

**THE NEWARK PUBLIC SCHOOLS**

**Group 3 Buildings**

**Sussex Ave School**

307 Sussex Ave, Newark, NJ 07107

**LOCAL GOVERNMENT ENERGY AUDIT PROGRAM  
FOR  
NEW JERSEY  
BOARD OF PUBLIC UTILITIES**

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**CHA PROJECT NO. 27999**

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## REPORT DISCLAIMER

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

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

## List of Common Energy Audit Abbreviations

- A/C – Air Conditioning
- AHS – Air Handling Unit
- BMS – Building Management System
- Btu – British thermal unit
- CDW – Condenser Water
- CFM – Cubic feet per minute
- CHW – Chilled Water
- DCV – Demand Control Ventilation
- DDC – Direct Digital Control
- DHW – Domestic Hot Water
- DX – Direct Expansion
- EER – Energy Efficiency Ratio
- EF – Exhaust Fan
- EUI – Energy Use Intensity
- Gal – Gallon
- GPD – Gallons per day
- GPF – Gallons Per Flush
- GPH – Gallons per hour
- GPM – Gallons per minute
- GPS – Gallons per second
- HHW – Heating Hot Water
- HID – High Intensity Discharge
- HP – Horsepower
- HRU – Heat Recovery Unit
- HVAC – Heating, Ventilation, Air Conditioning
- HX – Heat Exchanger
- kbtu/mbtu – One thousand (1,000) Btu
- kW – Kilowatt (1,000 watts)
- kWh – Kilowatt-hours
- LED – Light Emitting Diode
- mbh – Thousand Btu per hour
- mmbtu – One million (1,000,000) Btu
- OCC – Occupancy Sensor
- PSI – Pounds per square inch
- RTU – Rooftop Unit
- SBC – System Benefits Charge
- SF – Square foot
- UH – Unit Heater
- V – Volts
- VAV – Variable Air Volume
- VSD – Variable Speed Drive
- W – Watt

## 1.0 EXECUTIVE SUMMARY

This report summarizes the energy audit performed by CHA for Newark Public Schools (NPS), in connection with the New Jersey Board of Public Utilities (NJBPU) Local Government Energy Audit (LGEA) Program. The purpose of this report is to identify energy savings opportunities associated with major energy consumers and inefficient practices. Low-cost and no-cost are also identified during the study. This report details the results of the energy audit conducted for the building listed below:

Building Name	Address	Square Feet	Construction Date
<b>Sussex Ave School</b>	307 Sussex Ave, Newark, NJ 07107	64,762	1900,1955,1996

The potential total annual energy and cost savings for the energy conservation measures (ECM) identified in the survey are shown below:

Building Name	Electric Savings (kWh)	NG Savings (therms)	Total Savings (\$)	Payback (years)
<b>Sussex Ave School</b>	118,918	1,442	20,527	9.7

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

Each measure recommended by CHA typically has a stand-alone simple payback period of 15 years or less. However, if the owner chooses to pursue an Energy Savings Improvement Plan (ESIP), high payback measures could be bundled with lower payback measures which ultimately can result in a payback which is favorable for an ESIP project to proceed. Occasionally, we will recommend an ECM that has a longer payback period, based on the need to replace that piece(s) of equipment due to its age, such as a boiler for example.

The following table provides a detailed summary of each ECM for the building surveyed, including costs, savings, SmartStart incentives and payback.

## Summary of Energy Conservation Measures

ECM #	Energy Conservation Measure	Est. Costs (\$)	Est. Savings (\$/year)	Payback w/o Incentive	Potential Incentive (\$)*	Payback w/ Incentive	Recommended
1	Install Door Seals	2,305	102	22.5	0	22.5	N
2	Install Window A/C Controller	1,900	1,270	1.5	0	1.5	Y
3A	Install Basic Controls	21,309	5,094	4.2	0	4.2	Y
3B**	Install Full DDC Controls	356,512	7,467	47.7	0	47.7	N
4	Install Low Flow Plumbing Fixtures	231,512	4,009	57.7	0	57.7	N
L1**	Lighting Replacements / Upgrades	152,679	12,599	12.1	3,750	11.8	N
L2**	Install Lighting Controls (Add Occupancy Sensors)	22,680	3,429	6.6	2,940	5.8	N
L3	Lighting Replacements with Controls (Occupancy Sensors)	175,359	14,163	12.4	6,690	11.9	Y
<b>Total</b>		432,385	24,638	17.5	6,690	17.3	
<b>Total (Recommended)</b>		198,569	20,527	9.7	6,690	9.7	

\* Incentive shown is per the New Jersey SmartStart Program.

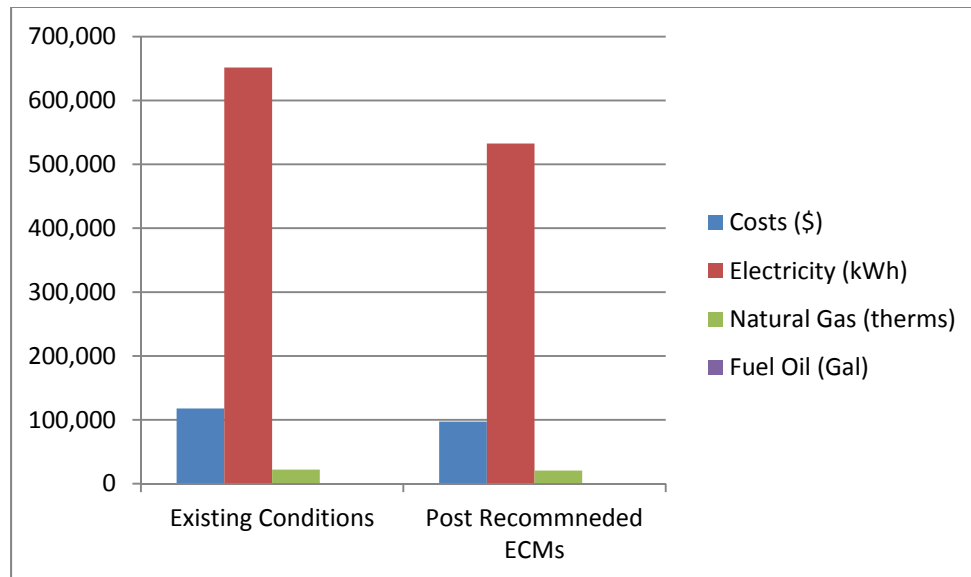
\*\* These ECMs are not included in the Total, as they are alternate measures not recommended.

The following alternative energy measures are also recommended for further study:

- Photovoltaic (PV) Rooftop Solar Power Generation – 180 kW System

If NPS implements the recommended ECMs, energy savings would be as follows:

	<b>Existing Conditions</b>	<b>Post Recommended ECMs</b>	<b>Percent Savings</b>
Costs (\$)	117,797	97,270	17%
Electricity (kWh)	651,678	532,760	18%
Natural Gas (therms)	22,100	20,658	7%
Site EUI (kbtu/SF/Yr)	68.5	60.0	





## 2.0 BUILDING INFORMATION AND EXISTING CONDITIONS

The following is a summary of building information related to HVAC, plumbing, building envelope, lighting, kitchen equipment and domestic hot water systems as observed during CHAs site visit. See Appendix B for detailed information on mechanical equipment, including capacities, model numbers and age. See Appendix F for some representative photos of some of the existing conditions observed while onsite.

**Building Name:** Sussex Ave School (Index No. 72)

**Address:** 307 Sussex Ave Newark NJ 07107

**Gross Floor Area:** 64,762 square feet

**Number of Floors:** 3

**Year Built:** 1900

**Additions:** 1955, 1996



**Description of Spaces:** Classrooms, offices, cafeteria, auditorium, gymnasium, stage, library, storage rooms, toilet rooms and a boiler room.

**Description of Occupancy:** The school serves 508 students from Pre-K grade to 8<sup>th</sup> grade. There are about 55 school faculty and staff members.

**Number of Computers:** The school has approximately 128 desktop and laptop computers.

**Building Usage:** School hours are 8:00 AM – 3:00 PM Monday through Friday, with various after-school activities. The office hours are from 7:30 AM to 4:00 PM. The two-shift custodian hours are from 6:30 AM to 11:00 PM.

**Construction Materials:** Concrete masonry blocks and stones. The interior walls are plaster walls. It is presumed that the exterior walls have little or no insulation based on the age of the building.

**Façade:** Brick veneer

**Roof:** The original 1900 building has pitched asphalt roofing and the additional sections have a flat tar roof. The connection sections between the original building and the additions have

rubber membrane roofs. The roofs are in good condition and therefore no roofing ECMs were considered.

**Windows:** The building has double pane aluminum frame windows. Windows are in good condition and therefore no ECMs associated related to window replacements were evaluated.

**Exterior Doors:** The school has steel doors with small single pane windows. The seals around the doors are not in good condition. An ECM has been included to address this issue.

## **Heating Ventilation & Air Conditioning (HVAC) Systems**

**Heating:** The 1900 and 1955 sections of the building are heated by two new 2012 Smith Cast Iron steam boilers. Each boiler has a rated maximum energy input of 2,718 MBH and energy output of 2,249 MBH which results in a nameplate efficiency of 82.7%. The burners of these two boilers are controlled by Power Flame burner controller. The condensate is returned to the boiler by using a condensate tank and two condensate return pumps. Each pump is driven by a ¾ HP Marathon electric motor. The whole building is heated by the steam system except the vestibule areas, which are heated by electric unit heaters. The gymnasium and auditorium are heated by two packaged heating ventilating (HV) units equipped with steam coils. During the site visit, it was observed that the outdoor air intake grill is covered up and sealed up with plastic covers and the HV units only circulate air from the mechanical room to the gymnasium/cafeteria. The classrooms and offices are heated by steam radiators and unit heaters. The 1996 addition is heated electrically by eight packaged classroom HVAC units (Airedale). The heating equipment is in good condition and therefore no ECMs were considered.

**Cooling:** The original 1900 building and 1955 addition are not cooled with an exception of a few rooms, which have window A/C units. According to the school staff, the library has a packaged AC unit with ductwork; however, it could not be located during the site visit. The main office room, conference room, principle office and some classrooms are cooled by using window AC units. There are about 10 window units in the building and they are controlled manually. Two types of window AC units are used in this building: one uses 120 V and the other uses 208 V. The current drawn by the window AC units ranges from 3.5 amps to 11.7 amps. The 1996 classrooms are cooled by eight Airedale packaged HVAC units. We have included an ECM that evaluates the energy savings associated with automatically controlling the window (and PTAC) units based on occupancy.

**Ventilation:** The HV units for gymnasium and auditorium are used only for heating as the outdoor air intakes are closed. The remaining areas including the gymnasium, cafeteria and classrooms use operable windows for natural ventilation

**Exhaust:** The gymnasium and auditorium have two exhaust fans, however, it was found that both of them are disconnected. During the site visit, it was observed that the gymnasium exhaust fan motor was still running with the belt missing.

## **Controls Systems**

The steam heating system in the building has no controls and the boilers are manually turned off when it is too hot in the building. The heating temperature set point in the building was estimated to be 80 °F. The library has a programmable thermostat to control the packaged AC unit serving the space. However, it was not working. The school staff has to turn off the circuit breaker to shut down the AC unit. The (8) Airedale packaged HVAC units have built in temperature sensors to control the room temperature; however these too were not working. The units run continuously to maintain the space temperatures.

Section 5 of the reports addresses these issues with two alternative ECMs. The first is adding basic automatic boiler controls that will cycle the boiler(s) on/off based on outdoor and indoor air temperature. The second alternative evaluates the energy savings for implementing a full wireless direct digital control system that enables remote automatic control, monitoring and alarming of all HVAC equipment, including the boilers and the classroom units. Specific energy savings sequences would include optimum Start/ Stop, night setback, temporary occupied set back, and economizer control of UVs and/or AHU's.

### **Domestic Hot Water Systems**

The building have an A.O Smith domestic hot water heater, however, it was disconnected and not running any more. Discussion with the facility staff, it was found that the building does not use domestic hot water, therefore no ECM was evaluated. The domestic hot water heater should be replaced; however is not considered as an ECM in this report; as there will be negative energy savings associated with replacement.

Drinking water is provided from bottled water.

### **Kitchen Equipment**

The kitchen has one Glenco refrigerator and one Traulsen freezer. The kitchen equipment appears to be in good condition. Kitchen equipment appears to be in good condition and no kitchen equipment ECMs is being evaluated.

### **Plumbing Systems**

The restrooms contain older style toilets and urinals that utilize a higher volume of water per flush than currently available new units. The sinks have manual metering faucets which are inherently low-flow ECMs are included that evaluate the water savings based on the installation of low- flow plumbing fixtures.

### **Plug Load**

This school has computers, copiers, smart boards, residential appliances (microwave, refrigerator), printers and portable electric heaters (personal) which contribute to the plug load in the building.

### **Lighting Systems**

The building has a mixture of T-8 fluorescent lighting, compact fluorescent lights (CFL) and some incandescent lights. The majority lighting fixtures in the building are T8 fluorescent pendent lensed fixtures. The gymnasium storage room has some CFLs. The auditorium and office restrooms have incandescent light bulbs. All the lights in this building are controlled by manual switches or key switches. After discussion with facility staff, it was noted that the classroom lights are typically turned off after the janitor cleaning the rooms and the hallway lights are on 24/7. We have provided three alternatives for lighting that include adding occupancy sensors to the existing lights, replacing the lights with LED lights and a third ECM that evaluates adding occupancy sensors to the proposed LED lights

### 3.0 UTILITIES

Utilities used by the building are delivered and supplied by the following utility companies:

	Electric	Natural Gas
Deliverer	PSEG	PSEG
Supplier	Nextera Energy Services	PSEG

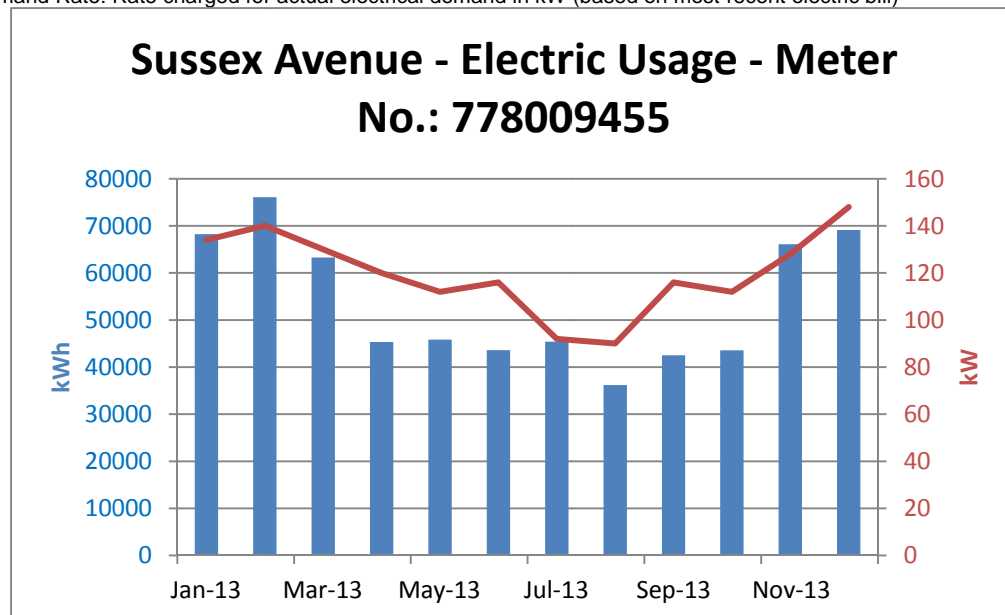
For the 12-month period ending in December 2013, the utilities usages and costs for the building were as follows:

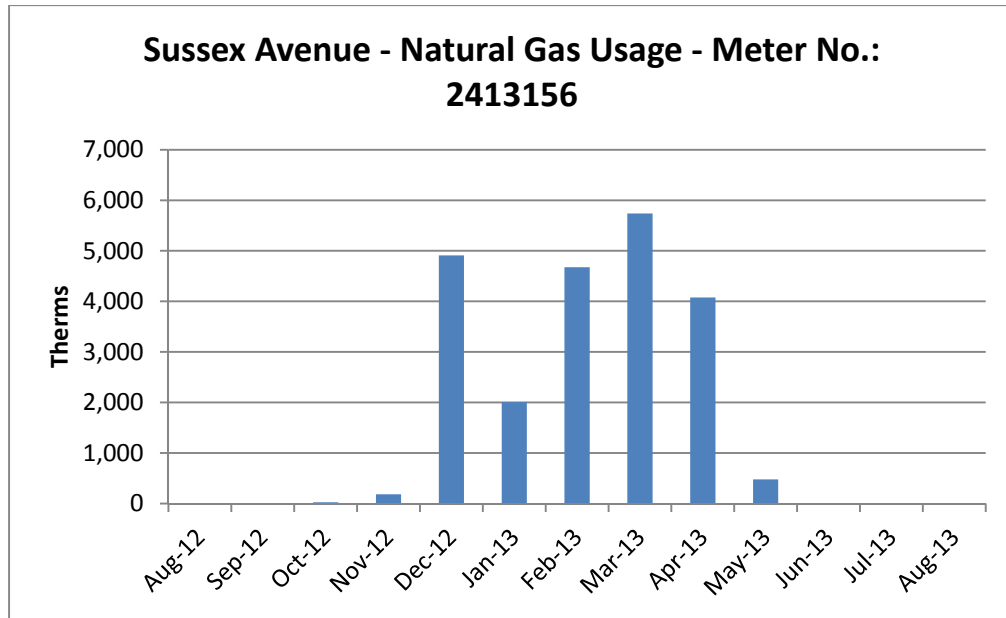
Electric		
Annual Consumption	645,258	kWh
Annual Cost	\$93,837	\$
Blended Unit Rate	\$0.15	\$/kWh
Supply Rate	\$0.13	\$/kWh
Demand Rate	\$5.41	\$/kW
Peak Demand	148	kW
Natural Gas		
Annual Consumption	22,100	Therms
Annual Cost	\$22,986	\$
Unit Rate	\$1.04	\$/therm

Blended Rate: Average rate charged determined by the annual cost / annual usage

Supply Rate: Actual rate charged for electricity usage in kWh (based on most recent electric bill)

Demand Rate: Rate charged for actual electrical demand in kW (based on most recent electric bill)





In addition, domestic water and sewer services are provided by City of Newark Division of Water at \$7.55/1000 gal.

See Appendix A for a detailed utility analysis.

Under New Jersey's energy deregulation law, the supply portion of the electric (or natural gas) bill is separated from the delivery portion. The supply portion is open to competition, and customers can shop around for the best price for their energy suppliers. The electric and natural gas distribution utilities will still deliver the gas/ electric supplies through their wires and pipes – and respond to emergencies, should they arise – regardless of where those supplies are purchased. Purchasing the energy supplies from a company other than your electric or gas utility is purely an economic decision; it has no impact on the reliability or safety of the service.

Comparison of Utility Rates to NJ State Average Rates*				Recommended to Shop for Third Party Supplier?
Utility	Units	School Average Rate	NJ Average Rate	
Electricity	\$/kWh	\$0.15	\$0.12	Y
Natural Gas	\$/Therm	\$1.04	\$0.95	Y

\* Per U.S. Energy Information Administration (2013 data – Electricity and Natural Gas, 2012 data – Fuel Oil)

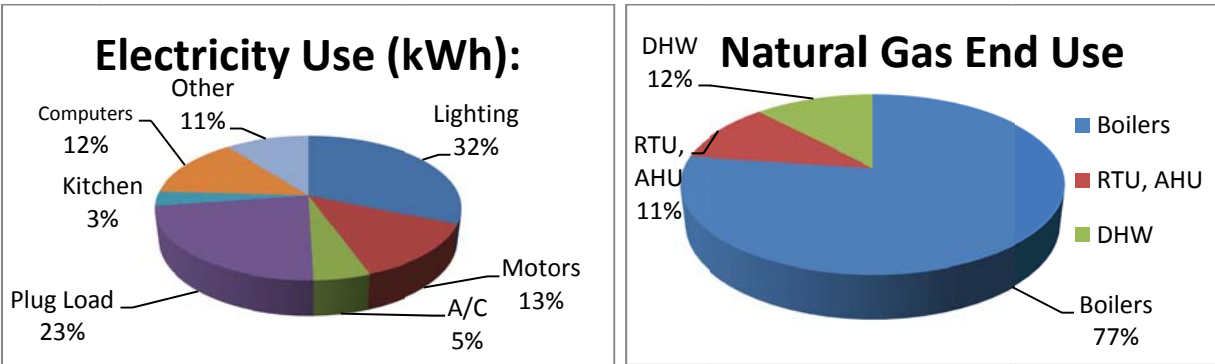
Additional information on selecting a third party energy supplier is available here:

<http://www.state.nj.us/bpu/commercial/shopping.html>.

See Appendix A for a list of third-party energy suppliers licensed by the Board of Public Utilities to sell within the building's service area.

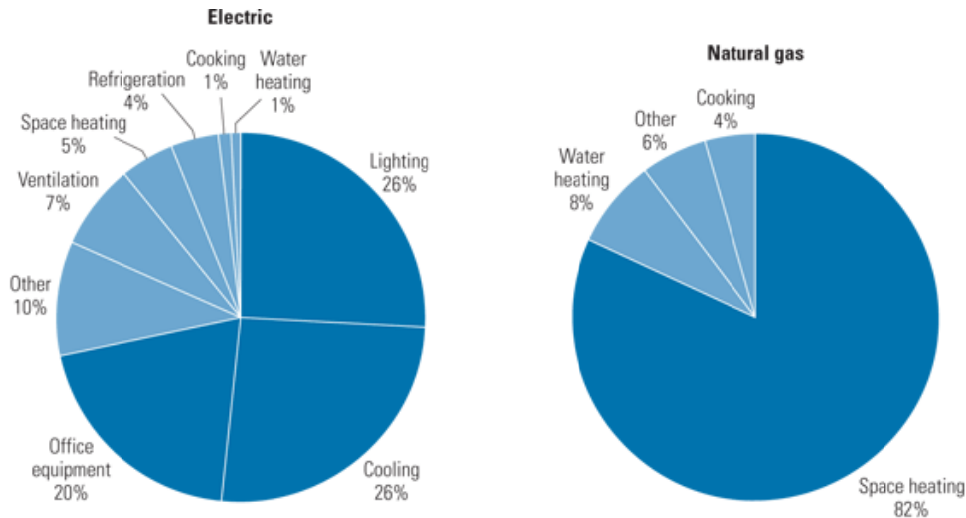
The charts below represent estimated utility end-use utility profiles for the building. The values used within the charts were estimated from a review of the utility analysis and the energy savings calculations.

### Site End-Use Utility Profile



Most of the electricity consumed by educational facilities is used to for lighting and plug loads such as copiers; most of the natural gas is used for space heating. Each school's energy profile is different, and the following charts represent typical utility profiles for K-12 schools per U.S. Department of Energy.

### Typical End-Use Utility Profile for Educational Facilities



Courtesy: E SOURCE; from Commercial Building Energy Consumption Survey, 1999 data

#### 4.0 Benchmarking

TRC has previously benchmarked this building, the results of which have been provided to NPS. The results are summarized below. Copies of the benchmarking report are included in this report in Appendix G.

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

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

Site EUI kBtu/ft <sup>2</sup> /yr	Energy Star Rating (1-100)
68.5*	13**

\* Calculated by CHA using Utility Data provided by NPS

\*\* Provided by TRC

The school has a below average Energy Star Rating Score (50 being the median score), and as such by implementing the measures discussed in this report, it is expected that the EUI can be further reduced and the Energy Star Rating further increased.

## **5.0 ENERGY CONSERVATION MEASURES**

The following types of energy savings opportunities are identified in this section of the report:

- Energy conservation measures (ECMs) are energy savings recommendations that typically require a financial investment. For these areas of opportunity, CHA prepared detailed calculations, as summarized in this section and in Appendix C.
- Operational and Maintenance measures (O&M) consist of low- or no-cost operational opportunities, which if implemented would have positive impacts on overall building operation, comfort levels, and/or energy usage.

Energy savings were quantified in the form of:

- electrical usage (kWh=Kilowatt-hour),
- electrical demand (kW=kilowatts),
- natural gas (therms=100,000 Btu),
- propane gas (gallons=91,650 Btu),
- fuel oil (gallons =138,700 Btu), and
- water (kgal=1,000 gallons).

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

Another financial indicator of the performance of a particular ECM is the Return on Investment or ROI, which represents the benefit (annual savings over the life of a project) of an investment divided by the cost of the investment. The result is expressed as a percentage or ratio.

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

### **5.1 ECM-1 Replace Door Sweeps and Seals**

Exterior doors throughout the school have door sweeps and seals which have deteriorated over time. Presently, gaps exist which allow for infiltration of outdoor air during the winter months, wasting steam heat generated by the boiler system and therefore natural gas.

This measure calls for the replacement of all exterior door seals. Replacement of these seals will result in a reduction of the buildings heating and cooling loads, therefore



providing natural gas and electricity savings. The linear footage of gap and wind speed is used to estimate the infiltration rate, which is then multiplied by the BIN weather data and the equipment efficiencies to determine the annual energy savings.

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

#### ECM-1 Replace Door Sweeps and Seals

Budgetary Cost	Annual Utility Savings				ROI	Potential Incentive*	Payback (without incentive)	Payback (with incentive)
	Electricity		Natural Gas	Total				
\$	kW	kWh	Therms	\$	%	\$	Years	Years
2,305	0	0	98	102	(0.3)	0	22.5	22.5

\* Does not qualify for Incentive from the New Jersey SmartStart Program. See section 6.0 for other incentive opportunities

This measure is not recommended due to long payback period.

## 5.2 ECM-2 Install Window A/C Controller

There are approximately ten (10) window air conditioners located throughout the school: the main office room, conference room, principle office and some classrooms. There are eight packaged heating and cooling units that serve the 1996 addition.

This ECM evaluates the installation of programmable “smart” timers that interrupt the electrical supply to the window air conditioners when cooling is not needed due to the room being unoccupied. The timers are configurable to operate as a standalone timer or they can be wirelessly interconnected to provide remote temperature control using software.

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

#### ECM-2 Install Window A/C Controller

Budgetary Cost	Annual Utility Savings				ROI	Potential Incentive*	Payback (without incentive)	Payback (with incentive)
	Electricity		Natural Gas	Total				
\$	kW	kWh	Therms	\$		\$	Years	Years
1,900	0	8,726	0	1,270	9.0	0	1.5	1.5

\* Does not qualify for Incentive from the New Jersey SmartStart Program. See section 6.0 for other incentive opportunities

This measure is recommended.

### 5.3.1 ECM-3A Install Basic Controls

The building uses steam boilers that are currently controlled manually by the building operators. Steam pressure is maintained most of the day with no regard to space temperature. Classrooms are overheated as a result and the teachers open the windows in an attempt to cool the rooms down. Furthermore, no night temperature set-back is implemented, unless the operator remembers to turn the boilers off before their shift ends. This highly inefficient method of operation consumes excessive fuel (natural gas).

A Basic Control (system will provide automatic control of the boiler(s) to produce only enough steam (or hot water) needed to heat the building, based on a single or multiple averaging space thermostats and outdoor air temperatures. This system will not provide for independent room temperature control, but could be expanded in the future to provide this function, if desired using thermostatic radiator control valves. This system could also provide basic boiler and space temperature monitoring, trending and remote notification of boiler failure.

#### ECM-3A Install Basic Controls

Budgetary Cost	Annual Utility Savings				ROI	Potential Incentive*	Payback (without incentive)	Payback (with incentive)
	Electricity		Natural Gas	Total				
\$	kW	kWh	Therms	\$		\$	Years	Years
21,309	0	24,699	1,442	5,094	2.6	0	4.2	4.2

\* Does not qualify for Incentive from the New Jersey SmartStart Program. See section 6.0 for other incentive opportunities.

This measure is recommended.

#### 5.3.2 ECM-3B Install Full DDC Controls

A Full Direct Digital Control (DDC) building automation system consists of automatic control of individual space heating and ventilation equipment, and provides monitoring, trending and alarms which notify an operator when a piece of equipment fails or operates outside a given set-point. This system allows for the implementation of energy efficient strategies, such as: time of day (TOD) optimization, set point optimization, staggered start, night setback, economizer (free cooling), demand control ventilation, exhaust fan TOD optimization, and holiday TOD optimization. It also allows for remote access and control of the building's systems.

Energy savings are seen from temperature reduction during the day and night as well as other controls sequences mentioned above.

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

#### ECM-3B Install Full DDC Controls

Budgetary Cost	Annual Utility Savings				ROI	Potential Incentive*	Payback (without incentive)	Payback (with incentive)
	Electricity		Natural Gas	Total				
\$	kW	kWh	Therms	\$		\$	Years	Years
356,512	0	26,003	3,542	7,467	(0.7)	0	47.7	47.7

\* Does not qualify for Incentive from the New Jersey SmartStart Program. See section 6.0 for other incentive opportunities.

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

## 5.4 ECM-4 Install Low Flow Plumbing Fixtures

The plumbing fixtures in this building are older high flow fixtures. The water savings associated from replacing existing high flow fixtures with low-flow fixtures was calculated by taking the difference of the annual water usage for the proposed and base case. The basis of this calculation is the estimate usage of each fixture, gallons per use, and number of fixtures. Replacing the existing fixtures in the restrooms with 1.28 Gals/flush toilets, 1.0 gal/flush urinals, and 0.5 gpm faucets will conserve water which will result in lower annual water and sewer charges. Facets with low-flow metering valves were not considered for replacement.

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

**ECM-4 Install Low Flow Plumbing Fixtures**

Budgetary Cost	Annual Utility Savings				ROI	Potential Incentive*	Payback (without incentive)	Payback (with incentive)
	Electricity		Natural Gas	Water				
\$	kW	kWh	Therms	kGal	\$	%	Years	Years
231,512	0	0	0	531	4,009	(0.7)	0	57.7

\* Does not qualify for Incentive from the New Jersey SmartStart Program. See section 6.0 for other incentive opportunities

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

## 5.5 ECM-L1 Lighting Replacement / Upgrades

The existing lighting system consists of mostly T8 linear fluorescent fixtures which until recently represented the most efficient lighting technology available. Recent technological improvements in light emitting diode (LED) technologies have driven down the initial costs making it a viable option for installation.

Overall energy consumption can be reduced by replacing inefficient bulbs and linear fluorescent bulbs with more efficient LED technology. To compute the annual savings for this ECM, the energy consumption of the current lighting fixtures was established and compared to the proposed fixture power requirement with the same annual hours of operation. The difference between the existing and proposed annual energy consumption was the energy savings. These calculations are based on 1 to 1 replacements of the fixtures, and do not take into account lumen output requirements for a given space. A more comprehensive engineering study should be performed to determine correct lighting levels.

Supporting calculations, including assumptions for lighting hours and annual energy usage for each fixture, are provided in Appendix C and summarized below:

**ECM-L1 Lighting Replacement / Upgrades**

Budgetary Cost	Annual Utility Savings				ROI	Potential Incentive*	Payback (without incentive)	Payback (with incentive)
	Electricity		Natural Gas	Total				
\$	kW	kWh	Therms	\$	%	\$	Years	Years
152,679	30.1	74,141	0	12,599	0.3	3,750	12.1	11.8

\* LED retrofits must go through the "custom" measures incentive option under New Jersey SmartStart Program. There are no "prescriptive" incentives for LED retrofits. Projects must achieve a minimum of 75,000 kWh annual savings to qualify for "custom" incentives. See section 6.0 for other incentive opportunities

This measure is not recommended in lieu of ECM-L3.

**5.6 ECM-L2 Install Lighting Controls (Occupancy Sensors)**

Presently, all interior lighting fixtures are controlled by wall mounted switches. Review of the comprehensive lighting survey determined that lighting in some areas could benefit from installation of occupancy sensors to turn off lights when they are unoccupied.

This measure recommends installing occupancy sensors for the current lighting system. Using a process similar to that utilized in ECM L1, the energy savings for this measure was calculated by applying the known fixture wattages in the space to the estimated existing and proposed times of operation for each fixture.

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

**ECM-L2 Install Lighting Controls (Occupancy Sensors)**

Budgetary Cost	Annual Utility Savings				ROI	Potential Incentive*	Payback (without incentive)	Payback (with incentive)
	Electricity		Natural Gas	Total				
\$	kW	kWh	Therms	\$	%	\$	Years	Years
22,680	0	24,890	0	3,429	1.4	2,940	6.6	5.8

\* Incentive shown is per the New Jersey SmartStart Program. See section 6.0 for other incentive opportunities.

This measure is not recommended in lieu of ECM-L3.

**5.7 ECM-L3 Lighting Replacements with Controls (Occupancy Sensors)**

This measure is a combination of ECM-L1 and ECM-L2; recommending replace/upgrade the current lighting fixtures to more efficient ones and installing occupancy sensors on the new lights. Interactive effects of the higher efficiency lights and occupancy sensors lead the energy and cost savings for this measure to not be cumulative or equivalent to the sum of replacing the lighting fixtures alone and installing occupancy sensors without the lighting upgrade.

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

**ECM-L3 Lighting Replacements with Controls (Occupancy Sensors)**

Budgetary Cost	Annual Utility Savings				ROI	Potential Incentive*	Payback (without incentive)	Payback (with incentive)
	Electricity		Natural Gas	Total				
\$	kW	kWh	Therms	\$		\$	Years	Years
175,359	30.1	85,492	0	14,163	0.3	6,690	12.4	11.9

\* LED retrofits must go through the “custom” measures incentive option under New Jersey SmartStart Program. There are no “prescriptive” incentives for LED retrofits. Projects must achieve a minimum of 75,000 kWh annual savings to qualify for “custom” incentives. See section 6.0 for other incentive opportunities

This measure is recommended.

## 5.8 Additional O&M Opportunities

This list of operations and maintenance (O&M) - type measures represent low-cost or no-cost opportunities, which if implemented will have a positive impact on the overall building operations, comfort and/or energy consumption. The recommended O&M measures for this building are as follows:

- Turn off the Gym Exhaust Fan Motor
- Perform steam trap replacement survey each year to ensure steam traps are operating as intended
- Install Covers on Window Air Conditioners
- Clean Window AC filters before each season
- Set computers monitors to turn off and computers to sleep mode when not in use
- Look for the ENERGY STAR® label when purchasing Window AC units or Kitchen Appliances
- Disconnect unnecessary or unused small appliances and electronics when not in use to reduce phantom loads
- Train custodians to turn off lights and set HVAC temperatures to minimum levels when rooms are unoccupied
- Develop an Energy Master Plan to measure and track energy performance
- Educate students and staff about how their behavior affects energy use. Create student energy patrols to monitor and inform administration when energy is being wasted.
- During the winter, Custodians should ensure all windows are closed as part of cleaning routine

## **6.0 PROJECT INCENTIVES**

### **6.1 Incentives Overview**

The following sections give detailed information on available incentive programs including New Jersey Smart Start, Direct Install, New Jersey Pay for Performance (P4P) and Energy Savings Improvement Plan (ESIP). If the School District wishes to and is eligible to participate in the Energy Savings Improvement Plan (ESIP) program and/or the Pay for Performance Incentive Program (P4P), it cannot participate in either the Smart Start or Direct Install Programs. Refer to Appendix D for more information on the Smart Start program.

#### **6.1.1 New Jersey Smart Start Program**

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

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

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

Refer to Appendix D for more information on the Smart Start program.

#### **6.1.2 Direct Install Program**

The Direct Install Program applies to smaller facilities that have a peak electrical demand of 200 kW or less in any of the previous 12 months. Buildings must be located in New Jersey and served by one of the state's public, regulated electric utility companies.

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

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

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

a previous energy assessment, such as this energy audit. The incentive is reimbursed to the owner upon successful replacement and payment of the equipment.

The building qualifies for this program because its electrical demand is less than the maximum peak electrical demand of 200 kW for the last 12 month period.

Refer to Appendix D for more information on this program.

### **6.1.3 New Jersey Pay For Performance Program (P4P)**

The Sussex Ave School may be eligible for incentives from the New Jersey Office of Clean Energy. The most significant incentives are available from the New Jersey Pay for Performance (P4P) Program. The P4P program is designed to offset the cost of energy conservation projects for facilities that pay the Societal Benefits Charge (SBC) and whose demand (kW) in any of the preceding 12 months exceeds 100 kW. This demand minimum has been waived for buildings owned by local governments or municipalities and non-profit organizations and *is not applicable to public schools*. Facilities that meet this criterion must also achieve a minimum performance target of 15% energy reduction by using the EPA Portfolio Manager benchmarking tool before and after implementation of the measure(s). Additionally, the overall return on investment (ROI) must exceed 10%. If the participant is a municipal electric company customer, and a customer of a regulated gas New Jersey Utility, only gas measures will be eligible under the Program. Available incentives are as follows:

Incentive #1: Energy Reduction Plan – This incentive is designed to offset the cost of services associated with the development of the Energy Reduction Plan (ERP). The ERP must include a detailed energy audit of the desired ECMs, energy savings calculations (using building modeling software) and inputting of all utility bills into the EPA Portfolio Manager website.

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

The standard incentive pays \$0.10 per square foot, up to a maximum of \$50,000, not to exceed 50% of facility annual energy cost, paid after approval of application. For building audits funded by the New Jersey Board of Public Utilities, which receive an initial 75% incentive toward performance of the energy audit, facilities are only eligible for an additional \$0.05 per square foot, up to a maximum of \$25,000, rather than the standard incentive noted above. The ERP must be completed by a Certified Energy Manager (CEM) and submitted along with the project application.

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

#### Electric

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

#### Gas

- Base incentive based on 15% savings: \$0.90/ per projected Therm saved.

- For each % over 15% add: \$0.05 per projected Therm saved.
- Maximum incentive: \$1.25 per projected Therm saved.

Incentive cap: 25% of total project cost

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

#### Electric

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

#### Gas

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

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

For the purpose of demonstrating the eligibility of the ECM's to meet the minimum savings requirement of 15% annual savings and 10% ROI for the Pay for Performance Program, all ECM's identified in this report have been included in the incentive calculations. The results for the building are shown in Appendix C, along with more detailed program information provided in Appendix D.

### **6.1.4 Energy Savings Improvement Plan**

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

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

For local governments interested in pursuing an ESIP, the first step is to perform an energy audit. Pursuing a Local Government Energy Audit through New Jersey's Clean Energy Program is a valuable first step to the ESIP approach. The “Local Finance Notice” outlines how local governments can develop and implement an ESIP for their facilities. The ESIP can be



prepared internally if the entity has qualified staff. If not, the ESIP must be implemented by an independent contractor and not by the energy savings company producing the Energy Reduction Plan.

The ESIP approach may not be appropriate for all energy conservation and energy efficiency improvements. Local units should carefully consider all alternatives to develop an approach that best meets their needs. Refer to Appendix D for more information on this program.

#### **6.1.5 Renewable Energy Incentive Program**

The Renewable Energy Incentive Program (REIP) is part of New Jersey's efforts to reach its Energy Master Plan goals of striving to use 30 percent of electricity from renewable sources by 2020.

Incentives for sustainable bio-power projects and for energy storage projects are currently under development, with competitive solicitations for each of those technologies expected to begin in the first quarter of 2014. The wind program is currently on hold.

New solar projects are no longer eligible for REIP incentives, but can register for Solar Renewable Energy Certificates (SRECs) through the SREC Registration Program (SRP).

## 7.0 ALTERNATIVE ENERGY SCREENING EVALUATION

### 7.1 Solar

#### 7.1.1 Photovoltaic Rooftop Solar Power Generation

The 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 amount of available roof area determines how large of a solar array can be installed on any given roof. The table below summarizes the approximate roof area available on the building and the associated solar array size that can be installed.

Available Roof Area (Ft <sup>2</sup> )	Potential PV Array Size (kW)
23,286	180

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

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. Payments that will be received by the PV producer (school) will change from year to year dependent upon supply and demand. There is no definitive way to calculate an exact price that will be received by the PV producer for SREC credits over the next 15 years. Renewable Energy Consultants estimates an average of \$155/SREC for 2013 and this number was utilized in the cash flow for this report.

The system costs for PV installations were derived from recent solar contractor budgetary pricing in the state of New Jersey and include the total cost of the system installation (PV panels, inverters, wiring, ballast, controls). The cost of installation is currently about \$4.00 per watt or \$4,000 per kW of installed system, for a typical 100 kW system. There are other considerations that have not been included in this pricing, such as the condition of the roof and need for structural reinforcement. Photovoltaic systems can be ground mounted if the roof is not suitable, however, this installation requires a substantial amount of open property (not wooded) and underground wiring, which adds more cost. 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 most likely need to be replaced during the useful life of the PV system.

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

#### Photovoltaic (PV) Rooftop Solar Power Generation – 180 kW System

Budgetary Cost	Annual Utility Savings			Total Savings	New Jersey Renewable SREC	Payback (without incentive)	Payback (with incentives)	Recommended
	Electricity		Natural Gas					
\$	kW	kWh	Therms	\$	\$	Years	Years	
\$720,000	180.0	234,600	0	\$35,098	\$36,363	20.5	10.1	

**Note:** CHA typically recommends a more detailed evaluation be conducted for the installation of PV Solar arrays when the screening evaluation shows a payback of less than 20 years. Therefore, this ECM is recommended for further study. Before implementation is pursued, the school district should consult with a certified solar PV contractor.

#### 7.1.2 Solar Thermal Hot Water Generation

Active solar thermal systems use solar collectors to gather the sun's energy to heat a fluid. An absorber in the collector (usually black colored piping) converts the sun's energy into heat. The heat is transferred to circulating water, antifreeze, or air for immediate use or is storage for later utilization. Applications for active solar thermal energy include supplementing domestic hot water, heating swimming pools, space heating or preheating air in residential and commercial buildings.

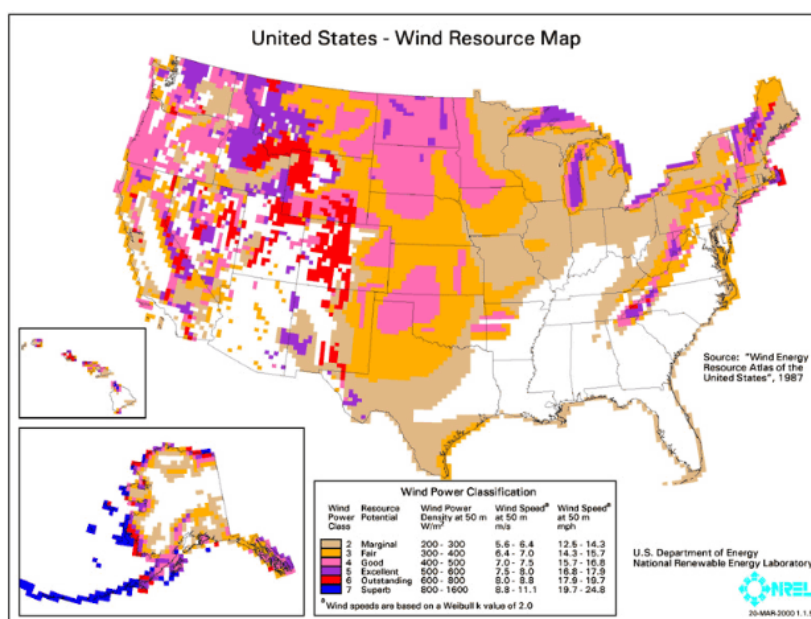
A standard solar hot water system is typically composed of solar collectors, heat storage vessel, piping, circulators, and controls. Systems are typically integrated to work alongside a conventional heating system that provides heat when solar resources are not sufficient. The solar collectors are usually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

Several options exist for using active solar thermal systems for space heating. The most common method is called a passive solar hot water system involves using glazed collectors to heat a liquid held in a storage tank (similar to an active solar hot water system described above which requires pumping). The most practical system would transfer the heat from the panels to thermal storage tanks and then use the pre-heated water for domestic hot water production. DHW is presently produced by natural gas fired water heaters and, therefore, this measure would offer natural gas utility savings. Unfortunately, the amount of domestic hot water that is currently used by this school is very small. Installing a solar domestic hot water system is not recommended due to the limited amount of domestic hot water presently consumed by the school.

This measure is not recommended due to the small usage of domestic hot water and long payback period.

## 7.1 Wind Powered Turbines

Wind power is the conversion of kinetic energy from wind into mechanical power that is used to drive a generator which creates electricity by means of a wind turbine. A wind turbine consists of rotor and blades connected to a gearbox and generator that are mounted onto a tower. Newer wind turbines also use advanced technology to generate electricity at a variety of frequencies depending on the wind speed, convert it to DC and then back to AC before sending it to the grid. Wind turbines range from 50 – 750 kW for utility scale turbines down to below 50 kW for residential use. On a scale of 1 (the lowest) to 7 (the highest), Class 3 and above (wind speeds of 13 mph or greater) are generally considered “good wind resource” according to the Wind Energy Development Programmatic EIS Information Center hosted by the Bureau of Land Management. According to the map below, published by NREL, Newark, NJ is classified as Class 1 at 50m, meaning the city would not be a good candidate for wind power.



This measure is not recommended due to the location of the school.

## 7.2 Combined Heat and Power Plant

Combined heat and power (CHP), 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 building has sufficient need for electrical generation and the ability to use most of the thermal byproduct during the winter; however thermal usage during the summer months does not exist. Thermal energy produced by the CHP plant in the warmer months will be wasted. An absorption chiller could be installed to utilize the heat to produce chilled water; however, there is no chilled water distribution system in the building. CHP is not recommended due to the building's limited summer thermal demand.

This measure is not recommended due to the lack of year round thermal load that is required for a CHP system to be operating cost effectively.

### **7.3 Demand Response Curtailment**

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

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

A pre-approved CSP will require a minimum of 100 kW of load reduction to participate in any curtailment program. From January 2013 through December 2013 the following table summarizes the electricity load profile for the building.

**Building Electric Load Profile**

Peak Demand kW	Min Demand kW	Avg Demand kW	Onsite Generation Y/N	Eligible? Y/N
148	90	120	Y	N

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

## 8.0 CONCLUSIONS & RECOMMENDATIONS

The LGEA energy audit conducted by CHA for the building identified potential annual savings of \$20,527/yr with an overall payback of 9.7 years, if the recommended ECMs are implemented.

The potential annual energy and cost savings are shown in the following table.

<b>Electric Savings (kWh)</b>	<b>Natural Gas Savings (therms)</b>	<b>Total Savings (\$)</b>	<b>Payback (years)</b>
118,918	1,442	20,527	9.7

The following projects should be considered for implementation:

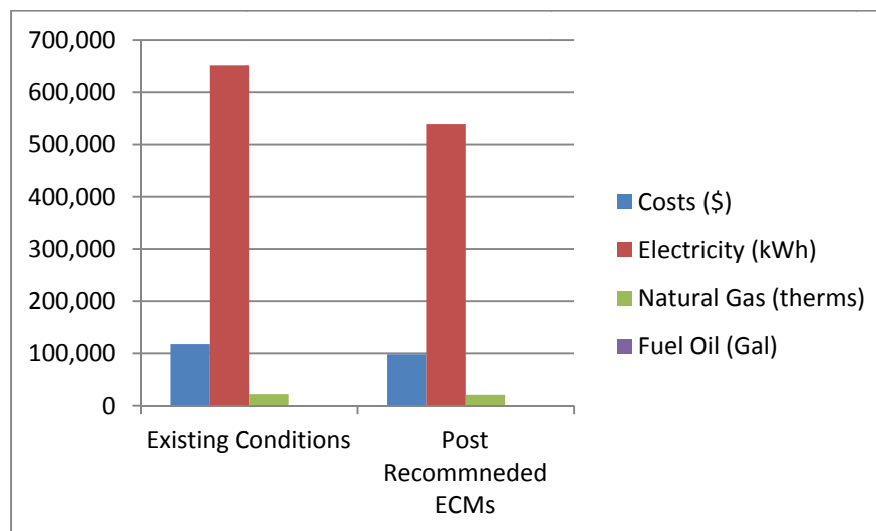
- Install Window A/C Controller
- Install Basic Controls
- Lighting Replacements with Controls

The following alternative energy measures are also recommended for further study:

- Photovoltaic (PV) Rooftop Solar Power Generation – 180 kW System

If NPS implements the recommended ECMs, energy savings would be as follows:

	<b>Existing Conditions</b>	<b>Post Recommended ECMs</b>	<b>Percent Savings</b>
Costs (\$)	117,797	97,270	17%
Electricity (kWh)	651,678	532,760	18%
Natural Gas (therms)	22,100	20,658	7%
Site EUI (kbtu/SF/Yr)	68.5	60.0	



## **APPENDIX A**

### **Utility Usage Analysis and Alternate Utility Suppliers**

Sussex Avenue - Electric Usage-(1)

Start Date	End Date	kWh	Demand Usage (KW)	Total Charge	Supply Charge	Delivery Charge	Demand Charge	Consumption (\$)	Blended Rate (\$/kWh)	Consumption Rate (\$/kWh)	Demand Rate (\$/kW)
1/5/2012	2/2/2012	64198	140	10,850.00	0	2,724.04	488.13	10361.87	\$ 0.17	\$ 0.16	\$ 3.49
2/3/2012	3/5/2012	68476	134	11,570.00	0	2,844.60	467.2	11102.8	\$ 0.17	\$ 0.16	\$ 3.49
3/6/2012	4/3/2012	48877	140	8,260.00	0	2,286.52	488.12	7771.88	\$ 0.17	\$ 0.16	\$ 3.49
4/4/2012	5/3/2012	43527	122	7,355.00	0	2,133.26	425.37	6929.63	\$ 0.17	\$ 0.16	\$ 3.49
5/4/2012	6/4/2012	46657	126	7,885.00	0	3,264.77	439.31	7445.69	\$ 0.17	\$ 0.16	\$ 3.49
6/5/2012	7/3/2012	43060	122	7,753.36	4,139.79	3,188.20	425.37	7327.99	\$ 0.18	\$ 0.17	\$ 3.49
7/4/2012	8/2/2012	47603	98	7,957.66	4,485.99	3,129.44	341.69	7615.97	\$ 0.17	\$ 0.16	\$ 3.49
8/3/2012	8/31/2012	44130	88	7,372.49	4,117.16	2,948.51	306.82	7065.67	\$ 0.17	\$ 0.16	\$ 3.49
9/1/2012	10/2/2012	50932	120	7,461.66	4,615.63	2,427.64	418.39	7043.27	\$ 0.15	\$ 0.14	\$ 3.49
10/3/2012	12/3/2012	106677	132	15,157.02	9,352.37	4,974.84	829.81	14327.21	\$ 0.14	\$ 0.13	\$ 6.29
12/4/2012	1/3/2013	63312	132	8,596.78	5,347.94	2,787.87	460.97	8135.81	\$ 0.14	\$ 0.13	\$ 3.49
1/4/2013	2/1/2013	68218	134	9,146.65	5,672.06	2,999.64	474.95	8671.7	\$ 0.13	\$ 0.13	\$ 3.54
2/2/2013	3/5/2013	76082	140	9,855.47	6,266.80	3,092.45	496.22	9359.25	\$ 0.13	\$ 0.12	\$ 3.54
3/6/2013	4/4/2013	63270	130	8,681.79	5,502.11	2,718.91	460.77	8221.02	\$ 0.14	\$ 0.13	\$ 3.54
4/5/2013	5/3/2013	45333	120	7,033.46	4,404.19	2,203.94	425.33	6608.13	\$ 0.16	\$ 0.15	\$ 3.54
5/4/2013	6/4/2013	45857	112	8,061.25	4,490.25	2,229.63	1,341.37	6719.88	\$ 0.18	\$ 0.15	\$ 11.98
6/4/2013	7/3/2013	43600	116	7,479.32	4,400.01	1,690.04	1,389.27	6090.05	\$ 0.17	\$ 0.14	\$ 11.98
7/4/2013	8/2/2013	45403	92	7,651.63	4,258.13	3,067.42	326.08	7325.55	\$ 0.17	\$ 0.16	\$ 3.54
8/2/2013	9/3/2013	36200	90	5,813.51	3,268.86	1,466.76	1,077.89	4735.62	\$ 0.16	\$ 0.13	\$ 11.98
9/4/2013	10/2/2013	42506	116	6,465.65	3,838.29	2,216.20	411.16	6054.49	\$ 0.15	\$ 0.14	\$ 3.54
10/3/2013	10/31/2013	43582	112	5,979.95	3,323.04	2,259.94	396.97	5582.98	\$ 0.14	\$ 0.13	\$ 3.54
11/1/2013	12/3/2013	66095	128	8,614.52	5,201.28	2,959.56	453.68	8160.84	\$ 0.13	\$ 0.12	\$ 3.54
12/4/2013	1/3/2014	69112	148	9,053.96	5,490.24	3,039.15	524.57	8529.39	\$ 0.13	\$ 0.12	\$ 3.54

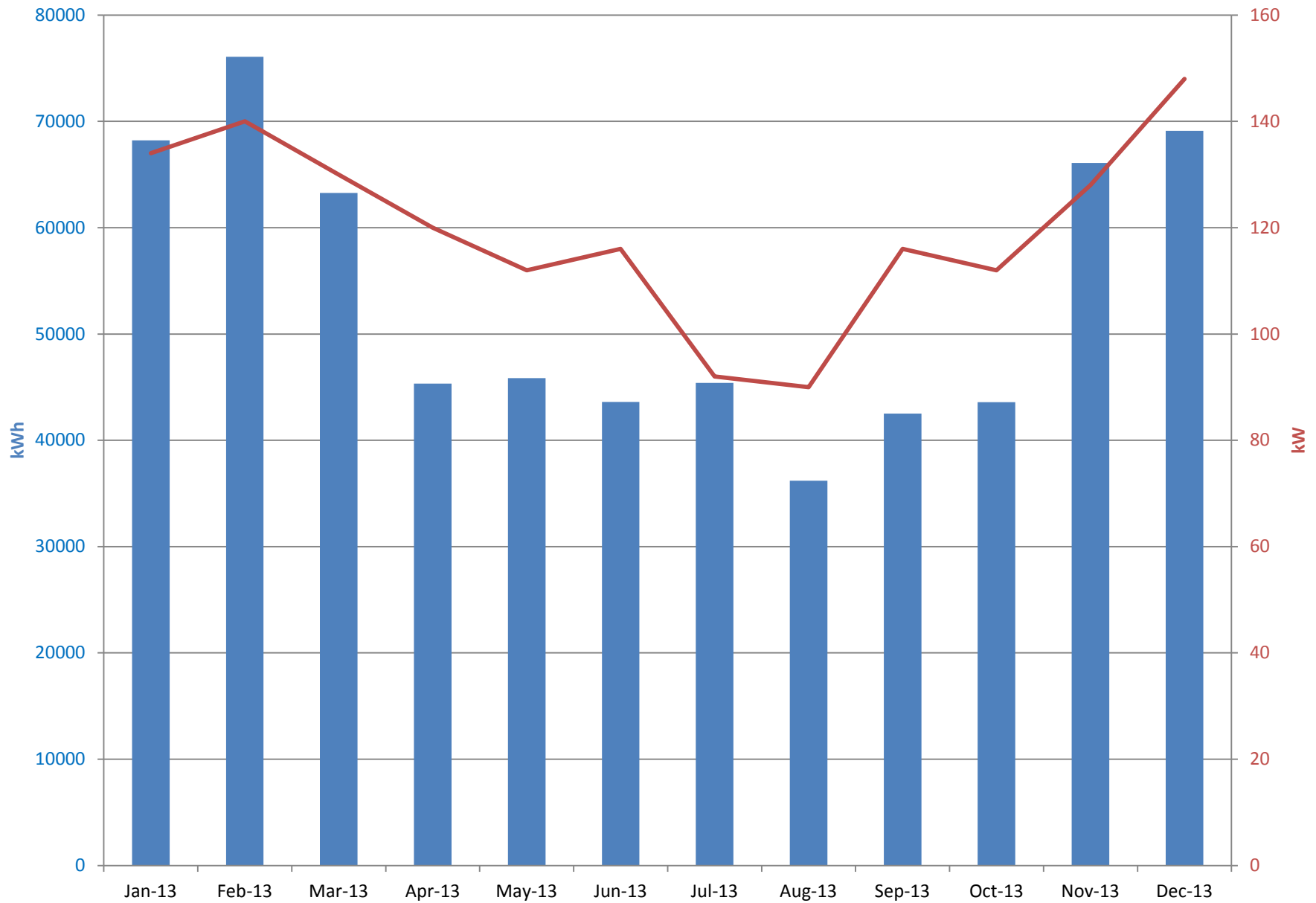
Sussex Avenue	Start Date	End Date	Months
307 Sussex Ave., 07107	1/5/2012	1/3/2014	23
Account Number 2147483647			
Meter Number 778009455			

ELECTRIC USAGE - MOST RECENT 12 MONTHS, PERIOD ENDING: 10/31/2013

Total Usage	645,258	kwh
Total Charges	\$93,837	
Blended Rate	\$0.15	\$/kWh
Consumption Rate	\$0.13	\$/kWh
Demand Rate	\$5.41	\$/kW
Max Demand	148	kW
Min Demand	90.0	kW
Avg Demand	120	kW



## Sussex Avenue - Electric Usage - Meter No.: 778009455



Sussex Avenue - Electric Usage-(2)

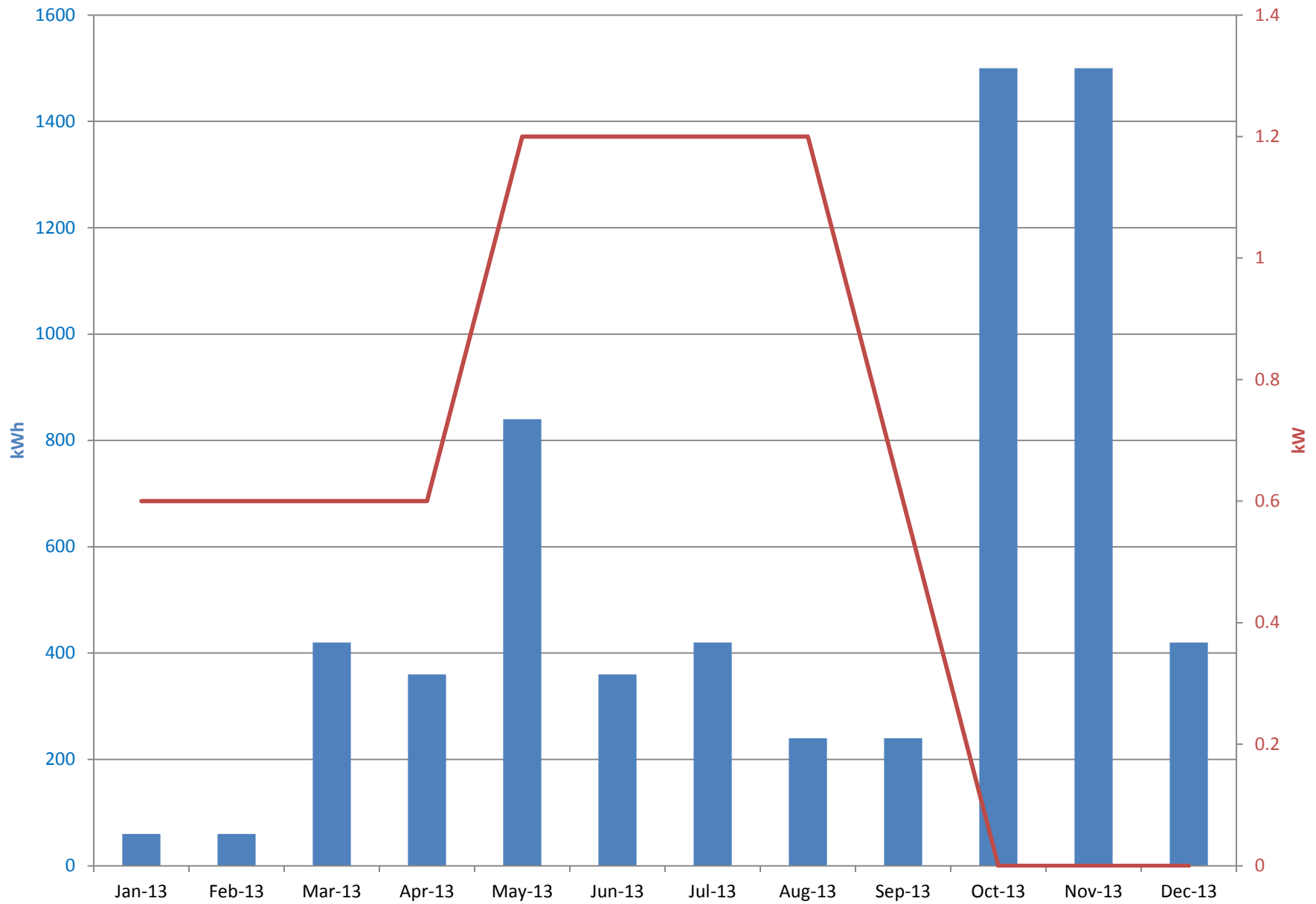
Start Date	End Date	kWh	Demand Usage (KW)	Total Charge	Supply Charge	Delivery Charge	Demand Charge	Consumption (\$)	Blended Rate (\$/kWh)	Consumption Rate (\$/kWh)	Demand Rate (\$/kW)
1/5/2012	2/2/2012	60	3.6	46.58	25.03	6.3	15.25	31.33	\$ 0.78	\$ 0.52	\$ 4.24
2/3/2012	3/5/2012	120	0.6	40.77	30.01	8.22	2.54	38.23	\$ 0.34	\$ 0.32	\$ 4.23
3/6/2012	5/3/2012	240	4.8	98.51	59.18	16.45	22.88	75.63	\$ 0.41	\$ 0.32	\$ 4.77
5/4/2012	6/4/2012	420	0.6	79.38	51.56	25.28	2.54	76.84	\$ 0.19	\$ 0.18	\$ 4.23
6/5/2012	7/3/2012	360	1.2	69.4	36.08	28.24	5.08	64.32	\$ 0.19	\$ 0.18	\$ 4.23
7/4/2012	8/2/2012	420	1.2	77.18	41.45	30.65	5.08	72.1	\$ 0.18	\$ 0.17	\$ 4.23
8/3/2012	8/30/2012	180	1.2	49.05	22.93	21.04	5.08	43.97	\$ 0.27	\$ 0.24	\$ 4.23
8/31/2012	12/3/2012	1260	0.6	181.72	118.95	55.15	7.62	174.1	\$ 0.14	\$ 0.14	\$ 12.70
12/4/2012	1/3/2013	540	0.6	72.9	47.97	22.38	2.55	70.35	\$ 0.14	\$ 0.13	\$ 4.25
1/4/2013	2/5/2013	60	0.6	25.46	14.13	6.19	5.14	20.32	\$ 0.21	\$ 0.17	\$ 4.28
2/6/2013	3/5/2013	60	0.6	25.46	14.13	6.19	5.14	20.32	\$ 0.21	\$ 0.17	\$ 4.28
3/6/2013	4/4/2013	420	0.6	60.59	40.3	17.72	2.57	58.02	\$ 0.14	\$ 0.14	\$ 4.28
4/5/2013	5/3/2013	360	0.6	55.07	36.71	15.79	2.57	52.5	\$ 0.15	\$ 0.15	\$ 4.28
5/4/2013	6/5/2013	840	1.2	124.24	72.56	37.01	14.67	109.57	\$ 0.15	\$ 0.13	\$ 12.23
6/6/2013	7/3/2013	360	1.2	69.3	35.76	28.4	5.14	64.16	\$ 0.19	\$ 0.18	\$ 4.28
7/4/2013	8/2/2013	420	1.2	75.47	39.5	30.83	5.14	70.33	\$ 0.18	\$ 0.17	\$ 4.28
8/3/2013	9/3/2013	240	1.2	50.35	21.67	23.54	5.14	45.21	\$ 0.21	\$ 0.19	\$ 4.28
9/4/2013	10/2/2013	240	0.6	36.69	21.67	12.45	2.57	34.12	\$ 0.15	\$ 0.14	\$ 4.28
10/3/2013	11/1/2013	1500	0	196.07	135.45	55.48	5.14	190.93	\$ 0.07	\$ 0.06	#DIV/0!
11/2/2013	12/1/2013	1500	0	196.07	135.45	55.48	5.14	190.93	\$ 0.07	\$ 0.06	#DIV/0!
12/2/2013	1/2/2014	420	0	59	37.93	18.5	2.57	56.43	\$ 0.14	\$ 0.13	#DIV/0!

Sussex Avenue	Start Date	End Date	Months
307 Sussex Ave., 07107	1/5/2012	1/2/2014	23
Account Number 2147483647			
Meter Number 1265223			

ELECTRIC USAGE - MOST RECENT 12 MONTHS, PERIOD ENDING: 1/2/2014

Total Usage	6,420	kwh
Total Charges	\$974	
Blended Rate	\$0.15	\$/kWh
Consumption Rate	\$0.14	\$/kWh
Demand Rate	\$7.81	\$/kW
Max Demand	1.2	kW
Min Demand	0.0	kW
Avg Demand	0.7	kW

## Sussex Avenue - Electric Usage - Meter No.: 778009455



## Sussex Avenue - Natural Gas Usage

Index No	Current Name	Acct	Meter	Start Date	End Date	Therms	Total Charge	\$/therm
72	Sussex Avenue	4200782103	2413156	1/5/2012	2/2/2012	6,107.56	5,605.82	0.92
72	Sussex Avenue	4200782103	2413156	2/3/2012	3/5/2012	7,093.90	5,982.70	0.84
72	Sussex Avenue	4200782103	2413156	3/6/2012	4/3/2012	1,765.22	1,187.54	0.67
72	Sussex Avenue	4200782103	2413156	4/4/2012	5/3/2012	1,832.01	1,182.62	0.65
72	Sussex Avenue	4200782103	2413156	5/4/2012	6/4/2012	154.86	192.62	1.24
72	Sussex Avenue	4200782103	2413156	6/5/2012	7/3/2012	1.07	100.22	93.66
72	Sussex Avenue	4200782103	2413156	7/4/2012	8/2/2012	3.22	101.71	31.59
72	Sussex Avenue	4200782103	2413156	8/3/2012	8/30/2012	2.14	101.02	47.21
72	Sussex Avenue	4200782103	2413156	8/31/2012	10/1/2012	25.73	116.59	4.53
72	Sussex Avenue	4200782103	2413156	10/2/2012	11/2/2012	182.24	1,073.37	5.89
72	Sussex Avenue	4200782103	2413156	11/3/2012	12/3/2012	4,909.45	5,070.61	1.03
72	Sussex Avenue	4200782103	2413156	12/4/2012	1/3/2013	2,005.51	2,651.77	1.32
72	Sussex Avenue	4200782103	2413156	1/4/2013	2/1/2013	4,675.59	4,731.27	1.01
72	Sussex Avenue	4200782103	2413156	2/2/2013	3/5/2013	5,737.94	5,466.47	0.95
72	Sussex Avenue	4200782103	2413156	3/6/2013	4/4/2013	4,076.30	2,984.11	0.73
72	Sussex Avenue	4200782103	2413156	4/5/2013	5/3/2013	476.5	471.38	0.99
72	Sussex Avenue	4200782103	2413156	5/4/2013	6/5/2013	3.23	106.8	33.07
72	Sussex Avenue	4200782103	2413156	6/6/2013	7/3/2013	2.16	105.9	49.03
72	Sussex Avenue	4200782103	2413156	7/4/2013	8/2/2013	3.26	106.62	32.71
72	Sussex Avenue	4200782103	2413156	9/4/2013	10/1/2013	0	0	#DIV/0!
72	Sussex Avenue	4200782103	2413156	10/2/2013	10/31/2013	0	0	#DIV/0!
72	Sussex Avenue	4200782103	2413156	11/1/2013	12/3/2013	0	0	#DIV/0!
72	Sussex Avenue	4200782103	2413156	12/4/2013	1/3/2014	2,009.35	3,301.15	1.64

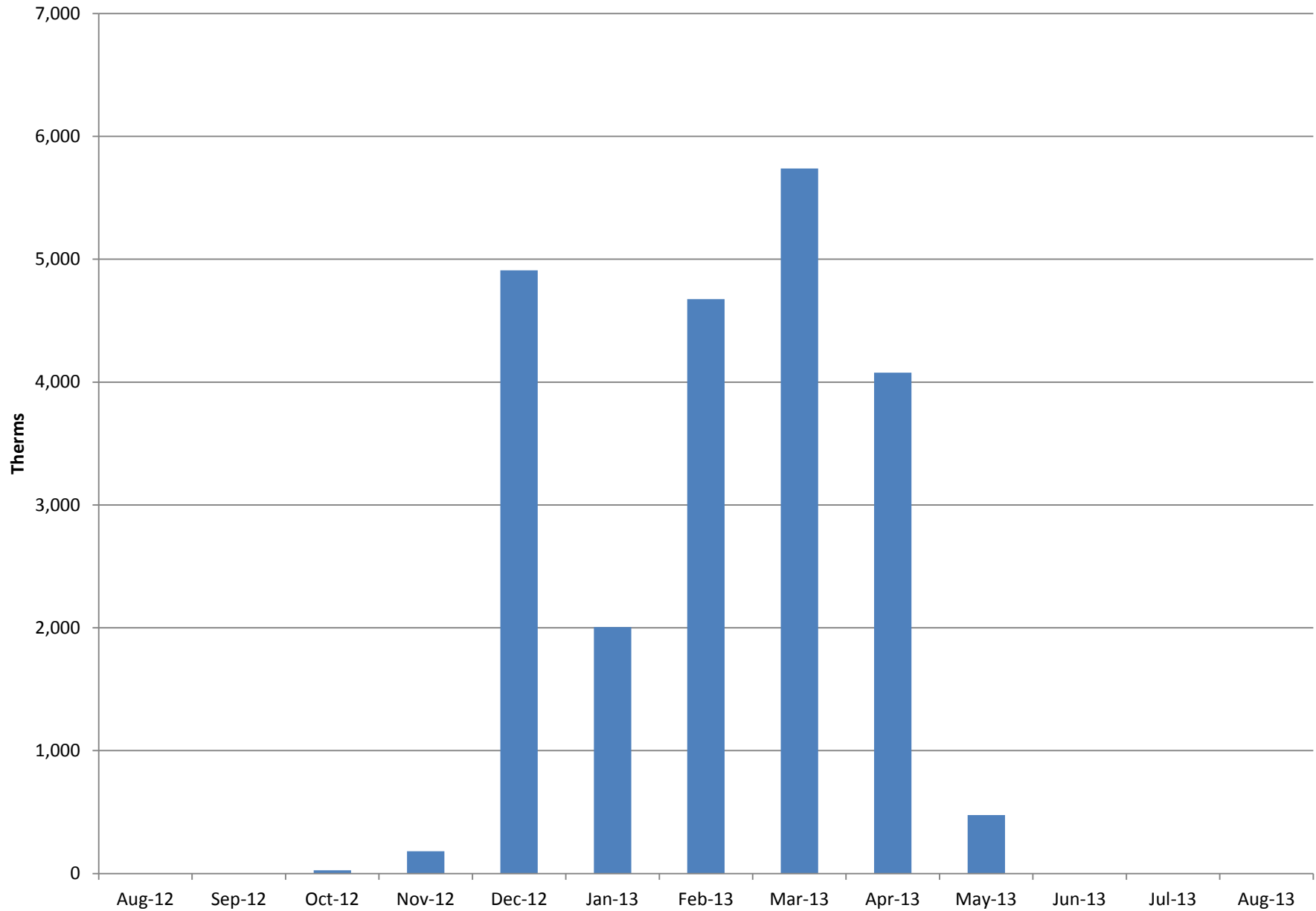
Sussex Avenue		Start Date	End Date	# Months
Account Number	4200782103	1/5/2012	1/3/2014	23
Meter Number	2413156			

### NATURAL GAS USAGE - MOST RECENT 12 MONTHS, PERIOD ENDING:

8/2/2013

Annual Usage	22,100	Therms
Annual Cost	\$22,986	
Rate	\$1.04	\$/Therm

### Sussex Avenue - Natural Gas Usage - Meter No.: 2413156



**PSE&G ELECTRIC SERVICE TERRITORY**  
**Last Updated: 10/24/12**

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

<b>Supplier</b>	<b>Telephone &amp; Web Site</b>	<b>*Customer Class</b>
<b>AEP Energy, Inc.</b> 309 Fellowship Road, Fl. 2 Mount Laurel, NJ 08054	(866) 258-3782 <a href="http://www.aepenergy.com">www.aepenergy.com</a>	<b>C/I</b>  <b>ACTIVE</b>
<b>Alpha Gas and Electric, LLC</b> 641 5 <sup>th</sup> Street Lakewood, NJ 08701	(855) 553-6374 <a href="http://www.alphagasandelectric.com">www.alphagasandelectric.com</a>	<b>R/C</b>  <b>ACTIVE</b>
<b>Ambit Northeast, LLC</b> 103 Carnegie Center Suite 300 Princeton, NJ 08540	(877)-30-AMBIT (877) 302-6248 <a href="http://www.ambitenergy.com">www.ambitenergy.com</a>	<b>R/C</b>  <b>ACTIVE</b>
<b>American Powernet Management, LP</b> 437 North Grove St. Berlin, NJ 08009	(877) 977-2636 <a href="http://www.americanpowernet.com">www.americanpowernet.com</a>	<b>C</b>  <b>ACTIVE</b>
<b>Amerigreen Energy, Inc.</b> 1463 Lamberton Road Trenton, NJ 08611	888-423-8357 <a href="http://www.amerigreen.com">www.amerigreen.com</a>	<b>R/C</b>  <b>ACTIVE</b>
<b>AP Gas &amp; Electric, LLC</b> 10 North Park Place, Suite 420 Morristown, NJ 07960	(855) 544-4895 <a href="http://www.apge.com">www.apge.com</a>	<b>R/C/I</b>  <b>ACTIVE</b>
<b>Astral Energy LLC</b> 16 Tyson Place Bergenfield, NJ 07621	(201) 384-5552 <a href="http://www.astralenergylc.com">www.astralenergylc.com</a>	<b>R/C/I</b>  <b>ACTIVE</b>
<b>Barclays Capital Services, Inc.</b> 70 Hudson Street Jersey City, NJ 07302-4585	(888) 978-9974 <a href="http://www.group.barclays.com">www.group.barclays.com</a>	<b>C</b>  <b>ACTIVE</b>
<b>BBPC, LLC d/b/a Great Eastern Energy</b> 116 Village Blvd. Suite 200 Princeton, NJ 08540	(888) 651-4121 <a href="http://www.greateasternenergy.com">www.greateasternenergy.com</a>	<b>C/I</b>  <b>ACTIVE</b>
<b>Champion Energy Services, LLC</b> 72 Avenue L Newark, NJ 07105	(877) 653-5090 <a href="http://www.championenergyservices.com">www.championenergyservices.com</a>	<b>R/C/I</b>  <b>ACTIVE</b>

<b>Choice Energy, LLC</b> 4257 US Highway 9, Suite 6C Freehold, NJ 07728	888-565-4490  <a href="http://www.4choiceenergy.com">www.4choiceenergy.com</a>	<b>R/C</b>  <b>ACTIVE</b>
<b>Clearview Electric, Inc.</b> 505 Park Drive Woodbury, NJ 08096	(888) CLR-VIEW (800) 746-4702 <a href="http://www.clearviewenergy.com">www.clearviewenergy.com</a>	<b>R/C/I</b>  <b>ACTIVE</b>
<b>Commerce Energy, Inc.</b> 7 Cedar Terrace Ramsey, NJ 07446	1-866-587-8674  <a href="http://www.commerceenergy.com">www.commerceenergy.com</a>	<b>R</b>  <b>ACTIVE</b>
<b>ConEdison Solutions</b> Cherry Tree Corporate Center 535 State Highway Suite 180 Cherry Hill, NJ 08002	(888) 665-0955  <a href="http://www.conedsolutions.com">www.conedsolutions.com</a>	<b>C/I</b>  <b>ACTIVE</b>
<b>Constellation NewEnergy, Inc.</b> 900A Lake Street, Suite 2 Ramsey, NJ 07446	(866) 237-7693  <a href="http://www.constellation.com">www.constellation.com</a>	<b>R/C/I</b>  <b>ACTIVE</b>
<b>Constellation Energy</b> 900A Lake Street, Suite 2 Ramsey, NJ 07446	(877) 997-9995  <a href="http://www.constellation.com">www.constellation.com</a>	<b>R</b>  <b>ACTIVE</b>
<b>Credit Suisse, (USA) Inc.</b> 700 College Road East Princeton, NJ 08450	(212) 538-3124  <a href="http://www.creditsuisse.com">www.creditsuisse.com</a>	<b>C</b>  <b>ACTIVE</b>
<b>Direct Energy Business, LLC</b> 120 Wood Avenue, Suite 611 Iselin, NJ 08830	(888) 925-9115  <a href="http://www.directenergybusiness.com">www.directenergybusiness.com</a>	<b>C/I</b>  <b>ACTIVE</b>
<b>Direct Energy Services, LLC</b> 120 Wood Avenue, Suite 611 Iselin, NJ 08830	(866) 348-4193  <a href="http://www.directenergy.com">www.directenergy.com</a>	<b>R</b>  <b>ACTIVE</b>
<b>Discount Energy Group, LLC</b> 811 Church Road, Suite 149 Cherry Hill, New Jersey 08002	(800) 282-3331  <a href="http://www.discountenergygroup.com">www.discountenergygroup.com</a>	<b>R/C</b>  <b>ACTIVE</b>
<b>Dominion Retail, Inc.</b> <b>d/b/a Dominion Energy Solutions</b> 395 Route #70 West Suite 125 Lakewood, NJ 08701	(866) 275-4240  <a href="http://www.dom.com/products">www.dom.com/products</a>	<b>R/C</b>  <b>ACTIVE</b>

<b>DTE Energy Supply, Inc.</b> One Gateway Center, Suite 2600 Newark, NJ 07102	(877) 332-2450  <a href="http://www.dtesupply.com">www.dtesupply.com</a>	<b>C/I</b>  <b>ACTIVE</b>
<b>Energy.me Midwest LLC</b> 90 Washington Blvd Bedminster, NJ 07921	(855) 243-7270  <a href="http://www.energy.me">www.energy.me</a>	<b>R/C/I</b>  <b>ACTIVE</b>
<b>Energy Plus Holdings LLC</b> 309 Fellowship Road East Gate Center, Suite 200 Mt. Laurel, NJ 08054	(877) 866-9193  <a href="http://www.energypluscompany.com">www.energypluscompany.com</a>	<b>R/C</b>  <b>ACTIVE</b>
<b>Ethical Electric Benefit Co. d/b/a Ethical Electric</b> 100 Overlook Center, 2 <sup>nd</sup> Fl. Princeton, NJ 08540	(888) 444-9452  <a href="http://www.ethicalelectric.com">www.ethicalelectric.com</a>	<b>R/C</b>  <b>ACTIVE</b>
<b>FirstEnergy Solutions</b> 300 Madison Avenue Morristown, NJ 07962	(800) 977-0500  <a href="http://www.fes.com">www.fes.com</a>	<b>C/I</b>  <b>ACTIVE</b>
<b>Gateway Energy Services Corp.</b> 44 Whispering Pines Lane Lakewood, NJ 08701	(800) 805-8586  <a href="http://www.gesc.com">www.gesc.com</a>	<b>R/C/I</b>  <b>ACTIVE</b>
<b>GDF SUEZ Energy Resources NA, Inc.</b> 333 Thornall Street Sixth Floor Edison, NJ 08837	(866) 999-8374  <a href="http://www.gdfsuezenergyresources.com">www.gdfsuezenergyresources.com</a>	<b>C/I</b>  <b>ACTIVE</b>
<b>Glacial Energy of New Jersey, Inc.</b> 75 Route 15 Building E Lafayette, NJ 07848	(888) 452-2425  <a href="http://www.glacialenergy.com">www.glacialenergy.com</a>	<b>C/I</b>  <b>ACTIVE</b>
<b>Global Energy Marketing LLC</b> 129 Wentz Avenue Springfield, NJ 07081	(800) 542-0778  <a href="http://www.globalp.com">www.globalp.com</a>	<b>C/I</b>  <b>ACTIVE</b>
<b>Green Mountain Energy Company</b> 211 Carnegie Center Drive Princeton, NJ 08540	(866) 767-5818  <a href="http://www.greenmountain.com/commercial-home">www.greenmountain.com/commercial-home</a>	<b>C/I</b>  <b>ACTIVE</b>



<b>Hess Corporation</b> 1 Hess Plaza Woodbridge, NJ 07095	(800) 437-7872  <a href="http://www.hess.com">www.hess.com</a>	<b>C/I</b>  <b>ACTIVE</b>
<b>HIKO Energy, LLC</b> 655 Suffern Road Teaneck, NJ 07666	(888) 264-4908  <a href="http://www.hikoenergy.com">www.hikoenergy.com</a>	<b>R/C</b>  <b>ACTIVE</b>
<b>HOP Energy, LLC d/b/a Metro Energy, HOP Fleet Fueling, HOP Energy Fleet Fueling</b> 1011 Hudson Avenue Ridgefield, NJ 07657	(877) 390-7155  <a href="http://www.hopenergy.com">www.hopenergy.com</a>	<b>R/C/I</b>  <b>ACTIVE</b>
<b>Hudson Energy Services, LLC</b> 7 Cedar Street Ramsey, New Jersey 07446	(877) Hudson 9  <a href="http://www.hudsonenergyservices.com">www.hudsonenergyservices.com</a>	<b>C</b>  <b>ACTIVE</b>
<b>IDT Energy, Inc.</b> 550 Broad Street Newark, NJ 07102	(877) 887-6866  <a href="http://www.idtenergy.com">www.idtenergy.com</a>	<b>R/C</b>  <b>ACTIVE</b>
<b>Independence Energy Group, LLC</b> 3711 Market Street, 10 <sup>th</sup> Fl. Philadelphia, PA 19104	(877) 235-6708  <a href="http://www.chooseindependence.com">www.chooseindependence.com</a>	<b>R/C</b>  <b>ACTIVE</b>
<b>Integrus Energy Services, Inc.</b> 99 Wood Ave, South, Suite 802 Iselin, NJ 08830	(877) 763-9977  <a href="http://www.integrusenergy.com">www.integrusenergy.com</a>	<b>C/I</b>  <b>ACTIVE</b>
<b>Keil &amp; Sons, Inc. d/b/a Systrum Energy</b> 1 Bergen Blvd. Fairview, NJ 07022	(877) 797-8786  <a href="http://www.systrumenergy.com">www.systrumenergy.com</a>	<b>R/C/I</b>  <b>ACTIVE</b>
<b>Liberty Power Delaware, LLC</b> 1973 Highway 34, Suite 211 Wall, NJ 07719	(866) 769-3799  <a href="http://www.libertypowercorp.com">www.libertypowercorp.com</a>	<b>C/I</b>  <b>ACTIVE</b>
<b>Liberty Power Holdings, LLC</b> 1973 Highway 34, Suite 211 Wall, NJ 07719	(866) 769-3799  <a href="http://www.libertypowercorp.com">www.libertypowercorp.com</a>	<b>C/I</b>  <b>ACTIVE</b>

<b>Linde Energy Services</b> 575 Mountain Avenue Murray Hill, NJ 07974	(800) 247-2644  <a href="http://www.linde.com">www.linde.com</a>	<b>C/I</b>  <b>ACTIVE</b>
<b>Marathon Power LLC</b> 302 Main Street Paterson, NJ 07505	( 888) 779-7255  <a href="http://www.mecny.com">www.mecny.com</a>	<b>R/C/I</b>  <b>ACTIVE</b>
<b>MXenergy Electric Inc.</b> 900 Lake Street Ramsey, NJ 07446	(800) 785-4374  <a href="http://www.mxenergy.com">www.mxenergy.com</a>	<b>R/C/I</b>  <b>ACTIVE</b>
<b>NATGASCO, Inc.</b> 532 Freeman St. Orange, NJ 07050	(973) 678-1800 x. 251  <a href="http://www.supremeenergyinc.com">www.supremeenergyinc.com</a>	<b>R/C</b>  <b>ACTIVE</b>
<b>NextEra Energy Services New Jersey, LLC</b> 651 Jernee Mill Road Sayreville, NJ 08872	(877) 528-2890 Commercial (800) 882-1276 Residential  <a href="http://www.nexteraenergyservices.com">www.nexteraenergyservices.com</a>	<b>R/C/I</b>  <b>ACTIVE</b>
<b>New Jersey Gas &amp; Electric</b> 1 Bridge Plaza fl. 2 Fort Lee, NJ 07024	(866) 568-0290  <a href="http://www.NJGandE.com">www.NJGandE.com</a>	<b>R/C</b>  <b>ACTIVE</b>
<b>Noble Americas Energy Solutions</b> The Mac-Cali Building 581 Main Street, 8th Floor Woodbridge, NJ 07095	(877) 273-6772  <a href="http://www.noblesolutions.com">www.noblesolutions.com</a>	<b>C/I</b>  <b>ACTIVE</b>
<b>North American Power and Gas, LLC</b> 222 Ridgedale Avenue Cedar Knolls, NJ 07927	(888) 313-9086  <a href="http://www.napower.com">www.napower.com</a>	<b>R/C/I</b>  <b>ACTIVE</b>
<b>Palmco Power NJ, LLC</b> One Greentree Centre 10,000 Lincoln Drive East, Suite 201 Marlton, NJ 08053	(877) 726-5862  <a href="http://www.PalmcoEnergy.com">www.PalmcoEnergy.com</a>	<b>R/C/I</b>  <b>ACTIVE</b>
<b>Pepco Energy Services, Inc.</b> 112 Main St. Lebanon, NJ 08833	(800) ENERGY-9 (363-7499)  <a href="http://www.pepco-services.com">www.pepco-services.com</a>	<b>C/I</b>  <b>ACTIVE</b>
<b>Plymouth Rock Energy, LLC</b> 338 Maitland Avenue Teaneck, NJ 07666	(855) 32-POWER (76937)  <a href="http://www.plymouthenergy.com">www.plymouthenergy.com</a>	<b>R/C/I</b>  <b>ACTIVE</b>

<b>PPL Energy Plus, LLC</b> 811 Church Road Cherry Hill, NJ 08002	(800) 281-2000  <a href="http://www.pplenergyplus.com">www.pplenergyplus.com</a>	<b>C/I</b>  <b>ACTIVE</b>
<b>Public Power &amp; Utility of New Jersey, LLC</b> 39 Old Ridgebury Rd. Suite 14 Danbury, CT 06810	(888) 354-4415  <a href="http://www.ppandu.com">www.ppandu.com</a>	<b>R/C/I</b>  <b>ACTIVE</b>
<b>Reliant Energy</b> 211 Carnegie Center Princeton, NJ 08540	(877) 297-3795 (877) 297-3780 <a href="http://www.reliant.com/pjm">www.reliant.com/pjm</a>	<b>R/C/I</b>  <b>ACTIVE</b>
<b>ResCom Energy LLC</b> 18C Wave Crest Ave. Winfield Park, NJ 07036	(888) 238-4041  <a href="http://rescomenergy.com">http://rescomenergy.com</a>	<b>R/C/I</b>  <b>ACTIVE</b>
<b>Respond Power LLC</b> 10 Regency CT Lakewood, NJ 08701	(877) 973-7763  <a href="http://www.respondpower.com">www.respondpower.com</a>	<b>R/C/I</b>  <b>ACTIVE</b>
<b>South Jersey Energy Company</b> 1 South Jersey Plaza, Route 54 Folsom, NJ 08037	(800) 266-6020  <a href="http://www.southjerseyenergy.com">www.southjerseyenergy.com</a>	<b>C/I</b>  <b>ACTIVE</b>
<b>Sperian Energy Corp.</b> 1200 Route 22 East, Suite 2000 Bridgewater, NJ 08807	(888) 682-8082	<b>R/C/I</b>  <b>ACTIVE</b>
<b>S.J. Energy Partners, Inc.</b> 208 White Horse Pike, Suite 4 Barrington, N.J. 08007	(800) 695-0666  <a href="http://www.sjnaturalgas.com">www.sjnaturalgas.com</a>	<b>R/C</b>  <b>ACTIVE</b>
<b>Spark Energy, L.P.</b> 2105 CityWest Blvd., Ste 100 Houston, Texas 77042	(800) 441-7514  <a href="http://www.sparkenergy.com">www.sparkenergy.com</a>	<b>R/C/I</b>  <b>ACTIVE</b>
<b>Sprague Energy Corp.</b> 12 Ridge Road Chatham Township, NJ 07928	(800) 225-1560  <a href="http://www.spragueenergy.com">www.spragueenergy.com</a>	<b>C/I</b>  <b>ACTIVE</b>
<b>Starion Energy PA Inc.</b> 101 Warburton Avenue Hawthorne, NJ 07506	(800) 600-3040  <a href="http://www.starionenergy.com">www.starionenergy.com</a>	<b>R/C/I</b>  <b>ACTIVE</b>
<b>Stream Energy</b> 309 Fellowship Rd., Suite 200 Mt. Laurel, NJ 08054	(877) 39-8150  <a href="http://www.streamenergy.net">www.streamenergy.net</a>	<b>R</b>  <b>ACTIVE</b>

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

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**PSE&G GAS SERVICE TERRITORY**  
**Last Updated: 10/24/12**

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

<b>Supplier</b>	<b>Telephone &amp; Web Site</b>	<b>*Customer Class</b>
<b>Ambit Northeast, LLC</b> 103 Carnegie Center Suite 300 Princeton, NJ 08540	(877)-30-AMBIT (877) 302-6248  <a href="http://www.ambitenergy.com">www.ambitenergy.com</a>	<b>R/C</b>  <b>ACTIVE</b>
<b>Astral Energy LLC</b> 16 Tyson Place Bergenfield, NJ 07621	888-850-1872  <a href="http://www.astralenergyllc.com">www.astralenergyllc.com</a>	<b>R/C/I</b>  <b>ACTIVE</b>
<b>BBPC, LLC Great Eastern Energy</b> 116 Village Blvd. Suite 200 Princeton, NJ 08540	888-651-4121  <a href="http://www.greateasternenergy.com">www.greateasternenergy.com</a>	<b>C/I</b>  <b>ACTIVE</b>
<b>Clearview Electric Inc.</b> <b>d/b/a Clearview Gas</b> 1744 Lexington Ave. Pennsauken, NJ 08110	800-746-4720  <a href="http://www.clearviewenergy.com">www.clearviewenergy.com</a>	<b>R/C</b>  <b>ACTIVE</b>
<b>Colonial Energy, Inc.</b> 83 Harding Road Wyckoff, NJ 07481	845-429-3229  <a href="http://www.colonialgroupinc.com">www.colonialgroupinc.com</a>	<b>C/I</b>  <b>ACTIVE</b>
<b>Commerce Energy, Inc.</b> 7 Cedar Terrace Ramsey, NJ 07746	(888) 817-8572  <a href="http://www.commerceenergy.com">www.commerceenergy.com</a>	<b>R</b>  <b>ACTIVE</b>
<b>Compass Energy Services, Inc.</b> 1085 Morris Avenue, Suite 150 Union, NJ 07083	866-867-8328 908-638-6605  <a href="http://www.compassenergy.net">www.compassenergy.net</a>	<b>C/I</b>  <b>ACTIVE</b>
<b>ConocoPhillips Company</b> 224 Strawbridge Drive, Suite 107 Moorestown, NJ 08057	800-646-4427  <a href="http://www.conocophillips.com">www.conocophillips.com</a>	<b>C/I</b>  <b>ACTIVE</b>
<b>Consolidated Edison Energy, Inc.</b> <b>d/b/a Con Edison Solutions</b> 535 State Highway 38, Suite 140 Cherry Hill, NJ 08002	888-686-1383 x2130  <a href="http://www.conedenergy.com">www.conedenergy.com</a>	

<b>Consolidated Edison Solutions, Inc.</b> Cherry Tree Corporate Center 535 State Highway 38, Suite 140 Cherry Hill, NJ 08002	888-665-0955  <a href="http://www.conedsolutions.com">www.conedsolutions.com</a>	<b>C/I</b>  <b>ACTIVE</b>
<b>Constellation NewEnergy-Gas Division, LLC</b> 900A Lake Street, Suite 2 Ramsey, NJ 07466	(800) 900-1982  <a href="http://www.constellation.com">www.constellation.com</a>	<b>C/I</b>  <b>ACTIVE</b>
<b>Direct Energy Business, LLC</b> 120 Wood Avenue, Suite 611 Iselin, NJ 08830	888-925-9115  <a href="http://www.directenergy.com">www.directenergy.com</a>	<b>C/I</b>  <b>ACTIVE</b>
<b>Direct Energy Services, LLP</b> 120 Wood Avenue, Suite 611 Iselin, NJ 08830	866-348-4193  <a href="http://www.directenergy.com">www.directenergy.com</a>	<b>R</b>  <b>ACTIVE</b>
<b>Gateway Energy Services Corp.</b> 44 Whispering Pines Lane Lakewood, NJ 08701	800-805-8586  <a href="http://www.gesc.com">www.gesc.com</a>	<b>R/C/I</b>  <b>ACTIVE</b>
<b>UGI Energy Services, Inc.</b> <b>d/b/a GASMARK</b> 224 Strawbridge Drive, Suite 107 Moorestown, NJ 08057	856-273-9995  <a href="http://www.ugienergyservices.com">www.ugienergyservices.com</a>	<b>C/I</b>  <b>ACTIVE</b>
<b>Global Energy Marketing, LLC</b> 129 Wentz Avenue Springfield, NJ 07081	800-542-0778  <a href="http://www.globalp.com">www.globalp.com</a>	<b>C/I</b>  <b>ACTIVE</b>
<b>Great Eastern Energy</b> 116 Village Blvd., Suite 200 Princeton, NJ 08540	888-651-4121  <a href="http://www.greateastern.com">www.greateastern.com</a>	<b>C/I</b>  <b>ACTIVE</b>
<b>Greenlight Energy</b> 330 Hudson Street, Suite 4 Hoboken, NJ 07030	718-204-7467  <a href="http://www.greenlightenergy.us">www.greenlightenergy.us</a>	<b>C</b>  <b>ACTIVE</b>
<b>Hess Energy, Inc.</b> One Hess Plaza Woodbridge, NJ 07095	800-437-7872  <a href="http://www.hess.com">www.hess.com</a>	<b>C/I</b>  <b>ACTIVE</b>
<b>Hess Small Business Services, LLC</b> One Hess Plaza Woodbridge, NJ 07095	888-494-4377  <a href="http://www.hessenergy.com">www.hessenergy.com</a>	<b>C/I</b>  <b>ACTIVE</b>
<b>HIKO Energy, LLC</b> 655 Suffern Road Teaneck, NJ 07666	(888) 264-4908  <a href="http://www.hikoenergy.com">www.hikoenergy.com</a>	<b>R/C</b>  <b>ACTIVE</b>

<b>Hudson Energy Services, LLC</b> 7 Cedar Street Ramsey, NJ 07446	877- Hudson 9 <a href="http://www.hudsonenergyservices.com">www.hudsonenergyservices.com</a>	<b>C</b> <b>ACTIVE</b>
<b>IDT Energy, Inc.</b> 550 Broad Street Newark, NJ 07102	877-887-6866 <a href="http://www.idtenergy.com">www.idtenergy.com</a>	<b>R/C</b> <b>ACTIVE</b>
<b>Integrus Energy Services – Natural Gas, LLC</b> 99 Wood Avenue South Suite #802 Iselin, NJ 08830	800-536-0151 <a href="http://www.integrusenergy.com">www.integrusenergy.com</a>	<b>C/I</b> <b>ACTIVE</b>
<b>Intelligent Energy</b> 2050 Center Avenue, Suite 500 Fort Lee, NJ 07024	800-927-9794 <a href="http://www.intelligentenergy.org">www.intelligentenergy.org</a>	<b>R/C/I</b> <b>ACTIVE</b>
<b>Keil &amp; Sons, Inc.</b> <b>d/b/a Systrum Energy</b> 1 Bergen Blvd. Fairview, NJ 07022	1-877-797-8786 <a href="http://www.systrumenergy.com">www.systrumenergy.com</a>	<b>R/C/I</b> <b>ACTIVE</b>
<b>Major Energy Services, LLC</b> 10 Regency CT Lakewood, NJ 08701	888-625-6760 <a href="http://www.majorenergy.com">www.majorenergy.com</a>	<b>R/C/I</b> <b>ACTIVE</b>
<b>Marathon Power LLC</b> 302 Main Street Paterson, NJ 07505	888-779-7255 <a href="http://www.mecny.com">www.mecny.com</a>	<b>R/C/I</b> <b>ACTIVE</b>
<b>Metromedia Energy, Inc.</b> 6 Industrial Way Eatontown, NJ 07724	800-828-9427 <a href="http://www.metromediaenergy.com">www.metromediaenergy.com</a>	<b>C</b> <b>ACTIVE</b>
<b>Metro Energy Group, LLC</b> 14 Washington Place Hackensack, NJ 07601	888-53-Metro <a href="http://www.metroenergy.com">www.metroenergy.com</a>	<b>R/C</b> <b>ACTIVE</b>
<b>MxEnergy, Inc.</b> 900 Lake Street Ramsey, NJ 07446	800-758-4374 <a href="http://www.mxenergy.com">www.mxenergy.com</a>	<b>R/C/I</b> <b>ACTIVE</b>
<b>NATGASCO (Mitchell Supreme)</b> 532 Freeman Street Orange, NJ 07050	800-840-4GAS <a href="http://www.natgasco.com">www.natgasco.com</a>	<b>C</b> <b>ACTIVE</b>
<b>New Energy Services LLC</b> 101 Neptune Avenue Deal, New Jersey 07723	800-660-3643 <a href="http://www.newenergyservicesllc.com">www.newenergyservicesllc.com</a>	<b>R/C/I</b> <b>ACTIVE</b>

<b>New Jersey Gas &amp; Electric</b> 1 Bridge Plaza, Fl. 2 Fort Lee, NJ 07024	866-568-0290 <a href="http://www.NJGandE.com">www.NJGandE.com</a>	<b>R/C</b> <b>ACTIVE</b>
<b>Noble Americas Energy Solutions</b> The Mac-Cali Building 581 Main Street, 8th fl. Woodbridge, NJ 07095	877-273-6772 <a href="http://www.noblesolutions.com">www.noblesolutions.com</a>	<b>C/I</b> <b>ACTIVE</b>
<b>North American Power &amp; Gas, LLC d/b/a North American Power</b> 197 Route 18 South Ste. 3000 East Brunswick, NJ 08816	(888) 313-9086 <a href="http://www.napower.com">www.napower.com</a>	<b>R/C/I</b> <b>ACTIVE</b>
<b>Palmco Energy NJ, LLC</b> One Greentree Centre 10,000 Lincoln Drive East, Suite 201 Marlton, NJ 08053	877-726-5862 <a href="http://www.PalmcoEnergy.com">www.PalmcoEnergy.com</a>	<b>R/C/I</b> <b>ACTIVE</b>
<b>Pepco Energy Services, Inc.</b> 112 Main Street Lebanon, NJ 08833	800-363-7499 <a href="http://www.pepco-services.com">www.pepco-services.com</a>	<b>C/I</b> <b>ACTIVE</b>
<b>Plymouth Rock Energy, LLC</b> 338 Maitland Avenue Teaneck, NJ 07666	855-32-POWER (76937) <a href="http://www.plymouthenergy.com">www.plymouthenergy.com</a>	<b>R/C/I</b> <b>ACTIVE</b>
<b>PPL EnergyPlus, LLC</b> 811 Church Road - Office 105 Cherry Hill, NJ 08002	800-281-2000 <a href="http://www.pplenergyplus.com">www.pplenergyplus.com</a>	<b>C/I</b> <b>ACTIVE</b>
<b>Respond Power LLC</b> 10 Regency CT Lakewood, NJ 08701	(877) 973-7763 <a href="http://www.respondpower.com">www.respondpower.com</a>	<b>R/C/I</b> <b>ACTIVE</b>
<b>South Jersey Energy Company</b> 1 South Jersey Plaza, Route 54 Folsom, NJ 08037	800-266-6020 <a href="http://www.southjerseyenergy.com">www.southjerseyenergy.com</a>	<b>C/I</b> <b>ACTIVE</b>
<b>S.J. Energy Partners, Inc.</b> 208 White Horse Pike, Suite 4 Barrington, NJ 08007	800-695-0666 <a href="http://www.sjnaturalgas.com">www.sjnaturalgas.com</a>	<b>R/C</b> <b>ACTIVE</b>
<b>Spark Energy Gas, L.P.</b> 2105 CityWest Blvd, Ste 100 Houston, Texas 77042	800-411-7514 <a href="http://www.sparkenergy.com">www.sparkenergy.com</a>	<b>R/C/I</b> <b>ACTIVE</b>
<b>Sprague Energy Corp.</b> 12 Ridge Road Chatham Township, NJ 07928	855-466-2842 <a href="http://www.spragueenergy.com">www.spragueenergy.com</a>	<b>C/I</b> <b>ACTIVE</b>



<b>Stuyvesant Energy LLC</b> 10 West Ivy Lane, Suite 4 Englewood, NJ 07631	800-640-6457  <a href="http://www.stuyfuel.com">www.stuyfuel.com</a>	<b>C</b>  <b>ACTIVE</b>
<b>Stream Energy New Jersey, LLC</b> 309 Fellowship Road Suite 200 Mt. Laurel, NJ 08054	(973) 494-8097  <a href="http://www.streamenergy.net">www.streamenergy.net</a>	<b>R/C</b>  <b>ACTIVE</b>
<b>Systrum Energy</b> 1 Bergen Blvd. Fairview, NJ 07022	877-797-8786  <a href="http://www.systrumenergy.com">www.systrumenergy.com</a>	<b>R/C/I</b>  <b>ACTIVE</b>
<b>Woodruff Energy</b> 73 Water Street Bridgeton, NJ 08302	800-557-1121  <a href="http://www.woodruffenergy.com">www.woodruffenergy.com</a>	<b>R/C/I</b>  <b>ACTIVE</b>
<b>Woodruff Energy US LLC</b> 73 Water Street, P.O. Box 777 Bridgeton, NJ 08302	856-455-1111 800-557-1121 <a href="http://www.woodruffenergy.com">www.woodruffenergy.com</a>	<b>C/I</b>  <b>ACTIVE</b>
<b>Xoom Energy New Jersey, LLC</b> 744 Broad Street Newark, NJ 07102	888-997-8979  <a href="http://www.xoomenergy.com">www.xoomenergy.com</a>	<b>R/C/I</b>  <b>ACTIVE</b>
<b>Your Energy Holdings, LLC</b> One International Boulevard Suite 400 Mahwah, NJ 07495-0400	(855) 732-2493  <a href="http://www.thisisyourenergy.com">www.thisisyourenergy.com</a>	<b>R/C/I</b>  <b>ACTIVE</b>

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## **APPENDIX B**

### **Equipment Inventory**

Description	QTY	Manufacturer Name	Model No.	Serial No.	Equipment Type / Utility	Capacity/Size /Efficiency	Location	Areas/Equipment Served	Date Installed	Remaining Useful Life (years)	Other Info.
B-1	1	Smith	28HE-9	132144	Heating / Natural Gas	2,718 MBH input, 2,249 MBH output (82.7%)	MER	School	2005	16	
B-2	1	Smith	28HE-9	132142	Heating / Natural Gas	2,718 MBH input, 2,249 MBH output (82.7%)	MER	School	2005	16	
Window Air Conditioners	10	Various	Various	Various	DX Cooling / Electric	8,000 - 24,000 btu/h (10.7 EER)	Classroom Windows	Classroom	2005	6	
AHU-1	1	No nameplate	No nameplate	No nameplate	Heating / Natural Gas	5 HP	3rd Floor	Gymnasium	1955	0	Used for recirculation only (no ventilation)
AHU-2	1	Unknown	ITF-HV	Unknown	Heating / Natural Gas	Unknown	3rd Floor	Auditorium	1955	0	Used for recirculation only (no ventilation)
ACU	8	Airedale	SCHP-2	PA1112-U1903	DX Cooling / Electric	Unknown	Kindergarten Classrooms	Kindergarten Classrooms	1996	2	

Cost of Electricity:

\$0.138	\$/kWh
\$6.61	\$/kW

EXISTING CONDITIONS												Retrofit Control
Field Code	Area Description Unique description of the location - Room number/Room name: Floor number (if applicable)	Usage Describe Usage Type using Operating Hours	No. of Fixtures No. of fixtures before the retrofit	Standard Fixture Code Lighting Fixture Code	Fixture Code Code from Table of Standard Fixture Wattages	Watts per Fixture Value from Table of Standard Fixture Wattages	kW/Space (Watts/Fixt) * (Fixt No.)	Exist Control Pre-inst. control device	Annual Hours Estimated annual hours for the usage group	Annual kWh (kW/space) * (Annual Hours)	Retrofit control device	Notes
20LED	300 Classroom	Classrooms	18	S 32 C F 1 (ELE)	F41LL	32	0.58	SW	2400	1,382	C-OCC	
20LED	301 Classroom	Classrooms	18	S 32 C F 1 (ELE)	F41LL	32	0.58	SW	2400	1,382	C-OCC	
20LED	302 Classroom	Classrooms	15	S 32 C F 1 (ELE)	F41LL	32	0.48	SW	2400	1,152	C-OCC	
20LED	303 Classroom	Classrooms	15	S 32 C F 1 (ELE)	F41LL	32	0.48	SW	2400	1,152	C-OCC	
20LED	Corridor	Hallways	3	S 32 C F 1 (ELE)	F41LL	32	0.10	SW	2280	219	NONE	
20LED	Stair	Stairway	2	S 32 C F 1 (ELE)	F41LL	32	0.06	SW	6240	399	NONE	
20LED	Stair	Stairway	4	S 32 C F 1 (ELE)	F41LL	32	0.13	SW	6240	799	NONE	
20LED	304 Computer Room	Classrooms	15	S 32 C F 1 (ELE)	F41LL	32	0.48	SW	2400	1,152	C-OCC	
20LED	305 Classroom	Classrooms	15	S 32 C F 1 (ELE)	F41LL	32	0.48	SW	2400	1,152	C-OCC	
20LED	306 Classroom	Classrooms	19	S 32 C F 1 (ELE)	F41LL	32	0.61	SW	2400	1,459	C-OCC	
20LED	308 Classroom	Classrooms	17	S 32 C F 1 (ELE)	F41LL	32	0.54	SW	2400	1,306	C-OCC	
20LED	310 Classroom	Classrooms	15	S 32 C F 1 (ELE)	F41LL	32	0.48	SW	2400	1,152	C-OCC	
20LED	Corridor	Hallways	4	S 32 C F 1 (ELE)	F41LL	32	0.13	SW	2280	292	NONE	
20LED	Mens TR	Restroom	1	S 32 C F 1 (ELE)	F41LL	32	0.03	SW	2400	77	NONE	
20LED	UN-52	Storage Areas	1	S 32 C F 1 (ELE)	F41LL	32	0.03	SW	1000	32	C-OCC	
20LED	UN-53	Storage Areas	1	S 32 C F 1 (ELE)	F41LL	32	0.03	SW	1000	32	C-OCC	
20LED	UN-54	Storage Areas	1	S 32 C F 1 (ELE)	F41LL	32	0.03	SW	1000	32	C-OCC	
20LED	UN-50	Storage Areas	1	S 32 C F 1 (ELE)	F41LL	32	0.03	SW	1000	32	C-OCC	
20LED	UN-51	Storage Areas	1	S 32 C F 1 (ELE)	F41LL	32	0.03	SW	1000	32	C-OCC	
20LED	Corridor	Hallways	11	S 32 C F 1 (ELE)	F41LL	32	0.35	SW	2280	803	NONE	
20LED	314A Office	Offices	6	S 32 C F 1 (ELE)	F41LL	32	0.19	SW	2400	461	C-OCC	
20LED	314B Art	Classrooms	13	S 32 C F 1 (ELE)	F41LL	32	0.42	SW	2400	998	C-OCC	
20LED	314	Classrooms	1	S 32 C F 1 (ELE)	F41LL	32	0.03	SW	2400	77	C-OCC	
20LED	316 Science	Classrooms	12	S 32 C F 1 (ELE)	F41LL	32	0.38	SW	2400	922	C-OCC	
20LED	318 Classroom	Classrooms	12	S 32 C F 1 (ELE)	F41LL	32	0.38	SW	2400	922	C-OCC	
20LED	320 Classroom	Classrooms	12	S 32 C F 1 (ELE)	F41LL	32	0.38	SW	2400	922	C-OCC	
20LED	313 Storage	Storage Areas	1	S 32 C F 1 (ELE)	F41LL	32	0.03	SW	1000	32	C-OCC	
40LED	311 Storage	Storage Areas	1	T 32 R F 2 (ELE)	F42LL	60	0.06	SW	1000	60	C-OCC	
40LED	309 Storage	Storage Areas	1	T 32 R F 2 (ELE)	F42LL	60	0.06	SW	1000	60	C-OCC	
40LED	307 Utility Room	Storage Areas	5	T 32 R F 2 (ELE)	F42LL	60	0.30	SW	1000	300	NONE	
40LED	Storage	Storage Areas	1	T 32 R F 2 (ELE)	F42LL	60	0.06	SW	1000	60	C-OCC	
40LED	Stairs	Stairway	2	T 32 R F 2 (ELE)	F42LL	60	0.12	SW	6240	749	NONE	
20LED	200 Classroom	Classrooms	15	S 32 C F 1 (ELE)	F41LL	32	0.48	SW	2400	1,152	C-OCC	
20LED	201 Classroom	Classrooms	15	S 32 C F 1 (ELE)	F41LL	32	0.48	SW	2400	1,152	C-OCC	
20LED	202 Classroom	Classrooms	15	S 32 C F 1 (ELE)	F41LL	32	0.48	SW	2400	1,152	C-OCC	
20LED	203 Nurse Office	Offices	12	S 32 C F 1 (ELE)	F41LL	32	0.38	SW	2400	922	C-OCC	
20LED	Exam Room	Offices	3	S 32 C F 1 (ELE)	F41LL	32	0.10	SW	2400	230	C-OCC	
20LED	UN-29	Storage Areas	1	S 32 C F 1 (ELE)	F41LL	32	0.03	SW	1000	32	C-OCC	
20LED	UN-28	Storage Areas	1	S 32 C F 1 (ELE)	F41LL	32	0.03	SW	1000	32	C-OCC	
20LED	Corridor	Hallways	4	S 32 C F 1 (ELE)	F41LL	32	0.13	SW	2280	292	NONE	
20LED	Stair	Stairway	3	S 32 C F 1 (ELE)	F41LL	32	0.10	SW	6240	599	NONE	
20LED	204 Classroom	Classrooms	15	S 32 C F 1 (ELE)	F41LL	32	0.48	SW	2400	1,152	C-OCC	
20LED	Storage	Storage Areas	1	S 32 C F 1 (ELE)	F41LL	32	0.03	SW	1000	32	C-OCC	
20LED	205 Classroom	Classrooms	15	S 32 C F 1 (ELE)	F41LL	32	0.48	SW	2400	1,152	C-OCC	
20LED	Storage	Storage Areas	1	S 32 C F 1 (ELE)	F41LL	32	0.03	SW	1000	32	C-OCC	
20LED	Corridor	Hallways	6	S 32 C F 1 (ELE)	F41LL	32	0.19	SW	2280	438	NONE	
20LED	206 Classroom	Classrooms	15	S 32 C F 1 (ELE)	F41LL	32	0.48	SW	2400	1,152	C-OCC	
20LED	Storage	Storage Areas	1	S 32 C F 1 (ELE)	F41LL	32	0.03	SW	1000	32	C-OCC	
20LED	208 Classroom	Classrooms	15	S 32 C F 1 (ELE)	F41LL	32	0.48	SW	2400	1,152	C-OCC	
20LED	Storage	Storage Areas	1	S 32 C F 1 (ELE)	F41LL	32	0.03	SW	1000	32	C-OCC	
20LED	210 Classroom	Classrooms	15	S 32 C F 1 (ELE)	F41LL	32	0.48	SW	2400	1,152	C-OCC	
20LED	Storage	Storage Areas	1	S 32 C F 1 (ELE)	F41LL	32	0.03	SW	1000	32	C-OCC	
20LED	Girls Locker Room	Locker	6	S 32 C F 1 (ELE)	F41LL	32	0.19	SW	2400	461	C-OCC	
20LED	UN-43	Storage Areas	4	S 32 C F 1 (ELE)	F41LL	32	0.13	SW	1000	128	C-OCC	
40LED	Corridor	Hallways	8	T 32 R F 2 (ELE)	F42LL	60	0.48	SW	2280	1,094	NONE	
40LED	Storage	Storage Areas	2	T 32 R F 2 (ELE)	F42LL	60	0.12	SW	1000	120	C-OCC	
20LED	131 Main Office	Offices	21	S 32 C F 1 (ELE)	F41LL	32	0.67	SW	2400	1,613	C-OCC	
20LED	103A Principal Office	Offices	10	S 32 C F 1 (ELE)	F41LL	32	0.32	SW	2400	768	C-OCC	
20LED	100A TR	Restroom	1	S 32 C F 1 (ELE)	F41LL	32	0.03	SW	2400	77	NONE	
20LED	103C	Offices	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	C-OCC	
20LED	103B Storage	Storage Areas	2	S 32 C F 1 (ELE)	F41LL	32	0.06	SW	1000	64	C-OCC	
20LED	Vest	Hallways	2	S 32 C F 1 (ELE)	F41LL	32	0.06	SW	2280	146	NONE	
20LED	Corridor	Hallways	2	S 32 C F 1 (ELE)	F41LL	32	0.06	SW	2280	146	NONE	
20LED	101 Office	Offices	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	C-OCC	
36	101A TR	Restroom	1	2T 3' 17 R F 1 (ELE)	F21LL	20	0.02	SW	2400	48	NONE	
20LED	103 Boys TR	Restroom	6	S 32 C F 1 (ELE)	F41LL	32	0.19	SW	2400	461	NONE	
20LED	Storage	Storage Areas	1	S 32 C F 1 (ELE)	F41LL	32	0.03	SW	1000	32	C-OCC	
20LED	105 Storage	Storage Areas	1	S 32 C F 1 (ELE)	F41LL	32	0.03	SW	1000	32	C-OCC	
20LED	Corridor	Hallways	3	S 32 C F 1 (ELE)	F41LL	32	0.10	SW	2280	219	NONE	
34LED	Corridor	Hallways	1	1T 32 C F 4 (ELE)	F44ILL	112	0.11	SW	2280	255	NONE	
20LED	106 Custodial Office	Offices	4	S 32 C F 1 (ELE)	F41LL	32	0.13	SW	2400	307	C-OCC	

Cost of Electricity:

\$0.138	\$/kWh
\$6.61	\$/kW

EXISTING CONDITIONS												Retrofit Control
Field Code	Area Description Unique description of the location - Room number/Room name: Floor number (if applicable)	Usage Describe Usage Type using Operating Hours	No. of Fixtures No. of fixtures before the retrofit	Standard Fixture Code Lighting Fixture Code	Fixture Code Code from Table of Standard Fixture Wattages	Watts per Fixture Value from Table of Standard Fixture Wattages	kW/Space (Watts/Fixt) * (Fixt No.)	Exist Control Pre-inst. control device	Annual Hours Estimated annual hours for the usage group	Annual kWh (kW/space) * (Annual Hours)	Retrofit control device	Notes
40LED	MER 102	Boiler Room	8	T 32 R F 2 (ELE)	F42LL	60	0.48	SW	1820	874	NONE	
20LED	107 Classroom	Classrooms	18	S 32 C F 1 (ELE)	F41LL	32	0.58	SW	2400	1,382	C-OCC	
20LED	106 Storage	Storage Areas	1	S 32 C F 1 (ELE)	F41LL	32	0.03	SW	1000	32	C-OCC	
36	109 Storage	Storage Areas	1	2T 3' 17 R F 1 (ELE)	F21ILL	20	0.02	SW	1000	20	C-OCC	
20LED	Corridor	Hallways	4	S 32 C F 1 (ELE)	F41LL	32	0.13	SW	2280	292	NONE	
40LED	Corridor	Hallways	1	T 32 R F 2 (ELE)	F42LL	60	0.06	SW	2280	137	NONE	
40LED	Corridor	Hallways	1	T 32 R F 2 (ELE)	F42LL	60	0.06	SW	2280	137	NONE	
34LED	Corridor	Hallways	1	1T 32 C F 4 (ELE)	F44ILL	112	0.11	SW	2280	255	NONE	
40LED	108 Office	Offices	9	T 32 R F 2 (ELE)	F42LL	60	0.54	SW	2400	1,296	C-OCC	
20LED	110 Girls TR	Restroom	5	S 32 C F 1 (ELE)	F41LL	32	0.16	SW	2400	384	NONE	
20LED	110 Girls TR	Restroom	1	S 32 C F 1 (ELE)	F41LL	32	0.03	SW	2400	77	NONE	
34LED	112 Library	Classrooms	14	1T 32 C F 4 (ELE)	F44ILL	112	1.57	SW	2400	3,763	C-OCC	
35LED	112A Office	Offices	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.36	SW	2400	864	C-OCC	
34LED	Corridor	Hallways	8	1T 32 C F 4 (ELE)	F44ILL	112	0.90	SW	2280	2,043	NONE	
40LED	116 Social Worker	Offices	2	T 32 R F 2 (ELE)	F42LL	60	0.12	SW	2400	288	C-OCC	
40LED	114 Nurse	Offices	5	T 32 R F 2 (ELE)	F42LL	60	0.30	SW	2400	720	C-OCC	
40LED	114A Nurse Office	Offices	2	T 32 R F 2 (ELE)	F42LL	60	0.12	SW	2400	288	C-OCC	
36	TR	Restroom	1	2T 3' 17 R F 1 (ELE)	F21ILL	20	0.02	SW	2400	48	NONE	
6LED	120 Cafeteria / Gym	Gymnasium	80	T 34 R F 4 (MAG)	F44EE	144	11.52	SW	2912	33,546	NONE	
X4	120A Gym Storage	Storage Areas	3	CF26W	CF26/4-L	108	0.32	SW	1000	324	C-OCC	
40LED	120D Office	Offices	1	T 32 R F 2 (ELE)	F42LL	60	0.06	SW	2400	144	C-OCC	
65	TR	Restroom	1	I 100	I100/1	100	0.10	SW	2400	240	NONE	
40LED	120C Office	Offices	1	T 32 R F 2 (ELE)	F42LL	60	0.06	SW	2400	144	C-OCC	
65	120C Office	Offices	1	I 100	I100/1	100	0.10	SW	2400	240	C-OCC	
20LED	120 E3 TR	Restroom	2	S 32 C F 1 (ELE)	F41LL	32	0.06	SW	2400	154	NONE	
20LED	120 E1	Storage Areas	2	S 32 C F 1 (ELE)	F41LL	32	0.06	SW	1000	64	C-OCC	
20LED	120 E2	Storage Areas	2	S 32 C F 1 (ELE)	F41LL	32	0.06	SW	1000	64	C-OCC	
20LED	120 E4	Storage Areas	2	S 32 C F 1 (ELE)	F41LL	32	0.06	SW	1000	64	C-OCC	
40LED	118 Kitchen	Kitchen	3	T 32 R F 2 (ELE)	F42LL	60	0.18	SW	3000	540	C-OCC	
40LED	122 Storage	Storage Areas	3	T 32 R F 2 (ELE)	F42LL	60	0.18	SW	1000	180	C-OCC	
34LED	Corridor	Hallways	3	1T 32 C F 4 (ELE)	F44ILL	112	0.34	SW	2280	766	NONE	
20LED	124 Auditorium	Auditorium	20	S 32 C F 1 (ELE)	F41LL	32	0.64	SW	1820	1,165	C-OCC	
9LED	124 Auditorium	Auditorium	24	High Bay MH 200 35 Feet High	MH200/1	232	5.57	SW	1820	10,134	C-OCC	
40LED	Stage	Stage	10	T 32 R F 2 (ELE)	F42LL	60	0.60	SW	5000	3,000	C-OCC	
9LED	Stage	Stage	1	High Bay MH 200 35 Feet High	MH200/1	232	0.23	SW	5000	1,160	C-OCC	
40LED	124A Dressing Room	Dressing Room	2	T 32 R F 2 (ELE)	F42LL	60	0.12	SW	8760	1,051	C-OCC	
40LED	124C	Storage Areas	2	T 32 R F 2 (ELE)	F42LL	60	0.12	SW	1000	120	C-OCC	
40LED	124B TR	Restroom	1	T 32 R F 2 (ELE)	F42LL	60	0.06	SW	2400	144	NONE	
20LED	Corridor	Hallways	12	S 32 C F 1 (ELE)	F41LL	32	0.38	SW	2280	876	NONE	
40LED	Corridor	Hallways	7	T 32 R F 2 (ELE)	F42LL	60	0.42	SW	2280	958	NONE	
34LED	Corridor	Hallways	2	1T 32 C F 4 (ELE)	F44ILL	112	0.22	SW	2280	511	NONE	
35LED	Classroom	Classrooms	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	SW	2400	2,592	C-OCC	
35LED	Classroom	Classrooms	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	SW	2400	2,592	C-OCC	
35LED	Classroom	Classrooms	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	SW	2400	2,592	C-OCC	
35LED	Classroom	Classrooms	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	SW	2400	2,592	C-OCC	
35LED	Classroom	Classrooms	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	SW	2400	2,592	C-OCC	
35LED	Classroom	Classrooms	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	SW	2400	2,592	C-OCC	
35LED	Classroom	Classrooms	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	SW	2400	2,592	C-OCC	
40LED	Corridor	Hallways	10	T 32 R F 2 (ELE)	F42LL	60	0.60	SW	2280	1,368	NONE	
Total			861				52.42			128,850		

## **APPENDIX C**

### **ECM Calculations**

Newark Board of Education - NJBPU  
CHA Project Number: 27999

Rate of Discount (used for NPV) 3.0%

Utility Costs		Yearly Usage	Metric Ton Carbon Dioxide Equivalent	Building Area	Annual Utility Cost		
\$	0.145	\$/kWh blended	0.000420205	64,762	Electric	Natural Gas	Fuel Oil
\$	0.138	\$/kWh supply	651.678		\$ 94,811	\$ 22,986	
\$	6.61	\$/kW	149.2				
\$	1.04	\$/Therm	22,100	0.00533471			
\$	7.55	\$/kgals		0			
		\$/Gal					

Sussex Avenue

Recommend?		Item	Savings						Cost	Simple	Life	Equivalent CO	NJ Smart Start	Direct Install	Payback w/	Simple Projected Lifetime Savings					ROI	NPV	IRR
Y or N			kW	kWh	therms	No. 2 Oil gal	Water kgal	\$		Payback	Expectancy	(Metric tons)	Incentives	Eligible (Y/N)	Incentives	kW	kWh	therms	kgal/yr	\$			
N	ECM-1	Replace Door Sweeps and Seals	0.0	0	98	0	0	102	\$ 2,305	22.5	15.0	0.5	\$ -	N	22.5	0.0	0	1,476	0	\$ 1,536	(0.3)	(\$1,083)	-4.7%
Y	ECM-2	Install Window A/C Controller	0.0	8,726	0	0	0	1,270	\$ 1,900	1.5	15.0	3.7	\$ -	N	1.5	0.0	130,895	0	0	\$ 19,044	9.0	\$13,256	66.8%
Y	ECM-3A	Install Basic Controls	0.0	24,699	1,442	0	0	5,094	\$ 21,309	4.2	15.0	18.1	\$ -	N	4.2	0.0	370,489	21,636	0	\$ 76,405	2.6	\$39,499	22.8%
N	ECM-3B	Install Full DDC Controls	0.0	26,003	3,542	0	0	7,467	\$ 356,512	47.7	15.0	29.8	\$ -	N	47.7	0.0	390,040	53,129	0	\$ 112,004	(0.7)	(\$267,372)	-11.9%
N	ECM-4	Install Low Flow Plumbing Fixtures	0.0	0	0	0	531	4,009	\$ 231,512	57.7	15.0	0.0	\$ -	N	57.7	0.0	0	0	7,965	\$ 60,138	(0.7)	(\$183,650)	-13.5%
N	ECM-L1	Lighting Replacements / Upgrades	30.1	74,141	0	0	0	12,599	\$ 152,679	12.1	15.0	31.2	\$ 3,750	N	11.8	450.9	1,112,116	0	0	\$ 197,562	0.3	\$1,481	3.1%
N	ECM-L2	Install Lighting Controls (Add Occupancy Sensors)	0.0	24,890	0	0	0	3,429	\$ 22,680	6.6	15.0	10.5	\$ 2,940	N	5.8	0.0	373,344	0	0	\$ 54,317	1.4	\$21,198	15.3%
Y	ECM-L3	Lighting Replacements with Controls (Occupancy Sensors)	30.1	85,492	0	0	0	14,163	\$ 175,359	12.4	15.0	35.9	\$ 6,690	N	11.9	450.9	1,282,386	0	0	\$ 222,334	0.3	\$411	3.0%
Total (Does Not Include 3B, ECM-L1 & ECM-L2)			30.1	118,918	1,541	0	531	\$ 24,638	\$ 432,385	17.5	15.0	58	\$ 6,690		17.3	451	1,783,770	23,113	7,965	\$ 379,457	(0.1)	(131,567)	-1.7%
Recommended Measures (highlighted green above)			30.1	118,918	1,442	0	0	\$ 20,527	\$ 198,569	9.7	15.0	58	\$ 6,690	0	9.3	451	1,783,770	21,636	-	\$ 317,783	0.6	53,166	6.6%
% of Existing			20%	18%	7%	#DIV/0!	#DIV/0!																

		City:	Newark, NJ				
		Occupied Hours/Week	70	70	70	70	50
			Building	Auditorium	Gymnasium	Library	Classrooms
			Operating Hours	Operating Hours	Occupied Hours	Occupied Hours	Occupied Hours
Temp	Enthalpy h (Btu/lb)	Bin Hours					
102.5							
97.5	35.4	6	3	3	3	3	2
92.5	37.4	31	13	13	13	13	9
87.5	35.0	131	55	55	55	55	39
82.5	33.0	500	208	208	208	208	149
77.5	31.5	620	258	258	258	258	185
72.5	29.9	664	277	277	277	277	198
67.5	27.2	854	356	356	356	356	254
62.5	24.0	927	386	386	386	386	276
57.5	20.3	600	250	250	250	250	179
52.5	18.2	730	304	304	304	304	217
47.5	16.0	491	205	205	205	205	146
42.5	14.5	656	273	273	273	273	195
37.5	12.5	1,023	426	426	426	426	304
32.5	10.5	734	306	306	306	306	218
27.5	8.7	334	139	139	139	139	99
22.5	7.0	252	105	105	105	105	75
17.5	5.4	125	52	52	52	52	37
12.5	3.7	47	20	20	20	20	14
7.5	2.1	34	14	14	14	14	10
2.5	1.3	1	0	0	0	0	0
-2.5							
-7.5							
8,760							

Multipliers	
Material:	1.027
Labor:	1.246
Equipment:	1.124

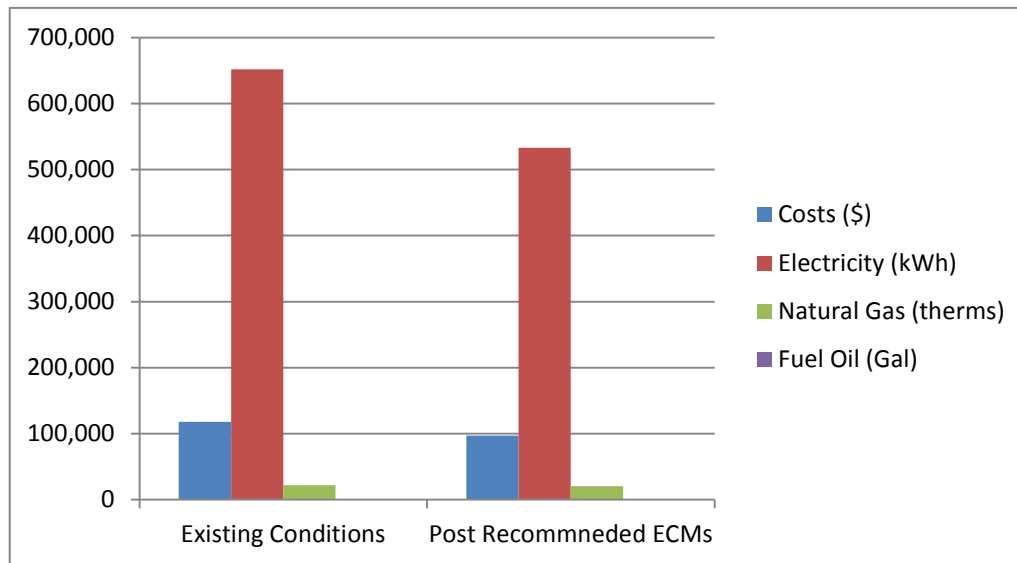
Heating System Efficiency	80%
Cooling Eff (kW/ton)	1.2

Heating	
Hours	4,427 Hrs
Weighted Avg	40 F
Avg	28 F

Cooling	
Hours	4,333 Hrs
Weighted Avg	68 F
Avg	78 F

**Newark Board of Education - NJBPU**  
**CHA Project Number: 27999**  
**Sussex Avenue**

	Existing Conditions	Post Recommended ECMs	Percent Savings
Costs (\$)	117,797	97,270	17%
Electricity (kWh)	651,678	532,760	18%
Natural Gas (therms)	22,100	20,658	7%
Fuel Oil (Gal)	0	0	#DIV/0!
Site EUI (kbtu/SF/Yr)	68.5	60.0	

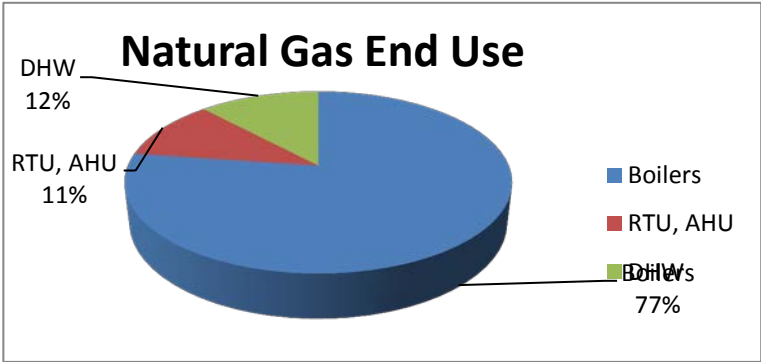
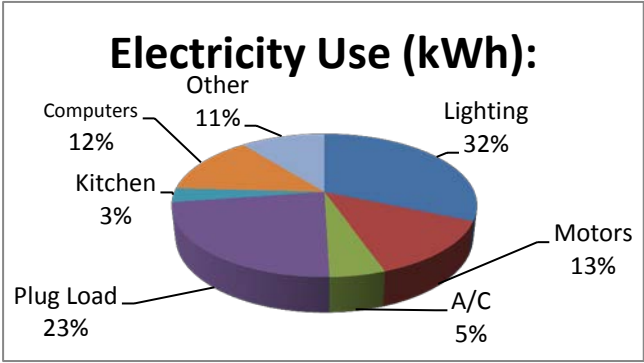




Utility End Use Analysis		
Electricity Use (kWh):		Notes/Comments:
651,678	Total	Based on utility analysis
205,000	Lighting	From Lighting Calculations
85,600	Motors	Estimated
32,381	A/C	See Window AC Calculation
150,667	Plug Load	Estimated
20,750	Kitchen	Estimated
87,600	Computers	Estimated
69,680	Other	Remaining
Natural Gas Use (Therms):		Notes/Comments:
22,100	Total	Based on utility analysis
17,062	Boilers	Therms/SF x Square Feet Served
2,386	RTU, AHU	Based on utility analysis
2,652	DHW	Based on utility analysis

31%  
13%  
5%  
23%  
3%  
13%  
11%

0.772057688  
0.107942312  
0.12



Newark Board of Education - NJBPU  
CHA Project Number: 27999  
Sussex Avenue

ECM-XX: Install Door Seals

Description: This ECM evaluates the thermal and electrical savings associate with adding door seals and sweeps to prevent infiltration of cold (hot) outdoor air.

Heating System Efficiency	80%	Ex Occupied Cing Temp.	80 °F	Ex Occupied Htg Temp.	80 °F
Cooling System Efficiency	0.00 kW/ton	Ex Unoccupied Cing Temp.	80 °F	Ex Unoccupied Htg Temp.	80 °F
Linear Feet of Door Edge	30 LF	Cooling Occ Enthalpy Setpoint	27.5 Btu/lb	Electricity	\$ 0.15 \$/kWh
Existing Infiltration Factor*	1.5 cfm/LF	Cooling Unocc Enthalpy Setpoint	27.5 Btu/lb	Natural Gas	\$ 1.04 \$/therm
Proposed Infiltration Factor*	0.45 cfm/LF				

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

					EXISTING LOADS		PROPOSED LOADS		COOLING ENERGY		HEATING ENERGY	
					Occupied	Unoccupied	Occupied	Unoccupied				
Avg Outdoor Air Temp. Bins °F	Avg Outdoor Air Enthalpy	Existing Equipment Bin Hours	Occupied Equipment Bin Hours	Unoccupied Equipment Bin Hours	Door Infiltration Load BTUH	Door Infiltration Load BTUH	Door Infiltration Load BTUH	Door Infiltration Load BTUH	Existing Cooling Energy kWh	Proposed Cooling Energy kWh	Existing Heating Energy therms	Proposed Heating Energy therms
A		B	C	D	E	F	G	H	I	J	K	L
102.5	0.0	0	0	0	5,569	5,569	1,671	1,671	0	0	0	0
97.5	35.4	6	3	4	-1,601	-1,601	-480	-480	0	0	0	0
92.5	37.4	31	13	18	-2,005	-2,005	-602	-602	0	0	0	0
87.5	35.0	131	55	76	-1,516	-1,516	-455	-455	0	0	0	0
82.5	33.0	500	208	292	-1,123	-1,123	-337	-337	0	0	0	0
77.5	31.5	620	258	362	122	122	36	36	0	0	1	0
72.5	29.9	664	277	387	365	365	109	109	0	0	3	1
67.5	27.2	854	356	498	608	608	182	182	0	0	6	2
62.5	24.0	927	386	541	851	851	255	255	0	0	10	3
57.5	20.3	600	250	350	1,094	1,094	328	328	0	0	8	2
52.5	18.2	730	304	426	1,337	1,337	401	401	0	0	12	4
47.5	16.0	491	205	286	1,580	1,580	474	474	0	0	10	3
42.5	14.5	656	273	383	1,823	1,823	547	547	0	0	15	4
37.5	12.5	1,023	426	597	2,066	2,066	620	620	0	0	26	8
32.5	10.5	734	306	428	2,309	2,309	693	693	0	0	21	6
27.5	8.7	334	139	195	2,552	2,552	765	765	0	0	11	3
22.5	7.0	252	105	147	2,795	2,795	838	838	0	0	9	3
17.5	5.4	125	52	73	3,038	3,038	911	911	0	0	5	1
12.5	3.7	47	20	27	3,281	3,281	984	984	0	0	2	1
7.5	2.1	34	14	20	3,524	3,524	1,057	1,057	0	0	1	0
2.5	1.3	1	0	1	3,767	3,767	1,130	1,130	0	0	0	0
-2.5	0.0	0	0	0	4,010	4,010	1,203	1,203	0	0	0	0
-7.5	0.0	0	0	0	4,253	4,253	1,276	1,276	0	0	0	0
TOTALS		8,760	3,650	5,110					0	0	141	42

Existing Door Infiltration	45 cfm	Savings	98 therms	\$ 102
Existing Unoccupied Door Infiltration	45 cfm		0 kWh	\$ -
Proposed Door Infiltration	14 cfm			\$ 102
Proposed Unoccupied Door Infiltration	14 cfm			

Door	Width (ft)	Height (ft)	Linear Feet (LF)	gap (in)	gap location	LF of gap	% door w/ gap	Average gap for door (in)
1	3	7	20	0.25	bottom/seam	3	15%	0.0375
2	3	7	20	0.25	bottom/seam	3	15%	0.0375
3	3	7	20	0.25	bottom/seam	3	15%	0.0375
4	3	7	20	0.25	bottom/seam	3	15%	0.0375
5	3	7	20	0.125	bottom/seam	3	15%	0.01875
6	3	7	20	0.125	bottom/seam	3	15%	0.01875
7	3	7	20	0.125	bottom/seam	3	15%	0.01875
8	3	7	20	0.0625	bottom/seam	3	15%	0.009375
9	3	7	20	0.25	bottom/seam	3	15%	0.0375
10	3	7	20	0.25	bottom/seam	3	15%	0.0375
Total	30	70	200	0.194		30	15%	0.029

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

Newark Board of Education - NJBPU  
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Sussex Avenue

Multipliers	
Material:	1.03
Labor:	1.25
Equipment:	1.12

ECM-XX: Install Door Seals - Cost

Description	QTY	UNIT	UNIT COSTS			SUBTOTAL COSTS			TOTAL COST	REMARKS
			MAT.	LABOR	EQUIP.	MAT.	LABOR	EQUIP.		
									\$ -	
Door Weatherization Seals & Sweeps	10	EA	\$ 40	\$ 115	\$ -	\$ 411	\$ 1,433	\$ -	\$ 1,844	
						\$ -	\$ -	\$ -	\$ -	

\*\*Cost Estimates are for Energy Savings calculations only, do not use for procurement

\$ 1,844	Subtotal
\$ 461	25% Contingency
\$ 2,305	Total

Newark Board of Education - NJBPU  
CHA Project Number: 27999  
Sussex Avenue

ECM-2: Window A/C Controller

ECM Description : Window A/C units are currently controlled manually by the occupants and are not turned off when the room is unoccupied. This ECM evaluates implementation of a digital timer device that will automatically turn the window A/C unit off at a preset time .

ASSUMPTIONS			Comments	
Electric Cost	\$0.145	/ kWh		
Average run hours per Week	80	Hours		
Space Balance Point	55	F		
Space Temperature Setpoint	65	deg F	Setpoint.	
BTU/Hr Rating of existing DX equipment	120,000	Btu / Hr	Total BTU/hr of Window AC units	
Average EER	10.7			
Existing Annual Electric Usage	14,985	kWh		

Item	Value	Units	Comments
Proposed Annual Electric Usage	6,259	kWh	Unit will cycle on w/ temp of room. Possible operating time shown below

ANNUAL SAVINGS		
Annual Electrical Usage Savings	8,726	kWh
Annual Cost Savings	\$1,270	
Total Project Cost	\$1,900	
Simple Payback	1	years

OAT - DB Bin Temp F	Annual Hours	Existing Hours of Operation	Proposed % of time of operation	Proposed hrs of Operation
102.5	0	0	100%	0
97.5	6	3	89%	3
92.5	31	15	79%	12
87.5	131	62	68%	43
82.5	500	238	58%	138
77.5	620	295	47%	140
72.5	664	316	37%	116
67.5	854	407	26%	107
62.5	927	0	0%	0
57.5	600	0	0%	0
52.5	730	0	0%	0
47.5	491	0	0%	0
42.5	656	0	0%	0
37.5	1,023	0	0%	0
32.5	734	0	0%	0
27.5	334	0	0%	0
22.5	252	0	0%	0
17.5	125	0	0%	0
12.5	47	0	0%	0
7.5	34	0	0%	0
2.5	1	0	0%	0
-2.5	0	0	0%	0
-7.5	0	0	0%	0
Total	8,760	1,336	42%	558

Newark Board of Education - NJBPU  
CHA Project Number: 27999  
Sussex Avenue

ECM-2: Window A/C Controller - Cost

Multipliers	
Material:	1.03
Labor:	1.25
Equipment:	1.12

Description	QTY	UNIT	UNIT COSTS			SUBTOTAL COSTS			TOTAL COST	REMARKS
			MAT.	LABOR	EQUIP.	MAT.	LABOR	EQUIP.		
						0	\$ -	\$ -	\$ -	
Window AC Controller	10	EA	\$ 150	\$ -	\$ -	1540.5	\$ -	\$ -	\$ 1,541	Est wireless A/C controller
						\$ -	\$ -	\$ -	\$ -	

\*\*Cost Estimates are for Energy Savings calculations only, do not use for procurement

\$ 1,541	Subtotal
\$ 385	25% Contingency
\$ 1,900	Total

Newark Board of Education - NJBPU  
CHA Project Number: 27999  
Sussex Avenue

ECM-3A: Basic Controls

Description: This ECM evaluates adding automatic temperature controls that will turn the boilers on/off based on outdoor air and indoor air temperatures.

Day Setback				Nighttime Setback			
EXISTING CONDITIONS				EXISTING CONDITIONS			
Heating				Heating			
Heating Season Facility Temp	80	F	Th	Heating Season Facility Temp	80	F	
Weekly Occupied Hours	70	hrs	H	Weekly Occupied Hours	70	hrs	
Heating Season Setback Temp	75	F	Sh	Heating Season Setback Temp	65	F	
Heating Season % Savings per	3%		Ph	Heating Season % Savings per	3%		
Annual Boiler Capacity		Mbtu/yr		Annual Boiler Capacity		Mbtu/yr	
Connected Heating Load	579,036	Btu/hr	Caph	Connected Heating Load Capacity	579,036	Btu/hr	
Equivalent Full Load Heating	900	hrs	EFLHh	Equivalent Full Load Heating Hours	500	hrs	
Heating Equipment Efficiency	80%		AFUEh	Heating Equipment Efficiency	80%		
Cooling				Cooling			
Cooling Season Facility Temp	74	F	Tc	Cooling Season Facility Temp	74	F	
Weekly Occupied Hours	70	hrs	H	Weekly Occupied Hours	70	hrs	
Cooling Season Setback Temp	79	F	Sc	Cooling Season Setback Temp	80	F	
Cooling Season % Savings per	6%		Pc	Cooling Season % Savings per	6%		
Connected Cooling Load	10	Tons	Capc	Connected Cooling Load Capacity	10	Tons	
Equivalent Full Load Cooling	381	hrs	EFLHc	Equivalent Full Load Cooling Hours	381	hrs	
Cooling Equipment EER	14.0		AFUEc	Cooling Equipment EER	14.0		
SAVINGS				SAVINGS			
Natural Gas Savings	541	Therms <sup>3</sup>		Natural Gas Savings	902	Therms <sup>3</sup>	
Cooling Electricity Savings	12,404	kWh		Cooling Electricity Savings	12,295	kWh	

\$0.15 \$/kWh Blended  
\$1.04 \$/Therm

COMBINED SAVINGS		
Natural Gas Savings	1,442	Therms
Cooling Electricity Savings	24,699	kWh
Total Cost Savings	\$ 5,094	
Estimated Total Project Cost	\$ 21,309	
Simple Payback	4.2	Yrs

Savings calculation formulas are taken from NJ Protocols document for Occupancy Controlled Thermostats

Algorithms

Cooling Energy Savings (kWh) = (((T<sub>c</sub>\*(H+5)+S<sub>c</sub>\*(168-(H+5)))/168)-  
T<sub>c</sub>)\*(P<sub>c</sub>\*Cap<sub>hp</sub>\*12\*EFLH<sub>c</sub>/EER<sub>hp</sub>)

Heating Energy Savings (kWh) = (((T<sub>h</sub>\*(H+5)+S<sub>h</sub>\*(168-(H+5)))/168)-  
T<sub>h</sub>)\*(P<sub>h</sub>\*Cap<sub>hp</sub>\*12\*EFLH<sub>h</sub>/EER<sub>hp</sub>)

Heating Energy Savings (Therms) = (T<sub>h</sub>-(T<sub>h</sub>\*(H+5)+S<sub>h</sub>\*(168-(H+5)))/168)\*  
(P<sub>h</sub>\*Cap<sub>h</sub>\*EFLH<sub>h</sub>/AFUE<sub>h</sub>/100,000)

Definition of Variables

T<sub>h</sub> = Heating Season Facility Temp. (°F)  
T<sub>c</sub> = Cooling Season Facility Temp. (°F)  
S<sub>h</sub> = Heating Season Setback Temp. (°F)  
S<sub>c</sub> = Cooling Season Setup Temp. (°F)  
H = Weekly Occupied Hours  
Cap<sub>hp</sub> = Connected load capacity of heat pump/AC (Tons) – Provided on Application.  
Cap<sub>h</sub> = Connected heating load capacity (Btu/hr) – Provided on Application.  
EFLH<sub>c</sub> = Equivalent full load cooling hours  
EFLH<sub>h</sub> = Equivalent full load heating hours  
P<sub>h</sub> = Heating season percent savings per degree setback  
P<sub>c</sub> = Cooling season percent savings per degree setup  
AFUE<sub>h</sub> = Heating equipment efficiency – Provided on Application.  
EER<sub>hp</sub> = Heat pump/AC equipment efficiency – Provided on Application

Occupancy Controlled Thermostats

Component	Type	Value	Source
T <sub>h</sub>	Variable		Application
T <sub>c</sub>	Variable		Application
S <sub>h</sub>	Fixed	T <sub>h</sub> -5°	
S <sub>c</sub>	Fixed	T <sub>c</sub> +5°	
H	Variable		Application; Default of 56 hrs/week
Cap <sub>hp</sub>	Variable		Application
Cap <sub>h</sub>	Variable		Application
EFLH <sub>c</sub>	Fixed	381	1
EFLH <sub>h</sub>	Fixed	900	PSE&G
P <sub>h</sub>	Fixed	3%	2
P <sub>c</sub>	Fixed	6%	2
AFUE <sub>h</sub>	Variable		Application
EER <sub>hp</sub>	Variable		Application

- Sources:
1. JCP&L metered data from 1995-1999
  2. ENERGY STAR Products website

Newark Board of Education - NJBPU  
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Multipliers	
Material:	1.03
Labor:	1.25
Equipment:	1.00

ECM-3A: Basic Controls - Cost

Description	QTY	UNIT	UNIT COSTS			SUBTOTAL COSTS			TOTAL COST	REMARKS
			MAT.	LABOR	EQUIP.	MAT.	LABOR	EQUIP.		
						\$ -	\$ -	\$ -	\$ -	
Boiler Controller	1	ea	\$ 7,500	\$ 7,500		\$ 7,703	\$ 9,345	\$ -	\$ 17,048	
						\$ -	\$ -	\$ -	\$ -	

\*\*Cost Estimates are for Energy Savings calculations only, do not use for procurement

\$ 17,048	Subtotal
\$ 4,262	25% Contingency
\$ 21,309	Total



Newark Board of Education - NJBPU  
CHA Project Number: 27999  
Sussex Avenue

ECM-3B: Install Full DDC Controls

Description: This ECM evaluates the energy savings associated with implementing a full wireless direct digital control system that enable remote automatic control, monitoring and alarming of all HVAC equipment. Specific energy savings sequences would include optimum Start/ Stop, night setback, temporary occupied set back, economizer control of UVs and AHU's. This energy savings percentage is based on past performance of similar buildings which have a fully functioning DDC control system.

Building Information:

64,762	Sq Footage	\$0.15	\$/kWh Blended
Y	Cooling	\$1.04	\$/Therm
Y	Heating		

FULL DDC - TEMPERATURE SETBACK SAVINGS CALCULATION		
EXISTING CONDITIONS		
Heating		
Heating Season Facility Temp	80	F
Weekly Occupied Hours	70	hrs
Heating Season Setback Temp	75	F
Heating Season % Savings per Degree Setback	3%	
Annual Boiler Capacity	-	Mbtu/yr
Connected Heating Load Capacity	579,036	Btu/hr
Equivalent Full Load Heating Hours	900	hrs
Heating System Efficiency	80%	
Cooling		
Cooling Season Facility Temp	74	F
Weekly Occupied Hours	70	hrs
Cooling Season Setback Temp	79	F
Cooling Season % Savings per Degree Setback	6%	
Connected Cooling Load Capacity	10	Tons
Equivalent Full Load Cooling Hours	381	hrs
Cooling Equipment EER	14.0	
SAVINGS		
Natural Gas Savings	541	Therms
Cooling Electricity Savings	12,404	kWh

Nighttime Setback		
EXISTING CONDITIONS		
Heating		
Heating Season Facility Temp	80	F
Weekly Occupied Hours	70	hrs
Heating Season Setback Temp	65	F
Heating Season % Savings per Degree Setback	3%	
Annual Boiler Capacity		Mbtu/yr
Connected Heating Load Capacity	579,036	Btu/hr
Equivalent Full Load Heating Hours	500	hrs
Heating Equipment Efficiency	80%	
Cooling		
Cooling Season Facility Temp	74	F
Weekly Occupied Hours	70	hrs
Cooling Season Setback Temp	80	F
Cooling Season % Savings per Degree Setback	6%	
Connected Cooling Load Capacity	10	Tons
Equivalent Full Load Cooling Hours	381	hrs
Cooling Equipment EER	14.0	
SAVINGS		
Natural Gas Savings	902	Therms <sup>3</sup>
Cooling Electricity Savings	12,295	kWh

FULL DDC - ADDITIONAL CONTROLS SAVINGS CALCULATION		
EXISTING CONDITIONS		
Existing Facility Total Electric usage	651,678	kWh
Existing Facility Total Gas usage	22,100	Therms
Existing Facility Cooling Electric usage	13,033.6	kWh <sup>1</sup>
Existing Facility Heating Natural Gas usage	20,995	Therms <sup>2</sup>
PROPOSED CONDITIONS		
Proposed Facility Cooling Electric Savings	1,303	kWh
Proposed Facility Natural Gas Savings	2,100	Therms
SAVINGS		
Electric Savings	1,303	kWh
Natural Gas Savings	2,100	Therms

- Assumptions
- 1 2% of facility total electricity dedicated to Cooling; based on utility information
  - 2 95% of facility total natural gas dedicated to Heating; based on utility information
  - 3 10% Typical Savings associated with installation of DDC controls

COMBINED SAVINGS		
Natural Gas Savings	3,542	Therms
Cooling Electricity Savings	26,003	kWh
Total Cost Savings	\$ 7,467	
Estimated Total Project Cost	\$356,512	
Simple Payback	47.7	Yrs

Savings calculation formulas for setback are taken from NJ Protocols document for Occupancy Controlled Thermostats  
Savings calculations for additional controls are estimated based on the level of control to be added and prior experience

Newark Board of Education - NJBPU  
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Sussex Avenue

Multipliers	
Material:	1.03
Labor:	1.25
Equipment:	1.00

ECM-3A: Basic Controls - Cost

Description	QTY	UNIT	UNIT COSTS			SUBTOTAL COSTS			TOTAL COST	REMARKS
			MAT.	LABOR	EQUIP.	MAT.	LABOR	EQUIP.		
						\$ -	\$ -	\$ -	\$ -	
Unit Ventilator Controls	40	ea		\$ 4,000		\$ -	\$ 199,360	\$ -	\$ 199,360	Vendor Quote
Radiator Control (Group of 4)	6	ea		\$ 4,500		\$ -	\$ 33,642	\$ -	\$ 33,642	Vendor Quote
Exhaust Fan Control (Group of 4)	3	ea		\$ 3,300		\$ -	\$ 12,335	\$ -	\$ 12,335	Vendor Quote
Head End Controller & Programming	1	ls		\$ 32,000		\$ -	\$ 39,872	\$ -	\$ 39,872	Vendor Quote
New Unit Ventilator	0	ea	\$ 5,000	\$ 4,000		\$ -	\$ -	\$ -	\$ -	Engineering Estimate
New Exhaust Fan	0	ea	\$ 1,525	\$ 239		\$ -	\$ -	\$ -	\$ -	RS Means 2012
New Radiator	0	lf	\$ 43	\$ 21		\$ -	\$ -	\$ -	\$ -	RS Means 2012
						\$ -	\$ -	\$ -	\$ -	
						\$ -	\$ -	\$ -	\$ -	

\*\*Cost Estimates are for Energy Savings calculations only, do not use for procurement

\$ 285,209	Subtotal
\$ 71,302	25% Contingency
\$ 356,512	Total

Newark Board of Education - NJBPU  
CHA Project Number: 27999  
Sussex Avenue

**ECM-4: Replace urinals and flush valves with low flow**

Description: This ECM evaluates the water savings associated with replacing/ upgrading urinals with 0.125 GPF urinals and or flush valves.

EXISTING CONDITIONS		
Cost of Water / 1000 Gallons	\$7.55	\$ / kGal
Urinals in Building to be replaced	26	
Average Flushes / Urinal (per Day)	9	
Average Gallons / Flush	2.5	Gal

PROPOSED CONDITIONS		
Proposed Urinals to be Replaced	26	
Proposed Gallons / Flush	0.125	Gal
Proposed Material Cost of new urinal & valve	\$1,200	RS Means 2012
Proposed Installation Cost of new urinal & valve	\$1,000	RS Means 2012
Total cost of new urinals & valves		

SAVINGS		
Current Urinal Water Use	213.53	kGal / year
Proposed Urinal Water Use	10.68	kGal / year
Water Savings	202.85	kGal / year
Cost Savings	\$1,532	/ year

\*\*Cost Estimates are for Energy Savings calculations only, do not use for procurement

Newark Board of Education - NJBPU  
CHA Project Number: 27999  
Sussex Avenue

**ECM-4: Replace toilets and flush valves with low flow**

Description: This ECM evaluates the water savings associated with repalcing/  
upgrading toilets to 1.28 GPF fixtures and/or flush valves.

EXISTING CONDITIONS		
Cost of Water / 1000 Gallons	\$7.55	\$ / kGal
Toilets in Building	45	
Average Flushes / Toilet (per Day)	9	
Average Gallons / Flush	3.5	Gal

PROPOSED CONDITIONS		
Proposed Toilets to be Replaced	45	
Proposed Gallons / Flush	1.28	Gal

SAVINGS		
Current Toilet Water Use	517.39	kGal / year
Proposed Toilet Water Use	189.22	kGal / year
Water Savings	328.17	kGal / year
Cost Savings	\$2,478	/ year

Newark Board of Education - NJBPU  
CHA Project Number: 27999  
Sussex Avenue

Multipliers	
Material:	1.03
Labor:	1.25
Equipment:	1.12

Replace Plumbing Fixtures with Low-Flow Equivalents - Cost

Description	QTY	UNIT	UNIT COSTS			SUBTOTAL COSTS			TOTAL COST	REMARKS
			MAT.	LABOR	EQUIP.	MAT.	LABOR	EQUIP.		
									\$ -	
Low-Flow Urinal	26	EA	\$ 1,200	\$ 1,000	\$ -	\$ 32,042	\$ 32,396	\$ -	\$ 64,438	Vendor Estimate
Low-Flow Toilet	45	EA	\$ 1,400	\$ 1,000	\$ -	\$ 64,701	\$ 56,070	\$ -	\$ 120,771	Vendor Estimate
						\$ -	\$ -	\$ -	\$ -	

\*\*Cost Estimates are for Energy Savings calculations only, do not use for procurement

\$ 185,209	Subtotal
\$ 46,302	25% Contingency
\$ 231,512	Total

**Newark Board of Education - NJBPU**  
**CHA Project Number: 27999**  
**Sussex Avenue**

**New Jersey Pay For Performance Incentive Program**

**Note:** The following calculation is based on the New Jersey Pay For Performance Incentive Program per April, 2012  
 Building must have a minimum average electric demand of 100 kW. This minimum is waived for buildings owned by local governments or non-profit organizations.

At a minimum, all recommended measures were used for this calculation. To qualify for P4P incentives, the following P4P requirements must be met:

- At least 15% source energy savings
- No more than 50% savings from lighting measures
- Scope includes more than one measure
- Project has at least a 10% internal rate of return
- At least 50% of the source energy savings must come from investor-owned electricity and/or natural gas (note: exemption for fuel conversions)

Incentive #1		
Total Building Area (Square Feet)	64,762	
Is this audit funded by NJ BPU (Y/N)	Yes	

Board of Public Utilities (BPU)

	Annual Utilities	
	kWh	Therms
Existing Cost (from utility)	\$94,811	\$22,986
Existing Usage (from utility)	651,678	22,100
Proposed Savings	118,918	1,442
Existing Total MMBtus	4,434	
Proposed Savings MMBtus	550	
% Energy Reduction	12.4%	
Proposed Annual Savings	\$20,527	

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

	Incentives \$		
	Elec	Gas	Total
Incentive #1	\$0	\$0	\$0
Incentive #2	\$0	\$0	\$0
Incentive #3	\$0	\$0	\$0
Total All Incentives	\$0	\$0	\$0

Total Project Cost	\$198,569
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	Allowable Incentive	
% Incentives #1 of Utility Cost*	0.0%	\$0
% Incentives #2 of Project Cost**	0.0%	\$0
% Incentives #3 of Project Cost**	0.0%	\$0
Total Eligible Incentives***	\$0	
Project Cost w/ Incentives	\$198,569	

Project Payback (years)	
w/o Incentives	w/ Incentives
9.7	9.7

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

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

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

\*\*\* Maximum allowable amount of Incentive #1 is \$50,000 if not funded by NJ BPU, and \$25,000 if it is.

Maximum allowable amount of Incentive #2 & #3 is \$1 million per gas account and \$1 million per electric account; maximum 2 million per project

EXISTING CONDITIONS											RETROFIT CONDITIONS											COST & SAVINGS ANALYSIS									
Field Code	Area Description Unique description of the location - Room number/Room name: Floor number (if applicable)	No. of Fixtures before the retrofit	Standard Fixture Code "Lighting Fixture Code" Example 40 R F(U) = 2'x2' Troff 40 w Recess. Floor 2 lamps U shape	Code from Table of Standard Fixture Wattages	Watts per Fixture Value from Table of Standard Fixture Wattages	kW/Space (Watts/Fixt) * (Fixt No.)	Exisit Control [Pre-inst. control device	Annual Hours Estimated daily hours for the usage group	Annual kWh (kWh/Space) * (Annual Hours)	Number of Fixtures No. of fixtures after the retrofit	Standard Fixture Code "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	Watts per Fixture Value from Table of Standard Fixture Wattages	kW/Space (Watts/Fixt) * (Number of Fixtures)	Retrofit control device	Annual Hours Estimated annual hours for the usage group	Annual kWh (kWh/Space) (Annual Hours)	Annual kWh Saved (Original Annual kWh) - (Retrofit Annual kWh)	Annual kW Saved (Original Annual kW) - (Retrofit Annual kW)	Annual \$ Saved (kWh Saved) * (\$/kWh)	Retrofit Cost Cost for renovations to lighting system	NJ Smart Start Lighting Incentive Prescriptive Lighting Measures	Simple Payback With Out Incentive Length of time for renovations cost to be recovered	Simple Payback Length of time for renovations cost to be recovered							
20LED	300 Classroom	18	S 32 C F 1 (ELE)	F41LL	32	0.6	SW	2400	1,382	18	4 R LED Tube	200732x1	15	0.3	SW	2,400	648	734	0.3	\$	125.46	\$	2,150.55	\$0	17.1	17.1					
20LED	301 Classroom	18	S 32 C F 1 (ELE)	F41LL	32	0.6	SW	2400	1,382	18	4 R LED Tube	200732x1	15	0.3	SW	2,400	648	734	0.3	\$	125.46	\$	2,150.55	\$0	17.1	17.1					
20LED	302 Classroom	15	S 32 C F 1 (ELE)	F41LL	32	0.5	SW	2400	1,152	15	4 R LED Tube	200732x1	15	0.2	SW	2,400	540	612	0.3	\$	104.55	\$	1,792.13	\$0	17.1	17.1					
20LED	303 Classroom	15	S 32 C F 1 (ELE)	F41LL	32	0.5	SW	2400	1,152	15	4 R LED Tube	200732x1	15	0.2	SW	2,400	540	612	0.3	\$	104.55	\$	1,792.13	\$0	17.1	17.1					
20LED	Corridor	3	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2280	219	3	4 R LED Tube	200732x1	15	0.0	SW	2,280	103	116	0.1	\$	20.07	\$	358.43	\$0	17.9	17.9					
20LED	Stair	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	6240	399	2	4 R LED Tube	200732x1	15	0.0	SW	6,240	187	212	0.0	\$	31.93	\$	238.95	\$0	7.5	7.5					
20LED	Stair	4	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	6240	799	4	4 R LED Tube	200732x1	15	0.1	SW	6,240	374	424	0.1	\$	63.86	\$	477.90	\$0	7.5	7.5					
20LED	304 Computer Room	15	S 32 C F 1 (ELE)	F41LL	32	0.5	SW	2400	1,152	15	4 R LED Tube	200732x1	15	0.2	SW	2,400	540	612	0.3	\$	104.55	\$	1,792.13	\$0	17.1	17.1					
20LED	305 Classroom	15	S 32 C F 1 (ELE)	F41LL	32	0.5	SW	2400	1,152	15	4 R LED Tube	200732x1	15	0.2	SW	2,400	540	612	0.3	\$	104.55	\$	1,792.13	\$0	17.1	17.1					
20LED	306 Classroom	19	S 32 C F 1 (ELE)	F41LL	32	0.6	SW	2400	1,459	19	4 R LED Tube	200732x1	15	0.3	SW	2,400	694	775	0.3	\$	132.43	\$	2,270.03	\$0	17.1	17.1					
20LED	308 Classroom	17	S 32 C F 1 (ELE)	F41LL	32	0.5	SW	2400	1,306	17	4 R LED Tube	200732x1	15	0.3	SW	2,400	612	694	0.3	\$	118.49	\$	2,031.08	\$0	17.1	17.1					
20LED	310 Classroom	15	S 32 C F 1 (ELE)	F41LL	32	0.5	SW	2400	1,152	15	4 R LED Tube	200732x1	15	0.2	SW	2,400	540	612	0.3	\$	104.55	\$	1,792.13	\$0	17.1	17.1					
20LED	Corridor	4	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2280	292	4	4 R LED Tube	200732x1	15	0.1	SW	2,280	137	155	0.1	\$	26.76	\$	477.90	\$0	17.9	17.9					
20LED	Mens TR	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	2400	77	1	4 R LED Tube	200732x1	15	0.0	SW	2,400	36	41	0.0	\$	6.97	\$	119.48	\$0	17.1	17.1					
20LED	UN-52	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32	1	4 R LED Tube	200732x1	15	0.0	SW	1,000	15	17	0.0	\$	3.69	\$	119.48	\$0	32.4	32.4					
20LED	UN-53	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32	1	4 R LED Tube	200732x1	15	0.0	SW	1,000	15	17	0.0	\$	3.69	\$	119.48	\$0	32.4	32.4					
20LED	UN-54	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32	1	4 R LED Tube	200732x1	15	0.0	SW	1,000	15	17	0.0	\$	3.69	\$	119.48	\$0	32.4	32.4					
20LED	UN-50	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32	1	4 R LED Tube	200732x1	15	0.0	SW	1,000	15	17	0.0	\$	3.69	\$	119.48	\$0	32.4	32.4					
20LED	UN-51	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32	1	4 R LED Tube	200732x1	15	0.0	SW	1,000	15	17	0.0	\$	3.69	\$	119.48	\$0	32.4	32.4					
20LED	Corridor	11	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2280	803	11	4 R LED Tube	200732x1	15	0.2	SW	2,280	376	426	0.2	\$	73.58	\$	1,314.23	\$0	17.9	17.9					
20LED	314A Office	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	461	6	4 R LED Tube	200732x1	15	0.1	SW	2,400	216	245	0.1	\$	41.82	\$	716.85	\$0	17.1	17.1					
20LED	314B Art	13	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	998	13	4 R LED Tube	200732x1	15	0.2	SW	2,400	468	530	0.2	\$	90.61	\$	1,553.18	\$0	17.1	17.1					
20LED	314	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	2400	77	1	4 R LED Tube	200732x1	15	0.0	SW	2,400	36	41	0.0	\$	6.97	\$	119.48	\$0	17.1	17.1					
20LED	316 Science	12	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	922	12	4 R LED Tube	200732x1	15	0.2	SW	2,400	432	490	0.2	\$	83.64	\$	1,433.70	\$0	17.1	17.1					
20LED	318 Classroom	12	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	922	12	4 R LED Tube	200732x1	15	0.2	SW	2,400	432	490	0.2	\$	83.64	\$	1,433.70	\$0	17.1	17.1					
20LED	320 Classroom	12	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	922	12	4 R LED Tube	200732x1	15	0.2	SW	2,400	432	490	0.2	\$	83.64	\$	1,433.70	\$0	17.1	17.1					
20LED	313 Storage	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32	1	4 R LED Tube	200732x1	15	0.0	SW	1,000	15	17	0.0	\$	3.69	\$	119.48	\$0	32.4	32.4					
40LED	311 Storage	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	1000	60	1	T 59 R LED	RTL32R	38	0.0	SW	1,000	38	22	0.0	\$	4.78	\$	236.25	\$0	49.5	49.5					
40LED	309 Storage	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	1000	60	1	T 59 R LED	RTL32R	38	0.0	SW	1,000	38	22	0.0	\$	4.78	\$	236.25	\$0	49.5	49.5					
40LED	307 Utility Room	5	T 32 R F 2 (ELE)	F42LL	60	0.3	SW	1000	300	5	T 59 R LED	RTL32R	38	0.2	SW	1,000	190	110	0.1	\$	23.88	\$	1,181.25	\$0	49.5	49.5					
40LED	Storage	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	1000	60	1	T 59 R LED	RTL32R	38	0.0	SW	1,000	38	22	0.0	\$	4.78	\$	236.25	\$0	49.5	49.5					
40LED	Stairs	2	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	6240	749	2	T 59 R LED	RTL32R	38	0.1	SW	6,240	474	275	0.0	\$	41.32	\$	472.50	\$0	11.4	11.4					
20LED	200 Classroom	15	S 32 C F 1 (ELE)	F41LL	32	0.5	SW	2400	1,152	15	4 R LED Tube	200732x1	15	0.2	SW	2,400	540	612	0.3	\$	104.55	\$	1,792.13	\$0	17.1	17.1					
20LED	201 Classroom	15	S 32 C F 1 (ELE)	F41LL	32	0.5	SW	2400	1,152	15	4 R LED Tube	200732x1	15	0.2	SW	2,400	540	612	0.3	\$	104.55	\$	1,792.13	\$0	17.1	17.1					
20LED																															

		EXISTING CONDITIONS								RETROFIT CONDITIONS								COST & SAVINGS ANALYSIS						
Field Code	Area Description Unique description of the location - Room number/Room name: Floor number (if applicable)	No. of Fixtures No. of fixtures before the retrofit	Standard Fixture Code "Lighting Fixture Code" Example 40 R F(U) = 2'x2' Troff 40 w Recess. Floor 2	Fixture Code Code from Table of Standard Fixture Wattages	Watts per Fixture Value from Table of Standard Fixture Wattages	kW/Space (Watts/Fixt) * (Fixt No.)	Exist Control Pre-inst. control device	Annual Hours Estimated daily hours for the usage group	Annual kWh (kW/Space) * (Annual Hours)	Number of Fixtures No. of fixtures after the retrofit	Standard Fixture Code "Lighting Fixture Code" Example 2T 40 R F(U) = 2'x2' Troff 40 w Recess. Floor 2 lamps U shape	Fixture Code Code from Table of Standard Fixture Wattages	Watts per Fixture Value from Table of Standard Fixture Wattages	kW/Space (Watts/Fixt) * (Number of Fixtures)	Retrofit Control Retrofit control device	Annual Hours Estimated annual hours for the usage group	Annual kWh (kW/Space) * (Annual Hours)	Annual kWh Saved (Original Annual kWh) - (Retrofit Annual kWh)	Annual kW Saved (Original Annual kW) - (Retrofit Annual kW)	Annual \$ Saved (kWh Saved) * (\$/kWh)	Retrofit Cost Cost for renovations to lighting system	NJ Smart Start Lighting Incentive Prescriptive Lighting Measures	Simple Payback With Out Incentive Length of time for renovations cost to be recovered	Simple Payback Simple Payback Length of time for renovations cost to be recovered
	Total	861				52.4			128.850	861			2.957	22.4			54.709	74.141	30.1	\$12.599	\$152.679	\$3.750		
																		Demand Savings		30.1	\$2.384			
																		kWh Savings		74.141	\$10.215			
																		Total savings			\$12.599		12.1	11.8



EXISTING CONDITIONS										RETROFIT CONDITIONS										COST & SAVINGS ANALYSIS						
Field Code	Area Description Unique description of the location - Room number/Room name: Floor number (if applicable)	No. of Fixtures before the retrofit	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space (Watts/Fixt) * (Fixt No.)	Pre-Inst. control device	Annual Hours	Annual kWh (kW/Space) * (Annual Hours)	No. of Fixtures after the retrofit	Standard Fixture Code "Lighting Fixture Code" Example 2T 4R F(U) = 2'x2' Troff 40 w Recess. Floor 2 lamps U shape	Fixture Code	Watts per Fixture	kW/Space (Watts/Fixtures)	Retrofit Control device	Annual Hours	Annual kWh (kW/Space) * (Annual Hours)	Annual kWh Saved (Original Annual kWh) - (Retrofit Annual kWh)	Annual kW Saved (Original Annual kW) - (Retrofit Annual kW)	Annual \$ Saved (\$/kWh)	Retrofit Cost	NJ Smart Start Lighting Incentive	Simple Payback Length of time for renovations cost to be recovered	Simple Payback Length of time for renovations cost to be recovered		
20LED	300 Classroom	18	S 32 C F 1 (ELE)	F41LL	32	0.6	SW	2400	1,382.4	18	S 32 C F 1 (ELE)	F41LL	32	0.6	C-OCC	1680	967.7	414.7	0.0	\$57.14	\$270.00	\$35.00	4.7	4.1		
20LED	301 Classroom	18	S 32 C F 1 (ELE)	F41LL	32	0.6	SW	2400	1,382.4	18	S 32 C F 1 (ELE)	F41LL	32	0.6	C-OCC	1680	967.7	414.7	0.0	\$57.14	\$270.00	\$35.00	4.7	4.1		
20LED	302 Classroom	15	S 32 C F 1 (ELE)	F41LL	32	0.5	SW	2400	1,152.0	15	S 32 C F 1 (ELE)	F41LL	32	0.5	C-OCC	1680	806.4	345.6	0.0	\$47.62	\$270.00	\$35.00	5.7	4.9		
20LED	303 Classroom	15	S 32 C F 1 (ELE)	F41LL	32	0.5	SW	2400	1,152.0	15	S 32 C F 1 (ELE)	F41LL	32	0.5	C-OCC	1680	806.4	345.6	0.0	\$47.62	\$270.00	\$35.00	5.7	4.9		
20LED	Corridor	3	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2280	218.9	3	S 32 C F 1 (ELE)	F41LL	32	0.1	NONE	2280	218.9	0.0	0.0	\$0.00	\$0.00	\$0.00	#DIV/0!			
20LED	Stair	2	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	6240	399.4	2	S 32 C F 1 (ELE)	F41LL	32	0.1	NONE	6240	399.4	0.0	0.0	\$0.00	\$0.00	\$0.00	#DIV/0!			
20LED	Stair	4	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	6240	798.7	4	S 32 C F 1 (ELE)	F41LL	32	0.1	NONE	6240	798.7	0.0	0.0	\$0.00	\$0.00	\$0.00	#DIV/0!			
20LED	304 Computer Room	15	S 32 C F 1 (ELE)	F41LL	32	0.5	SW	2400	1,152.0	15	S 32 C F 1 (ELE)	F41LL	32	0.5	C-OCC	1680	806.4	345.6	0.0	\$47.62	\$270.00	\$35.00	5.7	4.9		
20LED	305 Classroom	15	S 32 C F 1 (ELE)	F41LL	32	0.5	SW	2400	1,152.0	15	S 32 C F 1 (ELE)	F41LL	32	0.5	C-OCC	1680	806.4	345.6	0.0	\$47.62	\$270.00	\$35.00	5.7	4.9		
20LED	306 Classroom	19	S 32 C F 1 (ELE)	F41LL	32	0.6	SW	2400	1,459.2	19	S 32 C F 1 (ELE)	F41LL	32	0.6	C-OCC	1680	1,021.4	437.8	0.0	\$60.31	\$270.00	\$35.00	4.5	3.9		
20LED	308 Classroom	17	S 32 C F 1 (ELE)	F41LL	32	0.5	SW	2400	1,305.6	17	S 32 C F 1 (ELE)	F41LL	32	0.5	C-OCC	1680	913.9	391.7	0.0	\$53.97	\$270.00	\$35.00	5.0	4.4		
20LED	310 Classroom	15	S 32 C F 1 (ELE)	F41LL	32	0.5	SW	2400	1,152.0	15	S 32 C F 1 (ELE)	F41LL	32	0.5	C-OCC	1680	806.4	345.6	0.0	\$47.62	\$270.00	\$35.00	5.7	4.9		
20LED	Corridor	4	S 32 C F 1 (ELE)	F41LL	32	0.1	SW	2280	291.8	4	S 32 C F 1 (ELE)	F41LL	32	0.1	NONE	2280	291.8	0.0	0.0	\$0.00	\$0.00	\$0.00	#DIV/0!			
20LED	Mens TR	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	76.8	1	S 32 C F 1 (ELE)	F41LL	32	0.0	NONE	2400	76.8	0.0	0.0	\$0.00	\$0.00	\$0.00	#DIV/0!			
20LED	UN-52	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32.0	1	S 32 C F 1 (ELE)	F41LL	32	0.0	C-OCC	250	8.0	24.0	0.0	\$3.31	\$270.00	\$35.00	81.7	71.1		
20LED	UN-53	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32.0	1	S 32 C F 1 (ELE)	F41LL	32	0.0	C-OCC	250	8.0	24.0	0.0	\$3.31	\$270.00	\$35.00	81.7	71.1		
20LED	UN-54	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32.0	1	S 32 C F 1 (ELE)	F41LL	32	0.0	C-OCC	250	8.0	24.0	0.0	\$3.31	\$270.00	\$35.00	81.7	71.1		
20LED	UN-50	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32.0	1	S 32 C F 1 (ELE)	F41LL	32	0.0	C-OCC	250	8.0	24.0	0.0	\$3.31	\$270.00	\$35.00	81.7	71.1		
20LED	UN-51	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32.0	1	S 32 C F 1 (ELE)	F41LL	32	0.0	C-OCC	250	8.0	24.0	0.0	\$3.31	\$270.00	\$35.00	81.7	71.1		
20LED	Corridor	11	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2280	802.6	11	S 32 C F 1 (ELE)	F41LL	32	0.4	NONE	2280	802.6	0.0	0.0	\$0.00	\$0.00	\$0.00	#DIV/0!			
20LED	314A Office	6	S 32 C F 1 (ELE)	F41LL	32	0.2	SW	2400	460.8	6	S 32 C F 1 (ELE)	F41LL	32	0.2	C-OCC	1500	288.0	172.8	0.0	\$23.81	\$270.00	\$35.00	11.3	9.9		
20LED	314B Art	13	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	988.4	13	S 32 C F 1 (ELE)	F41LL	32	0.4	C-OCC	1680	688.9	299.5	0.0	\$41.27	\$270.00	\$35.00	6.5	5.7		
20LED	314	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	2400	76.8	1	S 32 C F 1 (ELE)	F41LL	32	0.0	C-OCC	1680	53.8	23.0	0.0	\$3.17	\$270.00	\$35.00	85.1	74.0		
20LED	316 Science	12	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	921.6	12	S 32 C F 1 (ELE)	F41LL	32	0.4	C-OCC	1680	645.1	276.5	0.0	\$38.09	\$270.00	\$35.00	7.1	6.2		
20LED	318 Classroom	12	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	921.6	12	S 32 C F 1 (ELE)	F41LL	32	0.4	C-OCC	1680	645.1	276.5	0.0	\$38.09	\$270.00	\$35.00	7.1	6.2		
20LED	320 Classroom	12	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	921.6	12	S 32 C F 1 (ELE)	F41LL	32	0.4	C-OCC	1680	645.1	276.5	0.0	\$38.09	\$270.00	\$35.00	7.1	6.2		
20LED	313 Storage	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32.0	1	S 32 C F 1 (ELE)	F41LL	32	0.0	C-OCC	250	8.0	24.0	0.0	\$3.31	\$270.00	\$35.00	81.7	71.1		
40LED	311 Storage	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	1000	60.0	1	T 32 R F 2 (ELE)	F42LL	60	0.1	C-OCC	250	15.0	45.0	0.0	\$6.20	\$270.00	\$35.00	43.5	37.9		
40LED	309 Storage	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	1000	60.0	1	T 32 R F 2 (ELE)	F42LL	60	0.1	C-OCC	250	15.0	45.0	0.0	\$6.20	\$270.00	\$35.00	43.5	37.9		
40LED	307 Utility Room	5	T 32 R F 2 (ELE)	F42LL	60	0.3	SW	1000	300.0	5	T 32 R F 2 (ELE)	F42LL	60	0.3	NONE	1000	300.0	0.0	0.0	\$0.00	\$0.00	\$0.00	#DIV/0!			
40LED	Storage	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	1000	60.0	1	T 32 R F 2 (ELE)	F42LL	60	0.1	C-OCC	250	15.0	45.0	0.0	\$6.20	\$270.00	\$35.00	43.5	37.9		
40LED	Stairs	2	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	6240	748.8	2	T 32 R F 2 (ELE)	F42LL	60	0.1	NONE	6240	748.8	0.0	0.0	\$0.00	\$0.00	\$0.00	#DIV/0!			
20LED	200 Classroom	15	S 32 C F 1 (ELE)	F41LL	32	0.5	SW	2400	1,152.0	15	S 32 C F 1 (ELE)	F41LL	32	0.5	C-OCC	1680	806.4	345.6	0.0	\$47.62	\$270.00	\$35.00	5.7	4.9		
20LED	201 Classroom	15	S 32 C F 1 (ELE)	F41LL	32	0.5	SW	2400	1,152.0	15	S 32 C F 1 (ELE)	F41LL	32	0.5	C-OCC	1680	806.4	345.6	0.0	\$47.62	\$270.00	\$35.00	5.7	4.9		
20LED	202 Classroom	15	S 32 C F 1 (ELE)	F41LL	32	0.5	SW	2400	1,152.0	15	S 32 C F 1 (ELE)	F41LL	32	0.5	C-OCC	1680	806.4	345.6	0.0	\$47.62	\$270.00	\$35.00	5.7	4.9		
20LED	203 Nurse Office	12	S 32 C F 1 (ELE)	F41LL	32	0.4	SW	2400	921.6	12	S 32 C F 1 (ELE)	F41LL	32	0.4	C-OCC	1500	576.0	345.6	0.0	\$47.62	\$270.00	\$35.00	5.7	4.9		

		EXISTING CONDITIONS								RETROFIT CONDITIONS								COST & SAVINGS ANALYSIS						
Field Code	Area Description	No. of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Exist Control	Annual Hours	Annual kWh	Number of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Retrofit Control	Annual Hours	Annual kWh	Annual kWh Saved	Annual kW Saved	Annual \$ Saved	Retrofit Cost	NJ Smart Start Lighting Incentive	Simple Payback With Out Incentive	Simple Payback
	Unique description of the location - Room number/Room name: Floor number (if applicable)	No. of fixtures before the retrofit	Lighting Fixture Code	Code from Table of Standard Fixture Wattages	Value from Table of Standard Fixture Wattages	(Watts/Fixt) * (Fixt No.)	Pre-inst. control device	Estimated annual hours for the usage group	(kW/Space) * (Annual Hours)	No. of fixtures after the retrofit	"Lighting Fixture Code" Example 2T 40 R F(U)      = 2'x2' Troff 40 w Recess. Floor 2 lamps U shape	Code from Table of Standard Fixture Wattages	Value from Table of Standard Fixture Wattages	(Watts/Fixt) * (Number of Fixtures)	Retrofit control device	Estimated annual hours for the usage group	(kW/Space) * (Annual Hours)	(Original Annual kWh) - (Retrofit Annual kWh)	(Original Annual kW) - (Retrofit Annual kW)	(kW Saved) * (\$/kWh)	Cost for renovations to lighting system	Length of time for renovations cost to be recovered	Length of time for renovations cost to be recovered	
	Total		861				52.4			128850.1	861.0				52.4			103960.5	24889.6	0.0	3429.3	22680.0	2940.0	
																		Demand Savings		0.0	\$0			
																		kWh Savings	24,890	\$3,429				
																		Total Savings		\$3,429		6.6	5.8	

		EXISTING CONDITIONS										RETROFIT CONDITIONS										COST & SAVINGS ANALYSIS						
Field Code	Area Description Unique description of the location - Room number/Room name: Floor number (if applicable)	No. of Fixtures before the retrofit	Standard Fixture Code		Code from Table of Standard Fixture Wattages	Watts per Fixture Value from Table of Standard Fixture Wattages	kW/Space (Watts/Fixt) * (Fixt No.)	Pre-Inst. control device	Annual Hours Estimated daily hours for the usage group	Annual kWh (kW/Space) * (Annual Hours)	Number of Fixtures after the retrofit	Standard Fixture Code		Code from Table of Standard Fixture Wattages	Watts per Fixture Value from Table of Standard Fixture Wattages	kW/Space (Watts/Fixt) * (Number of Fixtures)	Retrofit Control device	Annual Hours Estimated annual hours for the usage group	Annual kWh (kW/Space) * (Annual Hours)	Annual kWh Saved (Original Annual kWh) - (Retrofit Annual kWh)	Annual kW Saved (Original Annual kW) - (Retrofit Annual kW)	Annual \$ Saved (kWh Saved) * (\$/kWh)	Retrofit Cost Cost for renovations to lighting system	NJ Smart Start Lighting Incentive Prescriptive Lighting Measures	Simple Payback With Out Incentive Length of time for renovations cost to be recovered	Simple Payback Length of time for renovations cost to be recovered		
			Lighting Fixture Code	Fixture Code								Lighting Fixture Code	Fixture Code															
20LED	300 Classroom	18	S 32 C F 1 (ELE)	F41LL	F41LL	32	0.6	SW	2400	1,382	18	4 ft LED Tube	200732x1	15	0.3	C-0CC	1,680	454	929	0.3	\$ 152.24	\$ 2,420.55	\$ 35	15.9	15.7			
20LED	301 Classroom	18	S 32 C F 1 (ELE)	F41LL	F41LL	32	0.6	SW	2400	1,382	18	4 ft LED Tube	200732x1	15	0.3	C-0CC	1,680	454	929	0.3	\$ 152.24	\$ 2,420.55	\$ 35	15.9	15.7			
20LED	302 Classroom	15	S 32 C F 1 (ELE)	F41LL	F41LL	32	0.5	SW	2400	1,152	15	4 ft LED Tube	200732x1	15	0.2	C-0CC	1,680	378	774	0.3	\$ 126.87	\$ 2,062.13	\$ 35	16.3	16.0			
20LED	303 Classroom	15	S 32 C F 1 (ELE)	F41LL	F41LL	32	0.5	SW	2400	1,152	15	4 ft LED Tube	200732x1	15	0.2	C-0CC	1,680	378	774	0.3	\$ 126.87	\$ 2,062.13	\$ 35	16.3	16.0			
20LED	Corridor	3	S 32 C F 1 (ELE)	F41LL	F41LL	32	0.1	SW	2280	219	3	4 ft LED Tube	200732x1	15	0.0	NONE	2,280	103	116	0.1	\$ 20.07	\$ 358.43	-	17.9	17.9			
20LED	Stair	2	S 32 C F 1 (ELE)	F41LL	F41LL	32	0.1	SW	6240	399	2	4 ft LED Tube	200732x1	15	0.0	NONE	6,240	187	212	0.0	\$ 31.93	\$ 238.95	-	7.5	7.5			
20LED	Stair	4	S 32 C F 1 (ELE)	F41LL	F41LL	32	0.1	SW	6240	799	4	4 ft LED Tube	200732x1	15	0.1	NONE	6,240	374	424	0.1	\$ 63.86	\$ 477.90	-	7.5	7.5			
20LED	304 Computer Room	15	S 32 C F 1 (ELE)	F41LL	F41LL	32	0.5	SW	2400	1,152	15	4 ft LED Tube	200732x1	15	0.2	C-0CC	1,680	378	774	0.3	\$ 126.87	\$ 2,062.13	\$ 35	16.3	16.0			
20LED	305 Classroom	15	S 32 C F 1 (ELE)	F41LL	F41LL	32	0.5	SW	2400	1,152	15	4 ft LED Tube	200732x1	15	0.2	C-0CC	1,680	378	774	0.3	\$ 126.87	\$ 2,062.13	\$ 35	16.3	16.0			
20LED	306 Classroom	19	S 32 C F 1 (ELE)	F41LL	F41LL	32	0.6	SW	2400	1,459	19	4 ft LED Tube	200732x1	15	0.3	C-0CC	1,680	479	980	0.3	\$ 160.70	\$ 2,540.03	\$ 35	15.8	15.6			
20LED	308 Classroom	17	S 32 C F 1 (ELE)	F41LL	F41LL	32	0.5	SW	2400	1,306	17	4 ft LED Tube	200732x1	15	0.3	C-0CC	1,680	428	877	0.3	\$ 143.78	\$ 2,301.08	\$ 35	16.0	15.8			
20LED	310 Classroom	15	S 32 C F 1 (ELE)	F41LL	F41LL	32	0.5	SW	2400	1,152	15	4 ft LED Tube	200732x1	15	0.2	C-0CC	1,680	378	774	0.3	\$ 126.87	\$ 2,062.13	\$ 35	16.3	16.0			
20LED	Corridor	4	S 32 C F 1 (ELE)	F41LL	F41LL	32	0.1	SW	2280	292	4	4 ft LED Tube	200732x1	15	0.1	NONE	2,280	137	155	0.1	\$ 26.76	\$ 477.90	-	17.9	17.9			
20LED	Mens TR	1	S 32 C F 1 (ELE)	F41LL	F41LL	32	0.0	SW	2400	77	1	4 ft LED Tube	200732x1	15	0.0	NONE	2,400	36	41	0.0	\$ 6.97	\$ 119.48	-	17.1	17.1			
20LED	UN-52	1	S 32 C F 1 (ELE)	F41LL	F41LL	32	0.0	SW	1000	32	1	4 ft LED Tube	200732x1	15	0.0	C-0CC	250	4	28	0.0	\$ 5.24	\$ 389.48	\$ 35	74.3	67.6			
20LED	UN-53	1	S 32 C F 1 (ELE)	F41LL	F41LL	32	0.0	SW	1000	32	1	4 ft LED Tube	200732x1	15	0.0	C-0CC	250	4	28	0.0	\$ 5.24	\$ 389.48	\$ 35	74.3	67.6			
20LED	UN-54	1	S 32 C F 1 (ELE)	F41LL	F41LL	32	0.0	SW	1000	32	1	4 ft LED Tube	200732x1	15	0.0	C-0CC	250	4	28	0.0	\$ 5.24	\$ 389.48	\$ 35	74.3	67.6			
20LED	UN-50	1	S 32 C F 1 (ELE)	F41LL	F41LL	32	0.0	SW	1000	32	1	4 ft LED Tube	200732x1	15	0.0	C-0CC	250	4	28	0.0	\$ 5.24	\$ 389.48	\$ 35	74.3	67.6			
20LED	UN-51	1	S 32 C F 1 (ELE)	F41LL	F41LL	32	0.0	SW	1000	32	1	4 ft LED Tube	200732x1	15	0.0	C-0CC	250	4	28	0.0	\$ 5.24	\$ 389.48	\$ 35	74.3	67.6			
20LED	Corridor	11	S 32 C F 1 (ELE)	F41LL	F41LL	32	0.4	SW	2280	803	11	4 ft LED Tube	200732x1	15	0.2	NONE	2,280	376	426	0.2	\$ 73.58	\$ 1,314.23	-	17.9	17.9			
20LED	314A Office	6	S 32 C F 1 (ELE)	F41LL	F41LL	32	0.2	SW	2400	461	6	4 ft LED Tube	200732x1	15	0.1	C-0CC	1,500	135	326	0.1	\$ 52.98	\$ 986.85	\$ 35	18.6	18.0			
20LED	314B Art	13	S 32 C F 1 (ELE)	F41LL	F41LL	32	0.4	SW	2400	998	13	4 ft LED Tube	200732x1	15	0.2	C-0CC	1,680	328	671	0.2	\$ 109.95	\$ 1,823.18	\$ 35	16.6	16.3			
20LED	314	1	S 32 C F 1 (ELE)	F41LL	F41LL	32	0.0	SW	2400	77	1	4 ft LED Tube	200732x1	15	0.0	C-0CC	1,680	25	52	0.0	\$ 8.46	\$ 389.48	\$ 35	46.0	41.9			
20LED	316 Science	12	S 32 C F 1 (ELE)	F41LL	F41LL	32	0.4	SW	2400	922	12	4 ft LED Tube	200732x1	15	0.2	C-0CC	1,680	302	619	0.2	\$ 101.49	\$ 1,703.70	\$ 35	16.8	16.4			
20LED	318 Classroom	12	S 32 C F 1 (ELE)	F41LL	F41LL	32	0.4	SW	2400	922	12	4 ft LED Tube	200732x1	15	0.2	C-0CC	1,680	302	619	0.2	\$ 101.49	\$ 1,703.70	\$ 35	16.8	16.4			
20LED	320 Classroom	12	S 32 C F 1 (ELE)	F41LL	F41LL	32	0.4	SW	2400	922	12	4 ft LED Tube	200732x1	15	0.2	C-0CC	1,680	302	619	0.2	\$ 101.49	\$ 1,703.70	\$ 35	16.8	16.4			
20LED	313 Storage	1	S 32 C F 1 (ELE)	F41LL	F41LL	32	0.0	SW	1000	32	1	4 ft LED Tube	200732x1	15	0.0	C-0CC	250	4	28	0.0	\$ 5.24	\$ 389.48	\$ 35	74.3	67.6			
40LED	311 Storage	1	T 32 R F 2 (ELE)	F42LL	F42LL	60	0.1	SW	1000	60	1	T 59 R LED	RTL3D38	38	0.0	C-0CC	250	10	51	0.0	\$ 8.70	\$ 506.25	\$ 35	58.2	54.1			
40LED	309 Storage	1	T 32 R F 2 (ELE)	F42LL	F42LL	60	0.1	SW	1000	60	1	T 59 R LED	RTL3D38	38	0.0	C-0CC	250	10	51	0.0	\$ 8.70	\$ 506.25	\$ 35	58.2	54.1			
40LED	307 Utility Room	5	T 32 R F 2 (ELE)	F42LL	F42LL	60	0.3	SW	1000	300	5	T 59 R LED	RTL3D38	38	0.2	NONE	1,000	190	110	0.1	\$ 23.88	\$ 1,181.25	-	49.5	49.5			
40LED	Storage	1	T 32 R F 2 (ELE)	F42LL	F42LL	60	0.1	SW	1000	60	1	T 59 R LED	RTL3D38	38	0.0	C-0CC	250	10	51	0.0	\$ 8.70	\$ 506.25	\$ 35	58.2	54.1			
40LED	Stairs	2	T 32 R F 2 (ELE)	F42LL	F42LL	60	0.1	SW	6240	749	2	T 59 R LED	RTL3D38	38	0.1	NONE	6,240	474	275	0.0	\$ 41.32	\$ 472.50	-	11.4	11.4			
20LED	200 Classroom	15	S 32 C F 1 (ELE)	F41LL	F41LL	32	0.5	SW	2400	1,152	15	4 ft LED Tube	200732x1	15	0.2	C-0CC	1,680	378	774	0.3	\$ 126.87	\$ 2,062.13	\$ 35	16.3	16.0			
20LED	201 Classroom	15	S 32 C F 1 (ELE)	F41LL	F41LL	32	0.5	SW	2400	1,152	15	4 ft LED Tube	200732x1	15	0.2	C-0CC	1,680	378	774	0.3	\$ 126.87	\$ 2,062.13	\$ 35	16.3	16.0			
20LED	20																											

		EXISTING CONDITIONS									RETROFIT CONDITIONS									COST & SAVINGS ANALYSIS						
Field Code	Area Description	No. of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Exist Control	Annual Hours	Annual kWh	Number of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Retrofit Control	Annual Hours	Annual kWh	Annual kWh Saved	Annual kW Saved	Annual \$ Saved	Retrofit Cost	NJ Smart Start Lighting Incentive	Simple Payback With Out Incentive	Simple Payback		
		No. of fixtures before the retrofit	Lighting Fixture Code	Code from Table of Standard Fixture Wattages	Value from Table of Standard Fixture Wattages	(Watts/Fixt) * (Fixt No.)	Pre-inst. control device	Estimated daily hours for the usage group	(kW/Space) * (Annual Hours)	No. of fixtures after the retrofit	Lighting Fixture Code	Code from Table of Standard Fixture Wattages	Value from Table of Standard Fixture Wattages	(Watts/Fixt) * (Number of Fixtures)	Retrofit control device	Estimated annual hours for the usage group	(kW/Space) * (Annual Hours)	(Original Annual kWh) - (Retrofit Annual kWh)	(Original Annual kW) - (Retrofit Annual kW)	(kWh Saved) * (\$/kWh)	Cost for renovations to lighting system	Prescriptive Lighting Measures	Length of time for renovations cost to be recovered	Length of time for renovations cost to be recovered		
S	Total	861				52.4			128,850	861				22.4			43,358		30.1	14,163	175,359	\$6,690				
S																		Demand Savings		30.1	\$2,384					
S																		kWh Savings		85,492	\$11,779					
S																		Total Savings			\$14,163		12.4	11.9		

## **APPENDIX D**

### **New Jersey Board of Public Utilities Incentives**

- i. Smart Start**
  - ii. Direct Install**
  - iii. Pay for Performance (P4P)**
  - iv. Energy Savings Improvement Plan (ESIP)**
-

## I. SMART START



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## NJ SmartStart Buildings

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OIL, PROPANE & MUNICIPAL  
ELECTRIC CUSTOMERS

EDA PROGRAMS

SBC CREDIT PROGRAM



#### With New Jersey SmartStart Buildings ...

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

#### Special Notice

Enhanced incentives are available for NJ SmartStart Building upgrades in buildings impacted by Hurricane Sandy. Eligible projects receive an additional 50% and new incentives have been added for high efficiency food service equipment.

**Visit the Sandy web page for details and important links.**

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

[Project Categories](#)

[Custom Measures](#)

[Incentives for Qualifying Equipment and Projects](#)

[Program Terms and Conditions](#)

[Find a Trade Ally](#)

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

#### Getting Started

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

**PAST PROGRAMS****TOOLS AND RESOURCES****PROGRAM UPDATES****CONTACT US**

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

**Support for Custom Energy-Efficiency Measures**

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

**Incentives for Qualifying Equipment and Projects**

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

Find out more about equipment incentives

**For specific details** on equipment requirements and financial incentives, including incentives for equipment not listed here, contact a program representative. Fiscal year financial incentives will be limited to a maximum of \$500,000 per customer utility account and are available as long as permits are obtained.

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## Equipment Incentives

### Special Notice

Enhanced incentives are available for NJ SmartStart Building upgrades in buildings impacted by Hurricane Sandy. Eligible projects receive an additional 50% and new incentives have been added for high efficiency food service equipment.

**Visit the Sandy web page for details and important links.**

### More reasons for a smart start on your next project!

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

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

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

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



#### Electric Chillers

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

#### Gas Cooling

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

**PAST PROGRAMS****TOOLS AND RESOURCES****PROGRAM UPDATES****CONTACT US****Desiccant Systems** (\$1.00 per cfm - gas or electric)**Electric Unitary HVAC**

Unitary AC and split systems (\$73 - \$92 per ton)  
 Air-to-air heat pumps (\$73 - \$92 per ton)  
 Water-source heat pumps (\$81 per ton)  
 Packaged terminal AC & HP (\$65 per ton)  
 Central DX AC Systems (\$40 - \$72 per ton)  
 Dual Enthalpy Economizer Controls (\$250)  
 Occupancy Controlled Thermostats (\$75 each)  
 A/C Economizing Controls (\$85 - \$170 each)

**Ground Source Heat Pumps**

Closed Loop (\$450-750 per ton)

**Gas Heating**

Gas-fired boilers < 300 MBH (\$300 per unit)  
 Gas-fired boilers ≥ 300 MBH - 1500 MBH (\$1.75 per MBH)  
 Gas-fired boilers ≥ 1500 MBH - ≤ 4000 MBH (\$1.00 per MBH)  
 Gas-fired boilers > 4000 MBH (Calculated through Custom Measure)  
 Gas furnaces (\$300-\$400 per unit)  
 Gas infrared heaters - indoor only (\$300 - \$500 per unit)  
 Boiler economizing controls (\$1,200 - \$2,700 per unit)

**Variable Frequency Drives**

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

**Natural Gas Water Heating**

Gas water heaters ≤ 50 gallons (\$50 per unit)  
 Gas-fired water heaters > 50 gallons (\$1.00 - \$2.00 per MBH)  
 Tankless water heaters replacing a free standing water heater > 82 energy factor (\$300 per heater)  
 Gas-fired booster water heaters (\$17 - \$35 per MBH)

**Premium Motors**

Three-phase motors (\$45 - \$700 per motor) (**Incentive was discontinued effective March 1, 2013 except for buildings impacted by Hurricane Sandy. Approved applications will have the standard timeframe from the program commitment date to complete the installation.**)

**Refrigerator/Freezer Case Premium Efficiency Motors (ECM)**

Fractional (< 1 HP) Electronic Commutated Motors (ECM) (\$40 per for replacement of existing shaded-pole motor in refrigerated/freezer case)

**Prescriptive Lighting**

New Linear Fluorescent

T-12, HID and Incandescent to T-5 and T-8 (\$25 - \$200 per fixture) (**Note: T12 replacements are only available for buildings impacted by Hurricane Sandy**)

New Induction (\$70 per replaced HID fixture)

New LED

Screw-in/Plug-in (\$10 - \$20 per lamp)

Refrigerator/Freezer Case (\$30 - \$65 per fixture)

Outdoor pole/arm/wall-mounted luminaires (\$100 - \$175 per fixture)

Display case (\$30 per case)

Shelf-mounted display and task (\$15 per linear foot)

Wall-wash, desk, recessed (\$20 - \$35 per fixture)

Parking garage luminaires (\$100 per fixture)

Track or Mono-Point directional (\$50 per fixture)

Stairwell and Passageway luminaires (\$40 per fixture)

High-Bay, Low-Bay (\$150 per fixture)

Bollard (\$50 per fixture)

Luminaires for Ambient Lighting of Interior Commercial Space  
Linear panels (\$50 per fixture)

Fuel pump canopy (\$100 per fixture)

LED retrofit kits (custom measures)

New Pulse-Start Metal Halide (\$25 per fixture)

Linear Fluorescent Retrofit (\$10 - \$20 per fixture)

Induction Retrofit (\$50 per retrofitted HID fixture)

New Construction/Complete Renovation (performance-based)

**Note: Incentives for T-12 to T-5 and T-8 lamps with electronic ballast in facilities (\$10 per fixture, 1-4 lamps) and T-5/T-8 high bay fixtures (\$16 - per fixture) were discontinued effective March 1, 2013 for T-12 retrofits replacements except for buildings impacted by Hurricane Sandy. Approved applications will have the standard timeframe of one year from the project commitment date to complete the installation**

### Lighting Controls

#### Occupancy Sensors

Wall mounted (\$20 per control)

Remote mounted (\$35 per control)

Daylight dimmers (\$25 per fixture controlled, \$50 per fixture for office applications only)

Occupancy controlled hi-low fluorescent controls (\$25 per fixture controlled)

#### HID or Fluorescent Hi-Bay Controls

Occupancy hi-low (\$35 per fixture controlled)

Daylight dimming (\$45 per fixture controlled)

### Refrigeration

#### Covers and Doors

Energy-Efficient doors for open refrigerated doors/covers (\$100 per door)

Aluminum Night Curtains for open refrigerated cases (\$3.50 per linear foot)

#### Controls

Door Heater Control (\$50 per control)

Electric Defrost Control (\$50 per control)

Evaporator Fan Control (\$75 per control)

Novelty Cooler Shutoff (\$50 per control)

## Food Service Equipment

### Cooking

Combination Electric Oven/Steamer (\$1,000 per oven)  
 Combination Gas Oven/Steamer (\$750 per oven)  
 Electric Convection Oven (\$350 per oven)  
 Gas Convection Oven (\$500 per oven)  
 Gas Rack Oven (\$1,000 single, \$2,000 double)  
 Gas Conveyor Oven (\$500 small deck, \$750 large deck)  
 Electric Fryer (\$200 per vat)  
 Gas Fryer (\$749 per vat)  
 Electric Large Vat Fryer (\$200 per vat)  
 Gas Large Vat Fryer (\$500 per vat)  
 Electric Griddle (\$300 per griddle)  
 Gas Griddle (\$125 per griddle)  
 Electric Steam Cooker (\$1,250 per steamer)  
 Gas Steam Cooker (\$2,000 per steamer)

### Holding

Full Size Insulated Cabinets (\$300 per cabinet)  
 Three Quarter Size Insulated Cabinets (\$250 per cabinet)  
 Half Size Insulated Cabinets (\$200 per cabinet)

### Cooling

Glass Door Refrigerators (\$75 - \$150 per unit)  
 Solid Door Refrigerators (\$50 - \$200 per unit)  
 Glass Door Freezers (\$200 - \$1,000 per unit)  
 Solid Door Freezers (\$100 - \$600 per unit)  
 Ice Machines (\$50 - \$500 per unit)

### Cleaning

Dishwashers (\$400 - \$1,500 per unit)

## Other Equipment Incentives\*

Performance Lighting (\$1.00 per watt per square foot below program incentive threshold, currently 5% more energy efficient than ASHRAE 2007 for New Construction only.)

Custom electric and gas equipment incentives (not prescriptive)

\*Equipment incentives are calculated based on type, efficiency, size, and application and are evaluated on a case-by-case basis. Contact us for details.

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## II. DIRECT INSTALL



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NEW JERSEY'S CLEAN ENERGY PROGRAM

**DIRECT Install**

#### Let us pay up to 70% of your energy efficiency upgrade.

Sometimes, the biggest challenge to improving energy efficiency is knowing where to and how to get through the process. Created specifically for existing small to medium facilities, Direct Install is a turnkey solution that makes it easy and affordable to upgrade high efficiency equipment. Direct Install is designed to cut your facility's energy costs replacing lighting, HVAC and other outdated operational equipment with energy efficient alternatives. The program pays up to 70% of retrofit costs, dramatically improving your payback on the project. There is a \$125,000 incentive cap on each project.

#### ELIGIBILITY



Existing small to mid-sized commercial and industrial facilities with a peak electric demand that did not exceed 200 kW in any of the preceding 12 months are eligible to participate in Direct Install. Applicants will submit the last 12 months of electric utility bills indicating that they are below the demand threshold and have occupied the building during that time. Buildings must be located in New Jersey and served by the state's public, regulated electric or natural gas utility companies.

#### SYSTEMS & EQUIPMENT ADDRESSED BY THE PROGRAM

Lighting  
Heating, Cooling & Ventilation (HVAC)  
Refrigeration  
Motors  
Natural Gas  
Variable Frequency Drives



Measures eligible for Direct Install are limited to specific equipment categories, types and capacities. Boilers may not exceed 500,000 Btuh and furnaces may not exceed 140,

### III. PAY FOR PERFORMANCE (P4P)



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## Pay for Performance - Existing Buildings

Download program applications and incentive forms.

### The Greater the Savings, the Greater Your Incentives

Take a comprehensive, whole-building approach to saving energy in your existing facility. Earn incentives that are directly linked to your savings. Pay for Performance relies on a



program partners who provide technical services under direct contract to you. Acting as your energy expert, your partner will develop a whole-building energy reduction plan for each project with a whole-building technical component of a traditional energy audit, a financial plan for full implementation of energy efficient measures and a construction schedule for installation.

#### Eligibility

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

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

### ENERGY STAR Portfolio Manager

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



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

#### Incentives



**OIL, PROPANE & MUNICIPAL  
ELECTRIC CUSTOMERS**

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

**EDA PROGRAMS**

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

**SBC CREDIT PROGRAM**

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

**PAST PROGRAMS**

**TOOLS AND RESOURCES**

Incentive #3 - Completion of Post-Construction Benchmarking Report - A completed report verifying energy reductions based on one year of post-

**PROGRAM UPDATES**

implementation results. Incentives for electricity and natural gas savings will be based on actual savings, provided that the minimum performance threshold of savings has been achieved.

**CONTACT US**



**A detailed Incentive Structure document is available on the applications and form**

### **Steps to Participation**

[Click here](#) for a step-by-step description of the program.

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# PAY FOR PERFORMANCE APPLICATION FORM

**July 1, 2013 - June 30, 2014**

**Utility Serving Applicant:** ☐ Atlantic City Electric ☐ Jersey Central Power & Light ☐ PSE&G  
☐ New Jersey Natural Gas ☐ Elizabethtown Gas ☐ Rockland Electric Co. ☐ South Jersey Gas  
☐ Other Electric Service Provider (please specify): \_\_\_\_\_  
☐ Other Fuel Provider: \_\_\_\_\_ ☐ Oil: \_\_\_\_\_ ☐ Other (Please specify): \_\_\_\_\_

## Instructions

1. Read the program material to determine project qualification.
2. Read the Participation Agreement and sign where indicated.
3. Fill out all applicable spaces on this form.
4. Provide a copy of the customer's company W-9 form.
5. Provide the most recent consecutive 12 month period of utility bills for the project.

6. Provide brief description of facility.
7. Partner must submit the application package via e-mail, mail or fax **DIRECTLY** to the Market Manager – see back of this form.

**Approval of this Application is not an approval of the project's scope of work. Scope of work is only approved upon approval of the Energy Reduction Plan. See application and program guidelines for more information.**

## Customer/Owner Information (payment will be made to entity entered here)

Company Name		Project Contact/Title	
Company Address		City	State Zip
Phone/Fax	E-mail	Federal ID/SSN	

## Partner Information

Company Name		Project Contact/Title	
Company Address		City	State Zip
Phone	Fax	E-mail	

## Project Information

Project Name			
Building Address		City	State Zip
Utility Account Number(s): Electric		Gas	
* Note: Please use the back of this page for additional utility accounts if quantity exceeds space allotment.			
Annual Peak kW Demand	Building Type		Number of Buildings
Size of Building(s) (gross sq/ft)		Direct, Master or Sub Metered	

## Funding

☐ Check the box if an Energy Savings Improvement Program (ESIP) will be a source of funding. ESIP allows government agencies to pay for energy related improvements using the value of the resulting energy savings.

Do you expect to receive funding under any other efficiency programs? ☐ No ☐ Yes If Yes, please specify below:

Utility Program #1 – Utility: _____	Program Name: _____
Utility Program #2 – Utility: _____	Program Name: _____
Federal Program #1 – Organization: _____	Program Name: _____
Federal Program #2 – Organization: _____	Program Name: _____
Other Program – Organization: _____	Program Name: _____

## Additional Project information

Additional Utility Account(s)

Account type	Account number
Account type	Account number
Account type	Account number
Account type	Account number
Account type	Account number
Account type	Account number
Account type	Account number
Account type	Account number
Account type	Account number
Account type	Account number
Account type	Account number
Account type	Account number

## Additional Comments:

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Complete this application form and send it directly to the Commercial/Industrial Market Manager by e-mail, mail or fax.

New Jersey's Clean Energy Program  
c/o TRC Energy Services-P4P  
900 Route 9 North, Suite 404 • Woodbridge, NJ 07095

Phone: 866-657-6278 • Fax: 732-855-0422  
E-mail: P4P@NJCleanEnergy.com

**Visit our website: [NJCleanEnergy.com/P4P](http://NJCleanEnergy.com/P4P)**

New Jersey SmartStart Buildings<sup>®</sup> is a registered trademark. Use of the mark without the permission of the New Jersey Board of Public Utilities, Office of Clean Energy is prohibited.

\*Incentives/Requirements subject to change.



002-FY14-04/14

# Pay For Performance-Existing Buildings

## Participation Agreement

### Definitions:

**Design Incentives** – Incentives that may be offered to design professionals by the Program.

**Design Services** – Services that may be offered to design professionals under the Program.

**Energy-Efficient Measures** – Any device eligible to receive a Program Incentive payment through the NJ Clean Energy Commercial and Industrial Program (New Jersey SmartStart Buildings).

**New Jersey Utilities** – The regulated electric and/or gas utilities in the State of New Jersey. They are: Atlantic City Electric, Jersey Central Power & Light, Rockland Electric Company, New Jersey Natural Gas, Elizabethtown Gas, PSE&G, and South Jersey Gas.

**Administrator** – New Jersey Board of Public Utilities, Office of Clean Energy

**Participating Customers** – Those non-residential electric and/or gas service customers of the New Jersey Utilities who participate in this Program.

**Product Installation or Equipment Installation** – Installation of the Energy-Efficient Measures.

Projects with a contract threshold of \$14,187 (increasing to \$15,444 effective July 1, 2014) are required to pay no less than prevailing wage rate to workers employed in the performance of any construction undertaken in connection with Board of Public Utilities financial assistance, or undertaken to fulfill any condition of receiving Board of Public Utilities financial assistance, including the performance of any contract to construct, renovate or otherwise prepare a facility, the operations of which are necessary for the receipt of Board of Public Utilities financial assistance. By submitting an application, or accepting program incentives, applicant agrees to adhere to New Jersey Prevailing Wage requirements, as applicable.

**Program** – The Commercial and Industrial Energy-Efficient Construction Program (New Jersey SmartStart Buildings) offered herein by the New Jersey Board of Public Utilities, Office of Clean Energy pursuant to state regulatory approval under the New Jersey Electric Discount and Energy Competition Act, NJSA 48:3-49, et seq.

**Program Incentives** – Refers to the amount or level of incentive that the Program provides to Participating Customers pursuant to the Program offered herein (see description under "Incentive Amount" heading).

**Program Offer** – Program Incentives are available to non-residential retail electric and/or gas service customers of the New Jersey Utilities identified above.

**Program Manager** – TRC Energy Services.

**Application and Eligibility Process** – The Program pays incentives after the installation of qualified energy-efficient

measures that were pre-approved (for exceptions to this condition, please refer to "Exceptions for Approval".) In order to be eligible for Program Incentives, a Customer, or an agent (contractor/vendor) authorized by a Customer, must submit a properly completed application package. The package must include an application signed by the customer; a complete (current) utility bill; and technology worksheet and manufacturer's cut sheets (where appropriate). This information must be submitted to the Program Manager before equipment is installed. Applications for measures that are self installed by customers must be submitted by the customer and not the sales vendor of the measure, however, the customer may elect to assign payment of the incentive to the sales vendor. This application package must be received by the Program Manager on or before June 30, 2014 in order to be eligible for the fiscal year July 1, 2013-June 30, 2014 incentives. The Program Manager will review the application package to determine if the project is eligible for a Program Incentive. If eligible, the Customer will receive an approval letter with the estimated authorized incentive amount and the date by which the equipment must be installed in order for the approval to remain in effect. Upon receipt of an approval letter, the Customer may then proceed to install the equipment listed on the approved application. Equipment installed prior to the date of the Program Manager's approval letter is not eligible for an incentive. The Program Manager reserves the right to conduct a pre-inspection of the facility prior to the installation of equipment. This will be done prior to the issuance of the approval letter. All equipment must be purchased within 12 months of date of application. **Any Customer and/or agent who purchases equipment prior to the receipt of an incentive approval letter does so at his/her own risk.**

**Exceptions for Approval** – The Application and Eligibility Process pertains to all projects except for those involving either Gas Heating, Unitary HVAC or Motors having an incentive amount less than \$5,000 that were installed within 12 months of receipt of the application. These measures, at this incentive level, may be installed without prior approval. In addition, but at the sole discretion of the Program Manager, emergency replacement of equipment may not require a prior approval determination and letter. **In such cases, please notify the Program Manager of such emergencies as early as possible, that an application will soon be sent in that was not pre-approved.**

**Post-Installation Approval** – After installation is completed, the Customer, or an agent authorized by the Customer, must finalize and submit an invoice for the purchase of the equipment (material cost must be broken out from labor costs), and any other required documentation as specified on the equipment application or in the Program Manager's initial approval letter.

Please refer to the program guide on the [NJCleanEnergy.com/ssb](http://NJCleanEnergy.com/ssb) website for the complete Application and Eligibility Process.

The Program Manager reserves the right to verify sales transactions and to have reasonable access to Participating Customer's facility to inspect both pre-existing product or equipment (if applicable) and the Energy-Efficient Measures

installed under this Program, either prior to issuing incentives or at a later time.

Energy-Efficient Measures must be installed in buildings located within a New Jersey Utilities' service territory and designated on the Participating Customer's incentive application. Program Incentives are available for qualified Energy-Efficient Measures as listed and described in the Program materials and incentive applications. The Participating Customer must ultimately own the equipment, either through an up-front purchase or at the end of a short-term lease. Design Incentives are available to design professionals as described in the Program materials and applications. A different and separate agreement must be executed by participating design professionals to be eligible for this type of incentive. The design professional does not need to be based in New Jersey.

*Equipment procured by Participating Customers through another program offered by New Jersey's Clean Energy Program or the New Jersey Utilities, as applicable, is not eligible for incentives through this program. Customers who have not contributed to the Societal Benefits Charge of the applicable New Jersey Utility are not be eligible for incentives offered through this program.*

**Incentive Amount** – Program Incentives will equal either: a) the approved Program Incentive amount, or b) the actual equipment cost of the Energy-Efficient Measure, whichever is less, as determined by the Program Manager. Products offered at no direct cost to the customer are ineligible. Incomplete application submissions, applications requiring inspections and unanticipated high volume of activities may cause processing delays. Program Incentives are limited to \$500,000 per utility account in a calendar year. Contact the Program Manager regarding any questions.

**Tax Liability** – The Program Manager will not be responsible for any tax liability that may be imposed on any Participating Customer as a result of the payment of Program Incentives. All Participating Customers must supply their federal tax identification number or social security number to the Program Manager on the application form in order to receive a Program Incentive. In addition, Participating Customers must also provide a Tax Clearance Form (entitled "Business Assistance or Incentive Clearance Certificate") that is dated within 90 days of equipment installation.

**Endorsement** – The Program Manager and Administrator do not endorse, support or recommend any particular manufacturer, product or system design in promoting this Program.

**Warranties** – THE PROGRAM MANAGER AND ADMINISTRATOR DO NOT WARRANT THE PERFORMANCE OF INSTALLED EQUIPMENT, AND/OR SERVICES RENDERED AS PART OF THIS PROGRAM, EITHER EXPRESSLY OR IMPLICITLY. NO WARRANTIES OR REPRESENTATIONS OF ANY KIND, WHETHER STATUTORY, EXPRESSED, OR IMPLIED, INCLUDING, WITHOUT LIMITATIONS, WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE REGARDING EQUIPMENT OR SERVICES PROVIDED BY A MANUFACTURER OR VENDOR. CONTACT YOUR VENDOR/SERVICES PROVIDER FOR DETAILS REGARDING PERFORMANCE AND WARRANTIES.

**Limitation of Liability** – By virtue of participating in this Program, Participating Customers agree to waive any and all claims or damages against the Program Manager or the Administrator, except the receipt of the Program Incentive. Participating Customers agree that the Program Manager's and Administrator's liability, in connection with this Program, is limited to paying the Program Incentive specified. Under no circumstances shall the Program Manager, its representatives, or subcontractors, or the Administrator, be liable for any lost profits, special, punitive, consequential or incidental damages or for any other damages or claims connected with or resulting from participation in this Program. Further, any liability attributed to the Program Manager under this Program shall be individual, and not joint and/or several.

**Assignment** – The Participating Customer may assign Program Incentive payments to a specified vendor.

**Participating Customer's Certification** – Participating Customer certifies that he/she purchased and installed the equipment listed in their application at their defined New Jersey location. Participating Customer agrees that all information is true and that he/she has conformed to all of the Program and equipment requirements listed in the application.

**Termination** – The New Jersey Board of Public Utilities reserves the right to extend, modify (this includes modification of Program Incentive levels) or terminate this Program without prior or further notice.

**Acknowledgement** – I have read, understood and am in compliance with all rules and regulations concerning this incentive program. I certify that all information provided is correct to the best of my knowledge, and I give the Program Manager permission to share my records with the New Jersey Board of Public Utilities, and contractors it selects to manage, coordinate or evaluate the NJ SmartStart Buildings Program. Additionally, I allow reasonable access to my property to inspect the installation and performance of the technologies and installations that are eligible for incentives under the guidelines of New Jersey's Clean Energy Program.

CUSTOMER'S SIGNATURE
PARTNER SIGNATURE
By signing, I certify that I have read, understand and agree to the Participation Agreement listed above.

#### IV. ENERGY SAVINGS IMPROVEMENT PLAN (ESIP)



## Your Power to Save

At Home, for Business, and for the Future

[About Us](#) | [Press Room](#) | [Library](#)

HOME

RESIDENTIAL

COMMERCIAL, INDUSTRIAL  
AND LOCAL GOVERNMENT

### COMMERCIAL, INDUSTRIAL AND LOCAL GOVERNMENT

HURRICANE SANDY

#### PROGRAMS

NJ SMARTSTART BUILDINGS

PAY FOR PERFORMANCE

COMBINED HEAT & POWER AND  
FUEL CELLSLOCAL GOVERNMENT ENERGY  
AUDIT

LARGE ENERGY USERS PROGRAM

ENERGY SAVINGS IMPROVEMENT  
PROGRAM

DIRECT INSTALL

ENERGY BENCHMARKING

OIL, PROPANE & MUNICIPAL  
ELECTRIC CUSTOMERS

EDA PROGRAMS

SBC CREDIT PROGRAM

PAST PROGRAMS

TOOLS AND RESOURCES

PROGRAM UPDATES

CONTACT US

Home » Commercial &amp; Industrial » Programs

## Energy Savings Improvement Program

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

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

Local Government  
School Districts (K-12)

All RFPs must be submitted to the Board for approval at [ESIP@bpu.state.nj.us](mailto:ESIP@bpu.state.nj.us).

The Board also adopted protocols to measure energy savings:

Measuring Energy Savings  
Procedures for Implementation

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

The NJ Board of Public Utilities sponsored Sustainable Jersey in the creation of an ESIP Guidebook that explains how to implement the program. The guidebook also includes a list of successful projects and a list of helpful resources.

### FIRST STEP – ENERGY AUDIT

For local governments interested in pursuing an ESIP, the first step is to perform an energy audit as prescribed in P.L.2012 c.55.

### ENERGY REDUCTION PLANS

If you have an ESIP plan that needs to be submitted to the Board of Public Utilities, please email it to [ESIP@bpu.state.nj.us](mailto:ESIP@bpu.state.nj.us). Please limit the file size to 3MB (or break it into smaller files).

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

## **ESIP PROGRAM**

Final version 42413

### **BPU RULES**

1. Public Entity must decide if they will use an ESCO or DIY method or Hybrid thereof prior to issuing the RFP and the RFP must state the intended method. A change in the project procurement model after the RFP closing date will be cause for immediate rejection and disqualification of potential Clean Energy program incentives.
2. RFP procedures shall be adhered to as per the legislation, including the use of BPU approved forms. Any alteration of the forms, without prior approval from the BPU shall be grounds for rejection.
3. RFP must include copy of an audit (ASHRAE Level II w/Level III for lighting) and audit must be prepared by a firm classified by DPMC in the 036 discipline.
4. All firms, including professional services, whether using ESCO or DIY model, must be DPMC classified.
5. If an Architect is engaged by the public entity, the architectural fees are the responsibility of the public entity and must be paid directly to the firm. These fees may be included in the energy cost savings analysis and payback.

ESCO's may contract directly with an architectural firm, in which case the architectural firm serves as a subcontractor to the ESCO and the project related service costs may be included within the project's economic model.

6. Public entity shall conduct pre-bid meetings and site visits per existing statutes.

In the interest of open public bidding transparency, it is a requirement of the BPU that all proposers must attend the pre-proposal bid meeting.

7. There shall be no negative cash flow in any year of the program.  
section 7 (1)(a)  
"the energy savings resulting from the program will be sufficient to cover the cost of the program's energy conservation measures."
8. SREC values are not permitted to be used in the energy cost savings calculations.
9. Capital cost avoidance values are not to be used in the energy savings calculations.
10. Operational and Maintenance (O&M) cost savings may be permitted in the cost savings calculations, but only with supporting documentation.
11. Blended utility rates shall not be permitted. Use the actual utility tariff or local contracted rates if there is a third party supplier.

For the RFP proposals, the public entity shall define the utility rates in the RFP



12. Contracted third party utility rates may only be used for the term of the contract (5 yr. maximum)  
Subsequent years are to be projected at the utility tariff rates plus the annual BPU escalation rates.
13. Public entity shall conduct M&V (measurement and verification) at the one (1) year operational date and shall provide a copy of the M&V report to the Board of Public Utilities.

For the RFP proposals, the ESCO shall provide the cost for the one (1) year M&V only. For comparative purposes, the one year M&V pricing shall be indicated on the proposal Form VI, under the "Annual Service Costs" column. Additional M&V costs are at the discretion of the local unit and are not to be included in the proposal.

14. The decisions made by BPU staff regarding compliance or other issues that arise in connection with the RFP procurement process shall be considered a final decision of the BPU. Any appeal will need to be through the New Jersey Superior Court, Appellate Division.
15. For the RFP proposals only, Demand Response (DR) revenues claimed by ESCO's can only be projected for a maximum period of three (3) years. DR revenue projections beyond three years will not be permitted. DR revenues must be included and presented under the "Energy Rebates/Incentives" column of FORM VI.
16. ESCO "fees" proposed during the RFP phase of the project cannot increase post-award. ESCO's are required to maintain the fee percentages through final contract negotiations and construction of the Board approved Energy Savings Plan
17. Public Bid openings shall be held on the due date of the proposal submissions. The public entity shall announce the name of the bidder and the total dollar amount. After award of a contract, all proposals received will be made available by the owner for public inspection
18. Rejection of bids by the public entity shall be conducted in accordance with the appropriate sections of the applicable legislation, as stated in Title 40A:11-13.2. Additionally all proposals must be returned to the respective ESCO's upon rejection.
19. Field changes that exceed 5% of the project cost require BPU approval.
20. Energy Savings Plans (ESP) that is dependent upon incentives from the Clean Energy Program must review the current program requirements, at the time of application, for each incentive to insure eligibility. If any program incentive is denied, resubmission of all ESIP related forms will be necessary to remain ESIP qualified.

## **APPENDIX E**

### **Photovoltaic Analysis**

Photovoltaic (PV) Solar Power Generation - Screening Assessment

Newark Public Schools  
Sussex Avenue

Cost of Electricity	\$0.15	/kWh
Electricity Usage	651,678	kWh/yr
System Unit Cost	\$4,000	/kW

Photovoltaic (PV) Solar Power Generation - Screening Assessment

Budgetary	Annual Utility Savings				Estimated	Total		New Jersey	Payback	Payback
Cost					Maintenance	Savings	Federal Tax	Renewable	(without	(with
					Savings		Credit	** SREC	incentive)	incentive)
\$	kW	kWh	therms	\$	\$	\$	\$	\$	Years	Years
\$720,000	180.0	234,600	0	\$35,098	0	\$35,098	\$0	\$36,363	20.5	10.1

\*\* Estimated Solar Renewable Energy Certificate Program (SREC) SREC for 15 Years= \$155 /1000kwh

Area Output\*

2,545 m2  
27,396 ft2

Perimeter Output\*

528 m  
ft

Available Roof Space for PV:

(Area Output - 10 ft x Perimeter) x 85%  
23,286 ft2

Approximate System Size:

Is the roof flat? (Yes/No)

Yes

8 watt/ft2  
186,290 DC watts  
180 kW

Enter into PV Watts

PV Watts Inputs\*\*\*

Array Tilt Angle	20	Enter into PV Watts (always 20 if flat, if pitched - enter estimated roof angle)
Array Azimuth	180	Enter into PV Watts (default)
Zip Code	07112	Enter into PV Watts
DC/AC Derate Factor	0.83	Enter into PV Watts

PV Watts Output

234,600 annual kWh calculated in PV Watts program

% Offset Calc

Usage	651,678 (from utilities)
PV Generation	234,600 (generated using PV Watts )
% offset	36%



\* <http://www.freemaptools.com/area-calculator.htm>  
\*\* <http://www.flettexchange.com>  
\*\*\* [http://gisatnrel.nrel.gov/PVWatts\\_Viewer/index.html](http://gisatnrel.nrel.gov/PVWatts_Viewer/index.html)

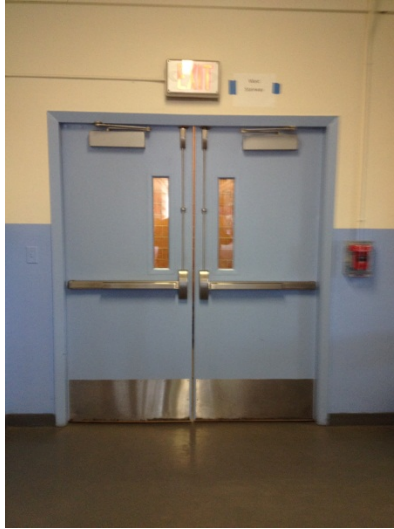




Station Identification	
Cell ID:	0268370
State:	New Jersey
Latitude:	40.9 ° N
Longitude:	74.2 ° W
PV System Specifications	
DC Rating:	180.0 kW
DC to AC Derate Factor:	0.830
AC Rating:	149.4 kW
Array Type:	Fixed Tilt
Array Tilt:	20.0 °
Array Azimuth:	180.0 °
Energy Specifications	
Cost of Electricity:	15.0 ¢/kWh

Results			
Month	Solar Radiation (kWh/m <sup>2</sup> /day)	AC Energy (kWh)	Energy Value (\$)
1	2.65	12575	1886.25
2	3.47	14893	2233.95
3	4.83	22103	3315.45
4	5.28	22655	3398.25
5	5.93	25848	3877.20
6	6.32	25954	3893.10
7	5.87	24430	3664.50
8	5.55	23257	3488.55
9	5.04	20817	3122.55
10	4.14	18306	2745.90
11	2.82	12294	1844.10
12	2.46	11468	1720.20
Year	4.54	234600	35190.00

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1: Typical Door in need of new door sweeps and seals



2: Typical window a/c which is used for cooling



3: Existing Burner for Steam Boiler



## **APPENDIX G**

### **EPA Portfolio Manager**



# ENERGY STAR<sup>®</sup> Statement of Energy Performance

# 31

ENERGY STAR<sup>®</sup>  
Score<sup>1</sup>

## Sussex Avenue Elementary

**Primary Property Function:** K-12 School  
**Gross Floor Area (ft<sup>2</sup>):** 66,500  
**Built:** 1900

**For Year Ending:** September 30, 2009  
**Date Generated:** April 21, 2014

1. The ENERGY STAR score is a 1-100 assessment of a building's energy efficiency as compared with similar buildings nationwide, adjusting for climate and business activity.

### Property & Contact Information

**Property Address**  
Sussex Avenue Elementary  
307 Sussex Avenue  
Newark, New Jersey 07103

**Property Owner**  
Newark Public Schools  
2 Cedar Street  
Newark, NJ 07102  
( ) -

**Primary Contact**  
Newark Public Schools  
2 Cedar Street  
Newark, NJ 07102  
9737337334  
webmaster@nps.k12.nj.us

**Property ID:** 3877107

### Energy Consumption and Energy Use Intensity (EUI)

Site EUI		Annual Energy by Fuel		National Median Comparison	
66.6 kBtu/ft <sup>2</sup>	Electric - Grid (kBtu)	1,966,404	(44%)	National Median Site EUI (kBtu/ft <sup>2</sup> )	56.5
	Natural Gas (kBtu)	2,461,532	(56%)	National Median Source EUI (kBtu/ft <sup>2</sup> )	111.8
Source EUI				% Diff from National Median Source EUI	18%
131.7 kBtu/ft <sup>2</sup>				<b>Annual Emissions</b>	
				Greenhouse Gas Emissions (MtCO <sub>2</sub> e/year)	380

### Signature & Stamp of Verifying Professional

I \_\_\_\_\_ (Name) verify that the above information is true and correct to the best of my knowledge.

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

#### Licensed Professional

Gregory Coleman  
10 Maxwell Drive  
Suite 200  
Clifton Park, NY 12065  
000-000-0000  
mvadney@trcsolutions.com



Professional Engineer Stamp  
(if applicable)