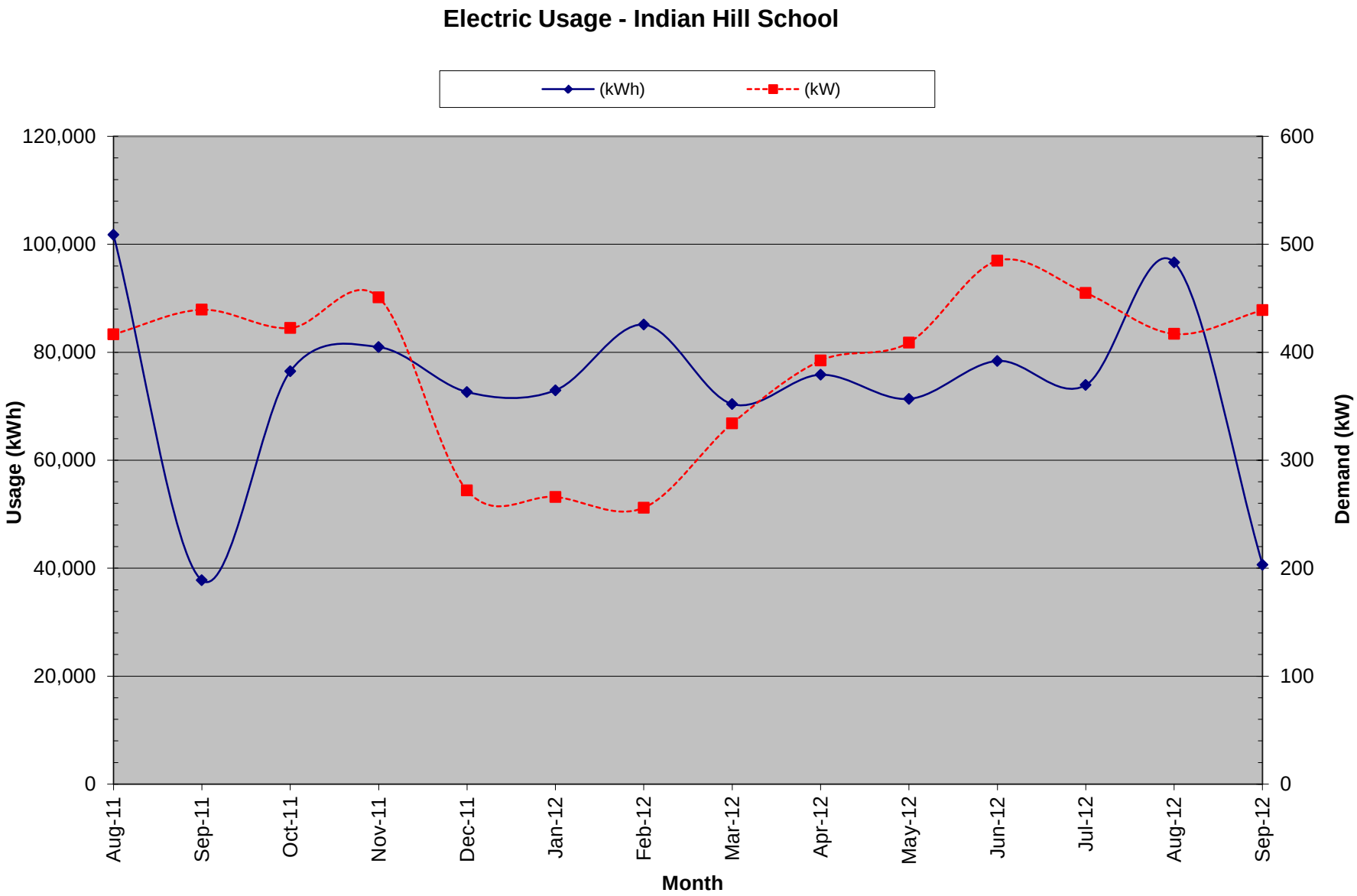
Account Number	School Building	Location	Type	Notes
E-100010879201	Indian Hill		Electricity	
G-08-2348-5473-21	Indian Hill Natural Gas		Natural Gas	

Holmdel Township BOE
Indian Hill School

For Service at: **Indian Hill**
Account No.: **E-100010879201** **Delivery -** JCP&L
Meter No.: **Supplier -** South Jersey Energy
Electric Service

			Provider Charges			Usage (kWh) vs. Demand (kW) Charges		Unit Costs		
Month	**Consumption (kWh)**	**Demand (kW)**	**Delivery ($)**	**Supplier ($)**	**Total ($)**	**Consumption ($)**	**Demand ($)**	**Blended Rate ($/kWh)**	**Consumption ($/kWh)**	**Demand ($/kW)**
August-11	101,760	416.60	14,592.19		14,592.19	11,770.39	2,821.80	0.14	0.12	6.77
September-11	37,760	439.40	7,390.87		7,390.87	4,410.83	2,980.04	0.20	0.12	6.78
October-11	76,480	422.40	11,526.96		11,526.96	8,858.73	2,668.23	0.15	0.12	6.32
November-11	80,960	450.90	12,245.26		12,245.26	9,392.64	2,852.62	0.15	0.12	6.33
December-11	72,640	272.00	10,150.65		10,150.65	8,408.67	1,741.98	0.14	0.12	6.40
January-12	72,960	266.00	10,142.48		10,142.48	8,438.93	1,703.55	0.14	0.12	6.40
February-12	85,120	256.00	11,426.53		11,426.53	9,787.02	1,639.51	0.13	0.11	6.40
March-12	70,400	334.10	10,067.95		10,067.95	7,971.02	2,096.93	0.14	0.11	6.28
April-12	75,840	392.30	10,844.25		10,844.25	8,370.77	2,473.48	0.14	0.11	6.31
May-12	71,360	409.00	3,891.19		3,891.19	1,271.82	2,619.37	0.05	0.02	6.40
June-12	78,400	484.80	10,036.27		10,036.27	6,741.16	3,295.11	0.13	0.09	6.80
July-12	73,920	455.00	9,446.10		9,446.10	6,532.13	2,913.97	0.13	0.09	6.40
August-12	96,640	417.00	11,115.13		11,115.13	8,444.53	2,670.60	0.12	0.09	6.40
September-12	40,640	439.00	6,507.53		6,507.53	3,696.03	2,811.50	0.16	0.09	6.40
Total (All)	**1,034,880**	**484.80**	**$139,383.36**	**$0.00**	**$139,383.36**	**$104,094.69**	**$35,288.67**	**$0.135**	**$0.101**	**$6.470**
Total (last 12-months)	**895,360**	**484.80**	**$117,400.30**	**$0.00**	**$117,400.30**	**$87,913.47**	**$29,486.83**	**$0.131**	**$0.098**	**$6.412**
Notes	1	2	3	4	5	6	7	8	9	10

1.) Number of kWh of electric energy used per month
2.) Number of kW of power measured
3.) Electric charges from Delivery provider
4.) Electric charges from Supply provider
5.) Total charges (Delivery + Supplier)
6.) Charges based on the number of kWh of electric energy used
7.) Charges based on the number of kW of power measured
8.) Total Charges ($) / Consumption (kWh)
9.) Consumption Charges ($) / Consumption (kWh)
10.) Demand Charges ($) / Demand (kW)

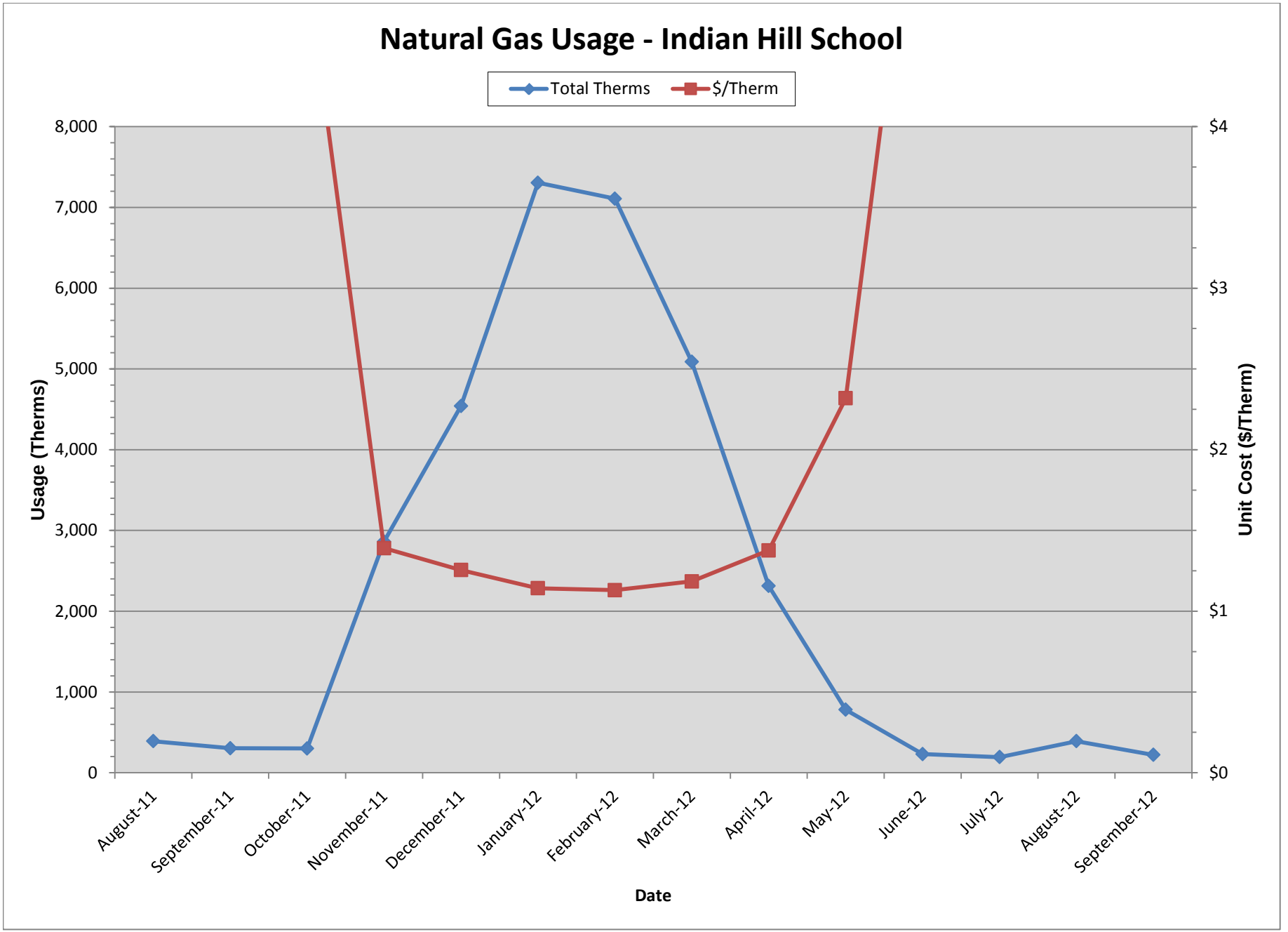


Utility Data -Indian Hill
Electric - Main Graph

Holmdel Township BOE
Indian Hill School

For Service at: **Indian Hill Natural Gas**
Account No.: **G-08-2348-5473-21**
Natural Gas Service
Delivery - **New Jersey Natural Gas**
Supplier - **Hess**

Month	Total Therms	Delivery ($)	Supply ($)	Total ($)	$/Therm
August-11	390.10	$ 1,635.01		$ 1,635.01	$ 4.19
September-11	302.93	$ 1,340.52	$ 164.08	$ 1,504.60	$ 4.97
October-11	300.89	$ 1,341.86	$ 152.89	$ 1,494.75	$ 4.97
November-11	2861.64	$ 2,481.29	$ 1,496.94	$ 3,978.23	$ 1.39
December-11	4540.73	$ 3,225.01	$ 2,472.56	$ 5,697.57	$ 1.25
January-12	7305.21	$ 4,436.27	$ 3,906.84	$ 8,343.11	$ 1.14
February-12	7107.40	$ 4,338.97	$ 3,696.00	$ 8,034.97	$ 1.13
March-12	5087.57	$ 3,449.83	$ 2,576.17	$ 6,026.00	$ 1.18
April-12	2311.76	$ 2,227.92	$ 954.99	$ 3,182.91	$ 1.38
May-12	779.42	$ 1,553.39	$ 253.90	$ 1,807.29	$ 2.32
June-12	230.42	$ 1,311.72	$ 73.34	$ 1,385.06	$ 6.01
July-12	192.84	$ 1,295.18		$ 1,295.18	$ 6.72
August-12	390.10	$ 2,726.09		$ 2,726.09	$ 6.99
September-12	220.77	$ 1,393.19		$ 1,393.19	$ 6.31
Total (all)	**32,021.78**	**$ 32,756.25**	**$ 15,747.71**	**$ 48,503.96**	**$ 1.51**
Total (last 12 months)	**31,328.75**	**$ 29,780.72**	**$ 15,583.63**	**$ 45,364.35**	**$ 1.45**


Natural Gas Usage - Indian Hill School
Total Therms
$/Therm
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
Usage (Therms)
$4
$3
$2
$1
$0
Unit Cost ($/Therm)
August-11
September-11
October-11
November-11
December-11
January-12
February-12
March-12
April-12
May-12
June-12
July-12
August-12
September-12
Date

APPENDIX B

Equipment Inventory

CHA Project# 24988

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.	Current year	Years Old	ASHRAE life expectancy
B-1	1	Aerco	BENCHMARK 2.0	G-03-0262	HOT WATER / NG	2,000,000 Input, 90%	MER A	1997 ADDITION	1997	9		2013	16	25
B-2	1	Aerco	BENCHMARK 2.0	G-03-0263	HOT WATER / NG	2,000,000 Input, 90%	MER A	1997 ADDITION	1997	9		2013	16	25
B-3	1	Aerco	BENCHMARK 2.0	G-03-0264	HOT WATER / NG	2,000,000 Input, 90%	MER A	1997 ADDITION	1997	9		2013	16	25
DHW-1	1	A.O. SMITH	BTC 197550	MG89-0039103-880	HOT WATER / NG	100 Gal, 197,000 BTU input, 80%	MER A	1997 ADDITION	1997	0		2013	16	12
P-1, P-2	2	TACO	FT2500E2AJCOA	-	HOT WATER / ELECTRIC	7.5HP, 88.5%	MER A	1997 ADDITION	1997	0		2013	16	10
P-3, P-4	2	TACO	FT1509E2EAUL0A	-	HOT WATER / ELECTRIC	5HP, 87.5%	MER A	1997 ADDITION	1997	0	ON VFD	2013	16	10
P-5, P-6, P-7, P-8	4	B&G	-	-	HOT WATER / ELECTRIC	1/3 hp, 1750 RPM	16A	16-20, 10-14, 4-5, 21-22	1997	0	ON VFD	2013	16	10
B-4, B-5, B-6, B-7, B-8, B-9, B-10	7	A.O. SMITH	LB 750 920	K9741002215, K9741000215, K9741E0507944, K9740999215, G0508691, K9741033215, K9741001215	HOT WATER / NG	750,000 INPUT, 650,000 OUTPUT	MER B	SCHOOL	1988	0		2013	25	20
P-3A, P-3B	1	TACO	FE2510E2H1F2l0A	-	HOT WATER / ELECTRIC	15 HP, 91%	MER B	SCHOOL	1988	0		2013	25	10
P-1A, P-1B, P-2A, P-2B	4	TACO	TA1224B2K1A2L0	-	HOT WATER / ELECTRIC	25hp, 88.5%	MER B	SCHOOL	1988	0		2013	25	10
CH-1	1	TRANE	CVHE320	L98D02379	AHU - CHILLED WATER	320-TON	MER B	SCHOOL	1988	0	COMPRESSOR ON VFD	2013	25	25
DHW-2	1	A.O. SMITH	VW-500-100	F-0717523	HOT WATER / NG	500,000 INPUT, 421, 000 INPUT	MER B	SCHOOL	2007	6	HAS (2) 200 GALLON TANKS	2013	6	12
AHU-D1	1	-	MCCA010GAA0AAL00	K98A0432	AHU - ELECTRIC DX COOLING	-	ROOF	GYMNASIUM	1998	10		2013	15	25
AHU-D2	1	-	MCCA010GAA0AAL00	K98A0433	AHU - ELECTRIC DX COOLING	-	ROOF	GYMNASIUM	1998	10		2013	15	25
AHU-D3	1	-	MCCA010GAA0AAL00	K98A0453	AHU - ELECTRIC DX COOLING	-	ROOF	LIBRARY	1998	10	HAS VFD	2013	15	25
AHU-D4	1	-	MCCA010GAA0AAL00	K98A0454	AHU - ELECTRIC DX COOLING	-	ROOF	CAFETERIA	1998	10		2013	15	25
CT-1	1	MARLEY	NC4201GS	115169-00297	AHU - CHILLED WATER	-	ROOF	CH-1	1997	9		2013	16	25
C-2	1	Seasons-4	6MHE21-0322-DN3.5-09SE	5065-0697337C-9	AHU - ELECTRIC DX COOLING	-	ROOF		1997	9		2013	16	25
C-1	1	Seasons-4	6MHE21-0302-DN3.5-09SE	5065-0697338C-1	AHU - ELECTRIC DX COOLING	-	ROOF		1997	9		2013	16	25
CU-1	1	FUJITSU	AQU3ORLXQ	01366	CONDENSER / DX COOLING	2.5-TON	ROOF	IDF	2007	14		2013	6	20
CU-2	1	TRANE	TTR048C100A3	N2115KFBF	CONDENSER / DX COOLING	4-TON	ROOF	MAIN OFFICE	1998	5		2013	15	20
CU-3	1	TRANE	TTB018C100A2	23125TABF	AHU - ELECTRIC DX COOLING	1.5-TON	ROOF	PRINCIPAL	2001	8		2013	12	20
CU-4	1	TRANE	TTR025C100A3	N18Y5NAF	CONDENSER / DX COOLING	2-TON	ROOF	CONFERENCE	1998	5		2013	15	20
CU-5	1	TRANE	TTB030100A0	M461XKBF	CONDENSER / DX COOLING	2.5-TON	ROOF	26	1997	4		2013	16	20
CU-6	1	TRANE	TTR025C100A3	N165T25AF	AHU - ELECTRIC DX COOLING	2-TON	ROOF	LOBBY	1998	5		2013	15	20
CU-7	1	YORK		NFJM077068	AHU - ELECTRIC DX COOLING		ROOF	27	1997	4		2013	16	20
HV-1	1	PETRA		1012810101101	Hot Water / Venilation	-	mezanine	GYM A	1988	0		2013	25	20
CU-8	1	TRANE	TTR048C100A3	N173PSWCF	AHU - ELECTRIC DX COOLING	4-TON	ROOF	MUSIC A	1998	5		2013	15	20
CU-9	1	TRANE	TTB036C00A0	N034RSLCF	AHU - ELECTRIC DX COOLING	3-TON	ROOF	24	1998	5		2013	15	20
CU-10	1	TRANE	TTB036C00A0	N175T0AAF	AHU - ELECTRIC DX COOLING	3-TON	ROOF	25	1998	5		2013	15	20
CU-11	1	TRANE	TTB036C00A0	N223K3PBF	AHU - ELECTRIC DX COOLING	3-TON	ROOF	CONFERENCE	1998	5		2013	15	20
CU-12	1	TRANE	2TTA0036A44000AA	30143F73F	AHU - ELECTRIC DX COOLING	1-TON	ROOF	1	2003	10		2013	10	20
CU-13	1	TRANE	2TTA0036A44000AA	30143HU3F	AHU - ELECTRIC DX COOLING	1-TON	ROOF	2	2003	10		2013	10	20
CU-14	1	TRANE	2TTA0036A44000AA	30142803F	AHU - ELECTRIC DX COOLING	1-TON	ROOF	3	2003	10		2013	10	20
CU-15	1	LENNOX	HS29-036-2P-2T	5801L46702	AHU - ELECTRIC DX COOLING	2.5-TON	ROOF	4	2002	9		2013	11	20
CU-16	1	LENNOX	HS29-036-2P-2T	30143BE3F	AHU - ELECTRIC DX COOLING	3-TON	ROOF	6	2003	10		2013	10	20
CU-17	1	LENNOX	HS29-036-2P-2T	30143C63F	AHU - ELECTRIC DX COOLING	3-TON	ROOF	8	2003	10		2013	10	20
CU-18	1	LENNOX	HS29-036-2P-2T	3074KGL3F	AHU - ELECTRIC DX COOLING	3-TON	ROOF	5	2003	10		2013	10	20
CU-19	1	LENNOX	HS29-036-2P-2T	3074KNL3F	AHU - ELECTRIC DX COOLING	3-TON	ROOF	7	2003	10		2013	10	20
CU-20	1	LENNOX	HS29-036-2P-2T	30143E13F	AHU - ELECTRIC DX COOLING	3-TON	ROOF	9	2003	10		2013	10	20
CU-21	1	LENNOX	HS29-036-2P-2T	30143CM3F	AHU - ELECTRIC DX COOLING	3-TON	ROOF	16	2003	10		2013	10	20

CHA Project# 24988

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.	Current year	Years Old	ASHRAE life expectancy
CU-22	1	LENNOX	HS29-036-2P-2T	30143B93F	AHU - ELECTRIC DX COOLING	3-TON	ROOF	18	2003	10		2013	10	20
CU-23	1	LENNOX	HS29-036-2P-2T	30143D93F	AHU - ELECTRIC DX COOLING	3-TON	ROOF	20	2003	10		2013	10	20
CU-24	1	LENNOX	HS29-036-2P-2T	301427X3F	AHU - ELECTRIC DX COOLING	3-TON	ROOF	19	2003	10		2013	10	20
CU-25	1	LENNOX	HS29-036-2P-2T	3074KF03F	AHU - ELECTRIC DX COOLING	3-TON	ROOF	17	2003	10		2013	10	20
CU-26	1	LENNOX	HS29-036-2P-2T	3074KH23F	AHU - ELECTRIC DX COOLING	3-TON	ROOF	15	2003	10		2013	10	20
CU-27	1	TRANE	2TTA0042A44000AA	23714553F	AHU - ELECTRIC DX COOLING	4-TON	ROOF	10	2003	10		2013	10	20
CU-28	1	TRANE	2TTA0042A44000AA	23714TH3F	AHU - ELECTRIC DX COOLING	3.5-TON	ROOF	13	2003	10		2013	10	20
CU-29	1	TRANE	2TTA0042A44000AA	237145R3F	AHU - ELECTRIC DX COOLING	3.5-TON	ROOF	14	2002	9		2013	11	20
CU-30	1	TRANE	TTB018C100A1	M464WJJAF	AHU - ELECTRIC DX COOLING	1.5-TON	ROOF	COPY ROOM	2002	9		2013	11	20
CU-31	1	TRANE	TTR048C100A3	N272WPJCF	AHU - ELECTRIC DX COOLING	4-TON	ROOF	NURSE	1997	4		2013	16	20
CU-32	1	-	-	-	AHU - ELECTRIC DX COOLING		ROOF	16A	1997	-		2013	-	20
												2013	2013	20

Energy Audit of Holmdel Schools - Indian Hill School
CHA Project No.24988
Existing Lighting

Cost of Electricity: **$0.131** **$/kWh**
$6.41 **$/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	
Field Code	Unique description of the location - Room number/Room name: Floor number (if applicable)	Describe Usage Type using Operating Hours	No. of fixtures before the retrofit	Lighting Fixture Code	Code from Table of Standard Fixture Wattages	Value from Table of Standard Fixture Wattages	(Watts/Fixt) * (Fixt No.)	Pre-inst. control device	Estimated annual hours for the usage group	Retrofit control device	(kW/space) * (Annual Hours)	Notes
19	Hallway Area	Hallway Safety	82	1B 32 P F 2 (ELE)	F42LL	60	4.92	SW	8760	SW	43,099	
19	Hallway Area	HW	126	1B 32 P F 2 (ELE)	F42LL	60	7.56	SW	1820	SW	13,759	
133	Hallway Area	HW	72	CF 26	CFQ26/1-L	27	1.94	SW	1820	SW	3,538	
39	Hallway Area	HW	50	2' 17 W F 2 (ELE)	F22ILL	33	1.65	SW	1820	SW	3,003	
19	Custodian Room	Custodian	4	1B 32 P F 2 (ELE)	F42LL	60	0.24	SW	780	OCC	187	
133	Custodian Room	Custodian	2	CF 26	CFQ26/1-L	27	0.05	SW	780	OCC	42	
191	Boiler Room A	Mechanical Room	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.37	SW	1000	OCC	369	
19	Boiler Room A	Mechanical Room	2	1B 32 P F 2 (ELE)	F42LL	60	0.12	SW	1000	OCC	120	
19	Maintanance Workroom	Mechanical Room	2	1B 32 P F 2 (ELE)	F42LL	60	0.12	SW	1000	OCC	120	
19	Boy's Room	Restroom	2	1B 32 P F 2 (ELE)	F42LL	60	0.12	SW	1000	OCC	120	
19	Girl's Room	Restroom	2	1B 32 P F 2 (ELE)	F42LL	60	0.12	SW	1000	SW	120	
9	Gym A (Old Gym)	Gymnasium	24	High Bay MH 400	MH400/1	458	10.99	SW	2000	OCC	21,984	
19	Gym Office	Gymnasium	4	1B 32 P F 2 (ELE)	F42LL	60	0.24	SW	2000	OCC	480	
19	Custodian Room	Custodian	4	1B 32 P F 2 (ELE)	F42LL	60	0.24	SW	780	OCC	187	
133	Storage	Storage Areas	1	CF 26	CFQ26/1-L	27	0.03	SW	1000	OCC	27	
232	Walking Freezer	Cooler/Freezer	1	R 60 C I 1	I60/1	60	0.06	SW	8760	OCC	526	
232	Walking Cooler	Cooler/Freezer	1	R 60 C I 1	I60/1	60	0.06	SW	8760	OCC	526	
19	Copy Room	Copy Room	4	1B 32 P F 2 (ELE)	F42LL	60	0.24	SW	2125	OCC	510	
19	Room 23A	Classrooms	13	1B 32 P F 2 (ELE)	F42LL	60	0.78	SW	1400	OCC	1,092	
19	Room 23	Classrooms	12	1B 32 P F 2 (ELE)	F42LL	60	0.72	SW	1400	OCC	1,008	
35	Room 24	Classrooms	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.54	SW	1400	OCC	756	
35	Room 25	Classrooms	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.54	SW	1400	OCC	756	
35	Room 26	Classrooms	14	T 32 R F 3 (ELE)	F43ILL/2	90	1.26	SW	1400	OCC	1,764	
19	Room 27	Classrooms	6	1B 32 P F 2 (ELE)	F42LL	60	0.36	SW	1400	OCC	504	
35	Room 28	Classrooms	8	T 32 R F 3 (ELE)	F43ILL/2	90	0.72	SW	1400	OCC	1,008	
35	Room 29	Classrooms	14	T 32 R F 3 (ELE)	F43ILL/2	90	1.26	SW	1400	OCC	1,764	
133	Custodian Room	Custodian	1	CF 26	CFQ26/1-L	27	0.03	SW	780	OCC	21	
19	IDF Office	Offices	1	1B 32 P F 2 (ELE)	F42LL	60	0.06	SW	2000	OCC	120	
19	Restroom	Restroom	1	1B 32 P F 2 (ELE)	F42LL	60	0.06	SW	1000	OCC	60	
35	Main Office Front Counter	Offices	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.54	SW	2000	OCC	1,080	
35	Assistant Principle Office	Offices	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.36	SW	2000	OCC	720	
35	Principle Office	Offices	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.36	SW	2000	OCC	720	
19	Breakroom	Offices	6	1B 32 P F 2 (ELE)	F42LL	60	0.36	SW	2000	OCC	720	
35	Main Office	Offices	10	T 32 R F 3 (ELE)	F43ILL/2	90	0.90	SW	2000	OCC	1,800	
5	Main Office	Offices	1	2T 32 R F 2 (u) (ELE)	FU2LL	60	0.06	SW	2000	OCC	120	
35	Music Room	Classrooms	15	T 32 R F 3 (ELE)	F43ILL/2	90	1.35	SW	1400	OCC	1,890	
19	Room 1	Classrooms	12	1B 32 P F 2 (ELE)	F42LL	60	0.72	SW	1400	OCC	1,008	
19	Room 2	Classrooms	12	1B 32 P F 2 (ELE)	F42LL	60	0.72	SW	1400	OCC	1,008	
19	Girl's Room	Restroom	4	1B 32 P F 2 (ELE)	F42LL	60	0.24	SW	1000	OCC	240	
19	Boy's Room	Restroom	4	1B 32 P F 2 (ELE)	F42LL	60	0.24	SW	1000	OCC	240	
19	Custodian Room	Custodian	1	1B 32 P F 2 (ELE)	F42LL	60	0.06	SW	780	OCC	47	
19	Room 3	Classrooms	12	1B 32 P F 2 (ELE)	F42LL	60	0.72	SW	1400	OCC	1,008	
19	Art Room	Classrooms	24	1B 32 P F 2 (ELE)	F42LL	60	1.44	SW	1400	OCC	2,016	
19	Room 4	Classrooms	12	1B 32 P F 2 (ELE)	F42LL	60	0.72	SW	1400	OCC	1,008	
19	Room 5	Classrooms	12	1B 32 P F 2 (ELE)	F42LL	60	0.72	SW	1400	OCC	1,008	
19	Room 6	Classrooms	12	1B 32 P F 2 (ELE)	F42LL	60	0.72	SW	1400	OCC	1,008	
19	Room 7	Classrooms	12	1B 32 P F 2 (ELE)	F42LL	60	0.72	SW	1400	OCC	1,008	
19	Room 8	Classrooms	12	1B 32 P F 2 (ELE)	F42LL	60	0.72	SW	1400	OCC	1,008	
19	Room 9	Classrooms	12	1B 32 P F 2 (ELE)	F42LL	60	0.72	SW	1400	OCC	1,008	
19	Room 10	Classrooms	18	1B 32 P F 2 (ELE)	F42LL	60	1.08	SW	1400	OCC	1,512	
19	Room 11	Classrooms	12	1B 32 P F 2 (ELE)	F42LL	60	0.72	SW	1400	OCC	1,008	
19	Room 12	Classrooms	12	1B 32 P F 2 (ELE)	F42LL	60	0.72	SW	1400	OCC	1,008	
19	Room 13	Classrooms	18	1B 32 P F 2 (ELE)	F42LL	60	1.08	SW	1400	OCC	1,512	
19	Room 14	Classrooms	18	1B 32 P F 2 (ELE)	F42LL	60	1.08	SW	1400	OCC	1,512	
19	Room 15	Classrooms	12	1B 32 P F 2 (ELE)	F42LL	60	0.72	SW	1400	OCC	1,008	
19	Room 16	Classrooms	12	1B 32 P F 2 (ELE)	F42LL	60	0.72	SW	1400	OCC	1,008	
19	Room 16 A	Classrooms	7	1B 32 P F 2 (ELE)	F42LL	60	0.42	SW	1400	OCC	588	
9	Boy's Room	Restroom	4	High Bay MH 400	MH400/1	458	1.83	SW	1000	OCC	1,832	
35	Girl's Room	Restroom	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.36	SW	1000	OCC	360	
35	Custodian Room	Custodian	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.09	SW	780	OCC	70	
19	Room 17	Classrooms	12	1B 32 P F 2 (ELE)	F42LL	60	0.72	SW	1400	OCC	1,008	
19	Room 18	Classrooms	12	1B 32 P F 2 (ELE)	F42LL	60	0.72	SW	1400	OCC	1,008	
19	Room 19	Classrooms	12	1B 32 P F 2 (ELE)	F42LL	60	0.72	SW	1400	OCC	1,008	
19	Room 20	Classrooms	12	1B 32 P F 2 (ELE)	F42LL	60	0.72	SW	1400	OCC	1,008	
19	IDF Office	Offices	2	1B 32 P F 2 (ELE)	F42LL	60	0.12	SW	2000	OCC	240	
232	Staff Restroom	Restroom	1	R 60 C I 1	I60/1	60	0.06	SW	1000	OCC	60	
5	Storage	Storage Areas	2	2T 32 R F 2 (u) (ELE)	FU2LL	60	0.12	SW	1000	OCC	120	
19	Room 21	Classrooms	24	1B 32 P F 2 (ELE)	F42LL	60	1.44	SW	1400	OCC	2,016	
19	Electric Closet	Storage Areas	2	1B 32 P F 2 (ELE)	F42LL	60	0.12	SW	1000	OCC	120	
19	Electric Closet	Storage Areas	1	1B 32 P F 2 (ELE)	F42LL	60	0.06	SW	1000	OCC	60	
35	Nurse Office	Offices	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.81	SW	2000	OCC	1,620	

Energy Audit of Holmdel Schools - Indian Hill School
CHA Project No.24988
Existing Lighting

Cost of Electricity: **$0.131** **$/kWh**
$6.41 **$/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	
Field Code	Unique description of the location - Room number/Room name: Floor number (if applicable)	Describe Usage Type using Operating Hours	No. of fixtures before the retrofit	Lighting Fixture Code	Code from Table of Standard Fixture Wattages	Value from Table of Standard Fixture Wattages	(Watts/Fixt) * (Fixt No.)	Pre-inst. control device	Estimated annual hours for the usage group	Retrofit control device	(kW/space) * (Annual Hours)	Notes
19	Nurse Office	Offices	11	1B 32 P F 2 (ELE)	F42LL	60	0.66	SW	2000	OCC	1,320	
19	Room 22	Classrooms	14	1B 32 P F 2 (ELE)	F42LL	60	0.84	SW	1400	OCC	1,176	
19	Locker Room (Girl's)	Gymnasium	10	1B 32 P F 2 (ELE)	F42LL	60	0.60	SW	2000	OCC	1,200	
19	Locker Room (Coach's)	Gymnasium	3	1B 32 P F 2 (ELE)	F42LL	60	0.18	SW	2000	OCC	360	
133	Locker Room (Coach's)	Gymnasium	4	CF 26	CFQ26/1-L	27	0.11	SW	2000	OCC	216	
19	Entrance to Gym	Gymnasium	4	1B 32 P F 2 (ELE)	F42LL	60	0.24	SW	2000	OCC	480	
19	Locker Room (Boy's)	Classrooms	10	1B 32 P F 2 (ELE)	F42LL	60	0.60	SW	1400	OCC	840	
19	Locker Room (Coach's)	Classrooms	3	1B 32 P F 2 (ELE)	F42LL	60	0.18	SW	1400	OCC	252	
133	Locker Room (Coach's)	Classrooms	4	CF 26	CFQ26/1-L	27	0.11	SW	1400	OCC	151	
35	Media Center (Lib)	Library	5	T 32 R F 3 (ELE)	F43ILL/2	90	0.45	SW	2000	OCC	900	
39	Media Center (Lib)	Library	36	2' 17 W F 2 (ELE)	F22ILL	33	1.19	SW	2000	OCC	2,376	
133	Media Center (Lib)	Library	14	CF 26	CFQ26/1-L	27	0.38	SW	2000	OCC	756	
20	Media Center (Lib)	Library	30	S 32 C F 1 (ELE)	F41LL	32	0.96	SW	2000	OCC	1,920	
35	Office	Offices	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.54	SW	2000	OCC	1,080	
9	Gym B (New Gym)	Gymnasium	24	High Bay MH 400	MH400/1	458	10.99	SW	2000	OCC	21,984	
19	Mechanical Room for Gym	Mechanical Room	2	1B 32 P F 2 (ELE)	F42LL	60	0.12	SW	1000	OCC	120	
19	Mezzanine	Gymnasium	12	1B 32 P F 2 (ELE)	F42LL	60	0.72	SW	2000	OCC	1,440	
19	Chiller Room	Mechanical Room	13	1B 32 P F 2 (ELE)	F42LL	60	0.78	SW	1000	OCC	780	
35	Guidenance Office	Offices	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.27	SW	2000	OCC	540	
35	Storage	Storage Areas	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.09	SW	1000	OCC	90	
35	Room 131	Classrooms	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	SW	1400	OCC	1,512	
35	Room 132	Classrooms	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	SW	1400	OCC	1,512	
35	Girl's Room	Restroom	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.36	SW	1000	OCC	360	
35	Boy's Room	Restroom	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.27	SW	1000	OCC	270	
35	Storage	Storage Areas	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.09	SW	1000	OCC	90	
35	Room 133	Classrooms	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	SW	1400	OCC	1,512	
35	Room 134	Classrooms	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	SW	1400	OCC	1,512	
35	Room 135	Classrooms	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	SW	1400	OCC	1,512	
35	Room 136	Classrooms	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	SW	1400	OCC	1,512	
35	Room 137	Classrooms	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	SW	1400	OCC	1,512	
35	Room 138	Classrooms	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	SW	1400	OCC	1,512	
35	Room 139	Classrooms	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	SW	1400	OCC	1,512	
35	Room 140	Classrooms	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	SW	1400	OCC	1,512	
35	Room 141	Classrooms	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	SW	1400	OCC	1,512	
35	Room 142	Classrooms	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	SW	1400	OCC	1,512	
35	Room 143	Classrooms	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	SW	1400	OCC	1,512	
19	Storage	Storage Areas	3	1B 32 P F 2 (ELE)	F42LL	60	0.18	SW	1000	OCC	180	
212	Stairway	Hallway Safety	4	T 32 R F 4 (ELE) (TWO SWITCH)	F44ILL	112	0.45	SW	8760	OCC	3,924	
20	Stairway	Hallway Safety	2	S 32 C F 1 (ELE)	F41LL	32	0.06	SW	8760	OCC	561	
19	Elevator Room	Hallway Safety	3	1B 32 P F 2 (ELE)	F42LL	60	0.18	SW	8760	OCC	1,577	
36	Staff Restroom	Restroom	1	2T 3' 17 R F 1 (ELE)	F21ILL	20	0.02	SW	1000	OCC	20	
19	Electric Closet	Storage Areas	1	1B 32 P F 2 (ELE)	F42LL	60	0.06	SW	1000	OCC	60	
35	Room 143A	Classrooms	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.27	SW	1400	OCC	378	
39	Room 143A	Classrooms	1	2' 17 W F 2 (ELE)	F22ILL	33	0.03	SW	1400	OCC	46	
19	Storage	Storage Areas	3	1B 32 P F 2 (ELE)	F42LL	60	0.18	SW	1000	OCC	180	
212	Stairway	Hallway Safety	4	T 32 R F 4 (ELE) (TWO SWITCH)	F44ILL	112	0.45	SW	8760	OCC	3,924	
20	Stairway	Hallway Safety	2	S 32 C F 1 (ELE)	F41LL	32	0.06	SW	8760	OCC	561	
39	Center Stairway	Hallway Safety	13	2' 17 W F 2 (ELE)	F22ILL	33	0.43	SW	8760	OCC	3,758	
133	Center Stairway	Hallway Safety	4	CF 26	CFQ26/1-L	27	0.11	SW	8760	OCC	946	
20	Center Stairway	Hallway Safety	2	S 32 C F 1 (ELE)	F41LL	32	0.06	SW	8760	OCC	561	
19	2nd floor Electric Closet	Storage Areas	6	1B 32 P F 2 (ELE)	F42LL	60	0.36	SW	1000	OCC	360	
19	Girl's Room	Restroom	4	1B 32 P F 2 (ELE)	F42LL	60	0.24	SW	1000	OCC	240	
19	Boy's Room	Restroom	4	1B 32 P F 2 (ELE)	F42LL	60	0.24	SW	1000	OCC	240	
19	Custodian Room	Custodian	1	1B 32 P F 2 (ELE)	F42LL	60	0.06	SW	780	OCC	47	
35	Storage	Storage Areas	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.27	SW	1000	OCC	270	
35	IDF Office	Offices	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.09	SW	2000	OCC	180	
35	Family Lounge	Offices	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	SW	2000	OCC	2,160	
19	Family Lounge	Offices	4	1B 32 P F 2 (ELE)	F42LL	60	0.24	SW	2000	OCC	480	
35	Room 231	Classrooms	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	SW	1400	OCC	1,512	
35	Room 232	Classrooms	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	SW	1400	OCC	1,512	
35	Room 233	Classrooms	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	SW	1400	OCC	1,512	
35	Room 234	Classrooms	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	SW	1400	OCC	1,512	
35	Room 235	Classrooms	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	SW	1400	OCC	1,512	
35	Room 236	Classrooms	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	SW	1400	OCC	1,512	
35	Room 237	Classrooms	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	SW	1400	OCC	1,512	
35	Room 238	Classrooms	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	SW	1400	OCC	1,512	
35	Room 239	Classrooms	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	SW	1400	OCC	1,512	
35	Room 240	Classrooms	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	SW	1400	OCC	1,512	
35	Room 241	Classrooms	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	SW	1400	OCC	1,512	
35	Room 242	Classrooms	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	SW	1400	OCC	1,512	
19	Staff Restroom	Restroom	1	1B 32 P F 2 (ELE)	F42LL	60	0.06		1000		60	

Energy Audit of Holmdel Schools - Indian Hill School
CHA Project No.24988
Existing Lighting

Cost of Electricity: **$0.131** **$/kWh**
$6.41 **$/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	
Field Code	Unique description of the location - Room number/Room name: Floor number (if applicable)	Describe Usage Type using Operating Hours	No. of fixtures before the retrofit	Lighting Fixture Code	Code from Table of Standard Fixture Wattages	Value from Table of Standard Fixture Wattages	(Watts/Fixt) * (Fixt No.)	Pre-inst. control device	Estimated annual hours for the usage group	Retrofit control device	(kW/space) * (Annual Hours)	Notes
228	Atrium near door 34	Hallway Safety	9	W60CF1	F81EL	60	0.54		8760		4,730	
133	Atrium near door 34	Hallway Safety	9	CF 26	CFQ26/1-L	27	0.24		8760		2,129	
35	Computer Room	Classrooms	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.27		1400		378	
35	Room 127	Classrooms	15	T 32 R F 3 (ELE)	F43ILL/2	90	1.35		1400		1,890	
35	Room 128	Classrooms	18	T 32 R F 3 (ELE)	F43ILL/2	90	1.62		1400		2,268	
35	Room 129	Classrooms	15	T 32 R F 3 (ELE)	F43ILL/2	90	1.35		1400		1,890	
35	Room 130	Classrooms	15	T 32 R F 3 (ELE)	F43ILL/2	90	1.35		1400		1,890	
35	Art Room	Classrooms	16	T 32 R F 3 (ELE)	F43ILL/2	90	1.44		1400		2,016	
19	Art Room	Classrooms	2	1B 32 P F 2 (ELE)	F42LL	60	0.12		1400		168	
20	Art Room	Classrooms	2	S 32 C F 1 (ELE)	F41LL	32	0.06		1400		90	
19	Music Room B	Classrooms	28	1B 32 P F 2 (ELE)	F42LL	60	1.68		1400		2,352	
35	Music Office	Offices	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.81		2000		1,620	
19	Café	Gymnasium	90	1B 32 P F 2 (ELE)	F42LL	60	5.40		2000		10,800	
39	Café	Gymnasium	3	2' 17 W F 2 (ELE)	F22ILL	33	0.10		2000		198	
133	Café	Gymnasium	72	CF 26	CFQ26/1-L	27	1.94		2000		3,888	
19	Kitchen Hood	Kitchen	8	1B 32 P F 2 (ELE)	F42LL	60	0.48		1400		672	
232	Kitchen Hood	Kitchen	3	R 60 C I 1	I60/1	60	0.18		1400		252	
20	Kitchen Hood	Kitchen	6	S 32 C F 1 (ELE)	F41LL	32	0.19		1400		269	
39	Entrance to Kitchen	Kitchen	9	2' 17 W F 2 (ELE)	F22ILL	33	0.30		1400		416	
39	Girl's Room	Restroom	4	2' 17 W F 2 (ELE)	F22ILL	33	0.13		1000		132	
39	Boy's Room	Restroom	4	2' 17 W F 2 (ELE)	F22ILL	33	0.13		1000		132	
19	Stage	Gymnasium	12	1B 32 P F 2 (ELE)	F42LL	60	0.72		2000		1,440	
35	Stage	Gymnasium	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.27		2000		540	
19	Electric Closet	HW	2	1B 32 P F 2 (ELE)	F42LL	60	0.12		1820		218	
	Total		**1,818**				**135.94**				**273,513**	

Energy Audit of Holmdel Township BOE
CHA Project No.24988
Existing Lighting

Cost of Electricity: **$0.131** **$/kWh**
$6.41 **$/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	
Field Code	Unique description of the location - Room number/Room name: Floor number (if applicable)	Describe Usage Type using Operating Hours	No. of fixtures before the retrofit	Lighting Fixture Code	Code from Table of Standard Fixture Wattages	Value from Table of Standard Fixture Wattages	(Watts/Fixt) * (Fixt No.)	Pre-inst. control device	Estimated annual hours for the usage group	Retrofit control device	(kW/space) * (Annual Hours)	Notes
	Total		31				11.95				59,725	

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	Window Replacement & Reduced Glazing for Classrooms 1-20	451,000	1,200	>20	0	>20	X
ECM-2	Interlock HW Piping and relocate Boilers to Boiler Room B	138,000	400	>20	2,000	>20	X
ECM-3	Install VSD's and Premium Motors on HW pumps (in Boiler room A)	18,000	3,100	5.8	2,900	4.9	X
ECM-4	Replace Chiller	230,000	6,000	>20	34,000	>20	X
ECM-5	Demand Controlled Ventilation (Gymnasium & Cafeteria)	20,000	8,600	2.3	0	2.3	X
ECM-6	Replace Domestic Hot Water with gas-fired tankless heater	8,000	300	>20	300	>20	
ECM-7	Replace Existing Boiler for DHW w/ Condensing Boiler	181,000	700	>20	4,000	>20	
ECM-8	Install Kitchen Hood VFD /Controller	35,000	200	>20	0	>20	
ECM-9	Install Walk-in Cooler / Freezer Controls	15,000	1,300	11.5	0	11.5	X
ECM-10	Lighting Replacement / Upgrades	29,000	1,600	18.1	5,200	14.9	
ECM-11	Install Lighting Controls (Occupancy Sensors)	17,000	4,600	3.7	2,700	3.1	
ECM-12	Lighting Replacements with Lighting Controls (Occupancy Sensors)	46,000	5,000	9.2	7,900	7.6	X
ECM-13	Exterior Lighting Replacements with LED lighting	26,000	5,100	5.1	3,100	4.5	X

Holmdel Township BOE - NJBPU
CHA Project #24988
Indian Hill School
ECM Summary Sheet

ECM-1 Window Replacement & Reduced Glazing for Classrooms 1-20

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
451,000	1,400	0.0	700	1,200	0	1,200	(0.9)	0	>20	>20

Expected Life: 30 years
Lifetime Savings: 42,000 kWh 21,000 therms $ 36,000

ECM-2 Interlock HW Piping and relocate Boilers to Boiler Room B

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
138,000	0	0.0	200	400	0	400	(0.9)	2,000	>20	>20

Expected Life: 25 years
Lifetime Savings: 0 kWh 5,000 therms $ 10,000

ECM-3 Install VSD's and Premium Motors on HW pumps (in Boiler room A)

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
18,000	23,300	0.0	0	3,100	0	3,100	1.6	2,900	5.8	4.9

Expected Life: 15 years
Lifetime Savings: 349,500 kWh 0 therms $ 46,500

ECM-4 Replace Chiller

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
230,000	45,700	0.0	0	6,000	0	6,000	(0.3)	34,000	>20	>20

Expected Life: 25 years
Lifetime Savings: 1,142,500 kWh 0 therms $ 150,000

ECM-5 Demand Controlled Ventilation (Gymnasium & Cafeteria)

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
20,000	29,100	0.0	3,300	8,600	0	8,600	5.5	0	2.3	2.3

Expected Life: 15 years
Lifetime Savings: 436,500 kWh 49,500 therms $ 129,000

ECM-6 Replace Domestic Hot Water with gas-fired tankless heater

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
8,000	0	0.0	200	300	0	300	(0.5)	300	>20	>20

Expected Life: 12 years
Lifetime Savings: 0 kWh 2,400 therms $ 3,600

ECM-7 Replace Existing Boiler for DHW w/ Condensing Boiler

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
181,000	0	0.0	500	700	0	700	(0.9)	4,000	>20	>20

Expected Life: 25 years
Lifetime Savings: 0 kWh 12,500 therms $ 17,500

ECM-8 Install Kitchen Hood VFD /Controller

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
35,000	500	0.0	100	200	0	200	(0.9)	0	>20	>20

Expected Life: 15 years
Lifetime Savings: 7,500 kWh 1,500 therms $ 3,000

ECM-9 Install Walk-in Cooler / Freezer Controls

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
15,000	9,700	0.0	0	1,300	0	1,300	0.3	0	11.5	11.5

Expected Life: 15 years
Lifetime Savings: 145,500 kWh 0 therms $ 19,500

ECM-10 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
29,000	11,400	5.8	0	1,600	0	1,600	0.0	5,200	18.1	14.9

Expected Life: 15 years
Lifetime Savings: 171,000 kWh 0 therms $ 24,000

ECM-11 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
17,000	35,200	0.0	0	4,600	0	4,600	3.0	2,700	3.7	3.1

Expected Life: 15 years
Lifetime Savings: 528,000 kWh 0 therms $ 69,000

ECM-12 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
46,000	46,600	5.8	0	5,000	0	5,000	1.1	7,900	9.2	7.6

Expected Life: 15 years
Lifetime Savings: 699,000 kWh 0 therms $ 75,000

ECM-13 **Exterior Lighting Replacements with LED lighting**

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Water	Total						
$	kWh	kW	kgal/yr	$	$	$		$	Years	Years
26,000	44,900	10.0	0	5,100	0	5,100	2.8	3,100	5.1	4.5

Expected Life: 15 years

Lifetime Savings: 673,500 kWh 0 therms $ 76,500

Holmdel Township BOE - NJBPU
CHA Project #24988

Rate of Discount (used for NPV) 3.0%

Utility Costs		Yearly Usage	Building Area	Annual Utility Cost	
$ 0.131	$/kWh blended		127,000	Electric	Natural Gas
$ 0.098	$/kWh supply	895,360		$117,400	$45,364
$ 6.41	$/kW	484.80			
$ 1.45	$/Therm	31,329			
$ -	$/kgals	-			

Indian Hill School

	Item	Savings					Cost	Simple Payback	Life Expectancy	NJ Smart Start Incentives	Direct Install Eligible (Y/N)*	Direct Install Incentives**	Max Incentives	Payback w/ Incentives***	Simple Projected Lifetime Savings					ROI	NPV	IRR
		kW	kWh	therms	Water kgal	$									kW	kWh	therms	kgal/yr	$			
ECM-1	Window Replacement & Reduced Glazing for Classrooms 1-20	0.0	1,356	677	0	$ 1,200	$ 451,008	375.8	30	$ -	N	$ -	$ -	375.8	0.0	40,686	20,324	0	$ 34,764	(0.9)	($427,487)	-12.0%
ECM-2	Interlock HW Piping and relocate Boilers to Boiler Room B	0.0	0	245	0	$ 400	$ 138,112	345.3	25	$ 2,000	N	$ -	$ 2,000	340.3	0.0	0	6,130	0	$ 8,876	(0.9)	($129,146)	-14.5%
ECM-3	Install VSD's and Premium Motors on HW pumps (in Boiler room A)	0.0	23,275	0	0	$ 3,100	$ 17,895	5.8	15	$ 2,900	N	$ -	$ 2,900	4.8	0.0	349,122	0	0	$ 45,777	1.6	$22,012	19.2%
ECM-4	Replace Chiller	0.0	45,671	0	0	$ 6,000	$ 229,758	38.3	25	$ 34,000	N	$ -	$ 34,000	32.6	0.0	1,141,787	0	0	$ 149,712	(0.3)	($91,279)	-2.0%
ECM-5	Demand Controlled Ventilation (Gymnasium & Cafeteria)	0.0	29,121	3,294	0	$ 8,600	$ 19,800	2.3	15	$ -	N	$ -	$ -	2.3	0.0	436,811	49,412	0	$ 128,824	5.5	$82,866	43.2%
ECM-6	Replace Domestic Hot Water with gas-fired tankless heater	0.0	0	239	0	$ 300	$ 7,630	25.4	12.0	$ 300	N	$ -	$ 300	24.4	0.0	0	2,862	0	$ 4,145	(0.5)	($4,343)	-9.5%
ECM-7	Replace Existing Boiler for DHW w/ Condensing Boiler	0.0	0	490	0	$ 700	$ 180,840	258.3	25.0	$ 4,000	N	$ -	$ 4,000	252.6	0.0	0	12,259	0	$ 17,751	(0.9)	($164,651)	-13.2%
ECM-8	Install Kitchen Hood VFD /Controller	0.0	500	103	0	$ 200	$ 34,608	173.0	15	$ -	N	$ -	$ -	173.0	0.0	7,493	1,548	0	$ 3,224	(0.9)	($32,221)	-21.6%
ECM-9	Install Walk-in Cooler / Freezer Controls	0.0	9,670	0	0	$ 1,300	$ 15,000	11.5	15.0	$ -	N	$ -	$ -	11.5	0.0	145,048	0	0	$ 19,019	0.3	$519	3.5%
ECM-10	Lighting Replacement / Upgrades	5.8	11,450	0	0	$ 1,600	$ 28,904	18.1	15.0	$ 5,200	N	$ -	$ 5,200	14.8	86.4	171,746	0	0	$ 29,170	0.0	($4,603)	0.2%
ECM-11	Install Lighting Controls (Occupancy Sensors)	0.0	35,189	0	0	$ 4,600	$ 17,442	3.8	15.0	$ 2,720	N	$ -	$ 2,720	3.2	0.0	527,841	0	0	$ 69,211	3.0	$40,193	30.7%
ECM-12	Lighting Replacements with Lighting Controls (Occupancy Sensors)	5.8	46,649	0	0	$ 5,000	$ 46,346	9.3	15.0	$ 7,920	N	$ -	$ 7,920	7.7	86.4	699,736	0	0	$ 98,401	1.1	$21,264	9.8%
ECM-13	Exterior Lighting Replacements with LED lighting	9.0	44,850	0	0	$ 5,100	$ 25,877	5.1	15.0	$ 3,100	N	$ -	$ 3,100	4.5	134.6	672,750	0	0	$ 98,565	2.8	$38,107	21.1%
Total (Does Not Include ECM-10 & ECM-11)		**14.7**	**201,092**	**5,049**	**0**	**$ 31,900**	**$ 1,166,873**	36.6	18.8	$ 54,220	N	$ -	$ 54,220	34.9	221.0	3,493,433	92,535	0	$ 609,057	(0.5)	($673,916)	-6.2%
Total Measures with Payback <15		**14.7**	**200,592**	**4,217**	**0**	**$ 30,700**	**$ 943,795**	30.7	15.0	$ 49,920	N	$ -	$ 49,920	29.1	220.98	3,485,940	75,866	0	$ 777,289	(0.2)	($527,380)	-7.3%
% of Existing		**3%**	**22%**	**16%**	**0%**																	

Holmdel Township BOE - NJBPU
CHA Project #24988
Indian Hill School

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

ECM-1: Window Replacement & Reduced Glazing for Classrooms 1-20

Existing: Windows are not properly sealed. This can lead to increased energy consumption due to infiltration/exfiltration and heat gain/loss.
Proposed: Install weather strip or caulking to properly seal windows

Linear Feet of window Edge	3,272.0 LF	Cooling System Efficiency	1.2 kW/ton	Heating System Efficiency	88%			
Area of window glass	4,176.0 SF	Ex Occupied Clng Temp.	70 *F	Heating On Temp.	60 *F			
Existing Infiltration Factor	**0.40 cfm/LF**	Ex Unoccupied Clng Temp.	76 *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.	58 *F			
Existing U Value	**1.20 Btuh/SF/°F**	Cooling Unocc Enthalpy Setpoint	27.5 Btu/lb	Electricity	$ 0.131	$/kWh		
Proposed U Value	**0.55 Btuh/SF/°F**			Natural Gas	$ 1.45	$/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	-147,984	-132,951	-107,922	-94,141	0	0	0	0
97.5	42.5	3	1	2	-113,076	-98,042	-85,248	-71,467	31	23	0	0
92.5	39.5	34	12	22	-91,714	-76,680	-69,347	-55,566	279	206	0	0
87.5	36.6	131	47	84	-70,646	-55,612	-53,593	-39,812	799	586	0	0
82.5	34.0	500	179	321	-50,461	-35,428	-38,281	-24,500	2040	1471	0	0
77.5	31.6	620	221	399	-30,866	-15,832	-23,263	-9,482	1314	893	0	0
72.5	29.2	664	237	427	-11,270	0	-8,245	0	267	196	0	0
67.5	27.0	854	305	549	0	0	0	0	0	0	0	0
62.5	24.5	927	331	596	0	0	0	0	0	0	0	0
57.5	21.4	600	214	386	33,730	1,606	27,827	1,325	0	0	89	74
52.5	18.7	610	218	392	49,791	17,668	41,078	14,576	0	0	202	167
47.5	16.2	611	218	393	65,853	33,730	54,329	27,827	0	0	314	259
42.5	14.4	656	234	422	81,915	49,791	67,579	41,078	0	0	457	377
37.5	12.6	1,023	365	658	97,977	65,853	80,830	54,329	0	0	899	742
32.5	10.7	734	262	472	114,038	81,915	94,081	67,579	0	0	779	643
27.5	8.6	334	119	215	130,100	97,977	107,332	80,830	0	0	415	343
22.5	6.8	252	90	162	146,162	114,038	120,583	94,081	0	0	359	297
17.5	5.5	125	45	80	162,224	130,100	133,834	107,332	0	0	201	166
12.5	4.1	47	17	30	178,286	146,162	147,085	120,583	0	0	84	69
7.5	2.6	22	8	14	194,347	162,224	160,336	133,834	0	0	43	36
2.5	1.0	13	5	8	210,409	178,286	173,587	147,085	0	0	28	23
-2.5	0.0	0	0	0	226,471	194,347	186,837	160,336	0	0	0	0
-7.5	-1.5	0	0	0	242,533	210,409	200,088	173,587	0	0	0	0
TOTALS		**8,760**	**3,129**	**5,631**					4730	3374	**3,871**	**3,194**

Existing Window Infiltration	**654**	**cfm**
Existing Window Heat Transfer	**2,506**	**Btuh/°F**
Proposed Window Infiltration	**327**	**cfm**
Proposed Window Heat Transfer	**2,297**	**Btuh/°F**

Savings	**677**	**Therms**	**$**	**981**
	1,356	**kWh**	**$**	**178**
			$	**1,159**

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	Glass Window	123	4	8	2,952.0	3,936.0	0.2	0.6	590.4	2,361.6
2	Glass Door	20	2	6	320.0	240.0	0.2	0.6	64.0	144.0
Total		**143**	**6**	**14**	**3,272.0**	**4,176.0**	**0.4**	**1.2**	**654.4**	**2,505.6**

Multipliers	
Material:	1.10
Labor:	1.30
Equipment:	1.30

ECM-1: Window Replacement & Reduced Glazing for Classrooms 1-20 - Cost

Description	QTY	UNIT	UNIT COSTS			SUBTOTAL COSTS			TOTAL COST	REMARKS
			MAT.	LABOR	EQUIP.	MAT.	LABOR	EQUIP.		
Windows	4176.0	$ / SF	$ 45.00	$ 45.00		$ 206,712	$ 244,296	$ -	$ 451,008	
					$ -	$ -	$ -	$ -	$ -	
						$ -	$ -	$ -	$ -	
						$ -	$ -	$ -	$ -	
						$ -	$ -	$ -	$ -	
						$ -	$ -	$ -	$ -	
						$ -	$ -	$ -	$ -	
						$ -	$ -	$ -	$ -	
						$ -	$ -	$ -	$ -	

$	451,008	Subtotal
$	-	
$	-	
$	-	
$	**451,008**	**Total**

Note: Cost Estimates are for Energy Savings Calulations only- Do not use for procurement !

ECM-2: Interlock HW Piping and relocate Boilers to Boiler Room B

Existing Fuel Nat.Gas

Proposed Fuel Nat.Gas

Item	Value	Units	Formula/Comments
Baseline Fuel Cost	$ 1.45	/ Therm	
Proposed Fuel Cost	$ 1.45	/ Therm	
Baseline Fuel Use	5,639	Therms	Based on historical utility data
Existing Boiler Plant Efficiency	88%		Estimated based on average of boilers in Boiler Room A & B
Baseline Boiler Load	496,247	Mbtu/yr	Baseline Fuel Use x Existing Efficiency x 100 Mbtu/Therms
Baseline Fuel Cost	$ 8,166		
Proposed Boiler Plant Efficiency	92%		New Boiler Efficiency
Proposed Fuel Use	5,394	Therms	Baseline Boiler Load / Proposed Efficiency / 100 Mbtu/Therms
Proposed Fuel Cost	$ 7,811		

*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**	**245**	**$0**	**$355**

Multipliers	
Material:	1.10
Labor:	1.30
Equipment:	1.10

ECM-2: Interlock HW Piping and relocate Boilers to Boiler Room B - Cost

Description	QTY	UNIT	UNIT COSTS			SUBTOTAL COSTS			TOTAL COST	REMARKS
			MAT.	LABOR	EQUIP.	MAT.	LABOR	EQUIP.		
Boiler demo & Relocation	1	EA	$ -	$ 7,500		$ -	$ 9,750	$ -	$ 9,750	
2,000 MBH NG Condensing Boiler	1	EA	$ 25,000	$ 25,000		$ 27,500	$ 32,500	$ -	$ 60,000	
Flue Installation	1	LS	$ 10,000	$ 5,000		$ 11,000	$ 6,500	$ -	$ 17,500	
Pump	1	EA	$ 5,000	$ 1,500		$ 5,500	$ 1,950	$ -	$ 7,450	
Miscellaneous Electrical Wiring	1	LS	$ 500	$ 1,000		$ 550	$ 1,300	$ -	$ 1,850	
Insulated Piping	100	LF	$ 25	$ 15		$ 2,750	$ 1,950	$ -	$ 4,700	
Valves	3	EA	$ 150	$ 150		$ 495	$ 585	$ -	$ 1,080	
Controls	1	EA	$ 1,500	$ 500		$ 1,650	$ 650	$ -	$ 2,300	

Note: Cost Estimates are for Energy Savings Calculations only- Do not use for procurement !

$ 104,630	Subtotal
$ 10,463.00	10% Contingency
$ 23,018.60	20% Contractor O&P
$ -	
$ 138,112	**Total**

ECM-3: Install VSD's and Premium Motors on HW pumps (in Boiler room A)

Variable Inputs

Blended Electric Rate	$0.13
Heating System "On" Point	55
VFD Efficiency	98.5%

ECM Description Summary

PUMP SCHEDULE							
Pump ID	Qty	HP	Total HP	Existing Motor Motor Eff.	New Motor Motor Eff.	Exist. Motor kW Note 1	New Motor kW Note 2
P-1, P-2	1	5.0	5.0	88.5%	93.0%	3.37	3.21
P-3, P-4	1	7.5	7.5	87.5%	93.0%	5.12	4.81
					Total:	8.49	8.02

SAVINGS ANALYSIS									
OAT - DB Avg Temp F	OAT - WB Avg Temp F	Annual Hours in Bin	Heating Hours Bin	Pump Load %	Existing Pump kWh	Proposed Pump kW	Speed efficiency %	Proposed Pump kWh	Proposed Savings kWh
(A) See Note 3	(B) See Note 3	(C) See Note 3	(D) =IF(A>TP,0,C)	(E) =0.5+0.5* (50-A)/(50-10)) See Note 4	(F) =D*AA	(G) =BB*E^2.5/CC See Note 5	(H)	(I) =D*G	(J) =F-H
97.5	75	0	0	0%	0	0.0	0.0%	0	0
92.5	74	3	0	0%	0	0.0	0.0%	0	0
87.5	72	34	0	0%	0	0.0	0.0%	0	0
82.5	69	131	0	0%	0	0.0	0.0%	0	0
77.5	67	500	0	0%	0	0.0	0.0%	0	0
72.5	64	620	0	0%	0	0.0	0.0%	0	0
67.5	62	664	0	0%	0	0.0	0.0%	0	0
62.5	58	854	0	0%	0	0.0	0.0%	0	0
57.5	53	927	0	0%	0	0.0	0.0%	0	0
52.5	47	600	600	53%	5,092	1.6	84.1%	1,175	3,917
47.5	43	610	610	58%	5,177	2.1	88.8%	1,453	3,724
42.5	38	611	611	64%	5,186	2.7	92.7%	1,751	3,435
37.5	34	656	656	69%	5,568	3.3	95.9%	2,240	3,328
32.5	30	1,023	1,023	75%	8,682	4.0	98.2%	4,133	4,550
27.5	25	734	734	81%	6,230	4.7	99.8%	3,490	2,740
22.5	20	334	334	86%	2,835	5.6	100.0%	1,872	963
17.5	16	252	252	92%	2,139	6.6	100.0%	1,651	488
12.5	11	125	125	97%	1,061	7.6	99.7%	951	109
7.5	6	47	47	100%	399	8.1	99.0%	387	12
2.5	2	22	22	100%	187	8.1	99.0%	181	6
-2.5	-3	13	13	100%	110	8.1	99.0%	107	3
-7.5	-8	0	0	0%	0	0.0	0.0%	0	0
		8,760	**5,027**		**42,665**			**19,390**	**23,275**

Notes:

1) Existing motor power was determined using…
2) New motor power is the same as existing motor power adjusted for the new efficiency, if a new motor is proposed.
3) Weather data from NOAA for …
4) The pump load is estimated at 100% at X deg. OAT and 50% at X deg. OAT and varies linearly in between.
5) The required VFD motor draw is based on a 2.5 power relationship to load.

HW PUMP VFD - SAVINGS SUMMARY					
	Electric Demand	Electric Usage	Nat Gas Usage	Maint.	Total Cost
	(kW)	(kWh)	(Therms)	($)	($)
Savings	**0**	**23,275**	**0**	**$0**	**$3,052**

Multipliers	
Material:	1.10
Labor:	1.30
Equipment:	1.00

ECM-3: Install VSD's and Premium Motors on HW pumps (in Boiler room A) - Cost

Description	QTY	UNIT	UNIT COSTS			SUBTOTAL COSTS			TOTAL COST	REMARKS
			MAT.	LABOR	EQUIP.	MAT.	LABOR	EQUIP.		
5 HP VSDs	2	ea	$ 1,706	$ 431		$ 3,754	$ 1,119	$ -	$ 4,873	
5 HP Motor	2	ea	$ 373	$ 79		$ 820	$ 205	$ -	$ 1,025	
7.5 HP VSDs	2	ea	$ 2,021	$ 509		$ 4,447	$ 1,324	$ -	$ 5,771	
7.5 HP Motor	2	ea	$ 536	$ 84		$ 1,178	$ 218	$ -	$ 1,397	
Electrical - misc.	2	ls	$ 200	$ 150		$ 440	$ 390	$ -	$ 830	
Pipe pressure sensor/transmitter	2	ea	$ 850	$ 500		$ 1,870	$ 1,300	$ -	$ 3,170	
Misc. piping modification	2	ea	$ 200	$ 150		$ 440	$ 390	$ -	$ 830	

Note: Cost Estimates are for Energy Savings Calulations only- Do not use for procurement !

$ 17,895	Subtotal
$ -	
$ -	
$ -	
$ 17,895	**Total**

Holmdel Township BOE - NJBPU
CHA Project #24988
Indian Hill School

ECM-4: Replace Chiller

ECM Description Summary
The chiller is rated 300 tons. The peak load, according to a report conducted by Dome-Tech, measured the peak load to be 130 tons. Chiller should be resized and replaced by a smaller capacity chiller. This would increase the efficiency of the chiller.

ASSUMPTIONS				Comments
Electric Cost		$0.131	/ kWh	
Average run hours per Week		50	Hours	Unit is manually turned on (even if after hours)
Space Balance Point		55	F	
Space Temperature Setpoint		70	deg F	setpoint

Item	Value	Units	Comments
Rated Capacity of Existing Chiller	320	tons	
Existing Annual Electric Usage	34,544	kWh	Uses 0.64 KW/ton from Dome-tech report
Rated Capacity of Proposed Chiller	130	tons	Per Dome-Tech Report received from facility
Proposed Annual Electric Usage	18,419	kWh	Uses 0.84 KW/ton from Dome-tech report

ANNUAL SAVINGS		
Annual Savings	16,125	kWh
Annual Cost Savings	$2,114	

OAT - DB Bin Temp F	Annual Hours	Cooling Hrs at Temp Above balance point	Assumed % of time of operation	Assumed hrs of Operation
102.5	0	0	100%	0
97.5	0	0	89%	0
92.5	3	1	79%	1
87.5	34	10	68%	7
82.5	131	39	58%	23
77.5	500	149	47%	70
72.5	620	185	37%	68
67.5	664	0	0%	0
62.5	854	0	0%	0
57.5	927	0	0%	0
52.5	600	0	0%	0
47.5	610	0	0%	0
42.5	611	0	0%	0
37.5	656	0	0%	0
32.5	1,023	0	0%	0
27.5	734	0	0%	0
22.5	334	0	0%	0
17.5	252	0	0%	0
12.5	125	0	0%	0
7.5	47	0	0%	0
2.5	22	0	0%	0
-2.5	13	0	0%	0
-7.5	0	0	0%	0
Total	8,760	383	44%	169

ECM-4: Install Variable Speed Drives - CHW Pump

Variable Inputs

Blended Electric Rate	$0.13
Cooling System "On" Point	70
VFD Efficiency	98.5%

ECM Description Summary

PUMP SCHEDULE							
Pump ID	Qty	HP	Total HP	Existing Motor Motor Eff.	New Motor Motor Eff.	Exist. Motor kW Note 1	New Motor kW Note 2
P-1A, P-2A	1	25.0	25.0	88.5%	91.7%	16.86	16.27
P-1B, P-2B	1	25.0	25.0	88.5%	91.7%	16.86	16.27
					Total:	33.72	32.54

SAVINGS ANALYSIS									
OAT - DB Avg Temp F	OAT - WB Avg Temp F	Annual Hours in Bin	Heating Hours Bin	Pump Load %	Existing Pump kWh	Proposed Pump kW	Speed efficiency %	Proposed Pump kWh	Proposed Savings kWh
(A) See Note 3	(B) See Note 3	(C) See Note 3	(D) =IF(A>TP,0,C)	(E) =0.5+0.5*(50-A)/(50-10)) See Note 4	(F) =D*AA	(G) =BB*E^2.5/CC See Note 5	(H)	(I) =D*G	(J) =F-H
97.5	75	0	0	0%	0	0.0	0.0%	0	0
92.5	74	3	3	92%	101	26.6	100.0%	80	21
87.5	72	34	34	82%	1,146	20.4	100.0%	692	454
82.5	69	131	131	73%	4,417	15.1	97.5%	2,031	2,386
77.5	67	500	500	64%	16,859	10.8	92.7%	5,812	11,047
72.5	64	620	620	55%	20,905	7.3	85.8%	5,267	15,638
67.5	62	664	0	0%	0	0.0	0.0%	0	0
62.5	58	854	0	0%	0	0.0	0.0%	0	0
57.5	53	927	0	0%	0	0.0	0.0%	0	0
52.5	47	600	0	0%	0	0.0	0.0%	0	0
47.5	43	610	0	0%	0	0.0	0.0%	0	0
42.5	38	611	0	0%	0	0.0	0.0%	0	0
37.5	34	656	0	0%	0	0.0	0.0%	0	0
32.5	30	1,023	0	0%	0	0.0	0.0%	0	0
27.5	25	734	0	0%	0	0.0	0.0%	0	0
22.5	20	334	0	0%	0	0.0	0.0%	0	0
17.5	16	252	0	0%	0	0.0	0.0%	0	0
12.5	11	125	0	0%	0	0.0	0.0%	0	0
7.5	6	47	0	0%	0	0.0	0.0%	0	0
2.5	2	22	0	0%	0	0.0	0.0%	0	0
-2.5	-3	13	0	0%	0	0.0	0.0%	0	0
-7.5	-8	0	0	0%	0	0.0	0.0%	0	0
		8,760	1,288		43,428			13,882	29,546

Notes:

1) Existing motor power was determined using…
2) New motor power is the same as existing motor power adjusted for the new efficiency, if a new motor is proposed.
3) Weather data from NOAA for …
4) The pump load is estimated at 100% at X deg. OAT and 50% at X deg. OAT and varies linearly in between.
5) The required VFD motor draw is based on a 2.5 power relationship to load.

CHW PUMP VFD - SAVINGS SUMMARY					
	Electric Demand	Electric Usage	Nat Gas Usage	Maint.	Total Cost
	(kW)	(kWh)	(Therms)	($)	($)
Savings	0	29,546	0	$0	$3,874

Multipliers	
Material:	1.10
Labor:	1.30
Equipment:	1.00

ECM-4: Replace Chiller - Cost

Description	QTY	UNIT	UNIT COSTS			SUBTOTAL COSTS			TOTAL COST	REMARKS
			MAT.	LABOR	EQUIP.	MAT.	LABOR	EQUIP.		
Existing Chiller Demolition	1	EA	$ -	$ 7,500		$ -	$ 9,750	$ -	$ 9,750	
New 100-ton Chiller	2	EA	$ 60,000	$ 5,000		$ 132,000	$ 13,000	$ -	$ 145,000	
Piping	100	LF	$ 75.00	$ 26.00		$ 8,250	$ 3,380	$ -	$ 11,630	
New Cooling Tower	1	EA	$ 26,800	$ 5,000		$ 29,480	$ 6,500	$ -	$ 35,980	
Miscellaneous Electrical Wiring	1	LS	$ 500	$ 1,000		$ 550	$ 1,300	$ -	$ 1,850	
Insulated Piping	100	LF	$ 25	$ 15		$ 2,750	$ 1,950	$ -	$ 4,700	
Valves	4	EA	$ 150	$ 150		$ 660	$ 780	$ -	$ 1,440	
Controls	1	EA	$ 1,500	$ 500		$ 1,650	$ 650	$ -	$ 2,300	
25 HP VSDs	2	ea	$ 4,016	$ 1,024		$ 8,836	$ 2,662	$ -	$ 11,498	
25 HP Motor	2	ea	$ 1,286	$ 141		$ 2,830	$ 366	$ -	$ 3,196	
Electrical - misc.	1	ls	$ 200	$ 150		$ 220	$ 195	$ -	$ 415	
Pipe pressure sensor/transmitter	1	ea	$ 850	$ 500		$ 935	$ 650	$ -	$ 1,585	
Misc. piping modification	1	ea	$ 200	$ 150		$ 220	$ 195	$ -	$ 415	

Note: Cost Estimates are for Energy Savings Calulations only- Do not use for procurement !

$ 229,758	Subtotal
$ -	
$ -	
$ -	
$ 229,758	**Total**

Holmdel Township BOE - NJBPU
CHA Project #24988
Indian Hill School

AIR HANDLER	AREA SERVED	CFM	OA CFM	% OA
AHU-D1, AHU-D2	GYMNASIUM	10,800	3,555	33%
AHU-D4	CAFETERIA	9,300	6,250	67%
			9,805	*CFM*

ECM 5: Demand Controlled Ventilation

ECM Description Summary

It is assumed the original system controls provide the full design ventilation outside air flow. Reducing outside air during occupied time periods will reduce heating and cooling energy used during the occupied period. A limit of 1000 PPM of CO2 is recommended in ASHRAE Standard 62-1982, Ventilation for Acceptable Indoor Air Quality. During unoccupied periods the outside air dampers should be closed.

Electric Cost	$ 0.13	/kWh
Natural Gas Cost	$ 1.45	/therm
Facility Ventilation Heating Load	370,629	BTU/Hour[1,2,3]
Facility Ventilation Cooling Load	105,894	BTU/Hour[1,2,3]
Existing Ventilation Heating Usage	13,177	Therms[2]
Existing Ventilation Cooling Usage	116,483	kWh[3]
Proposed Ventilation Heating Usage	9,882	Therms[7]
Proposed Ventilation Cooling Usage	87,362	kWh[7]
Total heating savings	3,294	**Therms**
Total cooling savings	29,121	**kWh**
Total cost savings	8,588	
Estimated Total Project Cost	$19,800	[8]
Simple Payback	2.3	**years**

Note: costs are used for enrgy savings calulations only. Do not use for procurment

Assumptions

1	9,805	OA AHU airflow based exsiting equipment model numbers
2	35	°F, Assumed average heating Δt (mixed air and supply)
3	10	°F, Assumed average cooling Δt (mixed air and supply)
4	88%	Heating Efficiency - %
5	1.2	Cooling Efficiency - kW/Ton
6	3,129	AHU run time per heating/cooling season bin data
7	25%	Estimated savings for DCV based on observed occupancy
8	$ 19,800	Measure Cost, see separate cost sheet

Holmdel Township BOE - NJBPU
CHA Project #24988
Indian Hill School

Multipliers	
Material:	1.10
Labor:	1.30
Equipment:	1.10

#REF!

Description	QTY	UNIT	UNIT COSTS			SUBTOTAL COSTS			TOTAL COST	REMARKS
			MAT.	LABOR	EQUIP.	MAT.	LABOR	EQUIP.		
CO2 sensor	2	ea	$ 500	$ 100		$ 1,100	$ 260	$ -	$ 1,360	
Replace damper actuators	3	ea	$ 500	$ 500		$ 1,650	$ 1,950	$ -	$ 3,600	
Control system programming	2	ls	$ 500	$ 1,000		$ 1,100	$ 2,600	$ -	$ 3,700	
electrical/wiring	3	ls	$ 1,000	$ 2,000		$ 3,300	$ 7,800	$ -	$ 11,100	
						$ -	$ -	$ -	$ -	

Note: Cost Estimates are for Energy Savings Calulations only- Do not use for procurement !

$ 19,760	Subtotal
$ -	
$ -	
$ -	
$ 19,800	**Total**

Holmdel Township BOE - NJBPU
CHA Project #24988

ECM-6: Replace DWH w/ tankless instantaneous unit

Summary

* Replace Existing NG 100 gallon DHWH w/ Instantaneous, Condensing, NG DHW Heater

Item	Value	Units	Formula/Comments
Occupied days per week	5	days/wk	
Water supply Temperature	60	˚F	Termperature of water coming into building
Hot Water Temperature	120	˚F	
Hot Water Usage per day	764	gal/day	Calculated from usage below
Annual Hot Water Energy Demand	76,344	MBTU/yr	Energy required to heat annual quantity of hot water to setpoint
Existing Tank Size	100	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)	1.0	MBH	
Annual Standby Hot Water Load	9,125	MBTU/yr	
Total Annual Hot Water Demand (w/ standby losses)	85,469	Mbtu/yr	Building demand plus standby losses
Existing Water Heater Efficiency	80%		Per Manufacturer
Total Annual Energy Required	106,837	Mbtu/yr	
Total Annual Natural Gas Required	**1,068.4**	**Therms /yr**	**Per Utility Bills**
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)	76,344	MBTU/yr	
Proposed Avg. Hot water heater efficiency	92%		Based on condensing tankless DHW Heater
Proposed Total Annual Energy Required	82,983	MBTU/yr	
Proposed Fuel Use	830	Therms /yr	Standby Losses and inefficient DHW heater eliminated
Proposed Fuel Savings	**239**	**Therms /yr**	
Natural Gas Utility Unit Cost	$1.45	$/Therm	
Existing Operating Cost of DHW	$1,547	$/yr	
Proposed Operating Cost of DHW	$1,202	$/yr	
Annual Utility Cost Savings	**$345**	**$/yr**	

Multipliers	
Material:	1.10
Labor:	1.30
Equipment:	1.10

ECM-6: Replace DWH w/ tankless instantaneous unit - Cost

Description	QTY	UNIT	UNIT COSTS			SUBTOTAL COSTS			TOTAL COST	REMARKS
			MAT.	LABOR	EQUIP.	MAT.	LABOR	EQUIP.		
Gas-Fired DHW Heater Removal	1	LS		$ 500		$ -	$ 650	$ -	$ 650	
Rannai Tankless Gas-Fired DHW Heater	1	LS	$ 1,000	$ 1,000		$ 1,100	$ 1,300	$ -	$ 2,400	
Miscellaneous Electrical	1	LS	$ 300	$ 500		$ 330	$ 650	$ -	$ 980	
Miscellaneous Piping and Valves	1	LS	$ 1,000	$ 500		$ 1,100	$ 650	$ -	$ 1,750	
						$ -	$ -	$ -	$ -	
						$ -	$ -	$ -	$ -	
						$ -	$ -	$ -	$ -	
						$ -	$ -	$ -	$ -	

Note: Cost Estimates are for Energy Savings Calulations only- Do not use for procurement !

$ 5,780	Subtotal
$ 578	10% Contingency
$ 1,272	20% Contractor O&P
$ -	
$ 7,630	**Total**

ECM-7: Replace Existing Boiler for DHW w/ Condensing Boiler

Existing Fuel	Nat.Gas
Proposed Fuel	Nat.Gas

Item	Value	Units	Formula/Comments
Baseline Fuel Cost	$ 1.45	/ Therm	
Proposed Fuel Cost	$ 1.45	/ Therm	
Baseline Fuel Use	5,639	Therms	Based on historical utility data
Existing Boiler Plant Efficiency	84%		Based on age of boiler and nameplate data
Baseline Boiler Load	473,691	Mbtu/yr	Baseline Fuel Use x Existing Efficiency x 100 Mbtu/Therms
Baseline Fuel Cost	$ 8,166		
Proposed Boiler Plant Efficiency	92%		New Boiler Efficiency
Proposed Fuel Use	5,149	Therms	Baseline Boiler Load / Proposed Efficiency / 100 Mbtu/Therms
Proposed Fuel Cost	$ 7,456		

*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**	**490**	**$0**	**$710**

Multipliers	
Material:	1.10
Labor:	1.30
Equipment:	1.10

ECM-7: Replace Existing Boiler for DHW w/ Condensing Boiler - Cost

Description	QTY	UNIT	UNIT COSTS			SUBTOTAL COSTS			TOTAL COST	REMARKS
			MAT.	LABOR	EQUIP.	MAT.	LABOR	EQUIP.		
Boiler demo	1	EA	$ -	$ 7,500		$ -	$ 9,750	$ -	$ 9,750	
4,000 MBH NG Condensing Boiler	1	EA	$ 50,000	$ 25,000		$ 55,000	$ 32,500	$ -	$ 87,500	
Flue Installation	1	LS	$ 10,000	$ 5,000		$ 11,000	$ 6,500	$ -	$ 17,500	
Pump	1	EA	$ 2,500	$ 1,500		$ 2,750	$ 1,950	$ -	$ 4,700	
Miscellaneous Electrical	1	LS	$ 1,500	$ 3,000		$ 1,650	$ 3,900	$ -	$ 5,550	
Miscellaneous HW Piping	1	LS	$ 5,000	$ 5,000		$ 5,500	$ 6,500	$ -	$ 12,000	
						$ -	$ -	$ -	$ -	

Note: Cost Estimates are for Energy Savings Calculations only- Do not use for procurement !

$ 137,000	Subtotal
$ 13,700.00	10% Contingency
$ 30,140.00	20% Contractor O&P
$ -	
$ 180,840	**Total**

ECM-8: Install Kitchen Hood VFD /Controller

Motor Operating Savings

Hours of Operation (per day)	4		A
Days/Year	190		B
Weeks/Year	38		C
Motor HP	2		D
Equivalent KW	1.24	KW	E
Cost of Electricity	$0.13	KWh	F
Total Time/Year	760	hrs/year	G
Total KWH/YR	945	KWh	H

% Rated RPM I	% Run Time J	Time K J * G	Output L I * E ^ 2.5	KWH/YR M L *K
100%	9%	68	1.243	85
90%	11%	84	0.955	80
80%	14%	106	0.712	76
70%	35%	266	0.510	136
60%	18%	137	0.347	47
50%	13%	99	0.220	22
40%	0%	0	0.126	0
30%	0%	0	0.061	0
20%	0%	0	0.022	0
10%	0%	0	0.004	0
				445 N

Total Savings .= H - N 500 KWh

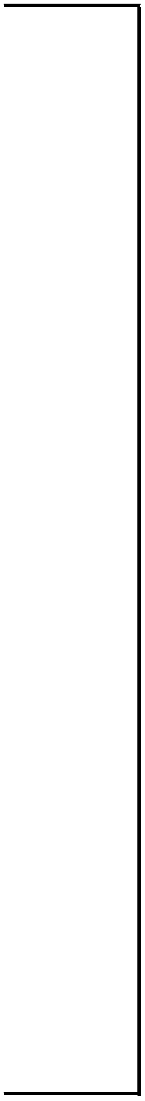
Reduced Electricity Savings =	**500**	**kWh**
Reduced Fuel Savings =	**103**	**therms**
Reduced Financial Savings =	**$215**	

Conditioned Make Up Air: Heating

Previous Net Exhaust Volume	2,800	CFM	
New Net Exhaust Volume	2,013	CFM	Note 1
Previous net heat load	92,232	BTU/hr	
new net heat load	66,315	BTU/hr	
Design Indoor Conditions	68	F	
Average Outdoor Air Temp (during Heating)	37.5	F	
Heating Hours	4,589	hrs/yr	
Total Therms Savings	103	Therms	

% Rated RPM I	% Run Time J	H * J
100%	9%	9.00%
90%	11%	9.90%
80%	14%	11.20%
70%	35%	24.50%
60%	18%	10.80%
50%	13%	6.50%
40%	0%	0.00%
30%	0%	0.00%
20%	0%	0.00%
10%	0%	0.00%
Avg RPM		71.90%

Cost of Fuel = $1.45 / therm



Multipliers	
Material:	1.10
Labor:	1.30
Equipment:	1.10

ECM-8: Install Kitchen Hood VFD /Controller - Cost

Description	QTY	UNIT	UNIT COSTS			SUBTOTAL COSTS			TOTAL COST	REMARKS
			MAT.	LABOR	EQUIP.	MAT.	LABOR	EQUIP.		
Me-Link Kitchen Hood Control System	1	ea	$ 15,000	$ 2,000		$ 16,500	$ 2,600	$ -	$ 19,100	
5.0 HP VFDs (1-exhaust fan)	1	ea	$ 1,485	$ 490		$ 1,634	$ 637	$ -	$ 2,271	
5.0 HP Motor	1	ea	$ 525	$ 85		$ 578	$ 111	$ -	$ 688	
Reprogram DDC system	1	ea	$ 100	$ 1,200		$ 110	$ 1,560	$ -	$ 1,670	
Electrical - misc.	1	ls	$ 200	$ 500		$ 220	$ 650	$ -	$ 870	
Remote bulb thermostat	2	ea	$ 500	$ 200		$ 1,100	$ 520	$ -	$ 1,620	
						$ -	$ -	$ -	$ -	
						$ -	$ -	$ -	$ -	
						$ -	$ -	$ -	$ -	
						$ -	$ -	$ -	$ -	
						$ -	$ -	$ -	$ -	

$ 26,219	Subtotal
$ 2,622	10% Contingency
$ 5,768	20% Contractor O&P
$ -	
$ 34,608	**Total**

Holmdel Township BOE - NJBPU
CHA Project #24988
Indian Hill School

ECM-9: Walk-in Cooler & Freezer Controls

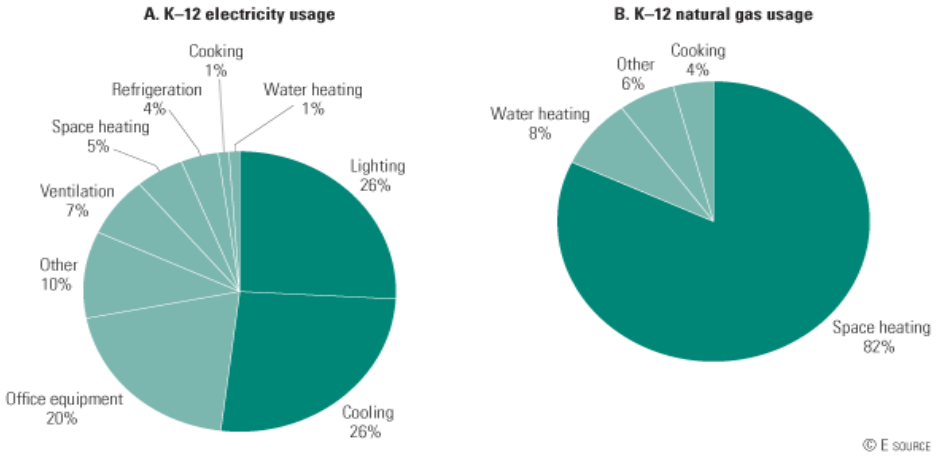
ECM Description Summary

For kitchens that contain walk-in coolers and freezers, CoolTrol is a controller that reduces energy consumption by controlling off of dewpoint temperature. Compressor cycling is reduced and the evaporator fans run 25% to 80% less. Door and frame heaters are also installed and controlled by store dew point temperature; this can reduce run time by up to 95% in coolers and 60% in freezers. The evaporator fan motors are also replaced with hi-efficiency fan motors saving 40% to 70% in energy. The proposed system comprises of an anti-sweat door controller, evaporator fan motor replacement and CoolTrol Cooler Control System.

EXISTING CONDITIONS		
Existing Facility Total Electric usage	895,360	kWh
Existing Facility Refridgeration Electric usage	53,722	kWh[1]
Existing Facility Walk-In Electric usage	32,233	kWh[2]
Walk-In Controls System Annual Electric savings	9,670	kWh[3]
SAVINGS		
Walk-In Controls Electric Usage Savings	9,670	**kWh**
Total cost savings	$ 1,267.92	
Estimated Total Project Cost	$ 15,000	[4]
Simple Payback	11.8	**years**

Assumptions

1 6% of facility total electricity; Source: E source, data from U.S. Energy Information Administration
2 60% of refrigeration attributable to walk-in based on site observations
3 30% Electric load reduction typical for walk-in controllers
4 Based on (2) "Cooltrol" walk-in controls systems



New Jersey Pay For Performance Incentive Program

Note: The following calculation is based on the New Jersey Pay For Performance Incentive Program.
Building must have a minimum average electric demand of 100 kW. This minimum is waived for buildings owned by local governments 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)	127,000
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)	$117,400	$45,364
Existing Usage (from utility)	895,360	31,329
Proposed Savings	200,592	4,217
Existing Total MMBtus	6,189	
Proposed Savings MMBtus	1,106	
% Energy Reduction	**17.9%**	
Proposed Annual Savings	$31,900	

	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	$0.10	$1.04
Incentive #3	$0.09	$0.90	$0.005	$0.05	$0.11	$1.25	$0.10	$1.04

	Incentives $		
	Elec	Gas	Total
Incentive #1	$0	$0	$12,700
Incentive #2	$20,938	$4,401	$25,339
Incentive #3	$20,938	$4,401	$25,339
Total All Incentives	**$41,876**	**$8,803**	**$63,379**

Total Project Cost	$943,795

		Allowable Incentive
% Incentives #1 of Utility Cost*	7.8%	$12,700
% Incentives #2 of Project Cost**	2.7%	$25,339
% Incentives #3 of Project Cost**	2.7%	$25,339
Total Eligible Incentives***	**$63,379**	
Project Cost w/ Incentives	$880,416	

Project Payback (years)	
w/o Incentives	w/ Incentives
29.6	27.6

* 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

Energy Audit of Holmdel Schools - Indian Hill School
CHA Project No.24988

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
$28,904	**5.8**	**11,450**	**0**	**$1,943**	**0**	**$1,943**	**$5,200**	**14.9**	**12.2**

*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
$17,442	**0.0**	**35,189**	**0**	**$4,610**	**0**	**$4,610**	**$2,720**	**3.8**	**3.2**

*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
$46,346	**5.8**	**46,649**	**0**	**$6,554**	**0**	**$6,554**	**$7,920**	**7.1**	**5.9**

*Incentive based on New Jersey Smart Start Prescriptive Lighting Measures

Energy Audit of Holmdel Schools - Indian Hill School
CHA Project No.24988
ECM-1 Lighting Replacements

		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
Field Code	Unique description of the location - Room number/Room name: Floor number (if applicable)	No. of fixtures before the retrofit	"Lighting Fixture Code" Example 2T 40 R F(U) = 2'x2' Troff 40 w Recess. Floor 2 lamps U shape	Code from Table of Standard Fixture Wattages	Value from Table of Standard Fixture Wattages	(Watts/Fixt) * (Fixt No.)	Pre-inst. control device	Estimated daily hours for the usage group	(kW/space) * (Annual Hours)	No. of fixtures after the retrofit	"Lighting Fixture Code" Example 2T 40 R F(U) = 2'x2' Troff 40 w Recess. Floor 2 lamps U shape	Code from Table of Standard Fixture Wattages	Value from Table of Standard Fixture Wattages	(Watts/Fixt) * (Number of Fixtures)	Retrofit control device	Estimated annual hours for the usage group	(kW/space) * (Annual Hours)	(Original Annual kWh) - (Retrofit Annual kWh)	(Original Annual kW) - (Retrofit Annual kW)	(kWh Saved) * ($/kWh)	Cost for renovations to lighting system	Prescriptive Lighting Measures	Length of time for renovations cost to be recovered	Length of time for renovations cost to be recovered
19	Hallway Area	82	1B 32 P F 2 (ELE)	F42LL	60	4.9	SW	8760	43,099	82	1B 32 P F 2 (ELE)	F42LL	60	4.9	SW	8,760	43,099	-	0.0	$ -	$ -	$0		#DIV/0!
19	Hallway Area	126	1B 32 P F 2 (ELE)	F42LL	60	7.6	SW	1820	13,759	126	1B 32 P F 2 (ELE)	F42LL	60	7.6	SW	1,820	13,759	-	0.0	$ -	$ -	$0		#DIV/0!
133	Hallway Area	72	CF 26	CFQ26/1-L	27	1.9	SW	1820	3,538	72	CF 26	CFQ26/1-L	27	1.9	SW	1,820	3,538	-	0.0	$ -	$ -	$0		#DIV/0!
39	Hallway Area	50	2' 17 W F 2 (ELE)	F22ILL	33	1.7	SW	1820	3,003	50	2' 17 W F 2 (ELE)	F22ILL	33	1.7	SW	1,820	3,003	-	0.0	$ -	$ -	$0		#DIV/0!
19	Custodian Room	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	780	187	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	780	187	-	0.0	$ -	$ -	$0		#DIV/0!
133	Custodian Room	2	CF 26	CFQ26/1-L	27	0.1	SW	780	42	2	CF 26	CFQ26/1-L	27	0.1	SW	780	42	-	0.0	$ -	$ -	$0		#DIV/0!
191	Boiler Room A	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	1000	369	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	1,000	369	-	0.0	$ -	$ -	$0		#DIV/0!
19	Boiler Room A	2	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	1000	120	2	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	1,000	120	-	0.0	$ -	$ -	$0		#DIV/0!
19	Maintanance Workroom	2	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	1000	120	2	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	1,000	120	-	0.0	$ -	$ -	$0		#DIV/0!
19	Boy's Room	2	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	1000	120	2	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	1,000	120	-	0.0	$ -	$ -	$0		#DIV/0!
19	Girl's Room	2	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	1000	120	2	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	1,000	120	-	0.0	$ -	$ -	$0		#DIV/0!
9	Gym A (Old Gym)	24	High Bay MH 400	MH400/1	458	11.0	SW	2000	21,984	24	C 54 C F 6	F46GHL	351	8.4	SW	2,000	16,848	5,136	2.6	$ 870.35	$ 13,284.00	$2,400	15.3	12.5
19	Gym Office	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	2000	480	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	2,000	480	-	0.0	$ -	$ -	$0		#DIV/0!
19	Custodian Room	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	780	187	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	780	187	-	0.0	$ -	$ -	$0		#DIV/0!
133	Storage	1	CF 26	CFQ26/1-L	27	0.0	SW	1000	27	1	CF 26	CFQ26/1-L	27	0.0	SW	1,000	27	-	0.0	$ -	$ -	$0		#DIV/0!
232	Walking Freezer	1	R 60 C I 1	I60/1	60	0.1	SW	8760	526	1	CF 26	CFQ26/1-L	27	0.0	SW	8,760	237	289	0.0	$ 40.41	$ 20.25	$0	0.5	0.5
232	Walking Cooler	1	R 60 C I 1	I60/1	60	0.1	SW	8760	526	1	CF 26	CFQ26/1-L	27	0.0	SW	8,760	237	289	0.0	$ 40.41	$ 20.25	$0	0.5	0.5
19	Copy Room	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	2125	510	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	2,125	510	-	0.0	$ -	$ -	$0		#DIV/0!
19	Room 23A	13	1B 32 P F 2 (ELE)	F42LL	60	0.8	SW	1400	1,092	13	1B 32 P F 2 (ELE)	F42LL	60	0.8	SW	1,400	1,092	-	0.0	$ -	$ -	$0		#DIV/0!
19	Room 23	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1,400	1,008	-	0.0	$ -	$ -	$0		#DIV/0!
35	Room 24	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	SW	1400	756	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	SW	1,400	756	-	0.0	$ -	$ -	$0		#DIV/0!
35	Room 25	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	SW	1400	756	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	SW	1,400	756	-	0.0	$ -	$ -	$0		#DIV/0!
35	Room 26	14	T 32 R F 3 (ELE)	F43ILL/2	90	1.3	SW	1400	1,764	14	T 32 R F 3 (ELE)	F43ILL/2	90	1.3	SW	1,400	1,764	-	0.0	$ -	$ -	$0		#DIV/0!
19	Room 27	6	1B 32 P F 2 (ELE)	F42LL	60	0.4	SW	1400	504	6	1B 32 P F 2 (ELE)	F42LL	60	0.4	SW	1,400	504	-	0.0	$ -	$ -	$0		#DIV/0!
35	Room 28	8	T 32 R F 3 (ELE)	F43ILL/2	90	0.7	SW	1400	1,008	8	T 32 R F 3 (ELE)	F43ILL/2	90	0.7	SW	1,400	1,008	-	0.0	$ -	$ -	$0		#DIV/0!
35	Room 29	14	T 32 R F 3 (ELE)	F43ILL/2	90	1.3	SW	1400	1,764	14	T 32 R F 3 (ELE)	F43ILL/2	90	1.3	SW	1,400	1,764	-	0.0	$ -	$ -	$0		#DIV/0!
133	Custodian Room	1	CF 26	CFQ26/1-L	27	0.0	SW	780	21	1	CF 26	CFQ26/1-L	27	0.0	SW	780	21	-	0.0	$ -	$ -	$0		#DIV/0!
19	IDF Office	1	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	2,000	120	-	0.0	$ -	$ -	$0		#DIV/0!
19	Restroom	1	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	1000	60	1	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	1,000	60	-	0.0	$ -	$ -	$0		#DIV/0!
35	Main Office Front Counter	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	SW	2000	1,080	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	SW	2,000	1,080	-	0.0	$ -	$ -	$0		#DIV/0!
35	Assistant Principle Office	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	SW	2000	720	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	SW	2,000	720	-	0.0	$ -	$ -	$0		#DIV/0!
35	Principle Office	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	SW	2000	720	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	SW	2,000	720	-	0.0	$ -	$ -	$0		#DIV/0!
19	Breakroom	6	1B 32 P F 2 (ELE)	F42LL	60	0.4	SW	2000	720	6	1B 32 P F 2 (ELE)	F42LL	60	0.4	SW	2,000	720	-	0.0	$ -	$ -	$0		#DIV/0!
35	Main Office	10	T 32 R F 3 (ELE)	F43ILL/2	90	0.9	SW	2000	1,800	10	T 32 R F 3 (ELE)	F43ILL/2	90	0.9	SW	2,000	1,800	-	0.0	$ -	$ -	$0		#DIV/0!
5	Main Office	1	2T 32 R F 2 (u) (ELE)	FU2LL	60	0.1	SW	2000	120	1	2T 32 R F 2 (u) (ELE)	FU2LL	60	0.1	SW	2,000	120	-	0.0	$ -	$ -	$0		#DIV/0!
35	Music Room	15	T 32 R F 3 (ELE)	F43ILL/2	90	1.4	SW	1400	1,890	15	T 32 R F 3 (ELE)	F43ILL/2	90	1.4	SW	1,400	1,890	-	0.0	$ -	$ -	$0		#DIV/0!
19	Room 1	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1,400	1,008	-	0.0	$ -	$ -	$0		#DIV/0!
19	Room 2	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1,400	1,008	-	0.0	$ -	$ -	$0		#DIV/0!
19	Girl's Room	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	1000	240	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	1,000	240	-	0.0	$ -	$ -	$0		#DIV/0!
19	Boy's Room	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	1000	240	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	1,000	240	-	0.0	$ -	$ -	$0		#DIV/0!
19	Custodian Room	1	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	780	47	1	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	780	47	-	0.0	$ -	$ -	$0		#DIV/0!
19	Room 3	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1,400	1,008	-	0.0	$ -	$ -	$0		#DIV/0!
19	Art Room	24	1B 32 P F 2 (ELE)	F42LL	60	1.4	SW	1400	2,016	24	1B 32 P F 2 (ELE)	F42LL	60	1.4	SW	1,400	2,016	-	0.0	$ -	$ -	$0		#DIV/0!
19	Room 4	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1,400	1,008	-	0.0	$ -	$ -	$0		#DIV/0!
19	Room 5	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1,400	1,008	-	0.0	$ -	$ -	$0		#DIV/0!
19	Room 6	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1,400	1,008	-	0.0	$ -	$ -	$0		#DIV/0!
19	Room 7	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1,400	1,008	-	0.0	$ -	$ -	$0		#DIV/0!
19	Room 8	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1,400	1,008	-	0.0	$ -	$ -	$0		#DIV/0!
19	Room 9	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1,400	1,008	-	0.0	$ -	$ -	$0		#DIV/0!
19	Room 10	18	1B 32 P F 2 (ELE)	F42LL	60	1.1	SW	1400	1,512	18	1B 32 P F 2 (ELE)	F42LL	60	1.1	SW	1,400	1,512	-	0.0	$ -	$ -	$0		#DIV/0!
19	Room 11	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1,400	1,008	-	0.0	$ -	$ -	$0		#DIV/0!
19	Room 12	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1,400	1,008	-	0.0	$ -	$ -	$0		#DIV/0!
19	Room 13	18	1B 32 P F 2 (ELE)	F42LL	60	1.1	SW	1400	1,512	18	1B 32 P F 2 (ELE)	F42LL	60	1.1	SW	1,400	1,512	-	0.0	$ -	$ -	$0		#DIV/0!
19	Room 14	18	1B 32 P F 2 (ELE)	F42LL	60	1.1	SW	1400	1,512	18	1B 32 P F 2 (ELE)	F42LL	60	1.1	SW	1,400	1,512	-	0.0	$ -	$ -	$0		#DIV/0!
19	Room 15	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1,400	1,008	-	0.0	$ -	$ -	$0		#DIV/0!
19	Room 16	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1,400	1,008	-	0.0	$ -	$ -	$0		#DIV/0!
19	Room 16 A	7	1B 32 P F 2 (ELE)	F42LL	60	0.4	SW	1400	588	7	1B 32 P F 2 (ELE)	F42LL	60	0.4	SW	1,400	588	-	0.0	$ -	$ -	$0		#DIV/0!
9	Boy's Room	4	High Bay MH 400	MH400/1	458	1.8	SW	1000	1,832	4	C 54 C F 6	F46GHL	351	1.4	SW	1,000	1,404	428	0.4	$ 88.99	$ 2,214.00	$400	24.9	20.4
35	Girl's Room	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	SW	1000	360	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	SW	1,000	360	-	0.0	$ -	$ -	$0		#DIV/0!
35	Custodian Room	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	SW	780	70	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	SW	780	70	-	0.0	$ -	$ -	$0		#DIV/0!
19	Room 17	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1,400	1,008	-	0.0	$ -	$ -	$0		#DIV/0!
19	Room 18	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1,400	1,008	-	0.0	$ -	$ -	$0		#DIV/0!
19	Room 19	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1,400	1,008	-	0.0	$ -	$ -	$0		#DIV/0!
19	Room 20	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1,400	1,008	-	0.0	$ -	$ -	$0		#DIV/0!
19	IDF Office	2	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	2000	240	2	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	2,000	240	-	0.0	$ -	$ -	$0		#DIV/0!
232	Staff Restroom	1	R 60 C I 1	I60/1	60	0.1	SW	1000	60	1	CF 26	CFQ26/1-L	27	0.0	SW	1,000	27	33	0.0	$ 6.86	$ 20.25	$0	3.0	3.0
5	Storage	2	2T 32 R F 2 (u) (ELE)	FU2LL	60	0.1	SW	1000	120	2	2T 32 R F 2 (u) (ELE)	FU2LL	60	0.1	SW	1,000	120	-	0.0	$ -	$ -	$0		#DIV/0!
19	Room 21	24	1B 32 P F 2 (ELE)	F42LL	60	1.4	SW	1400	2,016	24	1B 32 P F 2 (ELE)	F42LL	60	1.4	SW	1,400	2,016	-	0.0	$ -	$ -	$0		#DIV/0!
19	Electric Closet	2	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	1000	120	2	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	1,000	120	-	0.0	$ -	$ -	$0		#DIV/0!
19	Electric Closet	1	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	1000	60	1	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	1,000	60	-	0.0	$ -	$ -	$0		#DIV/0!
35	Nurse Office	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	SW	2000	1,620	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	SW	2,000	1,620	-	0.0	$ -	$ -	$0		#DIV/0!
19	Nurse Office	11	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	2000	1,320	11	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	2,000	1,320	-	0.0	$ -	$ -	$0		#DIV/0!
19	Room 22	14	1B 32 P F 2 (ELE)	F42LL	60	0.8	SW	1400	1,176	14	1B 32 P F 2 (ELE)	F42LL	60	0.8	SW	1,400	1,176	-	0.0	$ -	$ -	$0		#DIV/0!
19	Locker Room (Girl's)	10	1B 32 P F 2 (ELE)	F42LL	60	0.6	SW	2000	1,200	10	1B 32 P F 2 (ELE)	F42LL	60	0.6	SW	2,000	1,200	-	0.0	$ -	$ -	$0		#DIV/0!
19	Locker Room (Coach's)	3	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	2000	360	3	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	2,000	360	-	0.0	$ -	$ -	$0		#DIV/0!
133	Locker Room (Coach's)	4	CF 26	CFQ26/1-L	27	0.1	SW	2000	216	4	CF 26	CFQ26/1-L	27	0.1	SW	2,000	216	-	0.0	$ -	$ -	$0		#DIV/0!
19	Entrance to Gym	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	2000	480	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	2,000	480	-	0.0	$ -	$ -	$0		#DIV/0!
19	Locker Room (Boy's)	10	1B 32 P F 2 (ELE)	F42LL	60	0.6	SW	1400	840	10	1B 32 P F 2 (ELE)	F42LL	60	0.6	SW	1,400	840	-	0.0	$ -	$ -	$0		#DIV/0!
19	Locker Room (Coach's)	3	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	1400	252	3	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	1,400	252	-	0.0	$ -	$ -	$0		#DIV/0!
133	Locker Room (Coach's)	4	CF 26	CFQ26/1-L	27	0.1	SW	1400	151	4	CF 26	CFQ26/1-L	27	0.1	SW	1,400	151	-	0.0	$ -	$ -	$0		#DIV/0!
35	Media Center (Lib)	5	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	SW	2000	900	5	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	SW	2,000	900	-	0.0	$ -	$ -	$0		#DIV/0!
39	Media Center (Lib)	36	2' 17 W F 2 (ELE)	F22ILL	33	1.2	SW	2000	2,376	36	2' 17 W F 2 (ELE)	F22ILL	33	1.2	SW	2,000	2,376	-	0.0	$ -	$ -	$0		#DIV/0!
133	Media Center (Lib)	14	CF 26	CFQ26/1-L	27	0.4	SW	2000	756	14	CF 26	CFQ26/1-L	27	0.4	SW	2,000	756	-	0.0	$ -	$ -	$0		#DIV/0!
20	Media Center (Lib)	30	S 32 C F 1 (ELE)	F41LL	32	1.0	SW	2000	1,920	30	S 32 C F 1 (ELE)	F41LL	32	1.0	SW	2,000	1,920	-	0.0	$ -	$ -	$0		#DIV/0!
35	Office	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	SW	2000	1,080	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	SW	2,000	1,080	-	0.0	$ -	$ -	$0		#DIV/0!
9	Gym B (New Gym)	24	High Bay MH 400	MH400/1	458	11.0	SW	2000	21,984	24	C 54 C F 6	F46GHL	351	8.4	SW	2,000	16,848	5,136	2.6	$ 870.35	$ 13,284.00	$2,400	15.3	12.5
19	Mechanical Room for Gym	2	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	1000	120	2	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	1,000	120	-	0.0	$ -	$ -	$0		#DIV/0!
19	Mezzanine	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	2000	1,440	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	2,000	1,440	-	0.0	$ -	$ -	$0		#DIV/0!
19	Chiller Room	13	1B 32 P F 2 (ELE)	F42LL	60	0.8	SW	1000	780	13	1B 32 P F 2 (ELE)	F42LL	60	0.8	SW	1,000	780	-	0.0	$ -	$ -	$0		#DIV/0!
35	Guidenance Office	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	2000	540	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	2,000	540	-	0.0	$ -	$ -	$0		#DIV/0!
35	Storage	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	SW	1000	90	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	SW	1,000	90	-	0.0	$ -	$ -	$0		#DIV/0!
35	Room 131	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1,400	1,512	-	0.0	$ -	$ -	$0		#DIV/0!
35	Room 132	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1,400	1,512	-	0.0	$ -	$ -	$0		#DIV/0!
35	Girl's Room	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	SW	1000	360	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	SW	1,000	360	-	0.0	$ -	$ -	$0		#DIV/0!
35	Boy's Room	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	1000	270	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	1,000	270	-	0.0	$ -	$ -	$0		#DIV/0!
35	Storage	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	SW	1000	90	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	SW	1,000	90	-	0.0	$ -	$ -	$0		#DIV/0!
35	Room 133	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1,400	1,512	-	0.0	$ -	$ -	$0		#DIV/0!
35	Room 134	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1,400	1,512	-	0.0	$ -	$ -	$0		#DIV/0!
35	Room 135	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1,400	1,512	-	0.0	$ -	$ -	$0		#DIV/0!
35	Room 136	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1,400	1,512	-	0.0	$ -	$ -	$0		#DIV/0!
35	Room 137	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1,400	1,512	-	0.0	$ -	$ -	$0		#DIV/0!
35	Room 138	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1,400	1,512	-	0.0	$ -	$ -	$0		#DIV/0!
35	Room 139	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1,400	1,512	-	0.0	$ -	$ -	$0		#DIV/0!
35	Room 140	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1,400	1,512	-	0.0	$ -	$ -	$0		#DIV/0!
35	Room 141	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1,400	1,512	-	0.0	$ -	$ -	$0		#DIV/0!
35	Room 142	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1,400	1,512	-	0.0	$ -	$ -	$0		#DIV/0!
35	Room 143	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1,400	1,512	-	0.0	$ -	$ -	$0		#DIV/0!
19	Storage	3	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	1000	180	3	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	1,000	180	-	0.0	$ -	$ -	$0		#DIV/0!
212	Stairway	4	T 32 R F 4 (ELE) (TWO SWITCH)	F44ILL	112	0.4	SW	8760	3,924	4	T 32 R F 4 (ELE) (TWO SWITCH)	F44ILL	112	0.4	SW	8,760	3,924	-	0.0	$ -	$ -	$0		#DIV/0!
20	Stairway	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	8760	561	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	8,760	561	-	0.0	$ -	$ -	$0		#DIV/0!
19	Elevator Room	3	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	8760	1,577	3	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	8,760	1,577	-	0.0	$ -	$ -	$0		#DIV/0!
36	Staff Restroom	1	2T 3' 17 R F 1 (ELE)	F21ILL	20	0.0	SW	1000	20	1	2T 3' 17 R F 1 (ELE)	F21ILL	20	0.0	SW	1,000	20	-	0.0	$ -	$ -	$0		#DIV/0!
19	Electric Closet	1	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	1000	60	1	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	1,000	60	-	0.0	$ -	$ -	$0		#DIV/0!
35	Room 143A	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	1400	378	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	1,400	378	-	0.0	$ -	$ -	$0		#DIV/0!
39	Room 143A	1	2' 17 W F 2 (ELE)	F22ILL	33	0.0	SW	1400	46	1	2' 17 W F 2 (ELE)	F22ILL	33	0.0	SW	1,400	46	-	0.0	$ -	$ -	$0		#DIV/0!
19	Storage	3	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	1000	180	3	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	1,000	180	-	0.0	$ -	$ -	$0		#DIV/0!
212	Stairway	4	T 32 R F 4 (ELE) (TWO SWITCH)	F44ILL	112	0.4	SW	8760	3,924	4	T 32 R F 4 (ELE) (TWO SWITCH)	F44ILL	112	0.4	SW	8,760	3,924	-	0.0	$ -	$ -	$0		#DIV/0!
20	Stairway	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	8760	561	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	8,760	561	-	0.0	$ -	$ -	$0		#DIV/0!
39	Center Stairway	13	2' 17 W F 2 (ELE)	F22ILL	33	0.4	SW	8760	3,758	13	2' 17 W F 2 (ELE)	F22ILL	33	0.4	SW	8,760	3,758	-	0.0	$ -	$ -	$0		#DIV/0!
133	Center Stairway	4	CF 26	CFQ26/1-L	27	0.1	SW	8760	946	4	CF 26	CFQ26/1-L	27	0.1	SW	8,760	946	-	0.0	$ -	$ -	$0		#DIV/0!
20	Center Stairway	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	8760	561	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	8,760	561	-	0.0	$ -	$ -	$0		#DIV/0!
19	2nd floor Electric Closet	6	1B 32 P F 2 (ELE)	F42LL	60	0.4	SW	1000	360	6	1B 32 P F 2 (ELE)	F42LL	60	0.4	SW	1,000	360	-	0.0	$ -	$ -	$0		#DIV/0!

Energy Audit of Holmdel Schools - Indian Hill School

CHA Project No.24988

ECM-1 Lighting Replacements

		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
Field Code	Unique description of the location - Room number/Room name: Floor number (if applicable)	No. of fixtures before the retrofit	"Lighting Fixture Code" Example 2T 40 R F(U) = 2'x2' Troff 40 w Recess. Floor 2 lamps U shape	Code from Table of Standard Fixture Wattages	Value from Table of Standard Fixture Wattages	(Watts/Fixt) * (Fixt No.)	Pre-inst. control device	Estimated daily hours for the usage group	(kW/space) * (Annual Hours)	No. of fixtures after the retrofit	"Lighting Fixture Code" Example 2T 40 R F(U) = 2'x2' Troff 40 w Recess. Floor 2 lamps U shape	Code from Table of Standard Fixture Wattages	Value from Table of Standard Fixture Wattages	(Watts/Fixt) * (Number of Fixtures)	Retrofit control device	Estimated annual hours for the usage group	(kW/space) * (Annual Hours)	(Original Annual kWh) - (Retrofit Annual kWh)	(Original Annual kW) - (Retrofit Annual kW)	(kWh Saved) * ($/kWh)	Cost for renovations to lighting system	Prescriptive Lighting Measures	Length of time for renovations cost to be recovered	Length of time for renovations cost to be recovered
19	Girl's Room	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	1000	240	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	1,000	240	-	0.0	$ -	$ -	$0		#DIV/0!
19	Boy's Room	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	1000	240	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	1,000	240	-	0.0	$ -	$ -	$0		#DIV/0!
19	Custodian Room	1	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	780	47	1	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	780	47	-	0.0	$ -	$ -	$0		#DIV/0!
35	Storage	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	1000	270	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	1,000	270	-	0.0	$ -	$ -	$0		#DIV/0!
35	IDF Office	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	SW	2000	180	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	SW	2,000	180	-	0.0	$ -	$ -	$0		#DIV/0!
35	Family Lounge	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	2000	2,160	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	2,000	2,160	-	0.0	$ -	$ -	$0		#DIV/0!
19	Family Lounge	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	2000	480	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	2,000	480	-	0.0	$ -	$ -	$0		#DIV/0!
35	Room 231	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1,400	1,512	-	0.0	$ -	$ -	$0		#DIV/0!
35	Room 232	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1,400	1,512	-	0.0	$ -	$ -	$0		#DIV/0!
35	Room 233	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1,400	1,512	-	0.0	$ -	$ -	$0		#DIV/0!
35	Room 234	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1,400	1,512	-	0.0	$ -	$ -	$0		#DIV/0!
35	Room 235	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1,400	1,512	-	0.0	$ -	$ -	$0		#DIV/0!
35	Room 236	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1,400	1,512	-	0.0	$ -	$ -	$0		#DIV/0!
35	Room 237	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1,400	1,512	-	0.0	$ -	$ -	$0		#DIV/0!
35	Room 238	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1,400	1,512	-	0.0	$ -	$ -	$0		#DIV/0!
35	Room 239	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1,400	1,512	-	0.0	$ -	$ -	$0		#DIV/0!
35	Room 240	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1,400	1,512	-	0.0	$ -	$ -	$0		#DIV/0!
35	Room 241	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1,400	1,512	-	0.0	$ -	$ -	$0		#DIV/0!
35	Room 242	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1,400	1,512	-	0.0	$ -	$ -	$0		#DIV/0!
19	Staff Restroom	1	1B 32 P F 2 (ELE)	F42LL	60	0.1		1000	60	1	1B 32 P F 2 (ELE)	F42LL	60	0.1		1,000	60	-	0.0	$ -	$ -	$0		#DIV/0!
228	Atrium near door 34	9	W60CF1	F81EL	60	0.5		8760	4,730	9	W60CF1	F81EL	60	0.5		8,760	4,730	-	0.0	$ -	$ -	$0		#DIV/0!
133	Atrium near door 34	9	CF 26	CFQ26/1-L	27	0.2		8760	2,129	9	CF 26	CFQ26/1-L	27	0.2		8,760	2,129	-	0.0	$ -	$ -	$0		#DIV/0!
35	Computer Room	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3		1400	378	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3		1,400	378	-	0.0	$ -	$ -	$0		#DIV/0!
35	Room 127	15	T 32 R F 3 (ELE)	F43ILL/2	90	1.4		1400	1,890	15	T 32 R F 3 (ELE)	F43ILL/2	90	1.4		1,400	1,890	-	0.0	$ -	$ -	$0		#DIV/0!
35	Room 128	18	T 32 R F 3 (ELE)	F43ILL/2	90	1.6		1400	2,268	18	T 32 R F 3 (ELE)	F43ILL/2	90	1.6		1,400	2,268	-	0.0	$ -	$ -	$0		#DIV/0!
35	Room 129	15	T 32 R F 3 (ELE)	F43ILL/2	90	1.4		1400	1,890	15	T 32 R F 3 (ELE)	F43ILL/2	90	1.4		1,400	1,890	-	0.0	$ -	$ -	$0		#DIV/0!
35	Room 130	15	T 32 R F 3 (ELE)	F43ILL/2	90	1.4		1400	1,890	15	T 32 R F 3 (ELE)	F43ILL/2	90	1.4		1,400	1,890	-	0.0	$ -	$ -	$0		#DIV/0!
35	Art Room	16	T 32 R F 3 (ELE)	F43ILL/2	90	1.4		1400	2,016	16	T 32 R F 3 (ELE)	F43ILL/2	90	1.4		1,400	2,016	-	0.0	$ -	$ -	$0		#DIV/0!
19	Art Room	2	1B 32 P F 2 (ELE)	F42LL	60	0.1		1400	168	2	1B 32 P F 2 (ELE)	F42LL	60	0.1		1,400	168	-	0.0	$ -	$ -	$0		#DIV/0!
20	Art Room	2	S 32 C F 1 (ELE)	F41LL	32	0.1		1400	90	2	S 32 C F 1 (ELE)	F41LL	32	0.1		1,400	90	-	0.0	$ -	$ -	$0		#DIV/0!
19	Music Room B	28	1B 32 P F 2 (ELE)	F42LL	60	1.7		1400	2,352	28	1B 32 P F 2 (ELE)	F42LL	60	1.7		1,400	2,352	-	0.0	$ -	$ -	$0		#DIV/0!
35	Music Office	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8		2000	1,620	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8		2,000	1,620	-	0.0	$ -	$ -	$0		#DIV/0!
19	Café	90	1B 32 P F 2 (ELE)	F42LL	60	5.4		2000	10,800	90	1B 32 P F 2 (ELE)	F42LL	60	5.4		2,000	10,800	-	0.0	$ -	$ -	$0		#DIV/0!
39	Café	3	2' 17 W F 2 (ELE)	F22ILL	33	0.1		2000	198	3	2' 17 W F 2 (ELE)	F22ILL	33	0.1		2,000	198	-	0.0	$ -	$ -	$0		#DIV/0!
133	Café	72	CF 26	CFQ26/1-L	27	1.9		2000	3,888	72	CF 26	CFQ26/1-L	27	1.9		2,000	3,888	-	0.0	$ -	$ -	$0		#DIV/0!
19	Kitchen Hood	8	1B 32 P F 2 (ELE)	F42LL	60	0.5		1400	672	8	1B 32 P F 2 (ELE)	F42LL	60	0.5		1,400	672	-	0.0	$ -	$ -	$0		#DIV/0!
232	Kitchen Hood	3	R 60 C I 1	I60/1	60	0.2		1400	252	3	CF 26	CFQ26/1-L	27	0.1		1,400	113	139	0.1	$ 25.77	$ 60.75	$0	2.4	2.4
20	Kitchen Hood	6	S 32 C F 1 (ELE)	F41LL	32	0.2		1400	269	6	S 32 C F 1 (ELE)	F41LL	32	0.2		1,400	269	-	0.0	$ -	$ -	$0		#DIV/0!
39	Entrance to Kitchen	9	2' 17 W F 2 (ELE)	F22ILL	33	0.3		1400	416	9	2' 17 W F 2 (ELE)	F22ILL	33	0.3		1,400	416	-	0.0	$ -	$ -	$0		#DIV/0!
39	Girl's Room	4	2' 17 W F 2 (ELE)	F22ILL	33	0.1		1000	132	4	2' 17 W F 2 (ELE)	F22ILL	33	0.1		1,000	132	-	0.0	$ -	$ -	$0		#DIV/0!
39	Boy's Room	4	2' 17 W F 2 (ELE)	F22ILL	33	0.1		1000	132	4	2' 17 W F 2 (ELE)	F22ILL	33	0.1		1,000	132	-	0.0	$ -	$ -	$0		#DIV/0!
19	Stage	12	1B 32 P F 2 (ELE)	F42LL	60	0.7		2000	1,440	12	1B 32 P F 2 (ELE)	F42LL	60	0.7		2,000	1,440	-	0.0	$ -	$ -	$0		#DIV/0!
35	Stage	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3		2000	540	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3		2,000	540	-	0.0	$ -	$ -	$0		#DIV/0!
19	Electric Closet	2	1B 32 P F 2 (ELE)	F42LL	60	0.1		1820	218	2	1B 32 P F 2 (ELE)	F42LL	60	0.1		1,820	218	-	0.0	$ -	$ -	$0		#DIV/0!
	Total	1,818	0			135.9	0		273,513	1,818	0		11,824	130.2			262,063	11,450	5.8	$1,943	$28,904	$5,200		
																		Demand Savings		5.8	$443				
																		kWh Savings			11,450	$1,500			
																		Total savings				$1,943		14.9	12.2

Energy Audit of Holmdel Schools - Indian Hill School
CHA Project No.24988
ECM-2 Install Occupancy Sensors

		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
Field Code	Unique description of the location - Room number/Room name: Floor number (if applicable)	No. of fixtures before the retrofit	Lighting Fixture Code	Code from Table of Standard Fixture Wattages	Value from Table of Standard Fixture Wattages	(Watts/Fixt) * (Fixt No.)	Pre-inst. control device	Estimated annual hours for the usage group	(kW/space) * (Annual Hours)	No. of fixtures after the retrofit	"Lighting Fixture Code" Example 2T 40 R F(U) = 2'x2' Troff 40 w Recess. Floor 2 lamps U shape	Code from Table of Standard Fixture Wattages	Value from Table of Standard Fixture Wattages	(Watts/Fixt) * (Number of Fixtures)	Retrofit control device	Estimated annual hours for the usage group	(kW/space) * (Annual Hours)	(Original Annual kWh) - (Retrofit Annual kWh)	(Original Annual kW) - (Retrofit Annual kW)	(kW Saved) * ($/kWh)	Cost for renovations to lighting system		Length of time for renovations cost to be recovered	Length of time for renovations cost to be recovered
19	Hallway Area	82	1B 32 P F 2 (ELE)	F42LL	60	4.9	SW	8760	43,099.2	82	1B 32 P F 2 (ELE)	F42LL	60	4.9	SW	8760	43,099.2	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
19	Hallway Area	126	1B 32 P F 2 (ELE)	F42LL	60	7.6	SW	1820	13,759.2	126	1B 32 P F 2 (ELE)	F42LL	60	7.6	SW	1820	13,759.2	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
133	Hallway Area	72	CF 26	CFQ26/1-L	27	1.9	SW	1820	3,538.1	72	CF 26	CFQ26/1-L	27	1.9	SW	1820	3,538.1	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
39	Hallway Area	50	2' 17 W F 2 (ELE)	F22ILL	33	1.7	SW	1820	3,003.0	50	2' 17 W F 2 (ELE)	F22ILL	33	1.7	SW	1820	3,003.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
19	Custodian Room	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	780	187.2	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	OCC	1500	360.0	-172.8	0.0	-$22.64	$128.25	$20.00		-4.8
133	Custodian Room	2	CF 26	CFQ26/1-L	27	0.1	SW	780	42.1	2	CF 26	CFQ26/1-L	27	0.1	OCC	1500	81.0	-38.9	0.0	-$5.09	$128.25	$20.00		-21.3
191	Boiler Room A	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	1000	369.0	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	OCC	1000	369.0	0.0	0.0	$0.00	$128.25	$20.00		#DIV/0!
19	Boiler Room A	2	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	1000	120.0	2	1B 32 P F 2 (ELE)	F42LL	60	0.1	OCC	1000	120.0	0.0	0.0	$0.00	$128.25	$20.00		#DIV/0!
19	Maintanance Workroom	2	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	1000	120.0	2	1B 32 P F 2 (ELE)	F42LL	60	0.1	OCC	1000	120.0	0.0	0.0	$0.00	$128.25	$20.00		#DIV/0!
19	Boy's Room	2	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	1000	120.0	2	1B 32 P F 2 (ELE)	F42LL	60	0.1	OCC	1000	120.0	0.0	0.0	$0.00	$128.25	$20.00		#DIV/0!
19	Girl's Room	2	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	1000	120.0	2	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	1000	120.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
9	Gym A (Old Gym)	24	High Bay MH 400	MH400/1	458	11.0	SW	2000	21,984.0	24	High Bay MH 400	MH400/1	458	11.0	OCC	2000	21,984.0	0.0	0.0	$0.00	$128.25	$20.00		#DIV/0!
19	Gym Office	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	2000	480.0	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	OCC	2000	480.0	0.0	0.0	$0.00	$128.25	$20.00		#DIV/0!
19	Custodian Room	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	780	187.2	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	OCC	1500	360.0	-172.8	0.0	-$22.64	$128.25	$20.00		-4.8
133	Storage	1	CF 26	CFQ26/1-L	27	0.0	SW	1000	27.0	1	CF 26	CFQ26/1-L	27	0.0	OCC	250	6.8	20.3	0.0	$2.65	$128.25	$20.00	48.3	40.8
232	Walking Freezer	1	R 60 C I 1	I60/1	60	0.1	SW	8760	525.6	1	R 60 C I 1	I60/1	60	0.1	OCC	8760	525.6	0.0	0.0	$0.00	$128.25	$20.00		#DIV/0!
232	Walking Cooler	1	R 60 C I 1	I60/1	60	0.1	SW	8760	525.6	1	R 60 C I 1	I60/1	60	0.1	OCC	8760	525.6	0.0	0.0	$0.00	$128.25	$20.00		#DIV/0!
19	Copy Room	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	2125	510.0	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	OCC	1000	240.0	270.0	0.0	$35.37	$128.25	$20.00	3.6	3.1
19	Room 23A	13	1B 32 P F 2 (ELE)	F42LL	60	0.8	SW	1400	1,092.0	13	1B 32 P F 2 (ELE)	F42LL	60	0.8	OCC	980	764.4	327.6	0.0	$42.92	$128.25	$20.00	3.0	2.5
19	Room 23	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008.0	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	OCC	980	705.6	302.4	0.0	$39.61	$128.25	$20.00	3.2	2.7
35	Room 24	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	SW	1400	756.0	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	OCC	980	529.2	226.8	0.0	$29.71	$128.25	$20.00	4.3	3.6
35	Room 25	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	SW	1400	756.0	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	OCC	980	529.2	226.8	0.0	$29.71	$128.25	$20.00	4.3	3.6
35	Room 26	14	T 32 R F 3 (ELE)	F43ILL/2	90	1.3	SW	1400	1,764.0	14	T 32 R F 3 (ELE)	F43ILL/2	90	1.3	OCC	980	1,234.8	529.2	0.0	$69.33	$128.25	$20.00	1.8	1.6
19	Room 27	6	1B 32 P F 2 (ELE)	F42LL	60	0.4	SW	1400	504.0	6	1B 32 P F 2 (ELE)	F42LL	60	0.4	OCC	980	352.8	151.2	0.0	$19.81	$128.25	$20.00	6.5	5.5
35	Room 28	8	T 32 R F 3 (ELE)	F43ILL/2	90	0.7	SW	1400	1,008.0	8	T 32 R F 3 (ELE)	F43ILL/2	90	0.7	OCC	980	705.6	302.4	0.0	$39.61	$128.25	$20.00	3.2	2.7
35	Room 29	14	T 32 R F 3 (ELE)	F43ILL/2	90	1.3	SW	1400	1,764.0	14	T 32 R F 3 (ELE)	F43ILL/2	90	1.3	OCC	980	1,234.8	529.2	0.0	$69.33	$128.25	$20.00	1.8	1.6
133	Custodian Room	1	CF 26	CFQ26/1-L	27	0.0	SW	780	21.1	1	CF 26	CFQ26/1-L	27	0.0	OCC	1500	40.5	-19.4	0.0	-$2.55	$128.25	$20.00		-42.5
19	IDF Office	1	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	2000	120.0	1	1B 32 P F 2 (ELE)	F42LL	60	0.1	OCC	1200	72.0	48.0	0.0	$6.29	$128.25	$20.00	20.4	17.2
19	Restroom	1	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	1000	60.0	1	1B 32 P F 2 (ELE)	F42LL	60	0.1	OCC	1000	60.0	0.0	0.0	$0.00	$128.25	$20.00		#DIV/0!
35	Main Office Front Counter	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	SW	2000	1,080.0	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	OCC	1200	648.0	432.0	0.0	$56.59	$128.25	$20.00	2.3	1.9
35	Assistant Principle Office	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	SW	2000	720.0	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	OCC	1200	432.0	288.0	0.0	$37.73	$128.25	$20.00	3.4	2.9
35	Principle Office	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	SW	2000	720.0	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	OCC	1200	432.0	288.0	0.0	$37.73	$128.25	$20.00	3.4	2.9
19	Breakroom	6	1B 32 P F 2 (ELE)	F42LL	60	0.4	SW	2000	720.0	6	1B 32 P F 2 (ELE)	F42LL	60	0.4	OCC	1200	432.0	288.0	0.0	$37.73	$128.25	$20.00	3.4	2.9
35	Main Office	10	T 32 R F 3 (ELE)	F43ILL/2	90	0.9	SW	2000	1,800.0	10	T 32 R F 3 (ELE)	F43ILL/2	90	0.9	OCC	1200	1,080.0	720.0	0.0	$94.32	$128.25	$20.00	1.4	1.1
5	Main Office	1	2T 32 R F 2 (u) (ELE)	FU2LL	60	0.1	SW	2000	120.0	1	2T 32 R F 2 (u) (ELE)	FU2LL	60	0.1	OCC	1200	72.0	48.0	0.0	$6.29	$128.25	$20.00	20.4	17.2
35	Music Room	15	T 32 R F 3 (ELE)	F43ILL/2	90	1.4	SW	1400	1,890.0	15	T 32 R F 3 (ELE)	F43ILL/2	90	1.4	OCC	980	1,323.0	567.0	0.0	$74.28	$128.25	$20.00	1.7	1.5
19	Room 1	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008.0	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	OCC	980	705.6	302.4	0.0	$39.61	$128.25	$20.00	3.2	2.7
19	Room 2	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008.0	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	OCC	980	705.6	302.4	0.0	$39.61	$128.25	$20.00	3.2	2.7
19	Girl's Room	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	1000	240.0	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	OCC	1000	240.0	0.0	0.0	$0.00	$128.25	$20.00		#DIV/0!
19	Boy's Room	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	1000	240.0	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	OCC	1000	240.0	0.0	0.0	$0.00	$128.25	$20.00		#DIV/0!
19	Custodian Room	1	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	780	46.8	1	1B 32 P F 2 (ELE)	F42LL	60	0.1	OCC	1500	90.0	-43.2	0.0	-$5.66	$128.25	$20.00		-19.1
19	Room 3	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008.0	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	OCC	980	705.6	302.4	0.0	$39.61	$128.25	$20.00	3.2	2.7
19	Art Room	24	1B 32 P F 2 (ELE)	F42LL	60	1.4	SW	1400	2,016.0	24	1B 32 P F 2 (ELE)	F42LL	60	1.4	OCC	980	1,411.2	604.8	0.0	$79.23	$128.25	$20.00	1.6	1.4
19	Room 4	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008.0	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	OCC	980	705.6	302.4	0.0	$39.61	$128.25	$20.00	3.2	2.7
19	Room 5	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008.0	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	OCC	980	705.6	302.4	0.0	$39.61	$128.25	$20.00	3.2	2.7
19	Room 6	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008.0	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	OCC	980	705.6	302.4	0.0	$39.61	$128.25	$20.00	3.2	2.7
19	Room 7	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008.0	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	OCC	980	705.6	302.4	0.0	$39.61	$128.25	$20.00	3.2	2.7
19	Room 8	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008.0	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	OCC	980	705.6	302.4	0.0	$39.61	$128.25	$20.00	3.2	2.7
19	Room 9	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008.0	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	OCC	980	705.6	302.4	0.0	$39.61	$128.25	$20.00	3.2	2.7
19	Room 10	18	1B 32 P F 2 (ELE)	F42LL	60	1.1	SW	1400	1,512.0	18	1B 32 P F 2 (ELE)	F42LL	60	1.1	OCC	980	1,058.4	453.6	0.0	$59.42	$128.25	$20.00	2.2	1.8
19	Room 11	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008.0	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	OCC	980	705.6	302.4	0.0	$39.61	$128.25	$20.00	3.2	2.7
19	Room 12	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008.0	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	OCC	980	705.6	302.4	0.0	$39.61	$128.25	$20.00	3.2	2.7
19	Room 13	18	1B 32 P F 2 (ELE)	F42LL	60	1.1	SW	1400	1,512.0	18	1B 32 P F 2 (ELE)	F42LL	60	1.1	OCC	980	1,058.4	453.6	0.0	$59.42	$128.25	$20.00	2.2	1.8
19	Room 14	18	1B 32 P F 2 (ELE)	F42LL	60	1.1	SW	1400	1,512.0	18	1B 32 P F 2 (ELE)	F42LL	60	1.1	OCC	980	1,058.4	453.6	0.0	$59.42	$128.25	$20.00	2.2	1.8
19	Room 15	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008.0	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	OCC	980	705.6	302.4	0.0	$39.61	$128.25	$20.00	3.2	2.7
19	Room 16	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008.0	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	OCC	980	705.6	302.4	0.0	$39.61	$128.25	$20.00	3.2	2.7
19	Room 16 A	7	1B 32 P F 2 (ELE)	F42LL	60	0.4	SW	1400	588.0	7	1B 32 P F 2 (ELE)	F42LL	60	0.4	OCC	980	411.6	176.4	0.0	$23.11	$128.25	$20.00	5.5	4.7
9	Boy's Room	4	High Bay MH 400	MH400/1	458	1.8	SW	1000	1,832.0	4	High Bay MH 400	MH400/1	458	1.8	OCC	1000	1,832.0	0.0	0.0	$0.00	$128.25	$20.00		#DIV/0!
35	Girl's Room	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	SW	1000	360.0	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	OCC	1000	360.0	0.0	0.0	$0.00	$128.25	$20.00		#DIV/0!
35	Custodian Room	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	SW	780	70.2	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	OCC	1500	135.0	-64.8	0.0	-$8.49	$128.25	$20.00		-12.8
19	Room 17	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008.0	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	OCC	980	705.6	302.4	0.0	$39.61	$128.25	$20.00	3.2	2.7
19	Room 18	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008.0	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	OCC	980	705.6	302.4	0.0	$39.61	$128.25	$20.00	3.2	2.7
19	Room 19	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008.0	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	OCC	980	705.6	302.4	0.0	$39.61	$128.25	$20.00	3.2	2.7
19	Room 20	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008.0	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	OCC	980	705.6	302.4	0.0	$39.61	$128.25	$20.00	3.2	2.7
19	IDF Office	2	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	2000	240.0	2	1B 32 P F 2 (ELE)	F42LL	60	0.1	OCC	1200	144.0	96.0	0.0	$12.58	$128.25	$20.00	10.2	8.6
232	Staff Restroom	1	R 60 C I 1	I60/1	60	0.1	SW	1000	60.0	1	R 60 C I 1	I60/1	60	0.1	OCC	1000	60.0	0.0	0.0	$0.00	$128.25	$20.00		#DIV/0!
5	Storage	2	2T 32 R F 2 (u) (ELE)	FU2LL	60	0.1	SW	1000	120.0	2	2T 32 R F 2 (u) (ELE)	FU2LL	60	0.1	OCC	250	30.0	90.0	0.0	$11.79	$128.25	$20.00	10.9	9.2
19	Room 21	24	1B 32 P F 2 (ELE)	F42LL	60	1.4	SW	1400	2,016.0	24	1B 32 P F 2 (ELE)	F42LL	60	1.4	OCC	980	1,411.2	604.8	0.0	$79.23	$128.25	$20.00	1.6	1.4
19	Electric Closet	2	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	1000	120.0	2	1B 32 P F 2 (ELE)	F42LL	60	0.1	OCC	250	30.0	90.0	0.0	$11.79	$128.25	$20.00	10.9	9.2
19	Electric Closet	1	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	1000	60.0	1	1B 32 P F 2 (ELE)	F42LL	60	0.1	OCC	250	15.0	45.0	0.0	$5.90	$128.25	$20.00	21.8	18.4
35	Nurse Office	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	SW	2000	1,620.0	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	OCC	1200	972.0	648.0	0.0	$84.89	$128.25	$20.00	1.5	1.3
19	Nurse Office	11	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	2000	1,320.0	11	1B 32 P F 2 (ELE)	F42LL	60	0.7	OCC	1200	792.0	528.0	0.0	$69.17	$128.25	$20.00	1.9	1.6
19	Room 22	14	1B 32 P F 2 (ELE)	F42LL	60	0.8	SW	1400	1,176.0	14	1B 32 P F 2 (ELE)	F42LL	60	0.8	OCC	980	823.2	352.8	0.0	$46.22	$128.25	$20.00	2.8	2.3
19	Locker Room (Girl's)	10	1B 32 P F 2 (ELE)	F42LL	60	0.6	SW	2000	1,200.0	10	1B 32 P F 2 (ELE)	F42LL	60	0.6	OCC	2000	1,200.0	0.0	0.0	$0.00	$128.25	$20.00		#DIV/0!
19	Locker Room (Coach's)	3	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	2000	360.0	3	1B 32 P F 2 (ELE)	F42LL	60	0.2	OCC	2000	360.0	0.0	0.0	$0.00	$128.25	$20.00		#DIV/0!
133	Locker Room (Coach's)	4	CF 26	CFQ26/1-L	27	0.1	SW	2000	216.0	4	CF 26	CFQ26/1-L	27	0.1	OCC	2000	216.0	0.0	0.0	$0.00	$128.25	$20.00		#DIV/0!
19	Entrance to Gym	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	2000	480.0	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	OCC	2000	480.0	0.0	0.0	$0.00	$128.25	$20.00		#DIV/0!
19	Locker Room (Boy's)	10	1B 32 P F 2 (ELE)	F42LL	60	0.6	SW	1400	840.0	10	1B 32 P F 2 (ELE)	F42LL	60	0.6	OCC	980	588.0	252.0	0.0	$33.01	$128.25	$20.00	3.9	3.3
19	Locker Room (Coach's)	3	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	1400	252.0	3	1B 32 P F 2 (ELE)	F42LL	60	0.2	OCC	980	176.4	75.6	0.0	$9.90	$128.25	$20.00	12.9	10.9
133	Locker Room (Coach's)	4	CF 26	CFQ26/1-L	27	0.1	SW	1400	151.2	4	CF 26	CFQ26/1-L	27	0.1	OCC	980	105.8	45.4	0.0	$5.94	$128.25	$20.00	21.6	18.2
35	Media Center (Lib)	5	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	SW	2000	900.0	5	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	OCC	1500	675.0	225.0	0.0	$29.48	$128.25	$20.00	4.4	3.7
39	Media Center (Lib)	36	2' 17 W F 2 (ELE)	F22ILL	33	1.2	SW	2000	2,376.0	36	2' 17 W F 2 (ELE)	F22ILL	33	1.2	OCC	1500	1,782.0	594.0	0.0	$77.81	$128.25	$20.00	1.6	1.4
133	Media Center (Lib)	14	CF 26	CFQ26/1-L	27	0.4	SW	2000	756.0	14	CF 26	CFQ26/1-L	27	0.4	OCC	1500	567.0	189.0	0.0	$24.76	$128.25	$20.00	5.2	4.4
20	Media Center (Lib)	30	S 32 C F 1 (ELE)	F41LL	32	1.0	SW	2000	1,920.0	30	S 32 C F 1 (ELE)	F41LL	32	1.0	OCC	1500	1,440.0	480.0	0.0	$62.88	$128.25	$20.00	2.0	1.7
35	Office	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	SW	2000	1,080.0	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	OCC	1200	648.0	432.0	0.0	$56.59	$128.25	$20.00	2.3	1.9
9	Gym B (New Gym)	24	High Bay MH 400	MH400/1	458	11.0	SW	2000	21,984.0	24	High Bay MH 400	MH400/1	458	11.0	OCC	2000	21,984.0	0.0	0.0	$0.00	$128.25	$20.00		#DIV/0!
19	Mechanical Room for Gym	2	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	1000	120.0	2	1B 32 P F 2 (ELE)	F42LL	60	0.1	OCC	1000	120.0	0.0	0.0	$0.00	$128.25	$20.00		#DIV/0!
19	Mezzanine	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	2000	1,440.0	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	OCC	2000	1,440.0	0.0	0.0	$0.00	$128.25	$20.00		#DIV/0!
19	Chiller Room	13	1B 32 P F 2 (ELE)	F42LL	60	0.8	SW	1000	780.0	13	1B 32 P F 2 (ELE)	F42LL	60	0.8	OCC	1000	780.0	0.0	0.0	$0.00	$128.25	$20.00		#DIV/0!
35	Guidenance Office	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	2000	540.0	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	OCC	1200	324.0	216.0	0.0	$28.30	$128.25	$20.00	4.5	3.8
35	Storage	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	SW	1000	90.0	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	OCC	250	22.5	67.5	0.0	$8.84	$128.25	$20.00	14.5	12.2
35	Room 131	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512.0	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	980	1,058.4	453.6	0.0	$59.42	$128.25	$20.00	2.2	1.8
35	Room 132	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512.0	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	980	1,058.4	453.6	0.0	$59.42	$128.25	$20.00	2.2	1.8
35	Girl's Room	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	SW	1000	360.0	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	OCC	1000	360.0	0.0	0.0	$0.00	$128.25	$20.00		#DIV/0!
35	Boy's Room	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	1000	270.0	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	OCC	1000	270.0	0.0	0.0	$0.00	$128.25	$20.00		#DIV/0!
35	Storage	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	SW	1000	90.0	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	OCC	250	22.5	67.5	0.0	$8.84	$128.25	$20.00	14.5	12.2
35	Room 133	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512.0	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	980	1,058.4	453.6	0.0	$59.42	$128.25	$20.00	2.2	1.8
35	Room 134	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512.0	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	980	1,058.4	453.6	0.0	$59.42	$128.25	$20.00	2.2	1.8
35	Room 135	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512.0	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	980	1,058.4	453.6	0.0	$59.42	$128.25	$20.00	2.2	1.8
35	Room 136	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512.0	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	980	1,058.4	453.6	0.0	$59.42	$128.25	$20.00	2.2	1.8
35	Room 137	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512.0	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	980	1,058.4	453.6	0.0	$59.42	$128.25	$20.00	2.2	1.8
35	Room 138	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512.0	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	980	1,058.4	453.6	0.0	$59.42	$128.25	$20.00	2.2	1.8
35	Room 139	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512.0	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	980	1,058.4	453.6	0.0	$59.42	$128.25	$20.00	2.2	1.8
35	Room 140	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512.0	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	980	1,058.4	453.6	0.0	$59.42	$128.25	$20.00	2.2	1.8
35	Room 141	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512.0	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	980	1,058.4	453.6	0.0	$59.42	$128.25	$20.00	2.2	1.8
35	Room 142	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512.0	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	980	1,058.4	453.6	0.0	$59.42	$128.25	$20.00	2.2	1.8
35	Room 143	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512.0	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	980	1,058.4	453.6	0.0	$59.42	$128.25	$20.00	2.2	1.8
19	Storage	3	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	1000	180.0	3	1B 32 P F 2 (ELE)	F42LL	60	0.2	OCC	250	45.0	135.0	0.0	$17.69	$128.25	$20.00	7.3	6.1
212	Stairway	4	T 32 R F 4 (ELE) (TWO SWITCH)	F44ILL	112	0.4	SW	8760	3,924.5	4	T 32 R F 4 (ELE) (TWO SWITCH)	F44ILL	112	0.4	OCC	8760	3,924.5	0.0	0.0	$0.00	$128.25	$20.00		#DIV/0!
20	Stairway	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	8760	560.6	2	S 32 C F 1 (ELE)	F41LL	32	0.1	OCC	8760	560.6	0.0	0.0	$0.00	$128.25	$20.00		#DIV/0!
19	Elevator Room	3	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	8760	1,576.8	3	1B 32 P F 2 (ELE)	F42LL	60	0.2	OCC	8760	1,576.8	0.0	0.0	$0.00	$128.25	$20.00		#DIV/0!
36	Staff Restroom	1	2T 3' 17 R F 1 (ELE)	F21ILL	20	0.0	SW	1000	20.0	1	2T 3' 17 R F 1 (ELE)	F21ILL	20	0.0	OCC	1000	20.0	0.0	0.0	$0.00	$128.25	$20.00		#DIV/0!
19	Electric Closet	1	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	1000	60.0	1	1B 32 P F 2 (ELE)	F42LL	60	0.1	OCC	250	15.0	45.0	0.0	$5.90	$128.25	$20.00	21.8	18.4
35	Room 143A	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	1400	378.0	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	OCC	980	264.6	113.4	0.0	$14.86	$128.25	$20.00	8.6	7.3
39	Room 143A	1	2' 17 W F 2 (ELE)	F22ILL	33	0.0	SW	1400	46.2	1	2' 17 W F 2 (ELE)	F22ILL	33	0.0	OCC	980	32.3	13.9	0.0	$1.82	$128.25	$20.00	70.6	59.6
19	Storage	3	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	1000	180.0	3	1B 32 P F 2 (ELE)	F42LL	60	0.2	OCC	250	45.0	135.0	0.0	$17.69	$128.25	$20.00	7.3	6.1
212	Stairway	4	T 32 R F 4 (ELE) (TWO SWITCH)	F44ILL	112	0.4	SW	8760	3,924.5	4	T 32 R F 4 (ELE) (TWO SWITCH)	F44ILL	112	0.4	OCC	8760	3,924.5	0.0	0.0	$0.00	$128.25	$20.00		#DIV/0!
20	Stairway	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	8760	560.6	2	S 32 C F 1 (ELE)	F41LL	32	0.1	OCC	8760	560.6	0.0	0.0	$0.00	$128.25	$20.00		#DIV/0!
39	Center Stairway	13	2' 17 W F 2 (ELE)	F22ILL	33	0.4	SW	8760	3,758.0	13	2' 17 W F 2 (ELE)	F22ILL	33	0.4	OCC	8760	3,758.0	0.0	0.0	$0.00	$128.25	$20.00		#DIV/0!
133	Center Stairway	4	CF 26	CFQ26/1-L	27	0.1	SW	8760	946.1	4	CF 26	CFQ26/1-L	27	0.1	OCC	8760	946.1	0.0	0.0	$0.00	$128.25	$20.00		#DIV/0!
20	Center Stairway	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	8760	560.6	2	S 32 C F 1 (ELE)	F41LL	32	0.1	OCC	8760	560.6	0.0	0.0	$0.00	$128.25	$20.00		#DIV/0!
19	2nd floor Electric Closet	6	1B 32 P F 2 (ELE)	F42LL	60	0.4	SW	1000	360.0	6	1B 32 P F 2 (ELE)	F42LL	60	0.4	OCC	250	90.0	270.0	0.0	$35.37	$128.25	$20.00	3.6	3.1

Energy Audit of Holmdel Schools - Indian Hill School
CHA Project No.24988
ECM-2 Install Occupancy Sensors

		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
Field Code	**Unique description of the location - Room number/Room name: Floor number (if applicable)**	**No. of fixtures before the retrofit**	**Lighting Fixture Code**	**Code from Table of Standard Fixture Wattages**	**Value from Table of Standard Fixture Wattages**	**(Watts/Fixt) * (Fixt No.)**	**Pre-inst. control device**	**Estimated annual hours for the usage group**	**(kW/space) * (Annual Hours)**	**No. of fixtures after the retrofit**	**"Lighting Fixture Code" Example 2T 40 R F(U) = 2'x2' Troff 40 w Recess. Floor 2 lamps U shape**	**Code from Table of Standard Fixture Wattages**	**Value from Table of Standard Fixture Wattages**	**(Watts/Fixt) * (Number of Fixtures)**	**Retrofit control device**	**Estimated annual hours for the usage group**	**(kW/space) * (Annual Hours)**	**(Original Annual kWh) - (Retrofit Annual kWh)**	**(Original Annual kW) - (Retrofit Annual kW)**	**(kW Saved) * ($/kWh)**	**Cost for renovations to lighting system**		**Length of time for renovations cost to be recovered**	**Length of time for renovations cost to be recovered**
19	Girl's Room	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	1000	240.0	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	OCC	1000	240.0	0.0	0.0	$0.00	$128.25	$20.00		#DIV/0!
19	Boy's Room	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	1000	240.0	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	OCC	1000	240.0	0.0	0.0	$0.00	$128.25	$20.00		#DIV/0!
19	Custodian Room	1	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	780	46.8	1	1B 32 P F 2 (ELE)	F42LL	60	0.1	OCC	1500	90.0	-43.2	0.0	-$5.66	$128.25	$20.00		-19.1
35	Storage	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	1000	270.0	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	OCC	250	67.5	202.5	0.0	$26.53	$128.25	$20.00	4.8	4.1
35	IDF Office	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	SW	2000	180.0	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	OCC	1200	108.0	72.0	0.0	$9.43	$128.25	$20.00	13.6	11.5
35	Family Lounge	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	2000	2,160.0	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	1200	1,296.0	864.0	0.0	$113.18	$128.25	$20.00	1.1	1.0
19	Family Lounge	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	2000	480.0	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	OCC	1200	288.0	192.0	0.0	$25.15	$128.25	$20.00	5.1	4.3
35	Room 231	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512.0	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	980	1,058.4	453.6	0.0	$59.42	$128.25	$20.00	2.2	1.8
35	Room 232	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512.0	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	980	1,058.4	453.6	0.0	$59.42	$128.25	$20.00	2.2	1.8
35	Room 233	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512.0	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	980	1,058.4	453.6	0.0	$59.42	$128.25	$20.00	2.2	1.8
35	Room 234	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512.0	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	980	1,058.4	453.6	0.0	$59.42	$128.25	$20.00	2.2	1.8
35	Room 235	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512.0	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	980	1,058.4	453.6	0.0	$59.42	$128.25	$20.00	2.2	1.8
35	Room 236	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512.0	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	980	1,058.4	453.6	0.0	$59.42	$128.25	$20.00	2.2	1.8
35	Room 237	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512.0	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	980	1,058.4	453.6	0.0	$59.42	$128.25	$20.00	2.2	1.8
35	Room 238	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512.0	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	980	1,058.4	453.6	0.0	$59.42	$128.25	$20.00	2.2	1.8
35	Room 239	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512.0	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	980	1,058.4	453.6	0.0	$59.42	$128.25	$20.00	2.2	1.8
35	Room 240	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512.0	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	980	1,058.4	453.6	0.0	$59.42	$128.25	$20.00	2.2	1.8
35	Room 241	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512.0	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	980	1,058.4	453.6	0.0	$59.42	$128.25	$20.00	2.2	1.8
35	Room 242	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512.0	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	980	1,058.4	453.6	0.0	$59.42	$128.25	$20.00	2.2	1.8
19	Staff Restroom	1	1B 32 P F 2 (ELE)	F42LL	60	0.1		1000	60.0	1	1B 32 P F 2 (ELE)	F42LL	60	0.1	0	1000	60.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
228	Atrium near door 34	9	W60CF1	F81EL	60	0.5		8760	4,730.4	9	W60CF1	F81EL	60	0.5	0	8760	4,730.4	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
133	Atrium near door 34	9	CF 26	CFQ26/1-L	27	0.2		8760	2,128.7	9	CF 26	CFQ26/1-L	27	0.2	0	8760	2,128.7	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
35	Computer Room	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3		1400	378.0	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	0	980	264.6	113.4	0.0	$14.86	$0.00	$0.00	0.0	0.0
35	Room 127	15	T 32 R F 3 (ELE)	F43ILL/2	90	1.4		1400	1,890.0	15	T 32 R F 3 (ELE)	F43ILL/2	90	1.4	0	980	1,323.0	567.0	0.0	$74.28	$0.00	$0.00	0.0	0.0
35	Room 128	18	T 32 R F 3 (ELE)	F43ILL/2	90	1.6		1400	2,268.0	18	T 32 R F 3 (ELE)	F43ILL/2	90	1.6	0	980	1,587.6	680.4	0.0	$89.13	$0.00	$0.00	0.0	0.0
35	Room 129	15	T 32 R F 3 (ELE)	F43ILL/2	90	1.4		1400	1,890.0	15	T 32 R F 3 (ELE)	F43ILL/2	90	1.4	0	980	1,323.0	567.0	0.0	$74.28	$0.00	$0.00	0.0	0.0
35	Room 130	15	T 32 R F 3 (ELE)	F43ILL/2	90	1.4		1400	1,890.0	15	T 32 R F 3 (ELE)	F43ILL/2	90	1.4	0	980	1,323.0	567.0	0.0	$74.28	$0.00	$0.00	0.0	0.0
35	Art Room	16	T 32 R F 3 (ELE)	F43ILL/2	90	1.4		1400	2,016.0	16	T 32 R F 3 (ELE)	F43ILL/2	90	1.4	0	980	1,411.2	604.8	0.0	$79.23	$0.00	$0.00	0.0	0.0
19	Art Room	2	1B 32 P F 2 (ELE)	F42LL	60	0.1		1400	168.0	2	1B 32 P F 2 (ELE)	F42LL	60	0.1	0	980	117.6	50.4	0.0	$6.60	$0.00	$0.00	0.0	0.0
20	Art Room	2	S 32 C F 1 (ELE)	F41LL	32	0.1		1400	89.6	2	S 32 C F 1 (ELE)	F41LL	32	0.1	0	980	62.7	26.9	0.0	$3.52	$0.00	$0.00	0.0	0.0
19	Music Room B	28	1B 32 P F 2 (ELE)	F42LL	60	1.7		1400	2,352.0	28	1B 32 P F 2 (ELE)	F42LL	60	1.7	0	980	1,646.4	705.6	0.0	$92.43	$0.00	$0.00	0.0	0.0
35	Music Office	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8		2000	1,620.0	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	0	1200	972.0	648.0	0.0	$84.89	$0.00	$0.00	0.0	0.0
19	Café	90	1B 32 P F 2 (ELE)	F42LL	60	5.4		2000	10,800.0	90	1B 32 P F 2 (ELE)	F42LL	60	5.4	0	2000	10,800.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
39	Café	3	2' 17 W F 2 (ELE)	F22ILL	33	0.1		2000	198.0	3	2' 17 W F 2 (ELE)	F22ILL	33	0.1	0	2000	198.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
133	Café	72	CF 26	CFQ26/1-L	27	1.9		2000	3,888.0	72	CF 26	CFQ26/1-L	27	1.9	0	2000	3,888.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
19	Kitchen Hood	8	1B 32 P F 2 (ELE)	F42LL	60	0.5		1400	672.0	8	1B 32 P F 2 (ELE)	F42LL	60	0.5	0	1500	720.0	-48.0	0.0	-$6.29	$0.00	$0.00		0.0
232	Kitchen Hood	3	R 60 C I 1	I60/1	60	0.2		1400	252.0	3	R 60 C I 1	I60/1	60	0.2	0	1500	270.0	-18.0	0.0	-$2.36	$0.00	$0.00		0.0
20	Kitchen Hood	6	S 32 C F 1 (ELE)	F41LL	32	0.2		1400	268.8	6	S 32 C F 1 (ELE)	F41LL	32	0.2	0	1500	288.0	-19.2	0.0	-$2.52	$0.00	$0.00		0.0
39	Entrance to Kitchen	9	2' 17 W F 2 (ELE)	F22ILL	33	0.3		1400	415.8	9	2' 17 W F 2 (ELE)	F22ILL	33	0.3	0	1500	445.5	-29.7	0.0	-$3.89	$0.00	$0.00		0.0
39	Girl's Room	4	2' 17 W F 2 (ELE)	F22ILL	33	0.1		1000	132.0	4	2' 17 W F 2 (ELE)	F22ILL	33	0.1	0	1000	132.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
39	Boy's Room	4	2' 17 W F 2 (ELE)	F22ILL	33	0.1		1000	132.0	4	2' 17 W F 2 (ELE)	F22ILL	33	0.1	0	1000	132.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
19	Stage	12	1B 32 P F 2 (ELE)	F42LL	60	0.7		2000	1,440.0	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	0	2000	1,440.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
35	Stage	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3		2000	540.0	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	0	2000	540.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
19	Electric Closet	2	1B 32 P F 2 (ELE)	F42LL	60	0.1		1820	218.4	2	1B 32 P F 2 (ELE)	F42LL	60	0.1	0	1820	218.4	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
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															0	#N/A	#VALUE!	#VALUE!	#N/A	#VALUE!			#VALUE!	#VALUE!
	Total	**1,818**	**0.0**			**135.9**	**0.0**		**273512.9**	**1818.0**	**0.0**			**135.9**			**238323.5**	**35189.4**	**0.0**	**4609.8**	**17442.0**	**2720.0**		
																	Demand Savings			0.0	$0			
																	kWh Savings			35,189	$4,610			
																	Total Savings				$4,610		**3.8**	**3.2**

Energy Audit of Holmdel Schools - Indian Hill School
CHA Project No.24988
ECM-3 Lighting Replacements with Occupancy Sensors

		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
Field Code	Unique description of the location - Room number/Room name: Floor number (if applicable)	No. of fixtures before the retrofit	Lighting Fixture Code	Code from Table of Standard Fixture Wattages	Value from Table of Standard Fixture Wattages	(Watts/Fixt) * (Fixt No.)	Pre-inst. control device	Estimated daily hours for the usage group	(kW/space) * (Annual Hours)	No. of fixtures after the retrofit	Lighting Fixture Code	Code from Table of Standard Fixture Wattages	Value from Table of Standard Fixture Wattages	(Watts/Fixt) * (Number of Fixtures)	Retrofit control device	Estimated annual hours for the usage group	(kW/space) * (Annual Hours)	(Original Annual kWh) - (Retrofit Annual kWh)	(Original Annual kW) - (Retrofit Annual kW)	(kWh Saved) * ($/kWh)	Cost for renovations to lighting system	Prescriptive Lighting Measures	Length of time for renovations cost to be recovered	Length of time for renovations cost to be recovered
19	Hallway Area	82	1B 32 P F 2 (ELE)	F42LL	60	4.9	SW	8760	43,099	82	1B 32 P F 2 (ELE)	F42LL	60	4.9	SW	8,760	43,099	-	0.0	$ -	$ -	$ -		
19	Hallway Area	126	1B 32 P F 2 (ELE)	F42LL	60	7.6	SW	1820	13,759	126	1B 32 P F 2 (ELE)	F42LL	60	7.6	SW	1,820	13,759	-	0.0	$ -	$ -	$ -		
133	Hallway Area	72	CF 26	CFQ26/1-L	27	1.9	SW	1820	3,538	72	CF 26	CFQ26/1-L	27	1.9	SW	1,820	3,538	-	0.0	$ -	$ -	$ -		
39	Hallway Area	50	2' 17 W F 2 (ELE)	F22ILL	33	1.7	SW	1820	3,003	50	2' 17 W F 2 (ELE)	F22ILL	33	1.7	SW	1,820	3,003	-	0.0	$ -	$ -	$ -		
19	Custodian Room	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	780	187	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	OCC	1,500	360	(173)	0.0	$ (22.64)	$ 128.25	$ 20		
133	Custodian Room	2	CF 26	CFQ26/1-L	27	0.1	SW	780	42	2	CF 26	CFQ26/1-L	27	0.1	OCC	1,500	81	(39)	0.0	$ (5.09)	$ 128.25	$ 20		
191	Boiler Room A	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	1000	369	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	OCC	1,000	369	-	0.0	$ -	$ 128.25	$ 20		
19	Boiler Room A	2	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	1000	120	2	1B 32 P F 2 (ELE)	F42LL	60	0.1	OCC	1,000	120	-	0.0	$ -	$ 128.25	$ 20		
19	Maintanance Workroom	2	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	1000	120	2	1B 32 P F 2 (ELE)	F42LL	60	0.1	OCC	1,000	120	-	0.0	$ -	$ 128.25	$ 20		
19	Boy's Room	2	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	1000	120	2	1B 32 P F 2 (ELE)	F42LL	60	0.1	OCC	1,000	120	-	0.0	$ -	$ 128.25	$ 20		
19	Girl's Room	2	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	1000	120	2	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	1,000	120	-	0.0	$ -	$ -	$ -		
9	Gym A (Old Gym)	24	High Bay MH 400	MH400/1	458	11.0	SW	2000	21,984	24	C 54 C F 6	F46GHL	351	8.4	OCC	2,000	16,848	5,136	2.6	$ 870.35	$ 13,412.25	$ 2,420	15.4	12.6
19	Gym Office	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	2000	480	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	OCC	2,000	480	-	0.0	$ -	$ 128.25	$ 20		
19	Custodian Room	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	780	187	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	OCC	1,500	360	(173)	0.0	$ (22.64)	$ 128.25	$ 20		
133	Storage	1	CF 26	CFQ26/1-L	27	0.0	SW	1000	27	1	CF 26	CFQ26/1-L	27	0.0	OCC	250	7	20	0.0	$ 2.65	$ 128.25	$ 20	48.3	40.8
232	Walking Freezer	1	R 60 C I 1	I60/1	60	0.1	SW	8760	526	1	CF 26	CFQ26/1-L	27	0.0	OCC	8,760	237	289	0.0	$ 40.41	$ 148.50	$ 20	3.7	3.2
232	Walking Cooler	1	R 60 C I 1	I60/1	60	0.1	SW	8760	526	1	CF 26	CFQ26/1-L	27	0.0	OCC	8,760	237	289	0.0	$ 40.41	$ 148.50	$ 20	3.7	3.2
19	Copy Room	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	2125	510	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	OCC	1,000	240	270	0.0	$ 35.37	$ 128.25	$ 20	3.6	3.1
19	Room 23A	13	1B 32 P F 2 (ELE)	F42LL	60	0.8	SW	1400	1,092	13	1B 32 P F 2 (ELE)	F42LL	60	0.8	OCC	980	764	328	0.0	$ 42.92	$ 128.25	$ 20	3.0	2.5
19	Room 23	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	OCC	980	706	302	0.0	$ 39.61	$ 128.25	$ 20	3.2	2.7
35	Room 24	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	SW	1400	756	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	OCC	980	529	227	0.0	$ 29.71	$ 128.25	$ 20	4.3	3.6
35	Room 25	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	SW	1400	756	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	OCC	980	529	227	0.0	$ 29.71	$ 128.25	$ 20	4.3	3.6
35	Room 26	14	T 32 R F 3 (ELE)	F43ILL/2	90	1.3	SW	1400	1,764	14	T 32 R F 3 (ELE)	F43ILL/2	90	1.3	OCC	980	1,235	529	0.0	$ 69.33	$ 128.25	$ 20	1.8	1.6
19	Room 27	6	1B 32 P F 2 (ELE)	F42LL	60	0.4	SW	1400	504	6	1B 32 P F 2 (ELE)	F42LL	60	0.4	OCC	980	353	151	0.0	$ 19.81	$ 128.25	$ 20	6.5	5.5
35	Room 28	8	T 32 R F 3 (ELE)	F43ILL/2	90	0.7	SW	1400	1,008	8	T 32 R F 3 (ELE)	F43ILL/2	90	0.7	OCC	980	706	302	0.0	$ 39.61	$ 128.25	$ 20	3.2	2.7
35	Room 29	14	T 32 R F 3 (ELE)	F43ILL/2	90	1.3	SW	1400	1,764	14	T 32 R F 3 (ELE)	F43ILL/2	90	1.3	OCC	980	1,235	529	0.0	$ 69.33	$ 128.25	$ 20	1.8	1.6
133	Custodian Room	1	CF 26	CFQ26/1-L	27	0.0	SW	780	21	1	CF 26	CFQ26/1-L	27	0.0	OCC	1,500	41	(19)	0.0	$ (2.55)	$ 128.25	$ 20		
19	IDF Office	1	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	1B 32 P F 2 (ELE)	F42LL	60	0.1	OCC	1,200	72	48	0.0	$ 6.29	$ 128.25	$ 20	20.4	17.2
19	Restroom	1	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	1000	60	1	1B 32 P F 2 (ELE)	F42LL	60	0.1	OCC	1,000	60	-	0.0	$ -	$ 128.25	$ 20		
35	Main Office Front Counter	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	SW	2000	1,080	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	OCC	1,200	648	432	0.0	$ 56.59	$ 128.25	$ 20	2.3	1.9
35	Assistant Principle Office	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	SW	2000	720	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	OCC	1,200	432	288	0.0	$ 37.73	$ 128.25	$ 20	3.4	2.9
35	Principle Office	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	SW	2000	720	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	OCC	1,200	432	288	0.0	$ 37.73	$ 128.25	$ 20	3.4	2.9
19	Breakroom	6	1B 32 P F 2 (ELE)	F42LL	60	0.4	SW	2000	720	6	1B 32 P F 2 (ELE)	F42LL	60	0.4	OCC	1,200	432	288	0.0	$ 37.73	$ 128.25	$ 20	3.4	2.9
35	Main Office	10	T 32 R F 3 (ELE)	F43ILL/2	90	0.9	SW	2000	1,800	10	T 32 R F 3 (ELE)	F43ILL/2	90	0.9	OCC	1,200	1,080	720	0.0	$ 94.32	$ 128.25	$ 20	1.4	1.1
5	Main Office	1	2T 32 R F 2 (u) (ELE)	FU2LL	60	0.1	SW	2000	120	1	2T 32 R F 2 (u) (ELE)	FU2LL	60	0.1	OCC	1,200	72	48	0.0	$ 6.29	$ 128.25	$ 20	20.4	17.2
35	Music Room	15	T 32 R F 3 (ELE)	F43ILL/2	90	1.4	SW	1400	1,890	15	T 32 R F 3 (ELE)	F43ILL/2	90	1.4	OCC	980	1,323	567	0.0	$ 74.28	$ 128.25	$ 20	1.7	1.5
19	Room 1	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	OCC	980	706	302	0.0	$ 39.61	$ 128.25	$ 20	3.2	2.7
19	Room 2	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	OCC	980	706	302	0.0	$ 39.61	$ 128.25	$ 20	3.2	2.7
19	Girl's Room	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	1000	240	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	OCC	1,000	240	-	0.0	$ -	$ 128.25	$ 20		
19	Boy's Room	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	1000	240	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	OCC	1,000	240	-	0.0	$ -	$ 128.25	$ 20		
19	Custodian Room	1	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	780	47	1	1B 32 P F 2 (ELE)	F42LL	60	0.1	OCC	1,500	90	(43)	0.0	$ (5.66)	$ 128.25	$ 20		
19	Room 3	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	OCC	980	706	302	0.0	$ 39.61	$ 128.25	$ 20	3.2	2.7
19	Art Room	24	1B 32 P F 2 (ELE)	F42LL	60	1.4	SW	1400	2,016	24	1B 32 P F 2 (ELE)	F42LL	60	1.4	OCC	980	1,411	605	0.0	$ 79.23	$ 128.25	$ 20	1.6	1.4
19	Room 4	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	OCC	980	706	302	0.0	$ 39.61	$ 128.25	$ 20	3.2	2.7
19	Room 5	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	OCC	980	706	302	0.0	$ 39.61	$ 128.25	$ 20	3.2	2.7
19	Room 6	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	OCC	980	706	302	0.0	$ 39.61	$ 128.25	$ 20	3.2	2.7
19	Room 7	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	OCC	980	706	302	0.0	$ 39.61	$ 128.25	$ 20	3.2	2.7
19	Room 8	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	OCC	980	706	302	0.0	$ 39.61	$ 128.25	$ 20	3.2	2.7
19	Room 9	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	OCC	980	706	302	0.0	$ 39.61	$ 128.25	$ 20	3.2	2.7
19	Room 10	18	1B 32 P F 2 (ELE)	F42LL	60	1.1	SW	1400	1,512	18	1B 32 P F 2 (ELE)	F42LL	60	1.1	OCC	980	1,058	454	0.0	$ 59.42	$ 128.25	$ 20	2.2	1.8
19	Room 11	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	OCC	980	706	302	0.0	$ 39.61	$ 128.25	$ 20	3.2	2.7
19	Room 12	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	OCC	980	706	302	0.0	$ 39.61	$ 128.25	$ 20	3.2	2.7
19	Room 13	18	1B 32 P F 2 (ELE)	F42LL	60	1.1	SW	1400	1,512	18	1B 32 P F 2 (ELE)	F42LL	60	1.1	OCC	980	1,058	454	0.0	$ 59.42	$ 128.25	$ 20	2.2	1.8
19	Room 14	18	1B 32 P F 2 (ELE)	F42LL	60	1.1	SW	1400	1,512	18	1B 32 P F 2 (ELE)	F42LL	60	1.1	OCC	980	1,058	454	0.0	$ 59.42	$ 128.25	$ 20	2.2	1.8
19	Room 15	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	OCC	980	706	302	0.0	$ 39.61	$ 128.25	$ 20	3.2	2.7
19	Room 16	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	OCC	980	706	302	0.0	$ 39.61	$ 128.25	$ 20	3.2	2.7
19	Room 16 A	7	1B 32 P F 2 (ELE)	F42LL	60	0.4	SW	1400	588	7	1B 32 P F 2 (ELE)	F42LL	60	0.4	OCC	980	412	176	0.0	$ 23.11	$ 128.25	$ 20	5.5	4.7
9	Boy's Room	4	High Bay MH 400	MH400/1	458	1.8	SW	1000	1,832	4	C 54 C F 6	F46GHL	351	1.4	OCC	1,000	1,404	428	0.4	$ 88.99	$ 2,342.25	$ 420	26.3	21.6
35	Girl's Room	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	SW	1000	360	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	OCC	1,000	360	-	0.0	$ -	$ 128.25	$ 20		
35	Custodian Room	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	SW	780	70	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	OCC	1,500	135	(65)	0.0	$ (8.49)	$ 128.25	$ 20		
19	Room 17	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	OCC	980	706	302	0.0	$ 39.61	$ 128.25	$ 20	3.2	2.7
19	Room 18	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	OCC	980	706	302	0.0	$ 39.61	$ 128.25	$ 20	3.2	2.7
19	Room 19	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	OCC	980	706	302	0.0	$ 39.61	$ 128.25	$ 20	3.2	2.7
19	Room 20	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	1400	1,008	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	OCC	980	706	302	0.0	$ 39.61	$ 128.25	$ 20	3.2	2.7
19	IDF Office	2	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	2000	240	2	1B 32 P F 2 (ELE)	F42LL	60	0.1	OCC	1,200	144	96	0.0	$ 12.58	$ 128.25	$ 20	10.2	8.6
232	Staff Restroom	1	R 60 C I 1	I60/1	60	0.1	SW	1000	60	1	CF 26	CFQ26/1-L	27	0.0	OCC	1,000	27	33	0.0	$ 6.86	$ 148.50	$ 20	21.6	18.7
5	Storage	2	2T 32 R F 2 (u) (ELE)	FU2LL	60	0.1	SW	1000	120	2	2T 32 R F 2 (u) (ELE)	FU2LL	60	0.1	OCC	250	30	90	0.0	$ 11.79	$ 128.25	$ 20	10.9	9.2
19	Room 21	24	1B 32 P F 2 (ELE)	F42LL	60	1.4	SW	1400	2,016	24	1B 32 P F 2 (ELE)	F42LL	60	1.4	OCC	980	1,411	605	0.0	$ 79.23	$ 128.25	$ 20	1.6	1.4
19	Electric Closet	2	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	1000	120	2	1B 32 P F 2 (ELE)	F42LL	60	0.1	OCC	250	30	90	0.0	$ 11.79	$ 128.25	$ 20	10.9	9.2
19	Electric Closet	1	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	1000	60	1	1B 32 P F 2 (ELE)	F42LL	60	0.1	OCC	250	15	45	0.0	$ 5.90	$ 128.25	$ 20	21.8	18.4
35	Nurse Office	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	SW	2000	1,620	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	OCC	1,200	972	648	0.0	$ 84.89	$ 128.25	$ 20	1.5	1.3
19	Nurse Office	11	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	2000	1,320	11	1B 32 P F 2 (ELE)	F42LL	60	0.7	OCC	1,200	792	528	0.0	$ 69.17	$ 128.25	$ 20	1.9	1.6
19	Room 22	14	1B 32 P F 2 (ELE)	F42LL	60	0.8	SW	1400	1,176	14	1B 32 P F 2 (ELE)	F42LL	60	0.8	OCC	980	823	353	0.0	$ 46.22	$ 128.25	$ 20	2.8	2.3
19	Locker Room (Girl's)	10	1B 32 P F 2 (ELE)	F42LL	60	0.6	SW	2000	1,200	10	1B 32 P F 2 (ELE)	F42LL	60	0.6	OCC	2,000	1,200	-	0.0	$ -	$ 128.25	$ 20		
19	Locker Room (Coach's)	3	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	2000	360	3	1B 32 P F 2 (ELE)	F42LL	60	0.2	OCC	2,000	360	-	0.0	$ -	$ 128.25	$ 20		
133	Locker Room (Coach's)	4	CF 26	CFQ26/1-L	27	0.1	SW	2000	216	4	CF 26	CFQ26/1-L	27	0.1	OCC	2,000	216	-	0.0	$ -	$ 128.25	$ 20		
19	Entrance to Gym	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	2000	480	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	OCC	2,000	480	-	0.0	$ -	$ 128.25	$ 20		
19	Locker Room (Boy's)	10	1B 32 P F 2 (ELE)	F42LL	60	0.6	SW	1400	840	10	1B 32 P F 2 (ELE)	F42LL	60	0.6	OCC	980	588	252	0.0	$ 33.01	$ 128.25	$ 20	3.9	3.3
19	Locker Room (Coach's)	3	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	1400	252	3	1B 32 P F 2 (ELE)	F42LL	60	0.2	OCC	980	176	76	0.0	$ 9.90	$ 128.25	$ 20	12.9	10.9
133	Locker Room (Coach's)	4	CF 26	CFQ26/1-L	27	0.1	SW	1400	151	4	CF 26	CFQ26/1-L	27	0.1	OCC	980	106	45	0.0	$ 5.94	$ 128.25	$ 20	21.6	18.2
35	Media Center (Lib)	5	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	SW	2000	900	5	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	OCC	1,500	675	225	0.0	$ 29.48	$ 128.25	$ 20	4.4	3.7
39	Media Center (Lib)	36	2' 17 W F 2 (ELE)	F22ILL	33	1.2	SW	2000	2,376	36	2' 17 W F 2 (ELE)	F22ILL	33	1.2	OCC	1,500	1,782	594	0.0	$ 77.81	$ 128.25	$ 20	1.6	1.4
133	Media Center (Lib)	14	CF 26	CFQ26/1-L	27	0.4	SW	2000	756	14	CF 26	CFQ26/1-L	27	0.4	OCC	1,500	567	189	0.0	$ 24.76	$ 128.25	$ 20	5.2	4.4
20	Media Center (Lib)	30	S 32 C F 1 (ELE)	F41LL	32	1.0	SW	2000	1,920	30	S 32 C F 1 (ELE)	F41LL	32	1.0	OCC	1,500	1,440	480	0.0	$ 62.88	$ 128.25	$ 20	2.0	1.7
35	Office	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	SW	2000	1,080	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	OCC	1,200	648	432	0.0	$ 56.59	$ 128.25	$ 20	2.3	1.9
9	Gym B (New Gym)	24	High Bay MH 400	MH400/1	458	11.0	SW	2000	21,984	24	C 54 C F 6	F46GHL	351	8.4	OCC	2,000	16,848	5,136	2.6	$ 870.35	$ 13,412.25	$ 2,420	15.4	12.6
19	Mechanical Room for Gym	2	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	1000	120	2	1B 32 P F 2 (ELE)	F42LL	60	0.1	OCC	1,000	120	-	0.0	$ -	$ 128.25	$ 20		
19	Mezzanine	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	SW	2000	1,440	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	OCC	2,000	1,440	-	0.0	$ -	$ 128.25	$ 20		
19	Chiller Room	13	1B 32 P F 2 (ELE)	F42LL	60	0.8	SW	1000	780	13	1B 32 P F 2 (ELE)	F42LL	60	0.8	OCC	1,000	780	-	0.0	$ -	$ 128.25	$ 20		
35	Guidenance Office	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	2000	540	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	OCC	1,200	324	216	0.0	$ 28.30	$ 128.25	$ 20	4.5	3.8
35	Storage	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	SW	1000	90	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	OCC	250	23	68	0.0	$ 8.84	$ 128.25	$ 20	14.5	12.2
35	Room 131	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	980	1,058	454	0.0	$ 59.42	$ 128.25	$ 20	2.2	1.8
35	Room 132	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	980	1,058	454	0.0	$ 59.42	$ 128.25	$ 20	2.2	1.8
35	Girl's Room	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	SW	1000	360	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	OCC	1,000	360	-	0.0	$ -	$ 128.25	$ 20		
35	Boy's Room	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	1000	270	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	OCC	1,000	270	-	0.0	$ -	$ 128.25	$ 20		
35	Storage	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	SW	1000	90	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	OCC	250	23	68	0.0	$ 8.84	$ 128.25	$ 20	14.5	12.2
35	Room 133	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	980	1,058	454	0.0	$ 59.42	$ 128.25	$ 20	2.2	1.8
35	Room 134	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	980	1,058	454	0.0	$ 59.42	$ 128.25	$ 20	2.2	1.8
35	Room 135	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	980	1,058	454	0.0	$ 59.42	$ 128.25	$ 20	2.2	1.8
35	Room 136	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	980	1,058	454	0.0	$ 59.42	$ 128.25	$ 20	2.2	1.8
35	Room 137	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	980	1,058	454	0.0	$ 59.42	$ 128.25	$ 20	2.2	1.8
35	Room 138	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	980	1,058	454	0.0	$ 59.42	$ 128.25	$ 20	2.2	1.8
35	Room 139	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	980	1,058	454	0.0	$ 59.42	$ 128.25	$ 20	2.2	1.8
35	Room 140	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	980	1,058	454	0.0	$ 59.42	$ 128.25	$ 20	2.2	1.8
35	Room 141	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	980	1,058	454	0.0	$ 59.42	$ 128.25	$ 20	2.2	1.8
35	Room 142	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	980	1,058	454	0.0	$ 59.42	$ 128.25	$ 20	2.2	1.8
35	Room 143	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	980	1,058	454	0.0	$ 59.42	$ 128.25	$ 20	2.2	1.8
19	Storage	3	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	1000	180	3	1B 32 P F 2 (ELE)	F42LL	60	0.2	OCC	250	45	135	0.0	$ 17.69	$ 128.25	$ 20	7.3	6.1
212	Stairway	4	T 32 R F 4 (ELE) (TWO SWITCH)	F44ILL	112	0.4	SW	8760	3,924	4	T 32 R F 4 (ELE) (TWO SWITCH)	F44ILL	112	0.4	OCC	8,760	3,924	-	0.0	$ -	$ 128.25	$ 20		
20	Stairway	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	8760	561	2	S 32 C F 1 (ELE)	F41LL	32	0.1	OCC	8,760	561	-	0.0	$ -	$ 128.25	$ 20		
19	Elevator Room	3	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	8760	1,577	3	1B 32 P F 2 (ELE)	F42LL	60	0.2	OCC	8,760	1,577	-	0.0	$ -	$ 128.25	$ 20		
36	Staff Restroom	1	2T 3' 17 R F 1 (ELE)	F21ILL	20	0.0	SW	1000	20	1	2T 3' 17 R F 1 (ELE)	F21ILL	20	0.0	OCC	1,000	20	-	0.0	$ -	$ 128.25	$ 20		
19	Electric Closet	1	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	1000	60	1	1B 32 P F 2 (ELE)	F42LL	60	0.1	OCC	250	15	45	0.0	$ 5.90	$ 128.25	$ 20	21.8	18.4
35	Room 143A	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	1400	378	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	OCC	980	265	113	0.0	$ 14.86	$ 128.25	$ 20	8.6	7.3
39	Room 143A	1	2' 17 W F 2 (ELE)	F22ILL	33	0.0	SW	1400	46	1	2' 17 W F 2 (ELE)	F22ILL	33	0.0	OCC	980	32	14	0.0	$ 1.82	$ 128.25	$ 20	70.6	59.6
19	Storage	3	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	1000	180	3	1B 32 P F 2 (ELE)	F42LL	60	0.2	OCC	250	45	135	0.0	$ 17.69	$ 128.25	$ 20	7.3	6.1
212	Stairway	4	T 32 R F 4 (ELE) (TWO SWITCH)	F44ILL	112	0.4	SW	8760	3,924	4	T 32 R F 4 (ELE) (TWO SWITCH)	F44ILL	112	0.4	OCC	8,760	3,924	-	0.0	$ -	$ 128.25	$ 20		
20	Stairway	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	8760	561	2	S 32 C F 1 (ELE)	F41LL	32	0.1	OCC	8,760	561	-	0.0	$ -	$ 128.25	$ 20		
39	Center Stairway	13	2' 17 W F 2 (ELE)	F22ILL	33	0.4	SW	8760	3,758	13	2' 17 W F 2 (ELE)	F22ILL	33	0.4	OCC	8,760	3,758	-	0.0	$ -	$ 128.25	$ 20		
133	Center Stairway	4	CF 26	CFQ26/1-L	27	0.1	SW	8760	946	4	CF 26	CFQ26/1-L	27	0.1	OCC	8,760	946	-	0.0	$ -	$ 128.25	$ 20		
20	Center Stairway	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	8760	561	2	S 32 C F 1 (ELE)	F41LL	32	0.1	OCC	8,760	561	-	0.0	$ -	$ 128.25	$ 20		
19	2nd floor Electric Closet	6	1B 32 P F 2 (ELE)	F42LL	60	0.4	SW	1000	360	6	1B 32 P F 2 (ELE)	F42LL	60	0.4	OCC	250	90	270	0.0	$ 35.37	$ 128.25	$ 20	3.6	3.1

Energy Audit of Holmdel Schools - Indian Hill School
CHA Project No.24988
ECM-3 Lighting Replacements with Occupancy Sensors

		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
Field Code	Unique description of the location - Room number/Room name: Floor number (if applicable)	No. of fixtures before the retrofit	Lighting Fixture Code	Code from Table of Standard Fixture Wattages	Value from Table of Standard Fixture Wattages	(Watts/Fixt) * (Fixt No.)	Pre-inst. control device	Estimated daily hours for the usage group	(kW/space) * (Annual Hours)	No. of fixtures after the retrofit	Lighting Fixture Code	Code from Table of Standard Fixture Wattages	Value from Table of Standard Fixture Wattages	(Watts/Fixt) * (Number of Fixtures)	Retrofit control device	Estimated annual hours for the usage group	(kW/space) * (Annual Hours)	(Original Annual kWh) - (Retrofit Annual kWh)	(Original Annual kW) - (Retrofit Annual kW)	(kWh Saved) * ($/kWh)	Cost for renovations to lighting system	Prescriptive Lighting Measures	Length of time for renovations cost to be recovered	Length of time for renovations cost to be recovered
19	Girl's Room	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	1000	240	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	OCC	1,000	240	-	0.0	$ -	$ 128.25	$ 20		
19	Boy's Room	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	1000	240	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	OCC	1,000	240	-	0.0	$ -	$ 128.25	$ 20		
19	Custodian Room	1	1B 32 P F 2 (ELE)	F42LL	60	0.1	SW	780	47	1	1B 32 P F 2 (ELE)	F42LL	60	0.1	OCC	1,500	90	(43)	0.0	$ (5.66)	$ 128.25	$ 20		
35	Storage	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	1000	270	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	OCC	250	68	203	0.0	$ 26.53	$ 128.25	$ 20	4.8	4.1
35	IDF Office	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	SW	2000	180	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	OCC	1,200	108	72	0.0	$ 9.43	$ 128.25	$ 20	13.6	11.5
35	Family Lounge	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	2000	2,160	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	1,200	1,296	864	0.0	$ 113.18	$ 128.25	$ 20	1.1	1.0
19	Family Lounge	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	SW	2000	480	4	1B 32 P F 2 (ELE)	F42LL	60	0.2	OCC	1,200	288	192	0.0	$ 25.15	$ 128.25	$ 20	5.1	4.3
35	Room 231	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	980	1,058	454	0.0	$ 59.42	$ 128.25	$ 20	2.2	1.8
35	Room 232	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	980	1,058	454	0.0	$ 59.42	$ 128.25	$ 20	2.2	1.8
35	Room 233	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	980	1,058	454	0.0	$ 59.42	$ 128.25	$ 20	2.2	1.8
35	Room 234	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	980	1,058	454	0.0	$ 59.42	$ 128.25	$ 20	2.2	1.8
35	Room 235	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	980	1,058	454	0.0	$ 59.42	$ 128.25	$ 20	2.2	1.8
35	Room 236	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	980	1,058	454	0.0	$ 59.42	$ 128.25	$ 20	2.2	1.8
35	Room 237	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	980	1,058	454	0.0	$ 59.42	$ 128.25	$ 20	2.2	1.8
35	Room 238	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	980	1,058	454	0.0	$ 59.42	$ 128.25	$ 20	2.2	1.8
35	Room 239	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	980	1,058	454	0.0	$ 59.42	$ 128.25	$ 20	2.2	1.8
35	Room 240	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	980	1,058	454	0.0	$ 59.42	$ 128.25	$ 20	2.2	1.8
35	Room 241	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	980	1,058	454	0.0	$ 59.42	$ 128.25	$ 20	2.2	1.8
35	Room 242	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	1400	1,512	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	OCC	980	1,058	454	0.0	$ 59.42	$ 128.25	$ 20	2.2	1.8
19	Staff Restroom	1	1B 32 P F 2 (ELE)	F42LL	60	0.1		1000	60	1	1B 32 P F 2 (ELE)	F42LL	60	0.1	0	1,000	60	-	0.0	$ -	$ -	$ -		
228	Atrium near door 34	9	W60CF1	F81EL	60	0.5		8760	4,730	9	W60CF1	F81EL	60	0.5	0	8,760	4,730	-	0.0	$ -	$ -	$ -		
133	Atrium near door 34	9	CF 26	CFQ26/1-L	27	0.2		8760	2,129	9	CF 26	CFQ26/1-L	27	0.2	0	8,760	2,129	-	0.0	$ -	$ -	$ -		
35	Computer Room	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3		1400	378	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	0	980	265	113	0.0	$ 14.86	$ -	$ -	0.0	0.0
35	Room 127	15	T 32 R F 3 (ELE)	F43ILL/2	90	1.4		1400	1,890	15	T 32 R F 3 (ELE)	F43ILL/2	90	1.4	0	980	1,323	567	0.0	$ 74.28	$ -	$ -	0.0	0.0
35	Room 128	18	T 32 R F 3 (ELE)	F43ILL/2	90	1.6		1400	2,268	18	T 32 R F 3 (ELE)	F43ILL/2	90	1.6	0	980	1,588	680	0.0	$ 89.13	$ -	$ -	0.0	0.0
35	Room 129	15	T 32 R F 3 (ELE)	F43ILL/2	90	1.4		1400	1,890	15	T 32 R F 3 (ELE)	F43ILL/2	90	1.4	0	980	1,323	567	0.0	$ 74.28	$ -	$ -	0.0	0.0
35	Room 130	15	T 32 R F 3 (ELE)	F43ILL/2	90	1.4		1400	1,890	15	T 32 R F 3 (ELE)	F43ILL/2	90	1.4	0	980	1,323	567	0.0	$ 74.28	$ -	$ -	0.0	0.0
35	Art Room	16	T 32 R F 3 (ELE)	F43ILL/2	90	1.4		1400	2,016	16	T 32 R F 3 (ELE)	F43ILL/2	90	1.4	0	980	1,411	605	0.0	$ 79.23	$ -	$ -	0.0	0.0
19	Art Room	2	1B 32 P F 2 (ELE)	F42LL	60	0.1		1400	168	2	1B 32 P F 2 (ELE)	F42LL	60	0.1	0	980	118	50	0.0	$ 6.60	$ -	$ -	0.0	0.0
20	Art Room	2	S 32 C F 1 (ELE)	F41LL	32	0.1		1400	90	2	S 32 C F 1 (ELE)	F41LL	32	0.1	0	980	63	27	0.0	$ 3.52	$ -	$ -	0.0	0.0
19	Music Room B	28	1B 32 P F 2 (ELE)	F42LL	60	1.7		1400	2,352	28	1B 32 P F 2 (ELE)	F42LL	60	1.7	0	980	1,646	706	0.0	$ 92.43	$ -	$ -	0.0	0.0
35	Music Office	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8		2000	1,620	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	0	1,200	972	648	0.0	$ 84.89	$ -	$ -	0.0	0.0
19	Café	90	1B 32 P F 2 (ELE)	F42LL	60	5.4		2000	10,800	90	1B 32 P F 2 (ELE)	F42LL	60	5.4	0	2,000	10,800	-	0.0	$ -	$ -	$ -		
39	Café	3	2' 17 W F 2 (ELE)	F22ILL	33	0.1		2000	198	3	2' 17 W F 2 (ELE)	F22ILL	33	0.1	0	2,000	198	-	0.0	$ -	$ -	$ -		
133	Café	72	CF 26	CFQ26/1-L	27	1.9		2000	3,888	72	CF 26	CFQ26/1-L	27	1.9	0	2,000	3,888	-	0.0	$ -	$ -	$ -		
19	Kitchen Hood	8	1B 32 P F 2 (ELE)	F42LL	60	0.5		1400	672	8	1B 32 P F 2 (ELE)	F42LL	60	0.5	0	1,500	720	(48)	0.0	$ (6.29)	$ -	$ -		
232	Kitchen Hood	3	R 60 C I 1	I60/1	60	0.2		1400	252	3	CF 26	CFQ26/1-L	27	0.1	0	1,500	122	131	0.1	$ 24.71	$ 60.75	$ -	2.5	2.5
20	Kitchen Hood	6	S 32 C F 1 (ELE)	F41LL	32	0.2		1400	269	6	S 32 C F 1 (ELE)	F41LL	32	0.2	0	1,500	288	(19)	0.0	$ (2.52)	$ -	$ -		
39	Entrance to Kitchen	9	2' 17 W F 2 (ELE)	F22ILL	33	0.3		1400	416	9	2' 17 W F 2 (ELE)	F22ILL	33	0.3	0	1,500	446	(30)	0.0	$ (3.89)	$ -	$ -		
39	Girl's Room	4	2' 17 W F 2 (ELE)	F22ILL	33	0.1		1000	132	4	2' 17 W F 2 (ELE)	F22ILL	33	0.1	0	1,000	132	-	0.0	$ -	$ -	$ -		
39	Boy's Room	4	2' 17 W F 2 (ELE)	F22ILL	33	0.1		1000	132	4	2' 17 W F 2 (ELE)	F22ILL	33	0.1	0	1,000	132	-	0.0	$ -	$ -	$ -		
19	Stage	12	1B 32 P F 2 (ELE)	F42LL	60	0.7		2000	1,440	12	1B 32 P F 2 (ELE)	F42LL	60	0.7	0	2,000	1,440	-	0.0	$ -	$ -	$ -		
35	Stage	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3		2000	540	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	0	2,000	540	-	0.0	$ -	$ -	$ -		
19	Electric Closet	2	1B 32 P F 2 (ELE)	F42LL	60	0.1		1820	218	2	1B 32 P F 2 (ELE)	F42LL	60	0.1	0	1,820	218	-	0.0	$ -	$ -	$ -		
															0	#N/A								#VALUE!
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S	**Total**	**1,818**	**0.0**			**135.9**	**0.0**		**273,513**	**1,818**	**0.0**			**130.2**			**226,864**		**5.8**	**6,554**	**46,346**	**$7,920**		
S																	**Demand Savings**			**5.8**	**$443**			
S																	**kWh Savings**			**46,649**	**$6,111**			
S																	**Total Savings**				**$6,554**		**7.1**	**5.9**

Energy Audit of Holmdel Township BOE
CHA Project No.24988

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
$25,877	**9.0**	**44,850**	**0**	**$6,565**	**0**	**$6,565**	**$3,100**	**3.9**	**3.5**

*Incentive based on New Jersey Smart Start Prescriptive Lighting Measures

Energy Audit of Holmdel Township BOE
CHA Project No.24988
Existing Lighting

Cost of Electricity: **$0.131** **$/kWh**
$6.41 **$/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	
Field Code	Unique description of the location - Room number/Room name: Floor number (if applicable)	Describe Usage Type using Operating Hours	No. of fixtures before the retrofit	Lighting Fixture Code	Code from Table of Standard Fixture Wattages	Value from Table of Standard Fixture Wattages	(Watts/Fixt) * (Fixt No.)	Pre-inst. control device	Estimated annual hours for the usage group	Retrofit control device	(kW/space) * (Annual Hours)	Notes
141	Main Lot	Exterior Lights	11	HPS 250	HPS250/1	295	3.25	PCS	5000	NONE	16,225	
256	Main Lot	Exterior Lights	20	MH 400 Wallpack	MH400/1	435	8.70	PCS	5000	NONE	43,500	

Energy Audit of Holmdel Township BOE
CHA Project No.24988
Existing Lighting

Cost of Electricity:	
$0.131	$/kWh
$6.41	$/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	
Field Code	Unique description of the location - Room number/Room name: Floor number (if applicable)	Describe Usage Type using Operating Hours	No. of fixtures before the retrofit	Lighting Fixture Code	Code from Table of Standard Fixture Wattages	Value from Table of Standard Fixture Wattages	(Watts/Fixt) * (Fixt No.)	Pre-inst. control device	Estimated annual hours for the usage group	Retrofit control device	(kW/space) * (Annual Hours)	Notes

Energy Audit of Holmdel Township BOE
CHA Project No.24988
ECM-1 Lighting Replacements

		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
Field Code	Unique description of the location - Room number/Room name: Floor number (if applicable)	No. of fixtures before the retrofit	"Lighting Fixture Code" Example 2T 40 R F(U) = 2'x2' Troff 40 w Recess. Floor 2 lamps U shape	Code from Table of Standard Fixture Wattages	Value from Table of Standard Fixture Wattages	(Watts/Fixt) * (Fixt No.)	Pre-inst. control device	Estimated daily hours for the usage group	(kW/space) * (Annual Hours)	No. of fixtures after the retrofit	"Lighting Fixture Code" Example 2T 40 R F(U) = 2'x2' Troff 40 w Recess. Floor 2 lamps U shape	Code from Table of Standard Fixture Wattages	Value from Table of Standard Fixture Wattages	(Watts/Fixt) * (Number of Fixtures)	Retrofit control device	Estimated annual hours for the usage group	(kW/space) * (Annual Hours)	(Original Annual kWh) - (Retrofit Annual kWh)	(Original Annual kW) - (Retrofit Annual kW)	(kWh Saved) * ($/kWh)	Cost for renovations to lighting system	Prescriptive Lighting Measures	Length of time for renovations cost to be recovered	Length of time for renovations cost to be recovered
141	Main Lot	11	HPS 250	HPS250/1	295	3.2	PCS	5000	16,225	11	P21 105LA	P21 105LA/1	105	1.2	PCS	5,000	5,775	10,450	2.1	$ 1,529.71	$ 10,476.68	$1,100	6.8	6.1
256	Main Lot	20	MH 400 Wallpack	MH400/1	435	8.7	PCS	5000	43,500	20	WPLED78	WPLED78/1	91	1.8	PCS	5,000	9,100	34,400	6.9	$ 5,035.61	$ 15,400.00	$2,000	3.1	2.7

Energy Audit of Holmdel Township BOE
CHA Project No.24988
ECM-1 Lighting Replacements

		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
Field Code	Unique description of the location - Room number/Room name: Floor number (if applicable)	No. of fixtures before the retrofit	"Lighting Fixture Code" Example 2T 40 R F(U) = 2'x2' Troff 40 w Recess. Floor 2 lamps U shape	Code from Table of Standard Fixture Wattages	Value from Table of Standard Fixture Wattages	(Watts/Fixt) * (Fixt No.)	Pre-inst. control device	Estimated daily hours for the usage group	(kW/space) * (Annual Hours)	No. of fixtures after the retrofit	"Lighting Fixture Code" Example 2T 40 R F(U) = 2'x2' Troff 40 w Recess. Floor 2 lamps U shape	Code from Table of Standard Fixture Wattages	Value from Table of Standard Fixture Wattages	(Watts/Fixt) * (Number of Fixtures)	Retrofit control device	Estimated annual hours for the usage group	(kW/space) * (Annual Hours)	(Original Annual kWh) - (Retrofit Annual kWh)	(Original Annual kW) - (Retrofit Annual kW)	(kWh Saved) * ($/kWh)	Cost for renovations to lighting system	Prescriptive Lighting Measures	Length of time for renovations cost to be recovered	Length of time for renovations cost to be recovered
	Total	31				11.9			59,725	31			196	3.0			14,875	44,850	9.0	$6,565	$25,877	$3,100		
																		Demand Savings		9.0	$690			
																		kWh Savings		44,850	55,875			
																		Total savings			$6,565		3.9	3.5

Energy Audit of Holmdel Township BOE
CHA Project No.24988
ECM-2 Install Occupancy Sensors

		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
Field Code	Unique description of the location - Room number/Room name: Floor number (if applicable)	No. of fixtures before the retrofit	Lighting Fixture Code	Code from Table of Standard Fixture Wattages	Value from Table of Standard Fixture Wattages	(Watts/Fixt) * (Fixt No.)	Pre-inst. control device	Estimated annual hours for the usage group	(kW/space) * (Annual Hours)	No. of fixtures after the retrofit	"Lighting Fixture Code" Example 2T 40 R F(U) = 2'x2' Troff 40 w Recess. Floor 2 lamps U shape	Code from Table of Standard Fixture Wattages	Value from Table of Standard Fixture Wattages	(Watts/Fixt) * (Number of Fixtures)	Retrofit control device	Estimated annual hours for the usage group	(kW/space) * (Annual Hours)	(Original Annual kWh) - (Retrofit Annual kWh)	(Original Annual kW) - (Retrofit Annual kW)	($/kWh) * (kW Saved)	Cost for renovations to lighting system		Length of time for renovations cost to be recovered	Length of time for renovations cost to be recovered
141	Main Lot	11	HPS 250	HPS250/1	295	3.2	PCS	5000	16,225.0	11	HPS 250	HPS250/1	295	3.2	NONE	5000	16,225.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
256	Main Lot	20	MH 400 Wallpack	MH400/1	435	8.7	PCS	5000	43,500.0	20	MH 400 Wallpack	MH400/1	435	8.7	NONE	5000	43,500.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
															0	#N/A	#VALUE!	#VALUE!	#N/A	#VALUE!			#VALUE!	#VALUE!

Energy Audit of Holmdel Township BOE
CHA Project No.24988
ECM-2 Install Occupancy Sensors

		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**
Field Code	**Unique description of the location - Room number/Room name: Floor number (if applicable)**	**No. of fixtures before the retrofit**	**Lighting Fixture Code**	**Code from Table of Standard Fixture Wattages**	**Value from Table of Standard Fixture Wattages**	**(Watts/Fixt) * (Fixt No.)**	**Pre-inst. control device**	**Estimated annual hours for the usage group**	**(kW/space) * (Annual Hours)**	**No. of fixtures after the retrofit**	**"Lighting Fixture Code" Example 2T 40 R F(U) = 2'x2' Troff 40 w Recess. Floor 2 lamps U shape**	**Code from Table of Standard Fixture Wattages**	**Value from Table of Standard Fixture Wattages**	**(Watts/Fixt) * (Number of Fixtures)**	**Retrofit control device**	**Estimated annual hours for the usage group**	**(kW/space) * (Annual Hours)**	**(Original Annual kWh) - (Retrofit Annual kWh)**	**(Original Annual kW) - (Retrofit Annual kW)**	**(kW Saved) * ($/kWh)**	**Cost for renovations to lighting system**		**Length of time for renovations cost to be recovered**	**Length of time for renovations cost to be recovered**
															0	#N/A	#VALUE!	#VALUE!	#N/A	#VALUE!			#VALUE!	#VALUE!
															0	#N/A	#VALUE!	#VALUE!	#N/A	#VALUE!			#VALUE!	#VALUE!
															0	#N/A	#VALUE!	#VALUE!	#N/A	#VALUE!			#VALUE!	#VALUE!
															0	#N/A	#VALUE!	#VALUE!	#N/A	#VALUE!			#VALUE!	#VALUE!
															0	#N/A	#VALUE!	#VALUE!	#N/A	#VALUE!			#VALUE!	#VALUE!
															0	#N/A	#VALUE!	#VALUE!	#N/A	#VALUE!			#VALUE!	#VALUE!
															0	#N/A	#VALUE!	#VALUE!	#N/A	#VALUE!			#VALUE!	#VALUE!
															0	#N/A	#VALUE!	#VALUE!	#N/A	#VALUE!			#VALUE!	#VALUE!
															0	#N/A	#VALUE!	#VALUE!	#N/A	#VALUE!			#VALUE!	#VALUE!
															0	#N/A	#VALUE!	#VALUE!	#N/A	#VALUE!			#VALUE!	#VALUE!
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															0	#N/A	#VALUE!	#VALUE!	#N/A	#VALUE!			#VALUE!	#VALUE!
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															0	#N/A	#VALUE!	#VALUE!	#N/A	#VALUE!			#VALUE!	#VALUE!
	Total	**31**				**11.9**			**59725.0**	**31.0**				**11.9**			**59725.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**		
																	Demand Savings			0.0	$0			
																	kWh Savings			0	$0			
																	Total Savings				$0		**#DIV/0!**	**#DIV/0!**

Energy Audit of Holmdel Township BOE
CHA Project No.24988
ECM-3 Lighting Replacements with Occupancy Sensors

		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
Field Code	Unique description of the location - Room number/Room name: Floor number (if applicable)	No. of fixtures before the retrofit	Lighting Fixture Code	Code from Table of Standard Fixture Wattages	Value from Table of Standard Fixture Wattages	(Watts/Fixt) * (Fixt No.)	Pre-inst. control device	Estimated daily hours for the usage group	(kW/space) * (Annual Hours)	No. of fixtures after the retrofit	Lighting Fixture Code	Code from Table of Standard Fixture Wattages	Value from Table of Standard Fixture Wattages	(Watts/Fixt) * (Number of Fixtures)	Retrofit control device	Estimated annual hours for the usage group	(kW/space) * (Annual Hours)	(Original Annual kWh) - (Retrofit Annual kWh)	(Original Annual kW) - (Retrofit Annual kW)	(kWh Saved) * ($/kWh)	Cost for renovations to lighting system	Prescriptive Lighting Measures	Length of time for renovations cost to be recovered	Length of time for renovations cost to be recovered
141	Main Lot	11	HPS 250	HPS250/1	295	3.2	PCS	5000	16,225	11	P21 105LA	P21 105LA/1	105	1.2	NONE	5,000	5,775	10,450	2.1	$ 1,529.71	$ 10,476.68	$ 1,100	6.8	6.1
256	Main Lot	20	MH 400 Wallpack	MH400/1	435	8.7	PCS	5000	43,500	20	WPLED78	WPLED78/1	91	1.8	NONE	5,000	9,100	34,400	6.9	$ 5,035.61	$ 15,400.00	$ 2,000	3.1	2.7
															0	#N/A								#VALUE!

Energy Audit of Holmdel Township BOE
CHA Project No.24988
ECM-3 Lighting Replacements with Occupancy Sensors

		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
Field Code	Unique description of the location - Room number/Room name: Floor number (if applicable)	No. of fixtures before the retrofit	Lighting Fixture Code	Code from Table of Standard Fixture Wattages	Value from Table of Standard Fixture Wattages	(Watts/Fixt) * (Fixt No.)	Pre-inst. control device	Estimated daily hours for the usage group	(kW/space) * (Annual Hours)	No. of fixtures after the retrofit	Lighting Fixture Code	Code from Table of Standard Fixture Wattages	Value from Table of Standard Fixture Wattages	(Watts/Fixt) * (Number of Fixtures)	Retrofit control device	Estimated annual hours for the usage group	(kW/space) * (Annual Hours)	(Original Annual kWh) - (Retrofit Annual kWh)	(Original Annual kW) - (Retrofit Annual kW)	(kWh Saved) * ($/kWh)	Cost for renovations to lighting system	Prescriptive Lighting Measures	Length of time for renovations cost to be recovered	Length of time for renovations cost to be recovered
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S	Total	31				11.9			59,725	31				3.0			14,875		9.0	6,565	25,877	$3,100		
S																	Demand Savings			9.0	$690			
S																	kWh Savings			44,850	$5,875			
S																	Total Savings				$6,565		3.9	3.5

APPENDIX D

New Jersey Board of Public Utilities Incentives

i. **Smart Start**

ii. **Direct Install**

iii. **Pay for Performance (P4P)**

iv. **Energy Savings Improvement Plan (ESIP)**

I. SMART START

COMMERCIAL, INDUSTRIAL AND LOCAL GOVERNMENT

PROGRAMS

NJ SMARTSTART BUILDINGS

EQUIPMENT INCENTIVES

APPLICATION FORMS

TOOLS AND RESOURCES

PAY FOR PERFORMANCE

COMBINED HEAT & POWER AND FUEL CELLS

LOCAL GOVERNMENT ENERGY AUDIT

LARGE ENERGY USERS PILOT

ENERGY SAVINGS IMPROVEMENT PROGRAM

DIRECT INSTALL

ENERGY BENCHMARKING

OIL, PROPANE & MUNICIPAL ELECTRIC CUSTOMERS

EDA PROGRAMS

T-12 SCHOOLS LIGHTING INITIATIVE

TEACH

ARRA

TECHNOLOGIES

TOOLS AND RESOURCES

PROGRAM UPDATES

CONTACT US

Home » Commercial & Industrial » Programs

NJ SmartStart Buildings

Program Overview

New Jersey SmartStart BUILDINGS®

With New Jersey SmartStart Buildings ...

... A smart start now means better performance later! Whether you're starting a commercial or industrial project from the ground up, renovating existing space, or upgrading equipment, you have unique opportunities to upgrade the energy efficiency of the project.

New Jersey SmartStart Buildings can provide a range of support — at no cost to you — to yield substantial energy savings, both now and for the future. Learn more about:

- Project Categories
- Custom Measures
- Incentives for Qualifying Equipment and Projects
- Program Terms and Conditions
- Find a Trade Ally

Please note: pre-approval is required for almost all energy efficiency incentives. This means you must submit an application form (and applicable worksheets) and receive an approval letter from the program before any equipment is installed (click here for complete Terms and Conditions.) Upon receipt of an approval letter, you may proceed to install the equipment listed on your approved application. Equipment installed prior to the date of the approval letter is not eligible for an incentive. **Any customer and/or agent who purchases equipment prior to the receipt of an incentive approval letter does so at his/her own risk.**

Getting Started

Submit your project application form as soon as you know you will be doing a construction project, or replacing/adding equipment.

Smart-Growth Eligibility: *Check to make sure your project is eligible for incentives.*

Incentives for new construction are available only for projects in areas designated for growth in the NJ State Development and Redevelopment Plan. Public school (K-12) new construction projects are exempted from this restriction and are eligible for incentives throughout the State.

Customers, or their trade allies, can determine if a location is in a designated growth area by referring to the Smart Growth Site Evaluator Tool available from the HMFA website. Contact a program representative if you are uncertain about project eligibility. The Smart Growth policies will be implemented consistent with Board Orders as described more fully in the C&I Operational Procedure Manual.

Apply for pre-approval by submitting an application for the type of equipment you have chosen to install. The application should be accompanied by a related worksheet, where applicable, and a manufacturer's specification sheet (refer to the specific program requirements on the back of the application for specs needed for your project) for the equipment you are planning to install. (Program representatives will review your application package and approve it, reject it, and/or advise you of upgrades in equipment that will save energy costs and/or increase your incentives.)

Support for Custom Energy-Efficiency Measures

Custom measures allows program participants the opportunity to receive an incentive for unique energy-efficiency measures that are not on the prescriptive equipment incentive list, but are project/facility specific.

Incentives for Qualifying Equipment and Projects

Financial incentives are available for large and small projects. These incentives offset some — or maybe even all! — of the added cost to purchase qualifying energy-efficient equipment, which provides significant long-term energy savings. Ranges of incentives are available for qualifying equipment (depending on type, size, and efficiency) in several categories.

Find out more about equipment incentives!

For specific details on equipment requirements and financial incentives, including incentives for equipment not listed here, contact a program representative. Annual financial incentives may be

Program Updates

Notice of 2013 Changes to C&I Programs

Warranty and Lease Terms for CHP/Fuel Cells Increased to 10 Years

Large Combined Heat & Power/Fuel Cell Program Update

Board Order - Standby Charges for Distributed Generation Customers

Other updates posted.

COMMERCIAL, INDUSTRIAL AND LOCAL GOVERNMENT

- PROGRAMS
  - NJ SMARTSTART BUILDINGS
    - EQUIPMENT INCENTIVES
    - APPLICATION FORMS
    - TOOLS AND RESOURCES
  - PAY FOR PERFORMANCE
  - COMBINED HEAT & POWER AND FUEL CELLS
  - LOCAL GOVERNMENT ENERGY AUDIT
  - LARGE ENERGY USERS PILOT
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  - T-12 SCHOOLS LIGHTING INITIATIVE
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Home » Commercial & Industrial » Programs » NJ SmartStart Buildings

Equipment Incentives

More reasons for a smart start on your next project!

New Jersey SmartStart Buildings provides **financial incentives for qualifying equipment**. These incentives were developed to help our customers offset some of the added cost to purchase qualifying energy-efficient equipment, which provides significant long-term energy savings. A wide range of incentives are available for qualifying equipment (depending on type, size and efficiency).

Listed below are the types of qualifying equipment and ranges of incentives. For details on equipment requirements and full listings of incentives, refer to the **online application forms**.

Please note that almost all equipment incentives require pre-approval before equipment is installed. (**click for exceptions**)To start the pre-approval process, submit an Equipment Application, and appropriate Equipment Worksheets, for the type or types of equipment you are planning to install along with equipment specification sheets (refer to the specific program requirements on the back of the application for specifications needed for your project) and a current utility bill(s).

In order to be eligible to receive financial incentives under this Program, Applicants must receive electric and/or gas service from one of the regulated electric and/or gas utilities in the State of New Jersey. They are: Atlantic City Electric, Jersey Central Power & Light, Rockland Electric Company, New Jersey Natural Gas, Elizabethtown Gas, PSE&G, and South Jersey Gas.

Electric Chillers

- Water-cooled chillers ($12 - $170 per ton)
- Air-cooled chillers ($8 - $52 per ton)

Gas Cooling

- Gas absorption chillers ($185-$450 per ton)
- Gas Engine-Driven Chillers (Calculated through Custom Measure Path)

Desiccant Systems ($1.00 per cfm - gas or electric)

Electric Unitary HVAC

- Unitary AC and split systems ($73 - $92 per ton)
- Air-to-air heat pumps ($73 - $92 per ton)
- Water-source heat pumps ($81 per ton)
- Packaged terminal AC & HP ($65 per ton)
- Central DX AC Systems ($40 - $72 per ton)
- Dual Enthalpy Economizer Controls ($250)
- Occupancy Controlled Thermostats ($75 each)

Ground Source Heat Pumps

- Closed Loop ($450-750 per ton)

Gas Heating

- Gas-fired boilers < 300 MBH ($300 per unit)
- Gas-fired boilers ≥ 300 MBH - 1500 MBH ($1.75 per MBH)
- Gas-fired boilers ≥ 1500 MBH - ≤ 4000 MBH ($1.00 per MBH)
- Gas-fired boilers > 4000 MBH (Calculated through Custom Measure Path)
- Gas furnaces ($300-$400 per unit)

Variable Frequency Drives

- Variable air volume ($65 - $155 per hp)
- Chilled-water pumps ($60 per hp)
- Compressors ($5,250 to $12,500 per drive)

Natural Gas Water Heating

Program Updates

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- Board Order - Standby Charges for Distributed Generation Customers

Other updates posted.

Featured Success Story

Mannington Mills:

NJ SmartStart Buildings custom measures case study presented at Globalcon Conference

Applications and Brochures

Download the latest program materials.

e-Newsletter SIGN UP TODAY!

Follow Us:

II. DIRECT INSTALL

COMMERCIAL, INDUSTRIAL AND LOCAL GOVERNMENT

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  - LARGE ENERGY USERS PILOT
  - ENERGY SAVINGS IMPROVEMENT PROGRAM
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    - PARTICIPATION STEPS
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    - SUSTAINABLE JERSEY
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Direct Install - Steps to Participation

New Jersey SmartStart BUILDINGS

NEW JERSEY'S CLEAN ENERGY PROGRAM DIRECT Install

SIX SIMPLE STEPS TO PARTICIPATION

CONTACT THE PARTICIPATING CONTRACTOR IN YOUR AREA

Identify the contractor assigned and trained to provide Direct Install services in the county where your project is located. Using the contact information provided, call or send an e-mail to the participating contractor to discuss your project. The contractor will schedule an energy assessment and work with you to complete the program application and participation agreement.

If you're unable to contact the participating contractor or have questions, you may contact us at 866-NJSMART or send an e-mail to DirectInstall@NJCleanEnergy.com..

REVIEW RESULTS

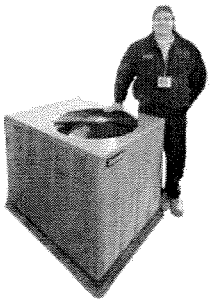
After the energy assessment, the contractor will review the results with you, including what measures qualify and your share of the project cost.

MOVE FORWARD

You will sign a scope of work document to proceed with implementation of qualifying measures.

ARRANGE INSTALLATION

You and the participating contractor will set a convenient start date for the installation.



CONFIRM INSTALLATION

Once the participating contractor completes the installation, you accept the work by signing a project completion form.

COMPLETE TRANSACTION

You pay the participating contractor your share of the project cost and New Jersey's Clean Energy Program pays the rest.

Program Updates

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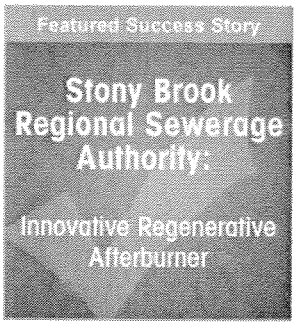

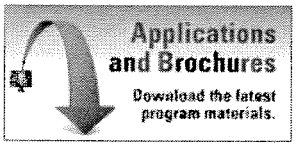

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III. PAY FOR PERFORMANCE (P4P)

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**
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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.

IV. ENERGY SAVINGS IMPROVEMENT PLAN (ESIP)

COMMERCIAL, INDUSTRIAL AND LOCAL GOVERNMENT

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- NJ SMARTSTART BUILDINGS
- PAY FOR PERFORMANCE
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Energy Savings Improvement Program

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

Notice of 2013 Changes to C&I Programs

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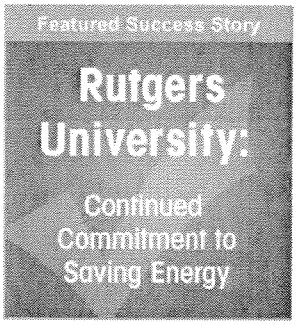
Other updates posted.



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new jersey department of community affairs
people places progress
division of local government services

LFN 2011-17

June 16, 2011

Local Finance Notice

Chris Christie, *Governor* | Kim Guadagno, *Lt. Governor* | Lori Grifa, *Commissioner* | Thomas H. Neff, *Director*

Update on Implementing Energy Savings Improvement Programs

This Local Finance Notice provides guidance concerning Energy Savings Improvement Program (ESIP) matters that affect local units covered under the Local Public Contracts Law (LPCL, N.J.S.A. 40A:11) and the Public School Contracts Law (PSCL, N.J.S.A. 18A:18A).

The Notice covers a model ESCO (Energy Services Company) Request for Proposal document and provides information on using the "Do-It-Yourself" process for implementing an ESIP. This Notice supplements Local Finance Notice 2009-11 concerning ESIPs.

Model ESCO Request for Proposal Document

General Issues

The Division of Local Government Services and the Board of Public Utilities have completed development of a model ESCO Request for Proposal Document. It is designed to assist all organizations (contracting units) covered by the LPCL and PSCL hire an energy services company (ESCO) to develop and implement an Energy Savings Plan (ESP) as part of an Energy Savings Improvement Program as authorized under N.J.S.A. 40A:11-4.6 and 18A:18A-4.6.

Specifically, the document serves as the starting point for these government agencies to select an ESCO through the competitive contracting procedure (N.J.S.A. 40A:11-4.1 et seq. and 18A:18A-4.1 et seq.).

Notwithstanding the efforts of the State agencies to ensure that the RFP is consistent with all relevant procurement procedures, laws, and regulations, there are several issues contracting unit personnel should keep in mind:

1) Local legal advisors should review the document to ensure it is consistent with any allowable local practices and legal considerations.
2) The individual responsible for managing the project should review the entire RFP in order to be able to answer questions and ensure the document meets local needs.
3) Forms have been carefully designed to meet the need of this specific process. Care should be taken if proposed forms are removed and replaced with ones normally used by the contracting unit.

Contact Information

Director's Office
V. 609.292.6613
F. 609.292.9073

Local Government Research
V. 609.292.6110
F. 609.292.9073

Financial Regulation and Assistance
V. 609.292.4806
F. 609.984.7388

Local Finance Board
V. 609.292.0479
F. 609.633.6243

Local Management Services
V. 609.292.7842
F. 609.633.6243

Authority Regulation
V. 609.984.0132
F. 609.984.7388

Mail and Delivery
101 South Broad St.
PO Box 803
Trenton, New Jersey
08625-0803
Web: www.nj.gov/dca/lgs
E-mail: dlgs@dca.state.nj.us

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Municipal and Freeholder Clerks
Municipal and County Chief Financial Officers
Local Authority and Fire District Officials
School Business Administrators
Local Procurement Officials

The RFP also uses a formal process for potential proposers to submit questions and requests for clarifications. Appendix B is a form for the submission of these requests and is referred to throughout the text.

Contracting units are also reminded the Competitive Contracting process does not allow for negotiating proposals. While legal elements of the contract (project development agreement) may require legal determinations and modifications, the process does not allow for negotiation of price or related substantive elements and any element that would have provided less than a level playing field for proposers.

Contracting units are also cautioned that setting qualification standards that arbitrarily limit competition is inconsistent with public bidding requirements.

Office of State Comptroller Filing: Contracting units are also reminded of their obligations to meet State Comptroller requirements for public contracts. In accordance with N.J.S.A 52:15C-10, contracting units must notify OSC as early as practicable, but no later than 30 days before advertisement, of any negotiation or solicitation of a contract that may exceed $10 million. Contracting units must also provide post-award notification for any contract for an amount exceeding $2 million. Notification must be given within 20 days of the award.

Substantive Edits:

Several sections are highlighted in green. These sections should be carefully edited to meet contracting unit needs. This has important application to evaluation criteria in Section D. Once finalized, the green highlight should be removed.

Section B-16; Insurance should be reviewed by the contracting unit's Risk Management professionals to be sure the standards are appropriate to the contracting unit and the work to be done.

The following Sections also require local decisions and editing:

- A-3: # of copies of proposal and # of CDs to be submitted
- A-4: Web posting address, if desired
- A-5: If extra credit is to be provided on evaluation scoring for attending site walk through
- B-11: Delete LPCL or PSCL section as appropriate
- B-34: Use only if PSCL
- C-1: Explanation of type of audit information
- C-3(k): Include if ESCO is to provide financing option
- Use of Appendix F and Proposal Requirements #8: These forms are related to submission of Political Contribution Disclosure forms. Only PSCL agencies are required to use these forms as pursuant to Public School Fiscal Accountability Procedures (N.J.A.C. 6A23A-6.3). The forms and references to it should be removed for all LPCL users.

Under the ESIP DIY approach, there would be no conflict in a properly procured single organization conducting the audit, developing the ESP, then preparing plans and specifications. This does not apply when using the ESCO approach, where the auditor and ESCO must be independent.

Once construction plans and specifications are complete, the contracting unit would then conduct the bidding process as it would any public works construction project: manage the project as it sees fit (the firm that did the plans could also serve as construction manager), and then contract as necessary for commissioning and final third party verification. The two verification steps (the ESP and verifying implementation) must be performed by an organization independent of the ones preparing the ESP, overseeing construction and commissioning.

By following this process, the contracting unit can then apply to the Local Finance Board for the issuance of ESIP-based energy saving obligations or enter into appropriate lease financing.

The ESIP approach to energy improvement provides a range of options for contracting units to accrue energy savings while improving the environment, taking advantage of low-cost financing and state and federal incentives. DLGS and the BPU encourage comments and questions (through the ESIP web page) on this new opportunity so we can improve it as time goes on.

Approved: Thomas H. Neff, Director, Division of Local Government Services

Table of Web Links

Page	Shortcut text	Internet Address
1, 4	Local Finance Notice 2009-11	http://www.nj.gov/dca/lgs/lfns/09lfns/2009-11.doc
2	ESIP webpage	http://www.nj.gov/dca/lgs/lpcl/esip.htm
2	email comments	mailto:lpcl@dca.state.nj.us
2	to register (via email	mailto:lpcl@dca.state.nj.us
2	GovConnect Local Procurement	http://www.nj.gov/dca/surveys/ppsurvey.htm
3	State Comptroller requirements.	http://www.nj.gov/comptroller/compliance/index.html

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**

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Base Incentive based on 15% savings: ..... **$0.90 per projected Therm saved**
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Electric Incentives

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APPENDIX E

EPA Portfolio Manager

OMB No. 2060-0347

STATEMENT OF ENERGY PERFORMANCE
Indian Hill School

Building ID: 3425555
For 12-month Period Ending: September 30, 2012[1]
Date SEP becomes ineligible: N/A
Date SEP Generated: January 28, 2013

Facility
Indian Hill School
735 Holmdel Rd
Holmdel, NJ 07733

Facility Owner
N/A

Primary Contact for this Facility
N/A

Year Built: 1956
Gross Floor Area (ft²): 127,000

Energy Performance Rating[2] (1-100) 85

Site Energy Use Summary[3]

Electricity - Grid Purchase(kBtu)	3,054,968
Natural Gas (kBtu)[4]	3,132,875
Total Energy (kBtu)	6,187,843

Energy Intensity[4]

Site (kBtu/ft²/yr)	49
Source (kBtu/ft²/yr)	106

Emissions (based on site energy use)

Greenhouse Gas Emissions ($MtCO_2e$/year)	599

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

National Median Comparison

National Median Site EUI	72
National Median Source EUI	156
% 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	Indian Hill 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	735 Holmdel Rd, Holmdel, NJ 07733	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 Building (K-12 School)				
CRITERION	**VALUE AS ENTERED IN PORTFOLIO MANAGER**	**VERIFICATION QUESTIONS**	**NOTES**	☑
Gross Floor Area	127,000 Sq. Ft.	Does this square footage include all supporting functions such as kitchens and break rooms used by staff, storage areas, administrative areas, elevators, stairwells, atria, vent shafts, etc. Also note that existing atriums should only include the base floor area that it occupies. Interstitial (plenum) space between floors should not be included in the total. Finally gross floor area is not the same as leasable space. Leasable space is a subset of gross floor area.		☐
Open Weekends?	Yes	Is this building normally open at all on the weekends? This includes activities beyond the work conducted by maintenance, cleaning, and security personnel. Weekend activity could include any time when the space is used for classes, performances or other school or community activities. If the building is open on the weekend as part of the standard schedule during one or more seasons, the building should select ?yes? for open weekends. The ?yes? response should apply whether the building is open for one or both of the weekend days.		☐
Number of PCs	330	Is this the number of personal computers in the K12 School?		☐
Number of walk-in refrigeration/freezer units	1	Is this the total number of commercial walk-in type freezers and coolers? These units are typically found in storage and receiving areas.		☐
Presence of cooking facilities	Yes	Does this school have a dedicated space in which food is prepared and served to students? If the school has space in which food for students is only kept warm and/or served to students, or has only a galley that is used by teachers and staff then the answer is "no".		☐
Percent Cooled	80 %	Is this the percentage of the total floor space within the facility that is served by mechanical cooling equipment?		☐
Percent Heated	100 %	Is this the percentage of the total floor space within the facility that is served by mechanical heating equipment?		☐
Months	10(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: Electric Meter (kWh (thousand Watt-hours))
Space(s): Entire Facility
Generation Method: Grid Purchase

Start Date	End Date	Energy Use (kWh (thousand Watt-hours))
09/01/2012	09/30/2012	40,640.00
08/01/2012	08/31/2012	96,640.00
07/01/2012	07/31/2012	73,920.00
06/01/2012	06/30/2012	78,400.00
05/01/2012	05/31/2012	71,360.00
04/01/2012	04/30/2012	75,840.00
03/01/2012	03/31/2012	70,400.00
02/01/2012	02/29/2012	85,120.00
01/01/2012	01/31/2012	72,960.00
12/01/2011	12/31/2011	72,640.00
11/01/2011	11/30/2011	80,960.00
10/01/2011	10/31/2011	76,480.00

Electric Meter Consumption (kWh (thousand Watt-hours))	**895,360.00**
Electric Meter Consumption (kBtu (thousand Btu))	**3,054,968.32**
Total Electricity (Grid Purchase) Consumption (kBtu (thousand Btu))	**3,054,968.32**
Is this the total Electricity (Grid Purchase) consumption at this building including all Electricity meters?	☐

Fuel Type: Natural Gas

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

Start Date	End Date	Energy Use (therms)
09/01/2012	09/30/2012	220.77
08/01/2012	08/31/2012	390.10
07/01/2012	07/31/2012	192.84
06/01/2012	06/30/2012	230.42
05/01/2012	05/31/2012	779.42
04/01/2012	04/30/2012	2,311.76
03/01/2012	03/31/2012	5,087.57
02/01/2012	02/29/2012	7,107.40
01/01/2012	01/31/2012	7,305.21
12/01/2011	12/31/2011	4,540.73

11/01/2011	11/30/2011	2,861.64
10/01/2011	10/31/2011	300.89
Natural Gas Meter Consumption (therms)		**31,328.75**
Natural Gas Meter Consumption (kBtu (thousand Btu))		**3,132,875.00**
Total Natural Gas Consumption (kBtu (thousand Btu))		**3,132,875.00**
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
Indian Hill School
735 Holmdel Rd
Holmdel, NJ 07733

Facility Owner
N/A

Primary Contact for this Facility
N/A

General Information

Indian Hill School	
Gross Floor Area Excluding Parking: (ft^2)	127,000
Year Built	1956
For 12-month Evaluation Period Ending Date:	September 30, 2012

Facility Space Use Summary

School Building	
Space Type	K-12 School
Gross Floor Area (ft^2)	127,000
Open Weekends?	Yes
Number of PCs	330
Number of walk-in refrigeration/freezer units	1
Presence of cooking facilities	Yes
Percent Cooled	80
Percent Heated	100
Months °	10
High School?	No
School District °	N/A

Energy Performance Comparison

	Evaluation Periods		Comparisons		
Performance Metrics	**Current** (Ending Date 09/30/2012)	**Baseline** (Ending Date 07/31/2012)	**Rating of 75**	**Target**	**National Median**
Energy Performance Rating	85	84	75	N/A	50
Energy Intensity					
Site ($kBtu/ft^2$)	49	49	56	N/A	72
Source ($kBtu/ft^2$)	106	106	122	N/A	156
Energy Cost					
$/year	$ 162,764.65	$ 166,145.38	$ 186,918.76	N/A	$ 239,035.52
$/$ft^2$/year	$ 1.28	$ 1.31	$ 1.47	N/A	$ 1.88
Greenhouse Gas Emissions					
$MtCO_2e$/year	599	601	688	N/A	880
$kgCO_2e/ft^2$/year	5	5	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.

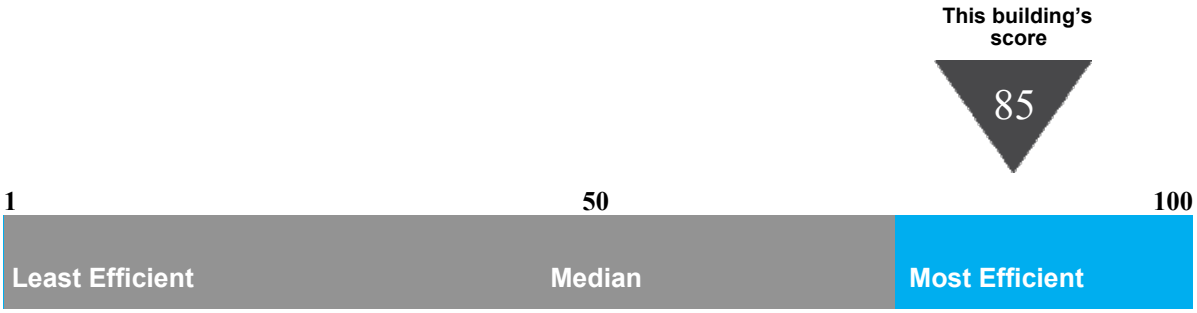
Statement of Energy Performance

2012

Indian Hill School
735 Holmdel Rd
Holmdel, NJ 07733

Portfolio Manager Building ID: 3425555

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 106 kBtu per square foot per year.*

*Based on source energy intensity for the 12 month period ending September 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: 01/28/2013