

**CHERRY HILL TOWNSHIP
MUNICIPAL BUILDING**

ENERGY ASSESSMENT

for

**NEW JERSEY
BUREAU OF PUBLIC UTILITIES**

CHA PROJECT NO. 19985

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1.0 INTRODUCTION & BACKGROUND

This report summarizes the energy audit for the Cherry Hill Township Municipal Building. The building is mainly two stories, three in some areas, and approximately 41,400 square feet. The building houses the Cherry Hill Township Police Department; Township Court; Building, Zoning, and Tax Assessor's Offices; large meeting room; and other support space. Support departments include the mayors office, recreation, tax collector, clerk's office, legal department and purchasing.

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.

This report shall cover the energy audit for the Cherry Hill Municipal Building.

2.0 EXECUTIVE SUMMARY

This report details the results of the Cherry Hill Township Municipal Building, a 41,400 square foot facility in Cherry Hill, New Jersey. The facility consists of the Police Department, Township Court, Building, Zoning, and Tax Assessor's Offices, large meeting room, and other support space. Support departments include the mayors office, recreation, tax collector, clerk's office, legal department and purchasing. The following areas were evaluated for energy conservation measures:

- Lighting replacement with occupancy sensors
- Direct digital control upgrades
- Night setback
- Motor efficiency upgrades
- HVAC VAV Conversion
- Demand control ventilation
- Dual Flush Valves and Low Flow Lavatory Faucets
- Piping Insulation
- Wall Insulation
- Roof Insulation & Windows

Various potential Energy Conservation Measures (ECMs) were identified for the above categories. Measures which are recommended for implementation have a payback of 10 years or less. This threshold is considered a viable return on investment. Potential annual savings of over \$89,100 for the recommended ECMs may be realized with a payback of less than 9 years.

The ECMs identified in this report will allow for the building to reduce its energy usage and if all the recommended ECMs are pursued has the opportunity to qualify for the New Jersey Pay For Performance Program. A summary of the costs, savings, and paybacks for the recommended ECMs follows:

ECM-3 Lighting Replacements with Occupancy Sensors

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	Potential Incentive*	Payback (without incentive)	Payback (with incentive)
	Electricity		Natural Gas	Total					
\$	kW	kWh	Therms	\$	\$	\$	\$	Years	Years
89,300	28.4	141,500	0	20,700	0	20,700	13,000	4.3	3.7

*Based on New Jersey Smart Start Prescriptive Lighting Measures

ECM-4 Install DDC Control System with Night Setback

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	Potential Incentive*	Payback (without incentive)	Payback (with incentive)
	Electricity		Natural Gas	Total					
\$	kW	kWh	Therms	\$	\$	\$	\$	Years	Years
127,000	0	59,600	900	10,400	0	10,400	12,100	12.2	11.0

*Based on NJ P4P Program if combined with other ECMs and overall 15% energy reduction realized

ECM-5 Install Premium Efficiency Motors

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	Potential Incentive*	Payback (without incentive)	Payback (with incentive)
	Electricity		Natural Gas	Total					
\$	kW	kWh	Therms	\$	\$	\$	\$	Years	Years
2,200	0.7	2,000	0	300	0	300	400	6.9	5.8

*Based on NJ P4P Program if combined with other ECMs and overall 15% energy reduction realized

ECM-6 VAV Conversion

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	Potential Incentive*	Payback (without incentive)	Payback (with incentive)
	Electricity		Natural Gas	Total					
\$	kW	kWh	Therms	\$	\$	\$	\$	Years	Years
628,100	0	254,900	7,400	50,600	0	50,600	448,200	12.4	3.6

*Based on NJ P4P Program if combined with other ECMs and overall 15% energy reduction realized. P4P incentive is \$59,200. DOE Block Grant incentive of \$389,000 for HVAC upgrades.

ECM-7 Demand Control Ventilation

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	Potential Incentive*	Payback (without incentive)	Payback (with incentive)
	Electricity		Natural Gas	Total					
\$	kW	kWh	Therms	\$	\$	\$	\$	Years	Years
26,400	0	6,800	1,100	2,900	0	2,900	3,200	9.1	8.0

*Based on NJ P4P Program if combined with other ECMs and overall 15% energy reduction realized

ECM-10 Dual Flush Valves and Low Flow Lavatory Faucets

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	Available Incentive	Payback (without incentive)	Payback (with incentive)
	Electricity		Water	Total					
\$	kW	kWh	1,000 Gallons	\$	\$	\$	\$	Years	Years
12,800	0	0	297	2,100	0	2,100	0	6.1	6.1

ECM-11 Pipe Insulation

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	Potential Incentive*	Payback (without incentive)	Payback (with incentive)
	Electricity		Natural Gas	Total					
\$	kW	kWh	Therms	\$	\$	\$	\$	Years	Years
1,000	0	0	1,300	2,100	0	2,100	500	0.5	0.2

*Based on NJ P4P Program if combined with other ECMs and overall 15% energy reduction realized

3.0 EXISTING CONDITIONS

3.1 Building General

3.1.1 Structure

The building was constructed in the 1960s, with additions in the mid-1970s and 1990s. The 41,400 SF facility has always served as a municipal building.

The walls are constructed of 12” and 8” CMU with negligible insulation in the existing wall cavities. The R-value is estimated at 6. The walls for the mid-1990s addition were constructed of 12” and 8” CMU with a batt insulation in the wall cavities. The R-value is estimated at 11.

The white membrane roof has 1” rigid insulation and was installed over a metal deck. The R-value is estimated at 7. The mid- 1990s addition has a white membrane roof with a 2” rigid insulation and was installed over a metal deck. The operable windows are double pane and in good condition. There is a main entrance door, several access doors around the perimeter, and a sallyport entrance for vehicular traffic with prisoners.

The facility includes an automated entry door to provide compliance with the American Disabilities Act (ADA). The issue of energy loss through the automated door is a valid one however the issues associated with removing the automated door are complex. Entry doors do not need to be automated to meet the ADA requirements however they do need to have low manual opening forces and maneuvering clearances. The use of an automated door operator results in the door being exempt from the low manual opening forces and the maneuvering clearances. The use of an automated entry door is appropriate for this facility. ADA or ANSI does not specify required close times for electrically actuated door openers. A typical industry open to close time is 15-20 seconds. Cherry Hill may want to consider reducing the close time to accommodate the slowest anticipated pedestrian traffic.

3.1.2 Operating Hours

The building is operational from 7:00 AM – 5:00 PM weekdays. The Police Department operates 24 hours a day seven days a week.

The court has evening hours three days a week and there are evening meetings several times a month in the large meeting room.

The Township Police Department occupies the north end of the building’s first and second floors. Other first floor office space includes Records, Mayor, Tax Assessor, Tax Collector, Municipal Clerk, Recreation, and the Boiler Room. The second floor includes the Town Court Room, Court Records, Purchasing, Building Inspections, Zoning and Planning. and the large meeting room. The third floor area is law offices.

3.2 Utility Usage

The building uses electricity, natural gas, water provided by two 3rd party providers and is connected into the municipal sewage system.

Electricity is purchased and supplied by the Public Service Electric and Gas Company (PSE&G). Natural gas is purchased from Woodruff Energy and delivered by PSE&G. The Municipal Building had an annual

electricity consumption of 1,005,400 kWh, natural gas usage of 14,800 therms, and water usage of 477,000 gallons. The Municipal Building's utility bill for the most recent 12 months was \$178,700. The largest portion of the energy bill is for electricity. Utility data is provided in Appendix A

Future consideration should be given to the possibility of energy procurement for electrical commodity supply and gas supply. The delivery component will always be the responsibility of the utility that connects to the distribution system; however, the electrical commodity supply kWh and the gas supply commodity therms, can be purchased from a third party. The commodity supply entity will require submission of one to three years of past energy bills. Contract terms can vary among suppliers. A list of approved electrical and gas commodity suppliers can be found in Appendix A.

3.3 HVAC Systems

3.3.1 Central Systems

The HVAC system is comprised of direct expansion cooling rooftop units, perimeter fin tube radiation, package terminal air conditioning units beneath windows, and hot water unit heaters. Two cooling only DX split systems are dedicated to conditioning separate computer rooms. The newer part of the building is conditioned with a variable air volume rooftop unit with multiple VAV boxes. The heating hot water is circulated through a piping system to each heat transfer coil.

The majority of the rooftop equipment has met or exceeded the service life as defined by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE).

3.3.2 Pumps

Three sets of heating hot water pumps provide circulation of the heating hot water throughout various portions of the heating systems. The pumps have motor capacities of 1, 1-1/2, and 5 HP. Each set consists of the lead and back-up pump. The controls allow for the back-up pump to start in the event that the lead pump fails. The pumps operate in a constant volume arrangement without any pump speed controls.

3.3.3 Controls

The HVAC controls consist primarily of analog thermostats. Although the analog thermostats provide accurate temperature control, they do not provide energy saving strategies such as night setback or demand control ventilation. Currently, temperature control is provided by a basic system, with heating and cooling setpoints of approximately 70°F and 76°F, respectively. The thermostats in the new portion of the building have the capability to connect to a Building Automation System.

3.4 Lighting/Electrical Systems

The lighting system within the building is manually controlled by individual switches in the spaces or timers. In the first floor police space, all areas except the storage rooms are mandated to be on 24/7. In the rest of the building, the lighting is turned on by employees. The lights in the public restrooms are on as long as the building is open for business, night court is in session, or a public meeting is being held in the meeting room. Most of the lighting is fluorescent using F40 T12 34 watt lamps. Incandescent lamps have been changed to 9 watt compact fluorescent. Some incandescent lamps still exist; however, they are in closets and used only several hours per year.

The building's exterior lighting consists of high pressure sodium and mercury vapor fixtures utilizing photosensors and timers. Some, in the area outside the police section of the building, are on continuously.

3.5 Plumbing Systems

The plumbing system for the facility consists of domestic water piping, sanitary piping, and vent piping. The systems are typical for a municipal building. Domestic hot water is generated by an electric tank type water heater with a storage capacity of 50 gallons. Plumbing fixtures include urinals, water closets, lavatories, sinks, security combination toilet/lavatory units, showers, hose bibbs, and floor drains. Urinals and water closets have standard flush valves and the lavatories' faucets do not have low-flow aerators.

4.0 ENERGY CONSERVATION MEASURES

4.1 ECM-1 Lighting Replacements

A comprehensive fixture survey was conducted of the entire building. Each switch and circuit was identified, and the number of fixtures, locations, and existing wattage established. The majority of lighting consists of fluorescent 34 watt T-12 lamps. The existing base case lighting energy consumption was calculated and compared to the proposed lighting replacements. Existing exit signs presently utilize high efficiency LED technology and most original incandescent lighting has been replaced with energy efficient compact fluorescent fixtures.

The following lighting upgrades were also considered where appropriate:

- T-12 34-watt 2 & 4 lamp with magnetic ballast retrofitted to T-8 28-watt lamps and electronic ballasts
- 2' x 2' U-Tube 34 watt 2 lamp fixtures with magnetic ballast retrofitted to 2' 17-W 2 lamp fixtures with a reflector kit

Replacing the T-12 lamps with T-8 lamps and installing the electronic ballasts will significantly reduce electrical use for lighting. In the future, the facility should only purchase low wattage super T-8 lamps and ballasts such as the low wattage 4' 28 watt units. These lamps may be directly installed into any existing 32 watt fixture when lamps fail. By installing these lamps, over time the most efficient lighting system available will be consistent throughout the facility.

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

ECM-1 Lighting Replacements

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	Potential Incentive*	Payback (without incentive)	Payback (with incentive)
	Electricity		Natural Gas	Total					
\$	kW	kWh	Therms	\$	\$	\$	\$	Years	Years
80,300	28.4	92,000	0	14,500	0	14,500	11,500	5.5	4.7

*Based on New Jersey Smart Start Prescriptive Lighting Measures

This measure is recommended when combined with ECM-2; see ECM-3.

4.2 ECM-2 Install Occupancy Sensors

It is proposed that occupancy sensors be installed in selected rooms to turn off lights when the area is unoccupied which will save electricity, and indirectly decrease energy usage by reduced cooling loads. A lighting survey was conducted of all fixtures to determine the average time lights are presently on in the spaces, and analysis performed to determine the benefits of utilizing occupancy sensors to turn off lighting while the space is unoccupied. Occupancy sensors were not considered in mechanical areas due to safety concerns. Other areas were also not considered due to the proposed location of the occupancy sensor. If a sensor does not have a clear view of the room, it may darken even with people in the space, creating an unsafe condition. Low use areas were also not considered due to the long payback of a sensor installation. The sensors could be mounted in place of the existing switches, on the ceiling, or directly on the light fixtures.

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

ECM-2 Install Occupancy Sensors

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	Potential Incentive*	Payback (without incentive)	Payback (with incentive)
	Electricity		Natural Gas	Total					
\$	kW	kWh	Therms	\$	\$	\$	\$	Years	Years
9,000	0	77,300	0	9,600	0	9,600	1,500	0.9	0.8

*Based on New Jersey Smart Start Prescriptive Lighting Measures

This measure is not recommended when combined with ECM-1; see ECM-3.

4.3 ECM-3 Lighting Replacements with Occupancy Sensors

This measure is a combination of ECMs 1 and 2 to allow for maximum energy and demand reduction. Due to interactive effects, the energy and cost savings for occupancy sensors and lighting upgrades are not cumulative.

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

ECM-3 Lighting Replacements with Occupancy Sensors

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	Potential Incentive*	Payback (without incentive)	Payback (with incentive)
	Electricity		Natural Gas	Total					
\$	kW	kWh	Therms	\$	\$	\$	\$	Years	Years
89,300	28.4	141,500	0	20,700	0	20,700	13,000	4.3	3.7

*Based on New Jersey Smart Start Prescriptive Lighting Measures

This measure is recommended.

4.4 ECM-4 Install DDC System with Night Setback

The existing thermostats are analog and, therefore, not programmable. Based on discussions with the facility maintenance staff, several thermostats are not calibrated properly and/or do not function correctly. Installation of a direct digital control (DDC) system with programmable occupied/unoccupied periods will allow each area to be conditioned only when necessary. The programmable system also has the ability to “learn” how an area responds to heating and cooling demands and optimize the control sequences to minimum the energy usage without sacrificing occupant comfort.

For this measure, the proposed system would be used to program area setpoints, measure occupied space temperatures, and provide heating and cooling output control to the HVAC equipment to meet the demands of the spaces. A central computer terminal (operator interface) would be installed in the facility to provide building personnel with access to the control system. Through the operator interface, the user would have the ability to monitor and/or adjust all control functions within the system. A web-based interface could be utilized to provide remote access over the internet through a secure connection. The control system would also provide trending of all control functions, including space setpoints, equipment run-times, and equipment or system alarms.

Night setback is a method of control that schedules systems to reduce or increase the setpoints of the area when unoccupied. It is proposed that through the new DDC system, the night setback temperature be set to 58°F in the winter and 80°F in the summer.

In order to project savings for this measure, a block load building model was created to approximate the existing energy load for the building. The block load, provided in Appendix E, models the maximum overall heating and cooling loads for the space. It takes into account various parameters such as roof, wall, and window construction, total envelope surface area, ventilation loads, building occupancy, internal heat generation, and other sources of heat gain and loss. By entering this calculated maximum load into a spreadsheet containing bin temperature data for Philadelphia, Pennsylvania, the total accumulated year-round heating and cooling loads are determined. The bin temperature model is included in Appendix E.

To determine the proposed energy savings if setback temperatures and decreased occupied hours are scheduled, a second bin temperature spreadsheet was created for the new accumulated building load. This spreadsheet is identical to the existing usage spreadsheet except the heating and cooling unoccupied temperatures are modified. The proposed heating setback is 58°F and the proposed cooling setback is 80°F. The difference in natural gas consumption and cooling energy between the two models is taken as the savings.

Performing night setback would result in cooling savings of 59,600 kWh per year and a heating savings of 900 therms of natural gas.

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

ECM-4 Install DDC System with Night Setback

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	Potential Incentive*	Payback (without incentive)	Payback (with incentive)
	Electricity		Natural Gas	Total					
\$	kW	kWh	Therms	\$	\$	\$	\$	Years	Years
127,000	0	59,600	900	10,400	0	10,400	12,100	12.2	11.0

*Based on NJ P4P Program if combined with other ECMs and overall 15% energy reduction realized

This measure is recommended when combined with ECM-6 & 7.

4.5 ECM-5 Install Premium Efficiency Motors

The existing heating hot water pumps do not have premium efficiency motors. Replacement of the motors with premium efficiency motors would result in reduction of energy consumption. The energy consumption associated with the pumps was modeled assuming that the pumps operate continuously when the outside air temperature is at or below 65°F. Since the heating pumps are arranged in pairs with one pump serving as the lead and the other as the back-up, the runtime for each pump was assigned 50% of the total available run hours. Replacement of the pump motors is a simple procedure that could be completed in approximately two hours per pump.

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

ECM-5 Install Premium Efficiency Motors

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	Potential Incentive*	Payback (without incentive)	Payback (with incentive)
	Electricity		Natural Gas	Total					
\$	kW	kWh	Therms	\$	\$	\$	\$	Years	Years
2,200	0.7	2,000	0	300	0	300	400	6.9	5.8

*Based on NJ P4P Program if combined with other ECMs and overall 15% energy reduction realized

This measure is recommended.

4.6 ECM-6 VAV Conversion

The HVAC system serving the original portion of the building is comprised of a constant volume rooftop air handler, packaged terminal air conditioners, perimeter fin tube radiation, and hot water unit heaters. The police station portion of the facility, which was constructed in the mid 1990s, is conditioned by a variable air volume (VAV) HVAC system. VAV systems are comprised of a central air handler, duct distribution system, and variable air volume terminal units (or boxes). Individual zone control is provided by the VAV boxes. The air handler provides air at a temperature of 55°F to each VAV box at a minimum airflow rate to meet the ventilation requirements of the individual zones. As the cooling demand of an individual zone increases, the associated VAV box modulates to allow more air to the zone up to the maximum flow rate of the box. On a call for heating, the VAV box reduces the airflow back to the minimum position; and if the heating demand still exists, a hot water control valve is modulated to provide heating hot water to a heating coil located within the associated VAV box. The HVAC controls use a static duct pressure sensor located within the duct distribution system to vary the airflow delivery by the air handler in response to the modulation of the system airflow by the individual VAV boxes. This type of system provides energy savings over a constant volume air handling system by utilizing the minimum quantity of air necessary to meet the code-required ventilation rates, and the heating and cooling demands of the individual spaces. This ECM proposes to replace the existing HVAC systems within the building with a VAV system designed to serve the entire facility.

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

ECM-6 VAV Conversion

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	Potential Incentive*	Payback (without incentive)	Payback (with incentive)
	Electricity		Natural Gas	Total					
\$	kW	kWh	Therms	\$	\$	\$	\$	Years	Years
628,100	0	254,900	7,400	50,600	0	50,600	448,200	12.4	3.6

*Based on NJ P4P Program if combined with other ECMs and overall 15% energy reduction realized. P4P incentive is \$59,200. DOE Block Grant incentive of \$389,000 for HVAC upgrades.

This measure is recommended when combined with ECM-4 & 7.

4.7 ECM-7 Demand Control Ventilation

Due to the condition of the HVAC equipment, particularly in the original portion of the building, various areas of the building may not meet the minimum ventilation required by building code, while other areas may be overventilated.

A viable option would be utilization of demand control ventilation (DCV), which measures carbon dioxide (CO₂) in the return air stream to an air handler and adjusts the outside air ventilation to maintain a CO₂ setpoint. An increase in CO₂ is representative of an increase in the number of occupants in a space. Outside air dampers will open and allow additional fresh air into the building. By controlling the ventilation based on occupancy, savings of natural gas and electricity can be achieved.

To determine savings, the current outside air CFM was determined as well as the ventilation required to match the average building occupancy. The current building ventilation rates were determined from design drawings. Hourly weather bin data for heating and cooling periods along with current building setpoints were used to determine required building ventilation for average occupancy. The derated building CFM used for DCV is 33% of the building maximum.

The cost for this ECM was developed assuming ECM-4 and ECM-6 have been implemented and all equipment is controlled by the DDC system. The budgetary cost shown is for the incremental costs above those required for ECM-4 and ECM-6.

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

ECM-7 Demand Control Ventilation

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	Potential Incentive*	Payback (without incentive)	Payback (with incentive)
	Electricity		Natural Gas	Total					
\$	kW	kWh	Therms	\$	\$	\$	\$	Years	Years
26,400	0	6,800	1,100	2,900	0	2,900	3,200	9.1	8.0

*Based on NJ P4P Program if combined with other ECMs and overall 15% energy reduction realized

This measure is recommended when combined with ECM-4 & 6.

4.8 ECM-8 Dual Flush Valves

The existing water closets (toilets) consist of a combination of tank (Mayor's Office) and flush valve types. The difference is that the tank type uses water stored within the tank to flush the fixture while flush valve types use water delivered through the flush valve. The flush valve type fixtures require a higher water pressure to provide the required water volume to successfully flush the fixture. The existing flush valves meet the current standards (Energy Policy Act of 2005) for water conservation which requires the water delivery to be limited to 1.6 gallons per flush. The flushing rate of the existing flush valves is fixed at 1.6 gallons per flush. Flush valves are now available which provide a choice of two flushing volumes. These flush valves provide 1.6 gallons per flush when the lever is pushed down and 1.1 gallons per flush when the lever is lifted up. The 1.6 gallon flush is used to flush solid waste and paper while the 1.1 gallon flush is used for liquid waste and paper. These new flush valves are code compliant and provide water savings over traditional flush valves. This ECM assesses the replacement of existing flush valves types with the new dual flush option fixtures.

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

ECM-8 Dual Flush Valves

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	Available Incentive	Payback (without incentive)	Payback (with incentive)
	Electricity		Water	Total					
\$	kW	kWh	000 Gallons	\$	\$	\$	\$	Years	Years
7,700	0	0	91	700	0	700	0	11.0	11.0

This measure is recommended when combined with ECM-9; see ECM-10.

4.9 ECM-9 Low Flow Lavatory Faucets

The lavatory faucets currently installed throughout the building have a flowrate of approximately 2.0 gallons per minute (gpm). Modern low flow lavatory faucets provide similar performance to the traditional flow faucets at a flowrate of 0.5gpm. The water savings associated with the conversion to low flow lavatory faucets was calculated based on a 30 second hand washing three times per day per person. Use of low flow lavatory faucets will reduce water consumption associated with hand washing by 75%.

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

ECM-9 Low Flow Lavatory Faucet Aerators

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	Potential Incentive	Payback (without incentive)	Payback (with incentive)
	Electricity		Water	Total					
\$	kW	kWh	1,000 Gallons	\$	\$	\$	\$	Years	Years
5,100	0	0	205	1,500	0	1,500	0	3.5	3.5

This measure is recommended when combined with ECM-8; see ECM-10.

4.10 ECM-10 Dual Flush Valves and Low Flow Lavatory Faucets

Installation of dual flush valves at the water closets and low flow lavatory faucets yield favorable water savings and paybacks. Depending on age of original valves and faucets, a significant water efficiency improvement can be obtained. It is recommended that these ECMs be combined into a single ECM.

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

ECM-10 Dual Flush Valves and Low Flow Lavatory Faucets

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	Available Incentive	Payback (without incentive)	Payback (with incentive)
	Electricity		Water	Total					
\$	kW	kWh	1,000 Gallons	\$	\$	\$	\$	Years	Years
12,800	0	0	297	2,100	0	2,100	0	6.1	6.1

This measure is recommended.

4.11 ECM-11 Piping Insulation

The heating system serving the building includes hot water boilers, circulating pumps, and a piping system. The heating hot water is circulated at 180°F to each of the heating terminal units throughout the building. There are several areas where the heating hot water pipe insulation has been removed from the piping. The lack of insulation on the piping system results in the loss of heat from the heating hot water within the piping system, rather than, as designed, at the heating terminals. The net effect of the piping system heat loss is a decrease in the heating system's operating efficiency and an increase in the operating cost since the hot water is delivered at a lower temperature than if the piping were insulated. Pipe insulation was missing from 50 feet of 3/4" piping, 25 feet of 2" piping, 25 feet of 3" piping and 10 feet of 4" piping. The energy code requires the 3/4" piping to have 1" of pipe insulation and the 2", 3" and 4" piping to have 1-1/2" of pipe insulation. This ECM proposes to install the code required insulation on the bare sections of heating hot water piping.

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

ECM-11 Pipe Insulation

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	Potential Incentive*	Payback (without incentive)	Payback (with incentive)
	Electricity		Natural Gas	Total					
\$	kW	kWh	Therms	\$	\$	\$	\$	Years	Years
1,000	0	0	1,300	2,100	0	2,100	500	0.5	0.2

*Based on NJ P4P Program if combined with other ECMs and overall 15% energy reduction realized

This measure is recommended.

4.12 ECM-12 Increase Wall Insulation

The exterior walls of the building consist of 8" and 12" concrete masonry units (CMU) with insulation within the wall cavity yielding an average insulating value of R-11. The low insulating value of the wall insulation results in energy loss during the winter months. This is a contributing factor to the higher utility costs.

This ECM proposes to increase the thickness of the existing insulation by 2", which will reduce heat loss and infiltration through the exterior walls. This ECM does not consider the cost of the architectural finish work within the building which would be required. The cost estimate is limited to the cost of the additional wall insulation.

Savings from increasing wall insulation was calculated by increasing the U-value, or insulation value, of the walls. The proposed insulation includes the addition of 2" of extruded polystyrene. A proposed savings of 1,500 therms of natural gas and 150 kWh from cooling can be achieved with additional wall insulation.

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

ECM-12 Increase Wall Insulation

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	Potential Incentive*	Payback (without incentive)	Payback (with incentive)
	Electricity		Natural Gas	Total					
\$	kW	kWh	Therms	\$	\$	\$	\$	Years	Years
38,300	0	150	1,500	2,100	0	2,100	2,700	18.2	17.0

*Based on NJ P4P Program if combined with other ECMs and overall 15% energy reduction realized

This measure is not recommended.

4.13 ECM-13 PC Replacement with Thin Clients

Cherry Hill Township is considering replacing all personal computers in the municipal building with thin client personal computers (PCs). A thin client, sometimes also called a lean or slim client, is a client computer or client software in client-server architecture networks which depends primarily on the central server for processing activities, and mainly focuses on conveying input and output between the user and the remote server. In contrast, a thick or fat client does as much processing as possible and passes only data for communications and storage to the server.

This ECM proposes to replace all individual user PCs with a thin client PC on a one for one basis. A thin client PC requires less electricity to operate than a thick client PC. This ECM does not include a detailed study of server end modifications which may be required. Cost estimate is limited to materials and labor replacement of PCs with thin clients.

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

ECM-13 PC Replacement with Thin clients

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	Potential Incentive*	Payback (without incentive)	Payback (with incentive)
	Electricity		Natural Gas	Total					
\$	kW	kWh	Therms	\$	\$	\$	\$	Years	Years
180,000	0	65,520	0	9,762	0	9,762	0	18.4	18.4

*Based on NJ P4P Program if combined with other ECMs and overall 15% energy reduction realized

This measure is not recommended based on energy savings alone.

4.14 Potential Incentives

The Cherry Hill energy conservation project may be eligible for numerous incentives from the New Jersey Office of Clean Energy. The most significant incentives may be through the New Jersey Pay for Performance (P4P) Program. The P4P program is designed for qualified energy conservation projects in facilities that consume a minimum average electric demand of 200 kW per month (total of 12 months peak demand/12). Cherry Hill over the period from October 2007 to September 2008 had an average electric demand of 231 kW. Facilities that meet this criterion must also achieve a minimum performance target of 15% energy reduction which would need to be demonstrated using an approved simulation modeling tool before and after construction. Implementing the measures identified in this report will allow the building to achieve this reduction. To utilize this program, a P4P Partner would need to be engaged. Incentives for this program include the following:

- Incentive #1: The P4P Program pays \$0.10 per square foot to a maximum of \$50,000 or 50% of facility annual energy cost for the P4P Partner to develop an Energy Reduction Plan (ERP). This incentive is paid after approval of the ERP and signed Installation Agreement. Applicant must agree to commit to implementation of the ERP within 6 months or the incentive must be returned to the state.
- Incentive #2: Paid after installation of recommended measures; base incentives deliver \$0.11/kWh and \$1.10/therm not to exceed 30% of total project cost
- Incentive #3: Paid after acceptance of Post-Construction Benchmarking Report showing energy savings over one year utilizing the approved simulation modeling tool and EPA Portfolio Manager. Incentive #3 base incentives deliver \$0.07/kWh and \$0.70/therm not to exceed 20% of total project cost.

Combining Incentives #2 and #3 will deliver a total of \$0.18/ kWh and \$1.80/therm not to exceed 50% of total project cost. Incentives for #2 and #3 are increased by \$0.005/kWh and \$0.05/therm for each percentage increase above the minimum performance target calculated with the approved simulation modeling tool, not to exceed 50% of total project cost.

Lighting energy reduction incentives were calculated utilizing the New Jersey SmartStart Building prescriptive lighting measures and incentive program. This program provides incentives dependent upon the existing fixture type and proposed lighting retrofit measure. Prescriptive lighting incentives were utilized for this report to show savings and incentives that would be received if only lighting implementation was selected. If Cherry Hill qualifies and enters into the New Jersey Pay for Performance Program, lighting savings will be included in total building energy usage and savings. Applicants cannot apply for both programs for the same project.

Over \$2.7 billion in formula grants are now available to U.S. states, territories, local governments, and Indian tribes under the Energy Efficiency and Conservation Block Grant (EECBG) Program, funded for the first time under the American Recovery and Reinvestment Act of 2009. Cherry Hill Township received a block grant of \$719,600 of which \$330,000 is available for a solar renewable energy project and \$389,000 is available for HVAC upgrades.

US Congress passed the FY 2009 Omnibus Appropriations Act and it was signed into law on 3/11/09. Appropriations consisted \$72.47 billion for the Department of Energy, including funding for energy efficiency and renewable energy, nuclear energy, clean coal technology, and innovative technology

guaranteed loans (Division C, Title III). Cherry Hill Township is receiving a federal solar grant of \$285,000 from this legislation.

5.0 ALTERNATIVE ENERGY SCREENING EVALUATION

5.1 Geothermal

Geothermal heat pumps transfer heat between the constant temperature of the earth and the building to maintain the building's interior space conditions. Below the surface of the earth throughout New Jersey the temperature remains in the low 50°F range throughout the year. This stable temperature provides a source for heat in the winter and a means to reject excess heat in the summer. With geothermal heat pump systems, water is circulated between the building and the ground-loop piping buried in the ground. In the summer, the water picks up heat from the building and moves it to the ground. In the winter, the water picks up heat from the ground and moves it to the building. Heat pumps facilitate collection and transfer of the heat to and from the building.

The cooling in this building is by DX coils in the air handling units. Heat is delivered via circulating hot water through reheat coils on VAV boxes, baseboard fin tube, and coils in unit ventilators. A complete rehabilitation of the cooling and heating system would be required for geothermal to be practical at this site. Cherry Hill Township provided three soil borings at a depth of 20' that were obtained when the building was constructed. The borings did not indicate any rock. Geothermal at this site would have to be a vertical system due to the limited green space adjacent to the building. An addition would need to be constructed to house the pumps, pipe headers, and heat exchangers.

This measure is not recommended due to the significant cost and disruption of building use.

5.2 Solar

5.2.1 Photovoltaic Rooftop Solar Power Generation

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

The PVWATTS solar power generation model was utilized to calculate PV power generation. The New Jersey Clean Power Estimator provided by the New Jersey Clean Energy Program is presently being updated; therefore, the site recommended use of the PVWATT solar grid analyzer version 1. The closest city available in the model is Newark, New Jersey and a fixed tilt array type was utilized to calculate energy production. The PVWAT solar power generation model is provided in Appendix I.

Cherry Hill Township was approved for a grant from NJ Office of Clean Energy under the Customer On Site Renewable Energy (CORE) Program. The grant application, #MM05960, was approved 12/19/08 for \$285,500 with the stipulation that the solar array be installed by 12/19/09. This grant is larger than the available 2009 New Jersey incentives for non-residential PV applications of \$1.00/watt up to 50 kW of installed PV array. Federal tax credits are also available for renewable energy projects up to 30% of installation cost. Municipalities do not pay federal taxes; therefore, would not be able to utilize the federal tax credit incentive.

Installation of (PV) arrays in the state New Jersey will allow the owner to participate in the New Jersey solar renewable energy certificates program (SREC). This is a program that has been set up to allow entities with large amounts of environmentally unfriendly emissions to purchase credits from zero

emission (PV) solar-producers. An alternative compliance penalty (ACP) is paid for by the high emission producers and is set each year on a declining scale of 3% per year. One SREC credit is equivalent to 1000 kilowatt hours of PV electrical production; these credits can be traded for period of 15 years from the date of installation. The cost of the ACP penalty for 2009 is \$689; this is the amount that must be paid per SERC by the high emission producers. The expected dollar amount that will be paid to the PV producer for 2009 is expected to be \$600/SREC credit. Payments that will be received from the PV producer will change from year to year dependent upon supply and demand. R R Renewable Energy Consultants is a third party SREC broker that has been approved by the New Jersey Clean Energy Program. As stated above there is no definitive way to calculate an exact price that will be received by the PV producer per SREC over the next 15 years. R R Renewable Energy Consultants estimated an average of \$487/ SERC per year and this number was utilized in the cash flow for this report.

US Congress passed the FY2009 Omnibus Appropriations Act and it was signed into law on 3/11/09. Appropriations consisted \$72.47 billion for the Department of Energy, including funding for energy efficiency and renewable energy, nuclear energy, clean coal technology, and innovative technology guaranteed loans (Division C, Title III). Cherry Hill Township is receiving a federal solar grant of \$285,000 from this legislation.

Over \$2.7 billion in formula grants are now available to U.S. states, territories, local governments, and Indian tribes under the Energy Efficiency and Conservation Block Grant (EECBG) Program, funded for the first time under the American Recovery and Reinvestment Act of 2009. Cherry Hill Township received a block grant of \$719,600 of which \$330,000 is available for a solar renewable energy project.

The Cherry Hill Municipal Building had a maximum kW demand of 300 kW and a minimum kW of 184 kW over the previous year. The monthly average over the year observed was 231 kW. The facility's existing load should justify the use of the maximum incentive cap of 100 kW of installed PV solar array; therefore, a 100 kW system size was selected for the calculations. The system costs for PV installations were derived from the most recent NYSERDA (New York State Energy Research and Development Agency) estimates of total cost of system installation. It should be noted that the cost of installation is currently \$10 per watt or \$10,000 per kW of installed system. This has increased in the past few years due to the rise in national demand for PV power generator systems. 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.

Budgetary	Annual Utility Savings				Total	New Jersey Renewable	New Jersey Renewable	Federal	Payback	Payback
Cost					Savings	* Energy Incentive	** SREC	Omnibus & DOE Block ***	(without incentive)	(with incentive)
\$	kW	kWh	therms	\$	\$	\$	\$	\$	Years	Years
\$1,000,000	0.0	118,299	0	\$17,627	\$17,627	\$285,500	\$57,572	\$615,000	56.7	1.3

* Incentive based on New Jersey Customer On Site Renewable Energy (CORE) Program Incentive of \$285,500

** Estimated Solar Renewable Energy Certificate Program (SREC) SREC for 15 years = \$487/1000 kwh

*** Incentive based on FY 2009 Omnibus Appropriations Act & DOE Energy Efficiency and Conservation Block grants

This is a potentially viable renewable measure that Cherry Hill may want to consider investigating further.

5.2.2 Solar Thermal Heating

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. Solar radiation is absorbed by the collector, and the heat collected is commonly used to heat or preheat water or air. 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 for Cherry Hill would transfer the heat from the panels to thermal storage tanks and transfer solar produced thermal energy to use for domestic hot water production.

No incentive is currently available for installation of thermal solar systems. Presently, a federal tax credit of 30% of installation cost for thermal applications is available; since municipalities do not pay federal taxes, this is not applicable.

PSE&G does offer a Solar Loan Program and designated a cap of 9 MW for municipalities, schools, and other units of local government. Information is available on their website.

The building does not have a high domestic hot water demand. The current building does not have the space required for the equipment, tanks, and pumps for the solar thermal system to supplement the heating system. An addition would be required.

This measure is not recommended.

5.3 Wind

Small wind turbines use a horizontal axis propeller, or rotor, to capture the kinetic energy of the wind and convert it into rotary motion to drive a generator which usually is designed specifically for the wind turbine. The rotor consists of two or three blades, usually made from wood or fiberglass. These materials give the turbine the needed strength and flexibility, and have the added advantage of not interfering with television signals. The structural backbone of the wind turbine is the mainframe, and includes the slip-rings that connect the wind turbine, which rotates as it points into changing wind directions, and the fixed tower wiring. The tail aligns the rotor into the wind.

To avoid turbulence and capture greater wind energy, turbines are mounted on towers. Turbines should be mounted at least 30 feet above any structure or natural feature within 300 feet of the installation. Smaller turbines can utilize shorter towers. For example, a 250-watt turbine may be mounted on a 30-50 foot tower, while a 10 kW turbine will usually need a tower of 80-120 feet. Tower designs include tubular or latticed, guyed or self-supporting. Wind turbine manufacturers also provide towers.

The New Jersey Clean Energy Program for small wind installations has designated numerous pre-approved wind turbines for installation in the State of New Jersey. Incentives for wind turbine installations are based on kilowatt hours saved in the first year. Systems sized under 16,000 kWh per year of production will receive a \$3.20 per kWh incentive. Systems producing over 16,000 kWh will receive \$51,200 for the first 16,000 kWh of production with an additional \$0.50 per kWh up to a maximum cap of 750,000 kWh per year. Federal tax credits are also available for renewable energy projects up to 30% of installation cost for systems less than 100 kW. However, as noted previously, municipalities do not pay federal taxes and is, therefore, not eligible for the tax credit incentive.

The most important part of any small wind generation project is the mean annual wind speed at the height of which the turbine will be installed. In the Cherry Hill area, the map indicates a mean annual wind speed of 10 miles per hour. For Cherry Hill, there are site restrictions. Parking lots, athletic fields, trees and local residential housing would greatly affect a tower location.

An aerial satellite image of the municipal site is included in Appendix P.

This measure is not recommended due to the low mean annual wind speed.

5.4 Combined Heat and Power Generation (CHP)

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

Any proposed CHP project will need to consider many factors, such as existing system load, use of thermal energy produced, system size, natural gas fuel availability, and proposed plant location.

The Municipal Building has sufficient need for electrical generation and the ability to use most of the thermal byproduct during the winter. Thermal usage during the summer months is low, and thermal energy produced by the CHP plant will be wasted. An absorption chiller could be installed to utilize the heat to produce chilled water; however, there is no chilled water distribution system in the building.

The most viable option for a CHP plant would be a reciprocating engine natural gas-fired unit. However, since the municipal building is located in a residential area, noise may be an issue.

This measure is not recommended due to limited use of summertime heat.

5.5 Biomass Power Generation

Biomass power generation is a process in which waste organic materials are used to produce electricity or thermal energy. These materials would otherwise be sent to the landfill or expelled to the atmosphere. To participate in NJCEP's Customer On-Site Renewable Energy program, participants must install an on-site sustainable biomass or fuel cell energy generation system. Incentives for bio-power installations are available to support up to 1MW-dc of rated capacity.

*Class I organic residues are eligible for funding through the NJCEP CORE program. Class I wastes include the following renewable supply of organic material:

- Wood wastes not adulterated with chemicals, glues or adhesives
- Agricultural residues (corn stover, rice hulls or nut shells, manures, poultry litter, horse manure, etc) and/or methane gases from landfills
- Food wastes
- Municipal tree trimming and grass clipping wastes
- Paper and cardboard wastes
- Non adulterated construction wood wastes, pallets

The NJDEP evaluates biomass resources not identified in the RPS.

Examples of eligible facilities for a CORE incentive include:

- Digestion of sewage sludge
- Landfill gas facilities
- Combustion of wood wastes to steam turbine
- Gasification of wood wastes to reciprocating engine
- Gasification or pyrolysis of bio-solid wastes to generation equipment

* from NJOCE Website

This measure is not recommended because the site does not have room to store the waste organic materials, noise issues, and potential zoning issues.

5.5 Demand Response Curtailment

Presently, electricity is delivered by PSE&G, which receives the electricity from regional power grid RFC. PJM is the regional transmission organization (RTO) that coordinates the movement of wholesale electricity in all or parts of 13 states and the District of Columbia including the State of New Jersey.

Utility Curtailment is an agreement with the PJM regional transmission organization and an approved Curtailment Service Providers (CSP) to shed electrical load by either turning major equipment off or energizing all or part of a facility utilizing an emergency generator; therefore, reducing the electrical demand on the utility grid. This program is to benefit the utility company during high demand periods and PJM offers incentives to the CSP to participate in this program. Enrolling in the program will require program participants to drop electrical load or turn on emergency generators during high electrical demand conditions or during emergencies. Part of the program also will require that program participants reduce their required load or run emergency generators with notice to test the system.

Presently, the Municipal Building has a 400 kW Caterpillar generator and an average kW demand during the observed period of 231 kW/month. PJM utilizes curtailment providers to bundle and organize demand reduction load. A PJM pre-approved CSP will require a minimum of 100 kW of load reduction to participate in any curtailment program. The Municipal Building would need to switch from the grid and use the generator during periods of high grid demand. The facility has the ability to reduce the electrical load by the required 100 kW minimum to enter the PJM demand response program.

This is a potentially viable measure that Cherry Hill Township should consider investigating further.

6.0 EPA PORTFOLIO MANAGER

The United State Energy Protection Agency (EPA) is a federal agency in charge of regulating environment waste and policy in the United States. The EPA has released the EPA Portfolio Manager for public use. The program is designed to allow property owners and managers to share, compare and improve upon their facility's energy consumption. Inputting such parameters at electricity, heating fuel, building characteristics and location into the website based program generates a naturalized energy rating score out of 100. Once an account is registered, monthly utility data can be entered to track the savings progress and retrieve an updated energy rating score on a monthly basis.

The Municipal Building is considered a high energy consumer per the Portfolio Manager. With a Source Energy Intensity of 317kBTU/ft²/year the EPA has scored a 30 out of 100. The national average is 50. Several factors are attributable to this score, including wasted energy from several factors including multiple air systems that are past their useful life and lack of adequate control, operable windows open while the cooling system is operating, and lack of proper insulation in the building envelope.

Reducing energy loss associated with equipment replacement, installing a DDC control system, reducing the lighting hours of operation with occupancy sensors and keeping the windows closed will increase the Municipal Building's score. If all of the recommended measures identified in this report are fully implemented, it is projected that an energy star rating of 71 can be obtained. Obtaining a score of 75 or higher out of 100 would be required to make the Cherry Hill Township Municipal Building eligible for Energy Star Rating.

A full EPA Energy Star Portfolio Manager Report is located in Appendix Q. The user name and password for the Municipal Building's EPA Portfolio Manager Account was given to Gary Kanefsky, Director of Maintenance.

7.0 CONCLUSIONS & RECOMMENDATIONS

The energy audit conducted by CHA at the Cherry Hill Township Municipal Building in Cherry Hill, New Jersey identified potential ECMs for motor upgrade, lighting replacements and controls, HVAC VAV conversion, direct digital control upgrades and strategies, pipe insulation, and fixture upgrades. Potential annual savings of over \$89,100 may be realized for the recommended ECMs, with a summary of the costs, savings, and paybacks as follows:

ECM-3 Lighting Replacements with Occupancy Sensors

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	Potential Incentive*	Payback (without incentive)	Payback (with incentive)
	Electricity		Natural Gas	Total					
\$	kW	kWh	Therms	\$	\$	\$	\$	Years	Years
89,300	28.4	141,500	0	20,700	0	20,700	13,000	4.3	3.7

*Based on New Jersey Smart Start Prescriptive Lighting Measures

ECM-4 Install DDC Control System with Night Setback

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	Potential Incentive*	Payback (without incentive)	Payback (with incentive)
	Electricity		Natural Gas	Total					
\$	kW	kWh	Therms	\$	\$	\$	\$	Years	Years
127,000	0	59,600	900	10,400	0	10,400	12,100	12.2	11.0

*Based on NJ P4P Program if combined with other ECMs and overall 15% energy reduction realized

ECM-5 Install Premium Efficiency Motors

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	Potential Incentive*	Payback (without incentive)	Payback (with incentive)
	Electricity		Natural Gas	Total					
\$	kW	kWh	Therms	\$	\$	\$	\$	Years	Years
2,200	0.7	2,000	0	300	0	300	400	6.9	5.8

*Based on NJ P4P Program if combined with other ECMs and overall 15% energy reduction realized

ECM-6 VAV Conversion

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	Potential Incentive*	Payback (without incentive)	Payback (with incentive)
	Electricity		Natural Gas	Total					
\$	kW	kWh	Therms	\$	\$	\$	\$	Years	Years
628,100	0	254,900	7,400	50,600	0	50,600	448,200	12.4	3.6

*Based on NJ P4P Program if combined with other ECMs and overall 15% energy reduction realized. P4P incentive is \$59,200. DOE Block Grant incentive is \$389,000 for HVAC upgrades.

ECM-7 Demand Control Ventilation

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	Potential Incentive*	Payback (without incentive)	Payback (with incentive)
	Electricity		Natural Gas	Total					
\$	kW	kWh	Therms	\$	\$	\$	\$	Years	Years
26,400	0	6,800	1,100	2,900	0	2,900	3,200	9.1	8.0

*Based on NJ P4P Program if combined with other ECMs and overall 15% energy reduction realized

ECM-10 Dual Flush Valves and Low Flow Lavatory Faucets

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	Available Incentive	Payback (without incentive)	Payback (with incentive)
	Electricity		Water	Total					
\$	kW	kWh	1,000 Gallons	\$	\$	\$	\$	Years	Years
12,800	0	0	297	2,100	0	2,100	0	6.1	6.1

ECM-11 Pipe Insulation

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	Potential Incentive*	Payback (without incentive)	Payback (with incentive)
	Electricity		Natural Gas	Total					
\$	kW	kWh	Therms	\$	\$	\$	\$	Years	Years
1,000	0	0	1,300	2,100	0	2,100	500	0.5	0.2

*Based on NJ P4P Program if combined with other ECMs and overall 15% energy reduction realized

APPENDIX A

Utility Usage Analysis

New Jersey BPU Energy Audit Program
CHA #19985
Building: Cherry Hill Township Municipal Building

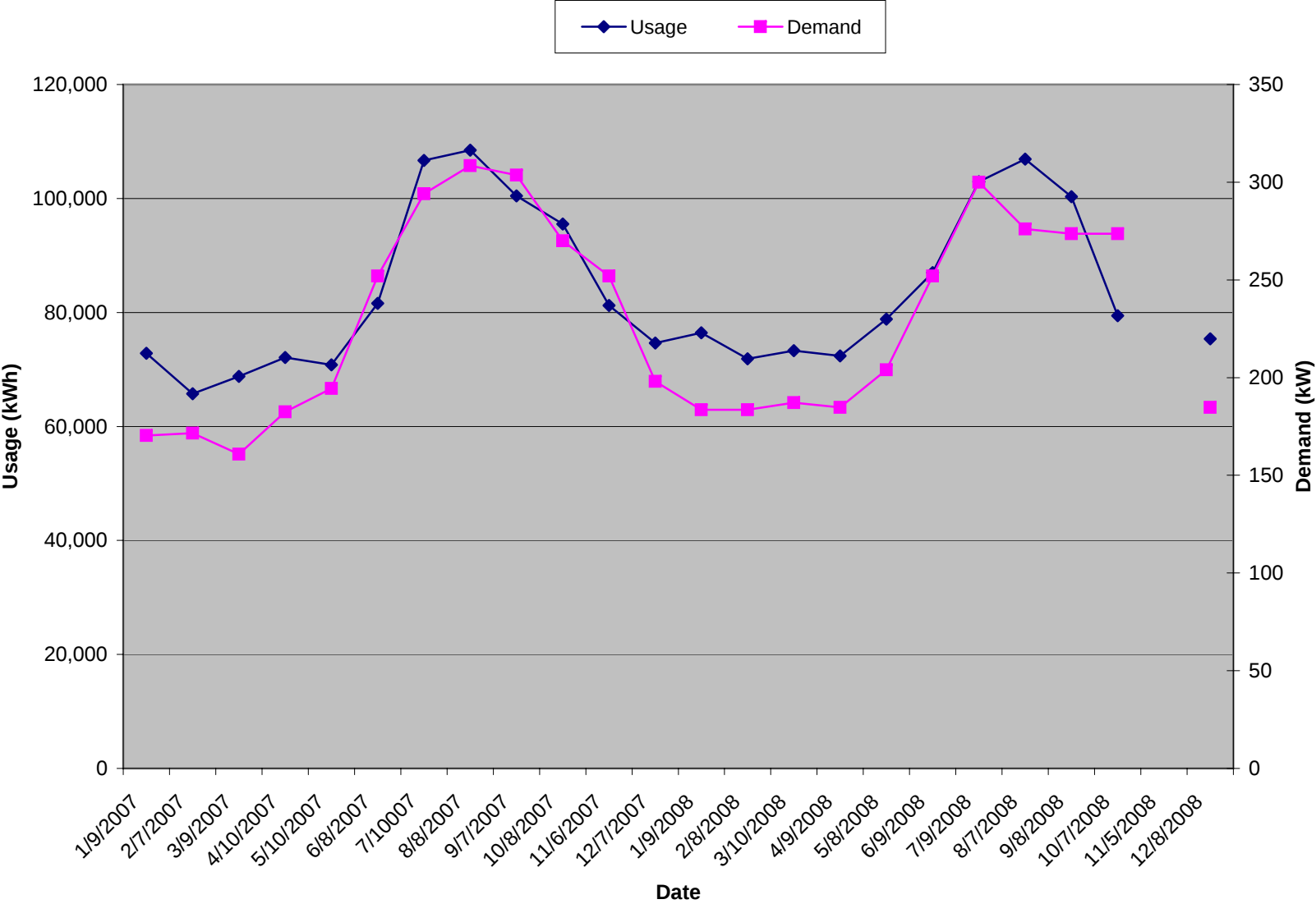
Account Number: 61 142 080 13 Meter Number: 778010409 Rate: LPLS
Public Service Electric & Gas Company (PSE&G)

Electricity						
Period	kWH	KW	Cost (\$)	Blended Rate (\$/kWh)	Unit Cost (\$/kWh)	Unit Cost (\$/kW)
1/9/2007	72,840	170.40	8,027.78	0.1102	0.0965	5.86
2/7/2007	65,760	171.60	7,502.05	0.1141	0.0983	6.05
3/9/2007	68,760	160.80	7,905.19	0.1150	0.1004	6.24
4/10/2007	72,120	182.40	8,260.18	0.1145	0.0997	5.88
5/10/2007	70,800	194.40	8,223.75	0.1162	0.1005	5.72
6/8/2007	81,600	252.00	12,197.05	0.1495	0.1052	14.34
7/10007	106,680	294.00	17,490.38	0.1640	0.1164	17.27
8/8/2007	108,480	308.40	18,154.09	0.1673	0.1191	16.97
9/7/2007	100,440	303.60	17,380.77	0.1730	0.1215	17.07
10/8/2007	95,520	270.00	13,234.48	0.1386	0.1131	9.00
11/6/2007	81,240	252.00	10,233.03	0.1260	0.1079	5.82
12/7/2007	74,640	198.00	9,395.51	0.1259	0.1086	6.52
1/9/2008	76,440	183.60	9,466.50	0.1238	0.1078	6.70
2/8/2008	71,880	183.60	9,169.79	0.1276	0.1110	6.47
3/10/2008	73,320	187.20	9,381.51	0.1280	0.1116	6.41
4/9/2008	72,360	184.80	9,156.55	0.1265	0.1101	6.45
5/8/2008	78,840	204.00	9,835.16	0.1247	0.1088	6.15
6/9/2008	87,000	252.00	13,659.14	0.1570	0.1151	14.46
7/9/2008	102,960	300.00	18,825.81	0.1828	0.0169	13.20
8/7/2008	106,920	276.00	19,414.05	0.1816	0.0167	13.68
9/8/2008	100,320	273.60	18,628.86	0.1857	0.0170	13.74
10/7/2008	79,440	273.60	12,944.98	0.1630	0.0179	6.07
11/5/2008						
12/8/2008	75,360	184.80	10,668.94	0.1416	0.1115	12.27
Total	1,923,720	308	\$ 279,156	0.1451	0.1167	10.39
Most Recent 12 months	1,005,360	300	\$ 150,111	0.1493	0.1238	9.26
Monthly Ave.	83,780	231	\$12,509	0.1493	0.1238	9.26

NOTE: Most recent 12 months is based on period from 11/6/07 to 10/7/08

Electricity											
Service Charge	Annual Demand KW	Summer Demand KW	On-peak kWh	off-peak kWh	Societal Benefit kWh	Securitization Transition kWh	Generation KW	Transmission KW	Delivery on-peak kWh	Delivery off-peak kWh	Total
\$372.14	\$549.61	\$0.00	\$210.20	\$194.86	\$214.66	\$727.55	\$37.99	\$410.53	\$3,165.17	\$2,145.07	\$8,027.78
\$372.14	\$553.48	\$0.00	\$198.86	\$166.83	\$193.79	\$647.08	\$40.56	\$443.91	\$3,024.00	\$1,861.40	\$7,502.05
\$372.14	\$518.64	\$0.00	\$206.00	\$171.12	\$208.79	\$676.59	\$40.56	\$443.91	\$3,261.08	\$2,006.36	\$7,905.19
\$372.14	\$588.31	\$0.00	\$125.07	\$110.55	\$406.32	\$709.65	\$40.56	\$443.91	\$3,304.46	\$2,159.21	\$8,260.18
\$372.14	\$627.02	\$0.00	\$130.16	\$101.15	\$398.89	\$696.67	\$40.56	\$443.91	\$3,438.38	\$1,974.87	\$8,223.75
\$372.14	\$812.80	\$1,933.72	\$146.24	\$120.35	\$459.74	\$802.95	\$423.51	\$443.91	\$4,272.67	\$2,409.02	\$12,197.05
\$372.14	\$948.27	\$2,256.01	\$184.65	\$163.87	\$601.03	\$1,049.74	\$1,428.78	\$443.91	\$6,646.01	\$3,395.97	\$17,490.38
\$372.14	\$994.71	\$2,366.51	\$195.24	\$159.16	\$611.18	\$1,067.44	\$1,428.78	\$443.91	\$7,131.41	\$3,383.61	\$18,154.09
\$372.14	\$979.23	\$2,329.67	\$183.87	\$144.27	\$565.88	\$988.33	\$1,428.78	\$443.91	\$6,806.70	\$3,137.99	\$17,380.77
\$372.14	\$870.86	\$0.00	\$168.18	\$143.88	\$548.18	\$939.91	\$1,114.10	\$443.91	\$5,727.01	\$2,906.31	\$13,234.48
\$372.14	\$812.80	\$0.00	\$149.37	\$116.04	\$500.53	\$799.40	\$209.38	\$443.91	\$4,482.03	\$2,347.43	\$10,233.03
\$372.11	\$638.63	\$0.00	\$132.91	\$110.95	\$446.88	\$734.46	\$209.38	\$443.91	\$4,028.29	\$2,277.99	\$9,395.51
\$372.11	\$592.18	\$0.00	\$129.77	\$119.96	\$457.64	\$755.26	\$209.22	\$428.20	\$3,936.24	\$2,465.92	\$9,466.50
\$372.11	\$592.18	\$0.00	\$128.99	\$105.86	\$430.35	\$717.93	\$208.81	\$386.67	\$3,988.59	\$2,238.30	\$9,169.79
\$372.11	\$603.79	\$0.00	\$123.49	\$116.04	\$438.97	\$732.33	\$208.81	\$387.61	\$3,883.65	\$2,514.71	\$9,381.51
\$372.11	\$596.05	\$0.00	\$128.99	\$107.41	\$433.22	\$722.73	\$208.81	\$387.61	\$3,955.62	\$2,244.00	\$9,156.55
\$372.11	\$657.98	\$0.00	\$141.53	\$116.04	\$472.02	\$787.46	\$208.81	\$387.61	\$4,300.29	\$2,391.31	\$9,835.16
\$372.11	\$812.80	\$1,933.72	\$146.24	\$138.00	\$520.87	\$868.96	\$509.42	\$387.54	\$4,965.93	\$3,003.55	\$13,659.14
\$372.11	\$967.62	\$2,302.05	\$187.79	\$148.57	\$616.42	\$1,028.36	\$1,271.62	\$387.35	\$7,968.38	\$3,575.54	\$18,825.81
\$372.11	\$890.21	\$2,117.89	\$194.46	\$154.86	\$640.13	\$1,067.92	\$1,271.62	\$387.35	\$8,440.36	\$3,877.14	\$19,414.05
\$372.11	\$882.47	\$2,099.47	\$172.49	\$155.24	\$600.61	\$1,002.00	\$1,271.62	\$387.35	\$7,651.17	\$4,034.33	\$18,628.86
\$372.11	\$882.47	\$0.00	\$139.95	\$119.57	\$474.12	\$793.44	\$1,270.35	\$391.47	\$5,653.51	\$2,847.99	\$12,944.98
											\$0.00
\$372.11	\$596.05	\$0.00	\$124.67	\$121.54	\$498.43	\$752.69	\$1,266.38	\$404.40	\$3,981.31	\$2,551.36	\$10,668.94
											\$0.00
\$8,559	\$16,968	\$17,339	\$3,649	\$3,106	\$10,739	\$19,069	\$14,348	\$9,617	\$114,012	\$61,749	
\$4,465	\$8,929	\$8,453	\$1,776	\$1,509	\$6,032	\$10,010	\$7,058	\$4,807	\$63,254	\$33,818	

Electric Usage - Cherry Hill Township Municipal Building



New Jersey BPU Energy Audit Program

CHA #19985

Building: Cherry Hill Township Municipal Building

Account Number: 61 142 080 13 Meter Number: 2413071 Rate: LVG

Public Service Electric & Gas Company (PSE&G) Delivery

Woodruff Energy Supplier

Natural Gas												
PSE&G - Delivery							Woodruff Energy - Supplier					
Period	Service Charge \$	Therms	Distribution \$	Demand \$	Balancing Charge \$	Societal Benefits \$	BGSS Commodity \$	Total Delivery \$	Commodity Charge \$	NJ Energy Reform Tax \$	Total Supply \$	Blended Cost/Therm
1/9/2007	92.03	2419.540	129.36	358.41	208.83	102.12	2,522.7800	3,413.53	3,347.34	234.31	3,581.65	
2/7/2007	92.03	3298.326	168.06	399.11	306.30	139.21		1,104.71	4,331.41	303.20	4634.61	
3/9/2007	92.03	3681.885	184.95	430.67	350.80	\$155.90		1,214.35	3,549.88	248.49	3798.37	
4/10/2007	92.03	2144.090	117.23			99.05		308.31	1,050.95	73.57	1124.52	
5/10/2007	92.03	850.952	56.88			39.32		188.23	910.93	63.77	974.7	
6/8/2007	92.03	0.000						92.03	247.12	17.30	264.42	
7/10/007	92.03	0.000						92.03	536.39	37.55	573.94	
8/8/2007	92.03	0.000						92.03	100.29	7.02	107.31	
9/7/2007	92.03	0.000						92.03	14.04	0.98	15.02	
10/8/2007	92.03	0.000						92.03	18.68	1.31	19.99	
11/6/2007	92.03	701.401	46.88	430.67	67.30	28.1		664.98	932.05	65.24	997.29	
12/7/2007	91.90	3017.152	155.67	430.67	289.52	117.03		1,084.79	1,974.79	138.24	2113.03	
1/9/2008	91.89	3515.397	177.62	430.67	337.33	136.36		1,173.87	3,946.33	276.24	4,222.57	1.63
		19628.743						9,612.92			22,427.42	
2/8/2008	91.89	3118.639	160.14	430.67	299.26	120.96		1,102.92	3,500.94	245.07	3746.01	
3/10/2008	91.89	3426.237	173.69	387.84	328.77	132.9		1,115.09	3,846.24	269.24	4115.48	
4/9/2008	91.89	2338.197	125.77			90.69		308.35	2,624.82	183.74	2808.56	
5/8/2008	91.89	928.601	62.07			36.02		189.98	1,042.43	72.97	1115.4	
6/9/2008	91.89	81.304	5.43			3.15		100.47	98.90	6.92	105.82	
7/9/2008	91.89	0.000						91.89	0.00	0.00	\$0.00	
8/7/2008	91.89	0.000						91.89	0.00	0.00	\$0.00	
9/8/2008	91.89	0.000						91.89	0.00	0.00	\$0.00	
10/7/2008	91.89	129.755	8.67			5.03		105.59	141.60	9.91	151.51	
11/5/2008	91.89	1188.615	75.15	387.84	112.22	48.76		715.86	1,192.77	83.49	1276.26	
12/8/2008	91.89	964.470	133.95	387.84	240.10	110.69		964.47	2,472.63	173.08	2645.71	
1/3/2009	92.00	2643.336	138.20	387.84	252.00	129.74		1,000.68	3,106.84	217.48	3324.32	1.70
		14819.154						5,879.08			19289.07	

New Jersey BPU Energy Audit Program
CHA #19985
Building: Cherry Hill Township Municipal Building

Account Number: 18-0628438-4 Meter Number: 2004025092; 2-inch meter: Premise Number: 18-0386379
New Jersey American Water

Municipal Water Usage									
Period	Service Charge \$	Water Volumes Gals	Water Charge \$	Water Cost Adjust \$	PWAC 1000 Gal Non-Exempt \$	Gross Receipts Franchise Taxes \$	Total \$	Cost / 1000 Gal \$	
1/26/2007	71.79	41,000.00	178.64	3.44		33.00	\$253.87		\$6.19
2/26/2007	71.79	53,000.00	230.92	4.45		39.93	\$307.16		\$5.80
3/26/2007	71.79	19,000.00	82.78	1.60		20.30	\$156.17		\$8.22
4/25/2007	68.38	47,000.00	222.73	0.30	14.63	39.80	\$306.13		\$6.51
5/24/2007	68.00	58,000.00	277.32		20.06	47.50	\$365.38		\$6.30
6/24/2007	68.00	19,000.00	90.85		6.57	21.50	\$165.42		\$8.71
7/26/10007	68.00	56,000.00	267.76		19.36	46.17	\$355.12		\$6.34
8/23/2007	68.00	59,000.00	282.10		20.40	48.17	\$370.50		\$6.28
9/25/2007	68.00	41,000.00	196.04		14.18	36.17	\$278.22		\$6.79
10/25/2007	68.00	41,000.00	196.04		14.18	36.17	\$278.22		\$6.79
11/26/2007	68.00	38,000.00	181.69		13.14	34.17	\$262.83		\$6.92
12/27/2007	68.00	35,000.00	167.35		12.10	32.17	\$247.45		\$7.07
		507,000.00					\$3,346.47		\$6.60
1/25/2008	68.00	36,000.00	172.13		12.45	32.84	\$252.58		\$7.02
2/26/2008	68.00	39,000.00	186.47		13.49	34.83	\$267.90		\$6.87
3/27/2008	68.00	37,000.00	176.91		12.79	33.50	\$257.70		\$6.96
4/24/2008	68.00	43,000.00	205.60		14.87	37.50	\$288.47		\$6.71
5/23/2008	68.00	34,000.00	162.57		11.76	31.50	\$242.33		\$7.13
6/24/2008	68.00	48,000.00	229.51		16.60	40.83	\$314.11		\$6.54
7/24/2008	68.00	42,000.00	200.82		14.52	36.83	\$283.34		\$6.75
8/25/2008	68.00	43,000.00	205.60		14.87	37.50	\$288.47		\$6.71
9/24/2008		0.00	128.16		0.00	16.66	\$128.16		
10/23/2008	68.00	46,000.00	219.94		15.94	39.50	\$303.88		\$6.61
11/25/2008	68.00	41,000.00	196.04		15.07	36.28	\$277.11		\$6.76
12/28/2008	70.35	34,000.00	174.54		12.49	33.46	\$257.38		\$7.57
		443,000.00					\$3,161.43		\$7.14

ELECTRIC MARKETERS LIST

The following is a listing of marketers/suppliers/brokers that have been licensed by the NJ Board of Public Utilities to sell electricity to residential, small commercial and industrial customers served by the Public Service Electric and Gas Company distribution system. **This listing is provided for informational purposes only and PSE&G makes no representations or warranties as to the competencies of the entities listed herein or to the completeness of this listing.**

American Powernet Management
867 Berkshire Blvd, Suite 101
Wyomissing, PA 19610
www.americanpowernet.com

Gerdau Ameristeel Energy Co.
North Crossman Road
Sayreville, NJ 08872

PPL EnergyPlus, LLC
Energy Marketing Center
Two North Ninth Street
Allentown, PA 18101
1-866-505-8825
<http://www.pplenergyplus.com/>

BOC Energy Services
575 Mountain Avenue
Murray Hill, NJ 07974
www.boc-gases.com

Gexa Energy LLC New Jersey
20 Greenway Plaza, Suite 600
Houston, TX 77046
(866) 304-GEXA
Beth.miller@gexaenergy.com

Sempra Energy Solutions
The Mac-Cali Building
581 Main Street, 8th Floor
Woodbridge, NJ 07095
(877) 273-6772
www.SempraSolutions.com

Commerce Energy Inc.
535 Route 38, Suite 138
Cherry Hill, NJ 08002
(888) 817-8572 or
(858) 910-8099
www.commerceenergy.com

Glacial Energy of New Jersey
2602 McKinney Avenue, Suite 220
Dallas, TX 75204
www.glacialenergy.com

South Jersey Energy Company
1 South Jersey Plaza, Route 54
Folsom, NJ 08037
(800) 756-3749
www.sjindustries.com

ConEdison Solutions
701 Westchester Avenue
Suite 201 West
White Plains, NY 10604
(800) 316-8011
www.ConEdSolutions.com

Hess Corporation
1 Hess Plaza
Woodbridge, NJ 07095
www.hess.com

Strategic Energy, LLC
6 East Main Street, Suite 6E
Ramsey, NJ 07446
(888) 925-9115
www.sel.com

Constellation NewEnergy, Inc.
1199 Route 22 East
Mountainside, NJ 07092
908 228-5100
www.newenergy.com

Integrus Energy Services, Inc
99 Wood Avenue, Suite 802
Iselin, NJ 08830
www.integrusenergy.com

Suez Energy Resources NA
333 Thornall Street FL6
Edison, NJ 08818
866.999.8374(toll free)
www.suezenergyresources.com

Credit Suisse (USA), Inc.
700 College Road East
Princeton, NJ 08450
www.creditsuisse.com

Liberty Power Delaware, LLC
1901 W Cypress Road, Suite 600
Fort Lauderdale, FL 33309
(866) Power-99
(866) 769-3799
www.libertypowercorp.com

UGI Energy Services, Inc.
d/b/a POWERMARK
1 Meridian Blvd. Suite 2C01
Wyomissing, PA 19610
(800) 427-8545
www.ugienergyservices.com

Direct Energy Services, LLC
One Gateway Center, Suite 2600
Newark, NJ 07102
(973) 799-8568
www.directenergy.com

Liberty Power Holdings, LLC
1901 W Cypress Creek Road, Suite 600
Fort Lauderdale, FL 33309
(866) Power-99
(866) 769-3799
www.libertypowercorp.com

FirstEnergy Solutions
395 Ghent Road Suite 407
Akron, OH 44333
(800) 977-0500
www.fes.com

Pepco Energy Services, Inc.
d/b/a Power Choice
23 S. Kinderkamack Rd Ste D
Montvale, NJ 07645
(800) 363-7499
www.pepco-services.com

GAS MARKETERS LIST

The following is a listing of marketers/suppliers/brokers that have been licensed by the NJ Board of Public Utilities to sell natural gas to residential, small commercial and industrial customers served by the Public Service Electric and Gas Company distribution system. **This listing is provided for informational purposes only and PSE&G makes no representations or warranties as to the competencies of the entities listed herein or to the completeness of this listing.**

Gateway Energy Services
44 Whispering Pines Lane
Lakewood, NJ 08701
(800) 805-8586
www.gesc.com

Metro Energy Group, LLC
14 Washington Place
Hackensack, NJ 07601
www.metroenergy.com

RPL Holdings, Inc
601 Carlson Pkwy
Minnetonka, MN 55305

Great Eastern Energy
3044 Coney Island Ave. PH
Brooklyn, NY 11235
888-651-4121
www.greasterngas.com

Metromedia Energy, Inc.
6 Industrial Way
Eatontown, NJ 07724
(800) 828-9427
www.metromediaenergy.com

South Jersey Energy Company
One South Jersey Plaza, Rte 54
Folsom, NJ 08037
(800) 756-3749
www.sjindustries.com/sje.htm

Hess Corporation
1 Hess Plaza
Woodbridge, NJ 07095
(800) 437-7872
www.hess.com

Mitchell- Supreme Fuel
(NATGASCO)
532 Freeman Street
Orange, NJ 07050
(800) 840-4GAS
www.mitchellsupreme.com

Sprague Energy Corp.
Two International Drive, Ste 200
Portsmouth, NH 03801
800-225-1560
www.spragueenergy.com

Hudson Energy Services, LLC
545 Route 17 South
Ridgewood, NJ 07450
(201) 251-2400
www.hudsonenergyservices.com

MxEnergy Inc.
P.O. Box 177
Annapolis Junction, MD 20701
800-375-1277
www.mxenergy.com

Stuyvesant Energy LLC
642 Southern Boulevard
Bronx, NY 10455
(718) 665-5700
www.stuyfuel.com

Intelligent Energy
7001 SW 24th Avenue
Gainesville, FL 32607
Sales: 1 877 I've Got Gas
(1 877 483-4684)
Customer Service:
1 800 927-9794
www.intelligentenergy.org

Pepco Energy Services, Inc.
23 S Kinderkamack Rd, Suite D
Montvale, NJ 07645
(800) 363-7499
www.pepco-services.com

Tiger Natural Gas, Inc.
1422 E. 71st Street, Suite J.
Tulsa, OK 74136
1-888-875-6122
www.tignaturalgas.com

Systrum Energy
877-SYSTRUM
(877-797-8786)
www.systrumenergy.com

Plymouth Rock Energy, LLC
165 Remsen Street
Brooklyn, NJ 11201
866-539-6450
www.plymouthrockenergy.com

UGI Energy Services, Inc.
d/b/a GASMAR
704 E. Main Street, Suite I
Moorestown, NJ 08057
856-273-9995
www.ugienergyservices.com

Macquarie Cook Energy, LLC
10100 Santa Monica Blvd, 18th
Fl
Los Angeles, CA 90067

PPL EnergyPlus, LLC
Energy Marketing Center
Two North Ninth Street
Allentown, PA 18101
1-866-505-8825
www.pplenergyplus.com/natural+gas/

Woodruff Energy
73 Water Street
P.O. Box 777
Bridgeton, NJ 08302
(856) 455-1111
www.woodruffenergy.com

APPENDIX B

ECM-1 Lighting Replacements

Cherry Hill Township Municipal Building Audit Program

CHA Project No. 19985

ECM-1 Lighting Replacements

Cost of Electricity:

\$0.124 \$/kWh

\$9.26 \$/kW

		EXISTING CONDITIONS								RETROFIT CONDITIONS								COST & SAVINGS ANALYSIS					
	Area Description	No. of Fixtures	Standard Fixture Code	NYSERDA Fixture Code	Watts per Fixture	kW/Space	Exist Control	Annual Hours	Annual kWh	Number of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Exist Control	Annual Hours	Annual kWh	Annual kWh Saved	Annual \$ Saved	Retrofit Cost	NJ Lighting Incentive	Simple Payback With Out Incentive	
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) = 2x2' 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) = 2x2' 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)	(kWh Saved) * (\$/kWh)	Cost for renovations to lighting system	Prescriptive Lighting Measures	Length of time for renovations cost to be recovered	
	Police Dept. First Floor																						
225	101 Sallyport	6	70 High Pressure Sodium	HPS70/1	95	0.6	BREAKER	8760	4,993	6	70 High Pressure Sodium	HPS70/1	95	0.6	BREAKER	8,760	4,993	-	\$ -	\$ -	\$0		
6	102 Officer	2	T 34 R F 4 (MAG)	F44EE	144	0.3	SW	8760	2,523	2	T 28 R F 4	F44SSILL	96	0.2	SW	8,760	1,682	841	\$ 114.78	\$ 262.50	\$40	2.3	
16	103 Sprinkler Room	2	T 34 R F 2 (MAG)	F42EE	72	0.1	SW	50	7	2	T 28 R F 2	F42SSILL	48	0.1	SW	50	5	2	\$ 5.63	\$ 229.50	\$20	40.8	
16	104 Security Lock	1	T 34 R F 2 (MAG)	F42EE	72	0.1	Breaker	8760	631	1	T 28 R F 2	F42SSILL	48	0.0	Breaker	8,760	420	210	\$ 28.69	\$ 114.75	\$10	4.0	
16	104 Security Lock	1	T 34 R F 2 (MAG)	F42EE	72	0.1	SW	8760	631	1	T 28 R F 2	F42SSILL	48	0.0	SW	8,760	420	210	\$ 28.69	\$ 114.75	\$10	4.0	
6	105 DWI Process	2	T 34 R F 4 (MAG)	F44EE	144	0.3	SW	8760	2,523	2	T 28 R F 4	F44SSILL	96	0.2	SW	8,760	1,682	841	\$ 114.78	\$ 262.50	\$40	2.3	
6	106 Stack Area	1	T 34 R F 4 (MAG)	F44EE	144	0.1	SW	8760	1,261	1	T 28 R F 4	F44SSILL	96	0.1	SW	8,760	841	420	\$ 57.39	\$ 131.25	\$20	2.3	
123	107 Toilet	1	O CF 15	CFS15/1	15	0.0	SW	3000	45	1	O CF 15	CFS15/1	15	0.0	SW	3,000	45	-	\$ -	\$ -	\$0		
61	107A Closet	1	T 34 R F 3 (MAG)	F43EE	115	0.1	SW	50	6	1	T 28 R F 3	F43SSILL	72	0.1	SW	50	4	2	\$ 5.04	\$ 128.25	\$20	25.4	
6	108 Operations Area	3	T 34 R F 4 (MAG)	F44EE	144	0.4	SW	8760	3,784	3	T 28 R F 4	F44SSILL	96	0.3	SW	8,760	2,523	1,261	\$ 172.17	\$ 393.75	\$60	2.3	
16	109 Corridor / Work Area	5	T 34 R F 2 (MAG)	F42EE	72	0.4	SW	8760	3,154	5	T 28 R F 2	F42SSILL	48	0.2	SW	8,760	2,102	1,051	\$ 143.47	\$ 573.75	\$50	4.0	
16	109 Corridor / Work Area	2	T 34 R F 2 (MAG)	F42EE	72	0.1	Breaker	8760	1,261	2	T 28 R F 2	F42SSILL	48	0.1	Breaker	8,760	841	420	\$ 57.39	\$ 229.50	\$20	4.0	
16	109A Corridor	2	T 34 R F 2 (MAG)	F42EE	72	0.1	SW	8760	1,261	2	T 28 R F 2	F42SSILL	48	0.1	SW	8,760	841	420	\$ 57.39	\$ 229.50	\$20	4.0	
16	109A Corridor	3	T 34 R F 2 (MAG)	F42EE	72	0.2	Breaker	8760	1,892	3	T 28 R F 2	F42SSILL	48	0.1	Breaker	8,760	1,261	631	\$ 86.08	\$ 344.25	\$30	4.0	
6	109A Corridor	4	T 34 R F 4 (MAG)	F44EE	144	0.6	BREAKER	8760	5,046	4	T 28 R F 4	F44SSILL	96	0.4	BREAKER	8,760	3,364	1,682	\$ 229.56	\$ 525.00	\$80	2.3	
X1	109A Corridor	1	X 1.5 W LED	ELED1.5/1	1.5	0.0	Breaker	8760	13	1	X 1.5 W LED	ELED1.5/1	1.5	0.0	Breaker	8,760	13	-	\$ -	\$ -	\$0		
X1	109 Corridor / Work Area	1	X 1.5 W LED	ELED1.5/1	1.5	0.0	BREAKER	8760	13	1	X 1.5 W LED	ELED1.5/1	1.5	0.0	BREAKER	8,760	13	-	\$ -	\$ -	\$0		
18	110 Cell 1	1	T 32 R F 4 (ELE)	F44ILL	112	0.1	BREAKER	5840	654	1	T 32 R F 4 (ELE)	F44ILL	112	0.1	BREAKER	5,840	654	-	\$ -	\$ -	\$0		
18	111 Cell 2	1	T 32 R F 4 (ELE)	F44ILL	112	0.1	BREAKER	5840	654	1	T 32 R F 4 (ELE)	F44ILL	112	0.1	BREAKER	5,840	654	-	\$ -	\$ -	\$0		
18	112 Cell 3	1	T 32 R F 4 (ELE)	F44ILL	112	0.1	BREAKER	5840	654	1	T 32 R F 4 (ELE)	F44ILL	112	0.1	BREAKER	5,840	654	-	\$ -	\$ -	\$0		
18	113 Cell 4	1	T 32 R F 4 (ELE)	F44ILL	112	0.1	BREAKER	5840	654	1	T 32 R F 4 (ELE)	F44ILL	112	0.1	BREAKER	5,840	654	-	\$ -	\$ -	\$0		
18	114 Cell 5	1	T 32 R F 4 (ELE)	F44ILL	112	0.1	BREAKER	5840	654	1	T 32 R F 4 (ELE)	F44ILL	112	0.1	BREAKER	5,840	654	-	\$ -	\$ -	\$0		
18	115 Cell 6	1	T 32 R F 4 (ELE)	F44ILL	112	0.1	BREAKER	5840	654	1	T 32 R F 4 (ELE)	F44ILL	112	0.1	BREAKER	5,840	654	-	\$ -	\$ -	\$0		
18	116 Mug Shot	1	T 32 R F 4 (ELE)	F44ILL	112	0.1	OCC	5000	560	1	T 32 R F 4 (ELE)	F44ILL	112	0.1	OCC	5,000	560	-	\$ -	\$ -	\$0		
108	116 Mug Shot	3	I 65	I65/1	65	0.2	OCC	5000	975	3	CF 26	CFQ26/1-L	27	0.1	OCC	5,000	405	570	\$ 83.23	\$ 60.75	\$0	0.7	
18	117 Finger Print	1	T 32 R F 4 (ELE)	F44ILL	112	0.1	SW	5000	560	1	T 32 R F 4 (ELE)	F44ILL	112	0.1	SW	5,000	560	-	\$ -	\$ -	\$0		
18	118 Cell 7	1	T 32 R F 4 (ELE)	F44ILL	112	0.1	BREAKER	5840	654	1	T 32 R F 4 (ELE)	F44ILL	112	0.1	BREAKER	5,840	654	-	\$ -	\$ -	\$0		
18	119 Cell 8	1	T 32 R F 4 (ELE)	F44ILL	112	0.1	BREAKER	5840	654	1	T 32 R F 4 (ELE)	F44ILL	112	0.1	BREAKER	5,840	654	-	\$ -	\$ -	\$0		
18	120 Cell 9	1	T 32 R F 4 (ELE)	F44ILL	112	0.1	BREAKER	5840	654	1	T 32 R F 4 (ELE)	F44ILL	112	0.1	BREAKER	5,840	654	-	\$ -	\$ -	\$0		
6	121 Process Rm 1	2	T 34 R F 4 (MAG)	F44EE	144	0.3	SW	8760	2,523	2	T 28 R F 4	F44SSILL	96	0.2	SW	8,760	1,682	841	\$ 114.78	\$ 262.50	\$40	2.3	
6	122 Process Rm 2	2	T 34 R F 4 (MAG)	F44EE	144	0.3	SW	8760	2,523	2	T 28 R F 4	F44SSILL	96	0.2	SW	8,760	1,682	841	\$ 114.78	\$ 262.50	\$40	2.3	
6	123 Process Rm 3	2	T 34 R F 4 (MAG)	F44EE	144	0.3	SW	8760	2,523	2	T 28 R F 4	F44SSILL	96	0.2	SW	8,760	1,682	841	\$ 114.78	\$ 262.50	\$40	2.3	
18	124 Juvenile Holding	1	T 32 R F 4 (ELE)	F44ILL	112	0.1	SW	5840	654	1	T 32 R F 4 (ELE)	F44ILL	112	0.1	SW	5,840	654	-	\$ -	\$ -	\$0		
6	125 Entry	1	T 34 R F 4 (MAG)	F44EE	144	0.1	SW	8760	1,261	1	T 28 R F 4	F44SSILL	96	0.1	SW	8,760	841	420	\$ 57.39	\$ 131.25	\$20	2.3	
6	126 Discharge	1	T 34 R F 4 (MAG)	F44EE	144	0.1	SW	8760	1,261	1	T 28 R F 4	F44SSILL	96	0.1	SW	8,760	841	420	\$ 57.39	\$ 131.25	\$20	2.3	
16	127 Vestibule	1	T 34 R F 2 (MAG)	F42EE	72	0.1	BREAKER	8760	631	1	T 28 R F 2	F42SSILL	48	0.0	BREAKER	8,760	420	210	\$ 28.69	\$ 114.75	\$10	4.0	
16	127 Vestibule	1	T 34 R F 2 (MAG)	F42EE	72	0.1	SW	6205	447	1	T 28 R F 2	F42SSILL	48	0.0	SW	6,205	298	149	\$ 21.10	\$ 114.75	\$10	5.4	
X1	128 Corridor	1	X 1.5 W LED	ELED1.5/1	1.5	0.0	BREAKER	8760	13	1	X 1.5 W LED	ELED1.5/1	1.5	0.0	BREAKER	8,760	13	-	\$ -	\$ -	\$0		
4	128 Corridor	1	2T 34 R F 2 (u) (MAG) (Note 1)	FU2EE	72	0.1	SW	8760	631	1	2T 17 R F 4 (ELE)	F22ILL	33	0.0	SW	8,76							

Field Code	Area Description	EXISTING CONDITIONS							RETROFIT CONDITIONS							COST & SAVINGS ANALYSIS						
		No. of Fixtures	Standard Fixture Code	NYSERDA Fixture Code	Watts per Fixture	kW/Space	Exist Control	Annual Hours	Annual kWh	Number of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Exist Control	Annual Hours	Annual kWh	Annual kWh Saved	Annual \$ Saved	Retrofit Cost	NJ Lighting Incentive	Simple Payback With Out Incentive
	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) = 2x2' 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) = 2x2' 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)	(kWh Saved) * (\$/kWh)	Cost for renovations to lighting system	Prescriptive Lighting Measures	Length of time for renovations cost to be recovered
6	151 Server Room	2	T 34 R F 4 (MAG)	F44EE	144	0.3	SW	600	173	2	T 28 R F 4	F44SSILL	96	0.2	SW	600	115	58	\$ 17.80	\$ 262.50	\$40	14.7
61	Boiler Room	4	T 34 R F 3 (MAG)	F43EE	115	0.5	SW	2080	957	4	T 28 R F 3	F43SSILL	72	0.3	SW	2,080	599	358	\$ 63.40	\$ 513.00	\$80	8.1
88	Boiler Room	2	CF 13 1 LAMP	CFQ13/1-L	15	0.0		2080	62	2	CF 13 1 LAMP	CFQ13/1-L	15	0.0		2,080	62	-	\$ -	\$ -	\$0	
61	Boiler Room	1	T 34 R F 3 (MAG)	F43EE	115	0.1		2080	239	1	T 28 R F 3	F43SSILL	72	0.1		2,080	150	89	\$ 15.85	\$ 128.25	\$20	8.1
88	Boiler Room	3	CF 13 1 LAMP	CFQ13/1-L	15	0.0		2080	94	3	CF 13 1 LAMP	CFQ13/1-L	15	0.0		2,080	94	-	\$ -	\$ -	\$0	
88	Boiler Room	4	CF 13 1 LAMP	CFQ13/1-L	15	0.1		2080	125	4	CF 13 1 LAMP	CFQ13/1-L	15	0.1		2,080	125	-	\$ -	\$ -	\$0	
61	Boiler Room	1	T 34 R F 3 (MAG)	F43EE	115	0.1		2080	239	1	T 28 R F 3	F43SSILL	72	0.1		2,080	150	89	\$ 15.85	\$ 128.25	\$20	8.1
61	Director of Maintenance Office	2	T 34 R F 3 (MAG)	F43EE	115	0.2	SW	2080	478	2	T 28 R F 3	F43SSILL	72	0.1	SW	2,080	300	179	\$ 31.70	\$ 256.50	\$40	8.1
108	Storage Closet	1	I 65	I65/1	65	0.1	SW	520	34	1	CF 26	CFQ26/1-L	27	0.0	SW	520	14	20	\$ 6.67	\$ 20.25	\$0	3.0
6	Police Bike Storage	1	T 34 R F 4 (MAG)	F44EE	144	0.1	SW	520	75	1	T 28 R F 4	F44SSILL	96	0.1	SW	520	50	25	\$ 8.42	\$ 131.25	\$20	15.6
6	Lobby	3	T 34 R F 4 (MAG)	F44EE	144	0.4	SW	6205	2,681	3	T 28 R F 4	F44SSILL	96	0.3	SW	6,205	1,787	894	\$ 126.62	\$ 393.75	\$60	3.1
86	Lobby	1	XX 3.0	ELED3/1	3	0.0	BREAKER	8760	26	1	XX 3.0	ELED3/1	3	0.0	BREAKER	8,760	26	-	\$ -	\$ -	\$0	
61	East Vestibule	1	T 34 R F 3 (MAG)	F43EE	115	0.1	SW	6205	714	1	T 28 R F 3	F43SSILL	72	0.1	SW	6,205	447	267	\$ 37.81	\$ 128.25	\$20	3.4
61	Main Corridor South	10	T 34 R F 3 (MAG)	F43EE	115	1.2	SW	6205	7,136	10	T 28 R F 3	F43SSILL	72	0.7	SW	6,205	4,468	2,668	\$ 378.10	\$ 1,282.50	\$200	3.4
88	Main Corridor South	4	CF 13 1 LAMP	CFQ13/1-L	15	0.1	SW	6205	372	4	CF 13 1 LAMP	CFQ13/1-L	15	0.1	SW	6,205	372	-	\$ -	\$ -	\$0	
90	Main Corridor South	3	X CF 7.0	ECF7/1	10	0.0	BREAKER	8760	263	3	X CF 7.0	ECF7/1	10	0.0	BREAKER	8,760	263	-	\$ -	\$ -	\$0	
88	West Vestibule	1	CF 13 1 LAMP	CFQ13/1-L	15	0.0	SW	6205	93	1	CF 13 1 LAMP	CFQ13/1-L	15	0.0	SW	6,205	93	-	\$ -	\$ -	\$0	
88	West Vestibule	1	CF 13 1 LAMP	CFQ13/1-L	15	0.0	BREAKER	8760	131	1	CF 13 1 LAMP	CFQ13/1-L	15	0.0	BREAKER	8,760	131	-	\$ -	\$ -	\$0	
88	Main Stairway	3	CF 13 1 LAMP	CFQ13/1-L	15	0.0	SW	6205	279	3	CF 13 1 LAMP	CFQ13/1-L	15	0.0	SW	6,205	279	-	\$ -	\$ -	\$0	
88	Main Stairway	1	CF 13 1 LAMP	CFQ13/1-L	15	0.0	SW	6205	93	1	CF 13 1 LAMP	CFQ13/1-L	15	0.0	SW	6,205	93	-	\$ -	\$ -	\$0	
4	Men's Room	2	2T 34 R F 2 (u) (MAG) (Note 1)	FU2EE	72	0.1	SW	6205	894	2	2T 17 R F 4 (ELE)	F22ILL	33	0.1	SW	6,205	410	484	\$ 68.59	\$ 202.50	\$20	3.0
123	Men's Room	1	O CF 15	CFS15/1	15	0.0	SW	6205	93	1	O CF 15	CFS15/1	15	0.0	SW	6,205	93	-	\$ -	\$ -	\$0	
4	Ladies Room	2	2T 34 R F 2 (u) (MAG) (Note 1)	FU2EE	72	0.1	SW	6205	894	2	2T 17 R F 4 (ELE)	F22ILL	33	0.1	SW	6,205	410	484	\$ 68.59	\$ 202.50	\$20	3.0
123	Ladies Room	1	O CF 15	CFS15/1	15	0.0	SW	6205	93	1	O CF 15	CFS15/1	15	0.0	SW	6,205	93	-	\$ -	\$ -	\$0	
6	Community Policing	4	T 34 R F 4 (MAG)	F44EE	144	0.6	SW	2080	1,198	4	T 28 R F 4	F44SSILL	96	0.4	SW	2,080	799	399	\$ 70.78	\$ 525.00	\$80	7.4
6	Tax Assessor	6	T 34 R F 4 (MAG)	F44EE	144	0.9	Sw	2080	1,797	6	T 28 R F 4	F44SSILL	96	0.6	Sw	2,080	1,198	599	\$ 106.16	\$ 787.50	\$120	7.4
6	Tax Assessor	9	T 34 R F 4 (MAG)	F44EE	144	1.3	Sw	2080	2,696	9	T 28 R F 4	F44SSILL	96	0.9	Sw	2,080	1,797	899	\$ 159.25	\$ 1,181.25	\$180	7.4
6	Tax Assessor's Office	4	T 34 R F 4 (MAG)	F44EE	144	0.6		2080	1,198	4	T 28 R F 4	F44SSILL	96	0.4		2,080	799	399	\$ 70.78	\$ 525.00	\$80	7.4
4	ACS Storage	3	2T 34 R F 2 (u) (MAG) (Note 1)	FU2EE	72	0.2	SW	2080	449	3	2T 17 R F 4 (ELE)	F22ILL	33	0.1	SW	2,080	206	243	\$ 43.13	\$ 303.75	\$30	7.0
4	Tax Collector	12	2T 34 R F 2 (u) (MAG) (Note 1)	FU2EE	72	0.9	SW	2080	1,797	12	2T 17 R F 4 (ELE)	F22ILL	33	0.4	SW	2,080	824	973	\$ 172.52	\$ 1,215.00	\$120	7.0
6	Office within Tax Collector Area	2	T 34 R F 4 (MAG)	F44EE	144	0.3	SW	2080	599	2	T 28 R F 4	F44SSILL	96	0.2	SW	2,080	399	200	\$ 35.39	\$ 262.50	\$40	7.4
6	Tax Files	5	T 34 R F 4 (MAG)	F44EE	144	0.7	SW	2080	1,498	5	T 28 R F 4	F44SSILL	96	0.5	SW	2,080	998	499	\$ 88.47	\$ 656.25	\$100	7.4
6	Tax Files	1	T 34 R F 4 (MAG)	F44EE	144	0.1	BREAKER	8760	1,261	1	T 28 R F 4	F44SSILL	96	0.1	BREAKER	8,760	841	420	\$ 57.39	\$ 131.25	\$20	2.3
6	Assessor Storage	2	T 34 R F 4 (MAG)	F44EE	144	0.3	SW	780	225	2	T 28 R F 4	F44SSILL	96	0.2	SW	780	150	75	\$ 19.94	\$ 262.50	\$40	13.2
6	Tax Collector Pay Window Area	3	T 34 R F 4 (MAG)	F44EE	144	0.4	SW	2080	899	3	T 28 R F 4	F44SSILL	96	0.3	SW	2,080	599	300	\$ 53.08	\$ 393.75	\$60	7.4
123	Storage Closet	2	O CF 15	CFS15/1	15	0.0	SW	780	23	2	O CF 15	CFS15/1	15	0.0	SW	780	23	-	\$ -	\$ -	\$0	
6	Municipal Clerk Counter Area	2	T 34 R F 4 (MAG)	F44EE	144	0.3	SW	2080	599	2	T 28 R F 4	F44SSILL	96	0.2	SW	2,080	399	200	\$ 35.39	\$ 262.50	\$40	7.4
6	Municipal Clerk Counter Area	8	T 34 R F 4 (MAG)	F44EE	144	1.2	SW	2080	2,396	8	T 28 R F 4	F44SSILL	96	0.8	SW	2,080	1,597	799	\$ 141.55	\$ 1,050.00	\$160	7.4
46	Municipal Clerk Storage Rm	2	W 32 C F 2 (ELE)	F42LL	60	0.1	SW	2080	250	2	W 32 C F 2 (ELE)	F42LL	60	0.1	SW	2,080	250	-	\$ -	\$ -	\$0	
6	Copy Room	4	T 34 R F 4 (MAG)	F44EE	144	0.6	SW	2080	1,198	4	T 28 R F 4	F44SSILL	96	0.4	SW	2,080	799	399	\$ 70.78	\$ 525.00	\$80	7.4
6	Corner Office	4	T 34 R F 4 (MAG)	F44EE	144	0.6	SW	2080	1,198	4	T 28 R F 4	F44SSILL	96	0.4	SW	2,080	799	399	\$ 70.78	\$ 525.00	\$80	7.4
6	Mayor's Office	9	T 34 R F 4 (MAG)	F44EE	144	1.3	SW	2080	2,696	9	T 28 R F 4	F44SSILL	96	0.9	SW	2,080	1,797	899	\$ 159.25	\$ 1,181.25	\$180	7.4
123	Mayor's Storage Area	1	O CF 15	CFS15/1	15	0.0	SW	1400	21	1	O CF 15	CFS15/1	15	0.0	SW	1,400	21	-	\$ -	\$ -	\$0	
123	Mayor's Restroom	6	O CF 15	CFS15/1	15	0.1	SW	1400	126	6	O CF 15	CFS15/1	15	0.1	SW	1,400	126	-	\$ -	\$ -	\$0	
123	Mayor's Restroom	4	O CF 15	CFS15/1	15	0.1	SW	780	47	4	O CF 15	CFS15/1	15	0.1	SW	780	47	-	\$ -	\$ -	\$0	
6	Business Administrator	4	T 34 R F 4 (MAG)	F44EE	144	0.6	SW	780	449	4	T 28 R F 4	F44SSILL	96	0.4	SW	780	300	150	\$ 39.88	\$ 525.00	\$80	13.2
6	Business Administrator	2	T 34 R F 4 (MAG)	F44EE	144	0.3	SW	2340	674	2	T 28 R F 4	F44SSILL	96	0.2	SW	2,340	449	225	\$ 38.48	\$ 262.50	\$40	6.8
6	Office	2	T 34 R F 4 (MAG)	F44EE	144	0.3	SW	2080	599	2	T 28 R F 4	F44SSILL	96	0.2	SW	2,080	399	200	\$ 35.39	\$ 262.50	\$40	7.4
6	Copy Room	3	T 34 R F 4 (MAG)	F44EE	144	0.4	SW	2080	899	3	T 28 R F 4	F44SSILL	96	0.3	SW	2,080	599	300	\$ 53.08	\$ 393.75	\$60	7.4
6	Administration Area	12	T 34 R F 4 (MAG)	F44EE	144	1.7	SW	2080	3,594	12	T 28 R F 4	F44SSILL	96	1.2	SW	2,080	2,396	1,198	\$ 212.33	\$ 1,575.00	\$240	7.4
6	106 Conference Room	6	T 34 R F 4 (MAG)	F44EE	144	0.9	SW	2080	1,797	6	T 28 R F 4	F44SSILL	96	0.6	SW	2,080	1,198	599	\$ 106.16	\$ 787.50	\$120	7.4
6	Storage Room	4	T 34 R F 4 (MAG)	F44EE	144	0.6	SW	520	300	4	T 28 R F 4	F44SSILL	96	0.4	SW	520	200	100	\$ 33.70	\$ 525.00	\$80	15.6
6	Storage Room	2	T 34 R F 4 (MAG)	F44EE	144	0.3	SW	520	150	2	T 28 R F 4	F44SSILL	96	0.2	SW	520	100	50	\$ 16.85	\$ 262.50	\$40	15.6
6	102 Recreation	6	T 34 R F 4 (MAG)	F44EE	144	0.9	SW	2080	1,797	6	T 28 R F 4	F44SSILL	96	0.6	SW	2,080	1,198	599	\$ 106.16	\$ 787.50	\$120	7.4
6	Rec Office	2	T 34 R F 4 (MAG)	F44EE	144	0.3	SW	2080	599	2	T 28 R F 4	F44SSILL	96	0.2	SW	2,080	399	200	\$ 35.39	\$ 262.50	\$40	7.4
6	Rec Office	2	T 34 R F 4 (MAG)	F44EE	144	0.3	SW	2080	599	2	T 28 R F 4	F44SSILL	96	0.2	SW	2,080	399	200	\$ 35.39	\$ 262.50	\$40	7.4
6	Cherry Hill Alliance Drug/ Alcohol	3	T 34 R F 4 (MAG)	F44EE	144	0.4	SW	3068	1,325	3	T 28 R F 4	F44SSILL	96	0.3	SW	3,068	884	442	\$ 70.70	\$ 393.75	\$60	5.6
123	South Starway	4	O CF 15	CFS15/1	15	0.1	BREAKER	8760	526	4	O CF 15	CFS15/1	15	0.1	BREAKER	8,760	526	-	\$ -	\$ -	\$0	
	Police Dept., Second Floor																					
6	201 Detectives	4	T 34 R F 4 (MAG)	F44EE	144	0.6	SW	8760	5,046	4	T 28 R F 4	F44SSILL	96	0.4	SW	8,760	3,364	1,68				

		EXISTING CONDITIONS								RETROFIT CONDITIONS								COST & SAVINGS ANALYSIS					
	Area Description	No. of Fixtures	Standard Fixture Code	NYSERDA Fixture Code	Watts per Fixture	kW/Space	Exist Control	Annual Hours	Annual kWh	Number of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Exist Control	Annual Hours	Annual kWh	Annual kWh Saved	Annual \$ Saved	Retrofit Cost	NJ Lighting Incentive	Simple Payback With Out Incentive	
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)	(kWh Saved) * (\$/kWh)	Cost for renovations to lighting system	Prescriptive Lighting Measures	Length of time for renovations cost to be recovered	
61	219 Office Bookkeeper	2	T 34 R F 3 (MAG)	F43EE	115	0.2	SW	2080	478	2	T 28 R F 3	F43SSILL	72	0.1	SW	2,080	300	179	\$ 31.70	\$ 256.50	\$40	8.1	
98	220 Communications	2	T 32 R F 2	F42LL	60	0.1	SW	600	72	2	T 32 R F 2	F42LL	60	0.1	SW	600	72	-	\$ -	\$ -	\$0		
61	221 Dispatch	8	T 34 R F 3 (MAG)	F43EE	115	0.9	SW	8760	8,059	8	T 28 R F 3	F43SSILL	72	0.6	SW	8,760	5,046	3,013	\$ 411.29	\$ 1,026.00	\$160	2.5	
172	219 Corridor (dwgA2.1.8.30.93)	4	1T 34 R F 2 (MAG)	F42EE	72	0.3	SW	6205	1,787	4	1T 28 R F 2	F42SSILL	48	0.2	SW	6,205	1,191	596	\$ 84.41	\$ 459.00	\$40	5.4	
172	219 Corridor (dwgA2.1.8.30.93)	2	1T 34 R F 2 (MAG)	F42EE	72	0.1	BREAKER	8760	1,261	2	1T 28 R F 2	F42SSILL	48	0.1	BREAKER	8,760	841	420	\$ 57.39	\$ 229.50	\$20	4.0	
61	222 Office	4	T 34 R F 3 (MAG)	F43EE	115	0.5	SW	2080	957	4	T 28 R F 3	F43SSILL	72	0.3	SW	2,080	599	358	\$ 63.40	\$ 513.00	\$80	8.1	
61	223 Office	4	T 34 R F 3 (MAG)	F43EE	115	0.5	SW	2080	957	4	T 28 R F 3	F43SSILL	72	0.3	SW	2,080	599	358	\$ 63.40	\$ 513.00	\$80	8.1	
61	224 Office	4	T 34 R F 3 (MAG)	F43EE	115	0.5	SW	2080	957	4	T 28 R F 3	F43SSILL	72	0.3	SW	2,080	599	358	\$ 63.40	\$ 513.00	\$80	8.1	
61	225 Office Captain	2	T 34 R F 3 (MAG)	F43EE	115	0.2	SW	2080	478	2	T 28 R F 3	F43SSILL	72	0.1	SW	2,080	300	179	\$ 31.70	\$ 256.50	\$40	8.1	
6	226 Office Chief	4	T 34 R F 4 (MAG)	F44EE	144	0.6	SW	2080	1,198	4	T 28 R F 4	F44SSILL	96	0.4	SW	2,080	799	399	\$ 70.78	\$ 525.00	\$80	7.4	
6	227 Conference Room	2	T 34 R F 4 (MAG)	F44EE	144	0.3	SW	2080	599	2	T 28 R F 4	F44SSILL	96	0.2	SW	2,080	399	200	\$ 35.39	\$ 262.50	\$40	7.4	
6	228 Internal Affairs	4	T 34 R F 4 (MAG)	F44EE	144	0.6	SW	2080	1,198	4	T 28 R F 4	F44SSILL	96	0.4	SW	2,080	799	399	\$ 70.78	\$ 525.00	\$80	7.4	
6	229 Office	4	T 34 R F 4 (MAG)	F44EE	144	0.6	SW	2080	1,198	4	T 28 R F 4	F44SSILL	96	0.4	SW	2,080	799	399	\$ 70.78	\$ 525.00	\$80	7.4	
6	230 Secretary Area	4	T 34 R F 4 (MAG)	F44EE	144	0.6	SW	2080	1,198	4	T 28 R F 4	F44SSILL	96	0.4	SW	2,080	799	399	\$ 70.78	\$ 525.00	\$80	7.4	
190	230 Secretary Area, Under cabinet	2	1B 32 C F 2)	F42LL	60	0.1	SW	2080	250	2	1B 32 C F 2)	F42LL	60	0.1	SW	2,080	250	-	\$ -	\$ -	\$0		
47	Men's Room	2	1B 34 C F 2 (MAG)	F42EE	72	0.1	SW	6205	894	2	1B 28 C F 2	F42SSILL	48	0.1	SW	6,205	596	298	\$ 42.21	\$ 256.50	\$20	6.1	
123	Men's Room	1	O CF 15	CFS15/1	15	0.0	SW	6205	93	1	O CF 15	CFS15/1	15	0.0	SW	6,205	93	-	\$ -	\$ -	\$0		
123	Women's Room	2	O CF 15	CFS15/1	15	0.0	SW	6205	186	2	O CF 15	CFS15/1	15	0.0	SW	6,205	186	-	\$ -	\$ -	\$0		
4	Women's Room	2	2T 34 R F 2 (u) (MAG) (Note 1)	FU2EE	72	0.1	SW	6205	894	2	2T 17 R F 4 (ELE)	F22ILL	33	0.1	SW	6,205	410	484	\$ 68.59	\$ 202.50	\$20	3.0	
123	Janitor's Closet	2	O CF 15	CFS15/1	15	0.0	SW	780	23	2	O CF 15	CFS15/1	15	0.0	SW	780	23	-	\$ -	\$ -	\$0		
6	231 Conference Room	6	T 34 R F 4 (MAG)	F44EE	144	0.9	SW	1040	899	6	T 28 R F 4	F44SSILL	96	0.6	SW	1,040	599	300	\$ 69.08	\$ 787.50	\$120	11.4	
6	233 Dave's Office	1	T 34 R F 4 (MAG)	F44EE	144	0.1	SW	3068	442	1	T 28 R F 4	F44SSILL	96	0.1	SW	3,068	295	147	\$ 23.57	\$ 131.25	\$20	5.6	
6	Storage next to Dave's Office	1	T 34 R F 4 (MAG)	F44EE	144	0.1	SW	600	86	1	T 28 R F 4	F44SSILL	96	0.1	SW	600	58	29	\$ 8.90	\$ 131.25	\$20	14.7	
6	Attorney's Office	2	T 34 R F 4 (MAG)	F44EE	144	0.3	SW	3068	884	2	T 28 R F 4	F44SSILL	96	0.2	SW	3,068	589	295	\$ 47.13	\$ 262.50	\$40	5.6	
6	234 Court Room	8	T 34 R F 4 (MAG)	F44EE	144	1.2	SW	3068	3,534	8	T 28 R F 4	F44SSILL	96	0.8	SW	3,068	2,356	1,178	\$ 188.52	\$ 1,050.00	\$160	5.6	
X1	234 Court Room	2	X 1.5 W LED	ELED1.5/1	1.5	0.0	BREAKER	3068	9	2	X 1.5 W LED	ELED1.5/1	1.5	0.0	BREAKER	3,068	9	-	\$ -	\$ -	\$0		
6	234 Court Room	3	T 34 R F 4 (MAG)	F44EE	144	0.4	SW	3068	1,325	3	T 28 R F 4	F44SSILL	96	0.3	SW	3,068	884	442	\$ 70.70	\$ 393.75	\$60	5.6	
X1	North Stairway	1	X 1.5 W LED	ELED1.5/1	1.5	0.0	BREAKER	8760	13	1	X 1.5 W LED	ELED1.5/1	1.5	0.0	BREAKER	8,760	13	-	\$ -	\$ -	\$0		
123	North Stairway	4	O CF 15	CFS15/1	15	0.1	BREAKER	8760	526	4	O CF 15	CFS15/1	15	0.1	BREAKER	8,760	526	-	\$ -	\$ -	\$0		
Public Area Second Floor																							
6	Court Records Counter Area	3	T 34 R F 4 (MAG)	F44EE	144	0.4	SW	2080	899	3	T 28 R F 4	F44SSILL	96	0.3	SW	2,080	599	300	\$ 53.08	\$ 393.75	\$60	7.4	
6	East & South Clerical Area	13	T 34 R F 4 (MAG)	F44EE	144	1.9	SW	2080	3,894	13	T 28 R F 4	F44SSILL	96	1.2	SW	2,080	2,596	1,298	\$ 230.02	\$ 1,706.25	\$260	7.4	
6	Dept Head Office	3	T 34 R F 4 (MAG)	F44EE	144	0.4	SW	2080	899	3	T 28 R F 4	F44SSILL	96	0.3	SW	2,080	599	300	\$ 53.08	\$ 393.75	\$60	7.4	
6	Back File Area	3	T 34 R F 4 (MAG)	F44EE	144	0.4	SW	2080	899	3	T 28 R F 4	F44SSILL	96	0.3	SW	2,080	599	300	\$ 53.08	\$ 393.75	\$60	7.4	
6	212 Purchasing	4	T 34 R F 4 (MAG)	F44EE	144	0.6	SW	2080	1,198	4	T 28 R F 4	F44SSILL	96	0.4	SW	2,080	799	399	\$ 70.78	\$ 525.00	\$80	7.4	
123	Closet	1	O CF 15	CFS15/1	15	0.0	SW	520	8	1	O CF 15	CFS15/1	15	0.0	SW	520	8	-	\$ -	\$ -	\$0		
6	Employee Lounge	8	T 34 R F 4 (MAG)	F44EE	144	1.2	SW	2080	2,396	8	T 28 R F 4	F44SSILL	96	0.8	SW	2,080	1,597	799	\$ 141.55	\$ 1,050.00	\$160	7.4	
4	Men's Room	2	2T 34 R F 2 (u) (MAG) (Note 1)	FU2EE	72	0.1	SW	6205	894	2	2T 17 R F 4 (ELE)	F22ILL	33	0.1	SW	6,205	410	484	\$ 68.59	\$ 20</			

Lighting Fixture Code

This key defines fixture types surveyed in the field and presented in this report. Each fixture is given a code selected from the key, which can contain five or six character parts. In some cases, the suffix part is left off. The "special suffix" part of the code is optional for some fixture descriptions since some are rare. Above the key is an example using all six of the parts.

This example: 2' x 2' troffer fixture - 40 watts - recessed - fluorescent - 2 lamps - U-shaped.

2T 40 R F 2 (u)					
<i>Fixture</i>	<i>Individual Lamp Watts</i>	<i>Mounting Method</i>	<i>Lamp Type</i>	<i># of Lamps per Fixture</i>	
B 2' x 4' Box 1B 1' x 4' Box 2B 2' x 2' Box 4B 4' x 4' Box BL Bollard CD Chandelier CH Cobra Head - Pole CR Concentric Ring D Downlight DC Decorative DR Drum E Eggcrate EP Explosion Proof ER Ellipsoidal Reflector FL Flood G Globe H Hood (Kitchen) HB High Bay I Industrial LB Low Bay LD Lensed Downlight O Open P 2' x 4' Parabolic 1P 1' x 4' Parabolic 2P 2' x 2' Parabolic 4P 4' x 4' Parabolic R Round Q Square S Strip SB Shoebox - Pole SP Spot TL Table Lamp TK Track T 2' x 4' Troffer 1T 1' x 4' Troffer 2T 2' x 2' Troffer 4T 4' x 4' Troffer UC Undercounter V Vapor Resistant Strip W Wraparound WP Wall Pack X One-Sided Exit Sign XX Two-Sided Exit Sign		C Ceiling G Ground P Pendant Po Pole R Recessed T Table Tr Track W Wall	F Fluorescent (CF) Compact Fluor. HPS High Pressure Sodium I Incandescent LED Light Emitting Diode LPS Low Pressure Sodium MV Mercury Vapor MH Metal Halide Qz Quartz TH Tungsten Halogen		
<i>Special Suffix (Can have more than 1)</i>					
(1) Only 1 Lamp Lit (if not equal to quantity) (2) Only 2 Lamps Lit (if not equal to quantity) (b) Bayonet Socket Lamp (bx) Biax Lamp (c) Candelabra Socket Lamp (c18) Cells 18 - # of Cells in parabolic lens (12, 24, 36 etc.) (cir) Fluorescent Circle Tubes (col) Colored Bulbs (i.e., on a stage) (d) Dimmable (dc) Decorative Luminaire w/Circle Retrofit (e) Emergency Ballast in Fixture (ho) High Output (i) Intermediate Socket Lamp (m) Medium Socket Lamp (mg) Mogel Socket Lamp (mr) MR 16 Lamp (n) New Fixture Recommended (p38) Par 38 Lamp (could use p20/p30/p40 etc.) (pc) Paracube Lens (1/2" cells) (r) Reflector already installed (s) Replace with a One Lamp 4' Strip (sb) Silver Bottom Incandescent Bulbs (t) Tandem Potential Fixtures Butted End to End (tf) Tandem Fixtures w/Flexible Conduit & One Ballast (th) Tungsten Halogen Retrofit - Comp. Fluor. won't fit (t2) Tandem (2) 1 Lamp Fixtures End to End w/1 Ballast (t3) Tandem (3) 1 Lamp Fixtures End to End w/1 Ballast (t4) Tandem (4) 1 Lamp Fixtures End to End w/1 Ballast (u) U-Shaped Lamps (vho) Very High Output (wg) Wire Guard (x) 1 Lamp per 1 Lamp Retrofit (No Reflector) (y) Yellow Lens - Replace (z) Don't Retrofit - (Energy Efficient or No Hours)					

APPENDIX C

ECM-2 Install Occupancy Sensors

Cherry Hill Township Municipal Building Audit Program

CHA Project No. 19985

ECM-2 Install Occupancy Sensors

\$0.124 \$/kWh

Cost of Electricity:

\$0.124 \$/kWh

\$9.26 \$/kW

\$9.26 \$/kW

										RETROFIT CONDITIONS								COST & SAVINGS ANALYSIS					
	Area Description	No. of Fixtures	Standard Fixture Code	NYSERDA Fixture Code	Watts per Fixture	kW/Space	Exist Control	Annual Hours	Annual kWh	Number of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Retrofit Control	Annual Hours	Annual kWh	Annual kWh Saved	Annual \$ Saved	Retrofit Cost	NJ Lighting Incentive	Simple Payback With Out Incentive	
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)	(kW Saved) * (\$/kWh)	Cost for renovations to lighting system		Length of time for renovations cost to be recovered	
	Police Dept. First Floor																						
225	101 Sallyport	6	70 High Pressure Sodium	HPS70/1	95	0.6	BREAKER	8760	4,993.2	6	70 High Pressure Sodium	HPS70/1	95	0.6	NONE	8760	4,993.2	0.0	\$0.00	\$0.00	\$0.00		
6	102 Officer	2	T 34 R F 4 (MAG)	F44EE	144	0.3	SW	8760	2,522.9	2	T 34 R F 4 (MAG)	F44EE	144	0.3	NONE	8760	2,522.9	0.0	\$0.00	\$0.00	\$0.00		
16	103 Sprinkler Room	2	T 34 R F 2 (MAG)	F42EE	72	0.1	SW	50	7.2	2	T 34 R F 2 (MAG)	F42EE	72	0.1	NONE	50	7.2	0.0	\$0.00	\$0.00	\$0.00		
16	104 Security Lock	1	T 34 R F 2 (MAG)	F42EE	72	0.1	Breaker	8760	630.7	1	T 34 R F 2 (MAG)	F42EE	72	0.1	NONE	8760	630.7	0.0	\$0.00	\$0.00	\$0.00		
16	104 Security Lock	1	T 34 R F 2 (MAG)	F42EE	72	0.1	SW	8760	630.7	1	T 34 R F 2 (MAG)	F42EE	72	0.1	NONE	8760	630.7	0.0	\$0.00	\$0.00	\$0.00		
6	105 DWI Process	2	T 34 R F 4 (MAG)	F44EE	144	0.3	SW	8760	2,522.9	2	T 34 R F 4 (MAG)	F44EE	144	0.3	NONE	8760	2,522.9	0.0	\$0.00	\$0.00	\$0.00		
6	106 Stack Area	1	T 34 R F 4 (MAG)	F44EE	144	0.1	SW	8760	1,261.4	1	T 34 R F 4 (MAG)	F44EE	144	0.1	NONE	8760	1,261.4	0.0	\$0.00	\$0.00	\$0.00		
123	107 Toilet	1	O CF 15	CFS15/1	15	0.0	SW	3000	45.0	1	O CF 15	CFS15/1	15	0.0	NONE	3000	45.0	0.0	\$0.00	\$0.00	\$0.00		
61	107A Closet	1	T 34 R F 3 (MAG)	F43EE	115	0.1	SW	50	5.8	1	T 34 R F 3 (MAG)	F43EE	115	0.1	NONE	50	5.8	0.0	\$0.00	\$0.00	\$0.00		
6	108 Operations Area	3	T 34 R F 4 (MAG)	F44EE	144	0.4	SW	8760	3,784.3	3	T 34 R F 4 (MAG)	F44EE	144	0.4	NONE	8760	3,784.3	0.0	\$0.00	\$0.00	\$0.00		
16	109 Corridor / Work Area	5	T 34 R F 2 (MAG)	F42EE	72	0.4	SW	8760	3,153.6	5	T 34 R F 2 (MAG)	F42EE	72	0.4	NONE	8760	3,153.6	0.0	\$0.00	\$0.00	\$0.00		
16	109 Corridor / Work Area	2	T 34 R F 2 (MAG)	F42EE	72	0.1	Breaker	8760	1,261.4	2	T 34 R F 2 (MAG)	F42EE	72	0.1	NONE	8760	1,261.4	0.0	\$0.00	\$0.00	\$0.00		
16	109A Corridor	2	T 34 R F 2 (MAG)	F42EE	72	0.1	SW	8760	1,261.4	2	T 34 R F 2 (MAG)	F42EE	72	0.1	NONE	8760	1,261.4	0.0	\$0.00	\$0.00	\$0.00		
16	109A Corridor	3	T 34 R F 2 (MAG)	F42EE	72	0.2	Breaker	8760	1,892.2	3	T 34 R F 2 (MAG)	F42EE	72	0.2	NONE	8760	1,892.2	0.0	\$0.00	\$0.00	\$0.00		
6	109A Corridor	4	T 34 R F 4 (MAG)	F44EE	144	0.6	BREAKER	8760	5,045.8	4	T 34 R F 4 (MAG)	F44EE	144	0.6	NONE	8760	5,045.8	0.0	\$0.00	\$0.00	\$0.00		
X1	109A Corridor	1	X 1.5 W LED	ELED1.5/1	1.5	0.0	Breaker	8760	13.1	1	X 1.5 W LED	ELED1.5/1	1.5	0.0	NONE	8760	13.1	0.0	\$0.00	\$0.00	\$0.00		
X1	109 Corridor / Work Area	1	X 1.5 W LED	ELED1.5/1	1.5	0.0	BREAKER	8760	13.1	1	X 1.5 W LED	ELED1.5/1	1.5	0.0	NONE	8760	13.1	0.0	\$0.00	\$0.00	\$0.00		
18	110 Cell 1	1	T 32 R F 4 (ELE)	F44ILL	112	0.1	BREAKER	5840	654.1	1	T 32 R F 4 (ELE)	F44ILL	112	0.1	NONE	5840	654.1	0.0	\$0.00	\$0.00	\$0.00		
18	111 Cell 2	1	T 32 R F 4 (ELE)	F44ILL	112	0.1	BREAKER	5840	654.1	1	T 32 R F 4 (ELE)	F44ILL	112	0.1	NONE	5840	654.1	0.0	\$0.00	\$0.00	\$0.00		
18	112 Cell 3	1	T 32 R F 4 (ELE)	F44ILL	112	0.1	BREAKER	5840	654.1	1	T 32 R F 4 (ELE)	F44ILL	112	0.1	NONE	5840	654.1	0.0	\$0.00	\$0.00	\$0.00		
18	113 Cell 4	1	T 32 R F 4 (ELE)	F44ILL	112	0.1	BREAKER	5840	654.1	1	T 32 R F 4 (ELE)	F44ILL	112	0.1	NONE	5840	654.1	0.0	\$0.00	\$0.00	\$0.00		
18	114 Cell 5	1	T 32 R F 4 (ELE)	F44ILL	112	0.1	BREAKER	5840	654.1	1	T 32 R F 4 (ELE)	F44ILL	112	0.1	NONE	5840	654.1	0.0	\$0.00	\$0.00	\$0.00		
18	115 Cell 6	1	T 32 R F 4 (ELE)	F44ILL	112	0.1	BREAKER	5840	654.1	1	T 32 R F 4 (ELE)	F44ILL	112	0.1	NONE	5840	654.1	0.0	\$0.00	\$0.00	\$0.00		
18	116 Mug Shot	1	T 32 R F 4 (ELE)	F44ILL	112	0.1	OCC	5000	560.0	1	T 32 R F 4 (ELE)	F44ILL	112	0.1	NONE	5000	560.0	0.0	\$0.00	\$0.00	\$0.00		
108	116 Mug Shot	3	I 65	I65/1	65	0.2	OCC	5000	975.0	3	I 65	I65/1	65	0.2	NONE	5000	975.0	0.0	\$0.00	\$0.00	\$0.00		
18	117 Finger Print	1	T 32 R F 4 (ELE)	F44ILL	112	0.1	SW	5000	560.0	1	T 32 R F 4 (ELE)	F44ILL	112	0.1	NONE	5000	560.0	0.0	\$0.00	\$0.00	\$0.00		
18	118 Cell 7	1	T 32 R F 4 (ELE)	F44ILL	112	0.1	BREAKER	5840	654.1	1	T 32 R F 4 (ELE)	F44ILL	112	0.1	NONE	5840	654.1	0.0	\$0.00	\$0.00	\$0.00		
18	119 Cell 8	1	T 32 R F 4 (ELE)	F44ILL	112	0.1	BREAKER	5840	654.1	1	T 32 R F 4 (ELE)	F44ILL	112	0.1	NONE	5840	654.1	0.0	\$0.00	\$0.00	\$0.00		
18	120 Cell 9	1	T 32 R F 4 (ELE)	F44ILL	112	0.1	BREAKER	5840	654.1	1	T 32 R F 4 (ELE)	F44ILL	112	0.1	NONE	5840	654.1	0.0	\$0.00	\$0.00	\$0.00		
6	121 Process Rm 1	2	T 34 R F 4 (MAG)	F44EE	144	0.3	SW	8760	2,522.9	2	T 34 R F 4 (MAG)	F44EE	144	0.3	NONE	8760	2,522.9	0.0	\$0.00	\$0.00	\$0.00		
6	122 Process Rm 2	2	T 34 R F 4 (MAG)	F44EE	144	0.3	SW	8760	2,522.9	2	T 34 R F 4 (MAG)	F44EE	144	0.3	NONE	8760	2,522.9	0.0	\$0.00	\$0.00	\$0.00		
6	123 Process Rm 3	2	T 34 R F 4 (MAG)	F44EE	144	0.3	SW	8760	2,522.9	2	T 34 R F 4 (MAG)	F44EE	144	0.3	NONE	8760	2,522.9	0.0	\$0.00	\$0.00	\$0.00		
18	124 Juvenile Holding	1	T 32 R F 4 (ELE)	F44ILL	112	0.1	SW	5840	654.1	1	T 32 R F 4 (ELE)	F44ILL	112	0.1	NONE	5840	654.1	0.0	\$0.00	\$0.00	\$0.00		
6	125 Entry	1	T 34 R F 4 (MAG)	F44EE	144	0.1	SW	8760	1,261.4	1	T 34 R F 4 (MAG)	F44EE	144	0.1	NONE	8760	1,261.4	0.0	\$0.00	\$0.00	\$0.00		
6	126 Discharge	1	T 34 R F 4 (MAG)	F44EE	144	0.1	SW	8760	1,261.4	1	T 34 R F 4 (MAG)	F44EE	144	0.1	NONE	8760	1,261.4	0.0	\$0.00	\$0.00	\$0.00		
16	127 Vestibule	1	T 34 R F 2 (MAG)	F42EE	72	0.1	BREAKER	8760	630.7	1	T 34 R F 2 (MAG)	F42EE	72	0.1	NONE	8760	630.7	0.0	\$0.00	\$0.00	\$0.00		
16	127 Vestibule	1	T 34 R F 2 (MAG)	F42EE	72	0.1	SW	6205	446.8	1	T 34 R F 2 (MAG)	F42EE	72	0.1	NONE	6205	446.8	0.0	\$0.00	\$0.00	\$0.00		
X1	128 Corridor	1	X 1.5 W LED	ELED1.5/1	1.5	0.0	BREAKER	8760	13.1	1	X 1.5 W LED	ELED1.5/1	1.5	0.0	NONE	8760	13.1	0.0	\$0.00	\$0.00	\$0.00		
4	128 Corridor	1	2T 34 R F 2 (u) (MAG) (Note 1)	FU2EE	72	0.1	SW	8760	630.7	1	2T 34 R F 2 (u) (MAG) (Note 1)	FU2EE	72	0.1	NONE	8760	630.7	0.0	\$0.00				

										RETROFIT CONDITIONS								COST & SAVINGS ANALYSIS				
	Area Description	No. of Fixtures	Standard Fixture Code	NYSERDA Fixture Code	Watts per Fixture	kW/Space	Exist Control	Annual Hours	Annual kWh	Number of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Retrofit Control	Annual Hours	Annual kWh	Annual kWh Saved	Annual \$ Saved	Retrofit Cost	NJ Lighting Incentive	Simple Payback With Out Incentive
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)	(kW Saved) * (\$/kWh)	Cost for renovations to lighting system		Length of time for renovations cost to be recovered
16	153 Corridor Display	1	T 34 R F 2 (MAG)	F42EE	72	0.1	SW	2340	168.5	1	T 34 R F 2 (MAG)	F42EE	72	0.1	NONE	2340	168.5	0.0	\$0.00	\$0.00	\$0.00	
16	153 Corridor	5	T 34 R F 2 (MAG)	F42EE	72	0.4	SW	8760	3,153.6	5	T 34 R F 2 (MAG)	F42EE	72	0.4	NONE	8760	3,153.6	0.0	\$0.00	\$0.00	\$0.00	
	Public Area First Floor																					
6	154 Records	16	T 34 R F 4 (MAG)	F44EE	144	2.3	SW	2080	4,792.3	16	T 34 R F 4 (MAG)	F44EE	144	2.3	OCC	1400	3,225.6	1,566.7	\$193.96	\$237.50	\$40.00	1.2
6	Office within Records	6	T 34 R F 4 (MAG)	F44EE	144	0.9	SW	2080	1,797.1	6	T 34 R F 4 (MAG)	F44EE	144	0.9	OCC	1400	1,209.6	587.5	\$72.73	\$118.75	\$20.00	1.6
6	155 Records Public Counter	6	T 34 R F 4 (MAG)	F44EE	144	0.9	SW	2080	1,797.1	6	T 34 R F 4 (MAG)	F44EE	144	0.9	NONE	2080	1,797.1	0.0	\$0.00	\$0.00	\$0.00	
4	Men's Room	1	2T 34 R F 2 (u) (MAG) (Note 1)	FU2EE	72	0.1	SW	6205	446.8	1	2T 34 R F 2 (u) (MAG) (Note 1)	FU2EE	72	0.1	OCC	50	3.6	443.2	\$54.86	\$59.38	\$10.00	1.1
123	Men's Room	1	O CF 15	CFS15/1	15	0.0	SW	6205	93.1	1	O CF 15	CFS15/1	15	0.0	OCC	50	0.8	92.3	\$11.43	\$59.38	\$10.00	5.2
4	Women's Room	2	2T 34 R F 2 (u) (MAG) (Note 1)	FU2EE	72	0.1	SW	6205	893.5	2	2T 34 R F 2 (u) (MAG) (Note 1)	FU2EE	72	0.1	OCC	50	7.2	886.3	\$109.73	\$59.38	\$10.00	0.5
6	151 Server Room	2	T 34 R F 4 (MAG)	F44EE	144	0.3	SW	600	172.8	2	T 34 R F 4 (MAG)	F44EE	144	0.3	OCC	600	172.8	0.0	\$0.00	\$59.38	\$10.00	
61	Boiler Room	4	T 34 R F 3 (MAG)	F43EE	115	0.5	SW	2080	956.8	4	T 34 R F 3 (MAG)	F43EE	115	0.5	NONE	2080	956.8	0.0	\$0.00	\$0.00	\$0.00	
88	Boiler Room	2	CF 13 1 LAMP	CFQ13/1-L	15	0.0		2080	62.4	2	CF 13 1 LAMP	CFQ13/1-L	15	0.0	NONE	2080	62.4	0.0	\$0.00	\$0.00	\$0.00	
61	Boiler Room	1	T 34 R F 3 (MAG)	F43EE	115	0.1		2080	239.2	1	T 34 R F 3 (MAG)	F43EE	115	0.1	NONE	2080	239.2	0.0	\$0.00	\$0.00	\$0.00	
88	Boiler Room	3	CF 13 1 LAMP	CFQ13/1-L	15	0.0		2080	93.6	3	CF 13 1 LAMP	CFQ13/1-L	15	0.0	NONE	2080	93.6	0.0	\$0.00	\$0.00	\$0.00	
88	Boiler Room	4	CF 13 1 LAMP	CFQ13/1-L	15	0.1		2080	124.8	4	CF 13 1 LAMP	CFQ13/1-L	15	0.1	NONE	2080	124.8	0.0	\$0.00	\$0.00	\$0.00	
61	Boiler Room	1	T 34 R F 3 (MAG)	F43EE	115	0.1		2080	239.2	1	T 34 R F 3 (MAG)	F43EE	115	0.1	NONE	2080	239.2	0.0	\$0.00	\$0.00	\$0.00	
61	Director of Maintenance Office	2	T 34 R F 3 (MAG)	F43EE	115	0.2	SW	2080	478.4	2	T 34 R F 3 (MAG)	F43EE	115	0.2	OCC	1400	322.0	156.4	\$19.36	\$118.75	\$20.00	6.1
108	Storage Closet	1	I 65	I65/1	65	0.1	SW	520	33.8	1	I 65	I65/1	65	0.1	NONE	200	13.0	20.8	\$2.58	\$0.00	\$0.00	0.0
6	Police Bike Storage	1	T 34 R F 4 (MAG)	F44EE	144	0.1	SW	520	74.9	1	T 34 R F 4 (MAG)	F44EE	144	0.1	NONE	520	74.9	0.0	\$0.00	\$0.00	\$0.00	
6	Lobby	3	T 34 R F 4 (MAG)	F44EE	144	0.4	SW	6205	2,680.6	3	T 34 R F 4 (MAG)	F44EE	144	0.4	NONE	6205	2,680.6	0.0	\$0.00	\$0.00	\$0.00	
86	Lobby	1	XX 3.0	ELED3/1	3	0.0	BREAKER	8760	26.3	1	XX 3.0	ELED3/1	3	0.0	NONE	6205	18.6	7.7	\$0.95	\$0.00	\$0.00	0.0
61	East Vestibule	1	T 34 R F 3 (MAG)	F43EE	115	0.1	SW	6205	713.6	1	T 34 R F 3 (MAG)	F43EE	115	0.1	NONE	6205	713.6	0.0	\$0.00	\$0.00	\$0.00	
61	Main Corridor South	10	T 34 R F 3 (MAG)	F43EE	115	1.2	SW	6205	7,135.8	10	T 34 R F 3 (MAG)	F43EE	115	1.2	NONE	6205	7,135.8	0.0	\$0.00	\$0.00	\$0.00	
88	Main Corridor South	4	CF 13 1 LAMP	CFQ13/1-L	15	0.1	SW	6205	372.3	4	CF 13 1 LAMP	CFQ13/1-L	15	0.1	NONE	6205	372.3	0.0	\$0.00	\$0.00	\$0.00	
90	Main Corridor South	3	X CF 7.0	ECF7/1	10	0.0	BREAKER	8760	262.8	3	X CF 7.0	ECF7/1	10	0.0	NONE	6205	186.2	76.7	\$9.49	\$0.00	\$0.00	0.0
88	West Vestibule	1	CF 13 1 LAMP	CFQ13/1-L	15	0.0	SW	6205	93.1	1	CF 13 1 LAMP	CFQ13/1-L	15	0.0	NONE	6205	93.1	0.0	\$0.00	\$0.00	\$0.00	
88	West Vestibule	1	CF 13 1 LAMP	CFQ13/1-L	15	0.0	BREAKER	8760	131.4	1	CF 13 1 LAMP	CFQ13/1-L	15	0.0	NONE	8760	131.4	0.0	\$0.00	\$0.00	\$0.00	
88	Main Stairway	3	CF 13 1 LAMP	CFQ13/1-L	15	0.0	SW	6205	279.2	3	CF 13 1 LAMP	CFQ13/1-L	15	0.0	NONE	6205	279.2	0.0	\$0.00	\$0.00	\$0.00	
88	Main Stairway	1	CF 13 1 LAMP	CFQ13/1-L	15	0.0	SW	6205	93.1	1	CF 13 1 LAMP	CFQ13/1-L	15	0.0	NONE	6205	93.1	0.0	\$0.00	\$0.00	\$0.00	
4	Men's Room	2	2T 34 R F 2 (u) (MAG) (Note 1)	FU2EE	72	0.1	SW	6205	893.5	2	2T 34 R F 2 (u) (MAG) (Note 1)	FU2EE	72	0.1	OCC	50	7.2	886.3	\$109.73	\$59.38	\$10.00	0.5
123	Men's Room	1	O CF 15	CFS15/1	15	0.0	SW	6205	93.1	1	O CF 15	CFS15/1	15	0.0	OCC	50	0.8	92.3	\$11.43	\$59.38	\$10.00	5.2
4	Ladies Room	2	2T 34 R F 2 (u) (MAG) (Note 1)	FU2EE	72	0.1	SW	6205	893.5	2	2T 34 R F 2 (u) (MAG) (Note 1)	FU2EE	72	0.1	OCC	50	7.2	886.3	\$109.73	\$59.38	\$10.00	0.5
123	Ladies Room	1	O CF 15	CFS15/1	15	0.0	SW	6205	93.1	1	O CF 15	CFS15/1	15	0.0	OCC	50	0.8	92.3	\$11.43	\$59.38	\$10.00	5.2
6	Community Policing	4	T 34 R F 4 (MAG)	F44EE	144	0.6	SW	2080	1,198.1	4	T 34 R F 4 (MAG)	F44EE	144	0.6	NONE	1400	806.4	391.7	\$48.49	\$0.00	\$0.00	0.0
6	Tax Assessor	6	T 34 R F 4 (MAG)	F44EE	144	0.9	Sw	2080	1,797.1	6	T 34 R F 4 (MAG)	F44EE	144	0.9	NONE	1400	1,209.6	587.5	\$72.73	\$0.00	\$0.00	0.0
6	Tax Assessor	9	T 34 R F 4 (MAG)	F44EE	144	1.3	Sw	2080	2,695.7	9	T 34 R F 4 (MAG)	F44EE	144	1.3	NONE	1400	1,814.4	881.3	\$109.10	\$0.00	\$0.00	0.0
6	Tax Assessor's Office	4	T 34 R F 4 (MAG)	F44EE	144	0.6		2080	1,198.1	4	T 34 R F 4 (MAG)	F44EE	144	0.6	NONE	1400	806.4	391.7	\$48.49	\$0.00	\$0.00	0.0
4	ACS Storage	3	2T 34 R F 2 (u) (MAG) (Note 1)	FU2EE	72	0.2	SW	2080	449.3	3	2T 34 R F 2 (u) (MAG) (Note 1)	FU2EE	72	0.2	NONE	1400	302.4	146.9	\$18.18	\$0.00	\$0.00	0.0
4	Tax Collector	12	2T 34 R F 2 (u) (MAG) (Note 1)	FU2EE	72	0.9	SW	2080	1,797.1	12	2T 34 R F 2 (u) (MAG) (Note 1)	FU2EE	72	0.9	NONE	1400	1,209.6	587.5	\$72.73	\$0.00	\$0.00	0.0
6	Office within Tax Collector Area	2	T 34 R F 4 (MAG)	F44EE	144	0.3	SW	2080	599.0	2	T 34 R F 4 (MAG)	F44EE	144	0.3	NONE	1400	403.2	195.8	\$24.24	\$0.00	\$0.00	0.0
6	Tax Files	5	T 34 R F 4 (MAG)	F44EE	144	0.7	SW	2080	1,497.6	5	T 34 R F 4 (MAG)	F44EE	144	0.7	NONE	1400	1,008.0	489.6	\$60.61	\$0.00	\$0.00	0.0
6	Tax Files	1	T 34 R F 4 (MAG)	F44EE	144	0.1	BREAKER	8760	1,261.4	1	T 34 R F 4 (MAG)	F44EE	144	0.1	NONE	8760	1,261.4	0.0	\$0.00	\$0.00	\$0.00	
6	Assessor Storage	2	T 34 R F 4 (MAG)	F44EE	144	0.3	SW	780	224.6	2	T 34 R F 4 (MAG)	F44EE	144	0.3	NONE	200	57.6	167.0	\$20.68	\$0.00	\$0.00	0.0
6	Tax Collector Pay Window Area	3	T 34 R F 4 (MAG)	F44EE	144	0.4	SW	2080	898.6	3	T 34 R F 4 (MAG)	F44EE	144	0.4	NONE	2080	898.6	0.0	\$0.00	\$0.00	\$0.00	
123	Storage Closet	2	O CF 15	CFS15/1	15	0.0	SW	780	23.4	2	O CF 15	CFS15/1	15	0.0	NONE	200	6.0	17.4	\$2.15	\$0.00	\$0.00	0.0
6	Municipal Clerk Counter Area	2	T 34 R F 4 (MAG)	F44EE	144	0.3	SW	2080	599.0	2	T 34 R F 4 (MAG)	F44EE	144	0.3	NONE	2080	599.0	0.0	\$0.00	\$0.00	\$0.00	
6	Municipal Clerk Counter Area	8	T 34 R F 4 (MAG)	F44EE	144	1.2	SW	2080	2,396.2	8	T 34 R F 4 (MAG)	F44EE	144	1.2	NONE	2080	2,396.2	0.0	\$0.00	\$0.00	\$0.00	
46	Municipal Clerk Storage Rm	2	W 32 C F 2 (ELE)	F42LL	60	0.1	SW	2080	249.6	2	W 32 C F 2 (ELE)	F42LL	60	0.1	NONE	200	24.0	225.6	\$27.93	\$0.00	\$0.00	0.0
6	Copy Room	4	T 34 R F 4 (MAG)	F44EE	144	0.6	SW	2080	1,198.1	4	T 34 R F 4 (MAG)	F44EE	144	0.6	NONE	200	115.2	1,082.9	\$134.06	\$0.00	\$0.00	0.0
6	Corner Office	4	T 34 R F 4 (MAG)	F44EE	144	0.6	SW	2080	1,198.1	4	T 34 R F 4 (MAG)	F44EE	144	0.6	NONE	1400	806.4	391.7	\$48.49	\$0.00	\$0.00	0.0
6	Mayor's Office	9	T 34 R F 4 (MAG)	F44EE	144	1.3	SW	2080	2,695.7	9	T 34 R F 4 (MAG)	F44EE	144	1.3	NONE	1400	1,814.4	881.3	\$109.10	\$0.00	\$0.00	0.0
123	Mayor's Storage Area	1	O CF 15	CFS15/1	15	0.0	SW	1400	21.0	1	O CF 15	CFS15/1	15	0.0	NONE	200	3.0	18.0	\$2.23	\$0.00	\$0.00	0.0
123	Mayor's Restroom	6	O CF 15	CFS15/1	15	0.1	SW	1400	126.0	6	O CF 15	CFS15/1	15	0.1	NONE	50	4.5	121.5	\$15.04	\$0.00	\$0.00	0.0
123	Mayor's Restroom	4	O CF 15	CFS15/1	15	0.1	SW	780	46.8	4	O CF 15	CFS15/1	15	0.1	NONE	50	3.0	43.8	\$5.42	\$0.00	\$0.00	0.0
6	Business Admistrator	4	T 34 R F 4 (MAG)	F44EE	144	0.6	SW	780	449.3	4	T 34 R F 4 (MAG)	F44EE	144	0.6	OCC	1400	806.4	-357.1	-\$44.21	\$118.75	\$20.00	
6	Business Admistrator	2	T 34 R F 4 (MAG)	F44EE	144	0.3	SW	2340	673.9	2	T 34 R F 4 (MAG)	F44EE	144	0.3	NONE	0	0.0	673.9	\$83.43	\$0.00	\$0.00	0.0
6	Office	2	T 34 R F 4 (MAG)	F44EE	144	0.3	SW	2080	599.0	2	T 34 R F 4 (MAG)	F44EE	144	0.3	NONE	1400	403.2	195.8	\$24.24	\$0.00	\$0.00	0.0
6	Copy Room	3	T 34 R F 4 (MAG)	F44EE	144	0.4	SW	2080	898.6	3	T 34 R F 4 (MAG)	F44EE	144	0.4	NONE	1400	604.8	293.8	\$			

										RETROFIT CONDITIONS								COST & SAVINGS ANALYSIS				
	Area Description	No. of Fixtures	Standard Fixture Code	NYSERDA Fixture Code	Watts per Fixture	kW/Space	Exist Control	Annual Hours	Annual kWh	Number of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Retrofit Control	Annual Hours	Annual kWh	Annual kWh Saved	Annual \$ Saved	Retrofit Cost	NJ Lighting Incentive	Simple Payback With Out Incentive
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)	(kW Saved) * (\$/kWh)	Cost for renovations to lighting system		Length of time for renovations cost to be recovered
61	210A Corridor	1	T 34 R F 3 (MAG)	F43EE	115	0.1	SW	6205	713.6	1	T 34 R F 3 (MAG)	F43EE	115	0.1	NONE	3068	352.8	360.8	\$44.66	\$0.00	\$0.00	0.0
61	211 Corridor	1	T 34 R F 3 (MAG)	F43EE	115	0.1	SW	6205	713.6	1	T 34 R F 3 (MAG)	F43EE	115	0.1	NONE	3068	352.8	360.8	\$44.66	\$0.00	\$0.00	0.0
61	211B Storage	1	T 34 R F 3 (MAG)	F43EE	115	0.1	SW	780	89.7	1	T 34 R F 3 (MAG)	F43EE	115	0.1	NONE	200	23.0	66.7	\$8.26	\$0.00	\$0.00	0.0
61	211A Corridor	2	T 34 R F 3 (MAG)	F43EE	115	0.2	Sw	780	179.4	2	T 34 R F 3 (MAG)	F43EE	115	0.2	NONE	3068	705.6	-526.2	-\$65.15	\$0.00	\$0.00	
61	212 Corridor	2	T 34 R F 3 (MAG)	F43EE	115	0.2	SW	6205	1,427.2	2	T 34 R F 3 (MAG)	F43EE	115	0.2	NONE	6205	1,427.2	0.0	\$0.00	\$0.00	\$0.00	
61	233 Vestibule to Court Room	2	T 34 R F 3 (MAG)	F43EE	115	0.2	SW	3068	705.6	2	T 34 R F 3 (MAG)	F43EE	115	0.2	NONE	3068	705.6	0.0	\$0.00	\$0.00	\$0.00	
X1	212 Corridor	2	X 1.5 W LED	ELED1.5/1	1.5	0.0	BREAKER	8760	26.3	2	X 1.5 W LED	ELED1.5/1	1.5	0.0	NONE	8760	26.3	0.0	\$0.00	\$0.00	\$0.00	
61	213A Corridor	2	T 34 R F 3 (MAG)	F43EE	115	0.2	SW	6205	1,427.2	2	T 34 R F 3 (MAG)	F43EE	115	0.2	NONE	6205	1,427.2	0.0	\$0.00	\$0.00	\$0.00	
61	213A Corridor	2	T 34 R F 3 (MAG)	F43EE	115	0.2	BREAKER	8760	2,014.8	2	T 34 R F 3 (MAG)	F43EE	115	0.2	NONE	8760	2,014.8	0.0	\$0.00	\$0.00	\$0.00	
X1	213A Corridor	2	X 1.5 W LED	ELED1.5/1	1.5	0.0	BREAKER	8760	26.3	2	X 1.5 W LED	ELED1.5/1	1.5	0.0	NONE	8760	26.3	0.0	\$0.00	\$0.00	\$0.00	
61	213 Corridor	4	T 34 R F 3 (MAG)	F43EE	115	0.5	SW	6205	2,854.3	4	T 34 R F 3 (MAG)	F43EE	115	0.5	NONE	6205	2,854.3	0.0	\$0.00	\$0.00	\$0.00	
61	213 Corridor	2	T 34 R F 3 (MAG)	F43EE	115	0.2	BREAKER	8760	2,014.8	2	T 34 R F 3 (MAG)	F43EE	115	0.2	NONE	8760	2,014.8	0.0	\$0.00	\$0.00	\$0.00	
61	214 Women's	2	T 34 R F 3 (MAG)	F43EE	115	0.2	SW	6205	1,427.2	2	T 34 R F 3 (MAG)	F43EE	115	0.2	OCC	50	11.5	1,415.7	\$175.26	\$118.75	\$20.00	0.7
61	215 Men's Room	2	T 34 R F 3 (MAG)	F43EE	115	0.2	SW	6205	1,427.2	2	T 34 R F 3 (MAG)	F43EE	115	0.2	OCC	50	11.5	1,415.7	\$175.26	\$118.75	\$20.00	0.7
6	216 Support Uniform Division	8	T 34 R F 4 (MAG)	F44EE	144	1.2	SW	2080	2,396.2	8	T 34 R F 4 (MAG)	F44EE	144	1.2	OCC	1400	1,612.8	783.4	\$96.98	\$237.50	\$40.00	2.4
6	217 Training Room	2	T 34 R F 4 (MAG)	F44EE	144	0.3	SW	2080	599.0	2	T 34 R F 4 (MAG)	F44EE	144	0.3	NONE	2080	599.0	0.0	\$0.00	\$0.00	\$0.00	
6	217A Training Room Storage	1	T 34 R F 4 (MAG)	F44EE	144	0.1	SW	520	74.9	1	T 34 R F 4 (MAG)	F44EE	144	0.1	NONE	200	28.8	46.1	\$5.70	\$0.00	\$0.00	0.0
16	218 Library/ Storage	2	T 34 R F 2 (MAG)	F42EE	72	0.1	SW	520	74.9	2	T 34 R F 2 (MAG)	F42EE	72	0.1	NONE	200	28.8	46.1	\$5.70	\$0.00	\$0.00	0.0
61	219 Office Bookkeeper	2	T 34 R F 3 (MAG)	F43EE	115	0.2	SW	2080	478.4	2	T 34 R F 3 (MAG)	F43EE	115	0.2	OCC	1400	322.0	156.4	\$19.36	\$237.50	\$40.00	12.3
98	220 Communications	2	T 32 R F 2	F42LL	60	0.1	SW	600	72.0	2	T 32 R F 2	F42LL	60	0.1	OCC	600	72.0	0.0	\$0.00	\$118.75	\$20.00	
61	221 Dispatch	8	T 34 R F 3 (MAG)	F43EE	115	0.9	SW	8760	8,059.2	8	T 34 R F 3 (MAG)	F43EE	115	0.9	NONE	8760	8,059.2	0.0	\$0.00	\$0.00	\$0.00	
172	219 Corridor (dwgA2.1,8.30.93)	4	1T 34 R F 2 (MAG)	F42EE	72	0.3	SW	6205	1,787.0	4	1T 34 R F 2 (MAG)	F42EE	72	0.3	NONE	6205	1,787.0	0.0	\$0.00	\$0.00	\$0.00	
172	219 Corridor (dwgA2.1,8.30.93)	2	1T 34 R F 2 (MAG)	F42EE	72	0.1	BREAKER	8760	1,261.4	2	1T 34 R F 2 (MAG)	F42EE	72	0.1	NONE	8760	1,261.4	0.0	\$0.00	\$0.00	\$0.00	
61	222 Office	4	T 34 R F 3 (MAG)	F43EE	115	0.5	SW	2080	956.8	4	T 34 R F 3 (MAG)	F43EE	115	0.5	OCC	1400	644.0	312.8	\$38.72	\$237.50	\$40.00	6.1
61	223 Office	4	T 34 R F 3 (MAG)	F43EE	115	0.5	SW	2080	956.8	4	T 34 R F 3 (MAG)	F43EE	115	0.5	OCC	1400	644.0	312.8	\$38.72	\$237.50	\$40.00	6.1
61	224 Office	4	T 34 R F 3 (MAG)	F43EE	115	0.5	SW	2080	956.8	4	T 34 R F 3 (MAG)	F43EE	115	0.5	OCC	1400	644.0	312.8	\$38.72	\$237.50	\$40.00	6.1
61	225 Office Captain	2	T 34 R F 3 (MAG)	F43EE	115	0.2	SW	2080	478.4	2	T 34 R F 3 (MAG)	F43EE	115	0.2	OCC	1400	322.0	156.4	\$19.36	\$237.50	\$40.00	12.3
6	226 Office Chief	4	T 34 R F 4 (MAG)	F44EE	144	0.6	SW	2080	1,198.1	4	T 34 R F 4 (MAG)	F44EE	144	0.6	OCC	1400	806.4	391.7	\$48.49	\$237.50	\$40.00	4.9
6	227 Conference Room	2	T 34 R F 4 (MAG)	F44EE	144	0.3	SW	2080	599.0	2	T 34 R F 4 (MAG)	F44EE	144	0.3	OCC	1400	403.2	195.8	\$24.24	\$237.50	\$40.00	9.8
6	228 Internal Affairs	4	T 34 R F 4 (MAG)	F44EE	144	0.6	SW	2080	1,198.1	4	T 34 R F 4 (MAG)	F44EE	144	0.6	OCC	1400	806.4	391.7	\$48.49	\$118.75	\$20.00	2.4
6	229 Office	4	T 34 R F 4 (MAG)	F44EE	144	0.6	SW	2080	1,198.1	4	T 34 R F 4 (MAG)	F44EE	144	0.6	OCC	1400	806.4	391.7	\$48.49	\$118.75	\$20.00	2.4
6	230 Secretary Area	4	T 34 R F 4 (MAG)	F44EE	144	0.6	SW	2080	1,198.1	4	T 34 R F 4 (MAG)	F44EE	144	0.6	OCC	2080	1,198.1	0.0	\$0.00	\$118.75	\$20.00	
190	230 Secretary Area, Under	2	1B 32 C F 2)	F42LL	60	0.1	SW	2080	249.6	2	1B 32 C F 2)	F42LL	60	0.1	NONE	2080	249.6	0.0	\$0.00	\$0.00	\$0.00	
47	Men's Room	2	1B 34 C F 2 (MAG)	F42EE	72	0.1	SW	6205	893.5	2	1B 34 C F 2 (MAG)	F42EE	72	0.1	OCC	50	7.2	886.3	\$109.73	\$59.38	\$10.00	0.5
123	Men's Room	1	O CF 15	CFS15/1	15	0.0	SW	6205	93.1	1	O CF 15	CFS15/1	15	0.0	OCC	50	0.8	92.3	\$11.43	\$59.38	\$10.00	5.2
123	Women's Room	2	O CF 15	CFS15/1	15	0.0	SW	6205	186.2	2	O CF											

										RETROFIT CONDITIONS								COST & SAVINGS ANALYSIS				
	Area Description	No. of Fixtures	Standard Fixture Code	NYSERDA Fixture Code	Watts per Fixture	kW/Space	Exist Control	Annual Hours	Annual kWh	Number of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Retrofit Control	Annual Hours	Annual kWh	Annual kWh Saved	Annual \$ Saved	Retrofit Cost	NJ Lighting Incentive	Simple Payback With Out Incentive
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)	(kW Saved) * (\$/kWh)	Cost for renovations to lighting system		Length of time for renovations cost to be recovered
161	Closet	1	B 65 C I 1	I65/1	65	0.1	SW	780	50.7	1	B 65 C I 1	I65/1	65	0.1	NONE	780	50.7	0.0	\$0.00	\$0.00	\$0.00	
6	Office	3	T 34 R F 4 (MAG)	F44EE	144	0.4	SW	2080	898.6	3	T 34 R F 4 (MAG)	F44EE	144	0.4	OCC	1400	604.8	293.8	\$36.37	\$118.75	\$20.00	3.3
161	Copy Area	1	B 65 C I 1	I65/1	65	0.1	SW	780	50.7	1	B 65 C I 1	I65/1	65	0.1	NONE	780	50.7	0.0	\$0.00	\$0.00	\$0.00	
6	Office	2	T 34 R F 4 (MAG)	F44EE	144	0.3	SW	2080	599.0	2	T 34 R F 4 (MAG)	F44EE	144	0.3	OCC	1400	403.2	195.8	\$24.24	\$118.75	\$20.00	4.9
6	Office	3	T 34 R F 4 (MAG)	F44EE	144	0.4	SW	2080	898.6	3	T 34 R F 4 (MAG)	F44EE	144	0.4	OCC	1400	604.8	293.8	\$36.37	\$118.75	\$20.00	3.3
197	Area by South Door to Roof	1	1B 32 C F 2 (ELE)	F42LL	60	0.1	SW	520	31.2	1	1B 32 C F 2 (ELE)	F42LL	60	0.1	NONE	520	31.2	0.0	\$0.00	\$0.00	\$0.00	
197	Room West of above room	1	1B 32 C F 2 (ELE)	F42LL	60	0.1	SW	520	31.2	1	1B 32 C F 2 (ELE)	F42LL	60	0.1	NONE	520	31.2	0.0	\$0.00	\$0.00	\$0.00	
197	Closet off room above	1	1B 32 C F 2 (ELE)	F42LL	60	0.1	SW	780	46.8	1	1B 32 C F 2 (ELE)	F42LL	60	0.1	NONE	780	46.8	0.0	\$0.00	\$0.00	\$0.00	
197	Stairway 2nd to third floor	2	1B 32 C F 2 (ELE)	F42LL	60	0.1	SW	2080	249.6	2	1B 32 C F 2 (ELE)	F42LL	60	0.1	NONE	2080	249.6	0.0	\$0.00	\$0.00	\$0.00	
	Exterior Building Lights																					
88	Main Entrance Mercer St. Fancy	1	CF 13 I 1 LAMP	CFQ13/I-L	15	0.0	Time	1460	21.9	1	CF 13 I 1 LAMP	CFQ13/I-L	15	0.0	NONE	1460	21.9	0.0	\$0.00	\$0.00	\$0.00	
71	Main Entrance Mercer St. Down	4	I 67	I67/I	67	0.3	Time	1460	391.3	4	I 67	I67/I	67	0.3	NONE	1460	391.3	0.0	\$0.00	\$0.00	\$0.00	
225	Mercer St. Side Police Ent.	1	70 High Pressure Sodium	HPS70/1	95	0.1	BREAKER	8760	832.2	1	70 High Pressure Sodium	HPS70/1	95	0.1	NONE	8760	832.2	0.0	\$0.00	\$0.00	\$0.00	
144	Mercer St. Side Police Wing	3	HPS 150	HPS150/1	188	0.6	PHOTO	2900	1,635.6	3	HPS 150	HPS150/1	188	0.6	NONE	2900	1,635.6	0.0	\$0.00	\$0.00	\$0.00	
144	Sallyport	3	HPS 150	HPS150/1	188	0.6	BREAKER	8760	4,940.6	3	HPS 150	HPS150/1	188	0.6	NONE	8760	4,940.6	0.0	\$0.00	\$0.00	\$0.00	
225	Police side entrance	2	70 High Pressure Sodium	HPS70/1	95	0.2	BREAKER	8760	1,664.4	2	70 High Pressure Sodium	HPS70/1	95	0.2	NONE	8760	1,664.4	0.0	\$0.00	\$0.00	\$0.00	
225	Door from Police Workout Rm.	1	70 High Pressure Sodium	HPS70/1	95	0.1	BREAKER	8760	832.2	1	70 High Pressure Sodium	HPS70/1	95	0.1	NONE	8760	832.2	0.0	\$0.00	\$0.00	\$0.00	
144	Boiler RM Facing parking lot	1	HPS 150	HPS150/1	188	0.2	SW	2900	545.2	1	HPS 150	HPS150/1	188	0.2	NONE	2900	545.2	0.0	\$0.00	\$0.00	\$0.00	
144	Boiler RM Face Back Main Bldg.	2	HPS 150	HPS150/1	188	0.4	PHOTO	2900	1,090.4	2	HPS 150	HPS150/1	188	0.4	NONE	2900	1,090.4	0.0	\$0.00	\$0.00	\$0.00	
225	Back Main Ent. 2 wall mount	2	70 High Pressure Sodium	HPS70/1	95	0.2	PHOTO	2900	551.0	2	70 High Pressure Sodium	HPS70/1	95	0.2	NONE	2900	551.0	0.0	\$0.00	\$0.00	\$0.00	
225	South East 1st floor exit	1	70 High Pressure Sodium	HPS70/1	95	0.1	PHOTO	2900	275.5	1	70 High Pressure Sodium	HPS70/1	95	0.1	NONE	2900	275.5	0.0	\$0.00	\$0.00	\$0.00	
225	South Side Stairway Exit	1	70 High Pressure Sodium	HPS70/1	95	0.1	PHOTO	2900	275.5	1	70 High Pressure Sodium	HPS70/1	95	0.1	NONE	2900	275.5	0.0	\$0.00	\$0.00	\$0.00	
225	Tax Assessors Area	1	70 High Pressure Sodium	HPS70/1	95	0.1	PHOTO	2900	275.5	1	70 High Pressure Sodium	HPS70/1	95	0.1	NONE	2900	275.5	0.0	\$0.00	\$0.00	\$0.00	
	Total	788				87.2			290,439	788				87.2			213,129	\$9,571	\$9,025	\$1,500		
																		Demand Savings	0.0	\$0		
																		kWh Savings	77,310	\$9,571		
																		Total Savings		\$9,571		0.9

APPENDIX D

ECM-3 Install Lighting Replacements and Occupancy Sensors

Cherry Hill Township Municipal Building Audit Program
CHA Project No. 19985

Cost of Electricity: \$0.124 \$/kWh

ECM-3 Lighting Replacements and Occupancy Sensors

\$9.26 \$/kWh

		EXISTING CONDITIONS								RETROFIT CONDITIONS								COST & SAVINGS ANALYSIS					
	Area Description	No. of Fixtures	Standard Fixture Code	NYSERDA Fixture Code	Watts per Fixture	kW/Space	Exist Control	Annual Hours	Annual kWh	No. of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Retrofit Control	Annual Hours	Annual kWh	Annual kWh Saved	Annual \$ Saved	Retrofit Cost	NJ Lighting Incentive	Simple Payback With Out Incentive	
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) = 2x2' 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) = 2x2' 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)	(kW Saved) * (\$/kWh)	Cost for renovations to lighting system		Length of time for renovations cost to be recovered	
225	Police Dept. First Floor																						
6	101 Sallyport	6	70 High Pressure Sodium	HPS70/1	95	0.57	BREAKER	8760	4,993	6	70 High Pressure Sodium	HPS70/1	95	0.57	NONE	8,760	4,993	-	\$ -	\$ -	\$ -		
16	102 Officer	2	T 34 R F 4 (MAG)	F44EE	144	0.288	SW	8760	2,523	2	T 28 R F 4	F44SSILL	96	0.192	NONE	8,760	1,682	841	\$ 114.78	\$ 262.50	\$ 40.00	2.3	
16	103 Sprinkler Room	2	T 34 R F 2 (MAG)	F42EE	72	0.144	SW	8760	1,682	2	T 28 R F 2	F42SSILL	48	0.096	NONE	8,760	50	2	\$ 5.63	\$ 229.50	\$ 20.00	40.8	
16	104 Security Lock	1	T 34 R F 2 (MAG)	F42EE	72	0.072	Breaker	8760	631	1	T 28 R F 2	F42SSILL	48	0.048	NONE	8,760	420	210	\$ 28.69	\$ 114.75	\$ 10.00	4.0	
16	104 Security Lock	1	T 34 R F 2 (MAG)	F42EE	72	0.072	SW	8760	631	1	T 28 R F 2	F42SSILL	48	0.048	NONE	8,760	420	210	\$ 28.69	\$ 114.75	\$ 10.00	4.0	
6	105 DWI Process	2	T 34 R F 4 (MAG)	F44EE	144	0.288	SW	8760	2,523	2	T 28 R F 4	F44SSILL	96	0.192	NONE	8,760	1,682	841	\$ 114.78	\$ 262.50	\$ 40.00	2.3	
6	106 Stack Area	1	T 34 R F 4 (MAG)	F44EE	144	0.144	SW	8760	1,261	1	T 28 R F 4	F44SSILL	96	0.096	NONE	8,760	841	420	\$ 57.39	\$ 131.25	\$ 20.00	2.3	
123	107 Toilet	1	O CF 15	CFS15/1	15	0.015	SW	3000	45	1	O CF 15	CFS15/1	15	0.015	NONE	3,000	45	-	\$ -	\$ -	\$ -		
61	107A Closet	1	T 34 R F 3 (MAG)	F43EE	115	0.115	SW	50	6	1	T 28 R F 3	F43SSILL	72	0.072	NONE	50	4	2	\$ 5.04	\$ 128.25	\$ 20.00	25.4	
6	108 Operations Area	3	T 34 R F 4 (MAG)	F44EE	144	0.432	SW	8760	3,784	3	T 28 R F 4	F44SSILL	96	0.288	NONE	8,760	2,523	1,261	\$ 172.17	\$ 393.75	\$ 60.00	2.3	
16	109 Corridor / Work Area	5	T 34 R F 2 (MAG)	F42EE	72	0.36	SW	8760	3,154	5	T 28 R F 2	F42SSILL	48	0.24	NONE	8,760	2,102	1,051	\$ 143.47	\$ 573.75	\$ 50.00	4.0	
16	109 Corridor / Work Area	2	T 34 R F 2 (MAG)	F42EE	72	0.144	Breaker	8760	1,261	2	T 28 R F 2	F42SSILL	48	0.096	NONE	8,760	841	420	\$ 57.39	\$ 229.50	\$ 20.00	4.0	
16	109A Corridor	2	T 34 R F 2 (MAG)	F42EE	72	0.144	SW	8760	1,261	2	T 28 R F 2	F42SSILL	48	0.096	NONE	8,760	841	420	\$ 57.39	\$ 229.50	\$ 20.00	4.0	
16	109A Corridor	3	T 34 R F 2 (MAG)	F42EE	72	0.216	Breaker	8760	1,892	3	T 28 R F 2	F42SSILL	48	0.144	NONE	8,760	1,261	631	\$ 86.08	\$ 344.25	\$ 30.00	4.0	
6	109A Corridor	4	T 34 R F 4 (MAG)	F44EE	144	0.576	BREAKER	8760	5,046	4	T 28 R F 4	F44SSILL	96	0.384	NONE	8,760	3,364	1,682	\$ 229.56	\$ 525.00	\$ 80.00	2.3	
X1	109A Corridor	1	X 1.5 W LED	ELED1.5/1	1.5	0.0015	Breaker	8760	13	1	X 1.5 W LED	ELED1.5/1	1.5	0.0015	NONE	8,760	13	-	\$ -	\$ -	\$ -		
X1	109 Corridor / Work Area	1	X 1.5 W LED	ELED1.5/1	1.5	0.0015	BREAKER	8760	13	1	X 1.5 W LED	ELED1.5/1	1.5	0.0015	NONE	8,760	13	-	\$ -	\$ -	\$ -		
18	110 Cell 1	1	T 32 R F 4 (ELE)	F44ILL	112	0.112	BREAKER	5840	654	1	T 32 R F 4 (ELE)	F44ILL	112	0.112	NONE	5,840	654	-	\$ -	\$ -	\$ -		
18	111 Cell 2	1	T 32 R F 4 (ELE)	F44ILL	112	0.112	BREAKER	5840	654	1	T 32 R F 4 (ELE)	F44ILL	112	0.112	NONE	5,840	654	-	\$ -	\$ -	\$ -		
18	112 Cell 3	1	T 32 R F 4 (ELE)	F44ILL	112	0.112	BREAKER	5840	654	1	T 32 R F 4 (ELE)	F44ILL	112	0.112	NONE	5,840	654	-	\$ -	\$ -	\$ -		
18	113 Cell 4	1	T 32 R F 4 (ELE)	F44ILL	112	0.112	BREAKER	5840	654	1	T 32 R F 4 (ELE)	F44ILL	112	0.112	NONE	5,840	654	-	\$ -	\$ -	\$ -		
18	114 Cell 5	1	T 32 R F 4 (ELE)	F44ILL	112	0.112	BREAKER	5840	654	1	T 32 R F 4 (ELE)	F44ILL	112	0.112	NONE	5,840	654	-	\$ -	\$ -	\$ -		
18	115 Cell 6	1	T 32 R F 4 (ELE)	F44ILL	112	0.112	BREAKER	5840	654	1	T 32 R F 4 (ELE)	F44ILL	112	0.112	NONE	5,840	654	-	\$ -	\$ -	\$ -		
18	116 Mug Shot	1	T 32 R F 4 (ELE)	F44ILL	112	0.112	OCC	5000	560	1	T 32 R F 4 (ELE)	F44ILL	112	0.112	NONE	5,000	560	-	\$ -	\$ -	\$ -		
108	116 Mug Shot	3	I 65/1	I65/1	65	0.195	OCC	5000	975	3	CF 26	CFQ26/1-L	27	0.081	NONE	5,000	405	570	\$ 83.23	\$ 60.75	\$ -	0.7	
18	117 Finger Print	1	T 32 R F 4 (ELE)	F44ILL	112	0.112	SW	5000	560	1	T 32 R F 4 (ELE)	F44ILL	112	0.112	NONE	5,000	560	-	\$ -	\$ -	\$ -		
18	118 Cell 7	1	T 32 R F 4 (ELE)	F44ILL	112	0.112	BREAKER	5840	654	1	T 32 R F 4 (ELE)	F44ILL	112	0.112	NONE	5,840	654	-	\$ -	\$ -	\$ -		
18	119 Cell 8	1	T 32 R F 4 (ELE)	F44ILL	112	0.112	BREAKER	5840	654	1	T 32 R F 4 (ELE)	F44ILL	112	0.112	NONE	5,840	654	-	\$ -	\$ -	\$ -		
18	120 Cell 9	1	T 32 R F 4 (ELE)	F44ILL	112	0.112	BREAKER	5840	654	1	T 32 R F 4 (ELE)	F44ILL	112	0.112	NONE	5,840	654	-	\$ -	\$ -	\$ -		
6	121 Process Rm 1	2	T 34 R F 4 (MAG)	F44EE	144	0.288	SW	8760	2,523	2	T 28 R F 4	F44SSILL	96	0.192	NONE	8,760	1,682	841	\$ 114.78	\$ 262.50	\$ 40.00	2.3	
6	122 Process Rm 2	2	T 34 R F 4 (MAG)	F44EE	144	0.288	SW	8760	2,523	2	T 28 R F 4	F44SSILL	96	0.192	NONE	8,760	1,682	841	\$ 114.78	\$ 262.50	\$ 40.00	2.3	
6	123 Process Rm 3	2	T 34 R F 4 (MAG)	F44EE	144	0.288	SW	8760	2,523	2	T 28 R F 4	F44SSILL	96	0.192	NONE	8,760	1,682	841	\$ 114.78	\$ 262.50	\$ 40.00	2.3	
18	124 Juvenile Holding	1	T 32 R F 4 (ELE)	F44ILL	112	0.112	SW	5840	654	1	T 32 R F 4 (ELE)	F44ILL	112	0.112	NONE	5,840	654	-	\$ -	\$ -	\$ -		
6	125 Entry	1	T 34 R F 4 (MAG)	F44EE	144	0.144	SW	8760	1,261	1	T 28 R F 4	F44SSILL	96	0.096	NONE	8,760	841	420	\$ 57.39	\$ 131.25	\$ 20.00	2.3	
6	126 Discharge	1	T 34 R F 4 (MAG)	F44EE	144	0.144	SW	8760	1,261	1	T 28 R F 4	F44SSILL	96	0.096	NONE	8,760	841	420	\$ 57.39	\$ 131.25	\$ 20.00	2.3	
16	127 Vestibule	1	T 34 R F 2 (MAG)	F42EE	72	0.072	BREAKER	8760	631	1	T 28 R F 2	F42SSILL	48	0.048	NONE	8,760	420	210	\$ 28.69	\$ 114.75	\$ 10.00	4.0	
16	127 Vestibule	1	T 34 R F 2 (MAG)	F42EE	72	0.072	SW	6205	447	1	T 28 R F 2	F42SSILL	48	0.048	NONE	6,205	298	149	\$ 21.10	\$ 114.75	\$ 10.00	5.4	
X1	128 Corridor	1	X 1.5 W LED	ELED1.5/1	1.5	0.0015	BREAKER	8760	13	1	X 1.5 W LED	ELED1.5/1	1.5	0.0015	NONE	8,760	13	-	\$ -				

Field Code	Area Description	EXISTING CONDITIONS								RETROFIT CONDITIONS								COST & SAVINGS ANALYSIS				
		No. of Fixtures	Standard Fixture Code	NYSERDA Fixture Code	Watts per Fixture	kW/Space	Exist Control	Annual Hours	Annual kWh	No. of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Retrofit Control	Annual Hours	Annual kWh	Annual kWh Saved	Annual \$ Saved	Retrofit Cost	NJ Lighting Incentive	Simple Payback With Out Incentive
	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)	(kW Saved) * (\$/kWh)	Cost for renovations to lighting system		Length of time for renovations cost to be recovered
61	Boiler Room	4	T 34 R F 3 (MAG)	F43EE	115	0.46	SW	2080	957	4	T 28 R F 3	F43SSILL	72	0.288	NONE	2,080	599	358	\$ 63.40	\$ 513.00	\$ 80.00	8.1
88	Boiler Room	2	CF 13 1 LAMP	CFQ13/1-L	15	0.03		2080	62	2	CF 13 1 LAMP	CFQ13/1-L	15	0.03	NONE	2,080	62	- \$	- \$	- \$	- \$	-
61	Boiler Room	1	T 34 R F 3 (MAG)	F43EE	115	0.115		2080	239	1	T 28 R F 3	F43SSILL	72	0.072	NONE	2,080	150	89	\$ 15.85	\$ 128.25	\$ 20.00	8.1
88	Boiler Room	3	CF 13 1 LAMP	CFQ13/1-L	15	0.045		2080	94	3	CF 13 1 LAMP	CFQ13/1-L	15	0.045	NONE	2,080	94	- \$	- \$	- \$	- \$	-
88	Boiler Room	4	CF 13 1 LAMP	CFQ13/1-L	15	0.06		2080	125	4	CF 13 1 LAMP	CFQ13/1-L	15	0.06	NONE	2,080	125	- \$	- \$	- \$	- \$	-
61	Boiler Room	1	T 34 R F 3 (MAG)	F43EE	115	0.115		2080	239	1	T 28 R F 3	F43SSILL	72	0.072	NONE	2,080	150	89	\$ 15.85	\$ 128.25	\$ 20.00	8.1
61	Director of Maintenance Office	2	T 34 R F 3 (MAG)	F43EE	115	0.23	SW	2080	478	2	T 28 R F 3	F43SSILL	72	0.144	OCC	1,400	202	277	\$ 43.82	\$ 375.25	\$ 60.00	8.6
108	Storage Closet	1	I 65	I65/I	65	0.065	SW	520	34	1	CF 26	CFQ26/1-L	27	0.027	NONE	200	5	28	\$ 7.74	\$ 20.25	- \$	2.6
6	Police Bike Storage	1	T 34 R F 4 (MAG)	F44EE	144	0.144	SW	520	75	1	T 28 R F 4	F44SSILL	96	0.096	NONE	520	50	25	\$ 8.42	\$ 131.25	\$ 20.00	15.6
6	Lobby	3	T 34 R F 4 (MAG)	F44EE	144	0.432	SW	6205	2,681	3	T 28 R F 4	F44SSILL	96	0.288	NONE	6,205	1,787	894	\$ 126.62	\$ 393.75	\$ 60.00	3.1
86	Lobby	1	XX 3.0	ELED3/1	3	0.003	BREAKER	8760	26	1	XX 3.0	ELED3/1	3	0.003	NONE	6,205	19	8	\$ 0.95	- \$	- \$	0.0
61	East Vestibule	1	T 34 R F 3 (MAG)	F43EE	115	0.115	SW	6205	714	1	T 28 R F 3	F43SSILL	72	0.072	NONE	6,205	447	267	\$ 37.81	\$ 128.25	\$ 20.00	3.4
61	Main Corridor South	10	T 34 R F 3 (MAG)	F43EE	115	1.15	SW	6205	7,136	10	T 28 R F 3	F43SSILL	72	0.72	NONE	6,205	4,468	2,668	\$ 378.10	\$ 1,282.50	\$ 200.00	3.4
88	Main Corridor South	4	CF 13 1 LAMP	CFQ13/1-L	15	0.06	SW	6205	372	4	CF 13 1 LAMP	CFQ13/1-L	15	0.06	NONE	6,205	372	- \$	- \$	- \$	- \$	-
90	Main Corridor South	3	X CF 7.0	ECF7/1	10	0.03	BREAKER	8760	263	3	X CF 7.0	ECF7/1	10	0.03	NONE	6,205	186	77	\$ 9.49	- \$	- \$	0.0
88	West Vestibule	1	CF 13 1 LAMP	CFQ13/1-L	15	0.015	SW	6205	93	1	CF 13 1 LAMP	CFQ13/1-L	15	0.015	NONE	6,205	93	- \$	- \$	- \$	- \$	-
88	West Vestibule	1	CF 13 1 LAMP	CFQ13/1-L	15	0.015	BREAKER	8760	131	1	CF 13 1 LAMP	CFQ13/1-L	15	0.015	NONE	8,760	131	- \$	- \$	- \$	- \$	-
88	Main Stairway	3	CF 13 1 LAMP	CFQ13/1-L	15	0.045	SW	6205	279	3	CF 13 1 LAMP	CFQ13/1-L	15	0.045	NONE	6,205	279	- \$	- \$	- \$	- \$	-
88	Main Stairway	1	CF 13 1 LAMP	CFQ13/1-L	15	0.015	SW	6205	93	1	CF 13 1 LAMP	CFQ13/1-L	15	0.015	NONE	6,205	93	- \$	- \$	- \$	- \$	-
4	Men's Room	2	2T 34 R F 2 (u) (MAG) (Note 1)	FU2EE	72	0.144	SW	6205	894	2	2T 17 R F 4 (ELE)	F22ILL	33	0.066	OCC	50	3	890	\$ 118.88	\$ 261.88	\$ 30.00	2.2
123	Men's Room	1	O CF 15	CFS15/1	15	0.015	SW	6205	93	1	O CF 15	CFS15/1	15	0.015	OCC	50	1	92	\$ 11.43	\$ 59.38	\$ 10.00	5.2
4	Ladies Room	2	2T 34 R F 2 (u) (MAG) (Note 1)	FU2EE	72	0.144	SW	6205	894	2	2T 17 R F 4 (ELE)	F22ILL	33	0.066	OCC	50	3	890	\$ 118.88	\$ 261.88	\$ 30.00	2.2
123	Ladies Room	1	O CF 15	CFS15/1	15	0.015	SW	6205	93	1	O CF 15	CFS15/1	15	0.015	OCC	50	1	92	\$ 11.43	\$ 59.38	\$ 10.00	5.2
6	Community Policing	4	T 34 R F 4 (MAG)	F44EE	144	0.576	SW	2080	1,198	4	T 28 R F 4	F44SSILL	96	0.384	NONE	1,400	538	660	\$ 103.10	\$ 525.00	\$ 80.00	5.1
6	Tax Assessor	6	T 34 R F 4 (MAG)	F44EE	144	0.864	Sw	2080	1,797	6	T 28 R F 4	F44SSILL	96	0.576	NONE	1,400	806	991	\$ 154.65	\$ 787.50	\$ 120.00	5.1
6	Tax Assessor	9	T 34 R F 4 (MAG)	F44EE	144	1.296	Sw	2080	2,696	9	T 28 R F 4	F44SSILL	96	0.864	NONE	1,400	1,210	1,486	\$ 231.98	\$ 1,181.25	\$ 180.00	5.1
6	Tax Assessor's Office	4	T 34 R F 4 (MAG)	F44EE	144	0.576		2080	1,198	4	T 28 R F 4	F44SSILL	96	0.384	NONE	1,400	538	660	\$ 103.10	\$ 525.00	\$ 80.00	5.1
4	ACS Storage	3	2T 34 R F 2 (u) (MAG) (Note 1)	FU2EE	72	0.216	SW	2080	449	3	2T 17 R F 4 (ELE)	F22ILL	33	0.099	NONE	1,400	139	311	\$ 51.46	\$ 303.75	\$ 30.00	5.9
4	Tax Collector	12	2T 34 R F 2 (u) (MAG) (Note 1)	FU2EE	72	0.864	SW	2080	1,797	12	2T 17 R F 4 (ELE)	F22ILL	33	0.396	NONE	1,400	554	1,243	\$ 205.85	\$ 1,215.00	\$ 120.00	5.9
6	Office within Tax Collector Area	2	T 34 R F 4 (MAG)	F44EE	144	0.288	SW	2080	599	2	T 28 R F 4	F44SSILL	96	0.192	NONE	1,400	269	330	\$ 51.55	\$ 262.50	\$ 40.00	5.1
6	Tax Files	5	T 34 R F 4 (MAG)	F44EE	144	0.72	SW	2080	1,498	5	T 28 R F 4	F44SSILL	96	0.48	NONE	1,400	672	826	\$ 128.88	\$ 656.25	\$ 100.00	5.1
6	Tax Files	1	T 34 R F 4 (MAG)	F44EE	144	0.144	BREAKER	8760	1,261	1	T 28 R F 4	F44SSILL	96	0.096	NONE	8,760	841	420	\$ 57.39	\$ 131.25	\$ 20.00	2.3
6	Assessor Storage	2	T 34 R F 4 (MAG)	F44EE	144	0.288	SW	780	225	2	T 28 R F 4	F44SSILL	96	0.192	NONE	200	38	186	\$ 33.72	\$ 262.50	\$ 40.00	7.8
6	Tax Collector Pay Window Area	3	T 34 R F 4 (MAG)	F44EE	144	0.432	SW	2080	899	3	T 28 R F 4	F44SSILL	96	0.288	NONE	2,080	599	300	\$ 53.08	\$ 393.75	\$ 60.00	7.4
123	Storage Closet	2	O CF 15	CFS15/1	15	0.03	SW	780	23	2	O CF 15	CFS15/1	15	0.03	NONE	200	6	17	\$ 2.15	- \$	- \$	0.0
6	Municipal Clerk Counter Area	2	T 34 R F 4 (MAG)	F44EE	144	0.288	SW	2080	599	2	T 28 R F 4	F44SSILL	96	0.192	NONE	2,080	399	200	\$ 35.39	\$ 262.50	\$ 40.00	7.4
6	Municipal Clerk Counter Area	8	T 34 R F 4 (MAG)	F44EE	144	1.152	SW	2080	2,396	8	T 28 R F 4	F44SSILL	96	0.768	NONE	2,080	1,597	799	\$ 141.55	\$ 1,050.00	\$ 160.00	7.4
46	Municipal Clerk Storage Rm	2	W 32 C F 2 (ELE)	F42LL	60	0.12	SW	2080	250	2	W 32 C F 2 (ELE)	F42LL	60	0.12	NONE	200	24	226	\$ 27.93	- \$	- \$	0.0
6	Copy Room	4	T 34 R F 4 (MAG)	F44EE	144	0.576	SW	2080	1,198	4	T 28 R F 4	F44SSILL	96	0.384	NONE	200	77	1,121	\$ 160.15	\$ 525.00	\$ 80.00	3.3
6	Corner Office	4	T 34 R F 4 (MAG)	F44EE	144	0.576	SW	2080	1,198	4	T 28 R F 4	F44SSILL	96	0.384	NONE	1,400	538	666	\$ 103.10	\$ 525.00	\$ 80.00	5.1
6	Mayor's Office	9	T 34 R F 4 (MAG)	F44EE	144	1.296	SW	2080	2,696	9	T 28 R F 4	F44SSILL	96	0.864	NONE	1,400	1,210	1,486	\$ 231.98	\$ 1,181.25	\$ 180.00	5.1
123	Mayor's Storage Area	1	O CF 15	CFS15/1	15	0.015	SW	1400	21	1	O CF 15	CFS15/1	15	0.015	NONE	200	3	18	\$ 2.23	- \$	- \$	0.0
123	Mayor's Restroom	6	O CF 15	CFS15/1	15	0.09	SW	1400	126	6	O CF 15	CFS15/1	15	0.09	NONE	50	3	39	\$ 15.04	- \$	- \$	0.0
123	Mayor's Restroom	4	O CF 15	CFS15/1	15	0.06	SW	780	47	4	O CF 15	CFS15/1	15	0.06	NONE	50	3	44	\$ 5.42	- \$	- \$	0.0
6	Business Administrator	4	T 34 R F 4 (MAG)	F44EE	144	0.576	SW	780	449	4	T 28 R F 4	F44SSILL	96	0.384	OCC	1,400	538	(89)	\$ 10.40	\$ 643.75	\$ 100.00	61.9
6	Business Administrator	2	T 34 R F 4 (MAG)	F44EE	144	0.288	SW	2340	674	2	T 28 R F 4	F44SSILL	96	0.192	NONE			674	\$ 94.10	\$ 262.50	\$ 40.00	2.9
6	Office	2	T 34 R F 4 (MAG)	F44EE	144	0.288	SW	2080	599	2	T 28 R F 4	F44SSILL	96	0.192	NONE	1,400	269	330	\$ 51.55	\$ 262.50	\$ 40.00	5.1
6	Copy Room	3	T 34 R F 4 (MAG)	F44EE	144	0.432	SW	2080	899	3	T 28 R F 4	F44SSILL	96	0.288	NONE	1,400	403	495	\$ 77.33	\$ 393.75	\$ 60.00	5.1
6	Administration Area	12	T 34 R F 4 (MAG)	F44EE	144	1.728	SW	2080	3,584	12	T 28 R F 4	F44SSILL	96	1.152	NONE	1,400	1,613	1,981	\$ 309.31	\$ 1,575.00	\$ 240.00	5.1
6	106 Conference Room	6	T 34 R F 4 (MAG)	F44EE	144	0.864	SW	2080	1,797	6	T 28 R F 4	F44SSILL	96	0.576	NONE	1,400	806	991	\$ 154.65	\$ 787.50	\$ 120.00	5.1
6	Storage Room	4	T 34 R F 4 (MAG)	F44EE	144	0.576	SW	520	300	4	T 28 R F 4	F44SSILL	96	0.384	NONE	200	77	223	\$ 48.91	\$ 525.00	\$ 80.00	10.7
6	Storage Room	2	T 34 R F 4 (MAG)	F44EE	144	0.288	SW	520	150	2	T 28 R F 4	F44SSILL	96	0.192	NONE	200	38	111	\$ 24.45	\$ 262.50	\$ 40.00	10.7
6	102 Recreation	6	T 34 R F 4 (MAG)	F44EE	144	0.864	SW	2080	1,797	6	T 28 R F 4	F44SSILL	96	0.576	OCC	1,400	806	991	\$ 154.65	\$ 906.25	\$ 140.00	5.9
6	Rec Office	2	T 34 R F 4 (MAG)	F44EE	144	0.288	SW	2080	599	2	T 28 R F 4	F44SSILL	96	0.192	NONE	1,400	269	330	\$ 51.55	\$ 262.50	\$ 40.00	5.1
6	Rec Office	2	T 34 R F 4 (MAG)	F44EE	144	0.288	SW	2080	599	2	T 28 R F 4	F44SSILL	96	0.192	NONE	1,400	269	330	\$ 51.55	\$ 262.50	\$ 40.00	5.1
6	Cherry Hill Alliance Drug/ Alcohol	3	T 34 R F 4 (MAG)	F44EE	144	0.432	SW	3068	1,325	3	T 28 R F 4	F44SSILL	96	0.288	NONE	1,400	403	922	\$ 130.17	\$ 393.75	\$ 60.00	3.0
123	South Starway	4	O CF 15	CFS15/1	15	0.06	BREAKER	8760	526	4	O CF 15	CFS15/1	15	0.06	NONE	8,760	526	- \$	- \$	- \$	- \$	-
6	201 Detectives	4	T 34 R F 4 (MAG)	F44EE	144	0.576	SW	8760	5,0													

		EXISTING CONDITIONS								RETROFIT CONDITIONS								COST & SAVINGS ANALYSIS					
	Area Description	No. of Fixtures	Standard Fixture Code	NYSERDA Fixture Code	Watts per Fixture	kW/Space	Exist Control	Annual Hours	Annual kWh	No. of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Retrofit Control	Annual Hours	Annual kWh	Annual kWh Saved	Annual \$ Saved	Retrofit Cost	NJ Lighting Incentive	Simple Payback With Out Incentive	
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)	(kW Saved) * (\$/kWh)	Cost for renovations to lighting system		Length of time for renovations cost to be recovered	
61	221 Dispatch	8	T 34 R F 3 (MAG)	F43EE	115	0.92	SW	8760	8,059	8	T 28 R F 3	F43SSILL	72	0.576	NONE	8,760	5,046	3,013	\$	411.29	\$ 1,026.00	\$ 160.00	2.5
172	219 Corridor (dwgA2.1.8.30.93)	4	1T 34 R F 2 (MAG)	F42EE	72	0.288	SW	6205	1,787	4	1T 28 R F 2	F42SSILL	48	0.192	NONE	6,205	1,191	596	\$	84.41	\$ 459.00	\$ 40.00	5.4
172	219 Corridor (dwgA2.1.8.30.93)	2	1T 34 R F 2 (MAG)	F42EE	72	0.144	BREAKER	8760	1,261	2	1T 28 R F 2	F42SSILL	48	0.096	NONE	8,760	841	420	\$	57.39	\$ 229.50	\$ 20.00	4.0
61	222 Office	4	T 34 R F 3 (MAG)	F43EE	115	0.46	SW	2080	957	4	T 28 R F 3	F43SSILL	72	0.288	OCC	1,400	403	554	\$	87.65	\$ 750.50	\$ 120.00	8.6
61	223 Office	4	T 34 R F 3 (MAG)	F43EE	115	0.46	SW	2080	957	4	T 28 R F 3	F43SSILL	72	0.288	OCC	1,400	403	554	\$	87.65	\$ 750.50	\$ 120.00	8.6
61	224 Office	4	T 34 R F 3 (MAG)	F43EE	115	0.46	SW	2080	957	4	T 28 R F 3	F43SSILL	72	0.288	OCC	1,400	403	554	\$	87.65	\$ 750.50	\$ 120.00	8.6
61	225 Office Captain	2	T 34 R F 3 (MAG)	F43EE	115	0.23	SW	2080	478	2	T 28 R F 3	F43SSILL	72	0.144	OCC	1,400	202	277	\$	43.82	\$ 494.00	\$ 80.00	11.3
6	226 Office Chief	4	T 34 R F 4 (MAG)	F44EE	144	0.576	SW	2080	1,198	4	T 28 R F 4	F44SSILL	96	0.384	OCC	1,400	538	660	\$	103.10	\$ 762.50	\$ 120.00	7.4
6	227 Conference Room	2	T 34 R F 4 (MAG)	F44EE	144	0.288	SW	2080	599	2	T 28 R F 4	F44SSILL	96	0.192	OCC	1,400	269	330	\$	51.55	\$ 500.00	\$ 80.00	9.7
6	228 Internal Affairs	4	T 34 R F 4 (MAG)	F44EE	144	0.576	SW	2080	1,198	4	T 28 R F 4	F44SSILL	96	0.384	OCC	1,400	538	660	\$	103.10	\$ 643.75	\$ 100.00	6.2
6	229 Office	4	T 34 R F 4 (MAG)	F44EE	144	0.576	SW	2080	1,198	4	T 28 R F 4	F44SSILL	96	0.384	OCC	1,400	538	660	\$	103.10	\$ 643.75	\$ 100.00	6.2
6	230 Secretary Area	4	T 34 R F 4 (MAG)	F44EE	144	0.576	SW	2080	1,198	4	T 28 R F 4	F44SSILL	96	0.384	OCC	2,080	799	399	\$	70.78	\$ 643.75	\$ 100.00	9.1
190	230 Secretary Area, Under cabinet	2	1B 32 C F 2)	F42LL	60	0.12	SW	2080	250	2	1B 32 C F 2)	F42LL	60	0.12	NONE	2,080	250	-	\$	-	\$ -	-	-
47	Men's Room	2	1B 34 C F 2 (MAG)	F42EE	72	0.144	SW	6205	894	2	1B 28 C F 2	F42SSILL	48	0.096	OCC	50	5	889	\$	115.36	\$ 315.88	\$ 30.00	2.7
123	Men's Room	1	O CF 15	CFS15/1	15	0.015	SW	6205	93	1	O CF 15	CFS15/1	15	0.015	OCC	50	1	92	\$	11.43	\$ 59.38	\$ 10.00	5.2
123	Women's Room	2	O CF 15	CFS15/1	15	0.03	SW	6205	186	2	O CF 15	CFS15/1	15	0.03	OCC	50	2	185	\$	22.86	\$ 59.38	\$ 10.00	2.6
4	Women's Room	2	2T 34 R F 2 (u) (MAG) (Note 1)	FU2EE	72	0.144	SW	6205	894	2	2T 17 R F 4 (ELE)	F22ILL	33	0.066	OCC	50	3	890	\$	118.88	\$ 261.88	\$ 30.00	2.2
123	Janitor's Closet	2	O CF 15	CFS15/1	15	0.03	SW	780	23	2	O CF 15	CFS15/1	15	0.03	NONE	200	6	17	\$	2.15	\$ -	\$ -	0.0
6	231 Conference Room	6	T 34 R F 4 (MAG)	F44EE	144	0.864	SW	1040	899	6	T 28 R F 4	F44SSILL	96	0.576	NONE	1,040	599	300	\$	69.08	\$ 787.50	\$ 120.00	11.4
6	233 Dave's Office	1	T 34 R F 4 (MAG)	F44EE	144	0.144	SW	3068	442	1	T 28 R F 4	F44SSILL	96	0.096	OCC	3,068	295	147	\$	23.57	\$ 250.00	\$ 40.00	10.6
6	Storage next to Dave's Office	1	T 34 R F 4 (MAG)	F44EE	144	0.144	SW	600	86	1	T 28 R F 4	F44SSILL	96	0.096	NONE	600	58	29	\$	8.90	\$ 131.25	\$ 20.00	14.7
6	Attorney's Office	2	T 34 R F 4 (MAG)	F44EE	144	0.288	SW	3068	884	2	T 28 R F 4	F44SSILL	96	0.192	NONE	3,068	589	295	\$	47.13	\$ 262.50	\$ 40.00	5.6
6	234 Court Room	8	T 34 R F 4 (MAG)	F44EE	144	1.152	SW	3068	3,534	8	T 28 R F 4	F44SSILL	96	0.768	NONE	3,068	2,356	1,178	\$	188.52	\$ 1,050.00	\$ 160.00	5.6
X1	234 Court Room	2	X 1.5 W LED	ELED1.5/1	1.5	0.003	BREAKER	3068	9	2	X 1.5 W LED	ELED1.5/1	1.5	0.003	NONE	3,068	9	-	\$	-	\$ -	-	-
6	234 Court Room	3	T 34 R F 4 (MAG)	F44EE	144	0.432	SW	3068	1,325	3	T 28 R F 4	F44SSILL	96	0.288	NONE	3,068	884	442	\$	70.70	\$ 393.75	\$ 60.00	5.6
X1	North Stairway	1	X 1.5 W LED	ELED1.5/1	1.5	0.0015	BREAKER	8760	13	1	X 1.5 W LED	ELED1.5/1	1.5	0.0015	NONE	8,760	13	-	\$	-	\$ -	-	-
123	North Stairway	4	O CF 15	CFS15/1	15	0.06	BREAKER	8760	526	4	O CF 15	CFS15/1	15	0.06	NONE	8,760	526	-	\$	-	\$ -	-	-
Public Area Second Floor																							
6	Court Records Counter Area	3	T 34 R F 4 (MAG)	F44EE	144	0.432	SW	2080	899	3	T 28 R F 4	F44SSILL	96	0.288	NONE	2,080	599	300	\$	53.08	\$ 393.75	\$ 60.00	7.4
6	East & South Clerical Area	13	T 34 R F 4 (MAG)	F44EE	144	1.872	SW	2080	3,894	13	T 28 R F 4	F44SSILL	96	1.248	NONE	1,400	1,747	2,147	\$	335.08	\$ 1,706.25	\$ 260.00	5.1
6	Dept Head Office	3	T 34 R F 4 (MAG)	F44EE	144	0.432	SW	2080	899	3	T 28 R F 4	F44SSILL	96	0.288	OCC	1,400	403	495	\$	77.33	\$ 512.50	\$ 80.00	6.6
6	Back File Area	3	T 34 R F 4 (MAG)	F44EE	144	0.432	SW	2080	899	3	T 28 R F 4	F44SSILL	96	0.288	OCC	1,400	403	495	\$	77.33	\$ 512.50	\$ 80.00	6.6
6	212 Purchasing	4	T 34 R F 4 (MAG)	F44EE	144	0.576	SW	2080	1,198	4	T 28 R F 4	F44SSILL	96	0.384	NONE	1,400	538	660	\$	103.10	\$ 525.00	\$ 80.00	5.1
123	Closet	1	O CF 15	CFS15/1	15	0.015	SW	520	8	1	O CF 15	CFS15/1	15	0.015	NONE	200	3	5	\$	0.59	\$ -	\$ -	0.0
6	Employee Lounge	8	T 34 R F 4 (MAG)	F44EE	144	1.152	SW	2080	2,396	8	T 28 R F 4	F44SSILL	96	0.768	OCC	1,400	1,075	1,321	\$	206.20	\$ 1,168.75	\$ 180.00	5.7
4	Men's Room	2	2T 34 R F 2 (u) (MAG) (Note 1)	FU2EE	72	0.144	SW	6205	894	2	2T 17 R F 4 (ELE)	F22ILL	33	0.066	OCC	50	3	890	\$	118.88	\$ 321.25	\$ 40.00	2.7
4	Ladies Room	2	2T 34 R F 2 (u) (MAG) (Note 1)	FU2EE	72	0.144	SW	6205	894	2	2T 17 R F 4 (ELE)	F22ILL	33	0.066	OCC	50	3	890	\$	118.88	\$ 321.25	\$ 40.00	2.7
4	IT Office	6	2T 34 R F 2 (u) (MAG) (Note 1																				

APPENDIX E

ECM-4 Install DDC Control System and Night Setback

New Jersey BPU Energy Audit Program
CHA #19985
Building: Cherry Hill Township Municipal Building

ECM-4 Night Setback

Building Footprint	41,400 SF	Ex Occupied Cing Temp.	76 °F	Ex Occupied Htg Temp.	76 °F	Heating Energy Savings	865 therms
Boiler Seasonal Efficiency	70%	Ex Unoccupied Cing Temp.	76 °F	Ex Unoccupied Htg Temp.	70 °F	Electrical Energy Savings	59,583 kWh
Cooling SEER	8 btu/wh	Prop Occupied Cing Temp.	76 °F	Prop Occupied Htg Temp.	76 °F		
Building Balance Temp.	55 °F	Prop Unoccupied Cing Temp.	80 °F	Prop Unoccupied Htg Temp.	58 °F		
Internal Gains	590,193 btu/h	Occupied Cooling UA	-51,811 btu/hr/°F	Occupied Heating UA	11,837 btu/hr/°F		
Unoc Internal Gain factor	0.3	Unoccupied Cooling UA	-19,108 btu/hr/°F	Unoccupied Heating UA	11,837 btu/hr/°F		
Ave Occ Internal Gain Factor	0.75						

Heating and cooling energy are unrelated in this model. If the building being analyzed is not cooled, disregard cooling energy calculation

				EXISTING LOADS						PROPOSED LOADS									
				Occupied			Unoccupied			Occupied			Unoccupied						
Avg Outdoor Air Temp. Bins °F	Existing Equipment Hours	Occupied Equipment Hours	Unoccupied Equipment Hours	Envelope Load BTUH	Ventilation Load BTUH	Internal Gain BTUH	Unoccupied Envelope Load BTUH	Ventilation Load BTUH	Internal Gain BTUH	Envelope Load BTUH	Ventilation Load BTUH	Internal Gain BTUH	Unoccupied Envelope Load BTUH	Ventilation Load BTUH	Internal Gain BTUH	Existing Cooling Energy kWh	Proposed Cooling Energy kWh	Existing Heating Therms	Proposed Heating Therms
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	K	L	M	N
102.5	0	0	0	-1,372,997	-238,430	-442,645	-506,368	-186,199	-177,058	-1,372,997	-238,430	-442,645	-429,935	-158,093	-177,058	0	0	0	0
97.5	3	1	2	-1,113,941	-193,443	-442,645	-410,827	-151,067	-177,058	-1,113,941	-193,443	-442,645	-334,394	-122,962	-177,058	674	436	0	0
92.5	52	23	29	-854,885	-148,457	-442,645	-315,286	-115,935	-177,058	-854,885	-148,457	-442,645	-238,853	-87,830	-177,058	8,938	5,714	0	0
87.5	104	46	58	-595,829	-103,470	-442,645	-219,745	-80,803	-177,058	-595,829	-103,470	-442,645	-143,312	-52,698	-177,058	13,084	8,207	0	0
82.5	477	213	264	-336,773	-58,483	-442,645	-124,203	-45,671	-177,058	-336,773	-58,483	-442,645	-47,771	-17,566	-177,058	40,863	24,786	0	0
77.5	656	293	363	-77,717	-13,496	-442,645	-28,662	-10,540	-177,058	-77,717	-13,496	-442,645	0	0	-177,058	33,274	20,964	0	0
72.5	907	405	502	0	0	-442,645	0	0	-177,058	0	0	-442,645	0	0	-177,058	35,501	23,709	0	0
67.5	619	276	343	29,592	22,493	-442,645	29,592	17,566	-177,058	29,592	22,493	-442,645	0	0	-177,058	19,926	13,896	0	0
62.5	983	439	544	88,777	67,480	-442,645	88,777	52,698	-177,058	88,777	67,480	-442,645	0	0	-177,058	21,660	17,083	0	0
57.5	625	279	346	147,961	112,467	-442,645	147,961	87,830	-177,058	147,961	112,467	-442,645	5,918	3,513	-177,058	8,193	7,829	0	0
52.5	540	241	299	207,146	157,454	-442,645	207,146	122,962	-177,058	207,146	157,454	-442,645	65,103	38,645	-177,058	2,839	2,744	0	0
47.5	576	257	319	266,330	202,441	-442,645	266,330	158,093	-177,058	266,330	202,441	-442,645	124,287	73,777	-177,058	0	0	215	192
42.5	552	246	306	325,514	247,428	-442,645	325,514	193,225	-177,058	325,514	247,428	-442,645	183,472	108,909	-177,058	0	0	1,027	962
37.5	1,067	476	591	384,699	292,415	-442,645	384,699	228,357	-177,058	384,699	292,415	-442,645	242,656	144,041	-177,058	0	0	3,574	3,364
32.5	685	306	379	443,883	337,401	-442,645	443,883	263,489	-177,058	443,883	337,401	-442,645	301,841	179,172	-177,058	0	0	3,314	3,126
27.5	442	197	245	503,068	382,388	-442,645	503,068	298,621	-177,058	503,068	382,388	-442,645	361,025	214,304	-177,058	0	0	2,796	2,640
22.5	248	111	137	562,252	427,375	-442,645	562,252	333,753	-177,058	562,252	427,375	-442,645	420,210	249,436	-177,058	0	0	1,938	1,831
17.5	184	82	102	621,437	472,362	-442,645	621,437	368,885	-177,058	621,437	472,362	-442,645	479,394	284,568	-177,058	0	0	1,712	1,618
12.5	40	18	22	680,621	517,349	-442,645	680,621	404,016	-177,058	680,621	517,349	-442,645	538,578	319,700	-177,058	0	0	432	408
7.5	0	0	0	739,806	562,336	-442,645	739,806	439,148	-177,058	739,806	562,336	-442,645	597,763	354,832	-177,058	0	0	0	0
2.5	0	0	0	798,990	607,323	-442,645	798,990	474,280	-177,058	798,990	607,323	-442,645	656,947	389,964	-177,058	0	0	0	0
-2.5	0	0	0	858,174	652,309	-442,645	858,174	509,412	-177,058	858,174	652,309	-442,645	716,132	425,096	-177,058	0	0	0	0
-7.5	0	0	0	917,359	697,296	-442,645	917,359	544,544	-177,058	917,359	697,296	-442,645	775,316	460,227	-177,058	0	0	0	0
TOTALS	8,760	3,911	4,849													184,951	125,368	15,007	14,142

Existing Building Ventilation & Infiltration (occ) 8,331 cfm
Overheat Ventilation Factor 1.00
Additional ventilation to offset overhea 0 cfm
Existing Building Ventilation & Infiltration (unocc) 6,506 cfm

New Jersey BPU Energy Audit Program
CHA #19985
Building: Cherry Hill Township Municipal Building
ECM-4 Night Setback

Multipliers	
Material:	1.00
Labor:	1.10
Equipment:	1.00

Description	QTY	UNIT	UNIT COSTS			SUBTOTAL COSTS			TOTAL COST	REMARKS
			MAT.	LABOR	EQUIP.	MAT.	LABOR	EQUIP.		
						\$ -	\$ -	\$ -	\$ -	
Install DDC control system	1	ls	\$ 52,560	\$ 35,040	\$ -	\$ 52,560	\$ 38,544	\$ -	\$ 91,104	
Programming	80	hours		\$ 75		\$ -	\$ 6,600	\$ -	\$ 6,600	
						\$ -	\$ -	\$ -	\$ -	
						\$ -	\$ -	\$ -	\$ -	
						\$ -	\$ -	\$ -	\$ -	
						\$ -	\$ -	\$ -	\$ -	
						\$ -	\$ -	\$ -	\$ -	
						\$ -	\$ -	\$ -	\$ -	
						\$ -	\$ -	\$ -	\$ -	

\$ 97,704	Subtotal
\$ 9,770	10% Contingency
	Contractor
\$ 9,770	10% O&P
\$ 9,770	10% Engineering
\$ 127,015	Total

New Jersey BPU Energy Audit Program
CHA # 19985
Building: Cherry Hill Township Municipal Building

Building Footprint	41,400 SF	Ex Occupied Cing Temp.	76 *F	Ex Occupied Htg Temp.	70 *F
Boiler Seasonal Efficiency	70%	Ex Unoccupied Cing Temp.	76 *F	Ex Unoccupied Htg Temp.	70 *F
Cooling SEER	8 btu/wh	Occupied Cooling UA	(51,811) btu/hr/°F	Occupied Heating UA	11,837 btu/hr/°F
Building Balance Temp.	55 *F	Unoccupied Cooling UA	(19,108) btu/hr/°F	Unoccupied Heating UA	11,837 btu/hr/°F
Internal Gains	590,193 btu/h				
Unoc Internal Gain factor	0.3				
Ave Occ Internal Gain Factor	0.75				

Heating and cooling energy are unrelated in this model. If the building being analyzed is not cooled, disregard cooling energy calculations

EXISTING LOADS											
				Occupied			Unoccupied				
Avg Outdoor Air Temp. Bins °F	Existing Equipment Bin Hours	Occupied Equipment Bin Hours	Unoccupied Equipment Bin Hours	Envelope Load BTUH	Ventilation Load BTUH	Internal Gain BTUH	Unoccupied Envelope Load BTUH	Ventilation Load BTUH	Internal Gain BTUH	Existing Cooling Energy kWh	Existing Heating Energy Therms
A	B	C	D	E	F	G	H	I	J	K	M
102.5	0	0	0	-1,372,997	-238,430	-442,645	-506,368	-186,199	-177,058	0	0
97.5	3	3	0	-1,113,941	-193,443	-442,645	-410,827	-151,067	177,058	674	0
92.5	52	52	0	-854,885	-148,457	-442,645	-315,286	-115,935	177,058	8,938	0
87.5	104	104	0	-595,829	-103,470	-442,645	-219,745	-80,803	177,058	13,084	0
82.5	477	477	0	-336,773	-58,483	-442,645	-124,203	-45,671	177,058	40,863	0
77.5	656	656	0	-77,717	-13,496	-442,645	-28,662	-10,540	177,058	33,274	0
72.5	907	907	0	0	0	-442,645	0	0	177,058	35,501	0
67.5	619	619	0	29,592	22,493	-442,645	29,592	17,566	177,058	19,926	0
62.5	983	983	0	88,777	67,480	-442,645	88,777	52,698	177,058	21,660	0
57.5	625	625	0	147,961	112,467	-442,645	147,961	87,830	177,058	8,193	0
52.5	540	540	0	207,146	157,454	-442,645	207,146	122,962	177,058	2,839	0
47.5	576	576	0	266,330	202,441	-442,645	266,330	158,093	177,058	0	215
42.5	552	552	0	325,514	247,428	-442,645	325,514	193,225	177,058	0	1,027
37.5	1,067	1,067	0	384,699	292,415	-442,645	384,699	228,357	177,058	0	3,574
32.5	685	685	0	443,883	337,401	-442,645	443,883	263,489	177,058	0	3,314
27.5	442	442	0	503,068	382,388	-442,645	503,068	298,621	177,058	0	2,796
22.5	248	248	0	562,252	427,375	-442,645	562,252	333,753	177,058	0	1,938
17.5	184	184	0	621,437	472,362	-442,645	621,437	368,885	177,058	0	1,712
12.5	40	40	0	680,621	517,349	-442,645	680,621	404,016	177,058	0	432
7.5	0	0	0	739,806	562,336	-442,645	739,806	439,148	177,058	0	0
2.5	0	0	0	798,990	607,323	-442,645	798,990	474,280	177,058	0	0
-2.5	0	0	0	858,174	652,309	-442,645	858,174	509,412	177,058	0	0
-7.5	0	0	0	917,359	697,296	-442,645	917,359	544,544	177,058	0	0
TOTALS	8,760	8,760	0							184,951	15,007

Existing Building Ventilation & Infiltration (occ)	8,331 cfm
Overheat Ventilation Factor	1.00
Additional ventilation to offset overheat	0 cfm
Existing Building Ventilation & Infiltration (unocc)	6,506 cfm

Energy Use (therms)

	Base Case		
Heating	15,007		
Target ->	17,223		
	87.1%		

Cherry Hill Township Municipal Building Audit Program
CHA Project No. 19985

Cost of Electricity: \$0.124 \$/kWh

ECM-3 Lighting Replacements and Occupancy Sensors

\$9.26 \$/kW

		EXISTING CONDITIONS								RETROFIT CONDITIONS								COST & SAVINGS ANALYSIS					
	Area Description	No. of Fixtures	Standard Fixture Code	NYSERDA Fixture Code	Watts per Fixture	kW/Space	Exist Control	Annual Hours	Annual kWh	No. of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Retrofit Control	Annual Hours	Annual kWh	Annual kWh Saved	Annual \$ Saved	Retrofit Cost	NJ Lighting Incentive	Simple Payback With Out Incentive	
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) = 2x2' 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) = 2x2' 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)	(kW Saved) * (\$/kWh)	Cost for renovations to lighting system		Length of time for renovations cost to be recovered	
	Police Dept. First Floor																						
225	101 Sallyport	6	70 High Pressure Sodium	HPS70/1	95	0.57	BREAKER	8760	4,993	6	70 High Pressure Sodium	HPS70/1	95	0.57	NONE	8,760	4,993	-	\$ -	\$ -	\$ -		
6	102 Officer	2	T 34 R F 4 (MAG)	F44EE	144	0.288	SW	8760	2,523	2	T 28 R F 4	F44SSILL	96	0.192	NONE	8,760	1,682	841	\$ 114.78	\$ 262.50	\$ 40.00	2.3	
16	103 Sprinkler Room	2	T 34 R F 2 (MAG)	F42EE	72	0.144	SW	8760	1,682	2	T 28 R F 2	F42SSILL	48	0.096	NONE	8,760	50	2	\$ 5.63	\$ 229.50	\$ 20.00	40.8	
16	104 Security Lock	1	T 34 R F 2 (MAG)	F42EE	72	0.072	Breaker	8760	631	1	T 28 R F 2	F42SSILL	48	0.048	NONE	8,760	420	210	\$ 28.69	\$ 114.75	\$ 10.00	4.0	
16	104 Security Lock	1	T 34 R F 2 (MAG)	F42EE	72	0.072	SW	8760	631	1	T 28 R F 2	F42SSILL	48	0.048	NONE	8,760	420	210	\$ 28.69	\$ 114.75	\$ 10.00	4.0	
6	105 DWI Process	2	T 34 R F 4 (MAG)	F44EE	144	0.288	SW	8760	2,523	2	T 28 R F 4	F44SSILL	96	0.192	NONE	8,760	1,682	841	\$ 114.78	\$ 262.50	\$ 40.00	2.3	
6	106 Stack Area	1	T 34 R F 4 (MAG)	F44EE	144	0.144	SW	8760	1,261	1	T 28 R F 4	F44SSILL	96	0.096	NONE	8,760	841	420	\$ 57.39	\$ 131.25	\$ 20.00	2.3	
123	107 Toilet	1	O CF 15	CFS15/1	15	0.015	SW	3000	45	1	O CF 15	CFS15/1	15	0.015	NONE	3,000	45	-	\$ -	\$ -	\$ -		
61	107A Closet	1	T 34 R F 3 (MAG)	F43EE	115	0.115	SW	50	6	1	T 28 R F 3	F43SSILL	72	0.072	NONE	50	4	2	\$ 5.04	\$ 128.25	\$ 20.00	25.4	
6	108 Operations Area	3	T 34 R F 4 (MAG)	F44EE	144	0.432	SW	8760	3,784	3	T 28 R F 4	F44SSILL	96	0.288	NONE	8,760	2,523	1,261	\$ 172.17	\$ 393.75	\$ 60.00	2.3	
16	109 Corridor / Work Area	5	T 34 R F 2 (MAG)	F42EE	72	0.36	SW	8760	3,154	5	T 28 R F 2	F42SSILL	48	0.24	NONE	8,760	2,102	1,051	\$ 143.47	\$ 573.75	\$ 50.00	4.0	
16	109 Corridor / Work Area	2	T 34 R F 2 (MAG)	F42EE	72	0.144	Breaker	8760	1,261	2	T 28 R F 2	F42SSILL	48	0.096	NONE	8,760	841	420	\$ 57.39	\$ 229.50	\$ 20.00	4.0	
16	109A Corridor	2	T 34 R F 2 (MAG)	F42EE	72	0.144	SW	8760	1,261	2	T 28 R F 2	F42SSILL	48	0.096	NONE	8,760	841	420	\$ 57.39	\$ 229.50	\$ 20.00	4.0	
16	109A Corridor	3	T 34 R F 2 (MAG)	F42EE	72	0.216	Breaker	8760	1,892	3	T 28 R F 2	F42SSILL	48	0.144	NONE	8,760	1,261	631	\$ 86.08	\$ 344.25	\$ 30.00	4.0	
6	109A Corridor	4	T 34 R F 4 (MAG)	F44EE	144	0.576	BREAKER	8760	5,046	4	T 28 R F 4	F44SSILL	96	0.384	NONE	8,760	3,364	1,682	\$ 229.56	\$ 525.00	\$ 80.00	2.3	
X1	109A Corridor	1	X 1.5 W LED	ELED1.5/1	1.5	0.0015	Breaker	8760	13	1	X 1.5 W LED	ELED1.5/1	1.5	0.0015	NONE	8,760	13	-	\$ -	\$ -	\$ -		
X1	109 Corridor / Work Area	1	X 1.5 W LED	ELED1.5/1	1.5	0.0015	BREAKER	8760	13	1	X 1.5 W LED	ELED1.5/1	1.5	0.0015	NONE	8,760	13	-	\$ -	\$ -	\$ -		
18	110 Cell 1	1	T 32 R F 4 (ELE)	F44ILL	112	0.112	BREAKER	5840	654	1	T 32 R F 4 (ELE)	F44ILL	112	0.112	NONE	5,840	654	-	\$ -	\$ -	\$ -		
18	111 Cell 2	1	T 32 R F 4 (ELE)	F44ILL	112	0.112	BREAKER	5840	654	1	T 32 R F 4 (ELE)	F44ILL	112	0.112	NONE	5,840	654	-	\$ -	\$ -	\$ -		
18	112 Cell 3	1	T 32 R F 4 (ELE)	F44ILL	112	0.112	BREAKER	5840	654	1	T 32 R F 4 (ELE)	F44ILL	112	0.112	NONE	5,840	654	-	\$ -	\$ -	\$ -		
18	113 Cell 4	1	T 32 R F 4 (ELE)	F44ILL	112	0.112	BREAKER	5840	654	1	T 32 R F 4 (ELE)	F44ILL	112	0.112	NONE	5,840	654	-	\$ -	\$ -	\$ -		
18	114 Cell 5	1	T 32 R F 4 (ELE)	F44ILL	112	0.112	BREAKER	5840	654	1	T 32 R F 4 (ELE)	F44ILL	112	0.112	NONE	5,840	654	-	\$ -	\$ -	\$ -		
18	115 Cell 6	1	T 32 R F 4 (ELE)	F44ILL	112	0.112	BREAKER	5840	654	1	T 32 R F 4 (ELE)	F44ILL	112	0.112	NONE	5,840	654	-	\$ -	\$ -	\$ -		
18	116 Mug Shot	1	T 32 R F 4 (ELE)	F44ILL	112	0.112	OCC	5000	560	1	T 32 R F 4 (ELE)	F44ILL	112	0.112	NONE	5,000	560	-	\$ -	\$ -	\$ -		
108	116 Mug Shot	3	I 65/1	I 65/1	65	0.195	OCC	5000	975	3	CF 26	CFQ26/1-L	27	0.081	NONE	5,000	405	570	\$ 83.23	\$ 60.75	\$ -	0.7	
18	117 Finger Print	1	T 32 R F 4 (ELE)	F44ILL	112	0.112	SW	5000	560	1	T 32 R F 4 (ELE)	F44ILL	112	0.112	NONE	5,000	560	-	\$ -	\$ -	\$ -		
18	118 Cell 7	1	T 32 R F 4 (ELE)	F44ILL	112	0.112	BREAKER	5840	654	1	T 32 R F 4 (ELE)	F44ILL	112	0.112	NONE	5,840	654	-	\$ -	\$ -	\$ -		
18	119 Cell 8	1	T 32 R F 4 (ELE)	F44ILL	112	0.112	BREAKER	5840	654	1	T 32 R F 4 (ELE)	F44ILL	112	0.112	NONE	5,840	654	-	\$ -	\$ -	\$ -		
18	120 Cell 9	1	T 32 R F 4 (ELE)	F44ILL	112	0.112	BREAKER	5840	654	1	T 32 R F 4 (ELE)	F44ILL	112	0.112	NONE	5,840	654	-	\$ -	\$ -	\$ -		
6	121 Process Rm 1	2	T 34 R F 4 (MAG)	F44EE	144	0.288	SW	8760	2,523	2	T 28 R F 4	F44SSILL	96	0.192	NONE	8,760	1,682	841	\$ 114.78	\$ 262.50	\$ 40.00	2.3	
6	122 Process Rm 2	2	T 34 R F 4 (MAG)	F44EE	144	0.288	SW	8760	2,523	2	T 28 R F 4	F44SSILL	96	0.192	NONE	8,760	1,682	841	\$ 114.78	\$ 262.50	\$ 40.00	2.3	
6	123 Process Rm 3	2	T 34 R F 4 (MAG)	F44EE	144	0.288	SW	8760	2,523	2	T 28 R F 4	F44SSILL	96	0.192	NONE	8,760	1,682	841	\$ 114.78	\$ 262.50	\$ 40.00	2.3	
18	124 Juvenile Holding	1	T 32 R F 4 (ELE)	F44ILL	112	0.112	SW	5840	654	1	T 32 R F 4 (ELE)	F44ILL	112	0.112	NONE	5,840	654	-	\$ -	\$ -	\$ -		
6	125 Entry	1	T 34 R F 4 (MAG)	F44EE	144	0.144	SW	8760	1,261	1	T 28 R F 4	F44SSILL	96	0.096	NONE	8,760	841	420	\$ 57.39	\$ 131.25	\$ 20.00	2.3	
6	126 Discharge	1	T 34 R F 4 (MAG)	F44EE	144	0.144	SW	8760	1,261	1	T 28 R F 4	F44SSILL	96	0.096	NONE	8,760	841	420	\$ 57.39	\$ 131.25	\$ 20.00	2.3	
16	127 Vestibule	1	T 34 R F 2 (MAG)	F42EE	72	0.072	BREAKER	8760	631	1	T 28 R F 2	F42SSILL	48	0.048	NONE	8,760	420	210	\$ 28.69	\$ 114.75	\$ 10.00	4.0	
16	127 Vestibule	1	T 34 R F 2 (MAG)	F42EE	72	0.072	SW	6205	447	1	T 28 R F 2	F42SSILL	48	0.048	NONE	6,205	298	149	\$ 21.10	\$ 114.75	\$ 10.00	5.4	
X1	128 Corridor	1	X 1.5 W LED	ELED1.5/1	1.5	0.0015	BREAKER	8760	13	1	X 1.5 W LED	ELED1.5/1	1.5	0.0015	NONE	8,760	13	-	\$ -	\$ -	\$ -		
4	128 Corridor																						

Field Code	Area Description	EXISTING CONDITIONS								RETROFIT CONDITIONS								COST & SAVINGS ANALYSIS				
		No. of Fixtures	Standard Fixture Code	NYSERDA Fixture Code	Watts per Fixture	kW/Space	Exist Control	Annual Hours	Annual kWh	No. of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Retrofit Control	Annual Hours	Annual kWh	Annual kWh Saved	Annual \$ Saved	Retrofit Cost	NJ Lighting Incentive	Simple Payback With Out Incentive
	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)	(kW Saved) * (\$/kWh)	Cost for renovations to lighting system		Length of time for renovations cost to be recovered
61	Boiler Room	4	T 34 R F 3 (MAG)	F43EE	115	0.46	SW	2080	957	4	T 28 R F 3	F43SSILL	72	0.288	NONE	2,080	599	358	\$ 63.40	\$ 513.00	\$ 80.00	8.1
88	Boiler Room	2	CF 13 1 LAMP	CFQ13/1-L	15	0.03		2080	62	2	CF 13 1 LAMP	CFQ13/1-L	15	0.03	NONE	2,080	62	- \$	- \$	- \$	- \$	-
61	Boiler Room	1	T 34 R F 3 (MAG)	F43EE	115	0.115		2080	239	1	T 28 R F 3	F43SSILL	72	0.072	NONE	2,080	150	89	\$ 15.85	\$ 128.25	\$ 20.00	8.1
88	Boiler Room	3	CF 13 1 LAMP	CFQ13/1-L	15	0.045		2080	94	3	CF 13 1 LAMP	CFQ13/1-L	15	0.045	NONE	2,080	94	- \$	- \$	- \$	- \$	-
88	Boiler Room	4	CF 13 1 LAMP	CFQ13/1-L	15	0.06		2080	125	4	CF 13 1 LAMP	CFQ13/1-L	15	0.06	NONE	2,080	125	- \$	- \$	- \$	- \$	-
61	Boiler Room	1	T 34 R F 3 (MAG)	F43EE	115	0.115		2080	239	1	T 28 R F 3	F43SSILL	72	0.072	NONE	2,080	150	89	\$ 15.85	\$ 128.25	\$ 20.00	8.1
61	Director of Maintenance Office	2	T 34 R F 3 (MAG)	F43EE	115	0.23	SW	2080	478	2	T 28 R F 3	F43SSILL	72	0.144	OCC	1,400	202	277	\$ 43.82	\$ 375.25	\$ 60.00	8.6
108	Storage Closet	1	I 65	I65/I	65	0.065	SW	520	34	1	CF 26	CFQ26/1-L	27	0.027	NONE	200	5	28	\$ 7.74	\$ 20.25	- \$	2.6
6	Police Bike Storage	1	T 34 R F 4 (MAG)	F44EE	144	0.144	SW	520	75	1	T 28 R F 4	F44SSILL	96	0.096	NONE	520	50	25	\$ 8.42	\$ 131.25	\$ 20.00	15.6
6	Lobby	3	T 34 R F 4 (MAG)	F44EE	144	0.432	SW	6205	2,681	3	T 28 R F 4	F44SSILL	96	0.288	NONE	6,205	1,787	894	\$ 126.62	\$ 393.75	\$ 60.00	3.1
86	Lobby	1	XX 3.0	ELED3/1	3	0.003	BREAKER	8760	26	1	XX 3.0	ELED3/1	3	0.003	NONE	6,205	19	8	\$ 0.95	- \$	- \$	0.0
61	East Vestibule	1	T 34 R F 3 (MAG)	F43EE	115	0.115	SW	6205	714	1	T 28 R F 3	F43SSILL	72	0.072	NONE	6,205	447	267	\$ 37.81	\$ 128.25	\$ 20.00	3.4
61	Main Corridor South	10	T 34 R F 3 (MAG)	F43EE	115	1.15	SW	6205	7,136	10	T 28 R F 3	F43SSILL	72	0.72	NONE	6,205	4,468	2,668	\$ 378.10	\$ 1,282.50	\$ 200.00	3.4
88	Main Corridor South	4	CF 13 1 LAMP	CFQ13/1-L	15	0.06	SW	6205	372	4	CF 13 1 LAMP	CFQ13/1-L	15	0.06	NONE	6,205	372	- \$	- \$	- \$	- \$	-
90	Main Corridor South	3	X CF 7.0	ECF7/1	10	0.03	BREAKER	8760	263	3	X CF 7.0	ECF7/1	10	0.03	NONE	6,205	186	77	\$ 9.49	- \$	- \$	0.0
88	West Vestibule	1	CF 13 1 LAMP	CFQ13/1-L	15	0.015	SW	6205	93	1	CF 13 1 LAMP	CFQ13/1-L	15	0.015	NONE	6,205	93	- \$	- \$	- \$	- \$	-
88	West Vestibule	1	CF 13 1 LAMP	CFQ13/1-L	15	0.015	BREAKER	8760	131	1	CF 13 1 LAMP	CFQ13/1-L	15	0.015	NONE	8,760	131	- \$	- \$	- \$	- \$	-
88	Main Stairway	3	CF 13 1 LAMP	CFQ13/1-L	15	0.045	SW	6205	279	3	CF 13 1 LAMP	CFQ13/1-L	15	0.045	NONE	6,205	279	- \$	- \$	- \$	- \$	-
88	Main Stairway	1	CF 13 1 LAMP	CFQ13/1-L	15	0.015	SW	6205	93	1	CF 13 1 LAMP	CFQ13/1-L	15	0.015	NONE	6,205	93	- \$	- \$	- \$	- \$	-
4	Men's Room	2	2T 34 R F 2 (u) (MAG) (Note 1)	FU2EE	72	0.144	SW	6205	894	2	2T 17 R F 4 (ELE)	F22ILL	33	0.066	OCC	50	3	890	\$ 118.88	\$ 261.88	\$ 30.00	2.2
123	Men's Room	1	O CF 15	CFS15/1	15	0.015	SW	6205	93	1	O CF 15	CFS15/1	15	0.015	OCC	50	1	92	\$ 11.43	\$ 59.38	\$ 10.00	5.2
4	Ladies Room	2	2T 34 R F 2 (u) (MAG) (Note 1)	FU2EE	72	0.144	SW	6205	894	2	2T 17 R F 4 (ELE)	F22ILL	33	0.066	OCC	50	3	890	\$ 118.88	\$ 261.88	\$ 30.00	2.2
123	Ladies Room	1	O CF 15	CFS15/1	15	0.015	SW	6205	93	1	O CF 15	CFS15/1	15	0.015	OCC	50	1	92	\$ 11.43	\$ 59.38	\$ 10.00	5.2
6	Community Policing	4	T 34 R F 4 (MAG)	F44EE	144	0.576	SW	2080	1,198	4	T 28 R F 4	F44SSILL	96	0.384	NONE	1,400	538	660	\$ 103.10	\$ 525.00	\$ 80.00	5.1
6	Tax Assessor	6	T 34 R F 4 (MAG)	F44EE	144	0.864	Sw	2080	1,797	6	T 28 R F 4	F44SSILL	96	0.576	NONE	1,400	806	991	\$ 154.65	\$ 787.50	\$ 120.00	5.1
6	Tax Assessor	9	T 34 R F 4 (MAG)	F44EE	144	1.296	Sw	2080	2,696	9	T 28 R F 4	F44SSILL	96	0.864	NONE	1,400	1,210	1,486	\$ 231.98	\$ 1,181.25	\$ 180.00	5.1
6	Tax Assessor's Office	4	T 34 R F 4 (MAG)	F44EE	144	0.576		2080	1,198	4	T 28 R F 4	F44SSILL	96	0.384	NONE	1,400	538	660	\$ 103.10	\$ 525.00	\$ 80.00	5.1
4	ACS Storage	3	2T 34 R F 2 (u) (MAG) (Note 1)	FU2EE	72	0.216	SW	2080	449	3	2T 17 R F 4 (ELE)	F22ILL	33	0.099	NONE	1,400	139	311	\$ 51.46	\$ 303.75	\$ 30.00	5.9
4	Tax Collector	12	2T 34 R F 2 (u) (MAG) (Note 1)	FU2EE	72	0.864	SW	2080	1,797	12	2T 17 R F 4 (ELE)	F22ILL	33	0.396	NONE	1,400	554	1,243	\$ 205.85	\$ 1,215.00	\$ 120.00	5.9
6	Office within Tax Collector Area	2	T 34 R F 4 (MAG)	F44EE	144	0.288	SW	2080	599	2	T 28 R F 4	F44SSILL	96	0.192	NONE	1,400	269	330	\$ 51.55	\$ 262.50	\$ 40.00	5.1
6	Tax Files	5	T 34 R F 4 (MAG)	F44EE	144	0.72	SW	2080	1,498	5	T 28 R F 4	F44SSILL	96	0.48	NONE	1,400	672	826	\$ 128.88	\$ 656.25	\$ 100.00	5.1
6	Tax Files	1	T 34 R F 4 (MAG)	F44EE	144	0.144	BREAKER	8760	1,261	1	T 28 R F 4	F44SSILL	96	0.096	NONE	8,760	841	420	\$ 57.39	\$ 131.25	\$ 20.00	2.3
6	Assessor Storage	2	T 34 R F 4 (MAG)	F44EE	144	0.288	SW	780	225	2	T 28 R F 4	F44SSILL	96	0.192	NONE	200	38	186	\$ 33.72	\$ 262.50	\$ 40.00	7.8
6	Tax Collector Pay Window Area	3	T 34 R F 4 (MAG)	F44EE	144	0.432	SW	2080	899	3	T 28 R F 4	F44SSILL	96	0.288	NONE	2,080	599	300	\$ 53.08	\$ 393.75	\$ 60.00	7.4
123	Storage Closet	2	O CF 15	CFS15/1	15	0.03	SW	780	23	2	O CF 15	CFS15/1	15	0.03	NONE	200	6	17	\$ 2.15	- \$	- \$	0.0
6	Municipal Clerk Counter Area	2	T 34 R F 4 (MAG)	F44EE	144	0.288	SW	2080	599	2	T 28 R F 4	F44SSILL	96	0.192	NONE	2,080	399	200	\$ 35.39	\$ 262.50	\$ 40.00	7.4
6	Municipal Clerk Counter Area	8	T 34 R F 4 (MAG)	F44EE	144	1.152	SW	2080	2,396	8	T 28 R F 4	F44SSILL	96	0.768	NONE	2,080	1,597	799	\$ 141.55	\$ 1,050.00	\$ 160.00	7.4
46	Municipal Clerk Storage Rm	2	W 32 C F 2 (ELE)	F42LL	60	0.12	SW	2080	250	2	W 32 C F 2 (ELE)	F42LL	60	0.12	NONE	200	24	226	\$ 27.93	- \$	- \$	0.0
6	Copy Room	4	T 34 R F 4 (MAG)	F44EE	144	0.576	SW	2080	1,198	4	T 28 R F 4	F44SSILL	96	0.384	NONE	200	77	1,121	\$ 160.15	\$ 525.00	\$ 80.00	3.3
6	Corner Office	4	T 34 R F 4 (MAG)	F44EE	144	0.576	SW	2080	1,198	4	T 28 R F 4	F44SSILL	96	0.384	NONE	1,400	538	666	\$ 103.10	\$ 525.00	\$ 80.00	5.1
6	Mayor's Office	9	T 34 R F 4 (MAG)	F44EE	144	1.296	SW	2080	2,696	9	T 28 R F 4	F44SSILL	96	0.864	NONE	1,400	1,210	1,486	\$ 231.98	\$ 1,181.25	\$ 180.00	5.1
123	Mayor's Storage Area	1	O CF 15	CFS15/1	15	0.015	SW	1400	21	1	O CF 15	CFS15/1	15	0.015	NONE	200	3	18	\$ 2.23	- \$	- \$	0.0
123	Mayor's Restroom	6	O CF 15	CFS15/1	15	0.09	SW	1400	126	6	O CF 15	CFS15/1	15	0.09	NONE	50	3	39	\$ 15.04	- \$	- \$	0.0
123	Mayor's Restroom	4	O CF 15	CFS15/1	15	0.06	SW	780	47	4	O CF 15	CFS15/1	15	0.06	NONE	50	3	44	\$ 5.42	- \$	- \$	0.0
6	Business Administrator	4	T 34 R F 4 (MAG)	F44EE	144	0.576	SW	780	449	4	T 28 R F 4	F44SSILL	96	0.384	OCC	1,400	538	(89)	\$ 10.40	\$ 643.75	\$ 100.00	61.9
6	Business Administrator	2	T 34 R F 4 (MAG)	F44EE	144	0.288	SW	2340	674	2	T 28 R F 4	F44SSILL	96	0.192	NONE			674	\$ 94.10	\$ 262.50	\$ 40.00	2.9
6	Office	2	T 34 R F 4 (MAG)	F44EE	144	0.288	SW	2080	599	2	T 28 R F 4	F44SSILL	96	0.192	NONE	1,400	269	330	\$ 51.55	\$ 262.50	\$ 40.00	5.1
6	Copy Room	3	T 34 R F 4 (MAG)	F44EE	144	0.432	SW	2080	899	3	T 28 R F 4	F44SSILL	96	0.288	NONE	1,400	403	495	\$ 77.33	\$ 393.75	\$ 60.00	5.1
6	Administration Area	12	T 34 R F 4 (MAG)	F44EE	144	1.728	SW	2080	3,584	12	T 28 R F 4	F44SSILL	96	1.152	NONE	1,400	1,613	1,981	\$ 309.31	\$ 1,575.00	\$ 240.00	5.1
6	106 Conference Room	6	T 34 R F 4 (MAG)	F44EE	144	0.864	SW	2080	1,797	6	T 28 R F 4	F44SSILL	96	0.576	NONE	1,400	806	991	\$ 154.65	\$ 787.50	\$ 120.00	5.1
6	Storage Room	4	T 34 R F 4 (MAG)	F44EE	144	0.576	SW	520	300	4	T 28 R F 4	F44SSILL	96	0.384	NONE	200	77	223	\$ 48.91	\$ 525.00	\$ 80.00	10.7
6	Storage Room	2	T 34 R F 4 (MAG)	F44EE	144	0.288	SW	520	150	2	T 28 R F 4	F44SSILL	96	0.192	NONE	200	38	111	\$ 24.45	\$ 262.50	\$ 40.00	10.7
6	102 Recreation	6	T 34 R F 4 (MAG)	F44EE	144	0.864	SW	2080	1,797	6	T 28 R F 4	F44SSILL	96	0.576	OCC	1,400	806	991	\$ 154.65	\$ 906.25	\$ 140.00	5.9
6	Rec Office	2	T 34 R F 4 (MAG)	F44EE	144	0.288	SW	2080	599	2	T 28 R F 4	F44SSILL	96	0.192	NONE	1,400	269	330	\$ 51.55	\$ 262.50	\$ 40.00	5.1
6	Rec Office	2	T 34 R F 4 (MAG)	F44EE	144	0.288	SW	2080	599	2	T 28 R F 4	F44SSILL	96	0.192	NONE	1,400	269	330	\$ 51.55	\$ 262.50	\$ 40.00	5.1
6	Cherry Hill Alliance Drug/ Alcohol	3	T 34 R F 4 (MAG)	F44EE	144	0.432	SW	3068	1,325	3	T 28 R F 4	F44SSILL	96	0.288	NONE	1,400	403	922	\$ 130.17	\$ 393.75	\$ 60.00	3.0
123	South Starway	4	O CF 15	CFS15/1	15	0.06	BREAKER	8760	526	4	O CF 15	CFS15/1	15	0.06	NONE	8,760	526	- \$	- \$	- \$	- \$	-
6	201 Detectives	4	T 34 R F 4 (MAG)	F44EE	144	0.576	SW															

		EXISTING CONDITIONS								RETROFIT CONDITIONS								COST & SAVINGS ANALYSIS					
	Area Description	No. of Fixtures	Standard Fixture Code	NYSERDA Fixture Code	Watts per Fixture	kW/Space	Exist Control	Annual Hours	Annual kWh	No. of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Retrofit Control	Annual Hours	Annual kWh	Annual kWh Saved	Annual \$ Saved	Retrofit Cost	NJ Lighting Incentive	Simple Payback With Out Incentive	
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)	(kW Saved) * (\$/kWh)	Cost for renovations to lighting system		Length of time for renovations cost to be recovered	
61	221 Dispatch	8	T 34 R F 3 (MAG)	F43EE	115	0.92	SW	8760	8,059	8	T 28 R F 3	F43SSILL	72	0.576	NONE	8,760	5,046	3,013	\$	411.29	\$ 1,026.00	\$ 160.00	2.5
172	219 Corridor (dwgA2.1.8.30.93)	4	1T 34 R F 2 (MAG)	F42EE	72	0.288	SW	6205	1,787	4	1T 28 R F 2	F42SSILL	48	0.192	NONE	6,205	1,191	596	\$	84.41	\$ 459.00	\$ 40.00	5.4
172	219 Corridor (dwgA2.1.8.30.93)	2	1T 34 R F 2 (MAG)	F42EE	72	0.144	BREAKER	8760	1,261	2	1T 28 R F 2	F42SSILL	48	0.096	NONE	8,760	841	420	\$	57.39	\$ 229.50	\$ 20.00	4.0
61	222 Office	4	T 34 R F 3 (MAG)	F43EE	115	0.46	SW	2080	957	4	T 28 R F 3	F43SSILL	72	0.288	OCC	1,400	403	554	\$	87.65	\$ 750.50	\$ 120.00	8.6
61	223 Office	4	T 34 R F 3 (MAG)	F43EE	115	0.46	SW	2080	957	4	T 28 R F 3	F43SSILL	72	0.288	OCC	1,400	403	554	\$	87.65	\$ 750.50	\$ 120.00	8.6
61	224 Office	4	T 34 R F 3 (MAG)	F43EE	115	0.46	SW	2080	957	4	T 28 R F 3	F43SSILL	72	0.288	OCC	1,400	403	554	\$	87.65	\$ 750.50	\$ 120.00	8.6
61	225 Office Captain	2	T 34 R F 3 (MAG)	F43EE	115	0.23	SW	2080	478	2	T 28 R F 3	F43SSILL	72	0.144	OCC	1,400	202	277	\$	43.82	\$ 494.00	\$ 80.00	11.3
6	226 Office Chief	4	T 34 R F 4 (MAG)	F44EE	144	0.576	SW	2080	1,198	4	T 28 R F 4	F44SSILL	96	0.384	OCC	1,400	538	660	\$	103.10	\$ 762.50	\$ 120.00	7.4
6	227 Conference Room	2	T 34 R F 4 (MAG)	F44EE	144	0.288	SW	2080	599	2	T 28 R F 4	F44SSILL	96	0.192	OCC	1,400	269	330	\$	51.55	\$ 500.00	\$ 80.00	9.7
6	228 Internal Affairs	4	T 34 R F 4 (MAG)	F44EE	144	0.576	SW	2080	1,198	4	T 28 R F 4	F44SSILL	96	0.384	OCC	1,400	538	660	\$	103.10	\$ 643.75	\$ 100.00	6.2
6	229 Office	4	T 34 R F 4 (MAG)	F44EE	144	0.576	SW	2080	1,198	4	T 28 R F 4	F44SSILL	96	0.384	OCC	1,400	538	660	\$	103.10	\$ 643.75	\$ 100.00	6.2
6	230 Secretary Area	4	T 34 R F 4 (MAG)	F44EE	144	0.576	SW	2080	1,198	4	T 28 R F 4	F44SSILL	96	0.384	OCC	2,080	799	399	\$	70.78	\$ 643.75	\$ 100.00	9.1
190	230 Secretary Area, Under cabinet	2	1B 32 C F 2)	F42LL	60	0.12	SW	2080	250	2	1B 32 C F 2)	F42LL	60	0.12	NONE	2,080	250	-	\$	-	\$ -	\$ -	-
47	Men's Room	2	1B 34 C F 2 (MAG)	F42EE	72	0.144	SW	6205	894	2	1B 28 C F 2	F42SSILL	48	0.096	OCC	50	5	889	\$	115.36	\$ 315.88	\$ 30.00	2.7
123	Men's Room	1	O CF 15	CFS15/1	15	0.015	SW	6205	93	1	O CF 15	CFS15/1	15	0.015	OCC	50	1	92	\$	11.43	\$ 59.38	\$ 10.00	5.2
123	Women's Room	2	O CF 15	CFS15/1	15	0.03	SW	6205	186	2	O CF 15	CFS15/1	15	0.03	OCC	50	2	185	\$	22.86	\$ 59.38	\$ 10.00	2.6
4	Women's Room	2	2T 34 R F 2 (u) (MAG) (Note 1)	FU2EE	72	0.144	SW	6205	894	2	2T 17 R F 4 (ELE)	F22ILL	33	0.066	OCC	50	3	890	\$	118.88	\$ 261.88	\$ 30.00	2.2
123	Janitor's Closet	2	O CF 15	CFS15/1	15	0.03	SW	780	23	2	O CF 15	CFS15/1	15	0.03	NONE	200	6	17	\$	2.15	\$ -	\$ -	0.0
6	231 Conference Room	6	T 34 R F 4 (MAG)	F44EE	144	0.864	SW	1040	899	6	T 28 R F 4	F44SSILL	96	0.576	NONE	1,040	599	300	\$	69.08	\$ 787.50	\$ 120.00	11.4
6	233 Dave's Office	1	T 34 R F 4 (MAG)	F44EE	144	0.144	SW	3068	442	1	T 28 R F 4	F44SSILL	96	0.096	OCC	3,068	295	147	\$	23.57	\$ 250.00	\$ 40.00	10.6
6	Storage next to Dave's Office	1	T 34 R F 4 (MAG)	F44EE	144	0.144	SW	600	86	1	T 28 R F 4	F44SSILL	96	0.096	NONE	600	58	29	\$	8.90	\$ 131.25	\$ 20.00	14.7
6	Attorney's Office	2	T 34 R F 4 (MAG)	F44EE	144	0.288	SW	3068	884	2	T 28 R F 4	F44SSILL	96	0.192	NONE	3,068	589	295	\$	47.13	\$ 262.50	\$ 40.00	5.6
6	234 Court Room	8	T 34 R F 4 (MAG)	F44EE	144	1.152	SW	3068	3,534	8	T 28 R F 4	F44SSILL	96	0.768	NONE	3,068	2,356	1,178	\$	188.52	\$ 1,050.00	\$ 160.00	5.6
X1	234 Court Room	2	X 1.5 W LED	ELED1.5/1	1.5	0.003	BREAKER	3068	9	2	X 1.5 W LED	ELED1.5/1	1.5	0.003	NONE	3,068	9	-	\$	-	\$ -	\$ -	-
6	234 Court Room	3	T 34 R F 4 (MAG)	F44EE	144	0.432	SW	3068	1,325	3	T 28 R F 4	F44SSILL	96	0.288	NONE	3,068	884	442	\$	70.70	\$ 393.75	\$ 60.00	5.6
X1	North Stairway	1	X 1.5 W LED	ELED1.5/1	1.5	0.0015	BREAKER	8760	13	1	X 1.5 W LED	ELED1.5/1	1.5	0.0015	NONE	8,760	13	-	\$	-	\$ -	\$ -	-
123	North Stairway	4	O CF 15	CFS15/1	15	0.06	BREAKER	8760	526	4	O CF 15	CFS15/1	15	0.06	NONE	8,760	526	-	\$	-	\$ -	\$ -	-
Public Area Second Floor																							
6	Court Records Counter Area	3	T 34 R F 4 (MAG)	F44EE	144	0.432	SW	2080	899	3	T 28 R F 4	F44SSILL	96	0.288	NONE	2,080	599	300	\$	53.08	\$ 393.75	\$ 60.00	7.4
6	East & South Clerical Area	13	T 34 R F 4 (MAG)	F44EE	144	1.872	SW	2080	3,894	13	T 28 R F 4	F44SSILL	96	1.248	NONE	1,400	1,747	2,147	\$	335.08	\$ 1,706.25	\$ 260.00	5.1
6	Dept Head Office	3	T 34 R F 4 (MAG)	F44EE	144	0.432	SW	2080	899	3	T 28 R F 4	F44SSILL	96	0.288	OCC	1,400	403	495	\$	77.33	\$ 512.50	\$ 80.00	6.6
6	Back File Area	3	T 34 R F 4 (MAG)	F44EE	144	0.432	SW	2080	899	3	T 28 R F 4	F44SSILL	96	0.288	OCC	1,400	403	495	\$	77.33	\$ 512.50	\$ 80.00	6.6
6	212 Purchasing	4	T 34 R F 4 (MAG)	F44EE	144	0.576	SW	2080	1,198	4	T 28 R F 4	F44SSILL	96	0.384	NONE	1,400	538	660	\$	103.10	\$ 525.00	\$ 80.00	5.1
123	Closet	1	O CF 15	CFS15/1	15	0.015	SW	520	8	1	O CF 15	CFS15/1	15	0.015	NONE	200	3	5	\$	0.59	\$ -	\$ -	0.0
6	Employee Lounge	8	T 34 R F 4 (MAG)	F44EE	144	1.152	SW	2080	2,396	8	T 28 R F 4	F44SSILL	96	0.768	OCC	1,400	1,075	1,321	\$	206.20	\$ 1,168.75	\$ 180.00	5.7
4	Men's Room	2	2T 34 R F 2 (u) (MAG) (Note 1)	FU2EE	72	0.144	SW	6205	894	2	2T 17 R F 4 (ELE)	F22ILL	33	0.066	OCC	50	3	890	\$	118.88	\$ 321.25	\$ 40.00	2.7
4	Ladies Room	2	2T 34 R F 2 (u) (MAG) (Note 1)	FU2EE	72	0.144	SW	6205	894	2	2T 17 R F 4 (ELE)	F22ILL	33	0.066	OCC	50	3	890	\$	118.88	\$ 321.25	\$ 40.00	2.7
4	IT Office	6	2T 34 R F 2 (u)																				

HEAT GAIN/LOSS WORKSHEET

Project Name: **New Jersey BPU Energy Audit Program**
 Location:
 Building Name: **Cherry Hill Township Municipal Building**
 Engineer: **Belcher**

Project No.: **19983**
 Site Elevation: **460** Feet
 Date: **06/12/09**
 Specific Volume: **14.00** CF/#

Building/Facility Designation:

Outdoor Winter Design DB Temperature: 15 *F	Indoor Winter Design DB Temperature: 70 *F
Outdoor Summer Design DB Temperature: 93	Indoor Summer Design DB Temperature: 76 *F
Outdoor Summer Design WB Temperature: 75 *F	Indoor Summer Design WB Temperature: 63 *F
Outdoor Summer Humidity Ratio: 0.0145 ##	Indoor Air (70°F) Humidity Ratio: 0.0097 ##

ENVELOPE DESCRIPTIONS (Descriptions are from Interior to Exterior)

Walls (Select One - Type X)	R Value	Wall Type
☐ Steel Siding, 4" Insulation, Steel Siding	15.2	1
☐ Plaster or Gypsum, frame construction, 5" Insulation, 1" stucco	18.2	1
☐ 4" WH CMU, 1" Insulation, Finished Exterior	5.2	2
☐ Plaster or Gypsum, frame construction, 3" Insulation, 8" LW CMU	7.8	5
☐ 4" Face Brick, 2" Concrete, 1" Insulation, Exterior Finish	5.1	12
☐ 4" Face Brick, 4" Concrete, 1" Insulation, Exterior Finish	4.0	11
☐ Interior Finish, 2" Insulation, 8" CMU, 4" Face Brick	10.9	16
☐ Finished Surface, 8" LW CMU (filled), Air Space, 4" Face Brick	11.1	16
☐ Stucco or Gypsum, 2.5" Insul, Face Brick	14.3	10
☐ 4" Block, 1" insulation, 8" Block	19.9	16
☒ 4" Face Brick, 8" CMU, Air Gap, Aluminum Insulation, Interior Plaster Wall	10.7	

Roofs (Select One)	R Value	Roof Type
☐ Tectum Deck, 3.3" Insul., BU Roof	13.0	1
☐ Steel Deck, 5" Insul., BU Roof	18.2	1
☐ Attic Roof with 6" Insul.	25.0	4
☐ 4" HW Concrete Deck, BU Roof	2.7	2
☐ Ceiling, 3" Insulation, 4" Concrete Deck, BU Roof	14.9	4
☐ Ceiling, 4" Concrete Deck, 3" Insulation, BU Roof	18.5	13
☐ Ceiling, 4" Concrete Deck, 6" Insulation, BU Roof	21.7	14
☐ Ceiling, Wood Deck, 6" Insulation, Felt & Membrane	22.7	10
☐ Wood Deck, 6" insulation, Felt & Membrane	18.0	
☒ Single Ply Membrane, Board Insulation, Air Gap, Metal Deck	9.51	

Windows (Select One)	U Value
☐ Aluminum Frame, 1/8" SP Glazing	1.05
☒ Aluminum Frame, 1/4" DP Glazing	0.60
☐ Aluminum Frame, 3/16" DP Glazing	0.62
☐ Aluminum Frame, 1/2" DP Glazing	0.50
☐ Skylights	0.90
☐ Other	

	No Storm
Flat Glass	1.05
Flat Glass (e=.6)	1.00
Flat Glass (e=0.4)	0.90
Flat Glass (e=0.2)	0.77
Double Glaze (3/16 in air)	0.63
Double Glaze (1/4 in air)	0.60
Double Glaze (1/2 in air)	0.53
Double Glaze (e=.6)	0.50
Double Glaze (e=0.4)	0.42
Double Glaze (e=0.2)	0.35
Triple Glaze (1/4 in air)	0.42
Triple Glaze (1/2 in air)	0.35

BUILDING CHARACTERISTICS

Roof Area: **20,700** SF
 Occupied Area: **41,400** SF
 Return Plenum?: **n**

	Gross Wall Length	Average Wall Height	Ceiling Height	Window Area	Door Area	Net Wall Area
North Exposure	190 Ft	28.0 Ft	18.0 Ft	3,182 SF	21 SF	2,107 SF
East Exposure	260 Ft	31.2 Ft	18.0 Ft	3,752 SF	105 SF	4,263 SF
South Exposure	200 Ft	28.0 Ft	18.0 Ft	3,360 SF	42 SF	2,198 SF
West Exposure	260 Ft	31.2 Ft	18.0 Ft	2,240 SF	105 SF	5,775 SF
Ventilation	1,825 cfm	6,916				

HEAT GAIN/LOSS WORKSHEET

Project Name: **New Jersey BPU Energy Audit Program**
 Location: **Cherry Hill Township Municipal Building**
 Building Name: **Belcher**
 Engineer:

Project No.: **19983**
 Site Elevation: **488** Feet
 Date: **06/12/09**

Specific Volume **14.00** CF/#

Building/Facility Designation

COOLING HEAT GAINS TO THE ROOM - SENSIBLE

SOLAR GAINS

WINDOWS	AREA (SF)	SHGF	Shade Coef	Cooling Load Factor		Solar Heat Gain
North Exposure	3,192	38 btu/h/sf	0.8	0.75	Glass Type C	72,778 Btu/hr
East Exposure	3,752	216 btu/h/sf	0.8	0.31	Glass Type C	200,987 Btu/hr
South Exposure	3,360	109 btu/h/sf	0.8	0.58	Glass Type C	169,935 Btu/hr
West Exposure	2,240	216 btu/h/sf	0.8	0.29	Glass Type C	112,251 Btu/hr
						555,951 Btu/h

CONDUCTION

	NET AREA (SF)	U-VALUE	Cooling Load Temp. Dif.	Return Air Factor		Room Heat Gain
North Exposure	207	0.09	20 *F	1.0		388 Btu/hr
East Exposure	823	0.09	39 *F	1.0		3,005 Btu/hr
South Exposure	198	0.09	27 *F	1.0		501 Btu/hr
West Exposure	2,335	0.09	22 *F	1.0		4,810 Btu/hr
Roof	20,700	0.11	73 *F	1.0		158,896 Btu/hr
Fenestration	12,544	0.60	17 *F			127,949 Btu/hr
Doors	273	0.14	27 *F			1,029 Btu/hr
Ceiling	41,400	0.14	0 *F			0 Btu/hr
Partition		0.05	0 *F			0 Btu/hr
Floor	41,400	0.04	0 *F			0 Btu/hr
						296,578 Btu/h

INTERNAL HEAT GAINS

						Room Heat Gain
Lights	2.00 w/sf x	41,400 Occ Area =	82.8 kW x 3.4x	1.0 RAF =		282,596 Btu/h
Plug Load	0.75 w/sf x	41,400 Occ Area =	31.1 kW x 3.4x	1.0 RAF =		105,974 Btu/h
People	250 people x	255 btu/person x	70% time in space =			44,625 Btu/h
Computer Work Stations		300 Units x	120 W/Unit x	3414 =		122,868 Btu/h
Equipment	10.0 kW x 3.413 =					34,130 Btu/h
Misc.						0 Btu/h
						590,193 Btu/h

VENTILATION AND INFILTRATION

	Infiltration Factor	Perimeter Ratio	Coef	Temp. Dif.		Room Heat Gain
Walls	0.10 CFM/SF		1.05	17 *F		6,851 Btu/h
Doors	0.20	0.95 LF/SF	1.05	17 *F		1,000 Btu/h
Windows	0.20 CFM/LF	2.00 LF/SF	1.05	17 *F		96,517 Btu/h
Ventilation	1,825 cfm		1.05	17 *F		35,091 Btu/h
						139,459 Btu/h

COOLING HEAT GAINS TO THE RA PLENUM - SENSIBLE

4,950

CONDUCTION

	NET AREA (SF)	U-VALUE	Cooling Load Temp. Dif.	Return Air Factor		Room Heat Gain
North Exposure	1,900	0.09	20	1.0		3,558 Btu/hr
East Exposure	3,440	0.09	39	1.0		12,562 Btu/hr
South Exposure	2,000	0.09	27	1.0		5,056 Btu/hr
West Exposure	3,440	0.09	22	1.0		7,086 Btu/hr
Roof	20,700	0.11	73	0.0		0 Btu/hr
						28,262 Btu/h

INTERNAL HEAT GAINS

Lights	2.00 w/sf x	41,400 Occ Area =	82.8 kW x3413x	0.00 RAF =		0 Btu/h
Misc.						0 Btu/h
						0 Btu/h

SENSIBLE HEAT GAINS - TEMP. DEPENDENT

Solar	555,951
Conduction to Room	296,578
Conduction to Plenum	28,262
Ventilation and Infiltration	139,459
Sub Total	1,020,250

SENSIBLE HEAT GAINS - TEMP. INDEPENDENT

Internal Gains to Room	590,193
Internal Gains to Plenum	0
Sub Total	590,193

HEAT GAIN/LOSS WORKSHEET

Project Name: **New Jersey BPU Energy Audit Program**
 Location:
 Building Name: **Cherry Hill Township Municipal Building**
 Engineer: **Belcher**

Project No.: **19983**
 Site Elevation: **466** Feet
 Date: **06/12/09**

Specific Volume **14.00** CF/#

Building/Facility Designation

LATENT COOLING LOADS

Infiltration

		Infiltration Factor	Air Density	Humidity Ratio Dif.
Walls	31,480 SF	0.10 CFM/SF	4,629	0.0048 ##
Doors	273 SF	0.20	4,629	0.0048 ##
Windows	12,544 SF	0.20 CFM/LF	4,629	0.0048 ##
Ventilation	1,825 cfm		4,629	0.0048 ##

Room Heat Gain	
69,940	Btu/h
1,155	Btu/h
111,521	Btu/h
40,546	Btu/h

223,162 Btu/h

Cooling Load Summary

	Sensible	Latent	Total
Temperature Dependent Gains	1,020,250	223,162	1,243,412
Temperature Indep. Gains	590,193	43,750	633,943
Total	1,610,443	266,912	1,877,355

SHR= 0.86

Building Cooling Load 156.4 Tons at 265 SF/Ton

Building Air Flow to Condition Space based on a 12°F Temp Rise is

125,896 CFM
3.04 CFM/sf

HEATING CALCULATION

CONDUCTION

	NET AREA (SF)	U-VALUE	Heating Load Temp. Dif.
North Exposure	2,107	0.09	55
East Exposure	4,263	0.09	55
South Exposure	2,198	0.09	55
West Exposure	5,775	0.09	55
Fenestration	12,544	0.60	55
Roof	20,700	0.11	55
Doors	273	0.14	55
Ceiling	41,400	0.14	0
Partition	0	0.05	0
Floor	20,700	0.04	50

Room Heat Gain

10,851	Btu/h
21,954	Btu/h
11,319	Btu/h
29,740	Btu/h
413,952	Btu/h
119,716	Btu/h
2,097	Btu/h
0	Btu/h
0	Btu/h
41,400	Btu/h

Ventilation and Infiltration

	Infiltration Factor	Coef	Temp. Difference	Air Flow
Walls	0.10 CFM/SF	1.05	55	1,434 cfm
Doors	0.20	1.05	55	52 cfm
Windows	0.20 CFM/LF	1.05	55	5,020 cfm
Ventilation Load		1.05	55	1,825 cfm
Total Ventilation & Infiltration Load				8,331 cfm

Room Heat Gain

82,616	Btu/h
2,995	Btu/h
289,131	Btu/h
113,530	Btu/h
488,272	Btu/h

Building Heating Load 1,139,301 btu/h

27.5 btu/sf

New Jersey BPU Energy Audit Program
CHA #19985
Building: Cherry Hill Township Municipal Building

Doors

	Width (ft)	Height (ft)	Quantity	Area (SF)	Lineal Feet
North	3.0	7.0	1	21.0	20.0
				0.0	0.0
				0.0	0.0
				0.0	0.0
				0.0	0.0
				0.0	0.0
Sub-total			21.0	20.0	
East	3.0	7.0	5	105.0	100.0
				0.0	0.0
				0.0	0.0
				Sub-total	
South	3.0	7.0	2	42.0	40.0
				0.0	0.0
				0.0	0.0
				0.0	0.0
				Sub-total	
West	3.0	7.0	5	105.0	100.0
				0.0	0.0
				Sub-total	
Total			273.0	260.0	
				LF/SF	0.95

LF/SF 0.95

Walls

	Width (ft)	Height (ft)	Quantity	Area (SF)	Lineal Feet	
North	190.0	28.0	1	5320.0	436.0	All wall quantities must remain equal to 1 Ave. height 28.0 Average height wall automatically linked
				0.0	0.0	
				0.0	0.0	
				0.0	0.0	
				0.0	0.0	
				0.0	0.0	
	190.0			5320.0	436.0	
East	200.0	28.0	1	5600.0	456.0	Ave. height 31.2 Average height wall automatically linked
				0.0	0.0	
				0.0	0.0	
				0.0	0.0	
				0.0	0.0	
				0.0	0.0	
	260.0			8120.0	660.0	27160.0
South	200.0	28.0	1	5600.0	456.0	Ave. height 28.0 Average height wall automatically linked
				0.0	0.0	
				0.0	0.0	
				0.0	0.0	
				0.0	0.0	
				0.0	0.0	
	200.0			5600.0	456.0	14616.0
West	200.0	28.0	1	5600.0	456.0	Ave. height 31.2 Average height auto linked to block load sheet
				0.0	0.0	
				0.0	0.0	
				0.0	0.0	
				0.0	0.0	
				0.0	0.0	
	260.0			8120.0	660.0	

Windows

	Width (ft)	Height (ft)	Quantity	Area (SF)	Lineal Feet	
North	3192.0	1.0	1	3192.0	6386.0	
				0.0	0.0	
				0.0	0.0	
				0.0	0.0	
				0.0	0.0	
				0.0	0.0	
			Sub-total	3192.0	6386.0	
East	2240.0	1.0	1	2240.0	4482.0	
				0.0	0.0	
				0.0	0.0	
				0.0	0.0	
				0.0	0.0	
				0.0	0.0	
	1512.0	1.0	1	1512.0	3026.0	
			Sub-total	3752.0	7508.0	
South	3360.0	1.0	1	3360.0	6722.0	
				0.0	0.0	
				0.0	0.0	
				0.0	0.0	
				0.0	0.0	
				0.0	0.0	
			Sub-total	3360.0	6722.0	
West	2240.0	1.0	1	2240.0	4482.0	
				0.0	0.0	
				0.0	0.0	
				0.0	0.0	
				0.0	0.0	
				0.0	0.0	
			Sub-total	2240.0	4482.0	
			Total	12544.0	25098.0	LF/SF 2.00

Multipliers	
Material:	1.00
Labor:	1.10
Equipment:	1.00

[illegible]

APPENDIX F

ECM-5 Install Premium Efficiency Motors

Building: Cherry Hill Township Municipal Building

M-5 Install Premium Efficiency Motors

Multipliers		
Material	Labor	Equipment
0.98	1.18	1.00

Analysis

Cost Estimates

[illegible]

APPENDIX G

ECM-6 VAV Conversion

10/1/2010

New Jersey BPU Energy Audit Program
CHA #19985
Building: Cherry Hill Township Municipal Building

ECM-6 VAV Conversion

Notes:

Cost of Electricity = \$ 0.148 / kWh
Cost of Natural Gas = \$ 1.70 / Therm

Summary:

Supply Fans:		
Fan ID	AHU-1	
Fan HP	20 HP	
Estimated Load Factor @ Full Flow	75% LF	
Estimated Power Factor @ Average Load	85% PF	
Motor Efficiency	93.0% Eff.	
Average Amperage	27.00 Amps	
Average 3-phase kW =	18.29 kW _{avg}	(Volts * Amps * (3)*.5 * PF / 1000)
Design Air Flow	37,000 CFM _{DES}	(From Reconcile)

Return Fans:		
Fan ID	AHU-1	
Fan HP	10 HP	
Estimated Load Factor @ Full Flow	75% LF	
Estimated Power Factor @ Average Load	85% PF	
Motor Efficiency	91.7% Eff.	
Average Amperage =	14.00 Amps	
Average 3-phase kW =	9.48 kW _{avg}	(Volts * Amps * (3)*.5 * PF / 1000)
Design Air Flow	27,750 CFM _{DES}	(From Drawings)

Inputs:

	Total CFM	O.A. CFM	O.A. %
Design Total CFM	37,000	1,850	5%
Actual Avg CFM	37,000	1,850	5%
SA Enthalpy, Cooling	23.0	BTU/lbma	
SA Setpoint, Heating	76.3	°F	
Summer RA Enthalpy	30.0	BTU/lbma	
Winter RA Temp	72.0	°F	
Balance Point	55.0	°F	
Cooling Efficiency	1.50	kW/Ton	(Includes Ancillary Equipment)
Boiler Plant Efficiency	70%	%	(Includes distribution & stand-by losses)

Calculations:

			Existing										Proposed										Savings		
Avg. DB Bin Temp °F	OA Enthalpy Btu/lb	Occupied Bin HOURS	Total Supply CFM	Winter MA Temp	Summer MA Enthalpy	Cooling Load MBH	Heating Load MBH	Cooling kWh	Heating Therms	Fan Power kW	Fan Energy kWh	VAV Load %	Total Supply CFM	Cooling Load MBH	Heating Load MBH	Cooling kWh	Heating Therms	Fan Power kW	Fan Energy kWh	Annual Cooling kWh	Annual Heating Therms	Annual Fan Energy kWh			
102.5	35	0	37,000	74	30.3	1,207	-	0	0	27.8	-	106%	39,098	1,276	0	0	0	31.0	-	(2)	-	(1)			
97.5	33.7	3	37,000	73	30.2	1,196	-	449	0	27.8	83	101%	37,191	1,202	0	451	0	28.1	84	-	-	-			
92.5	37.8	52	37,000	73	30.4	1,230	-	7,998	0	27.8	1,444	95%	35,284	1,173	0	7,627	0	25.2	1,313	371	-	131			
87.5	36.4	104	37,000	73	30.3	1,219	-	15,844	0	27.8	2,888	90%	33,376	1,099	0	14,292	0	22.6	2,350	1,552	-	538			
82.5	34	477	37,000	73	30.2	1,199	-	71,478	0	27.8	13,245	85%	31,469	1,020	0	60,794	0	20.1	9,581	10,685	-	3,664			
77.5	32.9	656	37,000	72	30.1	1,190	-	97,551	0	27.8	18,215	80%	29,562	950	0	77,940	0	17.7	11,627	19,611	-	6,587			
72.5	30.8	907	37,000	72	30.0	1,172	-	132,894	0	27.8	25,184	75%	27,655	876	0	99,328	0	15.5	14,069	33,566	-	11,115			
67.5	27.9	619	37,000	72	29.9	1,148	-	88,828	0	27.8	17,187	70%	25,747	799	0	61,813	0	13.9	8,594	27,015	-	8,594			
62.5	24.6	983	37,000	72	29.7	1,121	-	137,687	0	27.8	27,294	64%	23,840	722	0	88,716	0	13.9	13,647	48,971	-	13,647			
57.5	21.4	625	37,000	71	29.6	0	-	0	0	27.8	17,354	59%	21,933	0	0	0	0	13.9	8,677	-	-	8,677			
52.5	18.5	540	37,000	71	29.4	0	209	0	1611	27.8	14,994	50%	18,500	0	104	0	805	13.9	7,497	-	805	7,497			
47.5	16.1	576	37,000	71	29.3	0	219	0	1800	27.8	15,994	50%	18,500	0	109	0	900	13.9	7,997	-	900	7,997			
42.5	14.2	552	37,000	71	29.2	0	229	0	1804	27.8	15,327	50%	18,500	0	114	0	902	13.9	7,664	-	902	7,664			
37.5	12.5	1067	37,000	70	29.1	0	239	0	3639	27.8	29,627	50%	18,500	0	119	0	1820	13.9	14,813	-	1,820	14,813			
32.5	10.6	685	37,000	70	29.0	0	249	0	2434	27.8	19,020	50%	18,500	0	124	0	1217	13.9	9,510	-	1,217	9,510			
27.5	8.5	442	37,000	70	28.9	0	259	0	1634	27.8	12,273	50%	18,500	0	129	0	817	13.9	6,136	-	817	6,136			
22.5	6.9	248	37,000	70	28.8	0	269	0	952	27.8	6,886	50%	18,500	0	134	0	476	13.9	3,443	-	476	3,443			
17.5	5.3	184	37,000	69	28.8	0	279	0	733	27.8	5,109	50%	18,500	0	139	0	366	13.9	2,555	-	366	2,555			
12.5	3.8	40	37,000	69	28.7	0	289	0	165	27.8	1,111	50%	18,500	0	144	0	82	13.9	555	-	82	555			
7.5	2.4	0	37,000	69	28.6	0	299	0	0	27.8	-	50%	18,500	0	149	0	0	13.9	-	-	-	-			
2.5	1.1	0	37,000	69	28.6	0	309	0	0	27.8	-	50%	18,500	0	154	0	0	13.9	-	-	-	-			
-2.5	-0.2	0	37,000	68	28.5	0	319	0	0	27.8	-	50%	18,500	0	159	0	0	13.9	-	-	-	-			
-7.5	-1.4	0	37,000	68	28.4	0	329	0	0	27.8	-	50%	18,500	0	164	0	0	13.9	-	-	-	-			
						10,682	3,494	552,728	14,772		243,235		545,655	9,118	1,747	410,960	7,386		130,112	141,768	7,386	113,122			

Reduced Cooling kWh =	141,768	kWh
Reduced Heating Therms =	7,386	Therms
Reduced Fan Energy kWh =	113,122	kWh
Reduced Financial Savings =	\$50,611	

New Jersey BPU Energy Audit Program
CHA #19985
Building: Cherry Hill Township Municipal Building

ECM-6 VAV Conversion

Multipliers	
Material:	1.00
Labor:	1.10
Equipment:	1.00

Description	QTY	UNIT	UNIT COSTS			SUBTOTAL COSTS			TOTAL COST	REMARKS
			MAT.	LABOR	EQUIP.	MAT.	LABOR	EQUIP.		
						\$ -	\$ -	\$ -	\$ -	
Packaged VAV Rooftop Units	1	ea	\$ 60,000	\$ 10,000	\$ 5,000	\$ 60,000	\$ 11,000	\$ 5,000	\$ 76,000	
Roof Curbs	1	ea	\$ 5,000	\$ 2,000	\$ 1,000	\$ 5,000	\$ 2,200	\$ 1,000	\$ 8,200	
Electrical - misc.	1	ls	\$ 15,000	\$ 10,000		\$ 15,000	\$ 11,000	\$ -	\$ 26,000	
VAV boxes	55	ea	\$ 1,500	\$ 2,000	\$ -	\$ 82,500	\$ 121,000	\$ -	\$ 203,500	
Ductwork Modifications	1	ls	\$ 10,000	\$ 10,000	\$ -	\$ 10,000	\$ 11,000	\$ -	\$ 21,000	
Controls	1	ls	\$ 25,000	\$ 15,000		\$ 25,000	\$ 16,500	\$ -	\$ 41,500	
Demolition	1	ls	\$ 10,000	\$ 25,000	\$ 5,000	\$ 10,000	\$ 27,500	\$ 5,000	\$ 42,500	
						\$ -	\$ -	\$ -	\$ -	
						\$ -	\$ -	\$ -	\$ -	
						\$ -	\$ -	\$ -	\$ -	
						\$ -	\$ -	\$ -	\$ -	

\$ 418,700	Subtotal
\$ 104,675	25% Contingency Contractor
\$ 62,805	15% O&P
\$ 41,896	10% Engineering
\$ 628,076	Total

APPENDIX H

ECM-7 Install Demand Control Ventilation

New Jersey BPU Energy Audit Program
CHA #19985
Building: Cherry Hill Township Municipal Building

ECM-7 Install Demand Control Ventilation

Description:

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

Method:

The outdoor air introduced into the spaces is currently constant based on design occupancy conditions and operable windows.

This ECM proposes the installation of CO2 sensors in the space to allow for reduced outdoor air flows when conditions allow.

An average reduction of 50% is assumed possible with the implementation of DCV

The DCV system will automatically adjust the outdoor air damper position through the proposed EMS to reduce outdoor air flows based on indoor CO2 levels.

This ECM has been interacted with the new VAV DX cooling ECMs and accounts for the reduced operating hours of the unit via EMS scheduling.

	Total CFM	O.A. CFM	O.A. %
Org. CFM	8,331	1,825	22%
Average Derated CFM	8,331	1,320	16%
SA Enthalpy	23.0	BTU/lbma	AA
SA Set point, Winter	70.0	*F	BB
SA Set point, Summer	76.0		
Balance Point	55.0	*F	BP
Cooling Efficiency	1.50	kW/Ton	
Boiler Plant Efficiency	70%	%	

(Includes ancillary equipment)

(Includes distribution losses)

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
			Existing					Proposed Demand Ventilation					Savings	
Avg. DB Bin Temp °F	OA Enthalpy Btu/lb	Bin HOURS	OA CFM	Cooling Load MBH	Heating Load MBH	Cooling kWh	Heating Therms	Average Derated O.A. CFM	Cooling Load MBH	Heating Load MBH	Cooling kWh	Heating Therms	Cooling kWh	Heating Therms
102.5	35	0	1,825	99	0	0	0	1,320	71	0	0	0	0	0
97.5	33.7	3	1,825	88	0	33	0	1,320	64	0	24	0	9	0
92.5	37.8	52	1,825	122	0	790	0	1,320	88	0	571	0	219	0
87.5	36.4	104	1,825	110	0	1,431	0	1,320	80	0	1,035	0	396	0
82.5	34	477	1,825	90	0	5,386	0	1,320	65	0	3,896	0	1490	0
77.5	32.9	656	1,825	81	0	6,667	0	1,320	59	0	4,822	0	1845	0
72.5	30.8	907	1,825	64	0	7,263	0	1,320	46	0	5,253	0	2010	0
67.5	27.9	619	1,825	40	0	3,114	0	1,320	29	0	2,252	0	862	0
62.5	24.6	983	1,825	0	0	0	0	1,320	0	0	0	0	0	0
57.5	21.4	625	1,825	0	0	0	0	1,320	0	0	0	0	0	0
52.5	18.5	540	1,825	0	34	0	266	1,320	0	25	0	192	0	74
47.5	16.1	576	1,825	0	44	0	365	1,320	0	32	0	264	0	101
42.5	14.2	552	1,825	0	54	0	427	1,320	0	39	0	309	0	118
37.5	12.5	1067	1,825	0	64	0	976	1,320	0	46	0	706	0	270
32.5	10.6	685	1,825	0	74	0	723	1,320	0	53	0	523	0	200
27.5	8.5	442	1,825	0	84	0	529	1,320	0	61	0	383	0	146
22.5	6.9	248	1,825	0	94	0	332	1,320	0	68	0	240	0	92
17.5	5.3	184	1,825	0	103	0	272	1,320	0	75	0	197	0	75
12.5	3.8	40	1,825	0	113	0	65	1,320	0	82	0	47	0	18
7.5	2.4	0	1,825	0	123	0	0	1,320	0	89	0	0	0	0
2.5	1.1	0	1,825	0	133	0	0	1,320	0	96	0	0	0	0
-2.5	-0.2	0	1,825	0	143	0	0	1,320	0	103	0	0	0	0
-7.5	-1.4	0	1,825	0	153	0	0	1,320	0	110	0	0	0	0
Total		8,760		694.0		24,683	3,956		501.9		17,853	2,861	6,830	1,095

100% Energy Cost Savings		
Thermal Savings	1,095	therms
Electrical Savings	6,830	kWh

Comments:

- A-B Philadelphia, PA Bin
- C Proposed AHU occupied hours of operation based on a schedules. Bin Hours for different OCC may be found in bin data spread sheet
- D Design outdoor air requirements are based on blueprint drawings or field observations
- E Existing Cooling Load. Calculated based on outdoor air enthalpy.
- F Existing Heating Load. $= 1.08 * [\text{col D}] * \{(\text{BB}) - [\text{col A}]\} / 1000$
- G Existing Cooling kWh $= -[\text{col E}] / 12 \text{ Mbtu/Ton-Hr} * \text{Chiller Plant Efficiency} * [\text{col C}]$.
- H Existing Heating Usage Therms Gas $= [\text{col F}] / 100 \text{ Mbtu/Therm} / \text{Boiler Efficiency} * [\text{col C}]$.
- I Proposed Derated OA CFM: $[\text{col D}] * (1 - 0.5)$
- J Proposed Cooling Load $= -4.5 * [\text{col I}] * \{[\text{col B}] - [\text{AA}]\} / 1000$
- K Proposed Heating Load $= 1.08 * [\text{col I}] * \{(\text{BB}) - [\text{col A}]\} / 1000$
- L Proposed Cooling kWh $= -[\text{col J}] / 12 \text{ Mbtu/Ton-Hr} * \text{Chiller Plant Efficiency} * [\text{col C}]$.
- M Proposed Heating Usage Therms Gas $= [\text{col K}] / 100 \text{ Mbtu/Therm} / \text{Boiler Efficiency} * [\text{col C}]$.
- N Cooling kWh Savings: $[\text{col G}] - [\text{col L}]$
- O Heating Usage Savings $= [\text{col H}] - [\text{col M}]$

New Jersey BPU Energy Audit Program
CHA #19985
Building: Cherry Hill Township Municipal Building

ECM-7 Install Demand Control Ventilation

Multipliers	
Material:	1.00
Labor:	1.10
Equipment:	1.00

	QTY	UNIT	UNIT COSTS			SUBTOTAL COSTS			TOTAL COST	REMARKS
			MAT.	LABOR	EQUIP.	MAT.	LABOR	EQUIP.		
Demand Control Ventilation										
CO2 sensor	10	ea	\$ 400	\$ 100	\$ -	\$ 4,000	\$ 1,100	\$ -	\$ 5,100	
Replace damper actuators	2	ea	\$ 750	\$ 900	\$ -	\$ 1,500	\$ 1,980	\$ -	\$ 3,480	
Control system programming	1	ls	\$ 1,500	\$ 2,500	\$ -	\$ 1,500	\$ 2,750	\$ -	\$ 4,250	
electrical/wiring	1	ls	\$ 2,500	\$ 5,000	\$ -	\$ 2,500	\$ 5,500	\$ -	\$ 8,000	

Subtotal	\$ 20,830
10% OH, 5% Profit	\$ 3,125
10% Contingency	\$ 2,395
Total	\$ 26,350

APPENDIX I

ECM-8 Install Dual Flush Valves

New Jersey BPU Energy Audit Program
CHA #19985
Building: Cherry Hill Township Municipal Building

ECM-8 Provide Dual Flush Valves

EXISTING CONDITIONS		
Cost of Water / 1000 Gallons	\$7	\$ / kGal
Toilets in Building	17	
Average Flushes / Toilet (per Day)	44	
Average Gallons / Flush	1.6	Gal

PROPOSED CONDITIONS		
Proposed Flush Valves to be Replaced	17	
Proposed Gallons / Flush	1.3	Gal
Proposed Material Cost of new Flush Valves	\$315	
Proposed Installation cost of new Flush Valves	\$139	
Total cost of new flush valves	\$7,714	

SAVINGS		
Current Toilet Water Use	438	kGal / year
Proposed Toilet Water Use	347	kGal / year
Water Savings	91	kGal / year
Cost Savings	\$652	/ year
Simple Payback	11.8	/ year

APPENDIX J

ECM-9 Install Low Flow Lavatory Faucets

New Jersey BPU Energy Audit Program
CHA #19985
Building: Cherry Hill Township Municipal Building

ECM-9 Replace Faucets with Low Flow

EXISTING CONDITIONS		
Cost of Water / 1000 Gallons	\$7	\$ / kGal
Faucets in Building	19	
Average Uses / Faucet (per day)	39	Gal
Average Gallons / Use	1	Gal

PROPOSED CONDITIONS		
Proposed Faucets to be Replaced	19	
Proposed Gallons / Use	0.3	Gal
Proposed Material Cost of new Faucets	\$195	
Proposed Installation cost of new Faucets	\$75	
Total cost of new faucets	\$5,130	

SAVINGS		
Current Faucet Water Use	274	kGal / year
Proposed Faucet Water Use	68	kGal / year
Water Savings	205	kGal / year
Cost Savings	\$1,466	/ year
Simple Payback	3.5	/ year

APPENDIX K

ECM-10 Install Dual Flush Valves and Low Flow Lavatory Faucets

New Jersey BPU Energy Audit Program
CHA #19985
Building: Cherry Hill Township Municipal Building

ECM-10 Install Dual Flush Valves & Replace faucets with low flow

EXISTING CONDITIONS		
Cost of Water / 1000 Gallons	\$7	\$ / kGal
Toilets in Building	17	
Average Flushes / Toilet (per Day)	44	
Average Gallons / Flush	1.6	Gal
Faucets in Building	19	
Average Uses / Faucet (per day)	39	Gal
Average Gallons / Use	1	Gal

PROPOSED CONDITIONS		
Proposed Flush Valves to be Replaced	17	
Proposed Gallons / Flush	1.3	Gal
Proposed Material Cost of new Flush Valves	\$315	
Proposed Installation cost of new Flush Valves	\$139	
Proposed Faucets to be Replaced	19	
Proposed Gallons / Use	0.3	Gal
Proposed Material Cost of new Faucets	\$195	
Proposed Installation cost of new Faucets	\$75	
Total cost of new flush valves & faucets	\$12,844	

SAVINGS		
Current Water Use	712	kGal / year
Proposed Water Use	415	kGal / year
Water Savings	297	kGal / year
Cost Savings	\$2,117	/ year
Simple Payback	6.1	/ year

APPENDIX L

ECM-11 Improve Piping Insulation

New Jersey BPU Energy Audit Program
CHA #19985
Building: Cherry Hill Township Municipal Building

ECM-11 Piping Insulation (Bare Pipe)

Description Insulate heating system piping which are not currently insulated to reduce heat loss from piping and heat gain to the spaces.

Given	Fuel Energy Cost	=	\$	1.64	\$/Therm (Nat'l Gas)	▼
	Operation (Hours/Week)	=	168.00	Hours/Week		
	Operation (Heating Weeks/Year)	=	40.00	Weeks/Year		
	Operation (Hours/Year)	=	6720	Hours/Year		
	Heating Media	=	Water	▼		
	Piping Material	=	Mild Steel	▼		
	Ambient Temperature	=	70	°F		
	Pipe Diameter	=	Pipe #1	3/4	▼	00 inches
	Pipe Length	=	50.00	feet		
			Pipe #2	2	▼	inches
			25.00	feet		
			Pipe #3	3	▼	0 inches
			25.00	feet		
			Pipe #4	4	▼	00 inches
			10.00	feet		
Assumption	Min. Pipe Insulation Recommended	=	1.00	inches		
	Circulating Temperature	=	180	▼	3 °F	
	Heating Efficiency	=	80%			
	Pipe Insulation Conductivity	=	0.29	Btu*in./(h*ft2*F)		

Formula

Piping Correction Factor = (Current Transmission Coefficient / Reference Transmission Coefficient)

Temperature Correction Factor = (Circulating Temperature - Ambient Temperature) / (Circulating Temperature - Reference Temperature)

Hourly Heat Loss per pipe size and length = (Heat loss per foot [from chart]) x (Piping Correction Factor) x (Temperature Correction Factor) x (Pipe Length)

Seasonal Heat Loss = (Hourly Heat Loss Total) x (Operating hours) / (Heating Efficiency) / (1,000 btu/Mbtu)

Energy Loss = (Seasonal Heat Loss) / (Conversion Factor [MBtu/Unit])

Energy Loss Cost = (Energy Loss) x (cost/unit)

Calculation	Existing	Current Transmission Coefficient	Reference Transmission Coefficient	
	Piping Correction Factor = (	2.00	/	2.00) =
	Temperature Correction Factor = (	180	-	70) / (180 - 80) =
	Heat Loss Pipe #1 (Hourly)	= (72.50) x (	1.00) x (	1.10) x (50.00) =
	Heat Loss Pipe #2 (Hourly)	= (151.80) x (	1.00) x (	1.10) x (25.00) =
	Heat Loss Pipe #3 (Hourly)	= (215.90) x (	1.00) x (	1.10) x (25.00) =
	Heat Loss Pipe #4 (Hourly)	= (271.60) x (	1.00) x (	1.10) x (10.00) =
				17,087 Btuh
	Seasonal Heat Loss	=	17,087) x (6,720) / (80%) / (1,000) =	143,530 Mbtu
	Existing Energy Loss	=	143,530) / (100) =	1,435 Therm
	Existing Energy Loss Cost	=	1,435) x (\$ 1.64) =	\$ 2,354
	New	Heat Loss per foot	Piping CF	Temperature CF
	Heat Loss Pipe #1 (Hourly)	= (14.00) x (	1.00) x (	1.10) x (50.00) =
	Heat Loss Pipe #2 (Hourly)	= (17.00) x (	1.00) x (	1.10) x (25.00) =
	Heat Loss Pipe #3 (Hourly)	= (21.00) x (	1.00) x (	1.10) x (25.00) =
	Heat Loss Pipe #4 (Hourly)	= (22.00) x (	1.00) x (	1.10) x (10.00) =
				2,057 Btuh
	Seasonal Heat Loss	=	2,057) x (6,720) / (80%) / (1,000) =	17,279 Mbtu
	New Energy Loss	=	17,279) / (100) =	173 Therm
	New Energy Loss Cost	=	173) x (\$ 1.64) =	\$ 283

Result	Existing Heat Loss	1,435 Therm	\$ 2,354
	New Heat Loss	173 Therm	\$ 283
	Savings	100%	1,263 Therm
			\$ 2,071
			88.0%

Comment

New Jersey BPU Energy Audit Program
CHA #19985
Building: Cherry Hill Township Municipal Building

ECM-11 Piping Insulation (Bare Pipe)

Multipliers	
Material:	0.98
Labor:	1.18
Equipment:	1.00

ECM-11 Piping Insulation (Bare Pipe)

Description	QTY	UNIT	NIT COSTS			SUBTOTAL COSTS			TOTAL COST	REMARKS
			MAT.	LABOR	EQUIP.	MAT.	LABOR	EQUIP.		
3/4" Fiberglass w/ ASJ	50	lf	\$ 2.70	\$ 2.70		\$ 132	\$ 159	\$ -	\$ 291	
2" Fiberglass w/ ASJ	25	lf	\$ 3.88	\$ 3.88		\$ 95	\$ 114	\$ -	\$ 209	
3" Fiberglass w/ ASJ	25	lf	\$ 4.33	\$ 4.33		\$ 106	\$ 127	\$ -	\$ 233	
4" Fiberglass w/ ASJ	10	lf	\$ 5.13	\$ 5.13		\$ 42	\$ 60.37	\$ -	\$ 103	
						\$ -	\$ -	\$ -	\$ -	
						\$ -	\$ -	\$ -	\$ -	
						\$ -	\$ -	\$ -	\$ -	
						\$ -	\$ -	\$ -	\$ -	
						\$ -	\$ -	\$ -	\$ -	
						\$ -	\$ -	\$ -	\$ -	
						\$ -	\$ -	\$ -	\$ -	
						\$ -	\$ -	\$ -	\$ -	
						\$ -	\$ -	\$ -	\$ -	

\$ 836	Subtotal
\$ 84	10% Contingency
\$ 84	10% Contractor O&P
\$ -	0% Engineering
\$ 1,003	Total

Cost (\$/lf) w/O&P from RS Means Mechanical Cost Data 2009
Fiberglass W/ASJ

	1" Wall	1.5" Wall	2" Wall	3" Wall
1/2"	\$ 5.15	\$ 6.15	\$ 7.40	\$ 9.30
3/4"	\$ 5.40	\$ 6.35	\$ 7.70	\$ 9.85
1"	\$ 5.65	\$ 6.70	\$ 8.15	\$ 10.40
1.5"	\$ 6.05	\$ 7.25	\$ 8.70	\$ 11.00
2"	\$ 6.40	\$ 7.75	\$ 9.20	\$ 11.80
3"	\$ 7.30	\$ 8.65	\$ 10.35	\$ 13.30
4"	\$ 8.95	\$ 10.25	\$ 12.50	\$ 16.40
5"	\$ 9.70	\$ 11.20	\$ 13.85	\$ 18.25
6"	\$ 11.05	\$ 12.80	\$ 15.70	\$ 21.50
8"	\$ 14.50	\$ 16.30	\$ 19.40	\$ 27.50
10"	\$ 15.85	\$ 18.10	\$ 22.50	\$ 32.50
12"	\$ 17.70	\$ 19.70	\$ 24.50	\$ 38.00
14"	\$ 18.50	\$ 21.50	\$ 28.00	\$ 42.50

APPENDIX M

ECM-12 Improve Wall Insulation

New Jersey BPU Energy Audit Program
CHA #19985
Building: Cherry Hill Township Municipal Building

ECM-12 Increase Wall Insulation

Total Existing Wall Area	14,343	sf
Existing U-value	0.09	Btu/hr/(sf°F)
Proposed U-value	0.05	Btu/hr/(sf°F)
Boiler Efficiency	70%	%
Cooling Efficiency	8.00	SEER

Existing Cooling

Max. North Wall Cooling Load	388	Btu/hr
Max. East Wall Cooling Load	3,005	Btu/hr
Max. South Wall Cooling Load	501	Btu/hr
Max. West Wall Cooling Load	4,810	Btu/hr

Proposed Cooling

Max. North Wall Cooling Load	197	Btu/hr
Max. East Wall Cooling Load	1,528	Btu/hr
Max. South Wall Cooling Load	255	Btu/hr
Max. West Wall Cooling Load	2,446	Btu/hr

Occupied Cooling Setpoint	76	F
Unoccupied Cooling Setpoint	76	F

Existing Cooling Total	2,511,051	Btu/yr
Proposed Cooling Total	1,277,049	Btu/yr
Savings	1,234,002	Btu/yr
Input	154	kWh/yr

Existing Heating

Existing Heating Load Temp Diff.	55	F
Existing Max. Wall Heating Load	73,864	Btu/hr

Proposed Heating

Proposed Max. Heating Load	37,565	Btu/hr
----------------------------	--------	--------

Occupied Heating Setpoint	70	F
Unoccupied Heating Setpoint	70	F

Existing Heating Total	211,132,855	Btu/yr
Proposed Heating Total	107,376,138	Btu/yr
Savings	103,756,717	Btu/yr
Input	1,482	therms

				Occupied				Unoccupied							
Avg Outdoor Air Temp. Bins °F	Existing Equipment Bin Hours	Occupied Equipment Bin Hours	Unoccupied Equipment Bin Hours	Existing Heat Gain	Proposed Heat Gain	Existing Heat Loss	Proposed Heat Loss	Existing Heat Gain	Proposed Heat Gain	Existing Heat Loss	Proposed Heat Loss	Existing Cooling Load	Existing Heating Load	Proposed Cooling Load	Proposed Heating Load
				(Btu/hr)	(Btu/hr)	(Btu/hr)	(Btu/hr)	(Btu/hr)	(Btu/hr)	(Btu/hr)	(Btu/hr)	(Btu/yr)	(Btu/yr)	(Btu/yr)	(Btu/yr)
97.5	3	3	0	8,703	4,426	-	-	8,703	4,426	-	-	26,110	-	13,279	-
92.5	52	52	0	6,679	3,397	-	-	6,679	3,397	-	-	347,329	-	176,642	-
87.5	104	104	0	4,655	2,368	-	-	4,655	2,368	-	-	484,156	-	246,228	-
82.5	477	477	0	2,631	1,338	-	-	2,631	1,338	-	-	1,255,121	-	638,318	-
77.5	656	656	0	607	309	-	-	607	309	-	-	398,335	-	202,582	-
72.5	907	907	0	-	-	-	-	-	-	-	-	-	-	-	-
67.5	619	619	0	-	-	3,357	1,708	-	-	3,357	1,708	-	2,078,258	-	1,056,943
62.5	983	983	0	-	-	10,072	5,123	-	-	10,072	5,123	-	9,901,102	-	5,035,418
57.5	625	625	0	-	-	16,787	8,538	-	-	16,787	8,538	-	10,492,012	-	5,335,938
52.5	540	540	0	-	-	23,502	11,953	-	-	23,502	11,953	-	12,691,138	-	6,454,350
47.5	576	576	0	-	-	30,217	15,368	-	-	30,217	15,368	-	17,404,989	-	8,851,680
42.5	552	552	0	-	-	36,932	18,783	-	-	36,932	18,783	-	20,386,399	-	10,367,940
37.5	1,067	1,067	0	-	-	43,647	22,198	-	-	43,647	22,198	-	46,571,103	-	23,684,733
32.5	685	685	0	-	-	50,362	25,613	-	-	50,362	25,613	-	34,497,735	-	17,544,563
27.5	442	442	0	-	-	57,077	29,028	-	-	57,077	29,028	-	25,227,833	-	12,830,155
22.5	248	248	0	-	-	63,791	32,443	-	-	63,791	32,443	-	15,820,275	-	8,045,740
17.5	184	184	0	-	-	70,506	35,858	-	-	70,506	35,858	-	12,973,163	-	6,597,780
12.5	40	40	0	-	-	77,221	39,273	-	-	77,221	39,273	-	3,088,848	-	1,570,900
7.5	0	0	0	-	-	83,936	42,688	-	-	83,936	42,688	-	-	-	-
2.5	0	0	0	-	-	90,651	46,103	-	-	90,651	46,103	-	-	-	-
-2.5	0	0	0	-	-	97,366	49,518	-	-	97,366	49,518	-	-	-	-
-7.5	0	0	0	-	-	104,081	52,933	-	-	104,081	52,933	-	-	-	-
TOTALS	8,760	8,760	0									2,511,051	211,132,855	1,277,049	107,376,138

New Jersey BPU Energy Audit Program
CHA #19985
Building: Cherry Hill Township Municipal Building

ECM-12 Increase Wall Insulation

Multipliers	
Material:	0.98
Labor:	1.18
Equipment:	1.00

Description	QTY	UNIT	UNIT COSTS			SUBTOTAL COSTS			TOTAL COST	REMARKS
			MAT.	LABOR	EQUIP.	MAT.	LABOR	EQUIP.		
2" extruded polystyrene	20,000	sf	\$ 1	\$ 0		\$ 21,320	\$ 10,366	\$ -	\$ 31,687	
						\$ -	\$ -	\$ -	\$ -	
						\$ -	\$ -	\$ -	\$ -	
						\$ -	\$ -	\$ -	\$ -	

\$ 31,687	Subtotal
\$ 3,169	10% Contingency
\$ 3,486	10% Contractor O&P
\$ -	0% Engineering
\$ 38,341	Total

Blanket Insulation - Fiberglass (kraft faced)

<u>R-19 (6" thick)</u>				
11" wide	\$	0.47	\$	0.32
15" wide	\$	0.47	\$	0.24
23" wide	\$	0.47	\$	0.20
<u>R-38 (12" thick)</u>				
15" wide	\$	0.99	\$	0.32
23" wide	\$	0.99	\$	0.24

Blown Insulation - Cellulose or Fiberglass

3 1/2" thick - R-13	\$	0.23	\$	0.15	\$	0.06
6 1/2" thick - R-22	\$	0.44	\$	0.26	\$	0.10
10 7/8" thick R-38	\$	0.76	\$	0.43	\$	0.17

Board Insulation

3 lb density				
	(\$/sf)			
Fiberglass				
1" - R4.3	\$	0.54	\$	0.32
1 1/2" - R-6.5	\$	1.03	\$	0.32
2" - R-8.7	\$	1.25	\$	0.36
2 1/2" R-10.9	\$	1.10	\$	0.41
Polyisocyanurate				
1" R-7	\$	0.61	\$	0.41
1.5" R-10	\$	0.70	\$	0.44
2" R-14	\$	0.96	\$	0.44
3" R-21	\$	2.09	\$	0.44
Extruded Polystyrene (40 psi)				
1" R-5	\$	0.52	\$	0.41
2" R-10	\$	1.09	\$	0.44
3" R-15	\$	1.47	\$	0.44
Expanded Polystyrene				
1" R-3.8	\$	0.24	\$	0.41
2" R-7.6	\$	0.65	\$	0.44
3" R-12	\$	0.83	\$	0.44

APPENDIX N

Photovoltaic (PV) Rooftop Solar Power Conversion



AC Energy & Cost Savings



Station Identification	
City:	Newark
State:	New_Jersey
Latitude:	40.70° N
Longitude:	74.17° W
Elevation:	9 m
PV System Specifications	
DC Rating:	100.0 kW
DC to AC Derate Factor:	0.770
AC Rating:	77.0 kW
Array Type:	Fixed Tilt
Array Tilt:	40.7°
Array Azimuth:	180.0°
Energy Specifications	
Cost of Electricity:	14.0 ¢/kWh

Results			
Month	Solar Radiation (kWh/m ² /day)	AC Energy (kWh)	Energy Value (\$)
1	3.36	8278	1158.92
2	4.05	8939	1251.46
3	4.58	10844	1518.16
4	4.84	10597	1483.58
5	5.30	11676	1634.64
6	5.33	11012	1541.68
7	5.27	11121	1556.94
8	5.25	11005	1540.70
9	5.06	10677	1494.78
10	4.46	10055	1407.70
11	3.15	7175	1004.50
12	2.87	6919	968.66
Year	4.46	118299	16561.86

Output Hourly Performance Data

[About the Hourly Performance Data](#)

Output Results as Text

[Saving Text from a Browser](#)

New Jersey BPU Energy Audit Program
CHA #19985
Building: Cherry Hill Township Municipal Building

Photovoltaic (PV) Rooftop Solar Power Generation-100kW System

Budgetary	Annual Utility Savings				Estimated	Total	New Jersey Renewable	New Jersey Renewable	Federal	Payback	Payback
Cost					Maintenance	Savings	* Energy Incentive	** SREC	Omnibus & DOE Block ***	(without incentive)	(with incentive)
\$	kW	kWh	therms	\$	\$	\$	\$	\$	\$	Years	Years
\$1,000,000	0.0	118,299	0	\$17,627	0	\$17,627	\$285,500	\$57,572	\$615,000	56.7	1.3

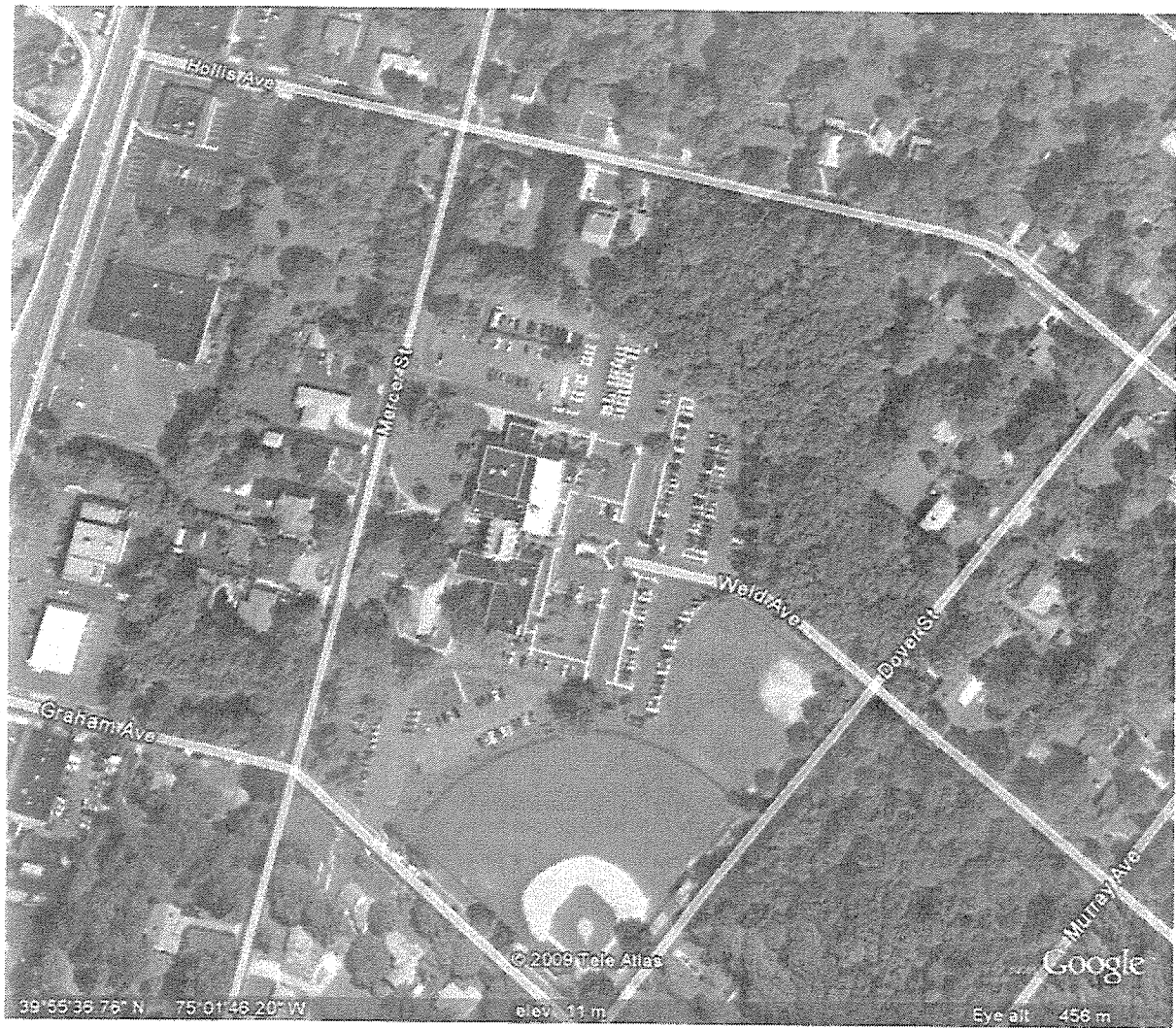
*Incentive based on New Jersey Customer On Site Renewable Energy (CORE) Program incentive of \$285,500

** Estimated Solar Renewable Energy Certificate Program (SREC) SREC for 15 Years= \$487/1000kwh

*** Incentive based on FY 2009 Omnibus Appropriations Act & DOE Energy Efficiency and Conservation Block grants

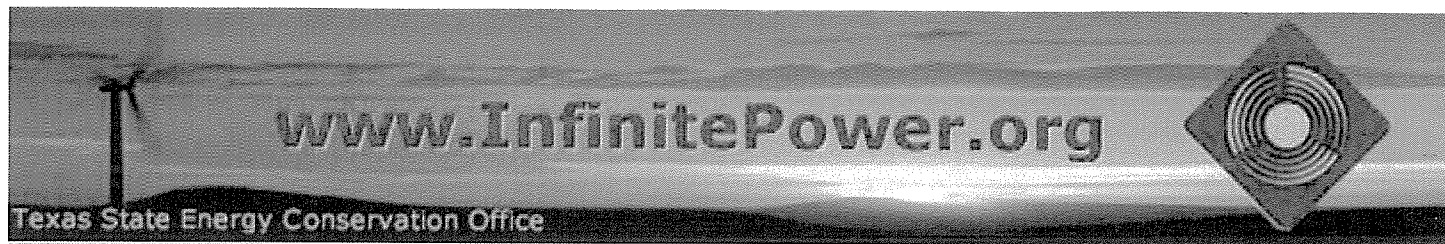
Estimated Solar Renewable Energy Certificate Program (SREC) payments for 15 Years from RR Renewable Energy Consultants

Year	SREC
1	600
2	600
3	600
4	500
5	500
6	500
7	500
8	500
9	500
10	500
11	400
12	400
13	400
14	400
15	400
AVG	487



APPENDIX O

Solar Thermal Heating


[Home](#)
[What Can I Do?](#)
[Electric Choice](#)
[Home Energy](#)
[FAQs](#)
LEARN
[Fact Sheets](#)
[Lesson Plans](#)
PLAY
[Calculators](#)
NETWORK
[Organizations](#)
[Businesses](#)
[Events Calendar](#)
BROWSE
[Resources](#)
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Interactive Energy Calculators

RENEWABLE ENERGY
THE INFINITE POWER
OF TEXAS

Our calculators help you understand energy production and consumption in a whole new way. Use them to develop a personal profile of your own energy use.

[Carbon Pollution Calculator](#)
[Electric Power Pollution Calculator](#)
[PV System Economics](#)
[Solar Water Heating](#)
[What's a Watt?](#)

Solar Water Heating Calculator

Water heating is a major energy consumer. Although the energy consumed daily is often less than for air conditioning or heating, it is required year round, making it a good application of solar energy. Use this calculator to explore the energy usage of your water heater, and to estimate whether a solar water heater could save you money.

Water Heater Characteristics			
Physical		Thermal	
Diameter (feet)	1.5	Water Inlet Temperature (Degrees F)	50
Capacity (gallons)	50	Ambient Temperature (Degrees F)	70
Surface Area (calculated - sq ft)	21.36	Hot Water Temperature (Degrees F)	120
Effective R-value	18.35	Hot Water Usage (Gallons per Day)	500
Energy Use			
11970		Heat Delivered in Hot Water (BTU/hr)	
58.2		Heat loss through insulation (BTU/hr)	

Gas vs. Electric Water Heating		
Gas		Electric
0.8317	Overall Efficiency	0.9753
0.8357	Conversion Efficiency	0.98
14390 BTU/hr	Power Into Water Heater	12270 BTU/hr
Cost		
\$ 1.64 /Therm	Utility Rates	\$ 0.1526 /kWh

\$ 2067.32	Yearly Water Heating Cost	\$ 4803.80
How Does Solar Compare?		
Solar Water Heater Cost: \$ 20000		Percentage Solar: 70
13.8204 years for gas	Payback Time for Solar System	5.94766 years for electric

More information on solar water heating:

Fact sheet - [Solar Water Heaters](#)

Fact sheet - [Solar Water Heaters for Swimming Pools](#)

Kids fact sheet - [Heat from the Sun](#)

[Return to Top of Page](#)

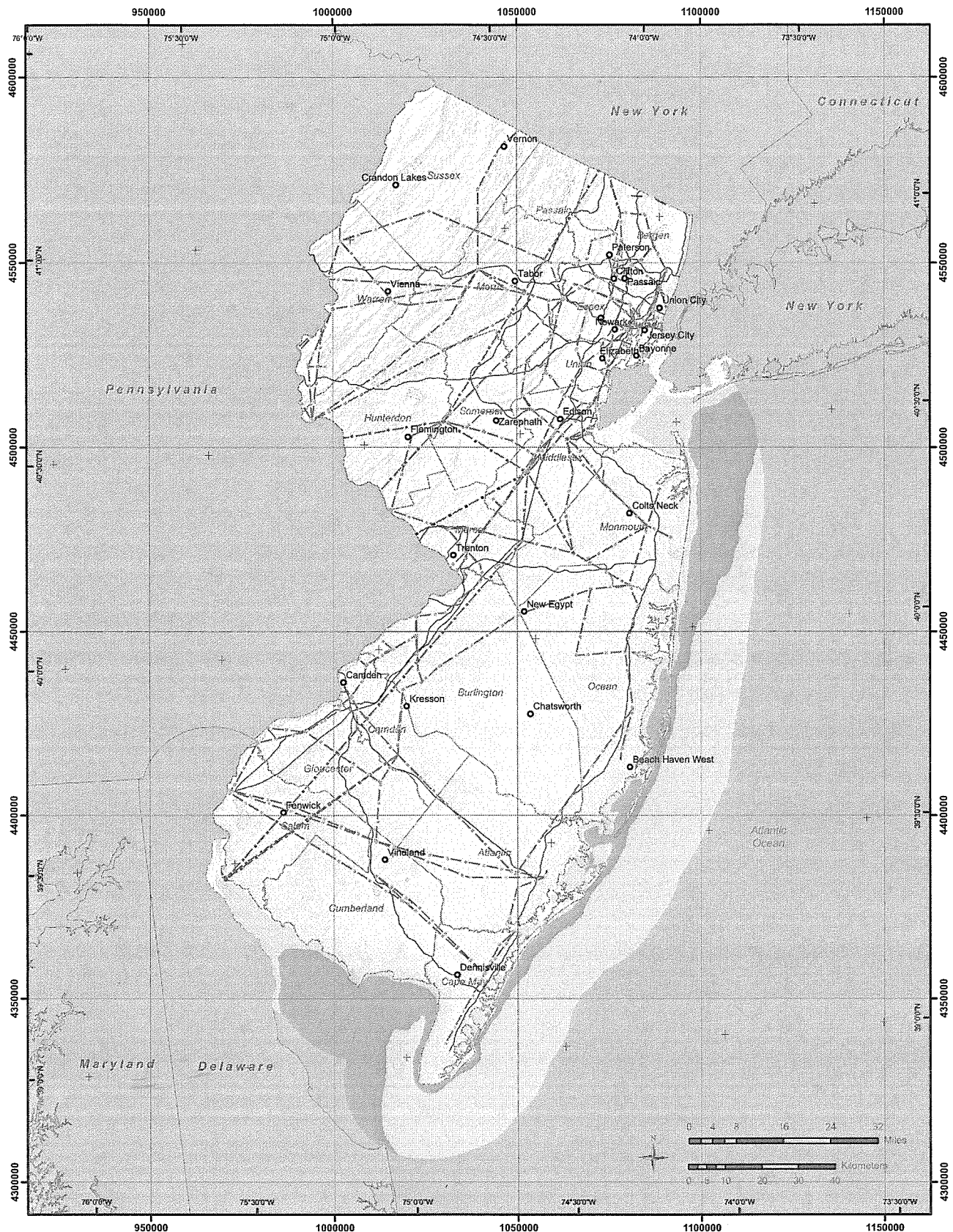
Send comments, questions, and suggestions to [website manager](#).

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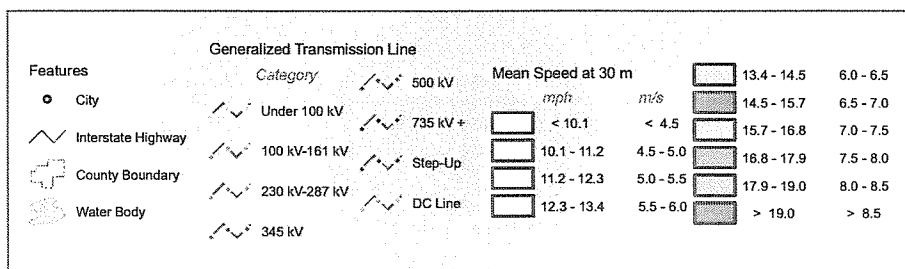
[State Energy Conservation Office \(SECO\)](#)

APPENDIX P

Wind



Wind Resource of New Jersey Mean Annual Wind Speed at 30 Meters



AWS Truewind

Projection: Transverse Mercator,
UTM Zone 17 WGS84

Spatial Resolution of Wind Resource Data: 200m
This map was created by AWS Truewind using the MesoMap system and historical weather data. Although it is believed to represent an accurate overall picture of the wind energy resource, estimates at any location should be confirmed by measurement.

The transmission line information was obtained by AWS Truewind from the Global Energy Decisions Velocity Suite. AWS does not warrant the accuracy of the transmission line information.

APPENDIX Q

EPA Energy Star Portfolio Manager Report



STATEMENT OF ENERGY PERFORMANCE

Township Municipal Building

Building ID: 1767277

For 12-month Period Ending: December 31, 2008¹

Date SEP becomes ineligible: N/A

Date SEP Generated: June 10, 2009

Facility

Township Municipal Building
820 Mercer
Cherry Hill, NJ 08002

Facility Owner

Cherry Hill Township
820 Mercer
Cherry Hill, NJ 08002

Primary Contact for this Facility

Gary Kanefsky
820 Mercer
Cherry Hill, NJ 08002

Year Built: 1963

Gross Floor Area (ft²): 41,400Energy Performance Rating² (1-100) 30**Site Energy Use Summary³**

Electricity (kBtu)	3,431,743
Natural Gas (kBtu) ⁴	1,596,008
Total Energy (kBtu)	5,027,751

Energy Intensity⁵

Site (kBtu/ft ² /yr)	121
Source (kBtu/ft ² /yr)	317

Emissions (based on site energy use)

Greenhouse Gas Emissions (MtCO ₂ e/year)	615
---	-----

Electric Distribution Utility

PSE&G - Public Service Elec & Gas Co

National Average Comparison

National Average Site EUI	99
National Average Source EUI	258
% Difference from National Average Source EUI	23%
Building Type	Office

Meets Industry Standards⁶ for Indoor Environmental Conditions:

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

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

Notes:

1. Application for the ENERGY STAR must be submitted to EPA within 4 months of the Period Ending date. Award of the ENERGY STAR is not final until approval is received from EPA.
2. The EPA Energy Performance Rating is based on total source energy. A rating of 75 is the minimum to be eligible for the ENERGY STAR.
3. Values represent energy consumption, annualized to a 12-month period.
4. Natural Gas values in units of volume (e.g. cubic feet) are converted to kBtu with adjustments made for elevation based on Facility zip code.
5. Values represent energy intensity, annualized to a 12-month period.
6. Based on Meeting ASHRAE Standard 62 for ventilation for acceptable indoor air quality, ASHRAE Standard 55 for thermal comfort, and IESNA Lighting Handbook for lighting quality.

ENERGY STAR® Data Checklist for Commercial Buildings

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

Please complete and sign this checklist and include it with the stamped, signed Statement of Energy Performance.

NOTE: You must check each box to indicate that each value is correct, OR include a note.

CRITERION	VALUE AS ENTERED IN PORTFOLIO MANAGER	VERIFICATION QUESTIONS	NOTES	☒
Building Name	Township Municipal Building	Is this the official building name to be displayed in the ENERGY STAR Registry of Labeled Buildings?		☐
Type	Office	Is this an accurate description of the space in question?		☐
Location	820 Mercer, Cherry Hill, NJ 08002	Is this address accurate and complete? Correct weather normalization requires an accurate zip code.		☐
Single Structure	Single Facility	Does this SEP represent a single structure? SEPs cannot be submitted for multiple-building campuses (with the exception of acute care or children's hospitals) nor can they be submitted as representing only a portion of a building		☐
Municipal Building (Office)				
CRITERION	VALUE AS ENTERED IN PORTFOLIO MANAGER	VERIFICATION QUESTIONS	NOTES	☒
Gross Floor Area	41,400 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.		☐
Weekly operating hours	50 Hours	Is this the total number of hours per week that the Office space is 75% occupied? This number should exclude hours when the facility is occupied only by maintenance, security, or other support personnel. For facilities with a schedule that varies during the year, "operating hours/week" refers to the total weekly hours for the schedule most often followed.		☐
Workers on Main Shift	150	Is this the number of employees present during the main shift? Note this is not the total number of employees or visitors who are in a building during an entire 24 hour period. For example, if there are two daily 8 hour shifts of 100 workers each, the Workers on Main Shift value is 100. The normal worker density ranges between 0.3 and 10 workers per 1000 square feet (92.8 square meters)		☐
Number of PCs	200	Is this the number of personal computers in the Office?		☐
Percent Cooled	50% or more	Is this the percentage of the total floor space within the facility that is served by mechanical cooling equipment?		☐
Percent Heated	50% or more	Is this the percentage of the total floor space within the facility that is served by mechanical heating equipment?		☐

ENERGY STAR® Data Checklist for Commercial Buildings

Energy Consumption

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

Fuel Type: Electricity		
Meter: PES&G Meter (kWh) Space(s): Entire Facility		
Start Date	End Date	Energy Use (kWh)
11/05/2008	12/08/2008	75,360.00
10/07/2008	11/05/2008	81,240.00
09/08/2008	10/07/2008	79,440.00
08/07/2008	09/08/2008	100,320.00
07/09/2008	08/07/2008	106,920.00
06/09/2008	07/09/2008	102,960.00
05/08/2008	06/09/2008	87,000.00
04/09/2008	05/08/2008	78,840.00
03/10/2008	04/09/2008	72,360.00
02/08/2008	03/10/2008	73,320.00
01/09/2008	02/08/2008	71,880.00
PES&G Meter Consumption (kWh)		929,640.00
PES&G Meter Consumption (kBtu)		3,171,931.68
Total Electricity Consumption (kBtu)		3,171,931.68
Is this the total Electricity consumption at this building including all Electricity meters?		☐

Fuel Type: Natural Gas		
Meter: PSE&G Gas Meter (therms) Space(s): Entire Facility		
Start Date	End Date	Energy Use (therms)
11/08/2008	12/07/2008	1,188.62
10/08/2008	11/07/2008	129.76
09/08/2008	10/07/2008	0.00
08/08/2008	09/07/2008	0.00
07/08/2008	08/07/2008	0.00
06/08/2008	07/07/2008	81.30
05/08/2008	06/07/2008	928.60
04/08/2008	05/07/2008	2,338.20
03/07/2008	04/07/2008	3,426.24
02/08/2008	03/07/2008	3,118.64

01/06/2008	02/08/2008	3,515.40
PSE&G Gas Meter Consumption (therms)		14,726.76
PSE&G Gas Meter Consumption (kBtu)		1,472,676.00
Total Natural Gas Consumption (kBtu)		1,472,676.00
Is this the total Natural Gas consumption at this building including all Natural Gas meters?		☐

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

Certifying Professional

(When applying for the ENERGY STAR, this must be the same PE that signed and stamped the SEP.)

Name: _____ Date: _____

Signature: _____

Signature is required when applying for the ENERGY STAR.

FOR YOUR RECORDS ONLY. DO NOT SUBMIT TO EPA.

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

Facility
Township Municipal Building
820 Mercer
Cherry Hill, NJ 08002

Facility Owner
Cherry Hill Township
820 Mercer
Cherry Hill, NJ 08002

Primary Contact for this Facility
Gary Kanefsky
820 Mercer
Cherry Hill, NJ 08002

General Information

Township Municipal Building	
Gross Floor Area Excluding Parking: (ft ²)	41,400
Year Built	1963
For 12-month Evaluation Period Ending Date:	December 31, 2008

Facility Space Use Summary

Municipal Building	
Space Type	Office
Gross Floor Area(ft ²)	41,400
Weekly operating hours	50
Workers on Main Shift	150
Number of PCs	200
Percent Cooled	50% or more
Percent Heated	50% or more

Energy Performance Comparison

Performance Metrics	Evaluation Periods		Comparisons		
	Current (Ending Date 12/31/2008)	Baseline (Ending Date 11/30/2008)	Rating of 75	Target	National Average
Energy Performance Rating	30	30	75	N/A	50
Energy Intensity					
Site (kBtu/ft ²)	121	125	73	N/A	99
Source (kBtu/ft ²)	317	321	191	N/A	258
Energy Cost					
\$/year	\$ 178,783.94	\$ 174,590.66	\$ 107,367.53	N/A	\$ 145,158.90
\$/ft ² /year	\$ 4.32	\$ 4.22	\$ 2.59	N/A	\$ 3.51
Greenhouse Gas Emissions					
MtCO ₂ e/year	615	615	369	N/A	499
kgCO ₂ e/ft ² /year	15	15	9	N/A	12

More than 50% of your building is defined as Office. Please note that your rating accounts for all of the spaces listed. The National Average column presents energy performance data your building would have if your building had an average rating of 50.

Notes:

o - This attribute is optional.

d - A default value has been supplied by Portfolio Manager.

APPENDIX R

ECM-13 PC Replacement with Thin Clients

New Jersey BPU Energy Audit Program
CHA #19985
Building: Cherry Hill Township Municipal Building

ECM-13 PC Replacment with Thin Clients

EXISTING CONDITIONS		
Total Number of PCs	300	
Wattage per PC	120	watts
Daily usage	10	hours
Annual energy consumption	93,600	kwhr

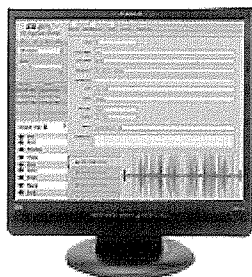
PROPOSED CONDITIONS		
Total number of thin clients	300	
Wattage per client	36	watts
Daily usage	10	hours
Annual energy consumption	28,080	kwhr

SAVINGS		
Existing PC Use	93,600	kwhr / year
Proposed Thin Client Use	28,080	kwhr / year
Electricity Savings	65,520	kwhr / year
Cost Savings	\$9,762	/ year
Implemetation cost*	\$180,000	
Simple Payback	18.4	/ year

* Thin client computer cost based on a Dell 17" ND1750 Integrated Thin Client Network Display of \$500 per unit with a 1.2 install cost factor

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17" ND1750 Integrated Thin Client Network Display



Planar Integrated Thin-Client Network Displays powered by Wyse are the perfect solution for virtual desktop computing. The ND1750 17" ND Thin Client Network Display is ideal for healthcare, call centers, point of ... [Full Description](#)

Starting Price**\$499.99**[Add to Cart](#)

Usually Ships: Within 24 Hours

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Manufacturer Part# : 997-3941-00 | Dell Part# : A1253565

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Tech Specs

General

Type Network computer**Product Form Factor** All-in-one**Built-in Devices** Stereo speakers, display**Width** 14.4 in**Depth** 7.8 in**Height** 15.1 in**Weight** 9.9 lbs**Color** Black

Processor

Type ARM9 400 MHz**Installed Qty** 1**Max Supported Qty** 1

RAM

Installed Size 128 MB

Storage

Monitor	Hard Drive	None.
	Monitor Type	LCD display - TFT active matrix
	Diagonal Size	17"
	Max Resolution	1280 x 1024
	Widescreen Display	No
	Response Time	8 ms
	Image Brightness	300 cd/m2
	Image Contrast Ratio	700:1
Audio Output		
	Type	Sound card
	Speaker(s)	2 x right / left channel
Input Device		
Keyboard	Type	Mouse, keyboard
	Interface	USB
Mouse	Features	Built-in PS/2 port
	Interface	PS/2
Networking		
Expansion / Connectivity	Networking	Network adapter
	Data Link Protocol	Ethernet, Fast Ethernet, Gigabit Ethernet
	Interfaces	1 x network - Ethernet 10Base-T/100Base-TX/1000Base-T - RJ-45 4 x Hi-Speed USB - 4 pin USB Type A 1 x microphone - input - mini-phone 3.5 mm 1 x headphones - output - mini-phone stereo 3.5 mm 1 x headset - RJ-22
	Miscellaneous	
Power	Compliant Standards	FCC Class B certified, CSA, UL, RoHS
	Device Type	Power adapter
	Voltage Required	AC 120/230 V (50/60 Hz)
	Power Consumption Operational	36 Watt
Operating System / Software		
Manufacturer Warranty	OS Provided	Wyse Thin OS
	Service & Support	3 years warranty
Service & Support Details		
Limited warranty - 3 years New releases update - 90 days		

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