POMPTON LAKES BOARD OF EDUCATION
LAKESIDE MIDDLE SCHOOL
ENERGY ASSESSMENT

FOR
NEW JERSEY
BOARD OF PUBLIC UTILITIES

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CHA PROJECT NO. 24698

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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 staff and spot measurements taken in the field.

1.0 EXECUTIVE SUMMARY

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

Building Name	Address	Square Feet	Construction Date
Lakeside Middle School	316 Lakeside Avenue Pompton Lakes, NJ 07442	38,105	1968

The Energy Conservation Measures (ECMs) and Operations and Maintenance Measures (OMMs) identified in this report are energy savings potential that if implemented will allow the school to use electricity and gas more effectively and efficiently. These measures if pursued may qualify for the New Jersey SmartStart Buildings Program and/or Direct Install Program. Ultimately the goal of this audit and the implementation of these measures is to facilitate the State of New Jersey's green initiative by reducing emissions, using less energy and lowering operating costs.

The potential annual energy cost savings for each energy conservation measure (ECM) is shown in Table 1. Each measure's annual savings are dependent on that measure alone. A total annual savings from implementing multiple measures is not equivalent to the summation of all of the measure's savings because of the interactive effects one measure has on another. A summary of the costs, savings, and paybacks for the recommended ECMs are detailed in Table 1 as follows:

Table 1: Summary of Energy Conservation Measures

Summary of Energy Conservation Measures							
	Energy Conservation Measure	**Approx. Costs ($)**	**Approx. Savings ($/year)**	**Payback (Years) w/o Incentive**	**Potential Incentive ($)***	**Payback (Years) w/ Incentive**	**Recommended For Implementation**
ECM-1	Door & Window Seals	17,000	2,900	6	0	6	X
ECM-2	Replace Roof	883,000	18,200	>20	0	>20	
ECM-3	Boiler Replacement	318,000	8,900	>20	6,000	>20	X
ECM-4	Install DDC & BMS	310,000	4,900	>20	0	>20	
ECM-5	Lighting Replacement / Upgrades	117,000	12,500	9	14,200	8	
ECM-6	Install Lighting Controls (Occupancy Sensors)	20,000	6,400	3	4,700	2	
ECM-7	Lighting Replacements with Lighting Controls (Occupancy Sensors)	137,000	15,800	9	18,900	7	X
ECM-8	Install Network Controller	2,000	1,600	1	0	1	X
ECM-9	Install Low Flow Plumbing Fixtures	223,000	800	>20	0	>20	
ECM-10	Replace Kitchen Booster Heater	17,000	4,400	4	0	4	X

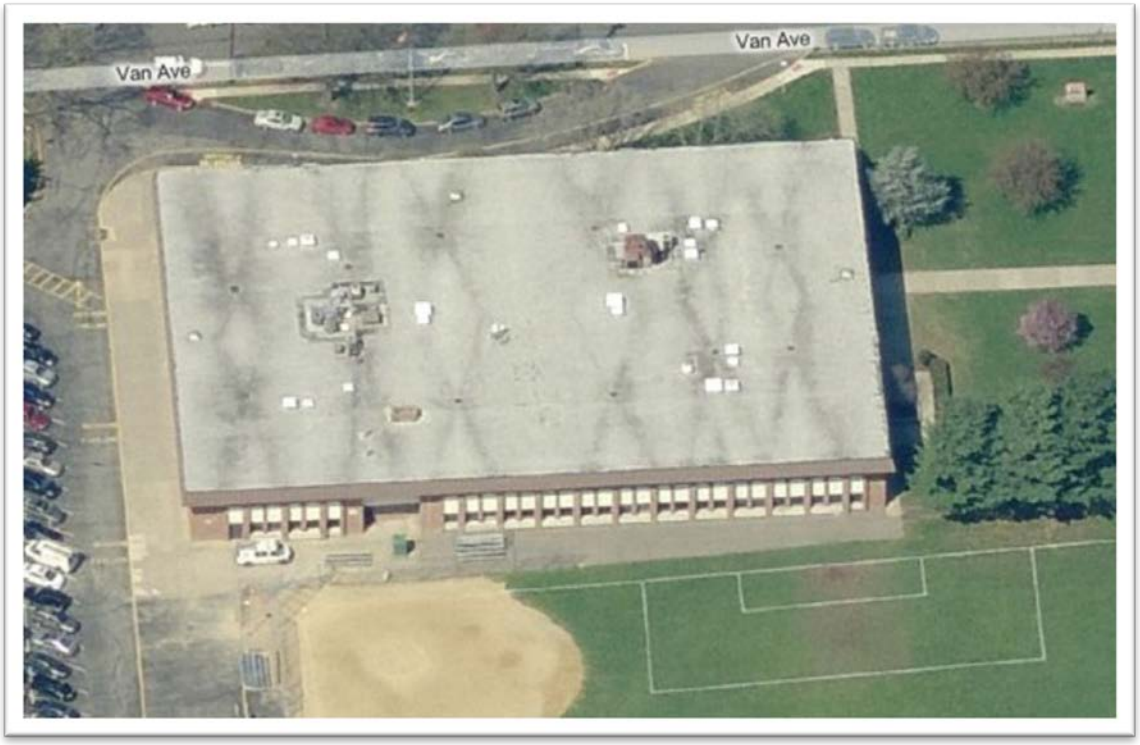
The measures recommended by CHA are typically less than a 15 year payback period, however under the New Jersey Energy Savings Improvement Plan, payback periods up to 15 years may be incentivized. If the recommended measures are implemented a total potential annual savings of $33,600 may be realized with a payback period of 14.6 years. This payback period is affected by the boiler replacement and roof replacement energy conservation measures which have high first costs; both measures are recommended because of their existing condition.

2.0 INTRODUCTION AND BACKGROUND

Lakeside Middle School is a 38,105 square foot building constructed in 1968. Comprised of two floors, the school serves grades 6 through 8 with approximately 400 students and 30 faculty and staff members. Lakeside School consists of the following spaces: classrooms, offices, multi-purpose room, kitchen, storage, toilet rooms and a media center. The school year hours of operation are from 8:00 AM – 11:00 PM Monday through Friday and 8:00 AM – 6:00PM Monday through Friday during the winter months of the school year. The summer hours of operation are 7:00AM to 3:00PM Monday through Friday.

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.

Figure 1: Lakeside Middle School



3.0 UTILITY

Utilities include electricity, natural gas and water. Electricity is delivered and supplied by Jersey Central Power & Light. Natural gas is delivered and supplied by PSE&G.

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

Table 2: Actual Cost & Site Utility Usage

Electric		
Annual Usage	453,759	kWh/yr
Annual Cost	70,339	$
Blended Rate	0.155	$/kWh
Consumption Rate	0.127	$/kWh
Demand Rate	7.91	$/kW
Peak Demand	234.0	kW
Min. Demand	78.7	kW
Avg. Demand	139.2	kW
Natural Gas		
Annual Usage	32,745	Therms/yr
Annual Cost	29,990	$
Rate	0.916	$/Therm
Water		
Annual Usage	792,000	gallons/yr
Annual Cost	1,208	$
Rate	1.525	$/kgallon

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

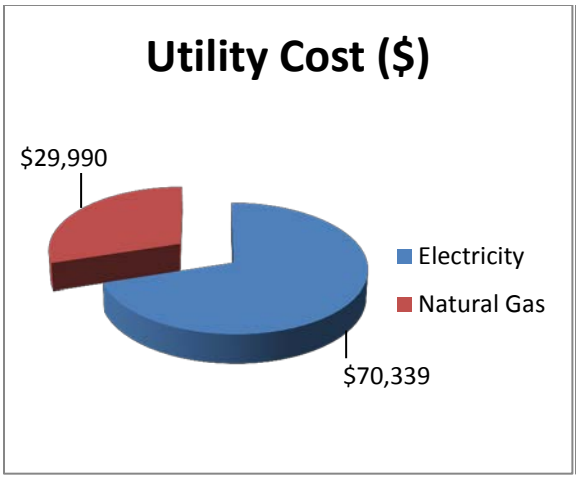


Figure 2: Annual Site Energy Usage

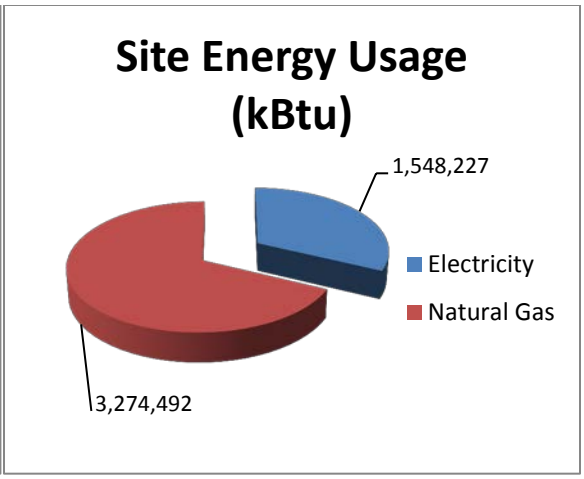


Figure 3: Annual Energy Cost

Under New Jersey's energy deregulation law, the supply portion of the electric (or natural gas) bill is separated from the delivery portion. 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.

4.0 EXISTING CONDITIONS & AREAS OF ENERGY OPPORTUNITY

Energy conservation measures (ECM) are energy savings improvement recommendations that require a financial investment. These recommendations are justified by the energy and/or cost savings realized over time. Operational and maintenance measures (OMM) are low or no cost operational opportunities, which can be implemented to have positive impacts on overall building operation, comfort levels, or energy usage.

4.1 Building Envelope

Lakeside Middle School is built of concrete masonry units with a brick veneer. There is no insulation in the walls and the interior of the building is painted concrete blocks. The rooms and hallways in the school, except for the all-purpose room, have dropped ceiling with insulation above the ceiling tiles.

Windows throughout the school building were originally single glazing aluminum framed operable and non-operable windows. A storm window was placed on top of the original windows to create double glazing. The additional pane was not properly sealed to the original frame and often leads to humidity between the two panes. The windows were noted by faculty and staff as “drafty and leaky.” It was noted that the seals between the storm windows and regular windows were not properly sealed and the caulking between the window frame and the building needs to be repaired.

The roof of the school building consists of a flat black rubber membrane roofing system with white gravel stone. The roof is over 20 years old and leaks, during the site visit it was noted that the roof was in poor condition.

The doors in the school were replaced within the last 10 years.

The following energy conservation measures were identified for building envelope improvements:

4.1.1 ECM-1 Replace Door & Window Seals

The seals around exterior doors and windows over time fail. This leads to unwanted infiltration of unconditioned outside air and exfiltration of conditioned air resulting in increased heating and cooling energy usage. This measure calls for the replacement of all exterior door seals and window seals including caulking between the window frame and building, seals between the storm and regular window as well as seals for the operable window.

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

ECM-1 Door & Window Seals

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	N. Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
17,000	0	0	3,000	2,900	0	2,900	(0.1)	0	5.9	5.9

Expected Life: 5 years

Lifetime Savings: 0 kWh 15,000 therms $ 14,500

* No incentives are available for this measure.

This measure is recommended.

4.1.2 ECM-2 Replace Roof & Add Insulation

Flat rubber membrane roofs have an average life expectancy of 20 years. The roof at Lakeside Middle School has exceeded its life span and is poor condition. It is proposed that an insulated white reflective roof is installed to replace the flat black rubber membrane roofing with stone ballasts. In combination with the roof replacement, the measure also recommends insulations under the roof. Un-insulated area leads to increased heat loss from the space below. The installation insulation in the spaces below the roof will reduce the air exfiltration and will decrease the energy consumption of the heating and cooling systems.

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

ECM-2 Replace Roof

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	N. Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
883,000	0	0	18,900	18,200	0	18,200	(0.5)	0	>20	>20

Expected Life: 20 years

Lifetime Savings: 0 kWh 378,000 therms $ 364,000

* No incentives are available for this measure.

This measure is not recommended because of the long payback period.

4.2 HVAC Systems

Lakeside Middle School has (2) Weil-McLain cast iron sectional natural gas fired hot water boilers. The capacity of each boiler is 3,480,000 BTU/Hour. The boilers operate in lead lag sequencing where the primary acts alone until the demand is higher than the capacity in which case the secondary boiler turns on. The two boilers cycle primary, secondary positions daily. Hot water is heated to 180°F and is returned around 120°F. The hot water is circulated throughout the building by two 7.5 HP pumps. The classrooms and hallways are served by unit ventilators with hot water coils. The unit ventilators are controlled with pneumatic valves, dampers and actuators. These controls are not precise because of the age of the system.

The kitchen and gym are heated and ventilated by indoor ventilation units with heating hot water coils. The Main offices including the Principal's office, Administrative office, Nurse's office and Guidance office have a packaged rooftop unit with natural gas direct fired heating and dx cooling.

The media center, music and faculty rooms have split dx air conditioners. The classrooms are predominantly not cooled, but a few have window A/C units.

There are 23 exhaust fans in the school to service the restrooms and the kitchen.

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

The following ECMs were identified as HVAC system improvements:

4.2.1 ECM-3 Boiler Replacement

The two natural gas fired hot water boilers located in the boiler room have a combined capacity of 6,960,000 BTU/Hour. The combined efficiency of these boilers de-rated for their age is approximately 65%. These boilers are past their service life which according to ASHRAE is 35 years. It is proposed to replace both existing steam boilers with new high efficiency natural gas fired condensing hot water boilers.

The high efficiency condensing hot water boilers have efficiencies between 90%-93% which would result in natural gas savings as the efficiency of the heating system increases. The savings calculations are based upon replacing the boilers with equal sized boilers. Additional savings may be recognized if the new boilers are sized per the system load. Further study is required to determine the system load and properly sized boilers.

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

ECM-3 Boiler Replacement

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	N. Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
318,000	0	0	9,200	8,900	0	8,900	(0.4)	6,000	>20	>20

Expected Life: 25 years

Lifetime Savings: 0 kWh 230,000 therms $ 222,500

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

This measure is recommended.

OMM-1 HVAC Unit Maintenance

Regular maintenance of HVAC units is necessary not only because it saves energy by keeping them operating at optimal efficiency, but also insures that the equipment does not fail. Some areas that reduce efficiency are: dirty condenser/evaporator coils, dirty filters and fan blades, air leaks and dirty heat transfer surfaces. Implementing a routine maintenance strategy will allow for better indoor air quality, increased efficiency and improved equipment life.

4.3 Control Systems

The building does not have a direct digital control system. The hydronic heating system including the classroom unit ventilators and the hot water boilers utilize pneumatic controls. The system includes valves, actuators and dampers controlled through the use of a 2.5 horsepower air compressor. The pneumatic system is old and outdated, does not function correctly and has depreciated with age. The packaged rooftop unit and split dx air conditioners have their own thermostats.

The pneumatic controls are on a timed schedule through the use of a clock and will reset the water temperature based on outside air temperature. The clock is utilized to set the occupied and unoccupied hours for the heating night set back. In the following table 3 displays the occupied and unoccupied hours and temperatures.

Table 3: Occupied & Unoccupied Hours & Setpoints

	Occupied	Unoccupied
Heating Setpoint	70°F	60°F
Time	7AM-6PM	6PM-7AM

The following ECMs identified are improvements to the school's HVAC control system:

4.3.1 ECM-4 Install Direct Digital Controls and Building Management System

Pneumatic control systems use compressed air as a medium to control HVAC equipment. This is accomplished by bleeding or draining the compressed air in the air lines going to the control devices such as sensors or thermostats to maintain a set line pressure. This in turn provides feedback in the loop to close or open dampers and actuators to meet the control set point. In addition to the age and inadequacies of the system, compressed air is an inefficient and expensive means of controlling a building's HVAC system.

New direct digital control (DDC) systems use electrical signals to manage HVAC equipment. In combination with a building management system (BMS) which allows for trending, scheduling and remote control, the DDC and BMS system will save natural gas and electrical energy. The new system will be able to set a schedule for occupied and unoccupied setpoints as well as schedule the HVAC equipment for shutdown/startup. It will also eliminate the compressed air system including the air compressor and compressed air dryer.

Savings are seen from temperature scheduling for occupied and unoccupied hours and from the elimination of the air compressor.

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

ECM-4 Install DDC & BMS

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	N. Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
310,000	1,300	3	4,700	4,900	0	4,900	(0.8)	0	>20	>20

Expected Life: 16 years

Lifetime Savings: 20,800 kWh 75,200 therms $ 78,400

* There are currently no incentives available for this measure.

This measure is not recommended.

4.4 Domestic Hot Water System

Lakeside Middle School has one domestic hot water heater located in the boiler room. The water heater is a State (SBF100 260) natural gas fired commercial domestic hot water heater with a capacity of 100 gallons. The thermal efficiency of the water heater is approximately 80% efficiency with an input of 260,000 BTU/Hour. The domestic hot water heater serves the kitchen, toilet rooms and sinks located throughout the school.

4.5 Lighting/Electrical Systems

The majority of the lighting in the middle school is T-12 fluorescent tube fixtures with magnetic ballasts and incandescent lamps. Some of the school has updated lighting with T8 fluorescent fixtures. The multipurpose room is illuminated with 400 W metal halide high bay fixtures. The exterior lighting is a mixture of mercury vapor, metal halide and high pressure sodium lights. A comprehensive lighting survey can be found in Appendix B.

There are approximately 92 computers in the school. All of the computers have flat screen monitors.

The following ECMs identified are improvements to Lakeside Middle School's lighting system:

4.5.1 ECM-5 Lighting Replacement / Upgrades

The school utilizes T-12 fluorescent fixtures. Compared to T-8s these bulbs consume more energy and are less efficient. The ballasts are magnetic as well. Each switch and circuit was identified, and the number of fixtures, locations, and existing wattage established (Appendix B). There is an opportunity to reduce consumption by upgrading the lighting fixtures to a super T-8 fixture and all incandescent fixtures to compact fluorescent lamps. The exterior lighting is proposed to be changed from mixture of mercury vapor, metal halide and high pressure sodium lights to LED lights which has a longer life and consumes much less energy. To upgrade the T12 fixtures to super T8's the fixtures need to be re-lamped and re-ballasted and incandescent replacement only involves changing the bulbs to compact fluorescent bulbs. The exterior lighting would require a full fixture replacement to change to LED fixtures.

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 10,156 kWh with an electrical demand reduction of about 29.5 kW. These calculations are based upon 1 to 1 replacements with the fixtures. They do not take into account lumen output and square footage. A more comprehensive study may be performed to determine correct lighting levels.

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

ECM-5 Lighting Replacement / Upgrades

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	N. Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
117,000	81,901	29	0	12,500	0	12,500	0.6	14,200	9.4	8.2

Expected Life: 15 years

Lifetime Savings: 1,228,500 kWh 0 therms $ 187,500

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

This measure is not recommended in lieu of ECM-7.

4.5.2 ECM-6 Install Lighting Controls (Occupancy Sensors)

Review of the comprehensive lighting survey determined that lighting in classrooms and various other spaces are typically operational, regardless of occupancy. Therefore, installing an occupancy sensor in these spaces to turn off lights when the areas are unoccupied was assessed.

This measure recommends installing occupancy sensors for the current lighting system. Using a process similar to that utilized in section 4.5.1, the energy savings for this measure was calculated by applying the known fixture wattages in the space to the estimated existing and proposed times of operation for each fixture. The difference between the two values resulted in an annual savings of 42,600 kWh.

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

ECM-6 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	N. Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
20,000	42,600	0	0	6,400	0	6,400	3.8	4,700	3.1	2.4

Expected Life: 15 years

Lifetime Savings: 639,000 kWh 0 therms $ 96,000

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

This measure is not recommended in lieu of ECM-7.

4.5.3 ECM-7 Lighting Replacements with Controls (Occupancy Sensors)

This measure is a combination of ECM 4 and ECM 5; recommending to replace/upgrade the current lighting fixtures to more efficient ones and installing occupancy sensors on the new lights. Interactive effects of the higher efficiency lights and occupancy sensors lead the energy and cost savings for this measure to not be cumulative or equivalent to the sum of replacing the lighting fixtures alone and installing occupancy sensors without the lighting upgrade. The calculated annual savings is 108,411 kWh with a demand reduction of 29.2kW at a total of $15,800.

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

ECM-7 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	N. Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
137,000	108,400	29	0	15,800	0	15,800	0.7	18,900	8.7	7.5

Expected Life: 15 years

Lifetime Savings: 1,626,000 kWh 0 therms $ 237,000

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

This measure is recommended.

4.5.4 ECM-8 Install Network Controller

Approximately 92 computers are utilized in the classrooms, offices, media centers and computer labs throughout Lakeside Middle School. These computers are left on for the entire day. A network controller is a remote power management system controlled via the internet. The controller has the ability to reduce total energy draw when computers are not being used which will result in significant energy savings. An evaluation was performed for installing a computer network controller to reduce electrical energy draw from the computer network system when computers are not in use.

Electronic controls have an expected life of 16 years, according to ASHRAE, and total energy savings over the life of the project are estimated at 176,000 kWh and $25,600.

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

ECM-8 Install Network Controller

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	N. Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
2,000	11,000	0	0	1,600	0	1,600	12.7	0	1.3	1.3

Expected Life: 16 years

Lifetime Savings: 176,000 kWh 0 therms $ 25,600

* There are no incentives available for this measure.

This measure is recommended.

OMM-2 Computer Energy Savings Plan

As an alternative solution to ECM 7, the school could implement an energy saving plan that includes mandating that all computers be manually turned off when they are not in use. If this plan is communicated to all staff members, the savings could potentially be the same as shown above without requiring software installation therefore eliminating the estimated budgetary cost.

4.6 Plumbing Systems

The school has older 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 (27) toilets with an average water use of 5.5 gpf, (14) urinals with an average of 3 gpf and (35) faucets with a flow of 3 gpm. Per the number of occupants, it was estimated that each toilet and faucet is utilized approximately 4 times per day.

The following ECMs identified are improvements to the school's plumbing system:

4.6.1 ECM-9 Install Low Flow Plumbing

Faucets, toilets and urinals installed before the 90s consume more water than modern plumbing fixtures. On average faucets installed before the 90s have a flow rate of 3 gallons per minute (gpm), urinals consume approximately 3 gallons per flush (gpf) and toilets typically use 5.5 gpf.

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 line. The basis of this calculation is the number of times each fixture is used, gallons per use, and number of fixtures. Replacing the existing plumbing fixtures in the school with 1.28 gpf toilets, 0.125 gpf urinals and 0.5 gpm faucets would save 280 KGal annually.

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

ECM-9 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	$	$	$		$	Years	Years
223,000	0	0	600	800	0	800	(1.0)	0	>20	>20

Expected Life: 15 years

Lifetime Savings: 0 kWh 9,000 kGal $ 12,000

* There is no incentive available for this measure.

This measure is not recommended.

OMM-3 Plumbing Upgrade Plan

Although ECM-9 is not recommended because of the long payback period, low flow plumbing fixtures are still beneficial energy efficient equipment. It is advised that the school implement a plumbing upgrade plan in which new low flow fixtures are installed as the older toilets, urinals and faucet aerators fail.

4.7 Kitchen Equipment

Cooking equipment for the kitchen within the facility is fueled by electricity and natural gas. The oven, dishwasher, dishwasher booster heater, steam table, and slicer are all electric powered. The stove is natural gas fired.

The following ECMs identified are improvements to Lakeside Middle School's kitchen equipment:

4.7.1 ECM-10 Replace Electric Dishwasher Booster Heater to Natural Gas

Lakeside Middle School uses a 24 kW dishwasher booster heater for drying dishes. The school uses this heater approximately four hours per day for 180 days per year. Utilizing natural gas for the heater was assessed.

The calculation uses electrical consumption and annual electrical cost as the baseline, which was converted to natural gas for the proposed case. The difference between the two values is the energy savings.

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

ECM-10 Replace Kitchen Booster Heater

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	N. Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
17,000	27,400	24	-900	4,400	0	4,400	2.2	0	3.9	3.9

Expected Life: 12 years

Lifetime Savings: 328,800 kWh -10,800 therms $ 52,800

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

This measure is recommended.

5.0 PROJECT INCENTIVES

5.1 Incentives Overview

5.1.1 New Jersey Pay For Performance Program

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

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

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

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

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

Electric

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

Gas

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

Incentive cap: 25% of total project cost

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

Electric

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

Gas

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

The table below shows the potential incentives available for the Lakeside Middle School through the Pay for Performance program:

	Incentives $		
	Elec	Gas	Total
Incentive #1	$0	$0	$7,200
Incentive #2	$13,556	$1,932	$15,488
Incentive #3	$13,556	$1,932	$15,488
Total All Incentives	**$27,112**	**$3,864**	**$38,176**

If all recommended ECM's are implemented, the average annual savings exceeds the 15% threshold savings for the P4P program and therefore all incentives are available. Refer to appendix D for detailed analysis.

5.1.2 New Jersey Smart Start Program

For this report, some energy conservation measures are applicable to the 2012 Smart Start Incentive Program and associated savings are included. This program provides incentives for pre-approved mechanical and electrical equipment replacements and pre-approved custom measures. The program includes a wide variety of incentives ranging from chillers and boilers, variable frequency drives, unitary HVAC equipment and lighting retrofits. Each incentive must be applied for and approved by the NJBPU (or corresponding utility program) prior to the installation of the equipment. Incentive payments are made to the owner after the equipment is fully installed and paid for.

5.1.3 Direct Install Program

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

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

Due to the demand exceeding the 150 kW threshold, this building is not eligible for Direct Install incentives.

5.1.4 Energy Savings Improvement Plans (ESIP)

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

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

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

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

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 uses solar cell arrays to 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. However, there is not sufficient room to size a system to meet the demand of the building. For this analysis we will consider a 90 KW system to help reduce usage.

The PVWATTS solar power generation model was utilized to calculate PV power generation; this model is provided in Appendix F.

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 a period of 15 years from the date of installation. The average SREC value per credit is estimated to be about $60/ SREC per year based on current market data, and this number was utilized in the cash flow for this report.

The available roof area justifies the use of 90 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, for a 50 kW system. Other cost considerations will also need to be considered. PV panels have an approximate 20 year life span; however, the inverter device that converts DC electricity to AC has a life span of 10 to 12 years and will need to be replaced multiple times during the useful life of the PV system.

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

Photovoltaic (PV) Rooftop Solar Power Generation – 130 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
840,000	210	273,700	0	40,781	40,781	0	16,422	20.6	14.7

* 30% federal tax credit

** Solar Renewable Energy Certificate Program (SREC) for 2012 is $82/1000kwh

At 100 square feet per kW of PV panels (rule of thumb), the proposed PV power generation system would require 9,000 square feet of open space. However, it would also require a structural analysis of the existing roof to ensure that it can support the additional weight of the panels. Due to the current SRECs rates we do not recommend this measure at this time.

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.

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 facility in the form of primary energy, which is raw fuel burned to create heat or electricity, such as natural gas or oil; or as secondary energy, which is the product created from a raw fuel such as electricity or district steam. To provide an equitable comparison for different buildings with varying proportions of primary and secondary energy consumption, Portfolio Manager uses the convention of source EUIs. The source energy also accounts for losses incurred in production, storage, transmission, and delivery of energy to the site, which provide an equivalent measure for various types of buildings with differing energy sources. The results of the Portfolio Manager benchmarking tool are contained in the table below.

Building	Site EUI kBtu/ft^2/yr	Source EUI Btu/ft^2/yr	Energy Star Rating (1-100)
Lakeside Middle School	121	205	14

The Lakeside Middle School has an below average Energy Star Rating (Median being 50%). This is attributed to older, inefficient HVAC equipment and controls and a poorly insulated building envelope. By implementing the measures discussed in this report, it is expected that the EUI can be reduced and the Energy Star Score increased.

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

Username: [redacted]
Password: [redacted]

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

8.0 CONCLUSIONS & RECOMMENDATIONS

The energy audit conducted by CHA at the Lakeside Middle School identified potential annual savings of $33,600 may be realized for the recommended ECMs, with a summary of the costs, savings, and paybacks as follows:

ECM-1 Door & Window Seals

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric kWh	Electric kW	Nat Gas Therms	Total $						
$					$	$		$	Years	Years
17,000	0	0	3,000	2,900	0	2,900	(0.0)	0	5.9	5.9

ECM-3 Boiler Replacement

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric kWh	Electric kW	Nat Gas Therms	Total $						
$					$	$		$	Years	Years
318,000	0	0	9,200	8,900	0	8,900	(0.2)	6,000	>20	>20

ECM-7 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 kWh	Electric kW	Nat Gas Therms	Total $						
$					$	$		$	Years	Years
137,000	108,400	29.2	0	15,800	0	15,800	0.7	18,900	8.7	7.5

ECM-8 Install Network Controller

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric kWh	Electric kW	Nat Gas Therms	Total $						
$					$	$		$	Years	Years
2,000	11,000	0	0	1,600	0	1,600	12.7	0	1.3	1.3

ECM-10 Replace Kitchen Booster Heater

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
17,000	27,400	24	-900	4,400	0	4,400	2.2	0	3.9	3.9

APPENDIX A

Utility Usage Analysis and List of Alternate Suppliers

Pompton Lakes Board of Education
237 Van Avenue, Pompton Lakes, NJ 07442

Annual Utilities
12-month Summary

Electric		
Annual Usage	453,759	kWh/yr
Annual Cost	70,339	$
Blended Rate	0.155	$/kWh
Consumption Rate	0.127	$/kWh
Demand Rate	7.91	$/kW
Peak Demand	234.0	kW
Min. Demand	78.7	kW
Avg. Demand	139.2	kW
Natural Gas		
Annual Usage	32,745	Therm/year
Annual Cost	29,990	$
Rate	0.916	$/Therm
Water		
Annual Usage	792,000	gallons/yr
Annual Cost	1,208	$
Rate	1.525	$/kgallon

Pompton Lakes Board of Education
237 Van Avenue, Pompton Lakes, NJ 07442

Utility Bills: Account Numbers

Account Number	School Building	Location	Type	Notes
100004509632	Lakeside Middle School	316 Lakeside Avenue, Pompton Lakes, NJ 07442	Electricity	
100004509566	Lakeside Middle School	316 Lakeside Avenue, Pompton Lakes, NJ 07442	Electricity	
6634854718	Lakeside Middle School	316 Lakeside Avenue, Pompton Lakes, NJ 07442	Natural Gas	
323212	Lakeside Middle School	316 Lakeside Avenue, Pompton Lakes, NJ 07442	Water	

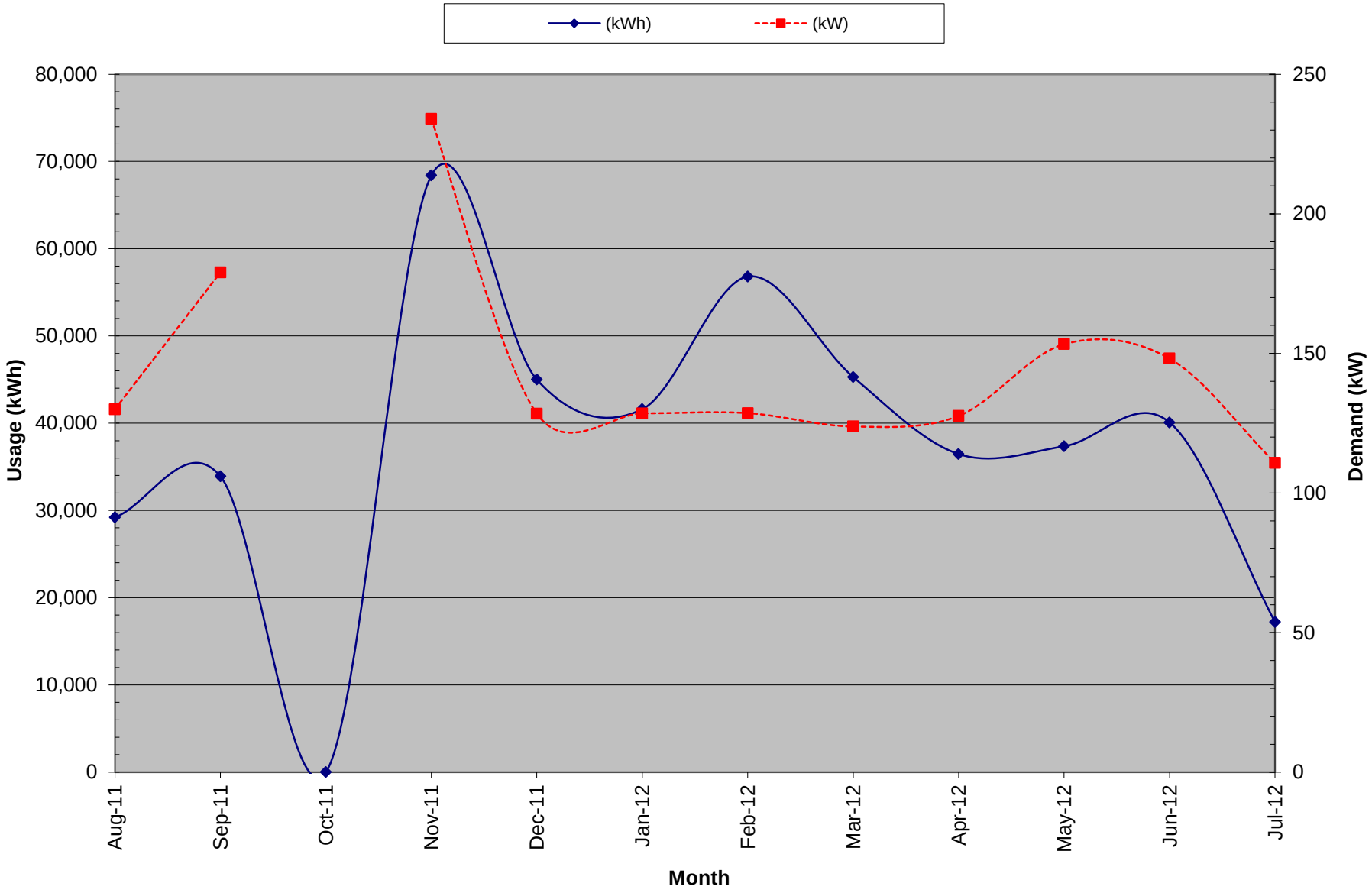
Pompton Lakes Board of Education
237 Van Avenue, Pompton Lakes, NJ 07442

For Service at: **Lakeside Middle School**
Account No.: **Meter No.:** **Delivery -** JCP&L
100004509632 G28125066 **Supplier -** JCP&L
100004509566 G53357752

			Provider Charges			Usage (kWh) vs. Demand (kW) Charges		Unit Costs		
Month	Consumption (kWh)	Demand (kW)	Delivery ($)	Supplier ($)	Total ($)	Consumption ($)	Demand ($)	Blended Rate ($/kWh)	Consumption ($/kWh)	Demand ($/kW)
August-11	29,196	130.00	$1,655.57	$3,280.67	4,936.24	2,744.90	2,191.34	0.17	0.09	16.86
September-11	33,909	179.00	$1,728.99	$3,862.90	5,591.89	2,446.26	3,145.63	0.16	0.07	17.57
October-11	Included in November Bill									
November-11	68,400	234.00	$3,075.08	$6,397.45	9,472.53	8,656.67	815.86	0.14	0.13	3.49
December-11	44,998	128.40	$2,087.19	$5,220.09	7,307.28	6,439.12	868.16	0.16	0.14	6.76
January-12	41,603	128.50	$1,881.00	$4,638.32	6,519.32	5,651.15	868.17	0.16	0.14	6.76
February-12	56,807	128.60	$2,224.06	$6,353.47	8,577.53	7,730.29	847.24	0.15	0.14	6.59
March-12	45,290	123.80	$1,700.10	$5,125.70	6,825.80	5,968.10	857.70	0.15	0.13	6.93
April-12	36,460	127.60	$1,563.71	$4,127.84	5,691.55	4,708.33	983.22	0.16	0.13	7.71
May-12	37,347	153.30	$1,828.79	$4,275.57	6,104.36	4,790.00	1,314.36	0.16	0.13	8.57
June-12	40,087	148.13	$1,971.61	$4,809.11	6,780.72	5,510.66	1,270.06	0.17	0.14	8.57
July-12	17,206	110.80	$1,128.45	$1,820.49	2,948.94	1,998.97	949.97	0.17	0.12	8.57
August-12	31,652	78.70	$1,158.36	$3,360.59	4,518.95	3,844.20	674.75	0.14	0.12	8.57
Total (All)	**482,955**	**234.00**	**$22,002.91**	**$53,272.20**	**$75,275.11**	**$60,488.65**	**$14,786.46**	**$0.16**	**$0.13**	**$9.29**
Total (last 12-months)	**453,759**	**234.00**	**$20,347.34**	**$49,991.53**	**$70,338.87**	**$57,743.75**	**$12,595.12**	**$0.16**	**$0.13**	**$7.91**
Notes	1	2	3	4	5	6	7	8	9	10

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

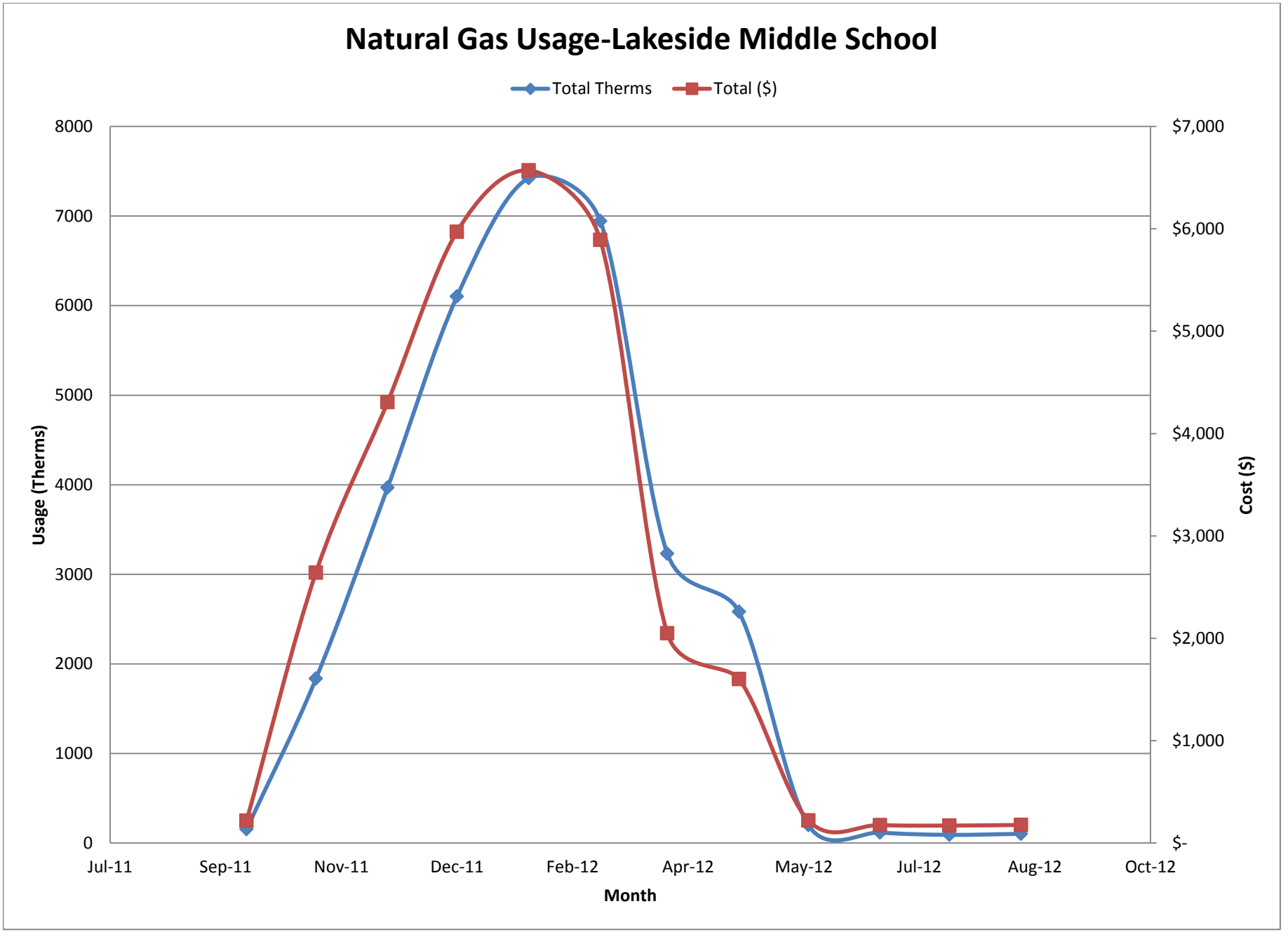
Electric Usage-Lakeside Middle School



Pompton Lakes Board of Education
237 Van Avenue, Pompton Lakes, NJ 07442

For Service at: **Lakeside Middle School**
Account No.: 6634854718
Meter No.: 3165792
Natural Gas Service
Delivery - **PSE&G**
Supplier - **PSE&G**

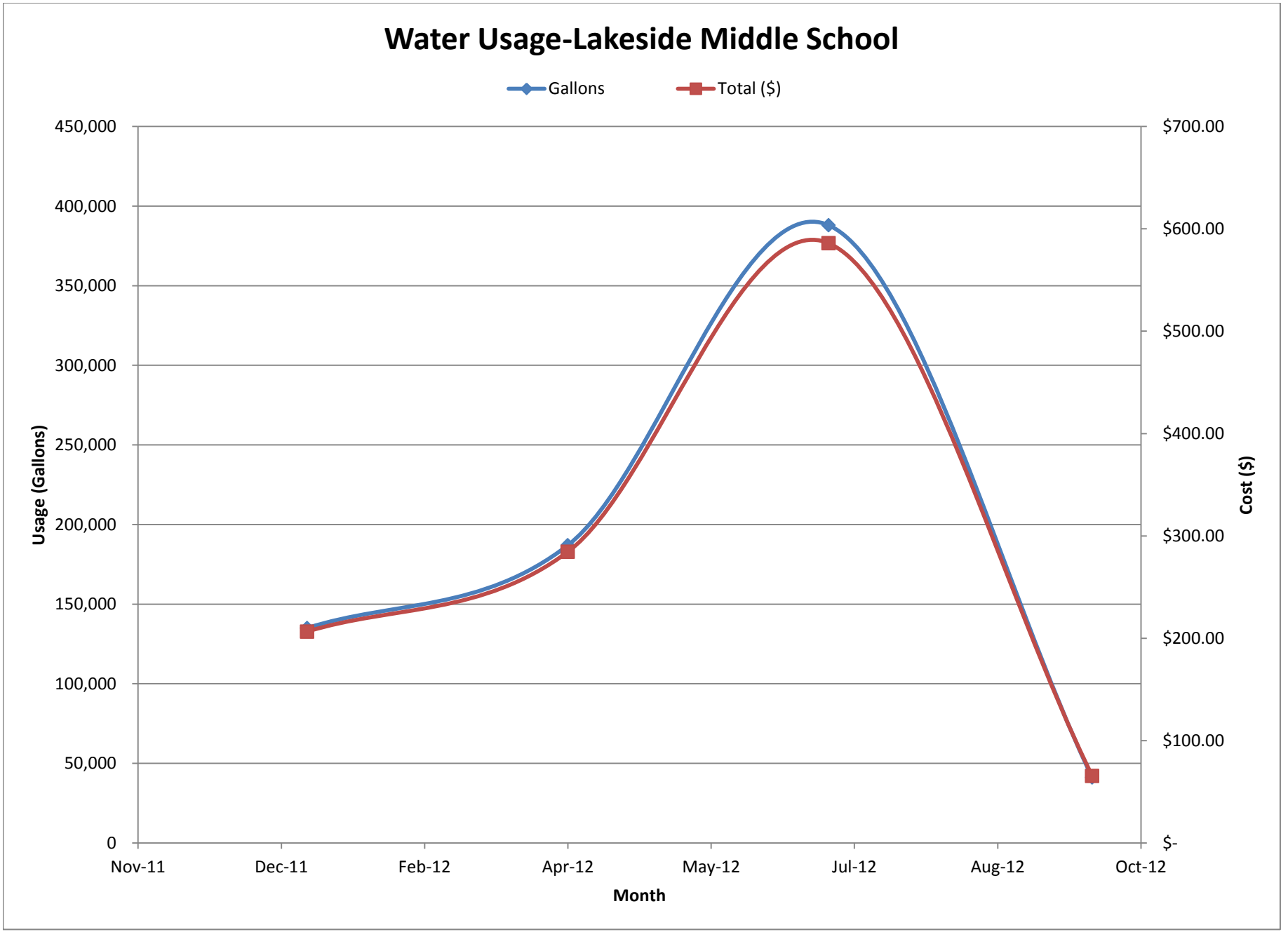
Month	Total Therms	Delivery ($)	Supply ($)	Total ($)	Blended Rate $/Therm
Aug-11	88	$ 112	$ 59	$ 171	$ 1.95
Sep-11	153	$ 122	$ 95	$ 217	$ 1.42
Oct-11	1834	$ 1,520	$ 1,121	$ 2,641	$ 1.44
Nov-11	3968	$ 1,924	$ 3,968	$ 4,307	$ 1.21
Dec-11	6101	$ 2,328	$ 3,644	$ 5,972	$ 0.98
Jan-12	7424	$ 2,320	$ 4,252	$ 6,572	$ 0.89
Feb-12	6945	$ 2,302	$ 3,590	$ 5,892	$ 0.85
Mar-12	3231	$ 456	$ 1,592	$ 2,048	$ 0.63
Apr-12	2581	$ 394	$ 1,208	$ 1,601	$ 0.62
May-12	200	$ 128	$ 92	$ 220	$ 1.10
Jun-12	116	$ 116	$ 59	$ 175	$ 1.51
Jul-12	90	$ 112	$ 57	$ 170	$ 1.88
Aug-12	102	$ 114	$ 62	$ 176	$ 1.73
Total (12-months)	**32,745**	**$ 11,836**	**$ 19,739**	**$29,990**	**$ 0.92**


Natural Gas Usage-Lakeside Middle School
Total Therms
Total ($)
8000
7000
6000
5000
4000
3000
2000
1000
0
Usage (Therms)
$7,000
$6,000
$5,000
$4,000
$3,000
$2,000
$1,000
$-
Cost ($)
Jul-11
Sep-11
Nov-11
Dec-11
Feb-12
Apr-12
May-12
Jul-12
Aug-12
Oct-12
Month

Pompton Lakes Board of Education
237 Van Avenue, Pompton Lakes, NJ 07442

For Service at: **Lakeside Middle School**
Account No.: 323212
Water
Delivery -
Supplier -

Month	Gallons	Total ($)	$/kGal
Oct-11	41,000	$ 65.50	$ 1.60
Jan-12	135,000	$ 206.50	$ 1.53
Apr-12	187,000	$ 284.50	$ 1.52
Jul-12	388,000	$ 586.00	$ 1.51
Oct-12	41,000	$ 65.50	$ 1.60
Total	**792,000**	**$ 1,208.00**	$ 1.53


Water Usage-Lakeside Middle School
Gallons
Total ($)
450,000
400,000
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
Usage (Gallons)
$700.00
$600.00
$500.00
$400.00
$300.00
$200.00
$100.00
$-
Cost ($)
Nov-11
Dec-11
Feb-12
Apr-12
May-12
Jul-12
Aug-12
Oct-12
Month

JCP&L 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**
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**
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**
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) 547-2722 www.directenergy.com	**C/I** **ACTIVE**
Discount Energy Group, LLC 811 Church Road, Suite 149 Cherry Hill, NJ 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 Plus Holdings LLC 309 Fellowship Road East Gate Center, Suite 200 Mt. Laurel, NJ 08054	(877) 866-9193 www.energypluscompany.com	**R/C** **ACTIVE**
Energy.me Midwest LLC 90 Washington Blvd Bedminster, NJ 07921	(855) 243-7270 www.energy.me	**R/C/I** **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 Corp. 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 08819	(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**
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**
IDT Energy, Inc. 550 Broad Street Newark, NJ 07102	(973) 438-4380 www.idtenergy.com	**R/C** **ACTIVE**

Independence Energy Group, LLC 211 Carnegie Center Princeton, NJ 08540	(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**
Liberty Power Delaware, LLC 3000 Atrium Way Suite 273 Mt. Laurel, NJ 08054	(866) 769-3799 www.libertypowercorp.com	**R/C/I** **ACTIVE**
Liberty Power Holdings, LLC 3000 Atrium Way Suite 273 Mt. Laurel, NJ 08054	(866) 769-3799 www.libertypowercorp.com	**R/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**
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**
NJ Gas & Electric 1 Bridge Plaza fl.2 Fort Lee, NJ 07024	(866) 568-0290 www.NJGandE.com	**R/C/I** **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 Ave. 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	**R/C** **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 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) 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**
Starion Energy PA Inc. 101 Warburton Avenue Hawthorne, NJ 07506	(800) 600-3040 www.starionenergy.com	**R/C/I** **ACTIVE**

Stream Energy 309 Fellowship Road Suite 200 Mt. Laurel, NJ 08054	(877) 369-8150 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**

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**

Back to main supplier information page

APPENDIX B

Equipment Inventory

Lakeside Middle School
CHA Project#24698
316 Lakeside Avenue
Pompton, NJ 07442

Description	QTY	Manufacturer Name	Model No.	Serial No.	Equipment Type / Utility	Capacity/Size /Efficiency	Location	Areas/Equipment Served
Air Compressor	1	Ingersoll Rand	2-234D4	30T735653	Air Compressor / Electric	2.5/80%	Boiler Room	HVAC Pneumatics
Heating Hot Water Boiler 1	1	Weil McLain	BG-1394WF	2	Boiler/NG	3508MBH	Boiler Room	
Heating Hot Water Boiler 2	1	Weil McLain	BG-1394WF	1	Boiler/NG	3508MBH	Boiler Room	
Heating Hot Water Pump 1	1	Century	SC-254U-KAA		HVAC /Electric	7.5HP/80%	Boiler Room	
Heating Hot Water Pump 2	1	Century	SC-254U-KAA		HVAC /Electric	7.5HP/80%	Boiler Room	
DHW	1	Weiss	SBF100 260 NET1	A97102216	DHW	100 Gallons	Boiler Room	
HV-1	1	Audivent	H-22-WSF	468889-02	Ventilation/Electric	641RPM	Ventilation Room	
HV-2	1	Trane	L3	K132035	Ventilation/Electric		Ventilation Room	
RTU-6	1	Lennox	HS26-030-2P	5899G 58331	HVAC/DX Cooling	2.5 Tons	Roof	
RTU-7	1		AUC-306B	C81F-13766	HVAC/DX Cooling		Roof	
RTU-1	1	Carrier	48TME006-A-501	3205G30208	HVAC/DX Cooling, NG Heating	115,000BTUH/80%	Roof	
RTU-2	1	Lennox	GCS16-090-200-2Y	5601G00617	HVAC/DX Cooling, NG Heating	200,000BTUH/80%	Roof	
AC-1	1	Sanyo		44512	HVAC/DX Cooling		Roof	
EF1-EF23	15				Exhaust/Electric	Varies	Roof	
UV1-UV35	35				HVAC/Hot Water Heating		Classrooms & Hallways	

Energy Audit of Lakeside Middle School
CHA Project No.24698
Existing Lighting

Cost of Electricity: **$0.124** **$/kWh** Consumption
$6.76 **$/kW** Demand

				EXISTING CONDITIONS									
	Area Description	**Usage**	**No. of Switches**	**No. of Fixtures**	**Standard Fixture Code**	**Fixture Code**	**Watts per Fixture**	**kW/Space**	**Exist Control**	**Annual Hours**	**Retrofit Control**	**Annual kWh**	
Field Code	Unique description of the location - Room number/Room name: Floor number (if applicable)	Describe Usage Type using Operating Hours	Number of Switches in Room	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
80	Boiler Room	Storage	1	1	I 100	I100/1	100	0.10	SW	1000	OSR	100	
102	Gym	Classroom	14	14	High Bay MH 400	MH400/1	458	6.41	BR	2400	OSR	15,389	
36	Girl's Locker Room	Locker	1	6	S 34 P F 2 (MAG)	F42EE	72	0.43	SW	2800	OSR	1,210	
91	Girl's Locker Room-Shower	Locker	1	6	I 75	I75/1	75	0.45	SW	2800	OSR	1,260	
36	Girl's Gym Office Entrance	Office	1	1	S 34 P F 2 (MAG)	F42EE	72	0.07	SW	2400	OSR	173	
36	Girl's Gym Office Entrance	Office	1	1	S 34 P F 2 (MAG)	F42EE	72	0.07	SW	2400	OSR	173	
24	Girl's Gym Office Bathroom	Bathroom	1	1	W 20 C F 2	F22SS	56	0.06	SW	2000	N/A	112	
36	Gym Storage	Storage	1	2	S 34 P F 2 (MAG)	F42EE	72	0.14	SW	1000	OSR	144	
36	Gym Storage	Storage	1	1	S 34 P F 2 (MAG)	F42EE	72	0.07	SW	1000	OSR	72	
36	Boy's Gym Office Entrance	Office	1	2	S 34 P F 2 (MAG)	F42EE	72	0.14	SW	2400	OSR	346	
36	Boy's Gym Office	Office	1	1	S 34 P F 2 (MAG)	F42EE	72	0.07	SW	2400	OSR	173	
24	Boy's Gym Office Bathroom	Bathroom	1	2	W 20 C F 2	F22SS	56	0.11	SW	2000	N/A	224	
36	Boy's Locker Room	Locker	1	11	S 34 P F 2 (MAG)	F42EE	72	0.79	SW	2800	OSR	2,218	
36	Kitchen	Cafeteria	3	15	S 34 P F 2 (MAG)	F42EE	72	1.08	SW	1600	OSR	1,728	
36	Kitchen Storage	Storage	1	1	S 34 P F 2 (MAG)	F42EE	72	0.07	SW	1000	OSR	72	
24	Kitchen Bathroom	Bathroom	1	1	W 20 C F 2	F22SS	56	0.06	SW	2000	N/A	112	
36	Storage Room	Storage	1	1	S 34 P F 2 (MAG)	F42EE	72	0.07	SW	1000	OSR	72	
24	114 (Art)	Classroom	3	30	W 20 C F 2	F22SS	56	1.68	SW	2400	OSR	4,032	
36	Art Storage	Storage	1	1	S 34 P F 2 (MAG)	F42EE	72	0.07	SW	1000	OSR	72	
36	Music	Classroom	2	29	S 34 P F 2 (MAG)	F42EE	72	2.09	SW	2400	OSR	5,011	
36	Music Storage	Storage	1	4	S 34 P F 2 (MAG)	F42EE	72	0.29	SW	1000	OSR	288	
36	Music Office	Office	1	2	S 34 P F 2 (MAG)	F42EE	72	0.14	SW	2400	OSR	346	
36	Music Office 2	Office	1	2	S 34 P F 2 (MAG)	F42EE	72	0.14	SW	2400	OSR	346	
36	Music Storage 2	Storage	1	1	S 34 P F 2 (MAG)	F42EE	72	0.07	SW	1000	OSR	72	
43	Stairway Near Music	Stairway	1	2	T 32 R F 3 (ELE)	F43ILL	89	0.18	SW	3200	N/A	570	
24	Stairway Near Music	Stairway	-	1	W 20 C F 2	F22SS	56	0.06	SW	3200	N/A	179	
69	107	Classroom	3	21	2B 34 R F 2 (u) (MAG)	FU2EE	72	1.51	SW	2400	OSR	3,629	
69	107 Office	Office	1	1	2B 34 R F 2 (u) (MAG)	FU2EE	72	0.07	SW	2400	OSR	173	
69	107 Storage	Storage	1	2	2B 34 R F 2 (u) (MAG)	FU2EE	72	0.14	SW	1000	OSR	144	
36	105	Classroom	3	24	S 34 P F 2 (MAG)	F42EE	72	1.73	SW	2400	OSR	4,147	
36	103	Classroom	3	24	S 34 P F 2 (MAG)	F42EE	72	1.73	SW	2400	OSR	4,147	
36	103 Storage	Storage	1	8	S 34 P F 2 (MAG)	F42EE	72	0.58	SW	1000	OSR	576	
36	101	Classroom	3	24	S 34 P F 2 (MAG)	F42EE	72	1.73	SW	2400	OSR	4,147	
36	Server Room	Storage	1	1	S 34 P F 2 (MAG)	F42EE	72	0.07	SW	1000	OSR	72	
24	1st Floor Boy's Bathroom	Bathroom	1	1	W 20 C F 2	F22SS	56	0.06	SW	2000	N/A	112	
36	1st Floor Boy's Bathroom	Bathroom	1	3	S 34 P F 2 (MAG)	F42EE	72	0.22	SW	2000	N/A	432	
36	1st Floor Maintenance	Storage	1	1	S 34 P F 2 (MAG)	F42EE	72	0.07	SW	1000	OSR	72	
24	1st Floor Girl's Bathroom	Bathroom	1	1	W 20 C F 2	F22SS	56	0.06	SW	2000	N/A	112	
36	1st Floor Girl's Bathroom	Bathroom	1	3	S 34 P F 2 (MAG)	F42EE	72	0.22	SW	2000	N/A	432	
48	Nurse	Office	2	5	T 32 R F 4 (ELE)	F44ILL	112	0.56	SW	2400	OSR	1,344	
24	Nurse Bathroom	Office	1	1	W 20 C F 2	F22SS	56	0.06	SW	2400	OSR	134	
38	Entryway	Hallway	1	1	F42ILL	F42ILL	59	0.06	SW	2280	N/A	135	
43	Principal's Office	Office	1	6	T 32 R F 3 (ELE)	F43ILL	89	0.53	SW	2400	OSR	1,282	
24	Principal's Bathroom	Bathroom	1	1	W 20 C F 2	F22SS	56	0.06	SW	2000	N/A	112	
43	Main Office	Office	2	10	T 32 R F 3 (ELE)	F43ILL	89	0.89	SW	2400	OSR	2,136	
24	Main Office Bathroom	Bathroom	1	1	W 20 C F 2	F22SS	56	0.06	SW	2000	N/A	112	
36	Main Office Closet	Storage	1	2	S 34 P F 2 (MAG)	F42EE	72	0.14	SW	1000	OSR	144	
43	Assistant Principal's Office	Office	1	4	T 32 R F 3 (ELE)	F43ILL	89	0.36	SW	2400	OSR	854	
43	Office	Office	1	1	T 32 R F 3 (ELE)	F43ILL	89	0.09	SW	2400	OSR	214	
43	Office	Office	1	1	T 32 R F 3 (ELE)	F43ILL	89	0.09	SW	2400	OSR	214	

Energy Audit of Lakeside Middle School
CHA Project No.24698
Existing Lighting

Cost of Electricity: **$0.124** **$/kWh** Consumption
$6.76 **$/kW** Demand

				EXISTING CONDITIONS									
	Area Description	**Usage**	**No. of Switches**	**No. of Fixtures**	**Standard Fixture Code**	**Fixture Code**	**Watts per Fixture**	**kW/Space**	**Exist Control**	**Annual Hours**	**Retrofit Control**	**Annual kWh**	
Field Code	Unique description of the location - Room number/Room name: Floor number (if applicable)	Describe Usage Type using Operating Hours	Number of Switches in Room	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
36	102	Classroom	2	15	S 34 P F 2 (MAG)	F42EE	72	1.08	SW	2400	OSR	2,592	
36	104	Classroom	2	15	S 34 P F 2 (MAG)	F42EE	72	1.08	SW	2400	OSR	2,592	
36	106	Classroom	2	15	S 34 P F 2 (MAG)	F42EE	72	1.08	SW	2400	OSR	2,592	
36	1st Floor Girl's Bathroom	Bathroom	1	3	S 34 P F 2 (MAG)	F42EE	72	0.22	SW	2000	N/A	432	
24	1st Floor Girl's Bathroom Entrance	Bathroom	1	1	W 20 C F 2	F22SS	56	0.06	SW	2000	N/A	112	
36	1st Floor Boy's Bathroom	Bathroom	1	3	S 34 P F 2 (MAG)	F42EE	72	0.22	SW	2000	N/A	432	
24	1st Floor Boy's Bathroom Entrance	Bathroom	1	1	W 20 C F 2	F22SS	56	0.06	SW	2000	N/A	112	
36	Maintenance Room	Storage	1	1	S 34 P F 2 (MAG)	F42EE	72	0.07	SW	1000	OSR	72	
36	108	Classroom	3	15	S 34 P F 2 (MAG)	F42EE	72	1.08	SW	2400	OSR	2,592	
36	110	Classroom	3	15	S 34 P F 2 (MAG)	F42EE	72	1.08	SW	2400	OSR	2,592	
36	112	Classroom	3	21	S 34 P F 2 (MAG)	F42EE	72	1.51	SW	2400	OSR	3,629	
69	Hallway	Hallway	-	54	2B 34 R F 2 (u) (MAG)	FU2EE	72	3.89	SW	2280	N/A	8,865	
69	1st Entry	Hallway	-	3	2B 34 R F 2 (u) (MAG)	FU2EE	72	0.22	SW	2280	N/A	492	
69	Stairway	Stairway	-	1	2B 34 R F 2 (u) (MAG)	FU2EE	72	0.07	SW	3200	N/A	230	
69	Stairway	Stairway	-	1	2B 34 R F 2 (u) (MAG)	FU2EE	72	0.07	SW	3200	N/A	230	
43	Stairwell	Stairway	-	2	T 32 R F 3 (ELE)	F43ILL	89	0.18	SW	3200	N/A	570	
43	Stairwell	Stairway	-	2	T 32 R F 3 (ELE)	F43ILL	89	0.18	SW	3200	N/A	570	
43	Stairwell	Stairway	-	2	T 32 R F 3 (ELE)	F43ILL	89	0.18	SW	3200	N/A	570	
36	219	Classroom	4	30	S 34 P F 2 (MAG)	F42EE	72	2.16	SW	2400	OSR	5,184	
43	Faculty Room	Office	3	8	T 32 R F 3 (ELE)	F43ILL	89	0.71	SW	2400	OSR	1,709	
80	Fan Room	Storage	1	5	I 100	I100/1	100	0.50	SW	1000	OSR	500	
36	2nd Floor Men's Bathroom	Bathroom	1	1	S 34 P F 2 (MAG)	F42EE	72	0.07	SW	2000	N/A	144	
24	2nd Floor Men's Bathroom	Bathroom		1	W 20 C F 2	F22SS	56	0.06	SW	2000	N/A	112	
36	216	Classroom	2	18	S 34 P F 2 (MAG)	F42EE	72	1.30	SW	2400	OSR	3,110	
24	2nd Floor Women's Bathroom Entrance	Bathroom	1	1	W 20 C F 2	F22SS	56	0.06	SW	2000	N/A	112	
36	2nd Floor Women's Bathroom Storage	Bathroom	1	1	S 34 P F 2 (MAG)	F42EE	72	0.07	SW	2000	N/A	144	
36	2nd Floor Women's Bathroom	Bathroom	1	2	S 34 P F 2 (MAG)	F42EE	72	0.14	SW	2000	N/A	288	
24	2nd Boy's Bathroom Entrance	Bathroom	1	1	W 20 C F 2	F22SS	56	0.06	SW	2000	N/A	112	
36	2nd Boy's Bathroom	Bathroom	1	4	S 34 P F 2 (MAG)	F42EE	72	0.29	SW	2000	N/A	576	
36	214	Classroom	2	15	S 34 P F 2 (MAG)	F42EE	72	1.08	SW	2400	OSR	2,592	
36	212	Classroom	2	15	S 34 P F 2 (MAG)	F42EE	72	1.08	SW	2400	OSR	2,592	
36	2nd Floor Maintenance Closet	Storage	1	1	S 34 P F 2 (MAG)	F42EE	72	0.07	SW	1000	OSR	72	
24	2nd Floor Girl's Bathroom Entrance	Bathroom	1	1	W 20 C F 2	F22SS	56	0.06	SW	2000	N/A	112	
36	2nd Floor Girl's Bathroom	Bathroom	1	4	S 34 P F 2 (MAG)	F42EE	72	0.29	SW	2000	N/A	576	
36	210	Classroom	2	15	S 34 P F 2 (MAG)	F42EE	72	1.08	SW	2400	OSR	2,592	
36	208	Classroom	2	15	S 34 P F 2 (MAG)	F42EE	72	1.08	SW	2400	OSR	2,592	
36	206	Classroom	2	15	S 34 P F 2 (MAG)	F42EE	72	1.08	SW	2400	OSR	2,592	
36	204A	Classroom	1	2	S 34 P F 2 (MAG)	F42EE	72	0.14	SW	2400	OSR	346	
70	Periodical Room	Classroom	1	4	2T 32 R F 2 (u) (ELE)	FU2ILL	59	0.24	SW	2400	OSR	566	
36	204	Classroom	2	15	S 34 P F 2 (MAG)	F42EE	72	1.08	SW	2400	OSR	2,592	
36	202	Classroom	2	15	S 34 P F 2 (MAG)	F42EE	72	1.08	SW	2400	OSR	2,592	
42	Media Center	Classroom	-	25	T 34 R F 3 (MAG)	F43EE	115	2.88	SW	2400	OSR	6,900	
36	Media Center Office	Office	1	4	S 34 P F 2 (MAG)	F42EE	72	0.29	SW	2400	OSR	691	
36	Media Center Conference Room	Office	1	6	S 34 P F 2 (MAG)	F42EE	72	0.43	SW	2400	OSR	1,037	
36	Media Center Storage	Storage	1	1	S 34 P F 2 (MAG)	F42EE	72	0.07	SW	1000	OSR	72	
36	PC Lab	Classroom	2	15	S 34 P F 2 (MAG)	F42EE	72	1.08	SW	2400	OSR	2,592	
36	203	Classroom	2	15	S 34 P F 2 (MAG)	F42EE	72	1.08	SW	2400	OSR	2,592	
70	2nd Floor Hallway	Hallway	-	50	2T 32 R F 2 (u) (ELE)	FU2ILL	59	2.95	SW	2280	N/A	6,726	
36	205A	Classroom	2	6	S 34 P F 2 (MAG)	F42EE	72	0.43	SW	2400	OSR	1,037	
36	205	Classroom	2	15	S 34 P F 2 (MAG)	F42EE	72	1.08	SW	2400	OSR	2,592	
36	207	Classroom	2	15	S 34 P F 2 (MAG)	F42EE	72	1.08	SW	2400	OSR	2,592	
36	209	Classroom	2	15	S 34 P F 2 (MAG)	F42EE	72	1.08	SW	2400	OSR	2,592	
36	211	Classroom	2	15	S 34 P F 2 (MAG)	F42EE	72	1.08	SW	2400	OSR	2,592	

Energy Audit of Lakeside Middle School
CHA Project No.24698
Existing Lighting

Cost of Electricity: **$0.124** **$/kWh** Consumption
$6.76 **$/kW** Demand

				EXISTING CONDITIONS									
	Area Description	**Usage**	**No. of Switches**	**No. of Fixtures**	**Standard Fixture Code**	**Fixture Code**	**Watts per Fixture**	**kW/Space**	**Exist Control**	**Annual Hours**	**Retrofit Control**	**Annual kWh**	
Field Code	Unique description of the location - Room number/Room name: Floor number (if applicable)	Describe Usage Type using Operating Hours	Number of Switches in Room	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
24	2nd Floor Girl's Bathroom Entrance	Bathroom	1	1	W 20 C F 2	F22SS	56	0.06	SW	2000	N/A	112	
36	2nd Floor Girl's Bathroom	Bathroom	1	4	S 34 P F 2 (MAG)	F42EE	72	0.29	SW	2000	N/A	576	
36	Maintenance Room	Storage	1	1	S 34 P F 2 (MAG)	F42EE	72	0.07	SW	1000	OSR	72	
36	213	Classroom	2	10	S 34 P F 2 (MAG)	F42EE	72	0.72	SW	2400	OSR	1,728	
24	2nd Floor Boy's Bathroom Entrance	Bathroom	1	1	W 20 C F 2	F22SS	56	0.06	SW	2000	N/A	112	
36	2nd Floor Boy's Bathroom	Bathroom	1	4	S 34 P F 2 (MAG)	F42EE	72	0.29	SW	2000	N/A	576	
36	215	Classroom	2	15	S 34 P F 2 (MAG)	F42EE	72	1.08	SW	2400	OSR	2,592	
36	217	Classroom	2	18	S 34 P F 2 (MAG)	F42EE	72	1.30	SW	2400	OSR	3,110	
82	Exterior	Outdoor Lighting	-	22	WP100 I 2	i100/2	200	4.40	BR	4368	N/A	19,219	
108	Exterior	Outdoor Lighting	-	7	100W Mercury Vapor	MV100/1	125	0.88	BR	4368	N/A	3,822	
96	Exterior	Outdoor Lighting	-	11	175 MH POLE	MH175/1	215	2.37	BR	4368	N/A	10,330	
75	Exterior	Outdoor Lighting	-	4	HPS 150	HPS150/1	188	0.75	BR	4368	N/A	3,285	
	Total			**925**				**77.85**				**197,999**	

APPENDIX C

ECM Calculations

Summary of Energy Conservation Measures							
Energy Conservation Measure		**Approx. Costs ($)**	**Approx. Savings ($/year)**	**Payback (Years) w/o Incentive**	**Potential Incentive ($)***	**Payback (Years) w/ Incentive**	**Recommended For Implementation**
ECM-1	Door & Window Seals	17,000	2,900	6	0	6	X
ECM-2	Replace Roof	883,000	18,200	>20	0	>20	
ECM-3	Boiler Replacement	318,000	8,900	>20	6,000	>20	X
ECM-4	Install DDC & BMS	310,000	4,900	>20	0	>20	
ECM-5	Lighting Replacement / Upgrades	117,000	12,500	9	14,200	8	
ECM-6	Install Lighting Controls (Occupancy Sensors)	20,000	6,400	3	4,700	2	
ECM-7	Lighting Replacements with Lighting Controls	137,000	15,800	9	18,900	7	X
ECM-8	Install Network Controller	2,000	1,600	1	0	1	X
ECM-9	Install Low Flow Plumbing Fixtures	223,000	800	>20	0	>20	
ECM-10	Replace Kitchen Booster Heater	17,000	4,400	4	0	4	X

Pompton Lakes-Lakeside MS - NJBPU
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Lakeside Middle School

ECM Summary Sheet

ECM-1 Door & Window Seals

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	0	0	3,000	2,900	0	2,900	(0.1)	0	5.9	5.9

Expected Life: 5 years
Lifetime Savings: 0 kWh 15,000 therms $ 14,500

ECM-2 Replace Roof

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
883,000	0	0	18,900	18,200	0	18,200	(0.6)	0	>20	>20

Expected Life: 20 years
Lifetime Savings: 0 kWh 378,000 therms $ 364,000

ECM-3 Boiler Replacement

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
318,000	0	0	9,200	8,900	0	8,900	(0.3)	6,000	>20	>20

Expected Life: 25 years
Lifetime Savings: 0 kWh 230,000 therms $ 222,500

ECM-4 Install DDC & BMS

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
310,000	1,300	3	4,700	4,900	0	4,900	(0.7)	0	>20	>20

Expected Life: 16 years
Lifetime Savings: 20,800 kWh 75,200 therms $ 78,400

ECM-5 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
117,000	81,901	29	0	12,500	0	12,500	0.6	14,200	9.4	8.2

Expected Life: 15 years
Lifetime Savings: 1,228,500 kWh 0 therms $ 187,500

ECM-6 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
20,000	42,600	0	0	6,400	0	6,400	3.8	4,700	3.1	2.4

Expected Life: 15 years
Lifetime Savings: 639,000 kWh 0 therms $ 96,000

ECM-7 Lighting Replacements with Lighting Controls

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
137,000	108,400	29	0	15,800	0	15,800	0.7	18,900	8.7	7.5

Expected Life: 15 years
Lifetime Savings: 1,626,000 kWh 0 therms $ 237,000

ECM-8 Install Network Controller

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
2,000	11,000	0	0	1,600	0	1,600	13.9	0	1.3	1.3

Expected Life: 16 years
Lifetime Savings: 176,000 kWh 0 therms $ 25,600

ECM-9 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	$	$	$		$	Years	Years
223,000	0	0	600	800	0	800	(1.0)	0	>20	>20

Expected Life: 15 years
Lifetime Savings: 0 kWh 9,000 kGal $ 12,000

ECM-10 Replace Kitchen Booster Heater

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
$	kWh	kW	Therms	$	$	$		$	Years	Years
17,000	27,400	24	-900	4,400	0	4,400	2.2	0	3.9	3.9

Expected Life: 12 years
Lifetime Savings: 328,800 kWh -10,800 therms $ 52,800

Pompton Lakes-Lakeside MS - NJBPU
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Multipliers	
Paterson, NJ 2012 RS Means	
Material:	1.01
Labor:	1.25
Equipment:	1.00

Utility Costs		Yearly Usage	MTCDE
$ 0.149	$/kWh blended		0.0004
$ 0.124	$/kWh consumption	386,100.0	0.0004
$ 6.760	$/kW	153.3	0.0000
$ 0.964	$/Therm	32,745.0	0.0053
$ 1.525	$/kGallon Water	792.0	

Building Area	hual Utility Cost	
72,000	Electric	Natural Gas
	386,100	32,745

Lakeside Middle School

	Item	Savings					Cost	Simple Payback	MTCDE	Life Expectancy	NJ Smart Start Incentives	Direct Install Eligible (Y/N)*	Direct Instal Incentives**	Max Incentives	Payback w/Incentives					ROI
		kW	kWh	therms	kGal	$									ncentives**	kW	kWh	therms	$	
ECM-1	Door & Window Seals	0.0	0	3,025.92	0.00	$ 2,900	$ 16,553	5.7	16.1	5	$ -	N	$ -	$ -	5.7	0.0	0	15,130	$ 14,585	(0.1)
ECM-2	Replace Roof	0.0	0	18,916.05	0.00	$ 18,200	$ 883,141	48.5	100.9	20	$ -	N	$ -	$ -	48.5	0.0	0	378,321	$ 364,701	(0.6)
ECM-3	Boiler Replacement	0.0	0	9,221.97	0.00	$ 8,900	$ 318,188	35.8	49.2	25	$ 6,000	N	$ -	$ -	35.8	0.0	0	230,549	$ 222,249	(0.3)
ECM-4	Install DDC & BMS	2.5	1,250	4,713.45	0.00	$ 4,900	$ 309,510	63.2	25.7	16	$ -	N	$ -	$ -	63.2	40.0	20,000	75,415	$ 78,425	(0.7)
ECM-5	Lighting Replacement / Upgrades	29.2	81,901	0.00	0.00	$ 12,500	$ 116,874	9.3	34.4	15	$ 14,245	N	$ -	$ -	9.3	438.0	1,228,515	0	$ 187,866	0.6
ECM-6	Install Lighting Controls (Occupancy Sensors)	0.0	42,649	0.00	0.00	$ 6,400	$ 19,950	3.1	17.9	15	$ 4,655	N	$ -	$ -	3.1	0.0	639,735	0	$ 95,321	3.8
ECM-7	Lighting Replacements with Lighting Controls	29.2	108,411	0.00	0.00	$ 15,800	$ 136,824	8.7	45.6	15	$ 18,900	N	$ -	$ -	8.7	438.0	1,626,165	0	$ 237,175	0.7
ECM-8	Install Network Controller	0.0	11,040	0.00	0.00	$ 1,600	$ 1,770	1.1	4.6	16	$ -	N	$ -	$ -	1.1	0.0	176,640	0	$ 26,319	13.9
ECM-9	Install Low Flow Plumbing Fixtures	0.0	0	0.00	516.44	$ 800	$ 222,569	278.2	0.0	15	$ -	N	$ -	$ -	278.2	0.0	0	0	$ -	(1.0)
ECM-10	Replace Kitchen Booster Heater	24.0	27,360	-933.52	0.00	$ 4,400	$ 16,596	3.8	6.5	12	$ -	N	$ -	$ -	3.8	288.0	328,320	(11,202)	$ 53,275	2.2
	Total (Does Not Include ECM-5 & ECM-6)	**55.7**	**148,061.00**	**34,943.86**	**516.44**	**53,100.0**	**1,888,554.2**	35.6		15.5	$ 43,800		$ -	$ -	35.6	1,204.0	4,019,375	688,213	$1,259,508	(0.3)
	Total Measures with Payback <15	**53.2**	**146,811.0**	**2,092.4**	**0.0**	**24,700.0**	**171,742.1**	7.0		13.0	$ 37,800		$ -	$ -	7.0	1,164.0	3,999,375	3,927	$ 614,541	2.6
	% of Existing	**36%**	**38%**	**107%**																

Pompton Lakes-Lakeside MS - NJBPU
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ECM 1-Door & Window Seals

Existing: Lack of door seals result in excessive heat loss and infiltration
Proposed: Install door seals and/or weather-stripping to reduce air infiltration

Heating System Efficiency	65%	
Linear Feet of Door & Window Edge	328	
Existing Door Infiltration Factor*	2	cfm/LF
Proposed Door Infiltration Factor*	0.45	cfm/LF

Heating System Efficiency		65%	
Heating On Temp.		60	*F
Ex Occupied Htg Temp.		72	*F
Ex Unoccupied Htg Temp.		72	*F
Electricity	$	0.149	$/kWh
Natural Gas	$	0.96	$/therm

*Infiltration Factor per Carrier Handbook of Air Conditioning System Design based on average door seal gap calculated below.

					EXISTING LOADS		PROPOSED LOADS		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	Door Infiltration Load BTUH	Door Infiltration Load BTUH	Door Infiltration Load BTUH	Door Infiltration Load BTUH	Existing Heating Energy therms	Proposed Heating Energy therms
A		B	C	D	E	F	G	H	K	L
102.5	50.1	0	0	0	0	0	0	0	0	0
97.5	42.5	3	1	2	0	0	0	0	0	0
92.5	39.5	34	12	22	0	0	0	0	0	0
87.5	36.6	131	47	84	0	0	0	0	0	0
82.5	34.0	500	179	321	0	0	0	0	0	0
77.5	31.6	620	221	399	0	0	0	0	0	0
72.5	29.2	664	237	427	0	0	0	0	0	0
67.5	27.0	854	305	549	0	0	0	0	0	0
62.5	24.5	927	331	596	0	0	0	0	0	0
57.5	21.4	600	214	386	10,273	10,273	2,311	2,311	95	21
52.5	18.7	610	218	392	13,815	13,815	3,108	3,108	130	29
47.5	16.2	611	218	393	17,358	17,358	3,905	3,905	163	37
42.5	14.4	656	234	422	20,900	20,900	4,703	4,703	211	47
37.5	12.6	1,023	365	658	24,443	24,443	5,500	5,500	385	87
32.5	10.7	734	262	472	27,985	27,985	6,297	6,297	316	71
27.5	8.6	334	119	215	31,527	31,527	7,094	7,094	162	36
22.5	6.8	252	90	162	35,070	35,070	7,891	7,891	136	31
17.5	5.5	125	45	80	38,612	38,612	8,688	8,688	74	17
12.5	4.1	47	17	30	42,155	42,155	9,485	9,485	30	7
7.5	2.6	22	8	14	45,697	45,697	10,282	10,282	15	3
2.5	1.0	13	5	8	49,239	49,239	11,079	11,079	10	2
-2.5	0.0	0	0	0	52,782	52,782	11,876	11,876	0	0
-7.5	-1.5	0	0	0	56,324	56,324	12,673	12,673	0	0
TOTALS		**8,760**	**3,129**	**5,631**					**1,727**	**389**

Existing Door Infiltration	**656**	**cfm**
Existing Unoccupied Door Infiltration	**656**	**cfm**
Proposed Door Infiltration	**148**	**cfm**
Proposed Unoccupied Door Infiltration	**148**	**cfm**

Savings	**1,339**	**therms**	**$**	**1,290**

Door	Width (ft)	Height (ft)	Linear Feet (LF)	gap (in)	gap location	LF of gap	% door w/ gap	Average gap for door (in)
1a	3	7	20	0.0625	Seams	0.125	1%	0.000390625
1b	3	7	20	0.0625	Seams	0.125	1%	0.000390625
2a	3	7	20	0.0625	Seams	0.125	1%	0.000390625
2b	3	7	20	0.0625	Seams	0.125	1%	0.000390625
3a	3	7	20	0.0625	Seams	0.125	1%	0.000390625
3b	3	7	20	0.0625	Seams	0.125	1%	0.000390625
4a	3	7	20	0.0625	Seams	0.125	1%	0.000390625
4b	3	7	20	0.0625	Seams	0.125	1%	0.000390625
5a	3	7	20	0.0625	Seams	0.125	1%	0.000390625
5b	3	7	20	0.0625	Seams	0.125	1%	0.000390625
6a	3	7	20	0.0625	Seams	0.125	1%	0.000390625
6b	3	7	20	0.0625	Seams	0.125	1%	0.000390625
7a	3	7	20	0.0625	Seams	0.125	1%	0.000390625
7b	3	7	20	0.0625	Seams	0.125	1%	0.000390625
8	5	7	24	0.0625	Seams	0.125	1%	0.000325521
9	5	7	24	0.0625	Seams	0.125	1%	0.000325521
Total	**52**	**112**	**328**	**0.063**		**2**	**1%**	**0.00038249**

Note: Doors labeled 'a', 'b', etc. are a part of the same door assembly.

Pompton Lakes-Lakeside MS - NJBPU
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ECM 1-Door & Window Seals

Existing: Lack of door seals result in excessive heat loss and infiltration
Proposed: Install door seals and/or weather-stripping to reduce air infiltration

Heating System Efficiency	65%		Heating System Efficiency	65%	
Linear Feet ofWindow Edge	3,204.0		Heating On Temp.	60	*F
Existing Window Infiltration Factor	0.3	cfm/LF	Ex Occupied Htg Temp.	72	*F
Proposed Window Infiltration Factor*	0.1	cfm/LF	Ex Unoccupied Htg Temp.	72	*F
*Infiltration Factor per Carrier Handbook of Air Conditioning System Design			Electricity	$ 0.149	$/kWh
based on average door seal gap calculated below.			Natural Gas	$ 0.96	$/therm

					EXISTING LOADS		PROPOSED LOADS		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	Door Infiltration Load BTUH	Door Infiltration Load BTUH	Door Infiltration Load BTUH	Door Infiltration Load BTUH	Existing Heating Energy therms	Proposed Heating Energy therms
A		B	C	D	E	F	G	H	K	L
102.5	50.1	0	0	0	0	0	0	0	0	0
97.5	42.5	3	1	2	0	0	0	0	0	0
92.5	39.5	34	12	22	0	0	0	0	0	0
87.5	36.6	131	47	84	0	0	0	0	0	0
82.5	34.0	500	179	321	0	0	0	0	0	0
77.5	31.6	620	221	399	0	0	0	0	0	0
72.5	29.2	664	237	427	0	0	0	0	0	0
67.5	27.0	854	305	549	0	0	0	0	0	0
62.5	24.5	927	331	596	0	0	0	0	0	0
57.5	21.4	600	214	386	15,052	15,052	5,017	5,017	139	46
52.5	18.7	610	218	392	20,243	20,243	6,748	6,748	190	63
47.5	16.2	611	218	393	25,433	25,433	8,478	8,478	239	80
42.5	14.4	656	234	422	30,624	30,624	10,208	10,208	309	103
37.5	12.6	1,023	365	658	35,814	35,814	11,938	11,938	564	188
32.5	10.7	734	262	472	41,005	41,005	13,668	13,668	463	154
27.5	8.6	334	119	215	46,195	46,195	15,398	15,398	237	79
22.5	6.8	252	90	162	51,386	51,386	17,129	17,129	199	66
17.5	5.5	125	45	80	56,576	56,576	18,859	18,859	109	36
12.5	4.1	47	17	30	61,767	61,767	20,589	20,589	45	15
7.5	2.6	22	8	14	66,957	66,957	22,319	22,319	23	8
2.5	1.0	13	5	8	72,148	72,148	24,049	24,049	14	5
-2.5	0.0	0	0	0	77,338	77,338	25,779	25,779	0	0
-7.5	-1.5	0	0	0	82,529	82,529	27,510	27,510	0	0
TOTALS		**8,760**	**3,129**	**5,631**					**2,531**	**844**

Existing Window Infiltration	**961**	**cfm**
Existing Unoccupied Window Infiltration	**961**	**cfm**
Proposed Window Infiltration	**320**	**cfm**
Proposed Unoccupied Window Infiltration	**320**	**cfm**

Savings	**1,687**	**therms**	**$ 1,627**

Window ID	Location	Quantity	Width (ft)	Height (ft)	Linear Feet (LF)
1a	Exterior Wall	117	3	1	936.0
1b	Exterior Wall	117	3	3	1404.0
2	Exterior Wall	48	4	5	864.0
Total		**282**	**10**	**9**	**3,204.0**

Pompton Lakes-Lakeside MS - NJBPU
CHA Project #24698

Multipliers	
Material:	1.01
Labor:	1.25
Equipment:	1.00

ECM 1-Door & Window Seals Cost

Description	QTY	UNIT	UNIT COSTS			SUBTOTAL COSTS			TOTAL COST	REMARKS
			MAT.	LABOR	EQUIP.	MAT.	LABOR	EQUIP.		
									$ -	
Door Seals	656	LS	$ 20	$ -	$ -	$ 13,304	$ -	$ -	$ 13,304	
Window Seals	3,204	LF	$ 1	$ -	$ -	$ 3,249	$ -	$ -	$ 3,249	

$ 16,553	Subtotal
$ -	
$ -	
$ -	
$ 16,553	**Total**

Pompton Lakes-Lakeside MS - NJBPU
CHA Project #24698

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

ECM-2 Roof Replacement

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

Area of ceiling	36,289	SF	Heating System Efficiency	65%	
Existing Infiltration Factor	**0.30**	**cfm/SF**	Heating On Point	60	*F
Proposed Infiltration Factor	**0.20**	**cfm/SF**	Ex Occupied Htg Temp.	72	*F
Existing U Value	**0.214**	**Btuh/SF/°F**	Ex Unoccupied Htg Temp.	60	*F
(No insulation, 4"LW Concrete, from Trace)			Electricity	$ 0.149	$/kWh
Proposed U Value	**0.030**	**Btuh/SF/°F**	Natural Gas	$ 0.96	$/Therm
(Fiberglass Batt Insulation R-4.1/inch, Trace)					

					EXISTING LOADS		PROPOSED LOADS		HEATING ENERGY	
					Occupied	Unoccupied	Occupied	Unoccupied		
Avg Outdoor Air Temp. Bins °F	**Avg Outdoor Air Enthalpy**	**Existing Equipment Bin Hours**	**Occupied Equipment Bin Hours**	**Unoccupied Equipment Bin Hours**	**Wall Infiltration & Heat Load BTUH**	**Wall Infiltration & Heat Load BTUH**	**Wall Infiltration & Heat Load BTUH**	**Wall Infiltration & Heat Load BTUH**	**Existing Heating Energy Therm**	**Proposed Heating Energy Therm**
A		**B**	**C**	**D**	**E**	**F**	**G**	**H**	**K**	**L**
97.5	42.5	0	0	0	0	0	0	0	-	-
92.5	39.5	36	10	26	0	0	0	0	-	-
87.5	36.6	123	33	90	0	0	0	0	-	-
82.5	34.0	477	128	349	0	0	0	0	-	-
77.5	31.6	656	176	480	0	0	0	0	-	-
72.5	29.2	742	199	543	0	0	0	0	-	-
67.5	27.0	784	210	574	0	0	0	0	-	-
62.5	24.5	983	263	720	0	0	0	0	-	-
57.5	21.4	625	167	458	282,989	48,791	129,445	22,318	1,072	491
52.5	18.7	438	117	321	380,572	146,374	174,081	66,954	1,409	645
47.5	16.2	559	150	409	478,154	243,956	218,717	111,590	2,638	1,206
42.5	14.4	671	180	491	575,736	341,539	263,353	156,226	4,173	1,909
37.5	12.6	1,067	286	781	673,319	439,121	307,989	200,862	8,238	3,768
32.5	10.7	685	183	502	770,901	536,703	352,625	245,498	6,317	2,890
27.5	8.6	369	99	270	868,484	634,286	397,261	290,134	3,957	1,810
22.5	6.8	321	86	235	966,066	731,868	441,897	334,771	3,924	1,795
17.5	5.5	184	49	135	1,063,649	829,451	486,533	379,407	2,526	1,155
12.5	4.1	40	11	29	1,161,231	927,033	531,169	424,043	609	279
7.5	2.6	0	0	0	1,258,813	1,024,616	575,805	468,679	-	-
2.5	1.0	0	0	0	1,356,396	1,122,198	620,441	513,315	-	-
-2.5	0.0	0	0	0	1,453,978	1,219,780	665,077	557,951	-	-
-7.5	-1.5	0	0	0	1,551,561	1,317,363	709,714	602,587	-	-
TOTALS		**8,760**	**2,346**	**6,414**					**34,863**	**15,947**

Existing Ceiling Infiltration	**10,887**	**cfm**
Existing Ceiling Heat Transfer	**7,759**	**Btuh/°F**
Proposed Ceiling Infiltration	**7,258**	**cfm**
Proposed Ceiling Heat Transfer	**1,089**	**Btuh/°F**

Savings	**18,916**	**Therm**	**$ 18,235**
	0	**kWh**	**$ -**
			$ 18,235

Pompton Lakes-Lakeside MS - NJBPU
CHA Project #24698

Multipliers	
Material:	1.01
Labor:	1.25
Equipment:	1.00

ECM 1-Door & Window Seals Cost

Description	QTY	UNIT	UNIT COSTS			SUBTOTAL COSTS			TOTAL COST	REMARKS
			MAT.	LABOR	EQUIP.	MAT.	LABOR	EQUIP.		
Roof Replacement	36,289	SF	$ 20	$ -	$ -	$ 735,951	$ -	$ -	$ 735,951	

$ 735,951	Subtotal
$ 147,190	20% Contingency
$ -	
$ -	
$ 883,141	**Total**

Pompton Lakes-Lakeside MS - NJBPU
CHA Project #24698

ECM 3- Boiler Replacement

Existing Fuel Nat. Gas
Proposed Fuel Nat. Gas

Utility Costs	
$ 0.149	$/kWh blended
$ 0.124	$/kWh consumption
$ 6.760	$/kW
$ 0.964	$/Therm
$ 1.525	$/kGallon Water

Item	Value	Units	Formula/Comments
Baseline Fuel Cost	$ 0.96	/ Therm	
Proposed Fuel Cost	$ 0.96	/ Therm	
Baseline Fuel Use	31,423	Therms	Based on historical utility data
Existing Boiler Plant Efficiency	65%		Estimated or Measured
Baseline Boiler Load	2,042,495	Mbtu/yr	Baseline Fuel Use x Existing Efficiency x 100 Mbtu/Therms
Baseline Fuel Cost	$ 30,292		
Proposed Boiler Plant Efficiency	92%		New Boiler Efficiency
Proposed Fuel Use	22,201	Therms	Baseline Boiler Load / Proposed Efficiency / 100 Mbtu/Therms
Proposed Fuel Cost	$ 21,402		

*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**	**9,222**	**$0**	**$8,890**

Pompton Lakes-Lakeside MS - NJBPU
CHA Project #24698

Multipliers	
Material:	1.01
Labor:	1.25
Equipment:	1.00

ECM 3- Boiler Replacement Cost

Description	QTY	UNIT	UNIT COSTS			SUBTOTAL COSTS			TOTAL COST	REMARKS
			MAT.	LABOR	EQUIP.	MAT.	LABOR	EQUIP.		
Demo existing boilers	2	EA	$ -	$ 10,000	$ -					
3,000 MBH NG Condensing Boiler	2	EA	$ 45,000	$ 40,000	$ -	$ 91,260	$ 99,600	$ -	$ 190,860	
Venting & Combustion Air	2	LS	$ 5,000	$ 2,500	$ -	$ 10,140	$ 6,225	$ -	$ 16,365	
Pumps	2	EA	$ 2,500	$ 1,500	$ -	$ 5,070	$ 3,735	$ -	$ 8,805	
Miscellaneous Electrical	2	LS	$ 500	$ 250	$ -	$ 1,014	$ 623	$ -	$ 1,637	
Miscellaneous HW Piping	2	LS	$ 5,000	$ 15,000	$ -	$ 10,140	$ 37,350	$ -	$ 47,490	
						$ -	$ -	$ -	$ -	
						$ -	$ -	$ -	$ -	

$ 265,157	Subtotal
$ 53,031.30	20% Contingency
-	
-	
$ 318,188	**Total**

Pompton Lakes-Lakeside MS - NJBPU
CHA Project #24698

ECM 4- Install DDC & BMS

Utility Costs		
$	0.149	$/kWh blended
$	0.124	$/kWh consumption
$	6.760	$/kW
$	0.964	$/Therm

EXISTING CONDITIONS			
Electricity Consumed by Air Compressor	1,250	kWh	5kW * 500 hours
Natural Gas Consumed by HVAC System	31,423	Therms[1]	From Utility Analysis
SAVINGS			
Electric Savings	1,250	kWh[2]	
Electric Demand Savings	3	kW[2]	
Natural Gas Savings	4,713	Therms[3]	
Total Cost Savings	$ 4,902		
Estimated Total Project Cost	$ 309,510	[4,5]	
Simple Payback	63.1	**years**	

Assumptions

1 Natural Gas consumption based on utility data, boiler capacity & operating hours
2 Electric savings from removing the air compressor
3 15% Approximate natural gas savings from night setback & temperature scheduling
4 Project cost is an estimate, includes cost of replacing non- programmbale thermostats with programmbale thermostats
5 control work cost

Pompton Lakes-Lakeside MS - NJBPU
CHA Project #24698

Multipliers	
Material:	1.01
Labor:	1.25
Equipment:	1.00

ECM 4- Install DDC & BMS Cost

Description	QTY	UNIT	UNIT COSTS			SUBTOTAL COSTS			TOTAL COST	REMARKS
			MAT.	LABOR	EQUIP.	MAT.	LABOR	EQUIP.		
						$ -	$ -	$ -	$ -	
Control System	1	LS	$ 150,000	$ 50,000	$ -	$ 152,100	$ 62,250	$ -	$ 214,350	
Removing Pneumatics	1	LS		$ 10,000	$ -	$ -	$ 12,450	$ -	$ 12,450	
Programming	1	LS	$ -	$ 25,000	$ -	$ -	$ 31,125	$ -	$ 31,125	
						$ -	$ -	$ -	$ -	
						$ -	$ -	$ -	$ -	
						$ -	$ -	$ -	$ -	
						$ -	$ -	$ -	$ -	
						$ -	$ -	$ -	$ -	
						$ -	$ -	$ -	$ -	
						$ -	$ -	$ -	$ -	

$ 257,925	Subtotal
$ 51,585.00	20% Contingency
-	
-	
$ 309,510	**Total**

Pompton Lakes-Lakeside MS - NJBPU
CHA Project #24698

ECM-8: Install Network Controller

Background Data Average Consumption and Savings Figures	kWh
Average Total Consumption per PC per Year	500-700
Average Energy and Cost Waste per PC per Year	350-450
Average savings transparantly available via Surveyor	120

Number of PCs	92
Return on Investment Analysis	
	kWh
Annual Energy Savings	11,040

Notes:

1. Savings are for the installation of a centralized computer management system installed on the client server that will centralize the power management functions that are native to the Windows environment.
2. Energy savings per computer are based on historical information from previous installations encompassing tens of thousands of computers.
3. There are approximately 60 computers in all

Pompton Lakes-Lakeside MS - NJBPU
CHA Project #24698

City cost multipliers from 2012 RS Means

Multipliers	
Material:	1.00
Labor:	1.24
Equipment:	0.98

Utility Costs		
$	0.138	$/kWh blended
$	0.113	$/kWh consumption
$	6.044	$/kW
$	1.036	$/Therm

ECM-8: Install Network Controller Cost

ECM Description Summary

Description	QTY	UNIT	UNIT COSTS			SUBTOTAL COSTS			TOTAL COST	REMARKS
			MAT.	LABOR	EQUIP.	MAT.	LABOR	EQUIP.		
						$ -	$ -	$ -	$ -	
Network Controller	92	EA	$ 8	$ -		$ 733	$ -	$ -	$ 733	
IT Deployment	1	EA	$ -	$ 600		$ -	$ 742	$ -	$ 742	
						$ -	$ -	$ -	$ -	

$	1,475	Subtotal
$	295	20% Contingency
$	**1,770**	**Total**

Note: Costs are for energy savings only. Do not use for procurement

Pompton Lakes-Lakeside MS - NJBPU
CHA Project #24698

ECM-8: Replace Plumbing with Low Flow Toilets

EXISTING CONDITIONS		
Cost of Water / 1000 Gallons	$1.53	$ / kGal
Toilets in Building	27	
Average Flushes / Toilet (per Day)	4	
Average Gallons / Flush	5.5	Gal

PROPOSED CONDITIONS		
Proposed Toilets to be Replaced	27	
Proposed Gallons / Flush	1.3	Gal

SAVINGS		
Current Urinal Water Use	594	kGal / year
Proposed Urinal Water Use	138	kGal / year
Water Savings	456	kGal / year
Cost Savings	$695	/ year

Pompton Lakes-Lakeside MS - NJBPU
CHA Project #24698

ECM-8: Replace Plumbing with Low Flow Urinals

EXISTING CONDITIONS		
Cost of Water / 1000 Gallons	$1.53	$ / kGal
Urinals in Building	14	
Average Flushes / Urinal (per Day)	4	
Average Gallons / Flush	3.0	Gal

PROPOSED CONDITIONS		
Proposed Urinals to be Replaced	14	
Proposed Gallons / Flush	0.5	Gal

SAVINGS		
Current Urinal Water Use	61	kGal / year
Proposed Urinal Water Use	10	kGal / year
Water Savings	51	kGal / year
Cost Savings	$78	/ year

Pompton Lakes-Lakeside MS - NJBPU
CHA Project #24698

ECM-8: Replace Plumbing with Low Flow Faucets

EXISTING CONDITIONS		
Cost of Water / 1000 Gallons	$1.53	$ / kGal
Faucets in Building	35	
Average Uses / Faucet (per day)	1	Gal
Average Time of Use	0.5	min
Average Flowrate	3.0	gpm

PROPOSED CONDITIONS		
Proposed Faucets to be Replaced	35	
Proposed Flowrate	1.5	gpm

SAVINGS		
Current Faucet Water Use	19	kGal / year
Proposed Faucet Water Use	10	kGal / year
Water Savings	10	kGal / year
Cost Savings	$15	/ year

Pompton Lakes-Lakeside MS - NJBPU
CHA Project #24698

Multipliers	
Material:	1.01
Labor:	1.25
Equipment:	1.00

ECM 9: Low Flow Plumbing Cost

Description	QTY	UNIT	UNIT COSTS			SUBTOTAL COSTS			TOTAL COST	REMARKS
			MAT.	LABOR	EQUIP.	MAT.	LABOR	EQUIP.		
Flush Valves & Toilets	27	EA	$ 1,400.00	$ 1,000.00	$ -	$ 38,329.20	$ 33,615.00	$ -	$ 71,944	
Urinals & Valves	14	EA	$ 1,200.00	$ 1,000.00	$ -	$ 17,035.20	$ 17,430.00	$ -	$ 34,465	
Faucets	35	EA	$ 1,000.00	$ 1,000.00	$ -	$ 35,490.00	$ 43,575.00	$ -	$ 79,065	
									$ -	
									$ -	
									$ -	
									$ -	
									$ -	
									$ -	
									$ -	

$ 185,474	Subtotal
$ 37,094.88	20% Contingency
-	
-	
$ 222,569	**Total**

Pompton Lakes-Lakeside MS - NJBPU
CHA Project #24698

Utility Costs	
$ 0.149	$/kWh blended
$ 0.124	$/kWh consumption
$ 6.760	$/kW
$ 0.964	$/Therm
$ 1.525	$/kGallon Water

ECM-10: Replace Electric Booster Heater

Existing Fuel Electric
Proposed Fuel Nat.Gas

Item	Value	Units	Formula/Comments
Baseline Fuel Cost	$ 0.12	/ kWh	
Baseline Fuel Cost	$ 6.76	/ kW	
Proposed Fuel Cost	$ 0.96	/ Therm	
Kitchen Equipment			
- Dishwasher Booster Heater	24.0	kW	Based on equipment nameplat data
- Total Equipmetn kW	24.0	**kW**	
Kitchen Annual Operating Hours	1,140	hours	6 hours per day x 5 days per week x 38 weeks per year
Baseline Equipment Efficiency	100%		
Baseline Annual Electric Use	27,360	**kWh**	
Baseline Annual Electric Cost	$ 5,340		
Proposed Equipment Efficiency	80%		Approxmiation
Proposed Fuel Use	934	**Therms**	Baseline Electric Use x 3,412 BTU/kWh / 100,000 BTU/Therm
Proposed Fuel Cost	$ 900		
Annual Savings	$ 4,440		
Natural Gas Equipment Project Cost	$16,596		
Simple Payback	3.7	Years	

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

Multipliers	
Material:	1.01
Labor:	1.25
Equipment:	1.00

ECM 9- Replace Electric Kitchen Equip. Cost

Description	QTY	UNIT	UNIT COSTS			SUBTOTAL COSTS			TOTAL COST	REMARKS
			MAT.	LABOR	EQUIP.	MAT.	LABOR	EQUIP.		
Dishwasher Booster Heater-Natural Gas	1	EA	$ 5,000	$ 1,500	$ -	$ 5,070	$ 1,868	$ -	$ 6,938	
Venting	1	EA	$ 1,500	$ 500		$ 1,521	$ 623	$ -	$ 2,144	
Natural Gas Hookup	1	EA	$ 500	$ 1,500		$ 507	$ 1,868	$ -	$ 2,375	
Electric wiring	1	EA	$ 500	$ 1,500		$ 507	$ 1,868	$ -	$ 2,375	
						$ -	$ -	$ -	$ -	
						$ -	$ -	$ -	$ -	
						$ -	$ -	$ -	$ -	
						$ -	$ -	$ -	$ -	

$ 13,830	Subtotal
$ 2,766.00	20% Contingency
-	
-	
$ 16,596	**Total**

Energy Audit of Lakeside Middle School

CHA Project No.24698 **Cost of Electricity:** **$0.124 $/kWh** **Consumption**

ECM-5 Lighting Replacements **$6.76 $/kW** **Demand**

		EXISTING CONDITIONS								RETROFIT CONDITIONS								COST & SAVINGS ANALYSIS						
	Area Description	**No. of Fixtures**	**Standard Fixture Code**	**Fixture Code**	**Watts per Fixture**	**kW/ Space**	**Exist Control**	**Annual Hours**	**Annual kWh**	**Number of Fixtures**	**Standard Fixture Code**	**Fixture Code**	**Watts per Fixture**	**kW/ Space**	**Retrofit Control**	**Annual Hours**	**Annual kWh**	**Annual kWh Saved**	**Annual kW Saved**	**Annual $ Saved**	**Retrofit Cost**	**NJ Smart Start Lighting Incentive**	**Simple Payback With Out Incentive**	**Simple Payback**
Field Code	Unique description of the location - Room number/Room name: Floor number (if applicable)	No. of fixtures before the retrofit	"Lighting Fixture Code" Example: 2T 40 R F(U) = 2'x2' Troff 40 w Recess. Floor 2 lamps U shape	Code from Table of Standard Fixture Wattages	Value from Table of Standard Fixture Wattages	(Watts/Fixt) * (Fixt No.)	Pre-inst. control device	Estimated daily hours for the usage group	(kW/space) * (Annual Hours)	No. of fixtures after the retrofit	"Lighting Fixture Code" Example 2T 40 R F(U) = 2'x2' Troff 40 w Recess. Floor 2 lamps U shape	Code from Table of Standard Fixture Wattages	Value from Table of Standard Fixture Wattages	(Watts/Fixt) * (Number of Fixtures)	Retrofit control device	Estimated annual hours for the usage group	(kW/space) * (Annual Hours)	(Original Annual kWh) - (Retrofit Annual kWh)	(Original Annual kW) - (Retrofit Annual kW)	(kWh Saved) * ($/kWh)	Cost for renovations to lighting system	Prescriptive Lighting Measures	Length of time for renovations cost to be recovered	Length of time for renovations cost to be recovered
80	Boiler Room	1	I 100	I100/1	100	0.1	SW	1000	100	1	CF 26	CFQ26/1-L	27	0.0	SW	1,000	27	73	0.1	$ 14.97	$ 6.75	$0	0.5	0.1
102	Gym	14	High Bay MH 400	MH400/1	458	6.4	BR	2400	15,389	14	C 54 C F 6	F46GHL	351	4.9	BR	2,400	11,794	3,595	1.5	$ 567.32	$ 7,749.00	$1,400	13.7	1.8
36	Girl's Locker Room	6	S 34 P F 2 (MAG)	F42EE	72	0.4	SW	2800	1,210	6	C 28 P F 2	F42SSILL	48	0.3	SW	2,800	806	403	0.1	$ 61.68	$ 637.50	$60	10.3	1.4
91	Girl's Locker Room-Shower	6	I 75	I75/1	75	0.5	SW	2800	1,260	6	CF 26	CFQ26/1-L	27	0.2	SW	2,800	454	806	0.3	$ 123.36	$ 32.40	$0	0.3	0.0
36	Girl's Gym Office Entrance	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	2400	173	1	C 28 P F 2	F42SSILL	48	0.0	SW	2,400	115	58	0.0	$ 9.09	$ 106.25	$10	11.7	1.7
36	Girl's Gym Office Entrance	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	2400	173	1	C 28 P F 2	F42SSILL	48	0.0	SW	2,400	115	58	0.0	$ 9.09	$ 106.25	$10	11.7	1.7
24	Girl's Gym Office Bathroom	1	W 20 C F 2	F22SS	56	0.1	SW	2000	112	1	W 17 W C 2	F22ILL	33	0.0	SW	2,000	66	46	0.0	$ 7.57	$ 101.25	$10	13.4	2.0
36	Gym Storage	2	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	1000	144	2	C 28 P F 2	F42SSILL	48	0.1	SW	1,000	96	48	0.0	$ 9.85	$ 212.50	$20	21.6	4.0
36	Gym Storage	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	1000	72	1	C 28 P F 2	F42SSILL	48	0.0	SW	1,000	48	24	0.0	$ 4.92	$ 106.25	$10	21.6	4.0
36	Boy's Gym Office Entrance	2	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	2400	346	2	C 28 P F 2	F42SSILL	48	0.1	SW	2,400	230	115	0.0	$ 18.18	$ 212.50	$20	11.7	1.7
36	Boy's Gym Office	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	2400	173	1	C 28 P F 2	F42SSILL	48	0.0	SW	2,400	115	58	0.0	$ 9.09	$ 106.25	$10	11.7	1.7
24	Boy's Gym Office Bathroom	2	W 20 C F 2	F22SS	56	0.1	SW	2000	224	2	W 17 W C 2	F22ILL	33	0.1	SW	2,000	132	92	0.0	$ 15.14	$ 202.50	$20	13.4	2.0
36	Boy's Locker Room	11	S 34 P F 2 (MAG)	F42EE	72	0.8	SW	2800	2,218	11	C 28 P F 2	F42SSILL	48	0.5	SW	2,800	1,478	739	0.3	$ 113.08	$ 1,168.75	$110	10.3	1.4
36	Kitchen	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	1600	1,728	15	C 28 P F 2	F42SSILL	48	0.7	SW	1,600	1,152	576	0.4	$ 100.63	$ 1,593.75	$150	15.8	2.5
36	Kitchen Storage	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	1000	72	1	C 28 P F 2	F42SSILL	48	0.0	SW	1,000	48	24	0.0	$ 4.92	$ 106.25	$10	21.6	4.0
24	Kitchen Bathroom	1	W 20 C F 2	F22SS	56	0.1	SW	2000	112	1	W 17 W C 2	F22ILL	33	0.0	SW	2,000	66	46	0.0	$ 7.57	$ 101.25	$10	13.4	2.0
36	Storage Room	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	1000	72	1	C 28 P F 2	F42SSILL	48	0.0	SW	1,000	48	24	0.0	$ 4.92	$ 106.25	$10	21.6	4.0
24	114 (Art)	30	W 20 C F 2	F22SS	56	1.7	SW	2400	4,032	30	W 17 W C 2	F22ILL	33	1.0	SW	2,400	2,376	1,656	0.7	$ 261.32	$ 3,037.50	$300	11.6	1.7
36	Art Storage	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	1000	72	1	C 28 P F 2	F42SSILL	48	0.0	SW	1,000	48	24	0.0	$ 4.92	$ 106.25	$10	21.6	4.0
36	Music	29	S 34 P F 2 (MAG)	F42EE	72	2.1	SW	2400	5,011	29	C 28 P F 2	F42SSILL	48	1.4	SW	2,400	3,341	1,670	0.7	$ 263.59	$ 3,081.25	$290	11.7	1.7
36	Music Storage	4	S 34 P F 2 (MAG)	F42EE	72	0.3	SW	1000	288	4	C 28 P F 2	F42SSILL	48	0.2	SW	1,000	192	96	0.1	$ 19.69	$ 425.00	$40	21.6	4.0
36	Music Office	2	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	2400	346	2	C 28 P F 2	F42SSILL	48	0.1	SW	2,400	230	115	0.0	$ 18.18	$ 212.50	$20	11.7	1.7
36	Music Office 2	2	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	2400	346	2	C 28 P F 2	F42SSILL	48	0.1	SW	2,400	230	115	0.0	$ 18.18	$ 212.50	$20	11.7	1.7
36	Music Storage 2	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	1000	72	1	C 28 P F 2	F42SSILL	48	0.0	SW	1,000	48	24	0.0	$ 4.92	$ 106.25	$10	21.6	4.0
43	Stairway Near Music	2	T 32 R F 3 (ELE)	F43ILL	89	0.2	SW	3200	570	2	T 32 R F 3 (ELE)	F43ILL	89	0.2	SW	3,200	570	-	0.0	$ -	$ -	$0		
24	Stairway Near Music	1	W 20 C F 2	F22SS	56	0.1	SW	3200	179	1	W 17 W C 2	F22ILL	33	0.0	SW	3,200	106	74	0.0	$ 10.99	$ 101.25	$10	9.2	1.2
69	107	21	2B 34 R F 2 (u) (MAG)	FU2EE	72	1.5	SW	2400	3,629	21	2T 17 R F 2 (ELE)	F22ILL	33	0.7	SW	2,400	1,663	1,966	0.8	$ 310.17	$ 2,126.25	$210	6.9	1.0
69	107 Office	1	2B 34 R F 2 (u) (MAG)	FU2EE	72	0.1	SW	2400	173	1	2T 17 R F 2 (ELE)	F22ILL	33	0.0	SW	2,400	79	94	0.0	$ 14.77	$ 101.25	$10	6.9	1.0
69	107 Storage	2	2B 34 R F 2 (u) (MAG)	FU2EE	72	0.1	SW	1000	144	2	2T 17 R F 2 (ELE)	F22ILL	33	0.1	SW	1,000	66	78	0.1	$ 16.00	$ 202.50	$20	12.7	2.3
36	105	24	S 34 P F 2 (MAG)	F42EE	72	1.7	SW	2400	4,147	24	C 28 P F 2	F42SSILL	48	1.2	SW	2,400	2,765	1,382	0.6	$ 218.14	$ 2,550.00	$240	11.7	1.7
36	103	24	S 34 P F 2 (MAG)	F42EE	72	1.7	SW	2400	4,147	24	C 28 P F 2	F42SSILL	48	1.2	SW	2,400	2,765	1,382	0.6	$ 218.14	$ 2,550.00	$240	11.7	1.7
36	103 Storage	8	S 34 P F 2 (MAG)	F42EE	72	0.6	SW	1000	576	8	C 28 P F 2	F42SSILL	48	0.4	SW	1,000	384	192	0.2	$ 39.38	$ 850.00	$80	21.6	4.0
36	101	24	S 34 P F 2 (MAG)	F42EE	72	1.7	SW	2400	4,147	24	C 28 P F 2	F42SSILL	48	1.2	SW	2,400	2,765	1,382	0.6	$ 218.14	$ 2,550.00	$240	11.7	1.7
36	Server Room	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	1000	72	1	C 28 P F 2	F42SSILL	48	0.0	SW	1,000	48	24	0.0	$ 4.92	$ 106.25	$10	21.6	4.0
24	1st Floor Boy's Bathroom	1	W 20 C F 2	F22SS	56	0.1	SW	2000	112	1	W 17 W C 2	F22ILL	33	0.0	SW	2,000	66	46	0.0	$ 7.57	$ 101.25	$10	13.4	2.0
36	1st Floor Boy's Bathroom	3	S 34 P F 2 (MAG)	F42EE	72	0.2	SW	2000	432	3	C 28 P F 2	F42SSILL	48	0.1	SW	2,000	288	144	0.1	$ 23.70	$ 318.75	$30	13.5	2.0
36	1st Floor Maintenance	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	1000	72	1	C 28 P F 2	F42SSILL	48	0.0	SW	1,000	48	24	0.0	$ 4.92	$ 106.25	$10	21.6	4.0
24	1st Floor Girl's Bathroom	1	W 20 C F 2	F22SS	56	0.1	SW	2000	112	1	W 17 W C 2	F22ILL	33	0.0	SW	2,000	66	46	0.0	$ 7.57	$ 101.25	$10	13.4	2.0
36	1st Floor Girl's Bathroom	3	S 34 P F 2 (MAG)	F42EE	72	0.2	SW	2000	432	3	C 28 P F 2	F42SSILL	48	0.1	SW	2,000	288	144	0.1	$ 23.70	$ 318.75	$30	13.5	2.0
48	Nurse	5	T 32 R F 4 (ELE)	F44ILL	112	0.6	SW	2400	1,344	5	0	F44SSILL	96	0.5	SW	2,400	1,152	192	0.1	$ 30.30	$ 531.25	$50	17.5	2.5
24	Nurse Bathroom	1	W 20 C F 2	F22SS	56	0.1	SW	2400	134	1	W 17 W C 2	F22ILL	33	0.0	SW	2,400	79	55	0.0	$ 8.71	$ 101.25	$10	11.6	1.7
38	Entryway	1	F42ILL	F42ILL	59	0.1	SW	2280	135	1	F42ILL	F42ILL	59	0.1	SW	2,280	135	-	0.0	$ -	$ -	$0		
43	Principal's Office	6	T 32 R F 3 (ELE)	F43ILL	89	0.5	SW	2400	1,282	6	T 32 R F 3 (ELE)	F43ILL	89	0.5	SW	2,400	1,282	-	0.0	$ -	$ -	$0		
24	Principal's Bathroom	1	W 20 C F 2	F22SS	56	0.1	SW	2000	112	1	W 17 W C 2	F22ILL	33	0.0	SW	2,000	66	46	0.0	$ 7.57	$ 101.25	$10	13.4	2.0
43	Main Office	10	T 32 R F 3 (ELE)	F43ILL	89	0.9	SW	2400	2,136	10	T 32 R F 3 (ELE)	F43ILL	89	0.9	SW	2,400	2,136	-	0.0	$ -	$ -	$0		
24	Main Office Bathroom	1	W 20 C F 2	F22SS	56	0.1	SW	2000	112	1	W 17 W C 2	F22ILL	33	0.0	SW	2,000	66	46	0.0	$ 7.57	$ 101.25	$10	13.4	2.0
36	Main Office Closet	2	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	1000	144	2	C 28 P F 2	F42SSILL	48	0.1	SW	1,000	96	48	0.0	$ 9.85	$ 212.50	$20	21.6	4.0
43	Assistant Principal's Office	4	T 32 R F 3 (ELE)	F43ILL	89	0.4	SW	2400	854	4	T 32 R F 3 (ELE)	F43ILL	89	0.4	SW	2,400	854	-	0.0	$ -	$ -	$0		
43	Office	1	T 32 R F 3 (ELE)	F43ILL	89	0.1	SW	2400	214	1	T 32 R F 3 (ELE)	F43ILL	89	0.1	SW	2,400	214	-	0.0	$ -	$ -	$0		
43	Office	1	T 32 R F 3 (ELE)	F43ILL	89	0.1	SW	2400	214	1	T 32 R F 3 (ELE)	F43ILL	89	0.1	SW	2,400	214	-	0.0	$ -	$ -	$0		
36	102	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592	15	C 28 P F 2	F42SSILL	48	0.7	SW	2,400	1,728	864	0.4	$ 136.34	$ 1,593.75	$150	11.7	1.7

Energy Audit of Lakeside Middle School

CHA Project No.24698 **Cost of Electricity:** **$0.124 $/kWh** **Consumption**

ECM-5 Lighting Replacements **$6.76 $/kW** **Demand**

		EXISTING CONDITIONS								RETROFIT CONDITIONS								COST & SAVINGS ANALYSIS						
	Area Description	No. of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/ Space	Exist Control	Annual Hours	Annual kWh	Number of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/ Space	Retrofit Control	Annual Hours	Annual kWh	Annual kWh Saved	Annual kW Saved	Annual $ Saved	Retrofit Cost	NJ Smart Start Lighting Incentive	Simple Payback With Out Incentive	Simple Payback
Field Code	Unique description of the location - Room number/Room name: Floor number (if applicable)	No. of fixtures before the retrofit	"Lighting Fixture Code" Example: 2T 40 R F(U) = 2'x2' Troff 40 w Recess. Floor 2 lamps U shape	Code from Table of Standard Fixture Wattages	Value from Table of Standard Fixture Wattages	(Watts/Fixt) * (Fixt No.)	Pre-inst. control device	Estimated daily hours for the usage group	(kW/space) * (Annual Hours)	No. of fixtures after the retrofit	"Lighting Fixture Code" Example 2T 40 R F(U) = 2'x2' Troff 40 w Recess. Floor 2 lamps U shape	Code from Table of Standard Fixture Wattages	Value from Table of Standard Fixture Wattages	(Watts/Fixt) * (Number of Fixtures)	Retrofit control device	Estimated annual hours for the usage group	(kW/space) * (Annual Hours)	(Original Annual kWh) - (Retrofit Annual kWh)	(Original Annual kW) - (Retrofit Annual kW)	(kWh Saved) * ($/kWh)	Cost for renovations to lighting system	Prescriptive Lighting Measures	Length of time for renovations cost to be recovered	Length of time for renovations cost to be recovered
36	104	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592	15	C 28 P F 2	F42SSILL	48	0.7	SW	2,400	1,728	864	0.4	$ 136.34	$ 1,593.75	$150	11.7	1.7
36	106	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592	15	C 28 P F 2	F42SSILL	48	0.7	SW	2,400	1,728	864	0.4	$ 136.34	$ 1,593.75	$150	11.7	1.7
36	1st Floor Girl's Bathroom	3	S 34 P F 2 (MAG)	F42EE	72	0.2	SW	2000	432	3	C 28 P F 2	F42SSILL	48	0.1	SW	2,000	288	144	0.1	$ 23.70	$ 318.75	$30	13.5	2.0
24	Entrance	1	W 20 C F 2	F22SS	56	0.1	SW	2000	112	1	W 17 W C 2	F22ILL	33	0.0	SW	2,000	66	46	0.0	$ 7.57	$ 101.25	$10	13.4	2.0
36	1st Floor Boy's Bathroom	3	S 34 P F 2 (MAG)	F42EE	72	0.2	SW	2000	432	3	C 28 P F 2	F42SSILL	48	0.1	SW	2,000	288	144	0.1	$ 23.70	$ 318.75	$30	13.5	2.0
24	Entrance	1	W 20 C F 2	F22SS	56	0.1	SW	2000	112	1	W 17 W C 2	F22ILL	33	0.0	SW	2,000	66	46	0.0	$ 7.57	$ 101.25	$10	13.4	2.0
36	Maintenance Room	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	1000	72	1	C 28 P F 2	F42SSILL	48	0.0	SW	1,000	48	24	0.0	$ 4.92	$ 106.25	$10	21.6	4.0
36	108	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592	15	C 28 P F 2	F42SSILL	48	0.7	SW	2,400	1,728	864	0.4	$ 136.34	$ 1,593.75	$150	11.7	1.7
36	110	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592	15	C 28 P F 2	F42SSILL	48	0.7	SW	2,400	1,728	864	0.4	$ 136.34	$ 1,593.75	$150	11.7	1.7
36	112	21	S 34 P F 2 (MAG)	F42EE	72	1.5	SW	2400	3,629	21	C 28 P F 2	F42SSILL	48	1.0	SW	2,400	2,419	1,210	0.5	$ 190.87	$ 2,231.25	$210	11.7	1.7
69	Hallway	54	2B 34 R F 2 (u) (MAG)	FU2EE	72	3.9	SW	2280	8,865	54	2T 17 R F 2 (ELE)	F22ILL	33	1.8	SW	2,280	4,063	4,802	2.1	$ 766.25	$ 5,467.50	$540	7.1	1.0
69	1st Entry	3	2B 34 R F 2 (u) (MAG)	FU2EE	72	0.2	SW	2280	492	3	2T 17 R F 2 (ELE)	F22ILL	33	0.1	SW	2,280	226	267	0.1	$ 42.57	$ 303.75	$30	7.1	1.0
69	Stairway	1	2B 34 R F 2 (u) (MAG)	FU2EE	72	0.1	SW	3200	230	1	2T 17 R F 2 (ELE)	F22ILL	33	0.0	SW	3,200	106	125	0.0	$ 18.64	$ 101.25	$10	5.4	0.7
69	Stairway	1	2B 34 R F 2 (u) (MAG)	FU2EE	72	0.1	SW	3200	230	1	2T 17 R F 2 (ELE)	F22ILL	33	0.0	SW	3,200	106	125	0.0	$ 18.64	$ 101.25	$10	5.4	0.7
43	Stairwell	2	T 32 R F 3 (ELE)	F43ILL	89	0.2	SW	3200	570	2	T 32 R F 3 (ELE)	F43ILL	89	0.2	SW	3,200	570	-	0.0	$ -	$ -	$0		
43	Stairwell	2	T 32 R F 3 (ELE)	F43ILL	89	0.2	SW	3200	570	2	T 32 R F 3 (ELE)	F43ILL	89	0.2	SW	3,200	570	-	0.0	$ -	$ -	$0		
43	Stairwell	2	T 32 R F 3 (ELE)	F43ILL	89	0.2	SW	3200	570	2	T 32 R F 3 (ELE)	F43ILL	89	0.2	SW	3,200	570	-	0.0	$ -	$ -	$0		
36	219	30	S 34 P F 2 (MAG)	F42EE	72	2.2	SW	2400	5,184	30	C 28 P F 2	F42SSILL	48	1.4	SW	2,400	3,456	1,728	0.7	$ 272.68	$ 3,187.50	$300	11.7	1.7
43	Faculty Room	8	T 32 R F 3 (ELE)	F43ILL	89	0.7	SW	2400	1,709	8	T 32 R F 3 (ELE)	F43ILL	89	0.7	SW	2,400	1,709	-	0.0	$ -	$ -	$0		
80	Fan Room	5	I 100	I100/1	100	0.5	SW	1000	500	5	CF 26	CFQ26/1-L	27	0.1	SW	1,000	135	365	0.4	$ 74.87	$ 33.75	$0	0.5	0.1
36	2nd Floor Men's Bathroom	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	2000	144	1	C 28 P F 2	F42SSILL	48	0.0	SW	2,000	96	48	0.0	$ 7.90	$ 106.25	$10	13.5	2.0
24	2nd Floor Men's Bathroom	1	W 20 C F 2	F22SS	56	0.1	SW	2000	112	1	W 17 W C 2	F22ILL	33	0.0	SW	2,000	66	46	0.0	$ 7.57	$ 101.25	$10	13.4	2.0
36	216	18	S 34 P F 2 (MAG)	F42EE	72	1.3	SW	2400	3,110	18	C 28 P F 2	F42SSILL	48	0.9	SW	2,400	2,074	1,037	0.4	$ 163.61	$ 1,912.50	$180	11.7	1.7
24	Entrance	1	W 20 C F 2	F22SS	56	0.1	SW	2000	112	1	W 17 W C 2	F22ILL	33	0.0	SW	2,000	66	46	0.0	$ 7.57	$ 101.25	$10	13.4	2.0
36	Storage	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	2000	144	1	C 28 P F 2	F42SSILL	48	0.0	SW	2,000	96	48	0.0	$ 7.90	$ 106.25	$10	13.5	2.0
36	2nd Floor Women's Bathroom	2	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	2000	288	2	C 28 P F 2	F42SSILL	48	0.1	SW	2,000	192	96	0.0	$ 15.80	$ 212.50	$20	13.5	2.0
24	2nd Boy's Bathroom Entrance	1	W 20 C F 2	F22SS	56	0.1	SW	2000	112	1	W 17 W C 2	F22ILL	33	0.0	SW	2,000	66	46	0.0	$ 7.57	$ 101.25	$10	13.4	2.0
36	2nd Boy's Bathroom	4	S 34 P F 2 (MAG)	F42EE	72	0.3	SW	2000	576	4	C 28 P F 2	F42SSILL	48	0.2	SW	2,000	384	192	0.1	$ 31.60	$ 425.00	$40	13.5	2.0
36	214	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592	15	C 28 P F 2	F42SSILL	48	0.7	SW	2,400	1,728	864	0.4	$ 136.34	$ 1,593.75	$150	11.7	1.7
36	212	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592	15	C 28 P F 2	F42SSILL	48	0.7	SW	2,400	1,728	864	0.4	$ 136.34	$ 1,593.75	$150	11.7	1.7
36	2nd Floor Maintenance Closet	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	1000	72	1	C 28 P F 2	F42SSILL	48	0.0	SW	1,000	48	24	0.0	$ 4.92	$ 106.25	$10	21.6	4.0
24	Entrance	1	W 20 C F 2	F22SS	56	0.1	SW	2000	112	1	W 17 W C 2	F22ILL	33	0.0	SW	2,000	66	46	0.0	$ 7.57	$ 101.25	$10	13.4	2.0
36	2nd Floor Girl's Bathroom	4	S 34 P F 2 (MAG)	F42EE	72	0.3	SW	2000	576	4	C 28 P F 2	F42SSILL	48	0.2	SW	2,000	384	192	0.1	$ 31.60	$ 425.00	$40	13.5	2.0
36	210	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592	15	C 28 P F 2	F42SSILL	48	0.7	SW	2,400	1,728	864	0.4	$ 136.34	$ 1,593.75	$150	11.7	1.7
36	208	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592	15	C 28 P F 2	F42SSILL	48	0.7	SW	2,400	1,728	864	0.4	$ 136.34	$ 1,593.75	$150	11.7	1.7
36	206	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592	15	C 28 P F 2	F42SSILL	48	0.7	SW	2,400	1,728	864	0.4	$ 136.34	$ 1,593.75	$150	11.7	1.7
36	204A	2	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	2400	346	2	C 28 P F 2	F42SSILL	48	0.1	SW	2,400	230	115	0.0	$ 18.18	$ 212.50	$20	11.7	1.7
70	Periodical Room	4	2T 32 R F 2 (u) (ELE)	FU2ILL	59	0.2	SW	2400	566	4	2T 32 R F 2 (u) (ELE	FU2ILL	59	0.2	SW	2,400	566	-	0.0	$ -	$ -	$0		
36	204	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592	15	C 28 P F 2	F42SSILL	48	0.7	SW	2,400	1,728	864	0.4	$ 136.34	$ 1,593.75	$150	11.7	1.7
36	202	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592	15	C 28 P F 2	F42SSILL	48	0.7	SW	2,400	1,728	864	0.4	$ 136.34	$ 1,593.75	$150	11.7	1.7
42	Media Center	25	T 34 R F 3 (MAG)	F43EE	115	2.9	SW	2400	6,900	25	1B 28	F43SSILL	72	1.8	SW	2,400	4,320	2,580	1.1	$ 407.12	$ 2,968.75	$375	7.3	1.0
36	Media Center Office	4	S 34 P F 2 (MAG)	F42EE	72	0.3	SW	2400	691	4	C 28 P F 2	F42SSILL	48	0.2	SW	2,400	461	230	0.1	$ 36.36	$ 425.00	$40	11.7	1.7
36	Room	6	S 34 P F 2 (MAG)	F42EE	72	0.4	SW	2400	1,037	6	C 28 P F 2	F42SSILL	48	0.3	SW	2,400	691	346	0.1	$ 54.54	$ 637.50	$60	11.7	1.7
36	Media Center Storage	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	1000	72	1	C 28 P F 2	F42SSILL	48	0.0	SW	1,000	48	24	0.0	$ 4.92	$ 106.25	$10	21.6	4.0
36	PC Lab	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592	15	C 28 P F 2	F42SSILL	48	0.7	SW	2,400	1,728	864	0.4	$ 136.34	$ 1,593.75	$150	11.7	1.7
36	203	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592	15	C 28 P F 2	F42SSILL	48	0.7	SW	2,400	1,728	864	0.4	$ 136.34	$ 1,593.75	$150	11.7	1.7
70	2nd Floor Hallway	50	2T 32 R F 2 (u) (ELE)	FU2ILL	59	3.0	SW	2280	6,726	50	2T 32 R F 2 (u) (ELE	FU2ILL	59	3.0	SW	2,280	6,726	-	0.0	$ -	$ -	$0		
36	205A	6	S 34 P F 2 (MAG)	F42EE	72	0.4	SW	2400	1,037	6	C 28 P F 2	F42SSILL	48	0.3	SW	2,400	691	346	0.1	$ 54.54	$ 637.50	$60	11.7	1.7
36	205	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592	15	C 28 P F 2	F42SSILL	48	0.7	SW	2,400	1,728	864	0.4	$ 136.34	$ 1,593.75	$150	11.7	1.7
36	207	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592	15	C 28 P F 2	F42SSILL	48	0.7	SW	2,400	1,728	864	0.4	$ 136.34	$ 1,593.75	$150	11.7	1.7
36	209	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592	15	C 28 P F 2	F42SSILL	48	0.7	SW	2,400	1,728	864	0.4	$ 136.34	$ 1,593.75	$150	11.7	1.7
36	211	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592	15	C 28 P F 2	F42SSILL	48	0.7	SW	2,400	1,728	864	0.4	$ 136.34	$ 1,593.75	$150	11.7	1.7
24	Entrance	1	W 20 C F 2	F22SS	56	0.1	SW	2000	112	1	W 17 W C 2	F22ILL	33	0.0	SW	2,000	66	46	0.0	$ 7.57	$ 101.25	$10	13.4	2.0

Energy Audit of Lakeside Middle School

CHA Project No.24698 **Cost of Electricity:** **$0.124 $/kWh** **Consumption**

ECM-5 Lighting Replacements **$6.76 $/kW** **Demand**

		EXISTING CONDITIONS								RETROFIT CONDITIONS								COST & SAVINGS ANALYSIS						
	Area Description	**No. of Fixtures**	**Standard Fixture Code**	**Fixture Code**	**Watts per Fixture**	**kW/ Space**	**Exist Control**	**Annual Hours**	**Annual kWh**	**Number of Fixtures**	**Standard Fixture Code**	**Fixture Code**	**Watts per Fixture**	**kW/ Space**	**Retrofit Control**	**Annual Hours**	**Annual kWh**	**Annual kWh Saved**	**Annual kW Saved**	**Annual $ Saved**	**Retrofit Cost**	**NJ Smart Start Lighting Incentive**	**Simple Payback With Out Incentive**	**Simple Payback**
Field Code	Unique description of the location - Room number/Room name: Floor number (if applicable)	No. of fixtures before the retrofit	"Lighting Fixture Code" Example: 2T 40 R F(U) = 2'x2' Troff 40 w Recess. Floor 2 lamps U shape	Code from Table of Standard Fixture Wattages	Value from Table of Standard Fixture Wattages	(Watts/Fixt) * (Fixt No.)	Pre-inst. control device	Estimated daily hours for the usage group	(kW/space) * (Annual Hours)	No. of fixtures after the retrofit	"Lighting Fixture Code" Example 2T 40 R F(U) = 2'x2' Troff 40 w Recess. Floor 2 lamps U shape	Code from Table of Standard Fixture Wattages	Value from Table of Standard Fixture Wattages	(Watts/Fixt) * (Number of Fixtures)	Retrofit control device	Estimated annual hours for the usage group	(kW/space) * (Annual Hours)	(Original Annual kWh) - (Retrofit Annual kWh)	(Original Annual kW) - (Retrofit Annual kW)	(kWh Saved) * ($/kWh)	Cost for renovations to lighting system	Prescriptive Lighting Measures	Length of time for renovations cost to be recovered	Length of time for renovations cost to be recovered
36	2nd Floor Girl's Bathroom	4	S 34 P F 2 (MAG)	F42EE	72	0.3	SW	2000	576	4	C 28 P F 2	F42SSILL	48	0.2	SW	2,000	384	192	0.1	$ 31.60	$ 425.00	$40	13.5	2.0
36	Maintenance Room	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	1000	72	1	C 28 P F 2	F42SSILL	48	0.0	SW	1,000	48	24	0.0	$ 4.92	$ 106.25	$10	21.6	4.0
36	213	10	S 34 P F 2 (MAG)	F42EE	72	0.7	SW	2400	1,728	10	C 28 P F 2	F42SSILL	48	0.5	SW	2,400	1,152	576	0.2	$ 90.89	$ 1,062.50	$100	11.7	1.7
24	Entrance	1	W 20 C F 2	F22SS	56	0.1	SW	2000	112	1	W 17 W C 2	F22ILL	33	0.0	SW	2,000	66	46	0.0	$ 7.57	$ 101.25	$10	13.4	2.0
36	2nd Floor Boy's Bathroom	4	S 34 P F 2 (MAG)	F42EE	72	0.3	SW	2000	576	4	C 28 P F 2	F42SSILL	48	0.2	SW	2,000	384	192	0.1	$ 31.60	$ 425.00	$40	13.5	2.0
36	215	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592	15	C 28 P F 2	F42SSILL	48	0.7	SW	2,400	1,728	864	0.4	$ 136.34	$ 1,593.75	$150	11.7	1.7
36	217	18	S 34 P F 2 (MAG)	F42EE	72	1.3	SW	2400	3,110	18	C 28 P F 2	F42SSILL	48	0.9	SW	2,400	2,074	1,037	0.4	$ 163.61	$ 1,912.50	$180	11.7	1.7
82	Exterior	22	WP100 I 2	i100/2	200	4.4	BR	4368	19,219	22	13W LED WP	WPLED13/1	13	0.3	BR	4,368	1,249	17,970	4.1	$2,562.00	$ 7,974.45	$0	3.1	0.4
108	Exterior	7	100W Mercury Vapor	MV100/1	125	0.9	BR	4368	3,822	7	FXLED39	FXLED39/1	39	0.3	BR	4,368	1,192	2,630	0.6	$ 374.90	$ 4,238.33	$0	11.3	1.6
96	Exterior	11	175 MH POLE	MH175/1	215	2.4	BR	4368	10,330	11	52W LED Pole Light	ALED52/1	52	0.6	BR	4,368	2,498	7,832	1.8	$1,116.59	$ 8,409.11	$0	7.5	1.1
75	Exterior	4	HPS 150	HPS150/1	188	0.8	BR	4368	3,285	4	FXLED39	FXLED39/1	39	0.2	BR	4,368	681	2,603	0.6	$ 371.16	$ 2,421.90	$0	6.5	0.9
	Total	**925**				**77.9**			**197,999**	**925**			**5,851**	**48.6**			**116,098**	**81,901**	**29.2**	**$12,528**	**$111,486**	**$9,145**		
																	Demand Savings			**29.2**	**$2,373**			
																	kWh Savings			**81,901**	**$10,156**			
																	Total savings				**$12,528**		**8.9**	**8.2**

Energy Audit of Lakeside Middle School

CHA Project No.24698 **Cost of Electricity:** **$ 0.149 $/kWh Blended**

ECM-6 Install Occupancy Sensors **$ 0.124 $/kWh Consumption**

$ 6.760 $/kW Demand

		EXISTING CONDITIONS								RETROFIT CONDITIONS								COST & SAVINGS ANALYSIS						
	Area Description	**No. of Fixtures**	**Standard Fixture Code**	**Fixture Code**	**Watts per Fixture**	**kW/ Space**	**Exist Control**	**Annual Hours**	**Annual kWh**	**Number of Fixtures**	**Standard Fixture Code**	**Fixture Code**	**Watts per Fixture**	**kW/ Space**	**Retrofit Control**	**Annual Hours**	**Annual kWh**	**Annual kWh Saved**	**Annual kW Saved**	**Annual $ Saved**	**Retrofit Cost**	**NJ Smart Start Lighting Incentive**	**Simple Payback With Out Incentive**	**Simple Payback**
Field Code	Unique description of the location - Room number/Room name: Floor number (if applicable)	No. of fixtures before the retrofit	"Lighting Fixture Code" Example 2T 40 R F(U) = 2'x2' Troff 40 w Recess. Floor 2 lamps U shape	Code from Table of Standard Fixture Wattages	Value from Table of Standard Fixture Wattages	(Watts/Fixt) * (Fixt No.)	Pre-inst. control device	Estimated 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
80	Boiler Room	1	I 100	I100/1	100	0.1	SW	1000	100.0	1	I 100	I100/1	100	0.1	OSR	250	25.0	75.0	0.0	$9.30	$150.00	$35.00	16.1	12.4
102	Gym	14	High Bay MH 400	MH400/1	458	6.4	BR	2400	15,388.8	14	High Bay MH 400	MH400/1	458	6.4	OSR	1680	10,772.2	4,616.6	0.0	$572.46	$2,100.00	$490.00	3.7	2.8
36	Girl's Locker Room	6	S 34 P F 2 (MAG)	F42EE	72	0.4	SW	2800	1,209.6	6	S 34 P F 2 (MAG)	F42EE	72	0.4	OSR	2000	864.0	345.6	0.0	$42.85	$150.00	$35.00	3.5	2.7
91	Shower	6	I 75	I75/1	75	0.5	SW	2800	1,260.0	6	I 75	I75/1	75	0.5	OSR	2000	900.0	360.0	0.0	$44.64	$150.00	$35.00	3.4	2.6
36	Entrance	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	2400	172.8	1	S 34 P F 2 (MAG)	F42EE	72	0.1	OSR	1500	108.0	64.8	0.0	$8.04	$150.00	$35.00	18.7	14.3
36	Entrance	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	2400	172.8	1	S 34 P F 2 (MAG)	F42EE	72	0.1	OSR	1500	108.0	64.8	0.0	$8.04	$150.00	$35.00	18.7	14.3
24	Bathroom	1	W 20 C F 2	F22SS	56	0.1	SW	2000	112.0	1	W 20 C F 2	F22SS	56	0.1	N/A	2000	112.0	0.0	0.0	$0.00	$0.00	$0.00		
36	Gym Storage	2	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	1000	144.0	2	S 34 P F 2 (MAG)	F42EE	72	0.1	OSR	250	36.0	108.0	0.0	$13.39	$150.00	$35.00	11.2	8.6
36	Gym Storage	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	1000	72.0	1	S 34 P F 2 (MAG)	F42EE	72	0.1	OSR	250	18.0	54.0	0.0	$6.70	$150.00	$35.00	22.4	17.2
36	Entrance	2	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	2400	345.6	2	S 34 P F 2 (MAG)	F42EE	72	0.1	OSR	1500	216.0	129.6	0.0	$16.07	$150.00	$35.00	9.3	7.2
36	Boy's Gym Office	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	2400	172.8	1	S 34 P F 2 (MAG)	F42EE	72	0.1	OSR	1500	108.0	64.8	0.0	$8.04	$150.00	$35.00	18.7	14.3
24	Bathroom	2	W 20 C F 2	F22SS	56	0.1	SW	2000	224.0	2	W 20 C F 2	F22SS	56	0.1	N/A	2000	224.0	0.0	0.0	$0.00	$0.00	$0.00		
36	Boy's Locker Room	11	S 34 P F 2 (MAG)	F42EE	72	0.8	SW	2800	2,217.6	11	S 34 P F 2 (MAG)	F42EE	72	0.8	OSR	2000	1,584.0	633.6	0.0	$78.57	$150.00	$35.00	1.9	1.5
36	Kitchen	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	1600	1,728.0	15	S 34 P F 2 (MAG)	F42EE	72	1.1	OSR	1200	1,296.0	432.0	0.0	$53.57	$450.00	$105.00	8.4	6.4
36	Kitchen Storage	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	1000	72.0	1	S 34 P F 2 (MAG)	F42EE	72	0.1	OSR	250	18.0	54.0	0.0	$6.70	$150.00	$35.00	22.4	17.2
24	Kitchen Bathroom	1	W 20 C F 2	F22SS	56	0.1	SW	2000	112.0	1	W 20 C F 2	F22SS	56	0.1	N/A	2000	112.0	0.0	0.0	$0.00	$0.00	$0.00		
36	Storage Room	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	1000	72.0	1	S 34 P F 2 (MAG)	F42EE	72	0.1	OSR	250	18.0	54.0	0.0	$6.70	$150.00	$35.00	22.4	17.2
24	114 (Art)	30	W 20 C F 2	F22SS	56	1.7	SW	2400	4,032.0	30	W 20 C F 2	F22SS	56	1.7	OSR	1680	2,822.4	1,209.6	0.0	$149.99	$450.00	$105.00	3.0	2.3
36	Art Storage	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	1000	72.0	1	S 34 P F 2 (MAG)	F42EE	72	0.1	OSR	250	18.0	54.0	0.0	$6.70	$150.00	$35.00	22.4	17.2
36	Music	29	S 34 P F 2 (MAG)	F42EE	72	2.1	SW	2400	5,011.2	29	S 34 P F 2 (MAG)	F42EE	72	2.1	OSR	1680	3,507.8	1,503.4	0.0	$186.42	$300.00	$70.00	1.6	1.2
36	Music Storage	4	S 34 P F 2 (MAG)	F42EE	72	0.3	SW	1000	288.0	4	S 34 P F 2 (MAG)	F42EE	72	0.3	OSR	250	72.0	216.0	0.0	$26.78	$150.00	$35.00	5.6	4.3
36	Music Office	2	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	2400	345.6	2	S 34 P F 2 (MAG)	F42EE	72	0.1	OSR	1500	216.0	129.6	0.0	$16.07	$150.00	$35.00	9.3	7.2
36	Music Office 2	2	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	2400	345.6	2	S 34 P F 2 (MAG)	F42EE	72	0.1	OSR	1500	216.0	129.6	0.0	$16.07	$150.00	$35.00	9.3	7.2
36	Music Storage 2	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	1000	72.0	1	S 34 P F 2 (MAG)	F42EE	72	0.1	OSR	250	18.0	54.0	0.0	$6.70	$150.00	$35.00	22.4	17.2
43	Stairway Near Music	2	T 32 R F 3 (ELE)	F43ILL	89	0.2	SW	3200	569.6	2	T 32 R F 3 (ELE)	F43ILL	89	0.2	N/A	3200	569.6	0.0	0.0	$0.00	$0.00	$0.00		
24	Stairway Near Music	1	W 20 C F 2	F22SS	56	0.1	SW	3200	179.2	1	W 20 C F 2	F22SS	56	0.1	N/A	3200	179.2	0.0	0.0	$0.00	$0.00	$0.00		
69	107	21	2B 34 R F 2 (u) (MAG)	FU2EE	72	1.5	SW	2400	3,628.8	21	2B 34 R F 2 (u) (MAG)	FU2EE	72	1.5	OSR	1680	2,540.2	1,088.6	0.0	$134.99	$450.00	$105.00	3.3	2.6
69	107 Office	1	2B 34 R F 2 (u) (MAG)	FU2EE	72	0.1	SW	2400	172.8	1	2B 34 R F 2 (u) (MAG)	FU2EE	72	0.1	OSR	1500	108.0	64.8	0.0	$8.04	$150.00	$35.00	18.7	14.3
69	107 Storage	2	2B 34 R F 2 (u) (MAG)	FU2EE	72	0.1	SW	1000	144.0	2	2B 34 R F 2 (u) (MAG)	FU2EE	72	0.1	OSR	250	36.0	108.0	0.0	$13.39	$150.00	$35.00	11.2	8.6
36	105	24	S 34 P F 2 (MAG)	F42EE	72	1.7	SW	2400	4,147.2	24	S 34 P F 2 (MAG)	F42EE	72	1.7	OSR	1680	2,903.0	1,244.2	0.0	$154.28	$450.00	$105.00	2.9	2.2
36	103	24	S 34 P F 2 (MAG)	F42EE	72	1.7	SW	2400	4,147.2	24	S 34 P F 2 (MAG)	F42EE	72	1.7	OSR	1680	2,903.0	1,244.2	0.0	$154.28	$450.00	$105.00	2.9	2.2
36	103 Storage	8	S 34 P F 2 (MAG)	F42EE	72	0.6	SW	1000	576.0	8	S 34 P F 2 (MAG)	F42EE	72	0.6	OSR	250	144.0	432.0	0.0	$53.57	$150.00	$35.00	2.8	2.1
36	101	24	S 34 P F 2 (MAG)	F42EE	72	1.7	SW	2400	4,147.2	24	S 34 P F 2 (MAG)	F42EE	72	1.7	OSR	1680	2,903.0	1,244.2	0.0	$154.28	$450.00	$105.00	2.9	2.2
36	Server Room	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	1000	72.0	1	S 34 P F 2 (MAG)	F42EE	72	0.1	OSR	250	18.0	54.0	0.0	$6.70	$150.00	$35.00	22.4	17.2
24	Bathroom	1	W 20 C F 2	F22SS	56	0.1	SW	2000	112.0	1	W 20 C F 2	F22SS	56	0.1	N/A	2000	112.0	0.0	0.0	$0.00	$0.00	$0.00		
36	Bathroom	3	S 34 P F 2 (MAG)	F42EE	72	0.2	SW	2000	432.0	3	S 34 P F 2 (MAG)	F42EE	72	0.2	N/A	2000	432.0	0.0	0.0	$0.00	$0.00	$0.00		
36	Maintenance	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	1000	72.0	1	S 34 P F 2 (MAG)	F42EE	72	0.1	OSR	250	18.0	54.0	0.0	$6.70	$150.00	$35.00	22.4	17.2
24	Bathroom	1	W 20 C F 2	F22SS	56	0.1	SW	2000	112.0	1	W 20 C F 2	F22SS	56	0.1	N/A	2000	112.0	0.0	0.0	$0.00	$0.00	$0.00		
36	Bathroom	3	S 34 P F 2 (MAG)	F42EE	72	0.2	SW	2000	432.0	3	S 34 P F 2 (MAG)	F42EE	72	0.2	N/A	2000	432.0	0.0	0.0	$0.00	$0.00	$0.00		
48	Nurse	5	T 32 R F 4 (ELE)	F44ILL	112	0.6	SW	2400	1,344.0	5	T 32 R F 4 (ELE)	F44ILL	112	0.6	OSR	1500	840.0	504.0	0.0	$62.50	$300.00	$70.00	4.8	3.7
24	Nurse Bathroom	1	W 20 C F 2	F22SS	56	0.1	SW	2400	134.4	1	W 20 C F 2	F22SS	56	0.1	OSR	1500	84.0	50.4	0.0	$6.25	$150.00	$35.00	24.0	18.4
38	Entryway	1	F42ILL	F42ILL	59	0.1	SW	2280	134.5	1	F42ILL	F42ILL	59	0.1	N/A	2280	134.5	0.0	0.0	$0.00	$0.00	$0.00		
43	Principal's Office	6	T 32 R F 3 (ELE)	F43ILL	89	0.5	SW	2400	1,281.6	6	T 32 R F 3 (ELE)	F43ILL	89	0.5	OSR	1500	801.0	480.6	0.0	$59.59	$150.00	$35.00	2.5	1.9
24	Principal's Bathroom	1	W 20 C F 2	F22SS	56	0.1	SW	2000	112.0	1	W 20 C F 2	F22SS	56	0.1	N/A	2000	112.0	0.0	0.0	$0.00	$0.00	$0.00		
43	Main Office	10	T 32 R F 3 (ELE)	F43ILL	89	0.9	SW	2400	2,136.0	10	T 32 R F 3 (ELE)	F43ILL	89	0.9	OSR	1500	1,335.0	801.0	0.0	$99.32	$300.00	$70.00	3.0	2.3
24	Bathroom	1	W 20 C F 2	F22SS	56	0.1	SW	2000	112.0	1	W 20 C F 2	F22SS	56	0.1	N/A	2000	112.0	0.0	0.0	$0.00	$0.00	$0.00		
36	Main Office Closet	2	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	1000	144.0	2	S 34 P F 2 (MAG)	F42EE	72	0.1	OSR	250	36.0	108.0	0.0	$13.39	$150.00	$35.00	11.2	8.6
43	Assistant Principal's Office	4	T 32 R F 3 (ELE)	F43ILL	89	0.4	SW	2400	854.4	4	T 32 R F 3 (ELE)	F43ILL	89	0.4	OSR	1500	534.0	320.4	0.0	$39.73	$150.00	$35.00	3.8	2.9
43	Office	1	T 32 R F 3 (ELE)	F43ILL	89	0.1	SW	2400	213.6	1	T 32 R F 3 (ELE)	F43ILL	89	0.1	OSR	1500	133.5	80.1	0.0	$9.93	$150.00	$35.00	15.1	11.6
43	Office	1	T 32 R F 3 (ELE)	F43ILL	89	0.1	SW	2400	213.6	1	T 32 R F 3 (ELE)	F43ILL	89	0.1	OSR	1500	133.5	80.1	0.0	$9.93	$150.00	$35.00	15.1	11.6

Energy Audit of Lakeside Middle School

CHA Project No.24698 | **Cost of Electricity: $ 0.149 $/kWh Blended**

ECM-6 Install Occupancy Sensors | **$ 0.124 $/kWh Consumption**

$ 6.760 $/kW Demand

	EXISTING CONDITIONS									RETROFIT CONDITIONS								COST & SAVINGS ANALYSIS						
	Area Description	**No. of Fixtures**	**Standard Fixture Code**	**Fixture Code**	**Watts per Fixture**	**kW/ Space**	**Exist Control**	**Annual Hours**	**Annual kWh**	**Number of Fixtures**	**Standard Fixture Code**	**Fixture Code**	**Watts per Fixture**	**kW/ Space**	**Retrofit Control**	**Annual Hours**	**Annual kWh**	**Annual kWh Saved**	**Annual kW Saved**	**Annual $ Saved**	**Retrofit Cost**	**NJ Smart Start Lighting Incentive**	**Simple Payback With Out Incentive**	**Simple Payback**
Field Code	Unique description of the location - Room number/Room name: Floor number (if applicable)	No. of fixtures before the retrofit	"Lighting Fixture Code" Example 2T 40 R F(U) = 2'x2' Troff 40 w Recess. Floor 2 lamps U shape	Code from Table of Standard Fixture Wattages	Value from Table of Standard Fixture Wattages	(Watts/Fixt) * (Fixt No.)	Pre-inst. control device	Estimated 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
36	102	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592.0	15	S 34 P F 2 (MAG)	F42EE	72	1.1	OSR	1680	1,814.4	777.6	0.0	$96.42	$300.00	$70.00	3.1	2.4
36	104	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592.0	15	S 34 P F 2 (MAG)	F42EE	72	1.1	OSR	1680	1,814.4	777.6	0.0	$96.42	$300.00	$70.00	3.1	2.4
36	106	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592.0	15	S 34 P F 2 (MAG)	F42EE	72	1.1	OSR	1680	1,814.4	777.6	0.0	$96.42	$300.00	$70.00	3.1	2.4
36	Bathroom	3	S 34 P F 2 (MAG)	F42EE	72	0.2	SW	2000	432.0	3	S 34 P F 2 (MAG)	F42EE	72	0.2	N/A	2000	432.0	0.0	0.0	$0.00	$0.00	$0.00		
24	Bathroom Entrance	1	W 20 C F 2	F22SS	56	0.1	SW	2000	112.0	1	W 20 C F 2	F22SS	56	0.1	N/A	2000	112.0	0.0	0.0	$0.00	$0.00	$0.00		
36	Bathroom	3	S 34 P F 2 (MAG)	F42EE	72	0.2	SW	2000	432.0	3	S 34 P F 2 (MAG)	F42EE	72	0.2	N/A	2000	432.0	0.0	0.0	$0.00	$0.00	$0.00		
24	Bathroom Entrance	1	W 20 C F 2	F22SS	56	0.1	SW	2000	112.0	1	W 20 C F 2	F22SS	56	0.1	N/A	2000	112.0	0.0	0.0	$0.00	$0.00	$0.00		
36	Maintenance Room	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	1000	72.0	1	S 34 P F 2 (MAG)	F42EE	72	0.1	OSR	250	18.0	54.0	0.0	$6.70	$150.00	$35.00	22.4	17.2
36	108	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592.0	15	S 34 P F 2 (MAG)	F42EE	72	1.1	OSR	1680	1,814.4	777.6	0.0	$96.42	$450.00	$105.00	4.7	3.6
36	110	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592.0	15	S 34 P F 2 (MAG)	F42EE	72	1.1	OSR	1680	1,814.4	777.6	0.0	$96.42	$450.00	$105.00	4.7	3.6
36	112	21	S 34 P F 2 (MAG)	F42EE	72	1.5	SW	2400	3,628.8	21	S 34 P F 2 (MAG)	F42EE	72	1.5	OSR	1680	2,540.2	1,088.6	0.0	$134.99	$450.00	$105.00	3.3	2.6
69	Hallway	54	2B 34 R F 2 (u) (MAG)	FU2EE	72	3.9	SW	2280	8,864.6	54	2B 34 R F 2 (u) (MAG)	FU2EE	72	3.9	N/A	2280	8,864.6	0.0	0.0	$0.00	$0.00	$0.00		
69	1st Entry	3	2B 34 R F 2 (u) (MAG)	FU2EE	72	0.2	SW	2280	492.5	3	2B 34 R F 2 (u) (MAG)	FU2EE	72	0.2	N/A	2280	492.5	0.0	0.0	$0.00	$0.00	$0.00		
69	Stairway	1	2B 34 R F 2 (u) (MAG)	FU2EE	72	0.1	SW	3200	230.4	1	2B 34 R F 2 (u) (MAG)	FU2EE	72	0.1	N/A	3200	230.4	0.0	0.0	$0.00	$0.00	$0.00		
69	Stairway	1	2B 34 R F 2 (u) (MAG)	FU2EE	72	0.1	SW	3200	230.4	1	2B 34 R F 2 (u) (MAG)	FU2EE	72	0.1	N/A	3200	230.4	0.0	0.0	$0.00	$0.00	$0.00		
43	Stairwell	2	T 32 R F 3 (ELE)	F43ILL	89	0.2	SW	3200	569.6	2	T 32 R F 3 (ELE)	F43ILL	89	0.2	N/A	3200	569.6	0.0	0.0	$0.00	$0.00	$0.00		
43	Stairwell	2	T 32 R F 3 (ELE)	F43ILL	89	0.2	SW	3200	569.6	2	T 32 R F 3 (ELE)	F43ILL	89	0.2	N/A	3200	569.6	0.0	0.0	$0.00	$0.00	$0.00		
43	Stairwell	2	T 32 R F 3 (ELE)	F43ILL	89	0.2	SW	3200	569.6	2	T 32 R F 3 (ELE)	F43ILL	89	0.2	N/A	3200	569.6	0.0	0.0	$0.00	$0.00	$0.00		
36	219	30	S 34 P F 2 (MAG)	F42EE	72	2.2	SW	2400	5,184.0	30	S 34 P F 2 (MAG)	F42EE	72	2.2	OSR	1680	3,628.8	1,555.2	0.0	$192.84	$600.00	$140.00	3.1	2.4
43	Faculty Room	8	T 32 R F 3 (ELE)	F43ILL	89	0.7	SW	2400	1,708.8	8	T 32 R F 3 (ELE)	F43ILL	89	0.7	OSR	1500	1,068.0	640.8	0.0	$79.46	$450.00	$105.00	5.7	4.3
80	Fan Room	5	I 100	I100/1	100	0.5	SW	1000	500.0	5	I 100	I100/1	100	0.5	OSR	250	125.0	375.0	0.0	$46.50	$150.00	$35.00	3.2	2.5
36	Bathroom	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	2000	144.0	1	S 34 P F 2 (MAG)	F42EE	72	0.1	N/A	2000	144.0	0.0	0.0	$0.00	$0.00	$0.00		
24	Bathroom	1	W 20 C F 2	F22SS	56	0.1	SW	2000	112.0	1	W 20 C F 2	F22SS	56	0.1	N/A	2000	112.0	0.0	0.0	$0.00	$0.00	$0.00		
36	216	18	S 34 P F 2 (MAG)	F42EE	72	1.3	SW	2400	3,110.4	18	S 34 P F 2 (MAG)	F42EE	72	1.3	OSR	1680	2,177.3	933.1	0.0	$115.71	$300.00	$70.00	2.6	2.0
24	Bathroom Entrance	1	W 20 C F 2	F22SS	56	0.1	SW	2000	112.0	1	W 20 C F 2	F22SS	56	0.1	N/A	2000	112.0	0.0	0.0	$0.00	$0.00	$0.00		
36	Bathroom Storage	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	2000	144.0	1	S 34 P F 2 (MAG)	F42EE	72	0.1	N/A	2000	144.0	0.0	0.0	$0.00	$0.00	$0.00		
36	Bathroom	2	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	2000	288.0	2	S 34 P F 2 (MAG)	F42EE	72	0.1	N/A	2000	288.0	0.0	0.0	$0.00	$0.00	$0.00		
24	Entrance	1	W 20 C F 2	F22SS	56	0.1	SW	2000	112.0	1	W 20 C F 2	F22SS	56	0.1	N/A	2000	112.0	0.0	0.0	$0.00	$0.00	$0.00		
36	2nd Boy's Bathroom	4	S 34 P F 2 (MAG)	F42EE	72	0.3	SW	2000	576.0	4	S 34 P F 2 (MAG)	F42EE	72	0.3	N/A	2000	576.0	0.0	0.0	$0.00	$0.00	$0.00		
36	214	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592.0	15	S 34 P F 2 (MAG)	F42EE	72	1.1	OSR	1680	1,814.4	777.6	0.0	$96.42	$300.00	$70.00	3.1	2.4
36	212	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592.0	15	S 34 P F 2 (MAG)	F42EE	72	1.1	OSR	1680	1,814.4	777.6	0.0	$96.42	$300.00	$70.00	3.1	2.4
36	Maintenance Closet	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	1000	72.0	1	S 34 P F 2 (MAG)	F42EE	72	0.1	OSR	250	18.0	54.0	0.0	$6.70	$150.00	$35.00	22.4	17.2
24	Bathroom Entrance	1	W 20 C F 2	F22SS	56	0.1	SW	2000	112.0	1	W 20 C F 2	F22SS	56	0.1	N/A	2000	112.0	0.0	0.0	$0.00	$0.00	$0.00		
36	Bathroom	4	S 34 P F 2 (MAG)	F42EE	72	0.3	SW	2000	576.0	4	S 34 P F 2 (MAG)	F42EE	72	0.3	N/A	2000	576.0	0.0	0.0	$0.00	$0.00	$0.00		
36	210	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592.0	15	S 34 P F 2 (MAG)	F42EE	72	1.1	OSR	1680	1,814.4	777.6	0.0	$96.42	$300.00	$70.00	3.1	2.4
36	208	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592.0	15	S 34 P F 2 (MAG)	F42EE	72	1.1	OSR	1680	1,814.4	777.6	0.0	$96.42	$300.00	$70.00	3.1	2.4
36	206	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592.0	15	S 34 P F 2 (MAG)	F42EE	72	1.1	OSR	1680	1,814.4	777.6	0.0	$96.42	$300.00	$70.00	3.1	2.4
36	204A	2	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	2400	345.6	2	S 34 P F 2 (MAG)	F42EE	72	0.1	OSR	1680	241.9	103.7	0.0	$12.86	$150.00	$35.00	11.7	8.9
70	Periodical Room	4	2T 32 R F 2 (u) (ELE)	FU2ILL	59	0.2	SW	2400	566.4	4	2T 32 R F 2 (u) (ELE)	FU2ILL	59	0.2	OSR	1680	396.5	169.9	0.0	$21.07	$150.00	$35.00	7.1	5.5
36	204	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592.0	15	S 34 P F 2 (MAG)	F42EE	72	1.1	OSR	1680	1,814.4	777.6	0.0	$96.42	$300.00	$70.00	3.1	2.4
36	202	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592.0	15	S 34 P F 2 (MAG)	F42EE	72	1.1	OSR	1680	1,814.4	777.6	0.0	$96.42	$300.00	$70.00	3.1	2.4
42	Media Center	25	T 34 R F 3 (MAG)	F43EE	115	2.9	SW	2400	6,900.0	25	T 34 R F 3 (MAG)	F43EE	115	2.9	OSR	1680	4,830.0	2,070.0	0.0	$256.68	$0.00	$0.00	0.0	0.0
36	Media Center Office	4	S 34 P F 2 (MAG)	F42EE	72	0.3	SW	2400	691.2	4	S 34 P F 2 (MAG)	F42EE	72	0.3	OSR	1500	432.0	259.2	0.0	$32.14	$150.00	$35.00	4.7	3.6
36	Conference Room	6	S 34 P F 2 (MAG)	F42EE	72	0.4	SW	2400	1,036.8	6	S 34 P F 2 (MAG)	F42EE	72	0.4	OSR	1500	648.0	388.8	0.0	$48.21	$150.00	$35.00	3.1	2.4
36	Storage	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	1000	72.0	1	S 34 P F 2 (MAG)	F42EE	72	0.1	OSR	250	18.0	54.0	0.0	$6.70	$150.00	$35.00	22.4	17.2
36	PC Lab	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592.0	15	S 34 P F 2 (MAG)	F42EE	72	1.1	OSR	1680	1,814.4	777.6	0.0	$96.42	$300.00	$70.00	3.1	2.4
36	203	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592.0	15	S 34 P F 2 (MAG)	F42EE	72	1.1	OSR	1680	1,814.4	777.6	0.0	$96.42	$300.00	$70.00	3.1	2.4
70	2nd Floor Hallway	50	2T 32 R F 2 (u) (ELE)	FU2ILL	59	3.0	SW	2280	6,726.0	50	2T 32 R F 2 (u) (ELE)	FU2ILL	59	3.0	N/A	2280	6,726.0	0.0	0.0	$0.00	$0.00	$0.00		
36	205A	6	S 34 P F 2 (MAG)	F42EE	72	0.4	SW	2400	1,036.8	6	S 34 P F 2 (MAG)	F42EE	72	0.4	OSR	1680	725.8	311.0	0.0	$38.57	$300.00	$70.00	7.8	6.0
36	205	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592.0	15	S 34 P F 2 (MAG)	F42EE	72	1.1	OSR	1680	1,814.4	777.6	0.0	$96.42	$300.00	$70.00	3.1	2.4
36	207	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592.0	15	S 34 P F 2 (MAG)	F42EE	72	1.1	OSR	1680	1,814.4	777.6	0.0	$96.42	$300.00	$70.00	3.1	2.4
36	209	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592.0	15	S 34 P F 2 (MAG)	F42EE	72	1.1	OSR	1680	1,814.4	777.6	0.0	$96.42	$300.00	$70.00	3.1	2.4
36	211	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592.0	15	S 34 P F 2 (MAG)	F42EE	72	1.1	OSR	1680	1,814.4	777.6	0.0	$96.42	$300.00	$70.00	3.1	2.4
24	Bathroom Entrance	1	W 20 C F 2	F22SS	56	0.1	SW	2000	112.0	1	W 20 C F 2	F22SS	56	0.1	N/A	2000	112.0	0.0	0.0	$0.00	$0.00	$0.00		

Energy Audit of Lakeside Middle School

CHA Project No.24698 **Cost of Electricity: $ 0.149 $/kWh Blended**

ECM-6 Install Occupancy Sensors **$ 0.124 $/kWh Consumption**

$ 6.760 $/kW Demand

		EXISTING CONDITIONS								RETROFIT CONDITIONS								COST & SAVINGS ANALYSIS						
	Area Description	**No. of Fixtures**	**Standard Fixture Code**	**Fixture Code**	**Watts per Fixture**	**kW/ Space**	**Exist Control**	**Annual Hours**	**Annual kWh**	**Number of Fixtures**	**Standard Fixture Code**	**Fixture Code**	**Watts per Fixture**	**kW/ Space**	**Retrofit Control**	**Annual Hours**	**Annual kWh**	**Annual kWh Saved**	**Annual kW Saved**	**Annual $ Saved**	**Retrofit Cost**	**NJ Smart Start Lighting Incentive**	**Simple Payback With Out Incentive**	**Simple Payback**
Field Code	Unique description of the location - Room number/Room name: Floor number (if applicable)	No. of fixtures before the retrofit	"Lighting Fixture Code" Example 2T 40 R F(U) = 2'x2' Troff 40 w Recess. Floor 2 lamps U shape	Code from Table of Standard Fixture Wattages	Value from Table of Standard Fixture Wattages	(Watts/Fixt) * (Fixt No.)	Pre-inst. control device	Estimated 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
36	Bathroom	4	S 34 P F 2 (MAG)	F42EE	72	0.3	SW	2000	576.0	4	S 34 P F 2 (MAG)	F42EE	72	0.3	N/A	2000	576.0	0.0	0.0	$0.00	$0.00	$0.00		
36	Maintenance Room	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	1000	72.0	1	S 34 P F 2 (MAG)	F42EE	72	0.1	OSR	250	18.0	54.0	0.0	$6.70	$150.00	$35.00	22.4	17.2
36	213	10	S 34 P F 2 (MAG)	F42EE	72	0.7	SW	2400	1,728.0	10	S 34 P F 2 (MAG)	F42EE	72	0.7	OSR	1680	1,209.6	518.4	0.0	$64.28	$300.00	$70.00	4.7	3.6
24	Bathroom Entrance	1	W 20 C F 2	F22SS	56	0.1	SW	2000	112.0	1	W 20 C F 2	F22SS	56	0.1	N/A	2000	112.0	0.0	0.0	$0.00	$0.00	$0.00		
36	Bathroom	4	S 34 P F 2 (MAG)	F42EE	72	0.3	SW	2000	576.0	4	S 34 P F 2 (MAG)	F42EE	72	0.3	N/A	2000	576.0	0.0	0.0	$0.00	$0.00	$0.00		
36	215	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592.0	15	S 34 P F 2 (MAG)	F42EE	72	1.1	OSR	1680	1,814.4	777.6	0.0	$96.42	$300.00	$70.00	3.1	2.4
36	217	18	S 34 P F 2 (MAG)	F42EE	72	1.3	SW	2400	3,110.4	18	S 34 P F 2 (MAG)	F42EE	72	1.3	OSR	1680	2,177.3	933.1	0.0	$115.71	$300.00	$70.00	2.6	2.0
82	Exterior	22	WP100 I 2	i100/2	200	4.4	BR	4368	19,219.2	22	WP100 I 2	i100/2	200	4.4	N/A	4368	19,219.2	0.0	0.0	$0.00	$0.00	$0.00		
108	Exterior	7	100W Mercury Vapor	MV100/1	125	0.9	BR	4368	3,822.0	7	100W Mercury Vapor	MV100/1	125	0.9	N/A	4368	3,822.0	0.0	0.0	$0.00	$0.00	$0.00		
96	Exterior	11	175 MH POLE	MH175/1	215	2.4	BR	4368	10,330.3	11	175 MH POLE	MH175/1	215	2.4	N/A	4368	10,330.3	0.0	0.0	$0.00	$0.00	$0.00		
75	Exterior	4	HPS 150	HPS150/1	188	0.8	BR	4368	3,284.7	4	HPS 150	HPS150/1	188	0.8	N/A	4368	3,284.7	0.0	0.0	$0.00	$0.00	$0.00		
	Total	**921**				**77.1**			**194,714**	**921**				**77**			**152,065**	**42,649**	**0**	**5,288**	**$19,950**	**4,655**		
																	Demand Savings		**0.0**	**$0**				
																	kWh Savings		**42,649**	**$6,355**				
																	Total Savings			**$6,355**		**3.1**	**2.4**	

Energy Audit of Lakeside Middle School

CHA Project No.24698 **Cost of Electricity:** **$0.124 $/kWh**

ECM-7 Lighting Replacements with Occupancy Sensors **$6.76 $/kW**

		EXISTING CONDITIONS								RETROFIT CONDITIONS								COST & SAVINGS ANALYSIS						
	Area Description	**No. of Fixtures**	**Standard Fixture Code**	**Fixture Code**	**Watts per Fixture**	**kW/ Space**	**Exist Control**	**Annual Hours**	**Annual kWh**	**Number of Fixtures**	**Standard Fixture Code**	**Fixture Code**	**Watts per Fixture**	**kW/ Space**	**Retrofit Control**	**Annual Hours**	**Annual kWh**	**Annual kWh Saved**	**Annual kW Saved**	**Annual $ Saved**	**Retrofit Cost**	**NJ Smart Start Lighting Incentive**	**Simple Payback With Out Incentive**	**Simple Payback**
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
80	Boiler Room	1	I 100	I100/1	100	0.1	SW	1000	100	1	CF 26	CFQ26/1-L	27	0.0	OSR	250	7	93	0.1	$ 17.48	$ 156.75	$ 35	9.0	7.0
102	Gym	14	High Bay MH 400	MH400/1	458	6.4	BR	2400	15,389	14	C 54 C F 6	F46GHL	351	4.9	OSR	1,680	8,256	7,133	1.5	$ 1,006.04	$ 9,849.00	$ 1,890	9.8	7.9
36	Girl's Locker Room	6	S 34 P F 2 (MAG)	F42EE	72	0.4	SW	2800	1,210	6	C 28 P F 2	F42SSILL	48	0.3	OSR	2,000	576	634	0.1	$ 90.25	$ 787.50	$ 95	8.7	7.7
91	Girl's Locker Room-Shower	6	I 75	I75/1	75	0.5	SW	2800	1,260	6	CF 26	CFQ26/1-L	27	0.2	OSR	2,000	324	936	0.3	$ 139.43	$ 182.40	$ 35	1.3	1.1
36	Girl's Gym Office Entrance	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	2400	173	1	C 28 P F 2	F42SSILL	48	0.0	OSR	1,500	72	101	0.0	$ 14.45	$ 256.25	$ 45	17.7	14.6
36	Girl's Gym Office Entrance	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	2400	173	1	C 28 P F 2	F42SSILL	48	0.0	OSR	1,500	72	101	0.0	$ 14.45	$ 256.25	$ 45	17.7	14.6
24	Girl's Gym Office Bathroom	1	W 20 C F 2	F22SS	56	0.1	SW	2000	112	1	W 17 W C 2	F22ILL	33	0.0	N/A	2,000	66	46	0.0	$ 7.57	$ 101.25	$ 10	13.4	12.1
36	Gym Storage	2	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	1000	144	2	C 28 P F 2	F42SSILL	48	0.1	OSR	250	24	120	0.0	$ 18.77	$ 362.50	$ 55	19.3	16.4
36	Gym Storage	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	1000	72	1	C 28 P F 2	F42SSILL	48	0.0	OSR	250	12	60	0.0	$ 9.39	$ 256.25	$ 45	27.3	22.5
36	Boy's Gym Office Entrance	2	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	2400	346	2	C 28 P F 2	F42SSILL	48	0.1	OSR	1,500	144	202	0.0	$ 28.89	$ 362.50	$ 55	12.5	10.6
36	Boy's Gym Office	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	2400	173	1	C 28 P F 2	F42SSILL	48	0.0	OSR	1,500	72	101	0.0	$ 14.45	$ 256.25	$ 45	17.7	14.6
24	Boy's Gym Office Bathroom	2	W 20 C F 2	F22SS	56	0.1	SW	2000	224	2	W 17 W C 2	F22ILL	33	0.1	N/A	2,000	132	92	0.0	$ 15.14	$ 202.50	$ 20	13.4	12.1
36	Boy's Locker Room	11	S 34 P F 2 (MAG)	F42EE	72	0.8	SW	2800	2,218	11	C 28 P F 2	F42SSILL	48	0.5	OSR	2,000	1,056	1,162	0.3	$ 165.45	$ 1,318.75	$ 145	8.0	7.1
36	Kitchen	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	1600	1,728	15	C 28 P F 2	F42SSILL	48	0.7	OSR	1,200	864	864	0.4	$ 136.34	$ 2,043.75	$ 255	15.0	13.1
36	Kitchen Storage	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	1000	72	1	C 28 P F 2	F42SSILL	48	0.0	OSR	250	12	60	0.0	$ 9.39	$ 256.25	$ 45	27.3	22.5
24	Kitchen Bathroom	1	W 20 C F 2	F22SS	56	0.1	SW	2000	112	1	W 17 W C 2	F22ILL	33	0.0	N/A	2,000	66	46	0.0	$ 7.57	$ 101.25	$ 10	13.4	12.1
36	Storage Room	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	1000	72	1	C 28 P F 2	F42SSILL	48	0.0	OSR	250	12	60	0.0	$ 9.39	$ 256.25	$ 45	27.3	22.5
24	114 (Art)	30	W 20 C F 2	F22SS	56	1.7	SW	2400	4,032	30	W 17 W C 2	F22ILL	33	1.0	OSR	1,680	1,663	2,369	0.7	$ 349.70	$ 3,487.50	$ 405	10.0	8.8
36	Art Storage	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	1000	72	1	C 28 P F 2	F42SSILL	48	0.0	OSR	250	12	60	0.0	$ 9.39	$ 256.25	$ 45	27.3	22.5
36	Music	29	S 34 P F 2 (MAG)	F42EE	72	2.1	SW	2400	5,011	29	C 28 P F 2	F42SSILL	48	1.4	OSR	1,680	2,339	2,673	0.7	$ 387.87	$ 3,381.25	$ 360	8.7	7.8
36	Music Storage	4	S 34 P F 2 (MAG)	F42EE	72	0.3	SW	1000	288	4	C 28 P F 2	F42SSILL	48	0.2	OSR	250	48	240	0.1	$ 37.55	$ 575.00	$ 75	15.3	13.3
36	Music Office	2	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	2400	346	2	C 28 P F 2	F42SSILL	48	0.1	OSR	1,500	144	202	0.0	$ 28.89	$ 362.50	$ 55	12.5	10.6
36	Music Office 2	2	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	2400	346	2	C 28 P F 2	F42SSILL	48	0.1	OSR	1,500	144	202	0.0	$ 28.89	$ 362.50	$ 55	12.5	10.6
36	Music Storage 2	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	1000	72	1	C 28 P F 2	F42SSILL	48	0.0	OSR	250	12	60	0.0	$ 9.39	$ 256.25	$ 45	27.3	22.5
43	Stairway Near Music	2	T 32 R F 3 (ELE)	F43ILL	89	0.2	SW	3200	570	2	T 32 R F 3 (ELE)	F43ILL	89	0.2	N/A	3,200	570	-	0.0	$ -	$ -	$ -		
24	Stairway Near Music	1	W 20 C F 2	F22SS	56	0.1	SW	3200	179	1	W 17 W C 2	F22ILL	33	0.0	N/A	3,200	106	74	0.0	$ 10.99	$ 101.25	$ 10	9.2	8.3
69	107	21	2B 34 R F 2 (u) (MAG)	FU2EE	72	1.5	SW	2400	3,629	21	2T 17 R F 2 (ELE)	F22ILL	33	0.7	OSR	1,680	1,164	2,465	0.8	$ 372.04	$ 2,576.25	$ 315	6.9	6.1
69	107 Office	1	2B 34 R F 2 (u) (MAG)	FU2EE	72	0.1	SW	2400	173	1	2T 17 R F 2 (ELE)	F22ILL	33	0.0	OSR	1,500	50	123	0.0	$ 18.45	$ 251.25	$ 45	13.6	11.2
69	107 Storage	2	2B 34 R F 2 (u) (MAG)	FU2EE	72	0.1	SW	1000	144	2	2T 17 R F 2 (ELE)	F22ILL	33	0.1	OSR	250	17	128	0.1	$ 22.14	$ 352.50	$ 55	15.9	13.4
36	105	24	S 34 P F 2 (MAG)	F42EE	72	1.7	SW	2400	4,147	24	C 28 P F 2	F42SSILL	48	1.2	OSR	1,680	1,935	2,212	0.6	$ 320.99	$ 3,000.00	$ 345	9.3	8.3
36	103	24	S 34 P F 2 (MAG)	F42EE	72	1.7	SW	2400	4,147	24	C 28 P F 2	F42SSILL	48	1.2	OSR	1,680	1,935	2,212	0.6	$ 320.99	$ 3,000.00	$ 345	9.3	8.3
36	103 Storage	8	S 34 P F 2 (MAG)	F42EE	72	0.6	SW	1000	576	8	C 28 P F 2	F42SSILL	48	0.4	OSR	250	96	480	0.2	$ 75.10	$ 1,000.00	$ 115	13.3	11.8
36	101	24	S 34 P F 2 (MAG)	F42EE	72	1.7	SW	2400	4,147	24	C 28 P F 2	F42SSILL	48	1.2	OSR	1,680	1,935	2,212	0.6	$ 320.99	$ 3,000.00	$ 345	9.3	8.3
36	Server Room	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	1000	72	1	C 28 P F 2	F42SSILL	48	0.0	OSR	250	12	60	0.0	$ 9.39	$ 256.25	$ 45	27.3	22.5
24	1st Floor Boy's Bathroom	1	W 20 C F 2	F22SS	56	0.1	SW	2000	112	1	W 17 W C 2	F22ILL	33	0.0	N/A	2,000	66	46	0.0	$ 7.57	$ 101.25	$ 10	13.4	12.1
36	1st Floor Boy's Bathroom	3	S 34 P F 2 (MAG)	F42EE	72	0.2	SW	2000	432	3	C 28 P F 2	F42SSILL	48	0.1	N/A	2,000	288	144	0.1	$ 23.70	$ 318.75	$ 30	13.5	12.2
36	1st Floor Maintenance	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	1000	72	1	C 28 P F 2	F42SSILL	48	0.0	OSR	250	12	60	0.0	$ 9.39	$ 256.25	$ 45	27.3	22.5
24	1st Floor Girl's Bathroom	1	W 20 C F 2	F22SS	56	0.1	SW	2000	112	1	W 17 W C 2	F22ILL	33	0.0	N/A	2,000	66	46	0.0	$ 7.57	$ 101.25	$ 10	13.4	12.1
36	1st Floor Girl's Bathroom	3	S 34 P F 2 (MAG)	F42EE	72	0.2	SW	2000	432	3	C 28 P F 2	F42SSILL	48	0.1	N/A	2,000	288	144	0.1	$ 23.70	$ 318.75	$ 30	13.5	12.2
48	Nurse	5	T 32 R F 4 (ELE)	F44ILL	112	0.6	SW	2400	1,344	5	0	F44SSILL	96	0.5	OSR	1,500	720	624	0.1	$ 83.87	$ 831.25	$ 120	9.9	8.5
24	Nurse Bathroom	1	W 20 C F 2	F22SS	56	0.1	SW	2400	134	1	W 17 W C 2	F22ILL	33	0.0	OSR	1,500	50	85	0.0	$ 12.39	$ 251.25	$ 45	20.3	16.6
38	Entryway	1	F42ILL	F42ILL	59	0.1	SW	2280	135	1	F42ILL	F42ILL	59	0.1	N/A	2,280	135	-	0.0	$ -	$ -	$ -		
43	Principal's Office	6	T 32 R F 3 (ELE)	F43ILL	89	0.5	SW	2400	1,282	6	T 32 R F 3 (ELE)	F43ILL	89	0.5	OSR	1,500	801	481	0.0	$ 59.59	$ 150.00	$ 35	2.5	1.9
24	Principal's Bathroom	1	W 20 C F 2	F22SS	56	0.1	SW	2000	112	1	W 17 W C 2	F22ILL	33	0.0	N/A	2,000	66	46	0.0	$ 7.57	$ 101.25	$ 10	13.4	12.1
43	Main Office	10	T 32 R F 3 (ELE)	F43ILL	89	0.9	SW	2400	2,136	10	T 32 R F 3 (ELE)	F43ILL	89	0.9	OSR	1,500	1,335	801	0.0	$ 99.32	$ 300.00	$ 70	3.0	2.3
24	Main Office Bathroom	1	W 20 C F 2	F22SS	56	0.1	SW	2000	112	1	W 17 W C 2	F22ILL	33	0.0	N/A	2,000	66	46	0.0	$ 7.57	$ 101.25	$ 10	13.4	12.1
36	Main Office Closet	2	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	1000	144	2	C 28 P F 2	F42SSILL	48	0.1	OSR	250	24	120	0.0	$ 18.77	$ 362.50	$ 55	19.3	16.4
43	Assistant Principal's Office	4	T 32 R F 3 (ELE)	F43ILL	89	0.4	SW	2400	854	4	T 32 R F 3 (ELE)	F43ILL	89	0.4	OSR	1,500	534	320	0.0	$ 39.73	$ 150.00	$ 35	3.8	2.9
43	Office	1	T 32 R F 3 (ELE)	F43ILL	89	0.1	SW	2400	214	1	T 32 R F 3 (ELE)	F43ILL	89	0.1	OSR	1,500	134	80	0.0	$ 9.93	$ 150.00	$ 35	15.1	11.6
43	Office	1	T 32 R F 3 (ELE)	F43ILL	89	0.1	SW	2400	214	1	T 32 R F 3 (ELE)	F43ILL	89	0.1	OSR	1,500	134	80	0.0	$ 9.93	$ 150.00	$ 35	15.1	11.6
36	102	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592	15	C 28 P F 2	F42SSILL	48	0.7	OSR	1,680	1,210	1,382	0.4	$ 200.62	$ 1,893.75	$ 220	9.4	8.3
36	104	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592	15	C 28 P F 2	F42SSILL	48	0.7	OSR	1,680	1,210	1,382	0.4	$ 200.62	$ 1,893.75	$ 220	9.4	8.3
36	106	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592	15	C 28 P F 2	F42SSILL	48	0.7	OSR	1,680	1,210	1,382	0.4	$ 200.62	$ 1,893.75	$ 220	9.4	8.3
36	1st Floor Girl's Bathroom	3	S 34 P F 2 (MAG)	F42EE	72	0.2	SW	2000	432	3	C 28 P F 2	F42SSILL	48	0.1	N/A	2,000	288	144	0.1	$ 23.70	$ 318.75	$ 30	13.5	12.2
24	Entrance	1	W 20 C F 2	F22SS	56	0.1	SW	2000	112	1	W 17 W C 2	F22ILL	33	0.0	N/A	2,000	66	46	0.0	$ 7.57	$ 101.25	$ 10	13.4	12.1
36	1st Floor Boy's Bathroom	3	S 34 P F 2 (MAG)	F42EE	72	0.2	SW	2000	432	3	C 28 P F 2	F42SSILL	48	0.1	N/A	2,000	288	144	0.1	$ 23.70	$ 318.75	$ 30	13.5	12.2

Energy Audit of Lakeside Middle School

CHA Project No.24698 **Cost of Electricity:** **$0.124 $/kWh**

ECM-7 Lighting Replacements with Occupancy Sensors **$6.76 $/kW**

		EXISTING CONDITIONS								RETROFIT CONDITIONS								COST & SAVINGS ANALYSIS						
	Area Description	No. of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/ Space	Exist Control	Annual Hours	Annual kWh	Number of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/ Space	Retrofit Control	Annual Hours	Annual kWh	Annual kWh Saved	Annual kW Saved	Annual $ Saved	Retrofit Cost	NJ Smart Start Lighting Incentive	Simple Payback With Out Incentive	Simple Payback
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
24	Entrance	1	W 20 C F 2	F22SS	56	0.1	SW	2000	112	1	W 17 W C 2	F22ILL	33	0.0	N/A	2,000	66	46	0.0	$ 7.57	$ 101.25	$ 10	13.4	12.1
36	Maintenance Room	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	1000	72	1	C 28 P F 2	F42SSILL	48	0.0	OSR	250	12	60	0.0	$ 9.39	$ 256.25	$ 45	27.3	22.5
36	108	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592	15	C 28 P F 2	F42SSILL	48	0.7	OSR	1,680	1,210	1,382	0.4	$ 200.62	$ 2,043.75	$ 255	10.2	8.9
36	110	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592	15	C 28 P F 2	F42SSILL	48	0.7	OSR	1,680	1,210	1,382	0.4	$ 200.62	$ 2,043.75	$ 255	10.2	8.9
36	112	21	S 34 P F 2 (MAG)	F42EE	72	1.5	SW	2400	3,629	21	C 28 P F 2	F42SSILL	48	1.0	OSR	1,680	1,693	1,935	0.5	$ 280.87	$ 2,681.25	$ 315	9.5	8.4
69	Hallway	54	2B 34 R F 2 (u) (MAG)	FU2EE	72	3.9	SW	2280	8,865	54	2T 17 R F 2 (ELE)	F22ILL	33	1.8	N/A	2,280	4,063	4,802	2.1	$ 766.25	$ 5,467.50	$ 540	7.1	6.4
69	1st Entry	3	2B 34 R F 2 (u) (MAG)	FU2EE	72	0.2	SW	2280	492	3	2T 17 R F 2 (ELE)	F22ILL	33	0.1	N/A	2,280	226	267	0.1	$ 42.57	$ 303.75	$ 30	7.1	6.4
69	Stairway	1	2B 34 R F 2 (u) (MAG)	FU2EE	72	0.1	SW	3200	230	1	2T 17 R F 2 (ELE)	F22ILL	33	0.0	N/A	3,200	106	125	0.0	$ 18.64	$ 101.25	$ 10	5.4	4.9
69	Stairway	1	2B 34 R F 2 (u) (MAG)	FU2EE	72	0.1	SW	3200	230	1	2T 17 R F 2 (ELE)	F22ILL	33	0.0	N/A	3,200	106	125	0.0	$ 18.64	$ 101.25	$ 10	5.4	4.9
43	Stairwell	2	T 32 R F 3 (ELE)	F43ILL	89	0.2	SW	3200	570	2	T 32 R F 3 (ELE)	F43ILL	89	0.2	N/A	3,200	570	-	0.0	$ -	$ -	$ -		
43	Stairwell	2	T 32 R F 3 (ELE)	F43ILL	89	0.2	SW	3200	570	2	T 32 R F 3 (ELE)	F43ILL	89	0.2	N/A	3,200	570	-	0.0	$ -	$ -	$ -		
43	Stairwell	2	T 32 R F 3 (ELE)	F43ILL	89	0.2	SW	3200	570	2	T 32 R F 3 (ELE)	F43ILL	89	0.2	N/A	3,200	570	-	0.0	$ -	$ -	$ -		
36	219	30	S 34 P F 2 (MAG)	F42EE	72	2.2	SW	2400	5,184	30	C 28 P F 2	F42SSILL	48	1.4	OSR	1,680	2,419	2,765	0.7	$ 401.24	$ 3,787.50	$ 440	9.4	8.3
43	Faculty Room	8	T 32 R F 3 (ELE)	F43ILL	89	0.7	SW	2400	1,709	8	T 32 R F 3 (ELE)	F43ILL	89	0.7	OSR	1,500	1,068	641	0.0	$ 79.46	$ 450.00	$ 105	5.7	4.3
80	Fan Room	5	I 100	I100/1	100	0.5	SW	1000	500	5	CF 26	CFQ26/1-L	27	0.1	OSR	250	34	466	0.4	$ 87.42	$ 183.75	$ 35	2.1	1.7
36	2nd Floor Men's Bathroom	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	2000	144	1	C 28 P F 2	F42SSILL	48	0.0	N/A	2,000	96	48	0.0	$ 7.90	$ 106.25	$ 10	13.5	12.2
24	2nd Floor Men's Bathroom	1	W 20 C F 2	F22SS	56	0.1	SW	2000	112	1	W 17 W C 2	F22ILL	33	0.0	N/A	2,000	66	46	0.0	$ 7.57	$ 101.25	$ 10	13.4	12.1
36	216	18	S 34 P F 2 (MAG)	F42EE	72	1.3	SW	2400	3,110	18	C 28 P F 2	F42SSILL	48	0.9	OSR	1,680	1,452	1,659	0.4	$ 240.74	$ 2,212.50	$ 250	9.2	8.2
24	Entrance	1	W 20 C F 2	F22SS	56	0.1	SW	2000	112	1	W 17 W C 2	F22ILL	33	0.0	N/A	2,000	66	46	0.0	$ 7.57	$ 101.25	$ 10	13.4	12.1
36	Storage	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	2000	144	1	C 28 P F 2	F42SSILL	48	0.0	N/A	2,000	96	48	0.0	$ 7.90	$ 106.25	$ 10	13.5	12.2
36	2nd Floor Women's Bathroom	2	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	2000	288	2	C 28 P F 2	F42SSILL	48	0.1	N/A	2,000	192	96	0.0	$ 15.80	$ 212.50	$ 20	13.5	12.2
24	2nd Boy's Bathroom Entrance	1	W 20 C F 2	F22SS	56	0.1	SW	2000	112	1	W 17 W C 2	F22ILL	33	0.0	N/A	2,000	66	46	0.0	$ 7.57	$ 101.25	$ 10	13.4	12.1
36	2nd Boy's Bathroom	4	S 34 P F 2 (MAG)	F42EE	72	0.3	SW	2000	576	4	C 28 P F 2	F42SSILL	48	0.2	N/A	2,000	384	192	0.1	$ 31.60	$ 425.00	$ 40	13.5	12.2
36	214	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592	15	C 28 P F 2	F42SSILL	48	0.7	OSR	1,680	1,210	1,382	0.4	$ 200.62	$ 1,893.75	$ 220	9.4	8.3
36	212	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592	15	C 28 P F 2	F42SSILL	48	0.7	OSR	1,680	1,210	1,382	0.4	$ 200.62	$ 1,893.75	$ 220	9.4	8.3
36	2nd Floor Maintenance Closet	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	1000	72	1	C 28 P F 2	F42SSILL	48	0.0	OSR	250	12	60	0.0	$ 9.39	$ 256.25	$ 45	27.3	22.5
24	Entrance	1	W 20 C F 2	F22SS	56	0.1	SW	2000	112	1	W 17 W C 2	F22ILL	33	0.0	N/A	2,000	66	46	0.0	$ 7.57	$ 101.25	$ 10	13.4	12.1
36	2nd Floor Girl's Bathroom	4	S 34 P F 2 (MAG)	F42EE	72	0.3	SW	2000	576	4	C 28 P F 2	F42SSILL	48	0.2	N/A	2,000	384	192	0.1	$ 31.60	$ 425.00	$ 40	13.5	12.2
36	210	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592	15	C 28 P F 2	F42SSILL	48	0.7	OSR	1,680	1,210	1,382	0.4	$ 200.62	$ 1,893.75	$ 220	9.4	8.3
36	208	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592	15	C 28 P F 2	F42SSILL	48	0.7	OSR	1,680	1,210	1,382	0.4	$ 200.62	$ 1,893.75	$ 220	9.4	8.3
36	206	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592	15	C 28 P F 2	F42SSILL	48	0.7	OSR	1,680	1,210	1,382	0.4	$ 200.62	$ 1,893.75	$ 220	9.4	8.3
36	204A	2	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	2400	346	2	C 28 P F 2	F42SSILL	48	0.1	OSR	1,680	161	184	0.0	$ 26.75	$ 362.50	$ 55	13.6	11.5
70	Periodical Room	4	2T 32 R F 2 (u) (ELE)	FU2ILL	59	0.2	SW	2400	566	4	2T 32 R F 2 (u) (ELE	FU2ILL	59	0.2	OSR	1,680	396	170	0.0	$ 21.07	$ 150.00	$ 35	7.1	5.5
36	204	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592	15	C 28 P F 2	F42SSILL	48	0.7	OSR	1,680	1,210	1,382	0.4	$ 200.62	$ 1,893.75	$ 220	9.4	8.3
36	202	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592	15	C 28 P F 2	F42SSILL	48	0.7	OSR	1,680	1,210	1,382	0.4	$ 200.62	$ 1,893.75	$ 220	9.4	8.3
42	Media Center	25	T 34 R F 3 (MAG)	F43EE	115	2.9	SW	2400	6,900	25	1B 28	F43SSILL	72	1.8	OSR	1,680	3,024	3,876	1.1	$ 567.83	$ 2,968.75	$ 375	5.2	4.6
36	Media Center Office	4	S 34 P F 2 (MAG)	F42EE	72	0.3	SW	2400	691	4	C 28 P F 2	F42SSILL	48	0.2	OSR	1,500	288	403	0.1	$ 57.78	$ 575.00	$ 75	10.0	8.7
36	Media Center Conference Room	6	S 34 P F 2 (MAG)	F42EE	72	0.4	SW	2400	1,037	6	C 28 P F 2	F42SSILL	48	0.3	OSR	1,500	432	605	0.1	$ 86.68	$ 787.50	$ 95	9.1	8.0
36	Media Center Storage	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	1000	72	1	C 28 P F 2	F42SSILL	48	0.0	OSR	250	12	60	0.0	$ 9.39	$ 256.25	$ 45	27.3	22.5
36	PC Lab	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592	15	C 28 P F 2	F42SSILL	48	0.7	OSR	1,680	1,210	1,382	0.4	$ 200.62	$ 1,893.75	$ 220	9.4	8.3
36	203	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592	15	C 28 P F 2	F42SSILL	48	0.7	OSR	1,680	1,210	1,382	0.4	$ 200.62	$ 1,893.75	$ 220	9.4	8.3
70	2nd Floor Hallway	50	2T 32 R F 2 (u) (ELE)	FU2ILL	59	3.0	SW	2280	6,726	50	2T 32 R F 2 (u) (ELE	FU2ILL	59	3.0	N/A	2,280	6,726	-	0.0	$ -	$ -	$ -		
36	205A	6	S 34 P F 2 (MAG)	F42EE	72	0.4	SW	2400	1,037	6	C 28 P F 2	F42SSILL	48	0.3	OSR	1,680	484	553	0.1	$ 80.25	$ 937.50	$ 130	11.7	10.1
36	205	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592	15	C 28 P F 2	F42SSILL	48	0.7	OSR	1,680	1,210	1,382	0.4	$ 200.62	$ 1,893.75	$ 220	9.4	8.3
36	207	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592	15	C 28 P F 2	F42SSILL	48	0.7	OSR	1,680	1,210	1,382	0.4	$ 200.62	$ 1,893.75	$ 220	9.4	8.3
36	209	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592	15	C 28 P F 2	F42SSILL	48	0.7	OSR	1,680	1,210	1,382	0.4	$ 200.62	$ 1,893.75	$ 220	9.4	8.3
36	211	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592	15	C 28 P F 2	F42SSILL	48	0.7	OSR	1,680	1,210	1,382	0.4	$ 200.62	$ 1,893.75	$ 220	9.4	8.3
24	Entrance	1	W 20 C F 2	F22SS	56	0.1	SW	2000	112	1	W 17 W C 2	F22ILL	33	0.0	N/A	2,000	66	46	0.0	$ 7.57	$ 101.25	$ 10	13.4	12.1
36	2nd Floor Girl's Bathroom	4	S 34 P F 2 (MAG)	F42EE	72	0.3	SW	2000	576	4	C 28 P F 2	F42SSILL	48	0.2	N/A	2,000	384	192	0.1	$ 31.60	$ 425.00	$ 40	13.5	12.2
36	Maintenance Room	1	S 34 P F 2 (MAG)	F42EE	72	0.1	SW	1000	72	1	C 28 P F 2	F42SSILL	48	0.0	OSR	250	12	60	0.0	$ 9.39	$ 256.25	$ 45	27.3	22.5
36	213	10	S 34 P F 2 (MAG)	F42EE	72	0.7	SW	2400	1,728	10	C 28 P F 2	F42SSILL	48	0.5	OSR	1,680	806	922	0.2	$ 133.75	$ 1,362.50	$ 170	10.2	8.9
24	Entrance	1	W 20 C F 2	F22SS	56	0.1	SW	2000	112	1	W 17 W C 2	F22ILL	33	0.0	N/A	2,000	66	46	0.0	$ 7.57	$ 101.25	$ 10	13.4	12.1
36	2nd Floor Boy's Bathroom	4	S 34 P F 2 (MAG)	F42EE	72	0.3	SW	2000	576	4	C 28 P F 2	F42SSILL	48	0.2	N/A	2,000	384	192	0.1	$ 31.60	$ 425.00	$ 40	13.5	12.2
36	215	15	S 34 P F 2 (MAG)	F42EE	72	1.1	SW	2400	2,592	15	C 28 P F 2	F42SSILL	48	0.7	OSR	1,680	1,210	1,382	0.4	$ 200.62	$ 1,893.75	$ 220	9.4	8.3
36	217	18	S 34 P F 2 (MAG)	F42EE	72	1.3	SW	2400	3,110	18	C 28 P F 2	F42SSILL	48	0.9	OSR	1,680	1,452	1,659	0.4	$ 240.74	$ 2,212.50	$ 250	9.2	8.2
82	Exterior	22	WP100 I 2	i100/2	200	4.4	BR	4368	19,219	22	13W LED WP	WPLED13/1	13	0.3	N/A	4,368	1,249	17,970	4.1	$ 2,562.00	$ 7,974.45	$ -	3.1	3.1
108	Exterior	7	100W Mercury Vapor	MV100/1	125	0.9	BR	4368	3,822	7	FXLED39	FXLED39/1	39	0.3	N/A	4,368	1,192	2,630	0.6	$ 374.90	$ 4,238.33	$ -	11.3	11.3
96	Exterior	11	175 MH POLE	MH175/1	215	2.4	BR	4368	10,330	11	52W LED Pole Ligh	ALED52/1	52	0.6	N/A	4,368	2,498	7,832	1.8	$ 1,116.59	$ 8,409.11	$ -	7.5	7.5
75	Exterior	4	HPS 150	HPS150/1	188	0.8	BR	4368	3,285	4	FXLED39	FXLED39/1	39	0.2	N/A	4,368	681	2,603	0.6	$ 371.16	$ 2,421.90	$ -	6.5	6.5
	Total	**925**				**77.9**			**194,714**	**921**				**48.6**			**86,303**		**29.2**	**16,138**	**131,436**	**$13,800**		
																	Demand Savings			**29.2**	**$2,373**			
																	kWh Savings			**108,411**	**$13,443**			
																	Total Savings				**$15,816**		**8.3**	**7.4**

APPENDIX D

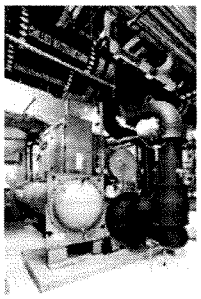
New Jersey Pay For Performance Incentive Program

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)	72,000
Is this audit funded by NJ BPU (Y/N)	Yes

Board of Public Utilites (BPU)

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

	Annual Utilities	
	kWh	Therms
Existing Cost (from utility)	$386,100	$32,745
Existing Usage (from utility)	386,100	32,745
Proposed Savings	146,811	2,092
Existing Total MMBtus	4,592	
Proposed Savings MMBtus	710	
% Energy Reduction	**15.5%**	
Proposed Annual Savings	$24,700	

	Min (Savings = 15%)		Increase (Savings >		Max Incentive		Achieved	
	$/kWh	$/therm	$/kWh	$/therm	$/kWh	$/therm	$/kWh	$/therm
Incentive #2	$0.09	$0.90	$0.005	$0.05	$0.11	$1.25	$0.09	$0.92
Incentive #3	$0.09	$0.90	$0.005	$0.05	$0.11	$1.25	$0.09	$0.92

	Incentives $		
	Elec	Gas	Total
Incentive #1	$0	$0	$7,200
Incentive #2	$13,556	$1,932	$15,488
Incentive #3	$13,556	$1,932	$15,488
Total All Incentives	**$27,112**	**$3,864**	**$38,176**

Total Project Cost	$171,742

		Allowable Incentive
% Incentives #1 of Utility Cost*	1.7%	$7,200
% Incentives #2 of Project Cost**	9.0%	$15,488
% Incentives #3 of Project Cost**	9.0%	$15,488
Total Eligible Incentives***	**$38,176**	
Project Cost w/ Incentives	$133,566	

Project Payback (years)	
w/o Incentives	w/ Incentives
7.0	5.4

* 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

Photovoltaic (PV) Rooftop Solar Power Generation

Pompton Lakes Public School
Lakeside Middle School

Cost of Electricity	$0.149	/kWh
Electricity Usage	386,100	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
$840,000	**210.0**	**273,700**	**0**	**$40,781**	**0**	**$40,781**	**$0**	**$16,422**	**20.6**	**14.7**

** Estimated Solar Renewable Energy Certificate Program (SREC) SREC for 15 Years= $60 /1000kwh

Area Output*
3,383 m2
36,416 ft2

Perimeter Output*
167 m
547 ft

Available Roof Space for PV:
(Area Output - 10 ft x Perimeter) x 85%
26,302 ft2

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

8 watt/ft2
210,417 DC watts
210 kW Enter into PV Watts

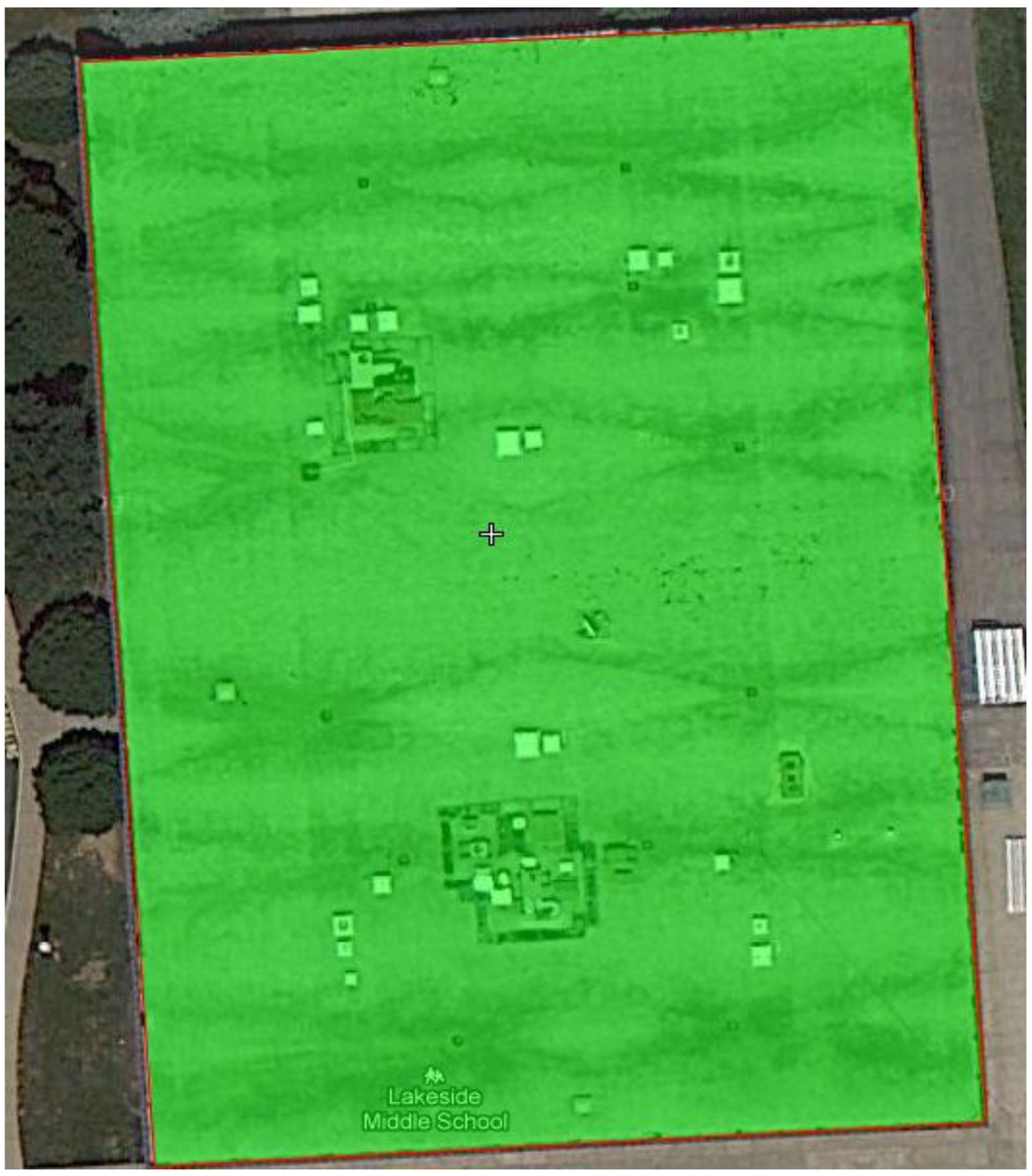
PV Watts Inputs*

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	07442	Enter into PV Watts
DC/AC Derate Factor	0.83	Enter info PV Watts

PV Watts Output
273,700 annual kWh calculated in PV Watts program

% Offset Calc

Usage	386,100	(from utilities)
PV Generation	273,700	(generated using PV Watts)
% offset	71%	



* 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:	210.0 kW
DC to AC Derate Factor:	0.830
AC Rating:	174.3 kW
Array Type:	Fixed Tilt
Array Tilt:	20.0 °
Array Azimuth:	180.0 °

Energy Specifications

Cost of Electricity:	17.2 ¢/kWh

Results

Month	Solar Radiation (kWh/m²/day)	AC Energy (kWh)	Energy Value ($)
1	2.65	14671	2523.41
2	3.47	17375	2988.50
3	4.83	25786	4435.19
4	5.28	26431	4546.13
5	5.93	30156	5186.83
6	6.32	30280	5208.16
7	5.87	28501	4902.17
8	5.55	27133	4666.88
9	5.04	24287	4177.36
10	4.14	21357	3673.40
11	2.82	14343	2467.00
12	2.46	13379	2301.19
Year	4.54	273700	47076.40

APPENDIX G

EPA Portfolio Manager

OMB No. 2060-0347

STATEMENT OF ENERGY PERFORMANCE
Lakeside Middle School

Building ID: 3310460
For 12-month Period Ending: August 31, 2012[1]
Date SEP becomes ineligible: N/A

Date SEP Generated: November 16, 2012

Facility
Lakeside Middle School
316 Lakeside Avenue
Pompton Lakes, NJ 07442

Facility Owner
N/A

Primary Contact for this Facility
N/A

Year Built: 1968
Gross Floor Area (ft²): 38,105

Energy Performance Rating[2] (1-100) 17

Site Energy Use Summary[3]

Electricity - Grid Purchase(kBtu)	1,317,373
Natural Gas (kBtu)[4]	3,274,500
Total Energy (kBtu)	4,591,873

Energy Intensity[4]

Site (kBtu/ft²/yr)	121
Source (kBtu/ft²/yr)	205

Emissions (based on site energy use)

Greenhouse Gas Emissions ($MtCO_2e$/year)	361

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

National Median Comparison

National Median Site EUI	87
National Median Source EUI	149
% Difference from National Median Source EUI	38%
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	Lakeside Middle 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	316 Lakeside Avenue, Pompton Lakes, NJ 07442	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.		☐
Lakeside Middle School (K-12 School)				
CRITERION	**VALUE AS ENTERED IN PORTFOLIO MANAGER**	**VERIFICATION QUESTIONS**	**NOTES**	☑
Gross Floor Area	38,105 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	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	100	Is this the number of personal computers in the K12 School?		☐
Number of walk-in refrigeration/freezer units	1	Is this the total number of commercial walk-in type freezers and coolers? These units are typically found in storage and receiving areas.		☐
Presence of cooking facilities	Yes	Does this school have a dedicated space in which food is prepared and served to students? If the school has space in which food for students is only kept warm and/or served to students, or has only a galley that is used by teachers and staff then the answer is "no".		☐
Percent Cooled	30 %	Is this the percentage of the total floor space within the facility that is served by mechanical cooling equipment?		☐
Percent Heated	100 %	Is this the percentage of the total floor space within the facility that is served by mechanical heating equipment?		☐
Months	10(Optional)	Is this school in operation for at least 8 months of the year?		☐

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

ENERGY STAR® Data Checklist for Commercial Buildings

Energy Consumption

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

Fuel Type: Electricity

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

Start Date	End Date	Energy Use (kWh (thousand Watt-hours))
08/01/2012	08/31/2012	31,560.00
07/01/2012	07/31/2012	17,160.00
06/01/2012	06/30/2012	25,860.00
05/01/2012	05/31/2012	34,560.00
04/01/2012	04/30/2012	34,080.00
03/01/2012	03/31/2012	39,240.00
02/01/2012	02/29/2012	43,800.00
01/01/2012	01/31/2012	35,040.00
12/01/2011	12/31/2011	39,000.00
11/01/2011	11/30/2011	26,040.00
10/01/2011	10/31/2011	26,040.00
09/01/2011	09/30/2011	33,720.00
Electric Meter Consumption (kWh (thousand Watt-hours))		**386,100.00**
Electric Meter Consumption (kBtu (thousand Btu))		**1,317,373.20**
Total Electricity (Grid Purchase) Consumption (kBtu (thousand Btu))		**1,317,373.20**
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)
08/01/2012	08/31/2012	102.00
07/01/2012	07/31/2012	90.00
06/01/2012	06/30/2012	116.00
05/01/2012	05/31/2012	200.00
04/01/2012	04/30/2012	2,581.00
03/01/2012	03/31/2012	3,231.00
02/01/2012	02/29/2012	6,945.00
01/01/2012	01/31/2012	7,424.00
12/01/2011	12/31/2011	6,101.00
11/01/2011	11/30/2011	3,968.00

10/01/2011	10/31/2011	1,834.00
09/01/2011	09/30/2011	153.00
Natural Gas Consumption (therms)		**32,745.00**
Natural Gas Consumption (kBtu (thousand Btu))		**3,274,500.00**
Total Natural Gas Consumption (kBtu (thousand Btu))		**3,274,500.00**
Is this the total Natural Gas consumption at this building including all Natural Gas meters?		☐

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

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
Lakeside Middle School
316 Lakeside Avenue
Pompton Lakes, NJ 07442

Facility Owner
N/A

Primary Contact for this Facility
N/A

General Information

Lakeside Middle School	
Gross Floor Area Excluding Parking: (ft^2)	38,105
Year Built	1968
For 12-month Evaluation Period Ending Date:	August 31, 2012

Facility Space Use Summary

Lakeside Middle School	
Space Type	K-12 School
Gross Floor Area (ft^2)	38,105
Open Weekends?	No
Number of PCs	100
Number of walk-in refrigeration/freezer units	1
Presence of cooking facilities	Yes
Percent Cooled	30
Percent Heated	100
Months ◦	10
High School?	No
School District ◦	Pompton Lakes

Energy Performance Comparison

	Evaluation Periods		Comparisons		
Performance Metrics	**Current** (Ending Date 08/31/2012)	**Baseline** (Ending Date 07/31/2012)	**Rating of 75**	**Target**	**National Median**
Energy Performance Rating	17	14	75	N/A	50
Energy Intensity					
Site (kBtu/ft²)	121	128	68	N/A	87
Source (kBtu/ft²)	205	212	116	N/A	149
Energy Cost					
$/year	$ 93,242.67	$ 93,459.92	$ 52,753.18	N/A	$ 67,461.86
$/ft²/year	$ 2.45	$ 2.45	$ 1.39	N/A	$ 1.77
Greenhouse Gas Emissions					
$MtCO_2e$/year	361	375	204	N/A	261
$kgCO_2e/ft^2$/year	9	10	5	N/A	7

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