FRANKLIN LAKES PUBLIC SCHOOL DISTRICT
HIGH MOUNTAIN ROAD ELEMENTARY SCHOOL
ENERGY ASSESSMENT

for

NEW JERSEY
BOARD OF PUBLIC UTILITIES

CHA PROJECT NO. 24497

November 2012

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REPORT DISCLAIMER

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

A thorough walkthrough of the 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 school staff and spot measurements taken in the field.

1.0 EXECUTIVE SUMMARY

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

Building Name	Address	Square Feet	Construction Date
High Mountain Road Elementary School	765 High Mountain Road Franklin Lakes, NJ 07417	47,173	1962

The Energy Conservation Measures (ECMs) identified in this report will allow for a more efficient use of energy and if pursued have the opportunity to qualify for the New Jersey SmartStart Buildings Program and/or Direct Install Program. Potential annual savings of $15,200 for the recommended ECMs may be realized with a payback of 8.5 years. A summary of the costs, savings, and paybacks for the recommended ECMs follows:

Energy Conservation Measure		Approx. Costs ($)	Approx. Savings ($/year)	Payback (Years) w/o Incentive	Potential Incentive ($)*	Payback (Years) w/ Incentive	Recommended For Implementation
ECM-1	Boiler Replacement (replace 7 boilers with 3 condensing boilers)	126,000	400	>20	9,000	>20	
ECM-2	Replace DHW	6,000	400	15	300	14	X
ECM-3	Install VSD & Premium Motors on HW Pumps	12,000	4,100	3	3,200	2	X
ECM-4	Upgrade Pneumatic Control to DDC System	20,000	5,200	4	0	4	X
ECM-5	Demand Controlled Ventilation (Cafeteria)	10,000	700	14	0	14	X
ECM-6	Window Replacement and Reduced Glazing	127,000	2,600	>20	0	>20	
ECM-7	Lighting Replacement / Upgrades	40,000	2,500	16	3,900	14	
ECM-8	Install Lighting Controls (Occupancy Sensors)	17,000	4,300	4	2,900	3	X
ECM-9	Lighting Replacements with Lighting Controls (Occupancy Sensors)	57,000	6,400	9	6,800	8	
ECM-10	Install Low Flow Plumbing Fixtures	7,000	500	14	0	14	X

* Incentive shown is the maximum amount potentially available per the NJ SmartStart or Programs.

2.0 INTRODUCTION AND BACKGROUND

The High Mountain Road Elementary School building is a 47,173 square foot school consisting of one floor. The building was constructed in 1962. The school includes classrooms, offices, multi-purpose room, gymnasium, and a media center. The school hours of operation are from 8:45 AM – 3:30 PM Monday through Friday, with various after-school activities. The employees work hours are from 8:00 AM – 5:00 PM. The building is occupied approximately 8 hours per day Monday through Friday; totaling 40-50 hours per week. The school has approximately 253 students and 45 staff members.

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

3.0 EXISTING CONDITIONS

3.1 Building – Envelope

The building envelope of the main building and addition are constructed of block walls (CMU) with a brick veneer. The majority of the interior walls are also painted block walls; 5/8" metal studs finished with gypsum board are used in spaces such as front office areas. The pitched roof is constructed of pine slates, one layer of tar (felt) paper, and finished with cedar shingles. The flat roof is constructed of 4" plywood, 4 ply built up roofing system.

Windows and doors are original to the time of construction. Windows are aluminum frame and single pane glzing and in fair condition.

3.2 Utility Usage

The utility consumption for the school includes electricity, natural gas for heating, and potable water. Electricity is delivered by Orange & Rockland and supplied by Direct Energy. Natural gas delivered by PSE&G and supplied by Woodruff Energy and Hess.

For the 12-month period ranging from June 2011 through May 2012, the utilities usage for the building was as follows:

Actual Cost & Site Usage by Utility

Electric		
Annual Usage	393,400	kWh/yr
Annual Cost	56,571.41	$
Blended Rate	0.144	$/kWh
Supply Rate	0.131	$/kWh
Demand Rate	3.53	$/kW
Peak Demand	170.0	kW
Min. Demand	90.0	kW
Avg. Demand	120.0	kW
Natural Gas		
Annual Usage	23281.3	Therms /yr
Annual Cost	23,598	$
Rate	1.01	$/Therm

Electrical usage was generally higher in the summer months when air conditioning equipment was operational. Natural Gas consumption was highest in winter months for heating.

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

an economic decision; it has no impact on the reliability or safety of your service. Additional information on selecting a third party energy supplier is available here: http://www.state.nj.us/bpu/commercial/shopping.html. See Appendix A for a list of third-party energy suppliers licensed by the Board of Public Utilities to sell within the building's service area.

3.3 HVAC Systems

Hot water (HW) provides heat in the school. Seven A.O. Smith LB1000 condensing hot water boilers, located in the mechanical room, have an inputs of 1,000,000 BTU, output of 900,000 BTU; 90% efficiency. They were installed in 1995 and are in good condition. These boilers operate using a hot water reset schedule based on outdoor air temperature. The hot water is pumped throughout the building by two 15 HP pumps which are 85.5% efficient. The primary heating terminal units are classroom unit ventilators. Small classrooms are conditioned with a single Unit Ventilator (UV) while larger ones have two UVs. Supplemental heat is provided by fin tube radiations, cabinet heaters and convectors.

Music room, media center, and cafeteria have dedicated Roof Top Units (RTUs) to condition those spaces. The gymnasium has a HV-1 unit for ventilation and does not provide cooling. All the units are packaged rooftop unit. Split systems are equipped with direct expansion (DX) cooling coils and connected to a dedicated remote condensing unit located outdoors, either on the roof or ground, are utilized to cool a couple of spaces.

Systems in the school are controlled by factory mounted controls. The facility director stated that the typical setpoints of classrooms or offices are 70°F heating and 74°F cooling with +/- 3 degree variance.

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

3.4 Control Systems

The building has pneumatic controls. An air compressor creates compressed air to control the air handling units. The UVs have factory mounted thermostats that control the temperature in the classrooms. The spaces with Split systems have a thermostat that controls the space temperature for that space.

Systems in the school are controlled by factory mounted controls. The facility director stated that the typical setpoints of classrooms or offices are 70°F heating and 74°F cooling with +/- 3 degree variance.

3.5 Lighting/Electrical Systems

The school was upgraded in 2010 with new lamps bulbs and occupancy sensors to control the lighting system under the PSE&G Direct Install Program. Select area lights are still switched manually. Some classrooms and restrooms have sensors but there is an opportunity to add ceiling mounted sensors to other offices, hallways and restrooms. The school has all electronic ballast.

Generally speaking the school has compact florescent lighting (CFLs). Classrooms, offices and corridor fixtures are four foot T-8 32W recessed fluorescents. Faculty room is compact fluorescent twin biaxial lamps, Storage closets have 60W incandescent bulbs and the gymnasium utilizes 400W metal halides lamps.

Parking lot lighting consists of pole mounted high pressure sodium light fixtures which are on a timer. The building exterior utilizes 250W MVR lamps and Luminaire wall packs.

3.6 Domestic Hot Water Systems

The school utilizes a BTU PVI 500N 400A-TP domestic hot water heater (DWH) to produce domestic hot water (DHW). The capacity is 400 gallon and was installed in 1989. The input is 399,000 BTU/hr and is estimated to be 80% efficient.

3.7 Plumbing Systems

The majority of the plumbing fixtures are low flow, 1.6 gallons per flush water closets, 1.0 gallon per flush urinals and 2.0 gallon per minute faucets. However, there were 10 water closets and 4 urinals that appear to have high-flow flush valves. Ultra –low flow fixtures with new infrared operated flush valves and faucets could be installed to reduce water usage. The plumbing fixtures are in good condition.

4.0 ENERGY CONSERVATION MEASURES

4.1 ECM-1 Boiler Replacement

Seven (7) A.O. Smith LB1000Four A.O. Smith LB1000 condensing hot water boilers, have inputs of 1,000,000 BTU, outputs of 900,000 BTU; 90% efficiency. They were installed in 1995 and are in good condition. According to the maintenance supervisor these boilers were problematic and had to be serviced frequently. This ECM would involve replacing the existing (7) boilers with three 3,000 MBH condensing boilers. Condensing boilers operate at higher efficiencies when producing lower water temperatures, typically in the 92-96% range. The increased system efficiency will result in lower natural gas usage.

Natural gas-fired boilers have an expected life of 25 years, according to ASHRAE, and total energy savings over the life of the project are estimated at 10,000 therms of natural gas and $10,000. The proposed boiler replacement will involve piping and wiring modifications as well as new venting and combustion air ducting.

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

ECM-1 Boiler Replacement

Budgetary Cost	Annual Utility Savings					Estimated Maintenance Savings	Total Savings	ROI	Potential Incentive*	Payback (without Incentive)	Payback (with Incentive)
	Electricity		Natural Gas	Water	Total						
$	kW	kWh	Therms	kGals	$	$	$		$	Years	Years
265,000	0	0	400	0	400	0	400	(1.0)	9,000	>20	>20

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

This measure is not recommended.

4.2 ECM-2 Replace DHW

The school utilizes a 400 gallon, 399,000 BTU BTU PVI 500N 400A-TP domestic hot water heater (DWH). The DHW is 80% efficiency and is past the useful life according to ASHRAE. This ECM assesses replacing this DWH with a more efficient tankless type domestic water heater sized to meet the DHW requirements of the building.

.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.

Domestic hot water heaters have an expected life of 12 years, according to ASHRAE, and total energy savings over the life of the project are estimated at 4,800 therms and $4,800.

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

ECM-2 Replace DHW

Budgetary Cost	Annual Utility Savings					Estimated Maintenance Savings	Total Savings	ROI	Potential Incentive*	Payback (without Incentive)	Payback (with Incentive)
	Electricity		Natural Gas	Water	Total						
$	kW	kWh	Therms	Kgals	$	$	$		$	Years	Years
6,000	0	0	400	0	400	0	400	(0.3)	300	15.0	14.3

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

This measure is not recommended.

4.3 ECM-3 Install VSDs and Premium Motors on HW Pumps

The hot water system is served by two (2) 15.0 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.

VSDs have an expected life of 15 years, according to ASHRAE, and total energy savings over the life of the project are estimated at 427,500 kWh and $61,500.

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

ECM-3 Install VSDs and Premium Motors on HW Pumps

Budgetary Cost	Annual Utility Savings					Estimated Maintenance Savings	Total Savings	ROI	Potential Incentive*	Payback (without Incentive)	Payback (with Incentive)
	Electricity		Natural Gas	Water	Total						
$	kW	kWh	Therms	Kgals	$	$	$		$	Years	Years
12,000	0	28,500	0	0	4,100	0	4,100	5.6	3,200	2.9	2.1

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

This measure is recommended.

4.4 ECM-4 Upgrade Pneumatic Controls to DDC System

The building has pneumatic controls. An air compressor creates compressed air to control the air handling units. The UVs have factory mounted thermostats that control the temperature in the

classrooms. The spaces with Split systems have a thermostat that controls the space temperature for that space.
The annual electrical and natural gas consumption is taken from the utility bills. Per the U.S. Energy Information Administration, the percent of a building's cooling and heating is 52% and 48%, respectively. Utilizing these numbers, the annual electrical and natural gas usage was found. Based on project experience upgrading to a central DDC system produces a 10% energy saving.

Upgrading to a central DDC system has an expected life of 15 years, according to ASHRAE, and total energy savings over the life of the project are estimated at 72,000 kWh, 66,000 therms, and $78,000. It is also noted that to continue to gain this annual savings proper maintenance of equipment needs to take place.

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

ECM-4 Upgrade Pneumatic Control to DDC System

Budgetary Cost	Annual Utility Savings					Estimated Maintenance Savings	Total Savings	ROI	Potential Incentive*	Payback (without Incentive)	Payback (with Incentive)
	Electricity		Natural Gas	Water	Total						
$	kW	kWh	Therms	kGals	$	$	$		$	Years	Years
20,000	0	4,800	4,400	0	5,200	0	5,200	2.9	0	3.8	3.8

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

This measure is recommended.

4.5 ECM-5 Demand Controlled Ventilation (DCV) (Cafeteria)

The cafeteria has a dedicated rooftop unit which is 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.

Controls have an expected life of 15 years, according to ASHRAE, and total energy savings over the life of the project are estimated at 348,000 kWh, 15,000 therms and $61,500.

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

ECM-5 Demand Controlled Ventilation (DCV) (Cafeteria)

Budgetary Cost	Annual Utility Savings					Estimated Maintenance Savings	Total Savings	ROI	Potential Incentive*	Payback (without Incentive)	Payback (with Incentive)
	Electricity		Natural Gas	Water	Total						
$	kW	kWh	Therms	kGals	$	$	$		$	Years	Years
10,000	0	3,400	200	0	700	0	700	0.0	0	14.3	14.3

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

This measure is recommended.

4.6 ECM-6 Window Replacements and Reduced Glazing

The school has 2,800 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 with internal blinds to decrease energy losses.

The calculation uses bin hours to estimate the occupied and unoccupied bin hours. This is converted to existing energy for the occupied and unoccupied cases using the existing window U-factor and the heating and cooling temperature. The two are summed together to create the annual utility usage for the baseline. The same steps are done to calculate the proposed utility usage. The difference in heating losses through the windows resulted in annual heating and cooling savings.

Windows have an expected life of 30 years, according to manufacturer; total energy savings over the life of the windows are estimated at 48,000 kWh and 69,000 therms, which results in a cost savings of $78,000 without inflation/escalation.

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

ECM-6 Window Replacements and Reduced Glazing

Budgetary Cost	Annual Utility Savings					Estimated Maintenance Savings	Total Savings	ROI	Potential Incentive*	Payback (without Incentive)	Payback (with Incentive)
	Electricity		Natural Gas	Water	Total						
$	kW	kWh	Therms	Kgals	$	$	$		$	Years	Years
127,000	0	1,600	2,300	0	2,600	0	2,600	(0.4)	0	>20	>20

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

This measure is not recommended.

4.7 ECM-7 Lighting Replacement / Upgrades

The school was upgraded in 2010 with new lamps bulbs and occupancy sensors to control the lighting system under the PSE&G Direct Install Program. Select area lights are still switched

manually. Some classrooms and restrooms have sensors but there is an opportunity to add ceiling mounted sensors to other offices, hallways and restrooms. The school has all electronic ballast. Generally speaking the school has compact florescent lighting (CFLs). Classrooms, offices and corridor fixtures are four foot T-8 32W recessed fluorescents. Faculty room is compact fluorescent twin biaxial lamps, Storage closets have 60W incandescent bulbs and the gymnasium utilizes 400W metal halides lamps.

Energy savings for this measure were calculated by applying the existing and proposed fixture wattages to estimated times of operation. The difference between energy requirements resulted in a total annual savings of 16,900 kWh with an electrical demand reduction of about 7.8 kW. Supporting calculations, including assumptions for lighting hours and annual energy usage for each fixture, are provided in Appendix C.

Lighting has an expected life of 15 years, according to the manufacturer, and total energy savings over the life of the project are estimated at 253,500 kWh and $37,500.

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

ECM-7 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	Water	Total						
$	kW	kWh	Therms	kGals	$	$	$		$	Years	Years
40,000	7.8	16,900	0	0	2,500	0	2,500	0	3,900	16.0	14.4

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

This measure is not recommended in lieu of ECM-8.

4.8 ECM-8 Install Lighting Controls (Occupancy Sensors)

Review of the comprehensive lighting survey determined that lighting in some restrooms, offices, hallways 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.

Using a process similar to that utilized in section 4.7, the energy savings for this measure were calculated by applying the known fixture wattages in the space to the estimated existing and proposed times of operation for each fixture. The difference between the two values resulted in an annual savings of 33,200 kWh. Ceiling-mounted occupancy sensors with dimmer control are required for this measure.

Occupancy sensors have an expected life of 15 years, according to the manufacturer, and total energy savings over the life of the project are estimated at 498,000 kWh and $64,500.

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

ECM-8 Install Lighting Controls (Occupancy Sensors)

Budgetary Cost	Annual Utility Savings					Estimated Maintenance Savings	Total Savings	ROI	Potential Incentive*	Payback (without Incentive)	Payback (with Incentive)
	Electricity		Natural Gas	Water	Total						
$	kW	kWh	Therms	kGals	$	$	$		$	Years	Years
17,000	0	33,200	0	0	4,300	0	4,300	3.2	2,900	4.0	3.3

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

This measure is not recommended due to the lighting being replaced in 2010.

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

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

The lighting retrofits and controls have an expected lifetime of 15 years, according to the manufacturer, and total energy savings over the life of the project are estimated at 696,000 kWh and $96,000.

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

ECM-9 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	Water	Total						
$	kW	kWh	Therms	kGals	$	$	$		$	Years	Years
57,000	7.8	46,400	0	0	6,400	0	6,400	0.7	6,800	8.9	7.8

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

This measure is not recommended.

4.10 ECM-10 Install Low Flow Plumbing

The school has a mixture of older and newer style fixtures in the restrooms. The older style fixtures consume more water than modern plumbing fixtures. It was determined that there is a combination of 14 toilets and urinals with an average water use of 3.5 gal/flush. Per the number of occupants, it was estimated that each toilet and faucet is utilized approximately nine times per day.

The water savings associated from replacing these fixtures with low-flow fixtures was calculated by taking the difference of the annual water usage for the proposed and base case. The basis of this calculation is the number of times each fixture is used, gallons per use, and number of fixtures. Replacing the existing fixtures in the restrooms with 1.28 gals/flush toilets would save 100 KGal annually.

Toilets and faucets have an expected life of 15 years, according to the manufacturer, and total energy savings over the life of the project are estimated at 1,500 KGal and $13,500.

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

ECM-10 Install Low Flow Plumbing

Budgetary Cost	Annual Utility Savings					Estimated Maintenance Savings	Total Savings	ROI	Potential Incentive*	Payback (without Incentive)	Payback (with Incentive)
	Electricity		Natural Gas	Water	Total						
$	kW	kWh	Therms	kGals	$	$	$		$	Years	Years
7,000	0	0	0	100	500	0	500	0.1	0	14.0	14.0

* There is no incentive available through the New Jersey Smart Start or Direct Install Programs for this ECM. See section 5.0 for other incentive opportunities.

This measure is not recommended.

5.0 PROJECT INCENTIVES

5.1 Incentives Overview

5.1.1 New Jersey Pay For Performance Program

The school 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 School annual energy cost

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

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

Electric

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

Gas

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

Incentive cap: 25% of total project cost

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

Electric

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

- Maximum incentive: $0.11/ kWh per projected kWh saved

Gas

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

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

Total P4P incentives are summarized below:

	Incentives $		
	Electric	**Gas**	**Total**
Incentive #1	$0	$0	$5,000
Incentive #2	$9,317	$9,626	$18,943
Incentive #3	$9,317	$9,626	$18,943
Total	**$18,635**	**$19,252**	**$42,886**

The current ECM's meet the minimum annual savings of 15% required by the P4P program and therefore the building would be eligible for incentives #1, #2 and #3. See Appendix D for additional analysis.

5.1.2 New Jersey Smart Start Program

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

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

5.1.3 Public Service Electric and Gas (PSE&G) Direct Install Program

The Public Service Electric and Gas (PSE&G) Direct Install Program targets government and non-profit customer facilities where the peak electrical demand does not exceed 150 kW in any of the previous 12 months. All elementary and secondary schools are considered regardless of size and rate class. Customers must be a PSE&G customer of record with separately metered PSE&G electric or gas account.

Direct Install is funded through PSE&G and is designed to provide capital for building energy upgrade projects to fast track implementation. The program will pay up to 80% of the costs for lighting retrofits including sensors and controls, refrigeration, motors, HVAC and site-specific custom projects. PSE&G makes the investment in energy efficiency upgrades easy for the client by initially covering 100% of the cost to install the recommended energy efficiency measures. The client will repay the remaining 20% of the total cost to install the energy efficiency measures,

interest free, over the next two years on your PSE&G bill or one lump sum payment depending on the clients preference. If a building is eligible for this funding, the PSE&G Direct Install Program can significantly reduce the implementation cost of energy conservation projects.

Installations must be completed by a PSE&G Direct Install participating contractor which is assigned by the PSE&G project manager. More information regarding the program can be found on PSE&G's website at:
http://www.pseg.com/business/small_large_business/save_energy/gov_efficiency.jsp.
Contractors will coordinate with the applicant to arrange installation of recommended measures identified in a previous energy assessment, such as this document once the cost proposal is approved.

This program is applicable to the High Mountain Road Elementary School based on the program requirements that consider all elementary and secondary schools regardless of size or rate class.

5.1.4 Direct Install Program

The Direct Install Program targets small and medium sized facilities where the peak electrical demand does not exceed 150 kW in any of the previous 12 months. Buildings must be located in New Jersey and served by one of the state's public, regulated electric utility companies. On a case-by-case basis, the program manager may accept a project for a customer that is within 10% of the 150 kW peak demand threshold.

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 significantly reduce the implementation cost of energy conservation projects.

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 a Direct Install participating contractor, a list of which can be found on the New Jersey Clean Energy Website at http://www.njcleanenergy.com. Contractors will coordinate with the applicant to arrange installation of recommended measures identified in a previous energy assessment, such as this document.

This program is not applicable to the High Mountain Road Elementary based on the school's average peak demand of 170.0 kW.

5.1.5 Energy Savings Improvement Plans (ESIP)

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

ESIP allows local units to use "energy savings obligations" to pay for the capital costs of energy improvements to their facilities. This can be done over a maximum term of 15 years. Energy savings obligations are not considered "new general obligation debt" of a local unit and do not count against debt limits or require voter approval. They may be issued as refunding bonds or

leases. Savings generated from the installation of energy conservation measures pay the principal of and interest on the bonds; for that reason, the debt service created by the ESOs is not paid from the debt service fund, but is paid from the general fund.

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

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

6.0 ALTERNATIVE ENERGY SCREENING EVALUATION

6.1 Solar

6.1.1 Photovoltaic Rooftop Solar Power Generation

The school was evaluated for the potential to install rooftop photovoltaic (PV) solar panels for power generation. Present technology incorporates the use of solar cell arrays that produce direct current (DC) electricity. This DC current is converted to alternating current (AC) with the use of an electrical device known as an inverter. The building's roof has sufficient room to install a large solar cell array.

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

Installation of (PV) arrays in the state New Jersey will allow the owner to participate in the New Jersey solar renewable energy certificates program (SREC). This is a program that has been set up to allow entities with large amounts of environmentally unfriendly emissions to purchase credits from zero emission (PV) solar-producers. One SREC credit is equivalent to 1000 kilowatt hours of PV electrical production; these credits can be traded for period of 15 years from the date of installation. The average SREC value per credit is estimated to be about $75/ SREC per year based on current market data, and this number was utilized in the cash flow for this report.

The existing load justifies the use of a 50.0 kW PV solar array. The system costs for PV installations were derived from contractor budgetary pricing in the state of New Jersey for estimates of total cost of system installation. It should be noted that the cost of installation is currently about $4.00 per watt or $4,000 per kW of installed system. Other cost considerations will also need to be considered such as structural reinforcement of the roof. PV panels have an approximate 20 year life span; however, the inverter device that converts DC electricity to AC has a life span of 10 to 12 years and will need to be replaced multiple times during the useful life of the PV system.

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

Photovoltaic (PV) Rooftop Solar Power Generation – 50.0 kW System

Budgetary Cost	Annual Utility Savings				Total Savings	New Jersey Renewable Energy Incentive*	New Jersey Renewable SREC**	Payback (without incentive)	Payback (with incentives)
	Electricity		Natural Gas	Total					
$	kW	kWh	Therms	$	$	$	$	Years	Years
200,000	50.0	65,167	0	9,384	9,384	0	4,888	>20	14.0

** Estimated Solar Renewable Energy Certificate Program (SREC) for 15 years at $95/1000 kWh

This measure is not recommended due to the long payback time. It is suggested, however, that the market for SREC credits is closely monitored. This market is fluctuating, and if the value per SREC is increased the measure could potentially show for a shorter payback in the near future.

6.1.2 Solar Thermal Hot Water Plant

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

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

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

This measure is not recommended due to the relatively low use of domestic hot water throughout the entire year.

6.2 Demand Response Curtailment

Presently, electricity is delivered by Orange & Rockland, which receives the electricity from regional power grid RFC. Direct Energy 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 school 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 June 2011 through May 2012, the electric usage for the school had a maximum electricity demand of 170.0 kW and a minimum of 90.0 kW. The monthly average over the observed 12 month period was 120.0 kW.

This measure is not recommended because the school does not have adequate load to meet the required minimum load reduction.

7.0 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 school 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)
High Mountain Road Elementary School	78	147	59

The high Mountain Elementary school has an above average Energy Star rating of 59, with a score of 50 being the median score. By implementing the measures discussed in this report, it is expected that the EUI can be reduced and the score increased. By obtaining a score of 75 or better, the school would be eligible to receive the Energy Star Rating Certification.

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/). The account has been shared with the NYSERDABENCHMARKING master account.

Username: franklinlakesboe
Password: energystar

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

The user name and password for the building's EPA Portfolio Manager Account has been provided to Michael Solokas, Business Administrator

8.0 CONCLUSIONS & RECOMMENDATIONS

The LGEA energy audit conducted by CHA at the High Mountain Road Elementary School identified several potential ECMs including Domestic hot water heater replacement, lighting control replacement, installing VSDs and premium motors, upgrading pneumatic controls and installing low flow plumbing fixtures can yield potential annual savings of $15,200. A summary of the costs, savings, and paybacks are as follows:

ECM-2 Replace DHW

Budgetary Cost	Annual Utility Savings					Estimated Maintenance Savings	Total Savings	ROI	Potential Incentive*	Payback (without Incentive)	Payback (with Incentive)
	Electricity		Natural Gas	Water	Total						
$	kW	kWh	Therms	Kgals	$	$	$		$	Years	Years
6,000	0	0	400	0	400	0	400	(0.3)	300	15.0	14.3

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

ECM-3 Install VSDs and Premium Motors on HW Pumps

Budgetary Cost	Annual Utility Savings					Estimated Maintenance Savings	Total Savings	ROI	Potential Incentive*	Payback (without Incentive)	Payback (with Incentive)
	Electricity		Natural Gas	Water	Total						
$	kW	kWh	Therms	Kgals	$	$	$		$	Years	Years
12,000	0	28500	0	0	4,100	0	4,100	5.6	3,200	2.9	2.1

ECM-4 Upgrade Pneumatic Control to DDC System

Budgetary Cost	Annual Utility Savings					Estimated Maintenance Savings	Total Savings	ROI	Potential Incentive*	Payback (without Incentive)	Payback (with Incentive)
	Electricity		Natural Gas	Water	Total						
$	kW	kWh	Therms	kGals	$	$	$		$	Years	Years
20,000	0	4,800	4,400	0	5,200	0	5,200	2.9	0	3.8	3.8

ECM-5 Demand Controlled Ventilation (DCV) (Cafeteria)

Budgetary Cost	Annual Utility Savings					Estimated Maintenance Savings	Total Savings	ROI	Potential Incentive*	Payback (without Incentive)	Payback (with Incentive)
	Electricity		Natural Gas	Water	Total						
$	kW	kWh	Therms	kGals	$	$	$		$	Years	Years
10,000	0	3,400	200	0	700	0	700	0.0	0	14.3	14.3

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

ECM-8 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	Water	Total						
$	kW	kWh	Therms	kGals	$	$	$		$	Years	Years
17,000	0	33,200	0	0	4,300	0	4,300	3.2	2,900	4.0	3.3

ECM-10 Install Low Flow Plumbing

Budgetary Cost	Annual Utility Savings					Estimated Maintenance Savings	Total Savings	ROI	Potential Incentive*	Payback (without Incentive)	Payback (with Incentive)
	Electricity		Natural Gas	Water	Total						
$	kW	kWh	Therms	kGals	$	$	$		$	Years	Years
7,000	0	0	0	100	500	0	500	0.1	0	14.0	14.0

* There is no incentive available through the New Jersey Sma

APPENDIX A

Utility Usage Analysis

Third Party Energy Suppliers List

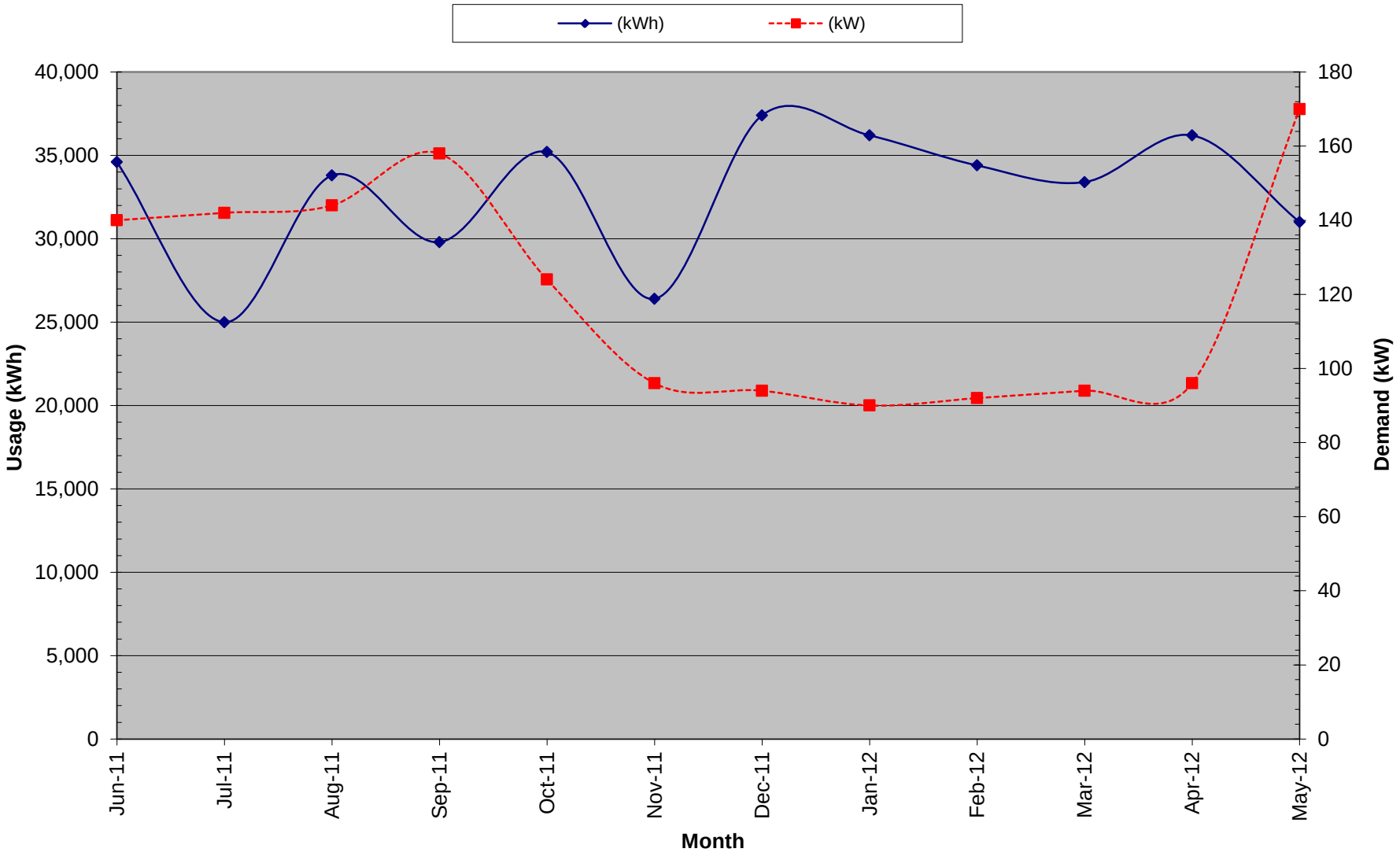
Franklin Lakes BOE
490 Pulis Ave, Franklin Lakes, NJ 07417

Electric Service
Delivery - Orange & Rockland
Supplier - Direct Energy

For Service at: **High Mountain Road School**
Account No.: **92912-67009 / 1065365**
Meter No.: **601037376**

			Charges			Unit Costs		
Month	Consumption (kWh)	Demand (kW)	Total ($)	Delivery ($)	Supply ($)	Blended Rate ($/kWh)	Consumption ($/kWh)	Demand ($/kW)
June-11	34,600	140.0	$5,552.61	$2,014.76	$3,537.85	$ 0.160	$ 0.145	$ 3.79
July-11	25,000	142.0	$4,210.96	$1,654.71	$2,556.25	$ 0.168	$ 0.147	$ 3.79
August-11	33,800	144.0	$5,492.36	$2,036.31	$3,456.05	$ 0.162	$ 0.146	$ 3.79
September-11	29,800	158.0	$4,952.49	$1,905.44	$3,047.05	$ 0.166	$ 0.147	$ 3.71
October-11	35,200	124.0	$5,533.52	$1,934.32	$3,599.20	$ 0.157	$ 0.146	$ 3.23
November-11	26,400	96.0	$4,193.76	$1,494.36	$2,699.40	$ 0.159	$ 0.147	$ 3.31
December-11	37,400	94.0	$5,207.34	$1,953.54	$3,253.80	$ 0.139	$ 0.131	$ 3.38
January-12	36,200	90.0	$5,024.08	$1,874.68	$3,149.40	$ 0.139	$ 0.130	$ 3.53
February-12	34,400	92.0	$4,792.90	$1,800.10	$2,992.80	$ 0.139	$ 0.130	$ 3.46
March-12	33,400	94.0	$4,664.47	$1,758.67	$2,905.80	$ 0.140	$ 0.130	$ 3.38
April-12	36,200	96.0	$5,024.10	$1,874.70	$3,149.40	$ 0.139	$ 0.130	$ 3.31
May-12	31,000	170.0	$1,922.82	$1,922.82		$ 0.062	$ 0.043	$ 3.40
Total (All)	**393,400**	**170.0**	**$56,571.41**	**$22,224.41**	**$34,347.00**	**$ 0.144**	**$ 0.131**	**$ 3.53**

Electric Usage - High Mountain Road School



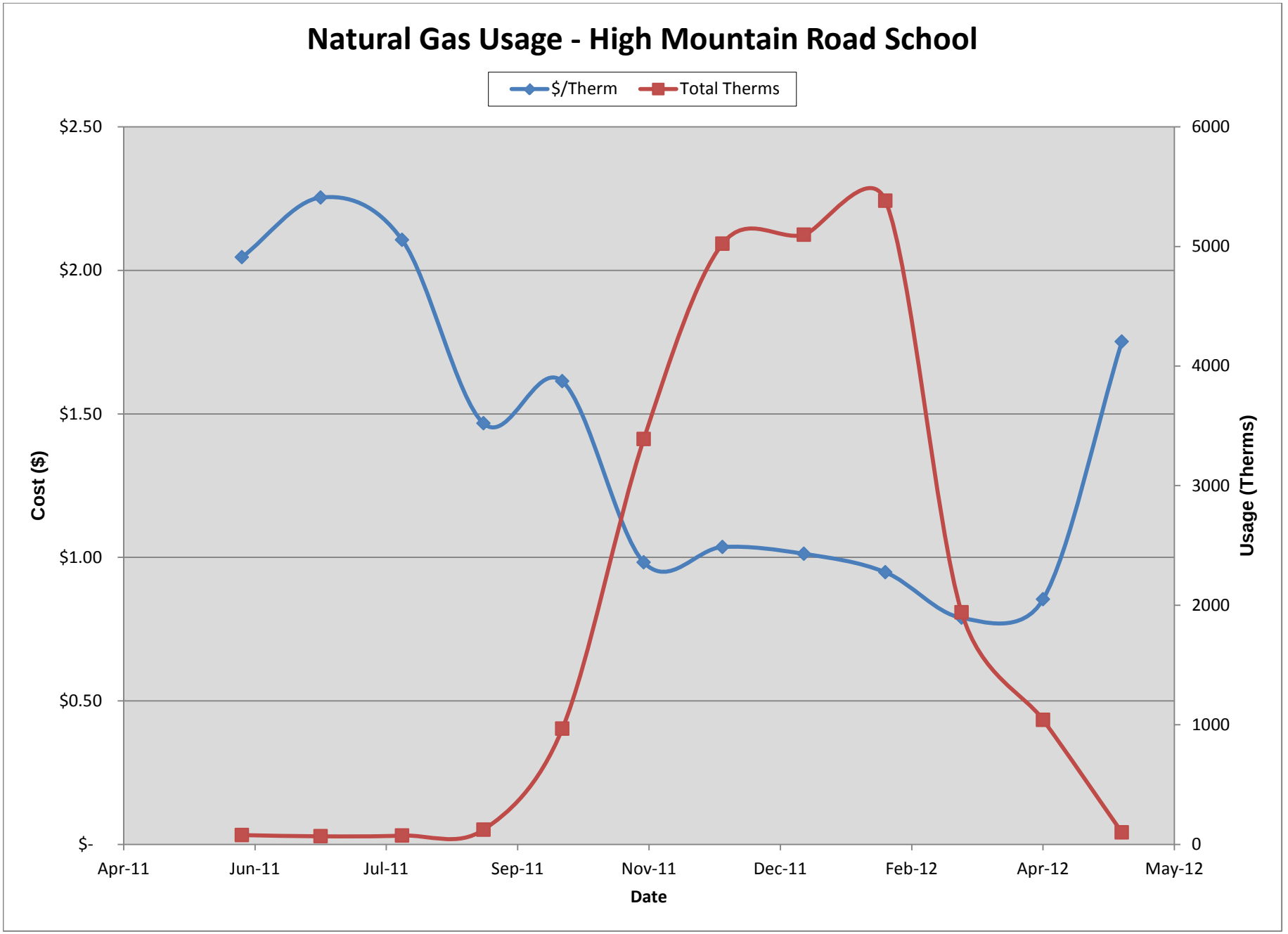
Utility Data - HMRS
Electric Graph

Franklin Lakes BOE
490 Pulis Ave, Franklin Lakes, NJ 07417

Gas Service
Delivery - **PSE&G**
Supplier - **Woodruff Energy / Hess**

For Service at: **High Mountain Road School**
Account No.: **6715616205**
Meter No.: **3164219**

Month	Total ($)	Delivery ($)	Supply ($)	Total Therms	$/Therm
Jun-11	$ 158.69	$ 108.38	$ 50.31	77.57	$ 2.05
Jul-11	$ 151.22	$ 107.87	$ 43.35	67.096	$ 2.25
Aug-11	$ 154.67	$ 110.20	$ 44.47	73.433	$ 2.11
Sep-11	$ 179.20	$ 117.30	$ 61.90	122.163	$ 1.47
Oct-11	$ 1,559.96	$ 1,075.56	$ 484.40	966.857	$ 1.61
Nov-11	$ 3,330.17	$ 1,536.96	$ 1,793.21	3388.662	$ 0.98
Dec-11	$ 5,205.30	$ 1,844.09	$ 3,361.21	5023.644	$ 1.04
Jan-12	$ 5,161.07	$ 1,777.02	$ 3,384.05	5097.884	$ 1.01
Feb-12	$ 5,102.77	$ 1,774.88	$ 3,327.89	5382.756	$ 0.95
Mar-12	$ 1,530.97	$ 331.82	$ 1,199.15	1939.629	$ 0.79
Apr-12	$ 888.95	$ 245.23	$ 643.72	1041.251	$ 0.85
May-12	$ 175.80	$ 113.73	$ 62.07	100.358	$ 1.75
Total	**$ 23,598.77**	**$ 9,143.04**	**$ 14,455.73**	**23281.303**	**$ 1.01**

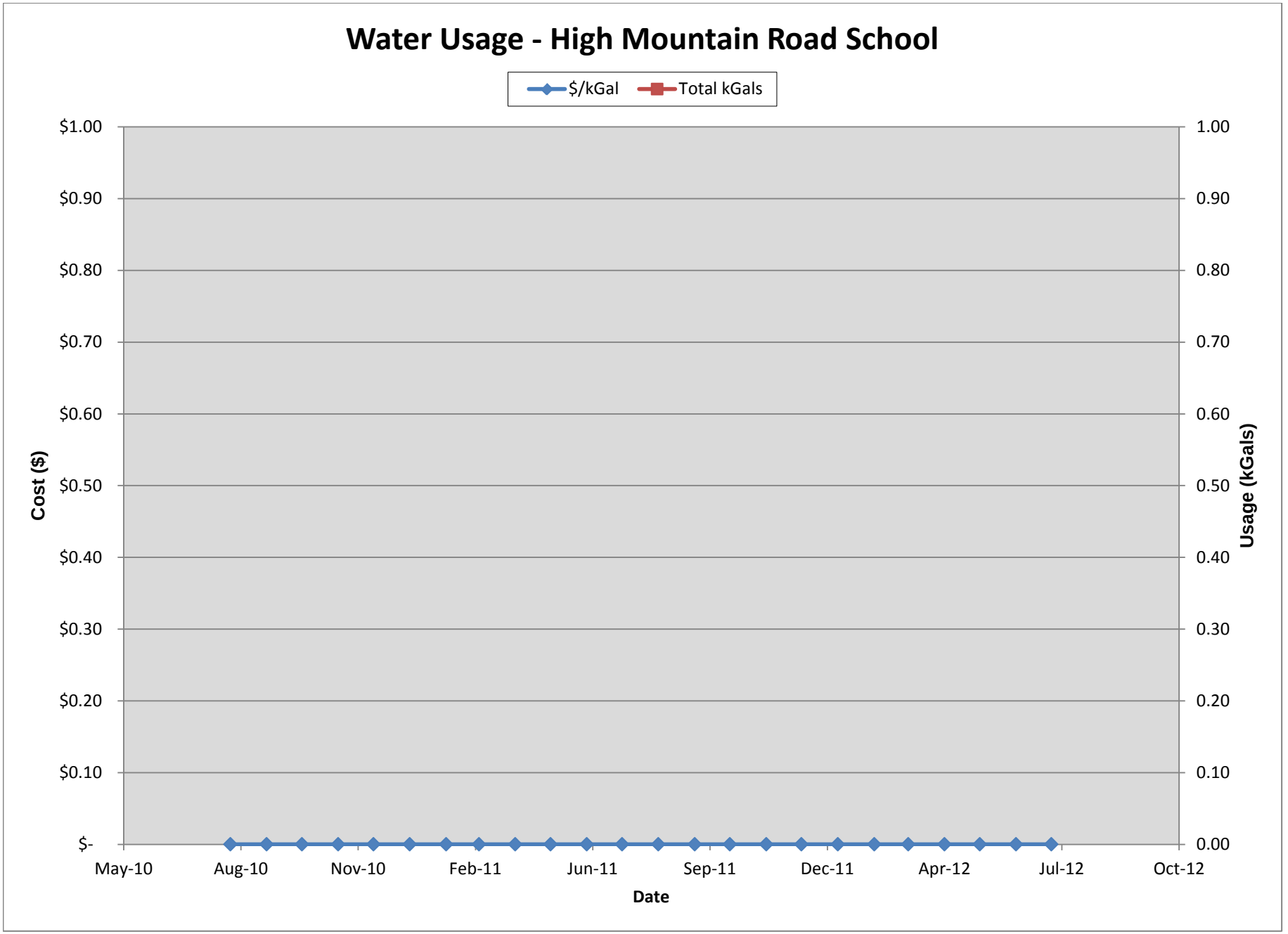

Natural Gas Usage - High Mountain Road School
$/Therm
Total Therms
$2.50
$2.00
$1.50
$1.00
$0.50
$-
Cost ($)
6000
5000
4000
3000
2000
1000
0
Usage (Therms)
Apr-11
Jun-11
Jul-11
Sep-11
Nov-11
Dec-11
Feb-12
Apr-12
May-12
Date

Franklin Lakes BOE
490 Pulis Ave, Franklin Lakes, NJ 07417

Water Service
Delivery -
Supplier -

For Service at: **High Mountain Road School**
Account No.:
Meter No.:

Month	Total ($)	Total kGals	$/kGal
Aug-10			#DIV/0!
Sep-10			#DIV/0!
Oct-10			#DIV/0!
Nov-10			#DIV/0!
Dec-10			#DIV/0!
Jan-11			#DIV/0!
Feb-11			#DIV/0!
Mar-11			#DIV/0!
Apr-11			#DIV/0!
May-11			#DIV/0!
Jun-11			#DIV/0!
Jul-11			#DIV/0!
Aug-11			#DIV/0!
Sep-11			#DIV/0!
Oct-11			#DIV/0!
Nov-11			#DIV/0!
Dec-11			#DIV/0!
Jan-12			#DIV/0!
Feb-12			#DIV/0!
Mar-12			#DIV/0!
Apr-12			#DIV/0!
May-12			#DIV/0!
Jun-12			#DIV/0!
Jul-12			#DIV/0!
Total	**$ -**	**0.00**	**#DIV/0!**


Water Usage - High Mountain Road School
$/kGal
Total kGals
$1.00
$0.90
$0.80
$0.70
$0.60
$0.50
$0.40
$0.30
$0.20
$0.10
$-
Cost ($)
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
Usage (kGals)
May-10
Aug-10
Nov-10
Feb-11
Jun-11
Sep-11
Dec-11
Apr-12
Jul-12
Oct-12
Date

PSE&G ELECTRIC SERVICE TERRITORY

Last Updated: 10/24/12

***CUSTOMER CLASS - R – RESIDENTIAL C – COMMERCIAL I –INDUSTRIAL**

Supplier	Telephone & Web Site	*Customer Class
AEP Energy, Inc. 309 Fellowship Road, Fl. 2 Mount Laurel, NJ 08054	(866) 258-3782 www.aepenergy.com	**C/I ACTIVE**
Alpha Gas and Electric, LLC 641 5th Street Lakewood, NJ 08701	(855) 553-6374 www.alphagasandelectric.com	**R/C ACTIVE**
Ambit Northeast, LLC 103 Carnegie Center Suite 300 Princeton, NJ 08540	(877)-30-AMBIT (877) 302-6248 www.ambitenergy.com	**R/C ACTIVE**
American Powernet Management, LP 437 North Grove St. Berlin, NJ 08009	(877) 977-2636 www.americanpowernet.com	**C ACTIVE**
Amerigreen Energy, Inc. 1463 Lamberton Road Trenton, NJ 08611	888-423-8357 www.amerigreen.com	**R/C ACTIVE**
AP Gas & Electric, LLC 10 North Park Place, Suite 420 Morristown, NJ 07960	(855) 544-4895 www.apge.com	**R/C/I ACTIVE**
Astral Energy LLC 16 Tyson Place Bergenfield, NJ 07621	(201) 384-5552 www.astralenergyllc.com	**R/C/I ACTIVE**
Barclays Capital Services, Inc. 70 Hudson Street Jersey City, NJ 07302-4585	(888) 978-9974 www.group.barclays.com	**C ACTIVE**
BBPC, LLC d/b/a Great Eastern Energy 116 Village Blvd. Suite 200 Princeton, NJ 08540	(888) 651-4121 www.greateasternenergy.com	**C/I ACTIVE**
Champion Energy Services, LLC 72 Avenue L Newark, NJ 07105	(877) 653-5090 www.championenergyservices.com	**R/C/I ACTIVE**
Choice Energy, LLC 4257 US Highway 9, Suite 6C Freehold, NJ 07728	888-565-4490 www.4choiceenergy.com	**R/C ACTIVE**
Clearview Electric, Inc. 505 Park Drive Woodbury, NJ 08096	(888) CLR-VIEW (800) 746-4702 www.clearviewenergy.com	**R/C/I ACTIVE**
Commerce Energy, Inc. 7 Cedar Terrace Ramsey, NJ 07446	1-866-587-8674 www.commerceenergy.com	**R ACTIVE**
ConEdison Solutions Cherry Tree Corporate Center 535 State Highway Suite 180 Cherry Hill, NJ 08002	(888) 665-0955 www.conedsolutions.com	**C/I ACTIVE**
Constellation NewEnergy, Inc. 900A Lake Street, Suite 2 Ramsey, NJ 07446	(866) 237-7693 www.constellation.com	**R/C/I ACTIVE**

Constellation Energy 900A Lake Street, Suite 2 Ramsey, NJ 07446	(877) 997-9995 www.constellation.com	**R** **ACTIVE**
Credit Suisse, (USA) Inc. 700 College Road East Princeton, NJ 08450	(212) 538-3124 www.creditsuisse.com	**C** **ACTIVE**
Direct Energy Business, LLC 120 Wood Avenue, Suite 611 Iselin, NJ 08830	(888) 925-9115 www.directenergybusiness.com	**C/I** **ACTIVE**
Direct Energy Services, LLC 120 Wood Avenue, Suite 611 Iselin, NJ 08830	(866) 348-4193 www.directenergy.com	**R** **ACTIVE**
Discount Energy Group, LLC 811 Church Road, Suite 149 Cherry Hill, New Jersey 08002	(800) 282-3331 www.discountenergygroup.com	**R/C** **ACTIVE**
Dominion Retail, Inc. d/b/a Dominion Energy Solutions 395 Route #70 West Suite 125 Lakewood, NJ 08701	(866) 275-4240 www.dom.com/products	**R/C** **ACTIVE**
DTE Energy Supply, Inc. One Gateway Center, Suite 2600 Newark, NJ 07102	(877) 332-2450 www.dtesupply.com	**C/I ACTIVE**
Energy.me Midwest LLC 90 Washington Blvd Bedminster, NJ 07921	(855) 243-7270 www.energy.me	**R/C/I** **ACTIVE**
Energy Plus Holdings LLC 309 Fellowship Road East Gate Center, Suite 200 Mt. Laurel, NJ 08054	(877) 866-9193 www.energypluscompany.com	**R/C** **ACTIVE**
Ethical Electric Benefit Co. d/b/a Ethical Electric 100 Overlook Center, 2nd Fl. Princeton, NJ 08540	(888) 444-9452 www.ethicalelectric.com	**R/C ACTIVE**
FirstEnergy Solutions 300 Madison Avenue Morristown, NJ 07962	(800) 977-0500 www.fes.com	**C/I** **ACTIVE**
Gateway Energy Services Corp. 44 Whispering Pines Lane Lakewood, NJ 08701	(800) 805-8586 www.gesc.com	**R/C/I ACTIVE**
GDF SUEZ Energy Resources NA, Inc. 333 Thornall Street Sixth Floor Edison, NJ 08837	(866) 999-8374 www.gdfsuezenergyresources.com	**C/I** **ACTIVE**
Glacial Energy of New Jersey, Inc. 75 Route 15 Building E Lafayette, NJ 07848	(888) 452-2425 www.glacialenergy.com	**C/I** **ACTIVE**
Global Energy Marketing LLC 129 Wentz Avenue Springfield, NJ 07081	(800) 542-0778 www.globalp.com	**C/I ACTIVE**

Green Mountain Energy Company 211 Carnegie Center Drive Princeton, NJ 08540	(866) 767-5818 www.greenmountain.com/commercial- home	**C/I** **ACTIVE**
Hess Corporation 1 Hess Plaza Woodbridge, NJ 07095	(800) 437-7872 www.hess.com	**C/I** **ACTIVE**
HIKO Energy, LLC 655 Suffern Road Teaneck, NJ 07666	(888) 264-4908 www.hikoenergy.com	**R/C** **ACTIVE**
HOP Energy, LLC d/b/a Metro Energy, HOP Fleet Fueling, HOP Energy Fleet Fueling 1011 Hudson Avenue Ridgefield, NJ 07657	(877) 390-7155 www.hopenergy.com	**R/C/I** **ACTIVE**
Hudson Energy Services, LLC 7 Cedar Street Ramsey, New Jersey 07446	(877) Hudson 9 www.hudsonenergyservices.com	**C** **ACTIVE**
IDT Energy, Inc. 550 Broad Street Newark, NJ 07102	(877) 887-6866 www.idtenergy.com	**R/C** **ACTIVE**
Independence Energy Group, LLC 3711 Market Street, 10th Fl. Philadelphia, PA 19104	(877) 235-6708 www.chooseindependence.com	**R/C ACTIVE**
Integrys Energy Services, Inc. 99 Wood Ave, South, Suite 802 Iselin, NJ 08830	(877) 763-9977 www.integrysenergy.com	**C/I** **ACTIVE**
Keil & Sons, Inc. **d/b/a Systrum Energy** 1 Bergen Blvd. Fairview, NJ 07022	(877) 797-8786 www.systrumenergy.com	**R/C/I ACTIVE**
Liberty Power Delaware, LLC 1973 Highway 34, Suite 211 Wall, NJ 07719	(866) 769-3799 www.libertypowercorp.com	**C/I ACTIVE**
Liberty Power Holdings, LLC 1973 Highway 34, Suite 211 Wall, NJ 07719	(866) 769-3799 www.libertypowercorp.com	**C/I ACTIVE**
Linde Energy Services 575 Mountain Avenue Murray Hill, NJ 07974	(800) 247-2644 www.linde.com	**C/I** **ACTIVE**
Marathon Power LLC 302 Main Street Paterson, NJ 07505	(888) 779-7255 www.mecny.com	**R/C/I** **ACTIVE**
MXenergy Electric Inc. 900 Lake Street Ramsey, NJ 07446	(800) 785-4374 www.mxenergy.com	**R/C/I** **ACTIVE**
NATGASCO, Inc. 532 Freeman St. Orange, NJ 07050	(973) 678-1800 x. 251 www.supremeenergyinc.com	**R/C** **ACTIVE**
NextEra Energy Services New Jersey, LLC 651 Jernee Mill Road Sayreville, NJ 08872	(877) 528-2890 Commercial (800) 882-1276 Residential www.nexteraenergyservices.com	**R/C/I** **ACTIVE**
New Jersey Gas & Electric 1 Bridge Plaza fl. 2 Fort Lee, NJ 07024	(866) 568-0290 www.NJGandE.com	**R/C** **ACTIVE**

Noble Americas Energy Solutions The Mac-Cali Building 581 Main Street, 8th Floor Woodbridge, NJ 07095	(877) 273-6772 www.noblesolutions.com	**C/I ACTIVE**
North American Power and Gas, LLC 222 Ridgedale Avenue Cedar Knolls, NJ 07927	(888) 313-9086 www.napower.com	**R/C/I ACTIVE**
Palmco Power NJ, LLC One Greentree Centre 10,000 Lincoln Drive East, Suite 201 Marlton, NJ 08053	(877) 726-5862 www.PalmcoEnergy.com	**R/C/I ACTIVE**
Pepco Energy Services, Inc. 112 Main St. Lebanon, NJ 08833	(800) ENERGY-9 (363-7499) www.pepco-services.com	**C/I ACTIVE**
Plymouth Rock Energy, LLC 338 Maitland Avenue Teaneck, NJ 07666	(855) 32-POWER (76937) www.plymouthenergy.com	**R/C/I ACTIVE**
PPL Energy Plus, LLC 811 Church Road Cherry Hill, NJ 08002	(800) 281-2000 www.pplenergyplus.com	**C/I ACTIVE**
Public Power & Utility of New Jersey, LLC 39 Old Ridgebury Rd. Suite 14 Danbury, CT 06810	(888) 354-4415 www.ppandu.com	**R/C/I ACTIVE**
Reliant Energy 211 Carnegie Center Princeton, NJ 08540	(877) 297-3795 (877) 297-3780 www.reliant.com/pjm	**R/C/I ACTIVE**
ResCom Energy LLC 18C Wave Crest Ave. Winfield Park, NJ 07036	(888) 238-4041 http://rescomenergy.com	**R/C/I ACTIVE**
Respond Power LLC 10 Regency CT Lakewood, NJ 08701	(877) 973-7763 www.respondpower.com	**R/C/I ACTIVE**
South Jersey Energy Company 1 South Jersey Plaza, Route 54 Folsom, NJ 08037	(800) 266-6020 www.southjerseyenergy.com	**C/I ACTIVE**
Sperian Energy Corp. 1200 Route 22 East, Suite 2000 Bridgewater, NJ 08807	(888) 682-8082	**R/C/I ACTIVE**
S.J. Energy Partners, Inc. 208 White Horse Pike, Suite 4 Barrington, N.J. 08007	(800) 695-0666 www.sjnaturalgas.com	**R/C ACTIVE**
Spark Energy, L.P. 2105 CityWest Blvd., Ste 100 Houston, Texas 77042	(800) 441-7514 www.sparkenergy.com	**R/C/I ACTIVE**
Sprague Energy Corp. 12 Ridge Road Chatham Township, NJ 07928	(800) 225-1560 www.spragueenergy.com	**C/I ACTIVE**
Starion Energy PA Inc. 101 Warburton Avenue Hawthorne, NJ 07506	(800) 600-3040 www.starionenergy.com	**R/C/I ACTIVE**
Stream Energy 309 Fellowship Rd., Suite 200 Mt. Laurel, NJ 08054	(877) 39-8150 www.streamenergy.net	**R ACTIVE**

UGI Energy Services, Inc. d/b/a GASMARK 224 Strawbridge Drive Suite 107 Moorestown, NJ 08057	(856) 273-9995 www.ugienergyservices.com	**C/I** **ACTIVE**
Verde Energy USA, Inc. 50 East Palisades Avenue Englewood, NJ 07631	(800) 388-3862 www.lowcostpower.com	**R/C/I** **ACTIVE**
Viridian Energy 2001 Route 46, Waterview Plaza Suite 310 Parsippany, NJ 07054	(866) 663-2508 www.viridian.com	**R/C/I** **ACTIVE**
Xoom Energy New Jersey, LLC 744 Broad Street Newark, NJ 07102	(888) 997-8979 www.xoomenergy.com	**R/C/I** **ACTIVE**
YEP Energy 89 Headquarters Plaza North #1463 Morristown, NJ 07960	(855) 363-7736 www.yepenergyNJ.com	**R/C/I** **ACTIVE**
Your Energy Holdings, LLC One International Boulevard Suite 400 Mahwah, NJ 07495-0400	(855) 732-2493 www.thisisyourenergy.com	**R/C/I** **ACTIVE**

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PSE&G GAS SERVICE TERRITORY
Last Updated: 10/24/12
***CUSTOMER CLASS - R – RESIDENTIAL C – COMMERCIAL I - INDUSTRIAL**

Supplier	Telephone & Web Site	*Customer Class
Ambit Northeast, LLC 103 Carnegie Center Suite 300 Princeton, NJ 08540	(877)-30-AMBIT (877) 302-6248 www.ambitenergy.com	**R/C ACTIVE**
Astral Energy LLC 16 Tyson Place Bergenfield, NJ 07621	888-850-1872 www.astralenergyllc.com	**R/C/I ACTIVE**
BBPC, LLC Great Eastern Energy 116 Village Blvd. Suite 200 Princeton, NJ 08540	888-651-4121 www.greateasternenergy.com	**C/I ACTIVE**
Clearview Electric Inc. d/b/a Clearview Gas 1744 Lexington Ave. Pennsauken, NJ 08110	800-746-4720 www.clearviewenergy.com	**R/C ACTIVE**
Colonial Energy, Inc. 83 Harding Road Wyckoff, NJ 07481	845-429-3229 www.colonialgroupinc.com	**C/I ACTIVE**
Commerce Energy, Inc. 7 Cedar Terrace Ramsey, NJ 07746	(888) 817-8572 www.commerceenergy.com	**R ACTIVE**
Compass Energy Services, Inc. 1085 Morris Avenue, Suite 150 Union, NJ 07083	866-867-8328 908-638-6605 www.compassenergy.net	**C/I ACTIVE**
ConocoPhillips Company 224 Strawbridge Drive, Suite 107 Moorestown, NJ 08057	800-646-4427 www.conocophillips.com	**C/I ACTIVE**
Consolidated Edison Energy, Inc. d/b/a Con Edison Solutions 535 State Highway 38, Suite 140 Cherry Hill, NJ 08002	888-686-1383 x2130 www.conedenergy.com	
Consolidated Edison Solutions, Inc. Cherry Tree Corporate Center 535 State Highway 38, Suite 140 Cherry Hill, NJ 08002	888-665-0955 www.conedsolutions.com	**C/I ACTIVE**
Constellation NewEnergy-Gas Division, LLC 900A Lake Street, Suite 2 Ramsey, NJ 07466	(800) 900-1982 www.constellation.com	**C/I ACTIVE**
Direct Energy Business, LLC 120 Wood Avenue, Suite 611 Iselin, NJ 08830	888-925-9115 www.directenergy.com	**C/I ACTIVE**
Direct Energy Services, LLP 120 Wood Avenue, Suite 611 Iselin, NJ 08830	866-348-4193 www.directenergy.com	**R ACTIVE**
Gateway Energy Services Corp. 44 Whispering Pines Lane Lakewood, NJ 08701	800-805-8586 www.gesc.com	**R/C/I ACTIVE**
UGI Energy Services, Inc. d/b/a GASMARK 224 Strawbridge Drive, Suite 107 Moorestown, NJ 08057	856-273-9995 www.ugienergyservices.com	**C/I ACTIVE**
Global Energy Marketing, LLC 129 Wentz Avenue Springfield, NJ 07081	800-542-0778 www.globalp.com	**C/I ACTIVE**
Great Eastern Energy 116 Village Blvd., Suite 200 Princeton, NJ 08540	888-651-4121 www.greateastern.com	**C/I ACTIVE**

Greenlight Energy 330 Hudson Street, Suite 4 Hoboken, NJ 07030	718-204-7467 www.greenlightenergy.us	**C** **ACTIVE**
Hess Energy, Inc. One Hess Plaza Woodbridge, NJ 07095	800-437-7872 www.hess.com	**C/I** **ACTIVE**
Hess Small Business Services, LLC One Hess Plaza Woodbridge, NJ 07095	888-494-4377 www.hessenergy.com	**C/I** **ACTIVE**
HIKO Energy, LLC 655 Suffern Road Teaneck, NJ 07666	(888) 264-4908 www.hikoenergy.com	**R/C** **ACTIVE**
Hudson Energy Services, LLC 7 Cedar Street Ramsey, NJ 07446	877- Hudson 9 www.hudsonenergyservices.com	**C** **ACTIVE**
IDT Energy, Inc. 550 Broad Street Newark, NJ 07102	877-887-6866 www.idtenergy.com	**R/C** **ACTIVE**
Integrys Energy Services – Natural Gas, LLC 99 Wood Avenue South Suite #802 Iselin, NJ 08830	800-536-0151 www.integrysenergy.com	**C/I** **ACTIVE**
Intelligent Energy 2050 Center Avenue, Suite 500 Fort Lee, NJ 07024	800-927-9794 www.intelligentenergy.org	**R/C/I** **ACTIVE**
Keil & Sons, Inc. **d/b/a Systrum Energy** 1 Bergen Blvd. Fairview, NJ 07022	1-877-797-8786 www.systrumenergy.com	**R/C/I** **ACTIVE**
Major Energy Services, LLC 10 Regency CT Lakewood, NJ 08701	888-625-6760 www.majorenergy.com	**R/C/I** **ACTIVE**
Marathon Power LLC 302 Main Street Paterson, NJ 07505	888-779-7255 www.mecny.com	**R/C/I** **ACTIVE**
Metromedia Energy, Inc. 6 Industrial Way Eatontown, NJ 07724	800-828-9427 www.metromediaenergy.com	**C** **ACTIVE**
Metro Energy Group, LLC 14 Washington Place Hackensack, NJ 07601	888-53-Metro www.metroenergy.com	**R/C** **ACTIVE**
MxEnergy, Inc. 900 Lake Street Ramsey, NJ 07446	800-758-4374 www.mxenergy.com	**R/C/I** **ACTIVE**
NATGASCO (Mitchell Supreme) 532 Freeman Street Orange, NJ 07050	800-840-4GAS www.natgasco.com	**C** **ACTIVE**
New Energy Services LLC 101 Neptune Avenue Deal, New Jersey 07723	800-660-3643 www.newenergyservicesllc.com	**R/C/I** **ACTIVE**
New Jersey Gas & Electric 1 Bridge Plaza, Fl. 2 Fort Lee, NJ 07024	866-568-0290 www.NJGandE.com	**R/C** **ACTIVE**
Noble Americas Energy Solutions The Mac-Cali Building 581 Main Street, 8th fl. Woodbridge, NJ 07095	877-273-6772 www.noblesolutions.com	**C/I** **ACTIVE**
North American Power & Gas, LLC d/b/a North American Power 197 Route 18 South Ste. 3000 East Brunswick, NJ 08816	(888) 313-9086 www.napower.com	**R/C/I** **ACTIVE**

Palmco Energy NJ, LLC One Greentree Centre 10,000 Lincoln Drive East, Suite 201 Marlton, NJ 08053	877-726-5862 www.PalmcoEnergy.com	**R/C/I** **ACTIVE**
Pepco Energy Services, Inc. 112 Main Street Lebanon, NJ 08833	800-363-7499 www.pepco-services.com	**C/I** **ACTIVE**
Plymouth Rock Energy, LLC 338 Maitland Avenue Teaneck, NJ 07666	855-32-POWER (76937) www.plymouthenergy.com	**R/C/I** **ACTIVE**
PPL EnergyPlus, LLC 811 Church Road - Office 105 Cherry Hill, NJ 08002	800-281-2000 www.pplenergyplus.com	**C/I** **ACTIVE**
Respond Power LLC 10 Regency CT Lakewood, NJ 08701	(877) 973-7763 www.respondpower.com	**R/C/I** **ACTIVE**
South Jersey Energy Company 1 South Jersey Plaza, Route 54 Folsom, NJ 08037	800-266-6020 www.southjerseyenergy.com	**C/I** **ACTIVE**
S.J. Energy Partners, Inc. 208 White Horse Pike, Suite 4 Barrington, NJ 08007	800-695-0666 www.sjnaturalgas.com	**R/C** **ACTIVE**
Spark Energy Gas, L.P. 2105 CityWest Blvd, Ste 100 Houston, Texas 77042	800-411-7514 www.sparkenergy.com	**R/C/I** **ACTIVE**
Sprague Energy Corp. 12 Ridge Road Chatham Township, NJ 07928	855-466-2842 www.spragueenergy.com	**C/I** **ACTIVE**
Stuyvesant Energy LLC 10 West Ivy Lane, Suite 4 Englewood, NJ 07631	800-640-6457 www.stuyfuel.com	**C** **ACTIVE**
Stream Energy New Jersey, LLC 309 Fellowship Road Suite 200 Mt. Laurel, NJ 08054	(973) 494-8097 www.streamenergy.net	**R/C ACTIVE**
Systrum Energy 1 Bergen Blvd. Fairview, NJ 07022	877-797-8786 www.systrumenergy.com	**R/C/I** **ACTIVE**
Woodruff Energy 73 Water Street Bridgeton, NJ 08302	800-557-1121 www.woodruffenergy.com	**R/C/I** **ACTIVE**
Woodruff Energy US LLC 73 Water Street, P.O. Box 777 Bridgeton, NJ 08302	856-455-1111 800-557-1121 www.woodruffenergy.com	**C/I** **ACTIVE**
Xoom Energy New Jersey, LLC 744 Broad Street Newark, NJ 07102	888-997-8979 www.xoomenergy.com	**R/C/I** **ACTIVE**
Your Energy Holdings, LLC One International Boulevard Suite 400 Mahwah, NJ 07495-0400	(855) 732-2493 www.thisisyourenergy.com	**R/C/I** **ACTIVE**

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APPENDIX B

Equipment Inventory

Franklin Lakes Public Schools - NJBPU
CHA Project #24497
High Mountain Road Elementary School

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.
B-1, B-2, B-3, B-4, B-5, B-6, B-7	7	A.O. Smith	LB 1000	#1:920G9528324, #2:920G9528339, #3:920G9528415, #4:920G9528385, #5:920G9528399, #6:920G9528325, #7:920G9528400	Heating / Natural Gas	Input: 1,000,000 BTU, Output: 900,000 BTU, 90% efficiency	Mech Room	School	1995	7	Good Condition
DWH	1	PVI	500N400A-TP	89585788	Heating / Natural Gas	Input: 399,000, 40 gallons, 80%	Mech Room	School	1989	-	Good Condition
P-1, P-2, P-3, P-4, P-5, P-6, P-7	7	B&G	Series 60	-	Heating / Electric	1725 RPM, 1 HP, 88.5%	Mech Room	HWR to Boiler	1995	-	Good Condition
P-8, P-9	2	B&G	4BC	#1:1956503, #2:195504	Heating / Electric	15 HP, 1725 RPM, 85.5% efficiency, 540 gpm	Mech Room	School	1995	-	Good Condition
RTU H-1	1	Trane	THC120A3ROA10D	330101015L	HVAC / Electric DX	-	Closet	Music / Lunchroom	2003	11	Good Condition
AHCU H-1	1	Trane	2TTA2048A3000AA	32132953F	HVAC / Electric DX	-	Roof	208	2003	11	Good Condition
CU-2	1	AG	024GB1AG	L955021441	HVAC / Electric DX	2-ton	Ground	-	2003	1	Good Condition

Energy Audit of High Mountain Road Elementary School

CHA Project No.24497

Existing Lighting

Cost of Electricity: **$0.125** **$/kWh**

$6.07 **$/kW**

			EXISTING CONDITIONS									
	Area Description	**Usage**	**No. of Fixtures**	**Standard Fixture Code**	**NYSERDA 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" 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 annual hours for the usage group	Retrofit control device	(kW/space) * (Annual Hours)	Notes
254	114A	Offices	3	T 32 R F 4 (ELE)	F44LL	118	0.35	C-OCC	2400	C-OCC	850	1
254	Printer Room	Offices	2	T 32 R F 4 (ELE)	F44LL	118	0.24	C-OCC	2400	C-OCC	566	2
254	107 Classroom	Classrooms	12	T 32 R F 4 (ELE)	F44LL	118	1.42	C-OCC	2400	C-OCC	3,398	3
71	107 TR	Bath Room	1	I 60	I60/1	60	0.06	SW	2000	C-OCC	120	4
254	106 Classroom	Classrooms	12	T 32 R F 4 (ELE)	F44LL	118	1.42	C-OCC	2400	C-OCC	3,398	5
71	106 TR	Bath Room	1	I 60	I60/1	60	0.06	SW	2000	C-OCC	120	6
254	109 Classroom	Classrooms	12	T 32 R F 4 (ELE)	F44LL	118	1.42	C-OCC	2400	C-OCC	3,398	7
71	109 TR	Bath Room	1	I 60	I60/1	60	0.06	SW	2000	C-OCC	120	8
254	108 Classrom	Classrooms	12	T 32 R F 4 (ELE)	F44LL	118	1.42	C-OCC	2400	C-OCC	3,398	9
71	108 TR	Bath Room	1	I 60	I60/1	60	0.06	SW	2000	C-OCC	120	10
254	111 Classroom	Classrooms	12	T 32 R F 4 (ELE)	F44LL	118	1.42	C-OCC	2400	C-OCC	3,398	11
71	111 TR	Bath Room	1	I 60	I60/1	60	0.06	SW	2000	C-OCC	120	12
254	110 Classroom	Classrooms	12	T 32 R F 4 (ELE)	F44LL	118	1.42	C-OCC	2400	C-OCC	3,398	13
71	110 TR	Bath Room	1	I 60	I60/1	60	0.06	SW	2000	C-OCC	120	14
254	112 Classroom	Classrooms	14	T 32 R F 4 (ELE)	F44LL	118	1.65	C-OCC	2400	C-OCC	3,965	15
7	112 TR	Bath Room	1	2T 32 R F 2 (u) (ELE) Thin Tube	FU2LL	60	0.06	SW	2000	C-OCC	120	16
71	112 Storage	Storage Areas	3	I 60	I60/1	60	0.18	SW	1000	C-OCC	180	17
254	112A	Classrooms	4	T 32 R F 4 (ELE)	F44LL	118	0.47	C-OCC	2400	C-OCC	1,133	18
254	113 Classroom	Classrooms	14	T 32 R F 4 (ELE)	F44LL	118	1.65	C-OCC	2400	C-OCC	3,965	19
7	113 TR	Bath Room	1	2T 32 R F 2 (u) (ELE) Thin Tube	FU2LL	60	0.06	SW	2000	C-OCC	120	20
71	Vestibule	Hallways	1	I 60	I60/1	60	0.06	SW	2280	C-OCC	137	21
55	Corridor	Hallways	6	2T 17 R F 3 (ELE)	F23ILL	47	0.28	SW	2280	C-OCC	643	22
71	Vestibule	Hallways	1	I 60	I60/1	60	0.06	SW	2280	C-OCC	137	23
55	Corridor	Hallways	12	2T 17 R F 3 (ELE)	F23ILL	47	0.56	SW	2280	C-OCC	1,286	24
254	105 Nurse	Offices	4	T 32 R F 4 (ELE)	F44LL	118	0.47	C-OCC	2400	C-OCC	1,133	25
7	105 TR	Bath Room	1	2T 32 R F 2 (u) (ELE) Thin Tube	FU2LL	60	0.06	SW	2000	C-OCC	120	26
198	105 TR	Bath Room	1	2T 17 R F 2 (ELE) REFLECTOR	F22LL	31	0.03	SW	2000	C-OCC	62	27
254	105 Vest	Hallways	1	T 32 R F 4 (ELE)	F44LL	118	0.12	SW	2280	SW	269	28
201	Cust	Storage/Janitor	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.09	SW	500	C-OCC	45	29
13	Main Lobby	Hallways	3	S 32 P F 2 (ELE)	F42LL	60	0.18	SW	2280	C-OCC	410	30
201	103 Main Office	Offices	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.54	SW	2400	C-OCC	1,296	31
71	103 Storage	Storage Areas	1	I 60	I60/1	60	0.06	SW	1000	C-OCC	60	32
201	103B Principal	Offices	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.54	SW	2400	C-OCC	1,296	33
7	103B TR	Bath Room	1	2T 32 R F 2 (u) (ELE) Thin Tube	FU2LL	60	0.06	SW	2000	C-OCC	120	34
198	103B TR	Bath Room	1	2T 17 R F 2 (ELE) REFLECTOR	F22LL	31	0.03	SW	2000	C-OCC	62	35
13	103 Vest	Hallways	1	S 32 P F 2 (ELE)	F42LL	60	0.06	SW	2280	C-OCC	137	36
13	103 Mailroom	Offices	1	S 32 P F 2 (ELE)	F42LL	60	0.06	SW	2400	C-OCC	144	37
55	Corridor	Hallways	10	2T 17 R F 3 (ELE)	F23ILL	47	0.47	SW	2280	SW	1,072	38
9	Gym / Auditorium	Gynasium	9	High Bay MH 400 35 Feet High	MH400/1	458	4.12	SW	2000	C-OCC	8,244	39
11	Storage	Storage Areas	3	S 34 P F 2 (MAG)	F42EE	72	0.22	SW	1000	C-OCC	216	40
71	Storage	Storage Areas	3	I 60	I60/1	60	0.18	SW	1000	C-OCC	180	41
71	Girl's TR	Bath Room	1	I 60	I60/1	60	0.06	SW	2000	C-OCC	120	42
198	Girl's TR	Bath Room	1	2T 17 R F 2 (ELE) REFLECTOR	F22LL	31	0.03	SW	2000	C-OCC	62	43
71	Vestibule	Hallways	3	I 60	I60/1	60	0.18	SW	2280	C-OCC	410	44
13	Storage	Storage Areas	3	S 32 P F 2 (ELE)	F42LL	60	0.18	SW	1000	C-OCC	180	45
13	Gym Office	Offices	3	S 32 P F 2 (ELE)	F42LL	60	0.18	SW	2400	C-OCC	432	46
71	Gym Office	Offices	2	I 60	I60/1	60	0.12	SW	2400	C-OCC	288	47
71	Boy's TR	Bath Room	1	I 60	I60/1	60	0.06	SW	2000	C-OCC	120	48
198	Boy's TR	Bath Room	1	2T 17 R F 2 (ELE) REFLECTOR	F22LL	31	0.03	SW	2000	C-OCC	62	49
71	Vestibule	Hallways	3	I 60	I60/1	60	0.18	SW	2280	C-OCC	410	50

Energy Audit of High Mountain Road Elementary School

CHA Project No.24497

Existing Lighting

Cost of Electricity: **$0.125** **$/kWh**

$6.07 **$/kW**

			EXISTING CONDITIONS									
	Area Description	**Usage**	**No. of Fixtures**	**Standard Fixture Code**	**NYSERDA 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" 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 annual hours for the usage group	Retrofit control device	(kW/space) * (Annual Hours)	Notes
13	Cust Office	Offices	6	S 32 P F 2 (ELE)	F42LL	60	0.36	SW	2400	SW	864	51
201	Library	Classrooms	36	T 32 R F 3 (ELE)	F43ILL/2	90	3.24	C-OCC	2400	C-OCC	7,776	52
55	Boy's TR	Bath Room	6	2T 17 R F 3 (ELE)	F23ILL	47	0.28	SW	2000	C-OCC	564	53
7	Faculty Women's TR	Bath Room	3	2T 32 R F 2 (u) (ELE) Thin Tube	FU2LL	60	0.18	SW	2000	C-OCC	360	54
7	Cust	Cafeteria	1	2T 32 R F 2 (u) (ELE) Thin Tube	FU2LL	60	0.06	SW	1600	SW	96	55
7	Faculty Men's TR	Bath Room	2	2T 32 R F 2 (u) (ELE) Thin Tube	FU2LL	60	0.12	SW	2000	C-OCC	240	56
201	123 Cafeteria	Cafeteria	20	T 32 R F 3 (ELE)	F43ILL/2	90	1.80	SW	1600	C-OCC	2,880	57
254	123 Storage	Storage Areas	4	T 32 R F 4 (ELE)	F44LL	118	0.47	SW	1000	C-OCC	472	58
55	Corridor	Hallways	5	2T 17 R F 3 (ELE)	F23ILL	47	0.24	SW	2280	C-OCC	536	59
13	125 Music	Classrooms	24	S 32 P F 2 (ELE)	F42LL	60	1.44	SW	2400	C-OCC	3,456	60
201	127 Faculty Lunchroom	Break/Lunch Rooms	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.81	C-OCC	3102.5	C-OCC	2,513	61
257	Girl's TR	Bath Room	6	CFT40W	CFT40/2-BX	72	0.43	SW	2000	C-OCC	864	62
254	126 Classroom	Classrooms	9	T 32 R F 4 (ELE)	F44LL	118	1.06	C-OCC	2400	C-OCC	2,549	63
254	129 Classroom	Classrooms	9	T 32 R F 4 (ELE)	F44LL	118	1.06	C-OCC	2400	C-OCC	2,549	64
254	128 Classroom	Classrooms	9	T 32 R F 4 (ELE)	F44LL	118	1.06	C-OCC	2400	C-OCC	2,549	65
254	131 Classroom	Classrooms	9	T 32 R F 4 (ELE)	F44LL	118	1.06	C-OCC	2400	C-OCC	2,549	66
254	130 Classroom	Classrooms	9	T 32 R F 4 (ELE)	F44LL	118	1.06	C-OCC	2400	C-OCC	2,549	67
254	133 Classroom	Classrooms	9	T 32 R F 4 (ELE)	F44LL	118	1.06	C-OCC	2400	C-OCC	2,549	68
254	132 Classroom	Classrooms	9	T 32 R F 4 (ELE)	F44LL	118	1.06	C-OCC	2400	C-OCC	2,549	69
201	135 Classroom	Classrooms	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.54	C-OCC	2400	C-OCC	1,296	70
201	137 Office	Offices	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.27	SW	2400	C-OCC	648	71
201	134 Classroom	Classrooms	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	C-OCC	2400	C-OCC	2,592	72
201	136 Classroom	Classrooms	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	C-OCC	2400	C-OCC	2,592	73
13	139 Copyroom	Offices	4	S 32 P F 2 (ELE)	F42LL	60	0.24	C-OCC	2400	C-OCC	576	74
13	141 Office	Offices	4	S 32 P F 2 (ELE)	F42LL	60	0.24	C-OCC	2400	C-OCC	576	75
199	Boy's TR	Bath Room	6	W 32 C F 1 (ELE)	F41LL	32	0.19	SW	2000	C-OCC	384	76
199	Girl's TR	Bath Room	6	W 32 C F 1 (ELE)	F41LL	32	0.19	SW	2000	C-OCC	384	77
201	142	Classrooms	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.36	C-OCC	2400	C-OCC	864	78
13	Cust Closet	Storage/Janitor	1	S 32 P F 2 (ELE)	F42LL	60	0.06	SW	500	C-OCC	30	79
201	143	Classrooms	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.54	C-OCC	2400	C-OCC	1,296	80
13	Teacher TR	Bath Room	1	S 32 P F 2 (ELE)	F42LL	60	0.06	SW	2000	C-OCC	120	81
201	146	Classrooms	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	C-OCC	2400	C-OCC	2,592	82
13	145 Computer	Classrooms	32	S 32 P F 2 (ELE)	F42LL	60	1.92	SW	2400	C-OCC	4,608	83
201	147 Science	Classrooms	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	SW	2400	C-OCC	2,592	84
201	148	Classrooms	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.81	SW	2400	C-OCC	1,944	85
13	150	Classrooms	32	S 32 P F 2 (ELE)	F42LL	60	1.92	SW	2400	C-OCC	4,608	86
13	149 Music	Classrooms	16	S 32 P F 2 (ELE)	F42LL	60	0.96	SW	2400	C-OCC	2,304	87
55	Corridor	Hallways	33	2T 17 R F 3 (ELE)	F23ILL	47	1.55	SW	2280	C-OCC	3,536	88
	Total		**607**				**53.84**				**123,166**	

APPENDIX C

ECM Calculations

Energy Conservation Measure		Approx. Costs ($)	Approx. Savings ($/year)	Payback (Years) w/o Incentive	Potential Incentive ($)*	Payback (Years) w/ Incentive	Recommended For Implementation
ECM-1	Boiler Replacement (replace 7 boilers with 3 condensing boilers)	265,000	400	>20	9,000	>20	
ECM-2	Replace DHW	6,000	400	15	300	14	X
ECM-3	Install VSD & Premium Motors on HW Pumps	12,000	4,100	3	3,200	2	X
ECM-4	Upgrade Pneumatic Control to DDC System	20,000	5,200	4	0	4	X
ECM-5	Demand Controlled Ventilation (Cafeteria)	10,000	700	14	0	14	X
ECM-6	Window Replacements and Reduced Glazing	127,000	2,600	>20	0	>20	
ECM-7	Lighting Replacement / Upgrades	40,000	2,500	16	3,900	14	
ECM-8	Install Lighting Controls (Occupancy Sensors)	17,000	4,300	4	2,900	3	X
ECM-9	Lighting Replacements with Lighting Controls (Occupancy Sensors)	57,000	6,400	9	6,800	8	
ECM-10	Install Low Flow Plumbing Fixtures	7,000	500	14	0	14	X

Franklin Lakes Public Schools - NJBPU
CHA Project #24497
High Mountain Road Elementary School

ECM Summary Sheet

ECM-1 Boiler Replacement (replace 7 boilers with 3 condensing boilers)

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
265,000	0	0	400	400	0	400	(1.0)	9,000	>20	>20

ECM-2 Replace DHW

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
6,000	0	0	400	400	0	400	(0.3)	300	15.0	14.3

ECM-3 Install VSD & Premium Motors on HW Pumps

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
12,000	28,500	0	0	4,100	0	4,100	5.6	3,200	2.9	2.1

ECM-4 Upgrade Pneumatic Control to DDC System

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
20,000	4,800	0	4,400	5,200	0	5,200	2.9	0	3.8	3.8

ECM-5 Demand Controlled Ventilation (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
10,000	3,400	0	200	700	0	700	0.0	0	14.3	14.3

ECM-6 Window Replacements and Reduced Glazing

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
127,000	1,600	0	2,300	2,600	0	2,600	(0.4)	0	>20	>20

ECM-7 Lighting Replacement / Upgrades

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
40,000	16,900	7.8	0	2,500	0	2,500	(0.0)	3,900	16.0	14.4

ECM-8 Install Lighting Controls (Occupancy Sensors)

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
17,000	33,200	0	0	4,300	0	4,300	3.2	2,900	4.0	3.3

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

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
57,000	46,400	7.8	0	6,400	0	6,400	0.7	6,800	8.9	7.8

ECM-10 Install Low Flow Plumbing Fixtures

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
7,000	0	0	0	500	0	500	0.1	0	14.0	14.0

Franklin Lakes Public Schools - NJBPU
CHA Project #24497

Utility Costs		Yearly Usage	MTCDE	Building Area	Annual Utility Cost	
$ 0.144	$/kWh blended		0.00042021	47,173	Electric	Natural Gas
$ 0.131	$/kWh supply	393,400	0.00042021		$56,571.41	$23,598.77
$ 3.53	$/kW	120	0			
$ 1.01	$/Therm	23,281	0.00533471			
$ 6.18	$/kgals	569	0			

High Mountain Road Elementary School

	Item	Savings						Cost	Simple Payback	MTCDE	Life Expectancy	NJ Smart Start Incentives	Direct Install Eligible (Y/N)*	Direct Install Incentives**	Max Incentives	Payback w/ Incentives***	Simple Projected Lifetime Savings						ROI
		kW	kWh	therms	cooling kWh	kgal/yr	$										kW	kWh	therms	cooling	kgal/yr	$	
ECM-1	Boiler Replacement (replace 7 boilers with 3 condensing boilers)	0.0	0	424	0	0	$ 400	$ 265,127	662.8	2.3	25	$ 9,000	Y	$ 75,000	$ 9,000	640.3	0.0	0	10,606	0	0	$ 10,751	(1.0)
ECM-2	Replace DHW	0.0	0	364	0	0	$ 400	$ 6,062	15.2	1.9	12	$ 300	Y	$ 4,200	$ 300	14.4	0.0	0	4,364	0	0	$ 4,423	(0.3)
ECM-3	Install VSD & Premium Motors on HW Pumps	0.0	28,486	0	0	0	$ 4,100	$ 12,495	3.0	12.0	20	$ 3,200	Y	$ 8,700	$ 3,200	2.3	0.0	569,711	0	0	0	$ 81,925	5.6
ECM-4	Upgrade Pneumatic Control to DDC System	0.0	0	4,409	4,776	0	$ 5,200	$ 20,000	3.8	25.5	15			$ -	$ -	3.8	0.0	0	66,130	71,641	0	$ 77,334	2.9
ECM-5	Demand Controlled Ventilation (Cafeteria)	0.0	0	184	3,417	0	$ 700	$ 10,000	14.3	2.4	15			$ -	$ -	14.3	0.0	0	2,756	51,256	0	$ 10,164	0.0
ECM-6	Window Replacements and Reduced Glazing	0.0	0	2,320	1,613	0	$ 2,600	$ 127,000	48.8	13.1	30			$ -	$ -	48.8	0.0	0	69,612	48,398	0	$ 77,521	(0.4)
ECM-7	Lighting Replacement / Upgrades	7.8	16,906	0	0	0	$ 2,500	$ 40,164	16.1	7.1	15	$ 3,890	Y	$ 28,100	$ 3,890	14.5	117.6	253,589	0	0	0	$ 38,171	(0.0)
ECM-8	Install Lighting Controls (Occupancy Sensors)	0.0	33,162	0	0	0	$ 4,300	$ 17,010	4.0	13.9	15	$ 2,940	Y	$ 11,900	$ 2,940	3.3	0.0	497,426	0	0	0	$ 71,531	3.2
ECM-9	Lighting Replacements with Lighting Controls (Occupancy Sensors)	7.8	46,410	0	0	0	$ 6,400	$ 57,174	8.9	19.5	15	$ 6,830	Y	$ 40,000	$ 6,830	7.9	117.6	696,157	0	0	0	$ 96,088	0.7
ECM-10	Install Low Flow Plumbing Fixtures	0.0	0	0	0	87	$ 500	$ 7,053	14.1	0.0	15			$ -	$ -	14.1	0.0	0	0	0	1,311	$ 8,105	0.1
	Total (Does Not Include ECM-8 & ECM-9)	**7.8**	**74,896**	**7,701**	**9,806**	**87**	**$ 20,300**	**$ 504,911**	24.9		18	$ 19,330		$ 127,900	$ 19,330	23.9	117.6	1,265,867	153,468	171,295	1,311	$ 366,312	(0.3)
	Total Measures with Payback <15	**7.8**	**74,896**	**4,409**	**4,776**	**0**	**$ 15,700**	**$ 89,669**	5.7		16	$ 10,030		$ 48,700	$ 10,030	5.1	117.6	1,265,867	66,130	71,641	0	$ 255,348	1.8
	% of Existing	**7%**	**19%**	**33%**	**2%**	**15%**																	

ECM-1: Boiler Replacement

Existing Fuel Nat.Gas

Proposed Fuel Nat.Gas

Item	Value	Units	Formula/Comments
Baseline Fuel Cost	$ 1.01	/ Therm	
Proposed Fuel Cost	$ 1.01	/ Therm	
Baseline Fuel Use	19,091	Therms	Based on historical utility data
Existing Boiler Plant Efficiency	88%		Estimated or Measured
Baseline Boiler Load	1,679,979	Mbtu/yr	Baseline Fuel Use x Existing Efficiency x 100 Mbtu/Therms
Baseline Fuel Cost	$ 19,351		
Proposed Boiler Plant Efficiency	90%		New Boiler Efficiency
Proposed Fuel Use	18,666	Therms	Baseline Boiler Load / Proposed Efficiency / 100 Mbtu/Therms
Proposed Fuel Cost	$ 18,921		

*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**	**424**	**$0**	**$430**

Multipliers	
Material:	1.10
Labor:	1.35
Equipment:	1.10

ECM-1: Boiler Replacement - Cost

Description	QTY	UNIT	UNIT COSTS			SUBTOTAL COSTS			TOTAL COST	REMARKS
			MAT.	LABOR	EQUIP.	MAT.	LABOR	EQUIP.		
3,000 MBH NG Condensing Boiler	3	EA	$ 45,000	$ 2,000		$ 148,500	$ 8,100	$ -	$ 156,600	
Flue Installation	25	LF	$ 75.0	$ 15.00		$ 2,063	$ 506	$ -	$ 2,569	
Reprogram DDC system	3	EA	$ 100.0	$ 350.00		$ 330	$ 1,418	$ -	$ 1,748	
Miscellaneous Electrical	1	LS	$ 500	$ 250		$ 550	$ 338	$ -	$ 888	
Miscellaneous HW Piping	1	LS	$ 2,000	$ 1,000		$ 2,200	$ 1,350	$ -	$ 3,550	
Boiler room/space construction	1	LS	$ 20,000	$ 10,000		$ 22,000	$ 13,500	$ -	$ 35,500	
						$ -	$ -	$ -	$ -	
						$ -	$ -	$ -	$ -	
						$ -	$ -	$ -	$ -	
						$ -	$ -	$ -	$ -	
						$ -	$ -	$ -	$ -	

$ 200,854	Subtotal
$ 20,085.38	10% Contingency
$ 44,187.83	20% Contractor O&P
$ -	
$ 265,127	**Total**

ECM-2: Replace DHW

Summary

Item	Value	Units	Formula/Comments
Avg. Monthly Utility Demand by Water Heater	**155**	Therms/month	Calculated from utility bill
Total Annual Utility Demand by Water Heater	186,250	MBTU/yr	1therm = 100 MBTU
Existing DHW Heater Efficiency	80%		Per manufacturer nameplate
Total Annual Hot Water Demand (w/ standby losses)	149,000	MBTU/yr	
Existing Tank Size	40	Gallons	Per manufacturer nameplate
Hot Water Piping System Capacity	200	Gallons	Estimated Per existing system (includes HWR piping)
Hot Water Temperature	140	˚F	Per building personnel
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)	3.5	MBH	
Annual Standby Hot Water Load	30,660	MBTU/yr	
New Tank Size	0	Gallons	Based on Takagi Flash T-H1 instantaneous, condensing DHW Heater
Hot Water Piping System Capacity	200	Gallons	Estimated Per existing system (includes HWR piping)
Hot Water Temperature	140	˚F	
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)	2.9	MBH	
Annual Standby Hot Water Load	25,550	MBTU/yr	
Total Annual Hot Water Demand	143,890	MBTU/yr	
Proposed Avg. Hot water heater efficiency	96%		Based on Takagi Flash T-H1 instantaneous, condensing DHW Heater
Proposed Fuel Use	1,499	Therms	Standby Losses and inefficient DHW heater eliminated
Utility Cost	$1.01	$/Therm	
Existing Operating Cost of DHW	$1,888	$/yr	
Proposed Operating Cost of DHW	$1,519	$/yr	

Savings Summary:

Utility	Energy Savings	Cost Savings
Therms/yr	364	$369

Multipliers	
Material:	1.10
Labor:	1.35
Equipment:	1.10

ECM-2: Replace DHW - Cost

Description	QTY	UNIT	UNIT COSTS			SUBTOTAL COSTS			TOTAL COST	REMARKS
			MAT.	LABOR	EQUIP.	MAT.	LABOR	EQUIP.		
Gas-Fired DHW Heater Removal	1	LS		$ 50		$ -	$ 68	$ -	$ 68	
Rinnai tankless Domestic water heaters	1	LS	$ 3,000	$ 500		$ 3,300	$ 675	$ -	$ 3,975	
Miscellaneous Electrical	1	LS	$ 300			$ 330	$ -	$ -	$ 330	
Miscellaneous Piping and Valves	1	LS	$ 200			$ 220	$ -	$ -	$ 220	
						$ -	$ -	$ -	$ -	
						$ -	$ -	$ -	$ -	
						$ -	$ -	$ -	$ -	
						$ -	$ -	$ -	$ -	

$ 4,593	Subtotal
$ 459	10% Contingency
$ 1,010	20% Contractor O&P
$ -	
$ 6,062	**Total**

ECM-3: Install VSD & Premium Motors on HW Pumps

Variable Inputs

Blended Electric Rate	$0.14
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-8, P-9	1	15.0	15.0	85.5%	92.0%	10.47	9.73
					Total:	10.47	9.73

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	6	0	0%	0	0.0	0.0%	0	0
92.5	74	45	0	0%	0	0.0	0.0%	0	0
87.5	72	146	0	0%	0	0.0	0.0%	0	0
82.5	69	298	0	0%	0	0.0	0.0%	0	0
77.5	67	476	0	0%	0	0.0	0.0%	0	0
72.5	64	662	0	0%	0	0.0	0.0%	0	0
67.5	62	740	0	0%	0	0.0	0.0%	0	0
62.5	58	765	0	0%	0	0.0	0.0%	0	0
57.5	53	733	0	0%	0	0.0	0.0%	0	0
52.5	47	668	668	53%	6,997	2.0	84.1%	1,588	5,409
47.5	43	659	659	58%	6,903	2.6	88.8%	1,906	4,997
42.5	38	685	685	64%	7,175	3.2	92.7%	2,382	4,794
37.5	34	739	739	69%	7,741	4.0	95.9%	3,062	4,679
32.5	30	717	717	75%	7,511	4.8	98.2%	3,515	3,995
27.5	25	543	543	81%	5,688	5.8	99.8%	3,133	2,555
22.5	20	318	318	86%	3,331	6.8	100.0%	2,163	1,168
17.5	16	245	245	92%	2,566	7.9	100.0%	1,948	618
12.5	11	156	156	97%	1,634	9.2	99.7%	1,441	193
7.5	6	92	92	100%	964	9.9	99.0%	918	45
2.5	2	36	36	100%	377	9.9	99.0%	359	18
-2.5	-3	19	19	100%	199	9.9	99.0%	190	9
-7.5	-8	8	8	100%	84	9.9	99.0%	80	4
		8,760	**4,887**		**51,170**			**22,685**	**28,486**

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	28,486	0	$0	$4,096

Multipliers	
Material:	1.10
Labor:	1.35
Equipment:	1.10

ECM-3: Install VSD & Premium Motors on HW Pumps - Cost

Description	QTY	UNIT	UNIT COSTS			SUBTOTAL COSTS			TOTAL COST	REMARKS
			MAT.	LABOR	EQUIP.	MAT.	LABOR	EQUIP.		
15 HP VFD	2	ea	$ 2,336	$ 772		$ 5,140	$ 2,084	$ -	$ 7,223	
15 HP Motor	2	ea	$ 861	$ 110		$ 1,894	$ 298	$ -	$ 2,192	
Electrical - misc.	2	ls	$ 200	$ 150		$ 440	$ 405	$ -	$ 845	
Duct pressure sensor/transmitter	2	ea	$ 500	$ 200		$ 1,100	$ 540	$ -	$ 1,640	
						$ -	$ -	$ -	$ -	
						$ -	$ -	$ -	$ -	
						$ -	$ -	$ -	$ -	
						$ -	$ -	$ -	$ -	
						$ -	$ -	$ -	$ -	
						$ -	$ -	$ -	$ -	

$ 11,900	Subtotal
$ 595	5% Contingency
$ -	
$ -	
$ 12,495	**Total**

Manchester Township School District - NJBPU
CHA Project #24383
Manchester Middle School

ECM 4: Upgrade Pneumatic Control to DDC System

EXISTING CONDITIONS		
Cost of Electricty	$ 0.14	$/kWh
Cost of Natural Gas	$ 1.01	$/Therms
Existing Facility Electric usage	393,400	kWh[1]
Existing Facility Natural Gas Usage	23,281	Therms[1]
Existing Facility Electric usage	115,299	kBtu
Existing Facility Natural Gas Usage	233	kBtu
Existing Facility Energy Usage	115,532	kBtu
Existing Facility HVAC Energy Usage	61,232	kBtu[2]
SAVINGS		
Total Energy Savings	9,185	kBtu[5]
Electricity Savings	4,776	kWh[3]
Natural Gas Savings	4,409	Therms[4]
Total Cost Savings	$5,156	$
Estimated Total Project Cost	$ 20,000	[6]
Simple Payback	3.9	**years**

Assumptions

1		Total combined energy usage from utility bill analysis
2	53%	of facility total energy used for HVAC; Source: http://www.esource.com/BEA/demo/PDF/CEA_offices.pdf
3	52%	of electrical energy savings
4	48%	of natural gas energy savings
5	15%	energy savings, typial for upgrading to DDC
6	$ 20,000	estimated measure installed

Manchester Township School District - NJBPU
CHA Project #24383
Manchester Middle School

AIR HANDLER	AREA SERVED	FAN MOTOR HP	CFM	OA CFM
RTU H-1	Cafeteria /Music	5.0	3,750	1,125
		5.0	*HP*	*1,125* *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	$ 0.14	/kWh
Natural Gas Cost	$ 1.30	/therm
Facility Ventilation Heating Load	60,750	BTU/Hour[1,2,3,4]
Facility Ventilation Cooling Load	17,357	BTU/Hour[1,2,3,4]
Existing Ventilation Heating Usage	919	therms[6]
Existing Ventilation Cooling Usage	7,689	kWh[6]
Proposed Ventilation Heating Usage	735	therms[7]
Proposed Ventilation Cooling Usage	6,152	kWh[7]
Proposed Ventilation Fan Savings	1,879	kWh[5,8]
Total heating savings	184	**therms**
Total cooling savings	3,417	**kWh**
Total cost savings	728	
Estimated Total Project Cost	$10,000	[9]
Simple Payback	14	**years**

Assumptions

1	1,125	OA AHU airflow based exsiting design drawing schedules
2	35	°F, Assumed average heating Δt (mixed air and supply)
3	10	°F, Assumed average cooling Δt (mixed air and supply)
4	70%	Typical energy recovery unit efficiency assumed based on prior project experience
5	3.7	kW of existing supply fan motor calculated based on electrical data from nameplate
6	1,512	AHU run time per heating/cooling seasons [12 hours/day, 21 days/month, 6 months/year]
7	20%	Estimated savings for DCV based on reducing unit run time from 12 hours to 10 hours per day
8	504	Assumed supply fan run time reduction based on 2 hours/day fan is "off" due to DCV
9	$ 10,000	estimated measure cost for installation of sensors and associated controls

Franklin Lakes Public Schools - NJBPU
CHA Project #24497
High Mountain Road Elementary School

ECM-6 Replace Windows

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	2,428.0	LF	Cooling System Efficiency	1.2	kW/ton	Heating System Efficiency	80%	
Area of window glass	2,820.0	SF	Ex Occupied Clng Temp.	74	*F	Heating On Temp.	60	*F
Existing Infiltration Factor	**0.20**	**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	**0.87**	**Btuh/SF/°F**	Cooling Unocc Enthalpy Setpoint	27.5	Btu/lb	Electricity	$ 0.144	$/kWh
Proposed U Value	**0.45**	**Btuh/SF/°F**				Natural Gas	$ 1.01	$/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
97.5	50.1	6	2	4	-107,040	-102,134	-54,514	-51,976	62	32	0	0
92.5	42.5	45	16	29	-78,166	-73,259	-39,866	-37,328	338	172	0	0
87.5	39.5	146	52	94	-59,343	-54,437	-30,243	-27,705	821	418	0	0
82.5	36.6	298	106	192	-40,739	-35,832	-20,729	-18,191	1121	569	0	0
77.5	34.0	476	170	306	-22,791	-17,884	-11,543	-9,005	935	472	0	0
72.5	31.6	662	237	426	0	0	0	0	0	0	0	0
67.5	29.2	740	264	476	0	0	0	0	0	0	0	0
62.5	27.0	765	273	492	0	0	0	0	0	0	0	0
57.5	24.5	733	262	471	31,267	1,489	16,078	766	0	0	111	57
52.5	21.4	668	239	430	46,157	16,378	23,734	8,422	0	0	226	116
47.5	18.7	659	235	424	61,046	31,267	31,390	16,078	0	0	345	178
42.5	16.2	685	245	441	75,935	46,157	39,046	23,734	0	0	487	250
37.5	14.4	739	264	475	90,824	61,046	46,702	31,390	0	0	662	341
32.5	12.6	717	256	461	105,714	75,935	54,358	39,046	0	0	776	399
27.5	10.7	543	194	349	120,603	90,824	62,015	46,702	0	0	689	354
22.5	8.6	318	114	205	135,492	105,714	69,671	54,358	0	0	463	238
17.5	6.8	245	88	158	150,381	120,603	77,327	62,015	0	0	402	207
12.5	5.5	156	56	100	165,271	135,492	84,983	69,671	0	0	285	147
7.5	4.1	92	33	59	180,160	150,381	92,639	77,327	0	0	185	95
2.5	2.6	36	13	23	195,049	165,271	100,295	84,983	0	0	79	41
-2.5	1.0	19	7	12	209,938	180,160	107,951	92,639	0	0	45	23
-7.5	0.0	8	3	5	224,828	195,049	115,607	100,295	0	0	21	11
0.0	-1.5	0	0	0	202,494	172,715	104,123	88,811	0	0	0	0
TOTALS		**8,760**	**3,129**	**5,631**					3276	1663	**4,777**	**2,456**

Existing Window Infiltration	**486**	**cfm**
Existing Window Heat Transfer	**2,453**	**Btuh/°F**
Proposed Window Infiltration	**243**	**cfm**
Proposed Window Heat Transfer	**1,269**	**Btuh/°F**

Savings	**2,320**	**Therms**	**$ 2,352**
	1,613	**kWh**	**$ 232**
			$ 2,584

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	Exterior Wall	36	4	4	576.0	576.0	0.2	0.87	115.2	501.1
2	Exterior Wall	42	3	6	756.0	756.0	0.2	0.87	151.2	657.7
3	Exterior Wall	34	4	6	680.0	816.0	0.2	0.87	136.0	709.9
4	Exterior Wall	16	7	6	416.0	672.0	0.2	0.87	83.2	584.6
Total		**128**	**18**	**22**	**2,428.0**	**2,820.0**	**0.20**	**0.87**	**485.6**	**2453.4**

ECM-10: Install Low Flow Plumbing Fixtures

EXISTING CONDITIONS		
Cost of Water / 1000 Gallons	$6.18	$ / kGal
Urinals in Building	4	
Average Flushes / Urinal (per Day)	9	
Average Gallons / Flush	3.5	Gal

PROPOSED CONDITIONS		
Proposed Urinals to be Replaced	4	
Proposed Gallons / Flush	1.6	Gal
Proposed Material Cost	$360	
Proposed Installation Cost	$269	
Total cost of new urinals & valves	$2,515	

SAVINGS		
Current Urinal Water Use	46	kGal / year
Proposed Urinal Water Use	21	kGal / year
Water Savings	25	kGal / year
Cost Savings	$154	/ year
Simple Payback	16.3	years

ECM-10: Install Low Flow Plumbing Fixtures

EXISTING CONDITIONS		
Cost of Water / 1000 Gallons	$6.18	$ / kGal
Toilets in Building	10	
Average Flushes / Toilet (per Day)	9	
Average Gallons / Flush	3.5	Gal

PROPOSED CONDITIONS		
Proposed Toilets to be Replaced	10	
Proposed Gallons / Flush	1.6	Gal
Proposed Material Cost of new Flush Valves	$315	
Proposed Installation cost of new Flush Valves	$139	
Total cost of new toilets & valves	$4,538	

SAVINGS		
Current Toilet Water Use	115	kGal / year
Proposed Toilet Water Use	53	kGal / year
Water Savings	62	kGal / year
Cost Savings	$386	/ year
Simple Payback	11.8	years

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
$40,164	**7.8**	**16,906**	**0**	**$2,688**	**0**	**$2,688**	**$3,890**	**14.9**	**13.5**

*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
$17,010	**0.0**	**33,162**	**0**	**$4,154**	**0**	**$4,154**	**$2,940**	**4.1**	**3.4**

*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
$57,174	**7.8**	**46,410**	**0**	**$6,384**	**0**	**$6,384**	**$6,830**	**9.0**	**7.9**

*Incentive based on New Jersey Smart Start Prescriptive Lighting Measures

Energy Audit of High Mountain Road Elementary School

CHA Project No.24497

ECM-1 Lighting Replacements

Cost of Electricity: **$0.125 $/kWh**

$6.07 $/kWh

		EXISTING CONDITIONS								RETROFIT CONDITIONS								COST & SAVINGS ANALYSIS						
	Area Description	**No. of Fixtures**	**Standard Fixture Code**	**NYSERDA 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
254	114A	3	T 32 R F 4 (ELE)	F44LL	118	0.4	C-OCC	2400	850	3	T 32 R F 4 (ELE)	F44LL	118	0.4	C-OCC	2,400	850	-	0.0	$ -	$ -	$0		#DIV/0!
254	Printer Room	2	T 32 R F 4 (ELE)	F44LL	118	0.2	C-OCC	2400	566	2	T 32 R F 4 (ELE)	F44LL	118	0.2	C-OCC	2,400	566	-	0.0	$ -	$ -	$0		#DIV/0!
254	107 Classroom	12	T 32 R F 4 (ELE)	F44LL	118	1.4	C-OCC	2400	3,398	12	T 32 R F 4 (ELE)	F44LL	118	1.4	C-OCC	2,400	3,398	-	0.0	$ -	$ -	$0		#DIV/0!
71	107 TR	1	I 60	I60/1	60	0.1	SW	2000	120	1	CF 26	CFQ26/1-L	27	0.0	SW	2,000	54	66	0.0	$ 10.67	$ 6.75	$0	0.6	0.1
254	106 Classroom	12	T 32 R F 4 (ELE)	F44LL	118	1.4	C-OCC	2400	3,398	12	T 32 R F 4 (ELE)	F44LL	118	1.4	C-OCC	2,400	3,398	-	0.0	$ -	$ -	$0		#DIV/0!
71	106 TR	1	I 60	I60/1	60	0.1	SW	2000	120	1	CF 26	CFQ26/1-L	27	0.0	SW	2,000	54	66	0.0	$ 10.67	$ 6.75	$0	0.6	0.1
254	109 Classroom	12	T 32 R F 4 (ELE)	F44LL	118	1.4	C-OCC	2400	3,398	12	T 32 R F 4 (ELE)	F44LL	118	1.4	C-OCC	2,400	3,398	-	0.0	$ -	$ -	$0		#DIV/0!
71	109 TR	1	I 60	I60/1	60	0.1	SW	2000	120	1	CF 26	CFQ26/1-L	27	0.0	SW	2,000	54	66	0.0	$ 10.67	$ 6.75	$0	0.6	0.1
254	108 Classrom	12	T 32 R F 4 (ELE)	F44LL	118	1.4	C-OCC	2400	3,398	12	T 32 R F 4 (ELE)	F44LL	118	1.4	C-OCC	2,400	3,398	-	0.0	$ -	$ -	$0		#DIV/0!
71	108 TR	1	I 60	I60/1	60	0.1	SW	2000	120	1	CF 26	CFQ26/1-L	27	0.0	SW	2,000	54	66	0.0	$ 10.67	$ 6.75	$0	0.6	0.1
254	111 Classroom	12	T 32 R F 4 (ELE)	F44LL	118	1.4	C-OCC	2400	3,398	12	T 32 R F 4 (ELE)	F44LL	118	1.4	C-OCC	2,400	3,398	-	0.0	$ -	$ -	$0		#DIV/0!
71	111 TR	1	I 60	I60/1	60	0.1	SW	2000	120	1	CF 26	CFQ26/1-L	27	0.0	SW	2,000	54	66	0.0	$ 10.67	$ 6.75	$0	0.6	0.1
254	110 Classroom	12	T 32 R F 4 (ELE)	F44LL	118	1.4	C-OCC	2400	3,398	12	T 32 R F 4 (ELE)	F44LL	118	1.4	C-OCC	2,400	3,398	-	0.0	$ -	$ -	$0		#DIV/0!
71	110 TR	1	I 60	I60/1	60	0.1	SW	2000	120	1	CF 26	CFQ26/1-L	27	0.0	SW	2,000	54	66	0.0	$ 10.67	$ 6.75	$0	0.6	0.1
254	112 Classroom	14	T 32 R F 4 (ELE)	F44LL	118	1.7	C-OCC	2400	3,965	14	T 32 R F 4 (ELE)	F44LL	118	1.7	C-OCC	2,400	3,965	-	0.0	$ -	$ -	$0		#DIV/0!
7	112 TR	1	2T 32 R F 2 (u) (ELE) Thin Tube	FU2LL	60	0.1	SW	2000	120	1	2T 17 R F 2 (ELE)	F22ILL	33	0.0	SW	2,000	66	54	0.0	$ 8.73	$ 101.25	$0	11.6	1.9
71	112 Storage	3	I 60	I60/1	60	0.2	SW	1000	180	3	CF 26	CFQ26/1-L	27	0.1	SW	1,000	81	99	0.1	$ 19.61	$ 20.25	$0	1.0	0.2
254	112A	4	T 32 R F 4 (ELE)	F44LL	118	0.5	C-OCC	2400	1,133	4	T 32 R F 4 (ELE)	F44LL	118	0.5	C-OCC	2,400	1,133	-	0.0	$ -	$ -	$0		#DIV/0!
254	113 Classroom	14	T 32 R F 4 (ELE)	F44LL	118	1.7	C-OCC	2400	3,965	14	T 32 R F 4 (ELE)	F44LL	118	1.7	C-OCC	2,400	3,965	-	0.0	$ -	$ -	$0		#DIV/0!
7	113 TR	1	2T 32 R F 2 (u) (ELE) Thin Tube	FU2LL	60	0.1	SW	2000	120	1	2T 17 R F 2 (ELE)	F22ILL	33	0.0	SW	2,000	66	54	0.0	$ 8.73	$ 101.25	$0	11.6	1.9
71	Vestibule	1	I 60	I60/1	60	0.1	SW	2280	137	1	CF 26	CFQ26/1-L	27	0.0	SW	2,280	62	75	0.0	$ 11.83	$ 6.75	$0	0.6	0.1
55	Corridor	6	2T 17 R F 3 (ELE)	F23ILL	47	0.3	SW	2280	643	6	2T 17 R F 3 (ELE)	F23ILL	47	0.3	SW	2,280	643	-	0.0	$ -	$ -	$0		#DIV/0!
71	Vestibule	1	I 60	I60/1	60	0.1	SW	2280	137	1	CF 26	CFQ26/1-L	27	0.0	SW	2,280	62	75	0.0	$ 11.83	$ 6.75	$0	0.6	0.1
55	Corridor	12	2T 17 R F 3 (ELE)	F23ILL	47	0.6	SW	2280	1,286	12	2T 17 R F 3 (ELE)	F23ILL	47	0.6	SW	2,280	1,286	-	0.0	$ -	$ -	$0		#DIV/0!
254	105 Nurse	4	T 32 R F 4 (ELE)	F44LL	118	0.5	C-OCC	2400	1,133	4	T 32 R F 4 (ELE)	F44LL	118	0.5	C-OCC	2,400	1,133	-	0.0	$ -	$ -	$0		#DIV/0!
7	105 TR	1	2T 32 R F 2 (u) (ELE) Thin Tube	FU2LL	60	0.1	SW	2000	120	1	2T 17 R F 2 (ELE)	F22ILL	33	0.0	SW	2,000	66	54	0.0	$ 8.73	$ 101.25	$0	11.6	1.9
198	105 TR	1	2T 17 R F 2 (ELE) REFLECTOR	F22LL	31	0.0	SW	2000	62	1	0	F42SSILL	48	0.0	SW	2,000	96	(34)	(0.0)	$ (5.50)	$ 106.25	$15		-2.7
254	105 Vest	1	T 32 R F 4 (ELE)	F44LL	118	0.1	SW	2280	269	1	T 32 R F 4 (ELE)	F44LL	118	0.1	SW	2,280	269	-	0.0	$ -	$ -	$0		#DIV/0!
201	Cust	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	SW	500	45	1	0	F43SSILL	72	0.1	SW	500	36	9	0.0	$ 2.44	$ 106.25	$15	43.6	10.1
13	Main Lobby	3	S 32 P F 2 (ELE)	F42LL	60	0.2	SW	2280	410	3	0	F42SSILL	48	0.1	SW	2,280	328	82	0.0	$ 12.90	$ 318.75	$30	24.7	3.5
201	103 Main Office	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	SW	2400	1,296	6	0	F43SSILL	72	0.4	SW	2,400	1,037	259	0.1	$ 40.33	$ 637.50	$90	15.8	2.1
71	103 Storage	1	I 60	I60/1	60	0.1	SW	1000	60	1	CF 26	CFQ26/1-L	27	0.0	SW	1,000	27	33	0.0	$ 6.54	$ 6.75	$0	1.0	0.2
201	103B Principal	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	SW	2400	1,296	6	0	F43SSILL	72	0.4	SW	2,400	1,037	259	0.1	$ 40.33	$ 637.50	$90	15.8	2.1
7	103B TR	1	2T 32 R F 2 (u) (ELE) Thin Tube	FU2LL	60	0.1	SW	2000	120	1	2T 17 R F 2 (ELE)	F22ILL	33	0.0	SW	2,000	66	54	0.0	$ 8.73	$ 101.25	$0	11.6	1.9
198	103B TR	1	2T 17 R F 2 (ELE) REFLECTOR	F22LL	31	0.0	SW	2000	62	1	0	F42SSILL	48	0.0	SW	2,000	96	(34)	(0.0)	$ (5.50)	$ 106.25	$15		-2.7
13	103 Vest	1	S 32 P F 2 (ELE)	F42LL	60	0.1	SW	2280	137	1	0	F42SSILL	48	0.0	SW	2,280	109	27	0.0	$ 4.30	$ 106.25	$10	24.7	3.5
13	103 Mailroom	1	S 32 P F 2 (ELE)	F42LL	60	0.1	SW	2400	144	1	0	F42SSILL	48	0.0	SW	2,400	115	29	0.0	$ 4.48	$ 106.25	$10	23.7	3.3
55	Corridor	10	2T 17 R F 3 (ELE)	F23ILL	47	0.5	SW	2280	1,072	10	2T 17 R F 3 (ELE)	F23ILL	47	0.5	SW	2,280	1,072	-	0.0	$ -	$ -	$0		#DIV/0!
9	Gym / Auditorium	9	High Bay MH 400 35 Feet High	MH400/1	458	4.1	SW	2000	8,244	9	0	QL200/1	200	1.8	SW	2,000	3,600	4,644	2.3	$ 750.77	$ 6,682.50	$0	8.9	1.4
11	Storage	3	S 34 P F 2 (MAG)	F42EE	72	0.2	SW	1000	216	3	C 28 P F 2	F42SSILL	48	0.1	SW	1,000	144	72	0.1	$ 14.26	$ 318.75	$30	22.4	4.0
71	Storage	3	I 60	I60/1	60	0.2	SW	1000	180	3	CF 26	CFQ26/1-L	27	0.1	SW	1,000	81	99	0.1	$ 19.61	$ 20.25	$0	1.0	0.2
71	Girl's TR	1	I 60	I60/1	60	0.1	SW	2000	120	1	CF 26	CFQ26/1-L	27	0.0	SW	2,000	54	66	0.0	$ 10.67	$ 6.75	$0	0.6	0.1
198	Girl's TR	1	2T 17 R F 2 (ELE) REFLECTOR	F22LL	31	0.0	SW	2000	62	1	0	F42SSILL	48	0.0	SW	2,000	96	(34)	(0.0)	$ (5.50)	$ 106.25	$15		-2.7
71	Vestibule	3	I 60	I60/1	60	0.2	SW	2280	410	3	CF 26	CFQ26/1-L	27	0.1	SW	2,280	185	226	0.1	$ 35.48	$ 20.25	$0	0.6	0.1
13	Storage	3	S 32 P F 2 (ELE)	F42LL	60	0.2	SW	1000	180	3	0	F42SSILL	48	0.1	SW	1,000	144	36	0.0	$ 7.13	$ 318.75	$30	44.7	8.0
13	Gym Office	3	S 32 P F 2 (ELE)	F42LL	60	0.2	SW	2400	432	3	0	F42SSILL	48	0.1	SW	2,400	346	86	0.0	$ 13.44	$ 318.75	$30	23.7	3.3
71	Gym Office	2	I 60	I60/1	60	0.1	SW	2400	288	2	CF 26	CFQ26/1-L	27	0.1	SW	2,400	130	158	0.1	$ 24.65	$ 13.50	$0	0.5	0.1
71	Boy's TR	1	I 60	I60/1	60	0.1	SW	2000	120	1	CF 26	CFQ26/1-L	27	0.0	SW	2,000	54	66	0.0	$ 10.67	$ 6.75	$0	0.6	0.1
198	Boy's TR	1	2T 17 R F 2 (ELE) REFLECTOR	F22LL	31	0.0	SW	2000	62	1	0	F42SSILL	48	0.0	SW	2,000	96	(34)	(0.0)	$ (5.50)	$ 106.25	$15		-2.7
71	Vestibule	3	I 60	I60/1	60	0.2	SW	2280	410	3	CF 26	CFQ26/1-L	27	0.1	SW	2,280	185	226	0.1	$ 35.48	$ 20.25	$0	0.6	0.1
13	Cust Office	6	S 32 P F 2 (ELE)	F42LL	60	0.4	SW	2400	864	6	0	F42SSILL	48	0.3	SW	2,400	691	173	0.1	$ 26.89	$ 637.50	$60	23.7	3.3
201	Library	36	T 32 R F 3 (ELE)	F43ILL/2	90	3.2	C-OCC	2400	7,776	36	0	F43SSILL	72	2.6	C-OCC	2,400	6,221	1,555	0.6	$ 241.99	$ 3,825.00	$540	15.8	2.1
55	Boy's TR	6	2T 17 R F 3 (ELE)	F23ILL	47	0.3	SW	2000	564	6	2T 17 R F 3 (ELE)	F23ILL	47	0.3	SW	2,000	564	-	0.0	$ -	$ -	$0		#DIV/0!
7	Faculty Women's TR	3	2T 32 R F 2 (u) (ELE) Thin Tube	FU2LL	60	0.2	SW	2000	360	3	2T 17 R F 2 (ELE)	F22ILL	33	0.1	SW	2,000	198	162	0.1	$ 26.19	$ 303.75	$0	11.6	1.9
7	Cust	1	2T 32 R F 2 (u) (ELE) Thin Tube	FU2LL	60	0.1	SW	1600	96	1	2T 17 R F 2 (ELE)	F22ILL	33	0.0	SW	1,600	53	43	0.0	$ 7.38	$ 101.25	$0	13.7	2.3
7	Faculty Men's TR	2	2T 32 R F 2 (u) (ELE) Thin Tube	FU2LL	60	0.1	SW	2000	240	2	2T 17 R F 2 (ELE)	F22ILL	33	0.1	SW	2,000	132	108	0.1	$ 17.46	$ 202.50	$0	11.6	1.9
201	123 Cafeteria	20	T 32 R F 3 (ELE)	F43ILL/2	90	1.8	SW	1600	2,880	20	0	F43SSILL	72	1.4	SW	1,600	2,304	576	0.4	$ 98.36	$ 2,125.00	$300	21.6	3.2
254	123 Storage	4	T 32 R F 4 (ELE)	F44LL	118	0.5	SW	1000	472	4	T 32 R F 4 (ELE)	F44LL	118	0.5	SW	1,000	472	-	0.0	$ -	$ -	$0		#DIV/0!
55	Corridor	5	2T 17 R F 3 (ELE)	F23ILL	47	0.2	SW	2280	536	5	2T 17 R F 3 (ELE)	F23ILL	47	0.2	SW	2,280	536	-	0.0	$ -	$ -	$0		#DIV/0!
13	125 Music	24	S 32 P F 2 (ELE)	F42LL	60	1.4	SW	2400	3,456	24	0	F42SSILL	48	1.2	SW	2,400	2,765	691	0.3	$ 107.55	$ 2,550.00	$240	23.7	3.3
201	127 Faculty Lunchroom	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	C-OCC	3102.5	2,513	9	0	F43SSILL	72	0.6	C-OCC	3,103	2,010	503	0.2	$ 74.75	$ 956.25	$135	12.8	1.6
257	Girl's TR	6	CFT40W	CFT40/2-BX	72	0.4	SW	2000	864	6	CFT40W	CFT40/2-BX	72	0.4	SW	2,000	864	-	0.0	$ -	$ -	$0		#DIV/0!
254	126 Classroom	9	T 32 R F 4 (ELE)	F44LL	118	1.1	C-OCC	2400	2,549	9	T 32 R F 4 (ELE)	F44LL	118	1.1	C-OCC	2,400	2,549	-	0.0	$ -	$ -	$0		#DIV/0!
254	129 Classroom	9	T 32 R F 4 (ELE)	F44LL	118	1.1	C-OCC	2400	2,549	9	T 32 R F 4 (ELE)	F44LL	118	1.1	C-OCC	2,400	2,549	-	0.0	$ -	$ -	$0		#DIV/0!
254	128 Classroom	9	T 32 R F 4 (ELE)	F44LL	118	1.1	C-OCC	2400	2,549	9	T 32 R F 4 (ELE)	F44LL	118	1.1	C-OCC	2,400	2,549	-	0.0	$ -	$ -	$0		#DIV/0!
254	131 Classroom	9	T 32 R F 4 (ELE)	F44LL	118	1.1	C-OCC	2400	2,549	9	T 32 R F 4 (ELE)	F44LL	118	1.1	C-OCC	2,400	2,549	-	0.0	$ -	$ -	$0		#DIV/0!
254	130 Classroom	9	T 32 R F 4 (ELE)	F44LL	118	1.1	C-OCC	2400	2,549	9	T 32 R F 4 (ELE)	F44LL	118	1.1	C-OCC	2,400	2,549	-	0.0	$ -	$ -	$0		#DIV/0!
254	133 Classroom	9	T 32 R F 4 (ELE)	F44LL	118	1.1	C-OCC	2400	2,549	9	T 32 R F 4 (ELE)	F44LL	118	1.1	C-OCC	2,400	2,549	-	0.0	$ -	$ -	$0		#DIV/0!
254	132 Classroom	9	T 32 R F 4 (ELE)	F44LL	118	1.1	C-OCC	2400	2,549	9	T 32 R F 4 (ELE)	F44LL	118	1.1	C-OCC	2,400	2,549	-	0.0	$ -	$ -	$0		#DIV/0!
201	135 Classroom	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	C-OCC	2400	1,296	6	0	F43SSILL	72	0.4	C-OCC	2,400	1,037	259	0.1	$ 40.33	$ 637.50	$90	15.8	2.1
201	137 Office	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	2400	648	3	0	F43SSILL	72	0.2	SW	2,400	518	130	0.1	$ 20.17	$ 318.75	$45	15.8	2.1
201	134 Classroom	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	C-OCC	2400	2,592	12	0	F43SSILL	72	0.9	C-OCC	2,400	2,074	518	0.2	$ 80.66	$ 1,275.00	$180	15.8	2.1
201	136 Classroom	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	C-OCC	2400	2,592	12	0	F43SSILL	72	0.9	C-OCC	2,400	2,074	518	0.2	$ 80.66	$ 1,275.00	$180	15.8	2.1
13	139 Copyroom	4	S 32 P F 2 (ELE)	F42LL	60	0.2	C-OCC	2400	576	4	0	F42SSILL	48	0.2	C-OCC	2,400	461	115	0.0	$ 17.92	$ 425.00	$40	23.7	3.3
13	141 Office	4	S 32 P F 2 (ELE)	F42LL	60	0.2	C-OCC	2400	576	4	0	F42SSILL	48	0.2	C-OCC	2,400	461	115	0.0	$ 17.92	$ 425.00	$40	23.7	3.3
199	Boy's TR	6	W 32 C F 1 (ELE)	F41LL	32	0.2	SW	2000	384	6	0	F41SSILL	26	0.2	SW	2,000	312	72	0.0	$ 11.64	$ 637.50	$90	54.8	7.6
199	Girl's TR	6	W 32 C F 1 (ELE)	F41LL	32	0.2	SW	2000	384	6	0	F41SSILL	26	0.2	SW	2,000	312	72	0.0	$ 11.64	$ 637.50	$90	54.8	7.6
201	142	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	C-OCC	2400	864	4	0	F43SSILL	72	0.3	C-OCC	2,400	691	173	0.1	$ 26.89	$ 425.00	$60	15.8	2.1
13	Cust Closet	1	S 32 P F 2 (ELE)	F42LL	60	0.1	SW	500	30	1	0	F42SSILL	48	0.0	SW	500	24	6	0.0	$ 1.63	$ 106.25	$10	65.4	16.0
201	143	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	C-OCC	2400	1,296	6	0	F43SSILL	72	0.4	C-OCC	2,400	1,037	259	0.1	$ 40.33	$ 637.50	$90	15.8	2.1
13	Teacher TR	1	S 32 P F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	0	F42SSILL	48	0.0	SW	2,000	96	24	0.0	$ 3.88	$ 106.25	$10	27.4	4.0
201	146	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	C-OCC	2400	2,592	12	0	F43SSILL	72	0.9	C-OCC	2,400	2,074	518	0.2	$ 80.66	$ 1,275.00	$180	15.8	2.1
13	145 Computer	32	S 32 P F 2 (ELE)	F42LL	60	1.9	SW	2400	4,608	32	0	F42SSILL	48	1.5	SW	2,400	3,686	922	0.4	$ 143.40	$ 3,400.00	$320	23.7	3.3
201	147 Science	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	2400	2,592	12	0	F43SSILL	72	0.9	SW	2,400	2,074	518	0.2	$ 80.66	$ 1,275.00	$180	15.8	2.1
201	148	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	SW	2400	1,944	9	0	F43SSILL	72	0.6	SW	2,400	1,555	389	0.2	$ 60.50	$ 956.25	$135	15.8	2.1
13	150	32	S 32 P F 2 (ELE)	F42LL	60	1.9	SW	2400	4,608	32	0	F42SSILL	48	1.5	SW	2,400	3,686	922	0.4	$ 143.40	$ 3,400.00	$320	23.7	3.3
13	149 Music	16	S 32 P F 2 (ELE)	F42LL	60	1.0	SW	2400	2,304	16	0	F42SSILL	48	0.8	SW	2,400	1,843	461	0.2	$ 71.70	$ 1,700.00	$160	23.7	3.3

Energy Audit of High Mountain Road Elementary School

CHA Project No.24497

ECM-1 Lighting Replacements

Cost of Electricity: **$0.125 $/kWh**

$6.07 $/kW

		EXISTING CONDITIONS								RETROFIT CONDITIONS								COST & SAVINGS ANALYSIS						
	Area Description	**No. of Fixtures**	**Standard Fixture Code**	**NYSERDA 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
55	Corridor	33	2T 17 R F 3 (ELE)	F23ILL	47	1.6	SW	2280	3,536	33	2T 17 R F 3 (ELE)	F23ILL	47	1.6	SW	2,280	3,536	-	0.0	$ -	$ -	$0		#DIV/0!
	Total	**607**				**53.8**			**123,166**	**607**			**5,739**	**46.0**			**106,260**	**16,906**	**7.8**	**$2,688**	**$40,164**	**$3,890**		
																				7.8	**$571**			
																				16,906	**$2,118**			
																					$2,688		**14.9**	**13.5**

Energy Audit of High Mountain Road Elementary School

CHA Project No.24497

ECM-2 Install Occupancy Sensors

Cost of Electricity: **$0.125 $/kWh**

$6.07 $/kW

		EXISTING CONDITIONS								RETROFIT CONDITIONS								COST & SAVINGS ANALYSIS							
	Area Description	**No. of Fixtures**	**Standard Fixture Code**	**NYSERDA 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 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
254	114A	3	T 32 R F 4 (ELE)	F44LL	118	0.4	C-OCC	2400	849.6	3	T 32 R F 4 (ELE)	F44LL	118	0.4	C-OCC	1200	424.8	424.8	0.0	$53.21	$202.50	$35.00	3.8	3.1
254	Printer Room	2	T 32 R F 4 (ELE)	F44LL	118	0.2	C-OCC	2400	566.4	2	T 32 R F 4 (ELE)	F44LL	118	0.2	C-OCC	1200	283.2	283.2	0.0	$35.48	$202.50	$35.00	5.7	4.7
254	107 Classroom	12	T 32 R F 4 (ELE)	F44LL	118	1.4	C-OCC	2400	3,398.4	12	T 32 R F 4 (ELE)	F44LL	118	1.4	C-OCC	1680	2,378.9	1,019.5	0.0	$127.71	$202.50	$35.00	1.6	1.3
71	107 TR	1	I 60	I60/1	60	0.1	SW	2000	120.0	1	I 60	I60/1	60	0.1	C-OCC	2000	120.0	0.0	0.0	$0.00	$202.50	$35.00		#DIV/0!
254	106 Classroom	12	T 32 R F 4 (ELE)	F44LL	118	1.4	C-OCC	2400	3,398.4	12	T 32 R F 4 (ELE)	F44LL	118	1.4	C-OCC	1680	2,378.9	1,019.5	0.0	$127.71	$202.50	$35.00	1.6	1.3
71	106 TR	1	I 60	I60/1	60	0.1	SW	2000	120.0	1	I 60	I60/1	60	0.1	C-OCC	2000	120.0	0.0	0.0	$0.00	$202.50	$35.00		#DIV/0!
254	109 Classroom	12	T 32 R F 4 (ELE)	F44LL	118	1.4	C-OCC	2400	3,398.4	12	T 32 R F 4 (ELE)	F44LL	118	1.4	C-OCC	1680	2,378.9	1,019.5	0.0	$127.71	$202.50	$35.00	1.6	1.3
71	109 TR	1	I 60	I60/1	60	0.1	SW	2000	120.0	1	I 60	I60/1	60	0.1	C-OCC	2000	120.0	0.0	0.0	$0.00	$202.50	$35.00		#DIV/0!
254	108 Classrom	12	T 32 R F 4 (ELE)	F44LL	118	1.4	C-OCC	2400	3,398.4	12	T 32 R F 4 (ELE)	F44LL	118	1.4	C-OCC	1680	2,378.9	1,019.5	0.0	$127.71	$202.50	$35.00	1.6	1.3
71	108 TR	1	I 60	I60/1	60	0.1	SW	2000	120.0	1	I 60	I60/1	60	0.1	C-OCC	2000	120.0	0.0	0.0	$0.00	$202.50	$35.00		#DIV/0!
254	111 Classroom	12	T 32 R F 4 (ELE)	F44LL	118	1.4	C-OCC	2400	3,398.4	12	T 32 R F 4 (ELE)	F44LL	118	1.4	C-OCC	1680	2,378.9	1,019.5	0.0	$127.71	$202.50	$35.00	1.6	1.3
71	111 TR	1	I 60	I60/1	60	0.1	SW	2000	120.0	1	I 60	I60/1	60	0.1	C-OCC	2000	120.0	0.0	0.0	$0.00	$202.50	$35.00		#DIV/0!
254	110 Classroom	12	T 32 R F 4 (ELE)	F44LL	118	1.4	C-OCC	2400	3,398.4	12	T 32 R F 4 (ELE)	F44LL	118	1.4	C-OCC	1680	2,378.9	1,019.5	0.0	$127.71	$202.50	$35.00	1.6	1.3
71	110 TR	1	I 60	I60/1	60	0.1	SW	2000	120.0	1	I 60	I60/1	60	0.1	C-OCC	2000	120.0	0.0	0.0	$0.00	$202.50	$35.00		#DIV/0!
254	112 Classroom	14	T 32 R F 4 (ELE)	F44LL	118	1.7	C-OCC	2400	3,964.8	14	T 32 R F 4 (ELE)	F44LL	118	1.7	C-OCC	1680	2,775.4	1,189.4	0.0	$149.00	$202.50	$35.00	1.4	1.1
7	112 TR	1	2T 32 R F 2 (u) (ELE) Thin Tube	FU2LL	60	0.1	SW	2000	120.0	1	2T 32 R F 2 (u) (ELE) Thin Tube	FU2LL	60	0.1	C-OCC	2000	120.0	0.0	0.0	$0.00	$202.50	$35.00		#DIV/0!
71	112 Storage	3	I 60	I60/1	60	0.2	SW	1000	180.0	3	I 60	I60/1	60	0.2	C-OCC	250	45.0	135.0	0.0	$16.91	$202.50	$35.00	12.0	9.9
254	112A	4	T 32 R F 4 (ELE)	F44LL	118	0.5	C-OCC	2400	1,132.8	4	T 32 R F 4 (ELE)	F44LL	118	0.5	C-OCC	1680	793.0	339.8	0.0	$42.57	$202.50	$35.00	4.8	3.9
254	113 Classroom	14	T 32 R F 4 (ELE)	F44LL	118	1.7	C-OCC	2400	3,964.8	14	T 32 R F 4 (ELE)	F44LL	118	1.7	C-OCC	1680	2,775.4	1,189.4	0.0	$149.00	$202.50	$35.00	1.4	1.1
7	113 TR	1	2T 32 R F 2 (u) (ELE) Thin Tube	FU2LL	60	0.1	SW	2000	120.0	1	2T 32 R F 2 (u) (ELE) Thin Tube	FU2LL	60	0.1	C-OCC	2000	120.0	0.0	0.0	$0.00	$202.50	$35.00		#DIV/0!
71	Vestibule	1	I 60	I60/1	60	0.1	SW	2280	136.8	1	I 60	I60/1	60	0.1	C-OCC	2280	136.8	0.0	0.0	$0.00	$202.50	$35.00		#DIV/0!
55	Corridor	6	2T 17 R F 3 (ELE)	F23ILL	47	0.3	SW	2280	643.0	6	2T 17 R F 3 (ELE)	F23ILL	47	0.3	C-OCC	2280	643.0	0.0	0.0	$0.00	$202.50	$35.00		#DIV/0!
71	Vestibule	1	I 60	I60/1	60	0.1	SW	2280	136.8	1	I 60	I60/1	60	0.1	C-OCC	2280	136.8	0.0	0.0	$0.00	$202.50	$35.00		#DIV/0!
55	Corridor	12	2T 17 R F 3 (ELE)	F23ILL	47	0.6	SW	2280	1,285.9	12	2T 17 R F 3 (ELE)	F23ILL	47	0.6	C-OCC	2280	1,285.9	0.0	0.0	$0.00	$202.50	$35.00		#DIV/0!
254	105 Nurse	4	T 32 R F 4 (ELE)	F44LL	118	0.5	C-OCC	2400	1,132.8	4	T 32 R F 4 (ELE)	F44LL	118	0.5	C-OCC	1200	566.4	566.4	0.0	$70.95	$202.50	$35.00	2.9	2.4
7	105 TR	1	2T 32 R F 2 (u) (ELE) Thin Tube	FU2LL	60	0.1	SW	2000	120.0	1	2T 32 R F 2 (u) (ELE) Thin Tube	FU2LL	60	0.1	C-OCC	2000	120.0	0.0	0.0	$0.00	$202.50	$35.00		#DIV/0!
198	105 TR	1	2T 17 R F 2 (ELE) REFLECTOR	F22LL	31	0.0	SW	2000	62.0	1	2T 17 R F 2 (ELE) REFLECTOR	F22LL	31	0.0	C-OCC	2000	62.0	0.0	0.0	$0.00	$202.50	$35.00		#DIV/0!
254	105 Vest	1	T 32 R F 4 (ELE)	F44LL	118	0.1	SW	2280	269.0	1	T 32 R F 4 (ELE)	F44LL	118	0.1	SW	2280	269.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
201	Cust	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	SW	500	45.0	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	C-OCC	0	0.0	45.0	0.0	$5.64	$202.50	$35.00	35.9	29.7
13	Main Lobby	3	S 32 P F 2 (ELE)	F42LL	60	0.2	SW	2280	410.4	3	S 32 P F 2 (ELE)	F42LL	60	0.2	C-OCC	2280	410.4	0.0	0.0	$0.00	$202.50	$35.00		#DIV/0!
201	103 Main Office	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	SW	2400	1,296.0	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	C-OCC	1200	648.0	648.0	0.0	$81.17	$202.50	$35.00	2.5	2.1
71	103 Storage	1	I 60	I60/1	60	0.1	SW	1000	60.0	1	I 60	I60/1	60	0.1	C-OCC	250	15.0	45.0	0.0	$5.64	$202.50	$35.00	35.9	29.7
201	103B Principal	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	SW	2400	1,296.0	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	C-OCC	1200	648.0	648.0	0.0	$81.17	$202.50	$35.00	2.5	2.1
7	103B TR	1	2T 32 R F 2 (u) (ELE) Thin Tube	FU2LL	60	0.1	SW	2000	120.0	1	2T 32 R F 2 (u) (ELE) Thin Tube	FU2LL	60	0.1	C-OCC	2000	120.0	0.0	0.0	$0.00	$202.50	$35.00		#DIV/0!
198	103B TR	1	2T 17 R F 2 (ELE) REFLECTOR	F22LL	31	0.0	SW	2000	62.0	1	2T 17 R F 2 (ELE) REFLECTOR	F22LL	31	0.0	C-OCC	2000	62.0	0.0	0.0	$0.00	$202.50	$35.00		#DIV/0!
13	103 Vest	1	S 32 P F 2 (ELE)	F42LL	60	0.1	SW	2280	136.8	1	S 32 P F 2 (ELE)	F42LL	60	0.1	C-OCC	2280	136.8	0.0	0.0	$0.00	$202.50	$35.00		#DIV/0!
13	103 Mailroom	1	S 32 P F 2 (ELE)	F42LL	60	0.1	SW	2400	144.0	1	S 32 P F 2 (ELE)	F42LL	60	0.1	C-OCC	1200	72.0	72.0	0.0	$9.02	$202.50	$35.00	22.5	18.6
55	Corridor	10	2T 17 R F 3 (ELE)	F23ILL	47	0.5	SW	2280	1,071.6	10	2T 17 R F 3 (ELE)	F23ILL	47	0.5	SW	2280	1,071.6	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
9	Gym / Auditorium	9	High Bay MH 400 35 Feet High	MH400/1	458	4.1	SW	2000	8,244.0	9	High Bay MH 400 35 Feet High	MH400/1	458	4.1	C-OCC	2000	8,244.0	0.0	0.0	$0.00	$202.50	$35.00		#DIV/0!
11	Storage	3	S 34 P F 2 (MAG)	F42EE	72	0.2	SW	1000	216.0	3	S 34 P F 2 (MAG)	F42EE	72	0.2	C-OCC	250	54.0	162.0	0.0	$20.29	$202.50	$35.00	10.0	8.3
71	Storage	3	I 60	I60/1	60	0.2	SW	1000	180.0	3	I 60	I60/1	60	0.2	C-OCC	250	45.0	135.0	0.0	$16.91	$202.50	$35.00	12.0	9.9
71	Girl's TR	1	I 60	I60/1	60	0.1	SW	2000	120.0	1	I 60	I60/1	60	0.1	C-OCC	2000	120.0	0.0	0.0	$0.00	$202.50	$35.00		#DIV/0!
198	Girl's TR	1	2T 17 R F 2 (ELE) REFLECTOR	F22LL	31	0.0	SW	2000	62.0	1	2T 17 R F 2 (ELE) REFLECTOR	F22LL	31	0.0	C-OCC	2000	62.0	0.0	0.0	$0.00	$202.50	$35.00		#DIV/0!
71	Vestibule	3	I 60	I60/1	60	0.2	SW	2280	410.4	3	I 60	I60/1	60	0.2	C-OCC	2280	410.4	0.0	0.0	$0.00	$202.50	$35.00		#DIV/0!
13	Storage	3	S 32 P F 2 (ELE)	F42LL	60	0.2	SW	1000	180.0	3	S 32 P F 2 (ELE)	F42LL	60	0.2	C-OCC	250	45.0	135.0	0.0	$16.91	$202.50	$35.00	12.0	9.9
13	Gym Office	3	S 32 P F 2 (ELE)	F42LL	60	0.2	SW	2400	432.0	3	S 32 P F 2 (ELE)	F42LL	60	0.2	C-OCC	1200	216.0	216.0	0.0	$27.06	$202.50	$35.00	7.5	6.2
71	Gym Office	2	I 60	I60/1	60	0.1	SW	2400	288.0	2	I 60	I60/1	60	0.1	C-OCC	1200	144.0	144.0	0.0	$18.04	$202.50	$35.00	11.2	9.3
71	Boy's TR	1	I 60	I60/1	60	0.1	SW	2000	120.0	1	I 60	I60/1	60	0.1	C-OCC	2000	120.0	0.0	0.0	$0.00	$202.50	$35.00		#DIV/0!
198	Boy's TR	1	2T 17 R F 2 (ELE) REFLECTOR	F22LL	31	0.0	SW	2000	62.0	1	2T 17 R F 2 (ELE) REFLECTOR	F22LL	31	0.0	C-OCC	2000	62.0	0.0	0.0	$0.00	$202.50	$35.00		#DIV/0!
71	Vestibule	3	I 60	I60/1	60	0.2	SW	2280	410.4	3	I 60	I60/1	60	0.2	C-OCC	2280	410.4	0.0	0.0	$0.00	$202.50	$35.00		#DIV/0!
13	Cust Office	6	S 32 P F 2 (ELE)	F42LL	60	0.4	SW	2400	864.0	6	S 32 P F 2 (ELE)	F42LL	60	0.4	SW	1200	432.0	432.0	0.0	$54.11	$0.00	$0.00	0.0	0.0
201	Library	36	T 32 R F 3 (ELE)	F43ILL/2	90	3.2	C-OCC	2400	7,776.0	36	T 32 R F 3 (ELE)	F43ILL/2	90	3.2	C-OCC	1680	5,443.2	2,332.8	0.0	$292.22	$202.50	$35.00	0.7	0.6
55	Boy's TR	6	2T 17 R F 3 (ELE)	F23ILL	47	0.3	SW	2000	564.0	6	2T 17 R F 3 (ELE)	F23ILL	47	0.3	C-OCC	2000	564.0	0.0	0.0	$0.00	$202.50	$35.00		#DIV/0!
7	Faculty Women's TR	3	2T 32 R F 2 (u) (ELE) Thin Tube	FU2LL	60	0.2	SW	2000	360.0	3	2T 32 R F 2 (u) (ELE) Thin Tube	FU2LL	60	0.2	C-OCC	2000	360.0	0.0	0.0	$0.00	$202.50	$35.00		#DIV/0!
7	Cust	1	2T 32 R F 2 (u) (ELE) Thin Tube	FU2LL	60	0.1	SW	1600	96.0	1	2T 32 R F 2 (u) (ELE) Thin Tube	FU2LL	60	0.1	SW	1200	72.0	24.0	0.0	$3.01	$0.00	$0.00	0.0	0.0
7	Faculty Men's TR	2	2T 32 R F 2 (u) (ELE) Thin Tube	FU2LL	60	0.1	SW	2000	240.0	2	2T 32 R F 2 (u) (ELE) Thin Tube	FU2LL	60	0.1	C-OCC	2000	240.0	0.0	0.0	$0.00	$202.50	$35.00		#DIV/0!
201	123 Cafeteria	20	T 32 R F 3 (ELE)	F43ILL/2	90	1.8	SW	1600	2,880.0	20	T 32 R F 3 (ELE)	F43ILL/2	90	1.8	C-OCC	1200	2,160.0	720.0	0.0	$90.19	$202.50	$35.00	2.2	1.9
254	123 Storage	4	T 32 R F 4 (ELE)	F44LL	118	0.5	SW	1000	472.0	4	T 32 R F 4 (ELE)	F44LL	118	0.5	C-OCC	250	118.0	354.0	0.0	$44.34	$202.50	$35.00	4.6	3.8
55	Corridor	5	2T 17 R F 3 (ELE)	F23ILL	47	0.2	SW	2280	535.8	5	2T 17 R F 3 (ELE)	F23ILL	47	0.2	C-OCC	2280	535.8	0.0	0.0	$0.00	$202.50	$35.00		#DIV/0!
13	125 Music	24	S 32 P F 2 (ELE)	F42LL	60	1.4	SW	2400	3,456.0	24	S 32 P F 2 (ELE)	F42LL	60	1.4	C-OCC	1680	2,419.2	1,036.8	0.0	$129.87	$202.50	$35.00	1.6	1.3
201	127 Faculty Lunchroom	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	C-OCC	3102.5	2,513.0	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	C-OCC	1500	1,215.0	1,298.0	0.0	$162.60	$202.50	$35.00	1.2	1.0
257	Girl's TR	6	CFT40W	CFT40/2-BX	72	0.4	SW	2000	864.0	6	CFT40W	CFT40/2-BX	72	0.4	C-OCC	2000	864.0	0.0	0.0	$0.00	$202.50	$35.00		#DIV/0!
254	126 Classroom	9	T 32 R F 4 (ELE)	F44LL	118	1.1	C-OCC	2400	2,548.8	9	T 32 R F 4 (ELE)	F44LL	118	1.1	C-OCC	1680	1,784.2	764.6	0.0	$95.78	$202.50	$35.00	2.1	1.7
254	129 Classroom	9	T 32 R F 4 (ELE)	F44LL	118	1.1	C-OCC	2400	2,548.8	9	T 32 R F 4 (ELE)	F44LL	118	1.1	C-OCC	1680	1,784.2	764.6	0.0	$95.78	$202.50	$35.00	2.1	1.7
254	128 Classroom	9	T 32 R F 4 (ELE)	F44LL	118	1.1	C-OCC	2400	2,548.8	9	T 32 R F 4 (ELE)	F44LL	118	1.1	C-OCC	1680	1,784.2	764.6	0.0	$95.78	$202.50	$35.00	2.1	1.7
254	131 Classroom	9	T 32 R F 4 (ELE)	F44LL	118	1.1	C-OCC	2400	2,548.8	9	T 32 R F 4 (ELE)	F44LL	118	1.1	C-OCC	1680	1,784.2	764.6	0.0	$95.78	$202.50	$35.00	2.1	1.7
254	130 Classroom	9	T 32 R F 4 (ELE)	F44LL	118	1.1	C-OCC	2400	2,548.8	9	T 32 R F 4 (ELE)	F44LL	118	1.1	C-OCC	1680	1,784.2	764.6	0.0	$95.78	$202.50	$35.00	2.1	1.7
254	133 Classroom	9	T 32 R F 4 (ELE)	F44LL	118	1.1	C-OCC	2400	2,548.8	9	T 32 R F 4 (ELE)	F44LL	118	1.1	C-OCC	1680	1,784.2	764.6	0.0	$95.78	$202.50	$35.00	2.1	1.7
254	132 Classroom	9	T 32 R F 4 (ELE)	F44LL	118	1.1	C-OCC	2400	2,548.8	9	T 32 R F 4 (ELE)	F44LL	118	1.1	C-OCC	1680	1,784.2	764.6	0.0	$95.78	$202.50	$35.00	2.1	1.7
201	135 Classroom	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	C-OCC	2400	1,296.0	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	C-OCC	1680	907.2	388.8	0.0	$48.70	$202.50	$35.00	4.2	3.4
201	137 Office	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	2400	648.0	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	C-OCC	1200	324.0	324.0	0.0	$40.59	$202.50	$35.00	5.0	4.1
201	134 Classroom	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	C-OCC	2400	2,592.0	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	C-OCC	1680	1,814.4	777.6	0.0	$97.41	$202.50	$35.00	2.1	1.7
201	136 Classroom	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	C-OCC	2400	2,592.0	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	C-OCC	1680	1,814.4	777.6	0.0	$97.41	$202.50	$35.00	2.1	1.7
13	139 Copyroom	4	S 32 P F 2 (ELE)	F42LL	60	0.2	C-OCC	2400	576.0	4	S 32 P F 2 (ELE)	F42LL	60	0.2	C-OCC	1200	288.0	288.0	0.0	$36.08	$202.50	$35.00	5.6	4.6
13	141 Office	4	S 32 P F 2 (ELE)	F42LL	60	0.2	C-OCC	2400	576.0	4	S 32 P F 2 (ELE)	F42LL	60	0.2	C-OCC	1200	288.0	288.0	0.0	$36.08	$202.50	$35.00	5.6	4.6
199	Boy's TR	6	W 32 C F 1 (ELE)	F41LL	32	0.2	SW	2000	384.0	6	W 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	2000	384.0	0.0	0.0	$0.00	$202.50	$35.00		#DIV/0!
199	Girl's TR	6	W 32 C F 1 (ELE)	F41LL	32	0.2	SW	2000	384.0	6	W 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	2000	384.0	0.0	0.0	$0.00	$202.50	$35.00		#DIV/0!
201	142	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	C-OCC	2400	864.0	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	C-OCC	1680	604.8	259.2	0.0	$32.47	$202.50	$35.00	6.2	5.2
13	Cust Closet	1	S 32 P F 2 (ELE)	F42LL	60	0.1	SW	500	30.0	1	S 32 P F 2 (ELE)	F42LL	60	0.1	C-OCC	0	0.0	30.0	0.0	$3.76	$202.50	$35.00	53.9	44.6
201	143	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	C-OCC	2400	1,296.0	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	C-OCC	1680	907.2	388.8	0.0	$48.70	$202.50	$35.00	4.2	3.4
13	Teacher TR	1	S 32 P F 2 (ELE)	F42LL	60	0.1	SW	2000	120.0	1	S 32 P F 2 (ELE)	F42LL	60	0.1	C-OCC	2000	120.0	0.0	0.0	$0.00	$202.50	$35.00		#DIV/0!
201	146	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	C-OCC	2400	2,592.0	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	C-OCC	1680	1,814.4	777.6	0.0	$97.41	$202.50	$35.00	2.1	1.7
13	145 Computer	32	S 32 P F 2 (ELE)	F42LL	60	1.9	SW	2400	4,608.0	32	S 32 P F 2 (ELE)	F42LL	60	1.9	C-OCC	1680	3,225.6	1,382.4	0.0	$173.17	$202.50	$35.00	1.2	1.0
201	147 Science	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	2400	2,592.0	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	C-OCC	1680	1,814.4	777.6	0.0	$97.41	$202.50	$35.00	2.1	1.7
201	148	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	SW	2400	1,944.0	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	C-OCC	1680	1,360.8	583.2	0.0	$73.05	$202.50	$35.00	2.8	2.3
13	150	32	S 32 P F 2 (ELE)	F42LL	60	1.9	SW	2400	4,608.0	32	S 32 P F 2 (ELE)	F42LL	60	1.9	C-OCC	1680	3,225.6	1,382.4	0.0	$173.17	$202.50	$35.00	1.2	1.0
13	149 Music	16	S 32 P F 2 (ELE)	F42LL	60	1.0	SW	2400	2,304.0	16	S 32 P F 2 (ELE)	F42LL	60	1.0	C-OCC	1680	1,612.8	691.2	0.0	$86.58	$202.50	$35.00	2.3	1.9

Energy Audit of High Mountain Road Elementary School

CHA Project No.24497

Cost of Electricity: **$0.125 $/kWh**

$6.07 $/kW

ECM-2 Install Occupancy Sensors

		EXISTING CONDITIONS								RETROFIT CONDITIONS								COST & SAVINGS ANALYSIS						
	Area Description	**No. of Fixtures**	**Standard Fixture Code**	**NYSERDA 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 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
55	Corridor	33	2T 17 R F 3 (ELE)	F23ILL	47	1.6	SW	2280	3,536.3	33	2T 17 R F 3 (ELE)	F23ILL	47	1.6	C-OCC	2280	3,536.3	0.0	0.0	$0.00	$202.50	$35.00		#DIV/0!
	Total	**607**				**53.8**			**123,166**	**607**				**54**			**90,005**	**33,162**	**0**	**4,154**	**$17,010**	**2,940**		
																	Demand Savings			**0.0**	**$0**			
																	kWh Savings			**33,162**	**$4,154**			
																	Total Savings				**$4,154**		**4.1**	**3.4**

Energy Audit of High Mountain Road Elementary School

CHA Project No.24497

ECM-3 Lighting Replacements with Occupancy Sensors

Cost of Electricity: **$0.125 $/kWh**

$6.07 $/kW

		EXISTING CONDITIONS								RETROFIT CONDITIONS								COST & SAVINGS ANALYSIS						
	Area Description	**No. of Fixtures**	**Standard Fixture Code**	**NYSERDA 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
254	114A	3	T 32 R F 4 (ELE)	F44LL	118	0.4	C-OCC	2400	850	3	T 32 R F 4 (ELE)	F44LL	118	0.4	C-OCC	1,200	425	425	0.0	$ 53.21	$ 202.50	$ 35	3.8	3.1
254	Printer Room	2	T 32 R F 4 (ELE)	F44LL	118	0.2	C-OCC	2400	566	2	T 32 R F 4 (ELE)	F44LL	118	0.2	C-OCC	1,200	283	283	0.0	$ 35.48	$ 202.50	$ 35	5.7	4.7
254	107 Classroom	12	T 32 R F 4 (ELE)	F44LL	118	1.4	C-OCC	2400	3,398	12	T 32 R F 4 (ELE)	F44LL	118	1.4	C-OCC	1,680	2,379	1,020	0.0	$ 127.71	$ 202.50	$ 35	1.6	1.3
71	107 TR	1	I 60	I60/1	60	0.1	SW	2000	120	1	CF 26	CFQ26/1-L	27	0.0	C-OCC	2,000	54	66	0.0	$ 10.67	$ 209.25	$ 35	19.6	16.3
254	106 Classroom	12	T 32 R F 4 (ELE)	F44LL	118	1.4	C-OCC	2400	3,398	12	T 32 R F 4 (ELE)	F44LL	118	1.4	C-OCC	1,680	2,379	1,020	0.0	$ 127.71	$ 202.50	$ 35	1.6	1.3
71	106 TR	1	I 60	I60/1	60	0.1	SW	2000	120	1	CF 26	CFQ26/1-L	27	0.0	C-OCC	2,000	54	66	0.0	$ 10.67	$ 209.25	$ 35	19.6	16.3
254	109 Classroom	12	T 32 R F 4 (ELE)	F44LL	118	1.4	C-OCC	2400	3,398	12	T 32 R F 4 (ELE)	F44LL	118	1.4	C-OCC	1,680	2,379	1,020	0.0	$ 127.71	$ 202.50	$ 35	1.6	1.3
71	109 TR	1	I 60	I60/1	60	0.1	SW	2000	120	1	CF 26	CFQ26/1-L	27	0.0	C-OCC	2,000	54	66	0.0	$ 10.67	$ 209.25	$ 35	19.6	16.3
254	108 Classrom	12	T 32 R F 4 (ELE)	F44LL	118	1.4	C-OCC	2400	3,398	12	T 32 R F 4 (ELE)	F44LL	118	1.4	C-OCC	1,680	2,379	1,020	0.0	$ 127.71	$ 202.50	$ 35	1.6	1.3
71	108 TR	1	I 60	I60/1	60	0.1	SW	2000	120	1	CF 26	CFQ26/1-L	27	0.0	C-OCC	2,000	54	66	0.0	$ 10.67	$ 209.25	$ 35	19.6	16.3
254	111 Classroom	12	T 32 R F 4 (ELE)	F44LL	118	1.4	C-OCC	2400	3,398	12	T 32 R F 4 (ELE)	F44LL	118	1.4	C-OCC	1,680	2,379	1,020	0.0	$ 127.71	$ 202.50	$ 35	1.6	1.3
71	111 TR	1	I 60	I60/1	60	0.1	SW	2000	120	1	CF 26	CFQ26/1-L	27	0.0	C-OCC	2,000	54	66	0.0	$ 10.67	$ 209.25	$ 35	19.6	16.3
254	110 Classroom	12	T 32 R F 4 (ELE)	F44LL	118	1.4	C-OCC	2400	3,398	12	T 32 R F 4 (ELE)	F44LL	118	1.4	C-OCC	1,680	2,379	1,020	0.0	$ 127.71	$ 202.50	$ 35	1.6	1.3
71	110 TR	1	I 60	I60/1	60	0.1	SW	2000	120	1	CF 26	CFQ26/1-L	27	0.0	C-OCC	2,000	54	66	0.0	$ 10.67	$ 209.25	$ 35	19.6	16.3
254	112 Classroom	14	T 32 R F 4 (ELE)	F44LL	118	1.7	C-OCC	2400	3,965	14	T 32 R F 4 (ELE)	F44LL	118	1.7	C-OCC	1,680	2,775	1,189	0.0	$ 149.00	$ 202.50	$ 35	1.4	1.1
7	112 TR	1	2T 32 R F 2 (u) (ELE) Thin Tube	FU2LL	60	0.1	SW	2000	120	1	2T 17 R F 2 (ELE)	F22ILL	33	0.0	C-OCC	2,000	66	54	0.0	$ 8.73	$ 303.75	$ 35	34.8	30.8
71	112 Storage	3	I 60	I60/1	60	0.2	SW	1000	180	3	CF 26	CFQ26/1-L	27	0.1	C-OCC	250	20	160	0.1	$ 27.22	$ 222.75	$ 35	8.2	6.9
254	112A	4	T 32 R F 4 (ELE)	F44LL	118	0.5	C-OCC	2400	1,133	4	T 32 R F 4 (ELE)	F44LL	118	0.5	C-OCC	1,680	793	340	0.0	$ 42.57	$ 202.50	$ 35	4.8	3.9
254	113 Classroom	14	T 32 R F 4 (ELE)	F44LL	118	1.7	C-OCC	2400	3,965	14	T 32 R F 4 (ELE)	F44LL	118	1.7	C-OCC	1,680	2,775	1,189	0.0	$ 149.00	$ 202.50	$ 35	1.4	1.1
7	113 TR	1	2T 32 R F 2 (u) (ELE) Thin Tube	FU2LL	60	0.1	SW	2000	120	1	2T 17 R F 2 (ELE)	F22ILL	33	0.0	C-OCC	2,000	66	54	0.0	$ 8.73	$ 303.75	$ 35	34.8	30.8
71	Vestibule	1	I 60	I60/1	60	0.1	SW	2280	137	1	CF 26	CFQ26/1-L	27	0.0	C-OCC	2,280	62	75	0.0	$ 11.83	$ 209.25	$ 35	17.7	14.7
55	Corridor	6	2T 17 R F 3 (ELE)	F23ILL	47	0.3	SW	2280	643	6	2T 17 R F 3 (ELE)	F23ILL	47	0.3	C-OCC	2,280	643	-	0.0	$ -	$ 202.50	$ 35		
71	Vestibule	1	I 60	I60/1	60	0.1	SW	2280	137	1	CF 26	CFQ26/1-L	27	0.0	C-OCC	2,280	62	75	0.0	$ 11.83	$ 209.25	$ 35	17.7	14.7
55	Corridor	12	2T 17 R F 3 (ELE)	F23ILL	47	0.6	SW	2280	1,286	12	2T 17 R F 3 (ELE)	F23ILL	47	0.6	C-OCC	2,280	1,286	-	0.0	$ -	$ 202.50	$ 35		
254	105 Nurse	4	T 32 R F 4 (ELE)	F44LL	118	0.5	C-OCC	2400	1,133	4	T 32 R F 4 (ELE)	F44LL	118	0.5	C-OCC	1,200	566	566	0.0	$ 70.95	$ 202.50	$ 35	2.9	2.4
7	105 TR	1	2T 32 R F 2 (u) (ELE) Thin Tube	FU2LL	60	0.1	SW	2000	120	1	2T 17 R F 2 (ELE)	F22ILL	33	0.0	C-OCC	2,000	66	54	0.0	$ 8.73	$ 303.75	$ 35	34.8	30.8
198	105 TR	1	2T 17 R F 2 (ELE) REFLECTOR	F22LL	31	0.0	SW	2000	62	1	0	F42SSILL	48	0.0	C-OCC	2,000	96	(34)	(0.0)	$ (5.50)	$ 308.75	$ 50		
254	105 Vest	1	T 32 R F 4 (ELE)	F44LL	118	0.1	SW	2280	269	1	T 32 R F 4 (ELE)	F44LL	118	0.1	SW	2,280	269	-	0.0	$ -	$ -	$ -		
201	Cust	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	SW	500	45	1	0	F43SSILL	72	0.1	C-OCC	-	-	45	0.0	$ 6.95	$ 308.75	$ 50	44.4	37.2
13	Main Lobby	3	S 32 P F 2 (ELE)	F42LL	60	0.2	SW	2280	410	3	0	F42SSILL	48	0.1	C-OCC	2,280	328	82	0.0	$ 12.90	$ 521.25	$ 65	40.4	35.4
201	103 Main Office	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	SW	2400	1,296	6	0	F43SSILL	72	0.4	C-OCC	1,200	518	778	0.1	$ 105.27	$ 840.00	$ 125	8.0	6.8
71	103 Storage	1	I 60	I60/1	60	0.1	SW	1000	60	1	CF 26	CFQ26/1-L	27	0.0	C-OCC	250	7	53	0.0	$ 9.07	$ 209.25	$ 35	23.1	19.2
201	103B Principal	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	SW	2400	1,296	6	0	F43SSILL	72	0.4	C-OCC	1,200	518	778	0.1	$ 105.27	$ 840.00	$ 125	8.0	6.8
7	103B TR	1	2T 32 R F 2 (u) (ELE) Thin Tube	FU2LL	60	0.1	SW	2000	120	1	2T 17 R F 2 (ELE)	F22ILL	33	0.0	C-OCC	2,000	66	54	0.0	$ 8.73	$ 303.75	$ 35	34.8	30.8
198	103B TR	1	2T 17 R F 2 (ELE) REFLECTOR	F22LL	31	0.0	SW	2000	62	1	0	F42SSILL	48	0.0	C-OCC	2,000	96	(34)	(0.0)	$ (5.50)	$ 308.75	$ 50		
13	103 Vest	1	S 32 P F 2 (ELE)	F42LL	60	0.1	SW	2280	137	1	0	F42SSILL	48	0.0	C-OCC	2,280	109	27	0.0	$ 4.30	$ 308.75	$ 45	71.8	61.3
13	103 Mailroom	1	S 32 P F 2 (ELE)	F42LL	60	0.1	SW	2400	144	1	0	F42SSILL	48	0.0	C-OCC	1,200	58	86	0.0	$ 11.70	$ 308.75	$ 45	26.4	22.5
55	Corridor	10	2T 17 R F 3 (ELE)	F23ILL	47	0.5	SW	2280	1,072	10	2T 17 R F 3 (ELE)	F23ILL	47	0.5	SW	2,280	1,072	-	0.0	$ -	$ -	$ -		
9	Gym / Auditorium	9	High Bay MH 400 35 Feet High	MH400/1	458	4.1	SW	2000	8,244	9	0	QL200/1	200	1.8	C-OCC	2,000	3,600	4,644	2.3	$ 750.77	$ 6,885.00	$ 35	9.2	9.1
11	Storage	3	S 34 P F 2 (MAG)	F42EE	72	0.2	SW	1000	216	3	C 28 P F 2	F42SSILL	48	0.1	C-OCC	250	36	180	0.1	$ 27.79	$ 521.25	$ 65	18.8	16.4
71	Storage	3	I 60	I60/1	60	0.2	SW	1000	180	3	CF 26	CFQ26/1-L	27	0.1	C-OCC	250	20	160	0.1	$ 27.22	$ 222.75	$ 35	8.2	6.9
71	Girl's TR	1	I 60	I60/1	60	0.1	SW	2000	120	1	CF 26	CFQ26/1-L	27	0.0	C-OCC	2,000	54	66	0.0	$ 10.67	$ 209.25	$ 35	19.6	16.3
198	Girl's TR	1	2T 17 R F 2 (ELE) REFLECTOR	F22LL	31	0.0	SW	2000	62	1	0	F42SSILL	48	0.0	C-OCC	2,000	96	(34)	(0.0)	$ (5.50)	$ 308.75	$ 50		
71	Vestibule	3	I 60	I60/1	60	0.2	SW	2280	410	3	CF 26	CFQ26/1-L	27	0.1	C-OCC	2,280	185	226	0.1	$ 35.48	$ 222.75	$ 35	6.3	5.3
13	Storage	3	S 32 P F 2 (ELE)	F42LL	60	0.2	SW	1000	180	3	0	F42SSILL	48	0.1	C-OCC	250	36	144	0.0	$ 20.66	$ 521.25	$ 65	25.2	22.1
13	Gym Office	3	S 32 P F 2 (ELE)	F42LL	60	0.2	SW	2400	432	3	0	F42SSILL	48	0.1	C-OCC	1,200	173	259	0.0	$ 35.09	$ 521.25	$ 65	14.9	13.0
71	Gym Office	2	I 60	I60/1	60	0.1	SW	2400	288	2	CF 26	CFQ26/1-L	27	0.1	C-OCC	1,200	65	223	0.1	$ 32.76	$ 216.00	$ 35	6.6	5.5
71	Boy's TR	1	I 60	I60/1	60	0.1	SW	2000	120	1	CF 26	CFQ26/1-L	27	0.0	C-OCC	2,000	54	66	0.0	$ 10.67	$ 209.25	$ 35	19.6	16.3
198	Boy's TR	1	2T 17 R F 2 (ELE) REFLECTOR	F22LL	31	0.0	SW	2000	62	1	0	F42SSILL	48	0.0	C-OCC	2,000	96	(34)	(0.0)	$ (5.50)	$ 308.75	$ 50		
71	Vestibule	3	I 60	I60/1	60	0.2	SW	2280	410	3	CF 26	CFQ26/1-L	27	0.1	C-OCC	2,280	185	226	0.1	$ 35.48	$ 222.75	$ 35	6.3	5.3
13	Cust Office	6	S 32 P F 2 (ELE)	F42LL	60	0.4	SW	2400	864	6	0	F42SSILL	48	0.3	SW	1,200	346	518	0.1	$ 70.18	$ 637.50	$ 60	9.1	8.2
201	Library	36	T 32 R F 3 (ELE)	F43ILL/2	90	3.2	C-OCC	2400	7,776	36	0	F43SSILL	72	2.6	C-OCC	1,680	4,355	3,421	0.6	$ 475.76	$ 4,027.50	$ 575	8.5	7.3
55	Boy's TR	6	2T 17 R F 3 (ELE)	F23ILL	47	0.3	SW	2000	564	6	2T 17 R F 3 (ELE)	F23ILL	47	0.3	C-OCC	2,000	564	-	0.0	$ -	$ 202.50	$ 35		
7	Faculty Women's TR	3	2T 32 R F 2 (u) (ELE) Thin Tube	FU2LL	60	0.2	SW	2000	360	3	2T 17 R F 2 (ELE)	F22ILL	33	0.1	C-OCC	2,000	198	162	0.1	$ 26.19	$ 506.25	$ 35	19.3	18.0
7	Cust	1	2T 32 R F 2 (u) (ELE) Thin Tube	FU2LL	60	0.1	SW	1600	96	1	2T 17 R F 2 (ELE)	F22ILL	33	0.0	SW	1,200	40	56	0.0	$ 9.03	$ 101.25	$ -	11.2	11.2
7	Faculty Men's TR	2	2T 32 R F 2 (u) (ELE) Thin Tube	FU2LL	60	0.1	SW	2000	240	2	2T 17 R F 2 (ELE)	F22ILL	33	0.1	C-OCC	2,000	132	108	0.1	$ 17.46	$ 405.00	$ 35	23.2	21.2
201	123 Cafeteria	20	T 32 R F 3 (ELE)	F43ILL/2	90	1.8	SW	1600	2,880	20	0	F43SSILL	72	1.4	C-OCC	1,200	1,728	1,152	0.4	$ 170.51	$ 2,327.50	$ 335	13.6	11.7
254	123 Storage	4	T 32 R F 4 (ELE)	F44LL	118	0.5	SW	1000	472	4	T 32 R F 4 (ELE)	F44LL	118	0.5	C-OCC	250	118	354	0.0	$ 44.34	$ 202.50	$ 35	4.6	3.8
55	Corridor	5	2T 17 R F 3 (ELE)	F23ILL	47	0.2	SW	2280	536	5	2T 17 R F 3 (ELE)	F23ILL	47	0.2	C-OCC	2,280	536	-	0.0	$ -	$ 202.50	$ 35		
13	125 Music	24	S 32 P F 2 (ELE)	F42LL	60	1.4	SW	2400	3,456	24	0	F42SSILL	48	1.2	C-OCC	1,680	1,935	1,521	0.3	$ 211.45	$ 2,752.50	$ 275	13.0	11.7
201	127 Faculty Lunchroom	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	C-OCC	3102.5	2,513	9	0	F43SSILL	72	0.6	C-OCC	1,500	972	1,541	0.2	$ 204.83	$ 1,158.75	$ 170	5.7	4.8
257	Girl's TR	6	CFT40W	CFT40/2-BX	72	0.4	SW	2000	864	6	CFT40W	CFT40/2-BX	72	0.4	C-OCC	2,000	864	-	0.0	$ -	$ 202.50	$ 35		
254	126 Classroom	9	T 32 R F 4 (ELE)	F44LL	118	1.1	C-OCC	2400	2,549	9	T 32 R F 4 (ELE)	F44LL	118	1.1	C-OCC	1,680	1,784	765	0.0	$ 95.78	$ 202.50	$ 35	2.1	1.7
254	129 Classroom	9	T 32 R F 4 (ELE)	F44LL	118	1.1	C-OCC	2400	2,549	9	T 32 R F 4 (ELE)	F44LL	118	1.1	C-OCC	1,680	1,784	765	0.0	$ 95.78	$ 202.50	$ 35	2.1	1.7
254	128 Classroom	9	T 32 R F 4 (ELE)	F44LL	118	1.1	C-OCC	2400	2,549	9	T 32 R F 4 (ELE)	F44LL	118	1.1	C-OCC	1,680	1,784	765	0.0	$ 95.78	$ 202.50	$ 35	2.1	1.7
254	131 Classroom	9	T 32 R F 4 (ELE)	F44LL	118	1.1	C-OCC	2400	2,549	9	T 32 R F 4 (ELE)	F44LL	118	1.1	C-OCC	1,680	1,784	765	0.0	$ 95.78	$ 202.50	$ 35	2.1	1.7
254	130 Classroom	9	T 32 R F 4 (ELE)	F44LL	118	1.1	C-OCC	2400	2,549	9	T 32 R F 4 (ELE)	F44LL	118	1.1	C-OCC	1,680	1,784	765	0.0	$ 95.78	$ 202.50	$ 35	2.1	1.7
254	133 Classroom	9	T 32 R F 4 (ELE)	F44LL	118	1.1	C-OCC	2400	2,549	9	T 32 R F 4 (ELE)	F44LL	118	1.1	C-OCC	1,680	1,784	765	0.0	$ 95.78	$ 202.50	$ 35	2.1	1.7
254	132 Classroom	9	T 32 R F 4 (ELE)	F44LL	118	1.1	C-OCC	2400	2,549	9	T 32 R F 4 (ELE)	F44LL	118	1.1	C-OCC	1,680	1,784	765	0.0	$ 95.78	$ 202.50	$ 35	2.1	1.7
201	135 Classroom	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	C-OCC	2400	1,296	6	0	F43SSILL	72	0.4	C-OCC	1,680	726	570	0.1	$ 79.29	$ 840.00	$ 125	10.6	9.0
201	137 Office	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	2400	648	3	0	F43SSILL	72	0.2	C-OCC	1,200	259	389	0.1	$ 52.63	$ 521.25	$ 80	9.9	8.4
201	134 Classroom	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	C-OCC	2400	2,592	12	0	F43SSILL	72	0.9	C-OCC	1,680	1,452	1,140	0.2	$ 158.59	$ 1,477.50	$ 215	9.3	8.0
201	136 Classroom	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	C-OCC	2400	2,592	12	0	F43SSILL	72	0.9	C-OCC	1,680	1,452	1,140	0.2	$ 158.59	$ 1,477.50	$ 215	9.3	8.0
13	139 Copyroom	4	S 32 P F 2 (ELE)	F42LL	60	0.2	C-OCC	2400	576	4	0	F42SSILL	48	0.2	C-OCC	1,200	230	346	0.0	$ 46.79	$ 627.50	$ 75	13.4	11.8
13	141 Office	4	S 32 P F 2 (ELE)	F42LL	60	0.2	C-OCC	2400	576	4	0	F42SSILL	48	0.2	C-OCC	1,200	230	346	0.0	$ 46.79	$ 627.50	$ 75	13.4	11.8
199	Boy's TR	6	W 32 C F 1 (ELE)	F41LL	32	0.2	SW	2000	384	6	0	F41SSILL	26	0.2	C-OCC	2,000	312	72	0.0	$ 11.64	$ 840.00	$ 125	72.2	61.4
199	Girl's TR	6	W 32 C F 1 (ELE)	F41LL	32	0.2	SW	2000	384	6	0	F41SSILL	26	0.2	C-OCC	2,000	312	72	0.0	$ 11.64	$ 840.00	$ 125	72.2	61.4
201	142	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	C-OCC	2400	864	4	0	F43SSILL	72	0.3	C-OCC	1,680	484	380	0.1	$ 52.86	$ 627.50	$ 95	11.9	10.1
13	Cust Closet	1	S 32 P F 2 (ELE)	F42LL	60	0.1	SW	500	30	1	0	F42SSILL	48	0.0	C-OCC	-	-	30	0.0	$ 4.63	$ 308.75	$ 45	66.7	56.9
201	143	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	C-OCC	2400	1,296	6	0	F43SSILL	72	0.4	C-OCC	1,680	726	570	0.1	$ 79.29	$ 840.00	$ 125	10.6	9.0
13	Teacher TR	1	S 32 P F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	0	F42SSILL	48	0.0	C-OCC	2,000	96	24	0.0	$ 3.88	$ 308.75	$ 45	79.6	68.0
201	146	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	C-OCC	2400	2,592	12	0	F43SSILL	72	0.9	C-OCC	1,680	1,452	1,140	0.2	$ 158.59	$ 1,477.50	$ 215	9.3	8.0
13	145 Computer	32	S 32 P F 2 (ELE)	F42LL	60	1.9	SW	2400	4,608	32	0	F42SSILL	48	1.5	C-OCC	1,680	2,580	2,028	0.4	$ 281.93	$ 3,602.50	$ 355	12.8	11.5
201	147 Science	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	2400	2,592	12	0	F43SSILL	72	0.9	C-OCC	1,680	1,452	1,140	0.2	$ 158.59	$ 1,477.50	$ 215	9.3	8.0
201	148	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	SW	2400	1,944	9	0	F43SSILL	72	0.6	C-OCC	1,680	1,089	855	0.2	$ 118.94	$ 1,158.75	$ 170	9.7	8.3
13	150	32	S 32 P F 2 (ELE)	F42LL	60	1.9	SW	2400	4,608	32	0	F42SSILL	48	1.5	C-OCC	1,680	2,580	2,028	0.4	$ 281.93	$ 3,602.50	$ 355	12.8	11.5
13	149 Music	16	S 32 P F 2 (ELE)	F42LL	60	1.0	SW	2400	2,304	16	0	F42SSILL	48	0.8	C-OCC	1,680	1,290	1,014	0.2	$ 140.97	$ 1,902.50	$ 195	13.5	12.1

Energy Audit of High Mountain Road Elementary School

CHA Project No.24497

ECM-3 Lighting Replacements with Occupancy Sensors

Cost of Electricity: **$0.125 $/kWh**

$6.07 $/kW

		EXISTING CONDITIONS								RETROFIT CONDITIONS								COST & SAVINGS ANALYSIS						
	Area Description	**No. of Fixtures**	**Standard Fixture Code**	**NYSERDA 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
55	Corridor	33	2T 17 R F 3 (ELE)	F23ILL	47	1.6	SW	2280	3,536	33	2T 17 R F 3 (ELE)	F23ILL	47	1.6	C-OCC	2,280	3,536	-	0.0	$ -	$ 202.50	$ 35		
	Total	**607**				**53.8**			**123,166**	**607**				**46.0**			**76,756**		**7.8**	**6,384**	**57,174**	**$6,830**		
																	Demand Savings			**7.8**	**$571**			
																	kWh Savings			**46,410**	**$5,814**			
																	Total Savings				**$6,384**		**9.0**	**7.9**

APPENDIX D

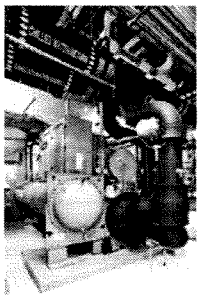
New Jersey Pay For Performance Incentive Program

Pay for Performance - Existing Buildings

Download program applications and incentive forms.

The Greater the Savings, the Greater Your Incentives

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



Eligibility

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

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

ENERGY STAR Portfolio Manager

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

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

Incentives

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

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

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

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

CONTACT US

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

Energy Efficiency Revolving Loan Fund (EE RLF)

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

Steps to Participation

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

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

New Jersey SmartStart BUILDINGS®

BPU

2012 PAY FOR PERFORMANCE PROGRAM
Existing Buildings Incentive Structure

Incentive #1: Energy Reduction Plan

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

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

Incentive #2: Installation of Recommended Measures

Minimum Performance Target: 15%

Electric Incentives

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

Gas Incentives

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

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

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

Incentive #3: Post-Construction Benchmarking Report

Minimum Performance Target: 15%

Electric Incentives

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

Gas Incentives

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

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

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

New Jersey Pay For Performance Incentive Program

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

Total Building Area (Square Feet)	47,173
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)	$56,571	$23,599
Existing Usage (from utility)	393,400	23,281
Proposed Savings	84,702	7,701
Existing Total MMBtus	3,671	
Proposed Savings MMBtus	1,059	
% Energy Reduction	**28.9%**	
Proposed Annual Savings	$15,700	

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

	Incentives $		
	Elec	Gas	Total
Incentive #1	$0	$0	$5,000
Incentive #2	$9,317	$9,626	$18,943
Incentive #3	$9,317	$9,626	$18,943
Total All Incentives	**$18,635**	**$19,252**	**$42,886**

Total Project Cost	$504,911

		Allowable Incentive
% Incentives #1 of Utility Cost*	6.2%	$5,000
% Incentives #2 of Project Cost**	3.8%	$18,943
% Incentives #3 of Project Cost**	3.8%	$18,943
Total Eligible Incentives***	**$42,886**	
Project Cost w/ Incentives	$462,024	

Project Payback (years)	
w/o Incentives	w/ Incentives
32.2	29.4

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

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

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

APPENDIX E

Energy Savings Improvement Plan (ESIP)

COMMERCIAL, INDUSTRIAL AND LOCAL GOVERNMENT

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

Home » Commercial & Industrial » Programs

Energy Savings Improvement Plan

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

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

- Local Government
- School Districts (K-12)

The Board also adopted protocols to measure energy savings.

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

FIRST STEP – ENERGY AUDIT

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

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

ENERGY REDUCTION PLANS

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

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

Program Updates

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

Other updates posted.

APPENDIX F

Solar Photovoltaic Analysis

Franklin Lakes Public Schools - NJBPU
High Mountain Road Elementary School

Cost of Electricity	$0.144	/kWh
Electricity Usage	393,400	kWh/yr
System Unit Cost	$4,000	/kW

Photovoltaic (PV) Solar Power Generation - Screening Assessment

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	Federal Tax Credit	New Jersey Renewable ** SREC	Payback (without incentive)	Payback (with incentive)
$	kW	kWh	therms	$	$	$	$	$	Years	Years
$200,000	**50.0**	**65,167**	**0**	**$9,384**	**0**	**$9,384**	**$0**	**$4,888**	**21.3**	**14.0**

** Estimated Solar Renewable Energy Certificate Program (SREC) SREC for 15 Years= $75 /1000kwh

Area Output*
1,381 m2
14,865 ft2

Perimeter Output*
225 m
738 ft

Available Roof Space for PV:
(Area Output - 10 ft x Perimeter) x 85%
6,361 ft2

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

8 watt/ft2
50,885 DC watts
50 kW Enter into PV Watts

PV Watts Inputs***

Array Tilt Angle	20	Enter into PV Watts (always 20 if flat, if pitched - enter estimated roof angle)
Array Azimuth	180	Enter into PV Watts (default)
Zip Code	07417	Enter into PV Watts
DC/AC Derate Factor	0.83	Enter info PV Watts

PV Watts Output
65,167 annual kWh calculated in PV Watts program

% Offset Calc

Usage	393,400	(from utilities)
PV Generation	65,167	(generated using PV Watts)
% offset	17%	

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

PVWatts * * * * *

AC Energy & Cost Savings

* * * * *

Cautions for Interpreting the Results

(Type comments here to appear on printout; maximum 1 row of 90 characters.)

Station Identification

Cell ID:	0268370
State:	New Jersey
Latitude:	40.9 ° N
Longitude:	74.2 ° W

PV System Specifications

DC Rating:	50.0 kW
DC to AC Derate Factor:	0.830
AC Rating:	41.5 kW
Array Type:	Fixed Tilt
Array Tilt:	20.0 °
Array Azimuth:	180.0 °

Energy Specifications

Cost of Electricity:	14.4 ¢/kWh

Results

Month	Solar Radiation (kWh/m²/day)	AC Energy (kWh)	Energy Value ($)
1	2.65	3493	502.99
2	3.47	4137	595.73
3	4.83	6140	884.16
4	5.28	6293	906.19
5	5.93	7180	1033.92
6	6.32	7209	1038.10
7	5.87	6786	977.18
8	5.55	6460	930.24
9	5.04	5783	832.75
10	4.14	5085	732.24
11	2.82	3415	491.76
12	2.46	3186	458.78
Year	4.54	65167	9384.05

Output Hourly Performance Data

(Gridded data is monthly, hourly output not available.)

Output Results as Text

Saving Text from a Browser

Run PVWATTS v.2 for another location

Run PVWATTS v.1

RReDC home page (http://rredc.nrel.gov)

APPENDIX G

EPA Portfolio Manager

OMB No. 2060-0347

STATEMENT OF ENERGY PERFORMANCE
High Mountain Road School

Building ID: 3257005
For 12-month Period Ending: May 31, 2012[1]
Date SEP becomes ineligible: N/A

Date SEP Generated: August 17, 2012

Facility
High Mountain Road School
765 High Mountain Road
Franklin Lakes, NJ 07417

Facility Owner
N/A

Primary Contact for this Facility
N/A

Year Built: 1962
Gross Floor Area (ft²): 47,173

Energy Performance Rating[2] (1-100) 59

Site Energy Use Summary[3]

Electricity - Grid Purchase(kBtu)	1,342,281
Natural Gas (kBtu)[4]	2,328,130
Total Energy (kBtu)	3,670,411

Energy Intensity[4]

Site (kBtu/ft²/yr)	78
Source (kBtu/ft²/yr)	147

Emissions (based on site energy use)

Greenhouse Gas Emissions ($MtCO_2e$/year)	246

Electric Distribution Utility
Rockland Electric Co [Consolidated Edison Inc]

National Median Comparison

National Median Site EUI	85
National Median Source EUI	160
% Difference from National Median Source EUI	-8%
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	High Mountain Road 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	765 High Mountain Road, Franklin Lakes, NJ 07417	Is this address accurate and complete? Correct weather normalization requires an accurate zip code.		☐
Single Structure	Single Facility	Does this SEP represent a single structure? SEPs cannot be submitted for multiple-building campuses (with the exception of a hospital, k-12 school, hotel and senior care facility) nor can they be submitted as representing only a portion of a building.		☐
School (K-12 School)				
CRITERION	**VALUE AS ENTERED IN PORTFOLIO MANAGER**	**VERIFICATION QUESTIONS**	**NOTES**	☑
Gross Floor Area	47,173 Sq. Ft.	Does this square footage include all supporting functions such as kitchens and break rooms used by staff, storage areas, administrative areas, elevators, stairwells, atria, vent shafts, etc. Also note that existing atriums should only include the base floor area that it occupies. Interstitial (plenum) space between floors should not be included in the total. Finally gross floor area is not the same as leasable space. Leasable space is a subset of gross floor area.		☐
Open Weekends?	No (Default)	Is this building normally open at all on the weekends? This includes activities beyond the work conducted by maintenance, cleaning, and security personnel. Weekend activity could include any time when the space is used for classes, performances or other school or community activities. If the building is open on the weekend as part of the standard schedule during one or more seasons, the building should select ?yes? for open weekends. The ?yes? response should apply whether the building is open for one or both of the weekend days.		☐
Number of PCs	83 (Default)	Is this the number of personal computers in the K12 School?		☐
Number of walk-in refrigeration/freezer units	0 (Default)	Is this the total number of commercial walk-in type freezers and coolers? These units are typically found in storage and receiving areas.		☐
Presence of cooking facilities	Yes (Default)	Does this school have a dedicated space in which food is prepared and served to students? If the school has space in which food for students is only kept warm and/or served to students, or has only a galley that is used by teachers and staff then the answer is "no".		☐
Percent Cooled	100 % (Default)	Is this the percentage of the total floor space within the facility that is served by mechanical cooling equipment?		☐
Percent Heated	100 % (Default)	Is this the percentage of the total floor space within the facility that is served by mechanical heating equipment?		☐
Months	N/A(Optional)	Is this school in operation for at least 8 months of the year?		☐

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

ENERGY STAR® Data Checklist for Commercial Buildings

Energy Consumption

Power Generation Plant or Distribution Utility: Rockland Electric Co [Consolidated Edison Inc]

Fuel Type: Electricity

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

Start Date	End Date	Energy Use (kWh (thousand Watt-hours))
05/01/2012	05/31/2012	31,000.00
04/01/2012	04/30/2012	36,200.00
03/01/2012	03/31/2012	33,400.00
02/01/2012	02/29/2012	34,400.00
01/01/2012	01/31/2012	36,200.00
12/01/2011	12/31/2011	37,400.00
11/01/2011	11/30/2011	26,400.00
10/01/2011	10/31/2011	35,200.00
09/01/2011	09/30/2011	29,800.00
08/01/2011	08/31/2011	33,800.00
07/01/2011	07/31/2011	25,000.00
06/01/2011	06/30/2011	34,600.00
Electricity Consumption (kWh (thousand Watt-hours))		**393,400.00**
Electricity Consumption (kBtu (thousand Btu))		**1,342,280.80**
Total Electricity (Grid Purchase) Consumption (kBtu (thousand Btu))		**1,342,280.80**
Is this the total Electricity (Grid Purchase) consumption at this building including all Electricity meters?		☐

Fuel Type: Natural Gas

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

Start Date	End Date	Energy Use (therms)
05/01/2012	05/31/2012	100.36
04/01/2012	04/30/2012	1,041.25
03/01/2012	03/31/2012	1,939.63
02/01/2012	02/29/2012	5,382.76
01/01/2012	01/31/2012	5,097.88
12/01/2011	12/31/2011	5,023.64
11/01/2011	11/30/2011	3,388.66
10/01/2011	10/31/2011	966.86
09/01/2011	09/30/2011	122.16
08/01/2011	08/31/2011	73.43

07/01/2011	07/31/2011	67.10
06/01/2011	06/30/2011	77.57
Natural Gas Consumption (therms)		**23,281.30**
Natural Gas Consumption (kBtu (thousand Btu))		**2,328,130.00**
Total Natural Gas Consumption (kBtu (thousand Btu))		**2,328,130.00**
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
High Mountain Road School
765 High Mountain Road
Franklin Lakes, NJ 07417

Facility Owner
N/A

Primary Contact for this Facility
N/A

General Information

High Mountain Road School	
Gross Floor Area Excluding Parking: (ft^2)	47,173
Year Built	1962
For 12-month Evaluation Period Ending Date:	May 31, 2012

Facility Space Use Summary

School	
Space Type	K-12 School
Gross Floor Area (ft^2)	47,173
Open Weekends? [d]	No
Number of PCs [d]	83
Number of walk-in refrigeration/freezer units [d]	0
Presence of cooking facilities [d]	Yes
Percent Cooled [d]	100
Percent Heated [d]	100
Months [o]	N/A
High School?	No
School District [o]	N/A

Energy Performance Comparison

	Evaluation Periods		Comparisons		
Performance Metrics	**Current** (Ending Date 05/31/2012)	**Baseline** (Ending Date 05/31/2012)	**Rating of 75**	**Target**	**National Median**
Energy Performance Rating	59	59	75	N/A	50
Energy Intensity					
Site ($kBtu/ft^2$)	78	78	66	N/A	85
Source ($kBtu/ft^2$)	147	147	125	N/A	160
Energy Cost					
$/year	$ 78,247.36	$ 78,247.36	$ 66,511.76	N/A	$ 85,045.36
$/$ft^2$/year	$ 1.66	$ 1.66	$ 1.41	N/A	$ 1.80
Greenhouse Gas Emissions					
$MtCO_2e$/year	246	246	209	N/A	267
$kgCO_2e/ft^2$/year	5	5	4	N/A	5

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.

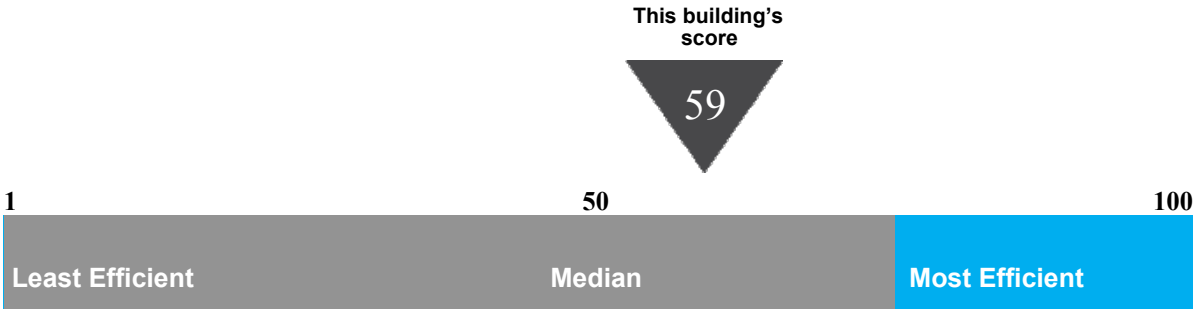
Statement of Energy Performance

2012

High Mountain Road School
765 High Mountain Road
Franklin Lakes, NJ 07417

Portfolio Manager Building ID: 3257005

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 147 kBtu per square foot per year.*

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

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

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

Date of certification

EPA United States Environmental Protection Agency

Date Generated: 08/17/2012