

**FRANKLIN LAKES PUBLIC SCHOOL DISTRICT  
FRANKLIN AVENUE MIDDLE SCHOOL  
ENERGY ASSESSMENT**

**for**

**NEW JERSEY  
BOARD OF PUBLIC UTILITIES**

**CHA PROJECT NO. 24497**

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

## 1.0 EXECUTIVE SUMMARY

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

| Building Name                 | Address                                         | Square Feet | Construction Date |
|-------------------------------|-------------------------------------------------|-------------|-------------------|
| Franklin Avenue Middle School | 755 Franklin Avenue<br>Franklin Lakes, NJ 07417 | 85,106      | 1995              |

The Energy Conservation Measures (ECMs) identified in this report will allow for a more efficient use of energy and if pursued have the opportunity to qualify for the New Jersey SmartStart Buildings Program and/or Direct Install Program. Potential annual savings of \$9,800 for the recommended ECMs may be realized with a payback of 7.3 years. A summary of the costs, savings, and paybacks for the recommended ECMs follows:

| Summary of Energy Conservation Measures |                                                                  |                    |                           |                               |                           |                              |                                |
|-----------------------------------------|------------------------------------------------------------------|--------------------|---------------------------|-------------------------------|---------------------------|------------------------------|--------------------------------|
| Energy Conservation Measure             |                                                                  | Approx. Costs (\$) | Approx. Savings (\$/year) | Payback (Years) w/o Incentive | Potential Incentive (\$)* | Payback (Years) w/ Incentive | Recommended For Implementation |
| ECM-1                                   | Air Handler Replacement (AHU-1 & AHU-2)                          | 116,000            | 900                       | >20                           | 4,300                     | >20                          |                                |
| ECM-2                                   | Boiler Replacement                                               | 265,000            | 300                       | >20                           | 9,000                     | >20                          |                                |
| ECM-3                                   | Replace DWH                                                      | 7,000              | 300                       | >20                           | 500                       | >20                          |                                |
| ECM-4                                   | Install VSD & Premium Motors on HW Pumps                         | 10,000             | 1,900                     | 5                             | 2,300                     | 4                            | X                              |
| ECM-5                                   | Demand Controlled Ventilation (Gym & Cafeteria)                  | 20,000             | 1,500                     | 13                            | 0                         | 13                           | X                              |
| ECM-6                                   | Walk-in Cooler Controls                                          | 15,000             | 900                       | 17                            | 0                         | 17                           |                                |
| ECM-7                                   | Seal Windows Properly                                            | 14,000             | 700                       | 20                            | 0                         | 20                           |                                |
| ECM-8                                   | Lighting Replacement / Upgrades                                  | 50,000             | 2,800                     | 18                            | 5,500                     | 16                           |                                |
| ECM-9                                   | Install Lighting Controls (Occupancy Sensors)                    | 22,000             | 5,700                     | 4                             | 3,900                     | 3                            | X                              |
| ECM-10                                  | Lighting Replacements with Lighting Controls (Occupancy Sensors) | 72,000             | 7,900                     | 9                             | 9,400                     | 8                            |                                |
| ECM-11                                  | Install Low Flow Plumbing Fixtures                               | 6,000              | 700                       | 9                             | 0                         | 9                            | X                              |

## 2.0 INTRODUCTION AND BACKGROUND

The Franklin Avenue Middle School building is an 85,106 square foot school consisting of two floors. The building was constructed in 1995. The school includes classrooms, offices, multi-purpose room, gymnasium, and a media center. The school hours of operation are from 8:00 AM – 2:45 PM Monday through Friday, with various after-school activities. The employees work hours are from 7:00 AM – 4:00 PM. The building is occupied approximately 8 hours per day Monday through Friday; totaling 40-50 hours per week. The school has approximately 490 students and 50 staff members.

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



### 3.0 EXISTING CONDITIONS

#### 3.1 Building – Envelope

The building envelope of the main building and addition are constructed of block walls (CMU) with a brick veneer. The majority of the interior walls are also painted block walls; 5/8” metal studs finished with gypsum board are used in spaces such as front office areas. The flat roof is constructed of 4” plywood, 4 ply built up roofing system manufactured by W.P. Hickman.

Windows and doors are original to the time of construction and in good condition. Windows are aluminum frame and double pane. The school commented on improper sealing around the windows. This leads to infiltration and increased energy usage to condition the air leaking in through windows.

#### 3.2 Utility Usage

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

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

##### Actual Cost & Site Usage by Utility

| Electric     |           |           |
|--------------|-----------|-----------|
| Annual Usage | 1,166,200 | kWh/yr    |
| Annual Cost  | 157,900   | \$        |
| Blended Rate | 0.135     | \$/kWh    |
| Supply Rate  | 0.130     | \$/kWh    |
| Demand Rate  | 3.44      | \$/kW     |
| Peak Demand  | 146.2     | kW        |
| Min. Demand  | 104.2     | kW        |
| Avg. Demand  | 135.1     | kW        |
| Natural Gas  |           |           |
| Annual Usage | 15,572    | Therms/yr |
| Annual Cost  | 15,958.23 | \$        |
| Rate         | 1.02      | \$/Therm  |

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

Under New Jersey’s energy deregulation law, the supply portion of the electric (or natural gas) bill is separated from the delivery portion. With the supply portion open to competition, customers can shop around for the best price on their energy supplies. Their electric and natural gas distribution utilities will still deliver those supplies through their wires and pipes – and

respond to emergencies, should they arise – regardless of where those supplies are purchased. Purchasing your energy supplies from a company other than your electric or gas utility is purely an economic decision; it has no impact on the reliability or safety of your service. Additional information on selecting a third party energy supplier is available here: <http://www.state.nj.us/bpu/commercial/shopping.html>. See Appendix A for a list of third-party energy suppliers licensed by the Board of Public Utilities to sell within the building's service area.

### **3.3 HVAC Systems**

Hot water (HW) provides heat in the school. Three A.O. Smith LB1000 condensing hot water boilers, located in the mechanical room, have an inputs of 1,000,000 BTU, output of 900,000 BTU; 90% efficiency. They were installed in 1995 and are in good condition. These boilers have hot water reset based on OA temp. The HW is pumped to the building to serve the building by two 7.5 HP pumps that are 85.5% efficient. The primary heating terminal units are classroom unit ventilators. Small classrooms are conditioned with a single Unit Ventilator (UV) while larger ones have two UVs. Supplemental heat is provided by fin tub radiators.

These UVs provide heating for the spaces they serve. Rooms 210, 208, 206 / 202, 119, 113, 122, 114, 135, 153 / 154, 225, 148, gymnasium, hallways, common areas, TV studio, main office, media center, and cafeteria have dedicated Roof Top Units (RTUs) to condition those spaces. All the units are packaged rooftop unit. Split systems are equipped with direct expansion (DX) cooling coils and connected to a dedicated remote condensing unit located outdoors, either on the roof or ground, are utilized to cool a couple of spaces like the weight room and server room.

Each space has a sensor that is tied into the BAS that controls the temperature to +/- 3 degrees of the setpoint.

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

### **3.4 Control Systems**

The building is controlled by a Johnson Controls Metasys 6000 building automation system (BAS). The boilers, UVs, rooftop units, and the pumps are controlled by the BAS. A computer in the school director's office controls the systems in the school. Out of the three schools audited, two have a web-enabled Direct Digital controls (DDC) system that the school manager can log onto remotely and make changes to the system. This building is one of those two schools.

Typical setpoints in the school are 70°F heating and 74°F cooling during occupied times, and 62°F heating and 80°F cooling during unoccupied times. Each setpoint has +/- 3 degree variance. Each space has a sensor that is tied into the BAS.

### **3.5 Lighting/Electrical Systems**

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

manually; exceptions are the janitor closets, mechanical room, cafeteria and gymnasium. Some classrooms, office spaces and restrooms have sensors but there is an opportunity to add ceiling mounted sensors to other classrooms, offices and restrooms. The school has all electronic ballast. Generally speaking the school has compact florescent lighting (CFLs). Classrooms, corridor and gym fixtures are four foot T-8 32W recessed fluorescents. Office spaces are compact fluorescent twin biaxial lamps.

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

### **3.6 Domestic Hot Water Systems**

The school utilizes a BTU RHEEM G100-200 domestic hot water heater (DWH) to produce domestic hot water (DHW). The capacity is 100 gallon and was installed in 2010. The input is 199,900 BTU/hr and is estimated to be 80% efficient.

### **3.7 Plumbing Systems**

The majority of the plumbing fixtures are low flow, 1.6 gallons per flush water closets, 1.0 gallon per flush urinals and 2.0 gallon per minute faucets. However, there were 8 water closets and 3 urinals that appear to have high-flow flush valves. The plumbing fixtures are in good condition.

## 4.0 ENERGY CONSERVATION MEASURES

### 4.1 ECM-1 Air Handler Replacement (AHU-1 & AHU-2)

Two McQuay RDS serve the Cafeteria / Stage area. These units have a remote condenser and were installed in 2005. The RTUs contain DX cooling and natural gas heating. Medium pressure gas piping is routed on the roof, and is pressure regulated to low pressure at each unit. Each RTU is mounted on an extended curb, with gravity pressure relief dampers and full economizer dampers. It is unclear if the economizer sections are operable. Supply and return ductwork is routed down through the roof curbs to a duct distribution system above the ceilings to each space. It is recommended that the RTUs be replaced through attrition with higher energy efficiency ratio (EER) models. The school director mentioned that these units were giving the school problems.

The assumption of this calculation is that the operating hours, number of units, and capacity stays the same. The energy savings result from operating higher efficiency units than the existing.

Rooftop units have an expected life of 25 years, according to ASHRAE, and total energy savings over the life of the project are estimated at 162,500 kWh and \$22,500.

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

#### ECM-1 Air Handler Replacement (AHU-1 & AHU-2)

| Budgetary<br>Cost | Annual Utility Savings |       |             |       |       | Estimated<br>Maintenance<br>Savings | Total<br>Savings | ROI   | Potential<br>Incentive* | Payback<br>(without<br>Incentive) | Payback<br>(with<br>Incentive) |
|-------------------|------------------------|-------|-------------|-------|-------|-------------------------------------|------------------|-------|-------------------------|-----------------------------------|--------------------------------|
|                   | Electricity            |       | Natural Gas | Water | Total |                                     |                  |       |                         |                                   |                                |
| \$                | kW                     | kWh   | Therms      | kGals | \$    | \$                                  | \$               |       | \$                      | Years                             | Years                          |
| 116,000           | 0                      | 6,500 | 0           | 0     | 900   | 0                                   | 900              | (0.8) | 4,300                   | >20                               | >20                            |

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

This measure is not recommended.

### 4.2 ECM-2 Boiler Replacement

The school utilizes Three A.O. Smith LB1000 condensing hot water boilers. These boilers are located in the mechanical room, have inputs of 1,000,000 BTU, outputs of 900,000 BTU; 90% efficiency. They were installed in 1995 and are in good condition. The school director mentioned having issues with these boilers during the field visit. This ECM would involve replacing the existing boilers with three 1,000 MBH condensing boilers. Condensing boilers operate at higher efficiencies when producing lower water temperatures, typically in the 92-96% range. The increased system efficiency will result in lower natural gas usage.

Natural gas-fired boilers have an expected life of 25 years, according to ASHRAE, and total energy savings over the life of the project are estimated at 7,500 therms of natural gas and \$7,500. The proposed boiler replacement will involve piping and wiring modifications as well as new venting and combustion air ducting.

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

#### ECM-2 Boiler Replacement

| Budgetary<br>Cost | Annual Utility Savings |     |             |       |       | Estimated<br>Maintenance<br>Savings | Total<br>Savings | ROI   | Potential<br>Incentiv<br>e* | Payback<br>(without<br>Incentive) | Payback<br>(with<br>Incentive) |
|-------------------|------------------------|-----|-------------|-------|-------|-------------------------------------|------------------|-------|-----------------------------|-----------------------------------|--------------------------------|
|                   | Electricity            |     | Natural Gas | Water | Total |                                     |                  |       |                             |                                   |                                |
| \$                | kW                     | kWh | Therms      | kGals | \$    | \$                                  | \$               |       | \$                          | Years                             | Years                          |
| 265,000           | 0                      | 0   | 300         | 0     | 300   | 0                                   | 300              | (1.0) | 9,000                       | >20                               | >20                            |

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

This measure is not recommended.

#### 4.3 ECM-3 Replace DHW

The school utilizes a 100 gallon, 199,900 BTU RHEEM G100-200 domestic hot water heater (DWH) to create domestic hot water (DHW). The DHW is 80% efficiency and has eight more years of useful life according to ASHRAE. This ECM assesses replacing this DWH with a more efficient tankless type domestic water heater sized to meet the DHW requirements of the building.

According to the U.S. Department of Energy, 2.5% of stored capacity is lost every hour during DHW heater standby. This value was applied to the total volume to determine annual standby losses. Proposed efficiency was based on a typical high efficiency natural gas condensing type hot water heater. The new water heater will require water and gas piping modifications, venting, and electrical connections.

Domestic hot water heaters have an expected life of 12 years, according to ASHRAE, and total energy savings over the life of the project are estimated at 3,600 therms and \$3,600.

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

#### ECM-3 Replace DHW

| Budgetary<br>Cost | Annual Utility Savings |     |             |       |       | Estimated<br>Maintenance<br>Savings | Total<br>Savings | ROI   | Potential<br>Incentive* | Payback<br>(without<br>Incentive) | Payback<br>(with<br>Incentive) |
|-------------------|------------------------|-----|-------------|-------|-------|-------------------------------------|------------------|-------|-------------------------|-----------------------------------|--------------------------------|
|                   | Electricity            |     | Natural Gas | Water | Total |                                     |                  |       |                         |                                   |                                |
| \$                | kW                     | kWh | Therms      | Kgals | \$    | \$                                  | \$               |       | \$                      | Years                             | Years                          |
| 7,000             | 0                      | 0   | 300         | 0     | 300   | 0                                   | 300              | (0.4) | 500                     | >20                               | >20                            |

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

This measure is not recommended.

#### 4.4 ECM-4 Install VSDs and Premium Motors on HW Pumps

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

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

VSDs have an expected life of 15 years, according to ASHRAE, and total energy savings over the life of the project are estimated at 213,000 kWh and \$28,500.

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

#### **ECM-4 Install VSDs and Premium Motors on HW Pumps**

| Budgetary<br>Cost | Annual Utility Savings |        |             |       |       | Estimated<br>Maintenance<br>Savings | Total<br>Savings | ROI | Potential<br>Incentive* | Payback<br>(without<br>Incentive) | Payback<br>(with<br>Incentive) |
|-------------------|------------------------|--------|-------------|-------|-------|-------------------------------------|------------------|-----|-------------------------|-----------------------------------|--------------------------------|
|                   | Electricity            |        | Natural Gas | Water | Total |                                     |                  |     |                         |                                   |                                |
| \$                | kW                     | kWh    | Therms      | Kgals | \$    | \$                                  | \$               |     | \$                      | Years                             | Years                          |
| 10,000            | 0                      | 14,200 | 0           | 0     | 1,900 | 0                                   | 1,900            | 2.8 | 2,300                   | 5.3                               | 4.1                            |

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

This measure is recommended.

#### **4.5 ECM-5 Demand Controlled Ventilation (DCV) (Gym & Cafeteria)**

The gymnasiums and cafeteria have dedicated rooftop units which are designed to provide ventilation based on maximum occupancy. This occurs infrequently and reducing the amount of ventilation will result in energy savings. Installation of carbon dioxide (CO<sub>2</sub>) sensors will allow for a reduction of outside air during periods of low occupancy. The quantity of ventilation air will be based on maintaining an acceptable CO<sub>2</sub> level in the space as an indicator of indoor air quality. A limit of 1000 PPM of CO<sub>2</sub> is recommended in ASHRAE Standard 62-2010, Ventilation for Acceptable Indoor Air Quality. Sensors will be installed to measure the building air CO<sub>2</sub> concentration, and the control sequence of operation changed. During unoccupied periods, the outside air dampers should be closed.

Bin weather data was utilized to obtain the annual operating hours required to maintain the current setpoint of 70°F. The BTU/Hr rating is calculated from the OA conditions and CFM. It is assumed that installing the controls will reduce the amount of OA to be conditioned by 20%. The annual thermal and electric usage was estimated. The energy saving is the difference in electric and natural gas usage.

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

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

**ECM-5 Demand Controlled Ventilation (DCV) (Gym & Cafeteria)**

| Budgetary<br>Cost | Annual Utility Savings |       |             |       |       | Estimated<br>Maintenance<br>Savings | Total<br>Savings | ROI | Potential<br>Incentive* | Payback<br>(without<br>Incentive) | Payback<br>(with<br>Incentive) |
|-------------------|------------------------|-------|-------------|-------|-------|-------------------------------------|------------------|-----|-------------------------|-----------------------------------|--------------------------------|
|                   | Electricity            |       | Natural Gas | Water | Total |                                     |                  |     |                         |                                   |                                |
| \$                | kW                     | kWh   | Therms      | kGals | \$    | \$                                  | \$               |     | \$                      | Years                             | Years                          |
| 20,000            | 0                      | 5,700 | 700         | 0     | 1,500 | 0                                   | 1,500            | 0.1 | 0                       | 13.3                              | 13.3                           |

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

This measure is recommended.

#### 4.6 ECM-6 Walk-in Cooler Controls

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

CoolTrol controls have an expected life of 15 years, according to the manufacturer, and total energy savings over the life of the project are estimated at 94,500 kWh and \$13,500.

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

**ECM-6 Walk-in Cooler and Freezer Controls**

| Budgetary<br>Cost | Annual Utility Savings |       |             |       |       | Estimated<br>Maintenance<br>Savings | Total<br>Savings | ROI   | Potential<br>Incentive* | Payback<br>(without<br>Incentive) | Payback<br>(with<br>Incentive) |
|-------------------|------------------------|-------|-------------|-------|-------|-------------------------------------|------------------|-------|-------------------------|-----------------------------------|--------------------------------|
|                   | Electricity            |       | Natural Gas | Water | Total |                                     |                  |       |                         |                                   |                                |
| \$                | kW                     | kWh   | Therms      | kGals | \$    | \$                                  | \$               |       | \$                      | Years                             | Years                          |
| 15,000            | 0                      | 6,300 | 0           | 0     | 900   | 0                                   | 900              | (0.1) | 0                       | 16.7                              | 16.7                           |

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

This measure is not recommended.

#### 4.7 ECM-7 Seal Windows Properly

The school has 2,600 square feet of window area. These windows are constructed with aluminum frames and double pane glazing. Due to improper installation windows incur excess air infiltration. This ECM assesses sealing the windows properly to minimize infiltration which will yield less energy being consumed to condition the space.

Per the building energy audit, it was found that the existing windows have an infiltration rate of about 0.2 CFM/LF. To calculate the savings for this measure, the baseline energy loss was found by applying this value to the total perimeter length of the existing windows in conjunction with weather bin data. The proposed energy loss was then determined using the expected infiltration

rate of 0.1 CFM/LF. The difference in heating and cooling losses through the windows resulted in an annual savings of about 900 kWh and 600 therms.

Windows seals have an expected life of 12 years, according to manufacturer; total energy savings over the life of the windows are estimated at 10,800 kWh and 7,200 therms, which results in a cost savings of \$8,400-without inflation/escalation.

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

#### ECM-7 Seal Windows Properly

| Budgetary<br>Cost | Annual Utility Savings |     |             |       |       | Estimated<br>Maintenance<br>Savings | Total<br>Savings | ROI   | Potential<br>Incentive* | Payback<br>(without<br>Incentive) | Payback<br>(with<br>Incentive) |
|-------------------|------------------------|-----|-------------|-------|-------|-------------------------------------|------------------|-------|-------------------------|-----------------------------------|--------------------------------|
|                   | Electricity            |     | Natural Gas | Water | Total |                                     |                  |       |                         |                                   |                                |
| \$                | kW                     | kWh | Therms      | Kgals | \$    | \$                                  | \$               |       | \$                      | Years                             | Years                          |
| 14,000            | 0                      | 900 | 600         | 0     | 700   | 0                                   | 700              | (0.4) | 0                       | 20.0                              | 20.0                           |

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

This measure is not recommended.

## 4.8 ECM-8 Lighting Replacement / Upgrades

The school was upgraded in 2010 with new lamps bulbs and occupancy sensors to control the lighting system under the PSE&G Direct Install Program. Select area lights are still switched manually; exceptions are the janitor closets, mechanical room, cafeteria and gymnasium. Some classrooms, office spaces and restrooms have sensors but there is an opportunity to add ceiling mounted sensors to other classrooms, offices and restrooms. The school has all electronic ballast. Generally speaking the school has compact florescent lighting (CFLs). Classrooms, corridor and gym fixtures are four foot T-8 32W recessed fluorescents. Office spaces are compact fluorescent twin biaxial lamps.

Energy savings for this measure were calculated by applying the existing and proposed fixture wattages to estimated times of operation. The difference between energy requirements resulted in a total annual savings of 19,000 kWh with an electrical demand reduction of about 8.3 kW. Supporting calculations, including assumptions for lighting hours and annual energy usage for each fixture, are provided in Appendix C.

Lighting has an expected life of 15 years, according to the manufacturer, and total energy savings over the life of the project are estimated at 285,000 kWh and \$42,000.

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

#### ECM-8 Lighting Replacement / Upgrades

| Budgetary<br>Cost | Annual Utility Savings |  |             |       |       | Estimated<br>Maintenance<br>Savings | Total<br>Savings | ROI | Potential<br>Incentive* | Payback<br>(without<br>Incentive) | Payback<br>(with<br>Incentive) |
|-------------------|------------------------|--|-------------|-------|-------|-------------------------------------|------------------|-----|-------------------------|-----------------------------------|--------------------------------|
|                   | Electricity            |  | Natural Gas | Water | Total |                                     |                  |     |                         |                                   |                                |

| \$     | kW  | kWh    | Therms | kGals | \$    | \$ | \$    |       | \$    | Years | Years |
|--------|-----|--------|--------|-------|-------|----|-------|-------|-------|-------|-------|
| 50,000 | 8.3 | 19,000 | 0      | 0     | 2,800 | 0  | 2,800 | (0.2) | 5,540 | 17.8  | 15.9  |

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

This measure is not recommended in lieu of ECM-9. However, lights should be replaced through attrition as bulbs fail.

#### 4.9 ECM-9 Install Lighting Controls (Occupancy Sensors)

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

Using a process similar to that utilized in section 4.8, the energy savings for this measure were calculated by applying the known fixture wattages in the space to the estimated existing and proposed times of operation for each fixture. The difference between the two values resulted in an annual savings of 43,900 kWh. Ceiling-mounted occupancy sensors with dimmer control are required for this measure.

Occupancy sensors have an expected life of 15 years, according to the manufacturer, and total energy savings over the life of the project are estimated at 658,500 kWh and \$85,500.

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

##### ECM-9 Install Lighting Controls (Occupancy Sensors)

| Budgetary<br>Cost | Annual Utility Savings |        |                |       |       | Estimated<br>Maintenance<br>Savings | Total<br>Savings | ROI | Potential<br>Incentive* | Payback<br>(without<br>Incentive) | Payback<br>(with<br>Incentive) |
|-------------------|------------------------|--------|----------------|-------|-------|-------------------------------------|------------------|-----|-------------------------|-----------------------------------|--------------------------------|
|                   | Electricity            |        | Natural<br>Gas | Water | Total |                                     |                  |     |                         |                                   |                                |
| \$                | kW                     | kWh    | Therms         | kGals | \$    | \$                                  | \$               |     | \$                      | Years                             | Years                          |
| 23,000            | 0                      | 43,900 | 0              | 0     | 5,700 | 0                                   | 5,700            | 3.0 | 3,900                   | 3.9                               | 3.2                            |

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

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

#### 4.10 ECM-10 Lighting Replacements with Controls (Occupancy Sensors)

Due to interactive effects, the energy and cost savings for occupancy sensors and lighting upgrades are not cumulative. This measure is a combination of ECMs-8 and 9 to reflect actual expected energy and demand reduction.

The lighting retrofits and controls have an expected lifetime of 15 years, according to the manufacturer, and total energy savings over the life of the project are estimated at 1,006,500 kWh and \$136,500.

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

#### ECM-10 Lighting Replacements with Controls (Occupancy Sensors)

| Budgetary<br>Cost | Annual Utility Savings |        |                |       |       | Estimated<br>Maintenance<br>Savings | Total<br>Savings | ROI | Potential<br>Incentive* | Payback<br>(without<br>Incentive) | Payback<br>(with<br>Incentive) |
|-------------------|------------------------|--------|----------------|-------|-------|-------------------------------------|------------------|-----|-------------------------|-----------------------------------|--------------------------------|
|                   | Electricity            |        | Natural<br>Gas | Water | Total |                                     |                  |     |                         |                                   |                                |
| \$                | kW                     | kWh    | Therms         | kGals | \$    | \$                                  | \$               |     | \$                      | Years                             | Years                          |
| 72,000            | 8.3                    | 58,500 | 0              | 0     | 7,900 | 0                                   | 7,900            | 0.9 | 9,400                   | 9.1                               | 7.9                            |

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

This measure is not recommended.

#### 4.11 ECM-11 Install Low Flow Plumbing

The school has a mixture of older and newer style fixtures in the restrooms. The older style fixtures consume more water than modern plumbing fixtures. It was determined that there is a combination of 21 toilets and urinals with an average water use of 3.5 gal/flush. Per the number of occupants, it was estimated that each toilet and faucet is utilized approximately nine times per day.

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

Toilets and faucets have an expected life of 15 years, according to the manufacturer, and total energy savings over the life of the project are estimated at 1,500 kGal and \$10,500.

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

#### ECM-11 Install Low Flow Plumbing

| Budgetary<br>Cost | Annual Utility Savings |     |             |       |       | Estimated<br>Maintenance<br>Savings | Total<br>Savings | ROI | Potential<br>Incentive* | Payback<br>(without<br>Incentive) | Payback<br>(with<br>Incentive) |
|-------------------|------------------------|-----|-------------|-------|-------|-------------------------------------|------------------|-----|-------------------------|-----------------------------------|--------------------------------|
|                   | Electricity            |     | Natural Gas | Water | Total |                                     |                  |     |                         |                                   |                                |
| \$                | kW                     | kWh | Therms      | kGals | \$    | \$                                  | \$               |     | \$                      | Years                             | Years                          |
| 6,000             | 0                      | 0   | 0           | 100   | 700   | 0                                   | 700              | 0.9 | 0                       | 8.6                               | 8.6                            |

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

This measure is recommended.



## **5.0 PROJECT INCENTIVES**

### **5.1 Incentives Overview**

#### **5.1.1 New Jersey Pay For Performance Program**

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

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

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

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

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

#### Electric

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

#### Gas

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

Incentive cap: 25% of total project cost

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

#### Electric

- Base incentive based on 15% savings: \$0.09/ per projected kWh saved.

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

#### Gas

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

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

Total P4P incentives are summarized below:

|                     | Incentives \$ |     |         |
|---------------------|---------------|-----|---------|
|                     | Electric      | Gas | Total   |
| <b>Incentive #1</b> | \$0           | \$0 | \$8,511 |
| <b>Incentive #2</b> | \$0           | \$0 | \$0     |
| <b>Incentive #3</b> | \$0           | \$0 | \$0     |
| <b>Total</b>        | \$0           | \$0 | \$8,511 |

The current recommended ECM's don't meet the minimum annual savings of 15% required by the P4P program and therefore the building is not eligible for incentives #2 and #3. See Appendix D for additional analysis.

#### 5.1.2 New Jersey Smart Start Program

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

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

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

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

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

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

Installations must be completed by a PSE&G Direct Install participating contractor which is assigned by the PSE&G project manager. More information regarding the program can be found on PSE&G's website at:

[http://www.pseg.com/business/small\\_large\\_business/save\\_energy/gov\\_efficiency.jsp](http://www.pseg.com/business/small_large_business/save_energy/gov_efficiency.jsp).

Contractors will coordinate with the applicant to arrange installation of recommended measures identified in a previous energy assessment, such as this document once the cost proposal is approved.

This program is applicable to the Franklin Ave Middle School based on the school's average peak demand of 146 kW.

#### 5.1.4 Direct Install Program

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

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

The program pays a maximum amount of \$75,000 per building, and up to \$250,000 per customer per year. Installations must be completed by a Direct Install participating contractor, a list of which can be found on the New Jersey Clean Energy Website at <http://www.njcleanenergy.com>. Contractors will coordinate with the applicant to arrange installation of recommended measures identified in a previous energy assessment, such as this document.

This program is not applicable to the Franklin Ave Middle School based on the school's average peak demand of 281.6 kW.

#### 5.1.5 Energy Savings Improvement Plans (ESIP)

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

ESIP allows local units to use "energy savings obligations" to pay for the capital costs of energy improvements to their facilities. This can be done over a maximum term of 15 years. Energy savings obligations are not considered "new general obligation debt" of a local unit and do not

count against debt limits or require voter approval. They may be issued as refunding bonds or leases. Savings generated from the installation of energy conservation measures pay the principal of and interest on the bonds; for that reason, the debt service created by the ESOs is not paid from the debt service fund, but is paid from the general fund.

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

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

## 6.0 ALTERNATIVE ENERGY SCREENING EVALUATION

### 6.1 Solar

#### 6.1.1 Photovoltaic Rooftop Solar Power Generation

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

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

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

The existing load justifies the use of a 170.0 kW PV solar array. The system costs for PV installations were derived from contractor budgetary pricing in the state of New Jersey for estimates of total cost of system installation. It should be noted that the cost of installation is currently about \$4.00 per watt or \$4,000 per kW of installed system. Other cost considerations will also need to be considered such as structural reinforcement of the roof. PV panels have an approximate 20 year life span; however, the inverter device that converts DC electricity to AC has a life span of 10 to 12 years and will need to be replaced multiple times during the useful life of the PV system.

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

**Photovoltaic (PV) Rooftop Solar Power Generation – 170.0 kW System**

| Budgetary<br>Cost | Annual Utility Savings |         |             |        | Total<br>Savings | New<br>Jersey<br>Renewable<br>Energy<br>Incentive* | New<br>Jersey<br>Renewable<br>SREC** | Payback<br>(without<br>incentive) | Payback<br>(with<br>incentives) |
|-------------------|------------------------|---------|-------------|--------|------------------|----------------------------------------------------|--------------------------------------|-----------------------------------|---------------------------------|
|                   | Electricity            |         | Natural Gas | Total  |                  |                                                    |                                      |                                   |                                 |
| \$                | kW                     | kWh     | Therms      | \$     | \$               | \$                                                 | \$                                   | Years                             | Years                           |
| 680,000           | 170.0                  | 221,567 | 0           | 29,912 | 29,912           | 0                                                  | 16,618                               | >20                               | 14.6                            |

\*\* Estimated Solar Renewable Energy Certificate Program (SREC) for 15 years at \$75/1000 kWh

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

#### 6.1.2 Solar Thermal Hot Water Plant

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

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

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

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

## 6.2 Demand Response Curtailment

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

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

A pre-approved CSP will require a minimum of 100 kW of load reduction to participate in any curtailment program. From June 2011 through May 2012, the electric usage for the school had a maximum electricity demand of 182.0 kW and a minimum of 98.0 kW. The monthly average over the observed 12 month period was 164.0 kW.

This measure is not recommended.

## 7.0 EPA PORTFOLIO MANAGER

The EPA Portfolio Manager benchmarking tool was used to assess the building's energy performance. Portfolio Manager provides a site and source Energy Use Intensity (EUI), as well as an Energy Star performance rating for qualifying building types. The EUIs are provided in kBtu/ft<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 school in the form of primary energy, which is raw fuel burned to create heat or electricity, such as natural gas or oil; or as secondary energy, which is the product created from a raw fuel such as electricity or district steam. To provide an equitable comparison for different buildings with varying proportions of primary and secondary energy consumption, Portfolio Manager uses the convention of source EUIs. The source energy also accounts for losses incurred in production, storage, transmission, and delivery of energy to the site, which provide an equivalent measure for various types of buildings with differing energy sources. The results of the Portfolio Manager benchmarking tool are contained in the table below.

| Building                   | Site EUI kBtu/ft <sup>2</sup> /yr | Source EUI Btu/ft <sup>2</sup> /yr | Energy Star Rating (1-100) |
|----------------------------|-----------------------------------|------------------------------------|----------------------------|
| Franklin Ave Middle School | 65                                | 175                                | 31                         |

The Franklin Avenue middle School has an above average Energy Star rating of 66, with a score of 50 being the median score. By implementing the measures discussed in this report, it is expected that the EUI can be reduced and the score increased. By obtaining a score of 75 or better, the school would be eligible to receive the Energy Star Rating Certification.

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

Username: franklinlakesboe

Password: energystar

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

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

## 8.0 CONCLUSIONS & RECOMMENDATIONS

The LGEA energy audit conducted by CHA at the Franklin Avenue Middle School identified several potential ECMs. Recommended ECM's for premium efficiency motors and variable speed drives , demand control Ventilation , low flow plumbing fixtures, and lighting controls, can yield potential annual savings of \$9,800. A summary of the costs, savings, and paybacks are as follows:

### ECM-4 Install VSDs and Premium Motors on HW Pumps

| Budgetary Cost | Annual Utility Savings |        |             |       |       | Estimated Maintenance Savings | Total Savings | ROI | Potential Incentive* | Payback (without Incentive) | Payback (with Incentive) |
|----------------|------------------------|--------|-------------|-------|-------|-------------------------------|---------------|-----|----------------------|-----------------------------|--------------------------|
|                | Electricity            |        | Natural Gas | Water | Total |                               |               |     |                      |                             |                          |
| \$             | kW                     | kWh    | Therms      | Kgals | \$    | \$                            | \$            |     | \$                   | Years                       | Years                    |
| 10,000         | 0                      | 14,200 | 0           | 0     | 1,900 | 0                             | 3,800         | 2.8 | 2,300                | 5.3                         | 4.1                      |

### ECM-5 Demand Controlled Ventilation (DCV) (Gym & Cafeteria)

| Budgetary Cost | Annual Utility Savings |       |             |       |       | Estimated Maintenance Savings | Total Savings | ROI | Potential Incentive* | Payback (without Incentive) | Payback (with Incentive) |
|----------------|------------------------|-------|-------------|-------|-------|-------------------------------|---------------|-----|----------------------|-----------------------------|--------------------------|
|                | Electricity            |       | Natural Gas | Water | Total |                               |               |     |                      |                             |                          |
| \$             | kW                     | kWh   | Therms      | kGals | \$    | \$                            | \$            |     | \$                   | Years                       | Years                    |
| 20,000         | 0                      | 5,700 | 700         | 0     | 1,500 | 0                             | 1,500         | 0.1 | 0                    | 13.3                        | 13.3                     |

### ECM-9 Install Lighting Controls (Occupancy Sensors)

| Budgetary Cost | Annual Utility Savings |        |             |       |       | Estimated Maintenance Savings | Total Savings | ROI | Potential Incentive* | Payback (without Incentive) | Payback (with Incentive) |
|----------------|------------------------|--------|-------------|-------|-------|-------------------------------|---------------|-----|----------------------|-----------------------------|--------------------------|
|                | Electricity            |        | Natural Gas | Water | Total |                               |               |     |                      |                             |                          |
| \$             | kW                     | kWh    | Therms      | kGals | \$    | \$                            | \$            |     | \$                   | Years                       | Years                    |
| 23,000         | 0                      | 43,900 | 0           | 0     | 5,700 | 0                             | 5,700         | 3.0 | 3,900                | 3.9                         | 3.2                      |

### ECM-11 Install Low Flow Plumbing

| Budgetary Cost | Annual Utility Savings |     |             |       |       | Estimated Maintenance Savings | Total Savings | ROI | Potential Incentive* | Payback (without Incentive) | Payback (with Incentive) |
|----------------|------------------------|-----|-------------|-------|-------|-------------------------------|---------------|-----|----------------------|-----------------------------|--------------------------|
|                | Electricity            |     | Natural Gas | Water | Total |                               |               |     |                      |                             |                          |
| \$             | kW                     | kWh | Therms      | kGals | \$    | \$                            | \$            |     | \$                   | Years                       | Years                    |
| 6,000          | 0                      | 0   | 0           | 100   | 700   | 0                             | 700           | 0.9 | 0                    | 8.6                         | 8.6                      |

## **APPENDIX A**

### **Utility Usage Analysis**

#### **Third Party Energy Suppliers List**

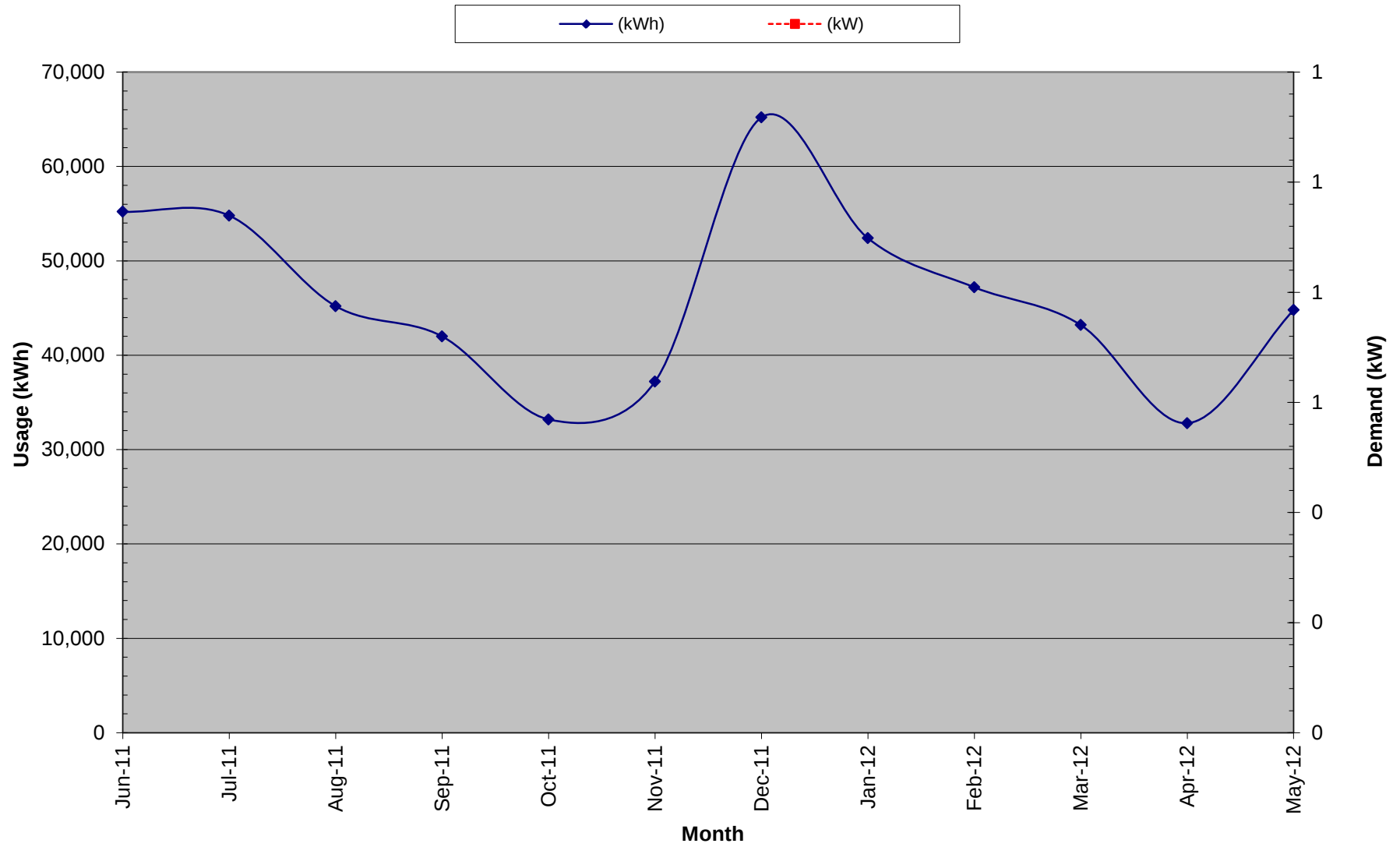
Franklin Lakes BOE  
490 Pulis Ave, Franklin Lakes, NJ 07417

Electric Service  
Delivery - Orange & Rockland  
Supplier - Direct Energy

For Service at: Franklin Avenue Middle School - Heat  
Account No.: 11915-62009 / 1065360  
Meter No.: 081287813

| Month              | Consumption<br>(kWh) | Demand<br>(kW) | Charges            |                    |                    | Unit Costs               |                         |                   |
|--------------------|----------------------|----------------|--------------------|--------------------|--------------------|--------------------------|-------------------------|-------------------|
|                    |                      |                | Total<br>(\$)      | Delivery<br>(\$)   | Supply<br>(\$)     | Blended Rate<br>(\$/kWh) | Consumption<br>(\$/kWh) | Demand<br>(\$/kW) |
| June-11            | 55,200               |                | \$8,580.81         | \$2,936.61         | \$5,644.20         | \$ 0.155                 | \$ 0.155                | #DIV/0!           |
| July-11            | 54,800               |                | \$8,521.33         | \$2,918.03         | \$5,603.30         | \$ 0.155                 | \$ 0.155                | #DIV/0!           |
| August-11          | 45,200               |                | \$7,033.49         | \$2,411.79         | \$4,621.70         | \$ 0.156                 | \$ 0.156                | #DIV/0!           |
| September-11       | 42,000               |                | \$6,188.24         | \$1,893.74         | \$4,294.50         | \$ 0.147                 | \$ 0.147                | #DIV/0!           |
| October-11         | 33,200               |                | \$4,672.55         | \$1,277.85         | \$3,394.70         | \$ 0.141                 | \$ 0.141                | #DIV/0!           |
| November-11        | 37,200               |                | \$5,244.31         | \$1,440.61         | \$3,803.70         | \$ 0.141                 | \$ 0.141                | #DIV/0!           |
| December-11        | 65,200               |                | \$8,162.70         | \$2,490.30         | \$5,672.40         | \$ 0.125                 | \$ 0.125                | #DIV/0!           |
| January-12         | 52,400               |                | \$6,537.01         | \$1,978.21         | \$4,558.80         | \$ 0.125                 | \$ 0.125                | #DIV/0!           |
| February-12        | 47,200               |                | \$5,888.29         | \$1,781.89         | \$4,106.40         | \$ 0.125                 | \$ 0.125                | #DIV/0!           |
| March-12           | 43,200               |                | \$5,389.29         | \$1,630.89         | \$3,758.40         | \$ 0.125                 | \$ 0.125                | #DIV/0!           |
| April-12           | 32,800               |                | \$4,091.91         | \$1,238.31         | \$2,853.60         | \$ 0.125                 | \$ 0.125                | #DIV/0!           |
| May-12             | 44,800               |                | \$2,082.41         | \$2,082.41         |                    | \$ 0.046                 | \$ 0.046                | #DIV/0!           |
| <b>Total (All)</b> | <b>553,200</b>       | <b>0.0</b>     | <b>\$72,392.34</b> | <b>\$24,080.64</b> | <b>\$48,311.70</b> | <b>\$ 0.131</b>          | <b>\$ 0.131</b>         | <b>#DIV/0!</b>    |

### Electric Usage - Franklin Avenue Middle School - Heat



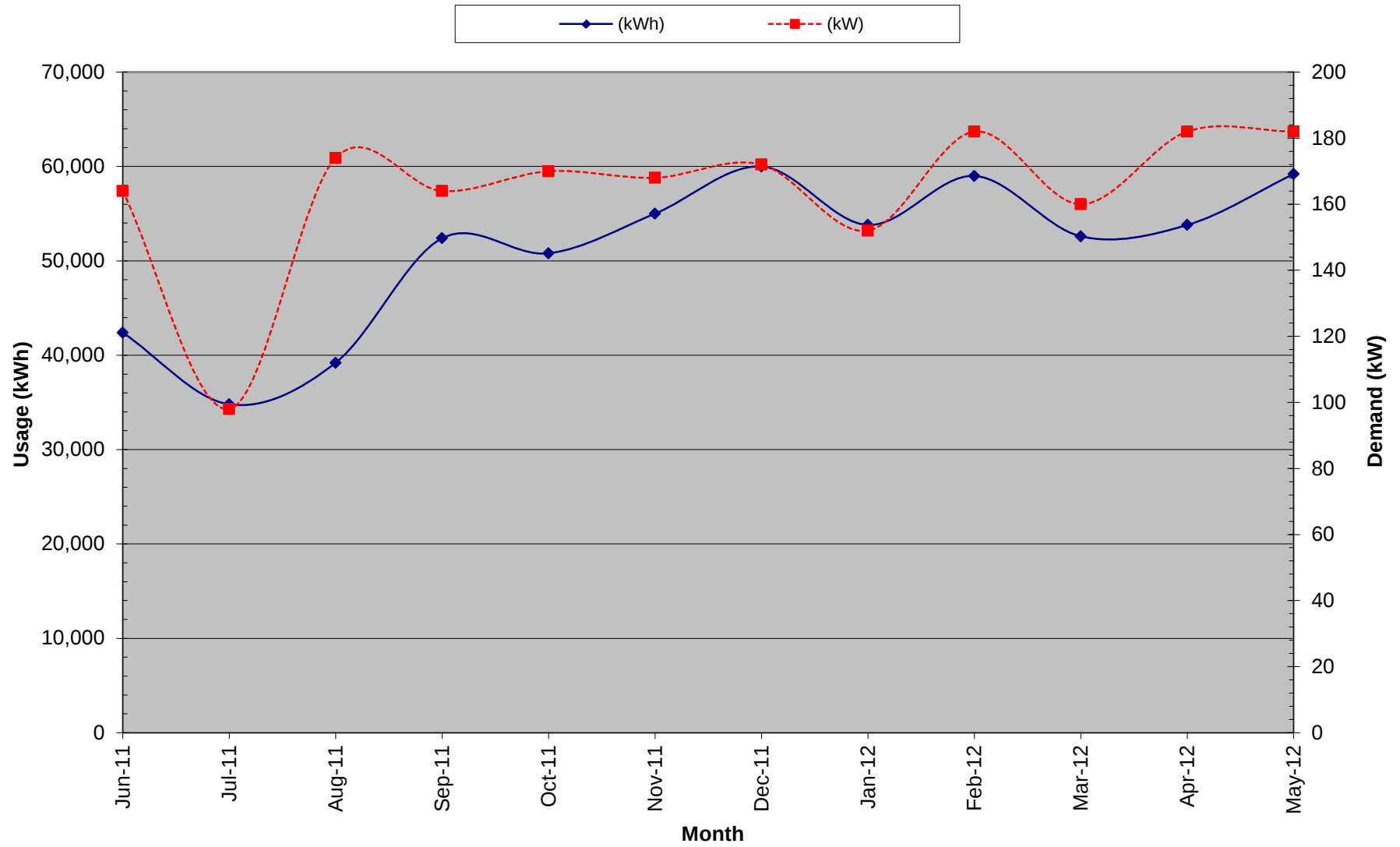
Franklin Lakes BOE  
490 Pulis Ave, Franklin Lakes, NJ 07417

Electric Service  
Delivery - Orange & Rockland  
Supplier - Direct Energy

For Service at: Franklin Avenue Middle School  
Account No.: 12125-62001 / 1065361  
Meter No.: 095815014

| Month              | Consumption<br>(kWh) | Demand<br>(kW) | Charges            |                    |                    | Unit Costs               |                         |                   |
|--------------------|----------------------|----------------|--------------------|--------------------|--------------------|--------------------------|-------------------------|-------------------|
|                    |                      |                | Total<br>(\$)      | Delivery<br>(\$)   | Supply<br>(\$)     | Blended Rate<br>(\$/kWh) | Consumption<br>(\$/kWh) | Demand<br>(\$/kW) |
| June-11            | 42,400               | 164.0          | \$6,803.75         | \$2,468.35         | \$4,335.40         | \$ 0.160                 | \$ 0.146                | \$ 3.81           |
| July-11            | 34,800               | 98.0           | \$5,451.90         | \$1,893.60         | \$3,558.30         | \$ 0.157                 | \$ 0.146                | \$ 3.73           |
| August-11          | 39,200               | 174.0          | \$6,388.56         | \$2,380.36         | \$4,008.20         | \$ 0.163                 | \$ 0.146                | \$ 3.82           |
| September-11       | 52,400               | 164.0          | \$8,192.72         | \$2,834.82         | \$5,357.90         | \$ 0.156                 | \$ 0.145                | \$ 3.51           |
| October-11         | 50,800               | 170.0          | \$7,949.25         | \$2,754.95         | \$5,194.30         | \$ 0.156                 | \$ 0.146                | \$ 3.27           |
| November-11        | 55,000               | 168.0          | \$8,562.10         | \$2,938.35         | \$5,623.75         | \$ 0.156                 | \$ 0.146                | \$ 3.27           |
| December-11        | 60,000               | 172.0          | \$8,351.98         | \$3,131.98         | \$5,220.00         | \$ 0.139                 | \$ 0.130                | \$ 3.27           |
| January-12         | 53,800               | 152.0          | \$7,461.74         | \$2,781.14         | \$4,680.60         | \$ 0.139                 | \$ 0.129                | \$ 3.26           |
| February-12        | 59,000               | 182.0          | \$8,230.69         | \$3,097.69         | \$5,133.00         | \$ 0.140                 | \$ 0.129                | \$ 3.28           |
| March-12           | 52,600               | 160.0          | \$7,334.58         | \$2,758.38         | \$4,576.20         | \$ 0.139                 | \$ 0.130                | \$ 3.26           |
| April-12           | 53,800               | 182.0          | \$7,562.91         | \$2,882.31         | \$4,680.60         | \$ 0.141                 | \$ 0.129                | \$ 3.28           |
| May-12             | 59,200               | 182.0          | \$3,173.02         | \$3,173.02         |                    | \$ 0.054                 | \$ 0.043                | \$ 3.59           |
| <b>Total (All)</b> | <b>613,000</b>       | <b>182.0</b>   | <b>\$85,463.20</b> | <b>\$33,094.95</b> | <b>\$52,368.25</b> | <b>\$ 0.139</b>          | <b>\$ 0.128</b>         | <b>\$ 3.44</b>    |

## Electric Usage - Franklin Avenue Middle School



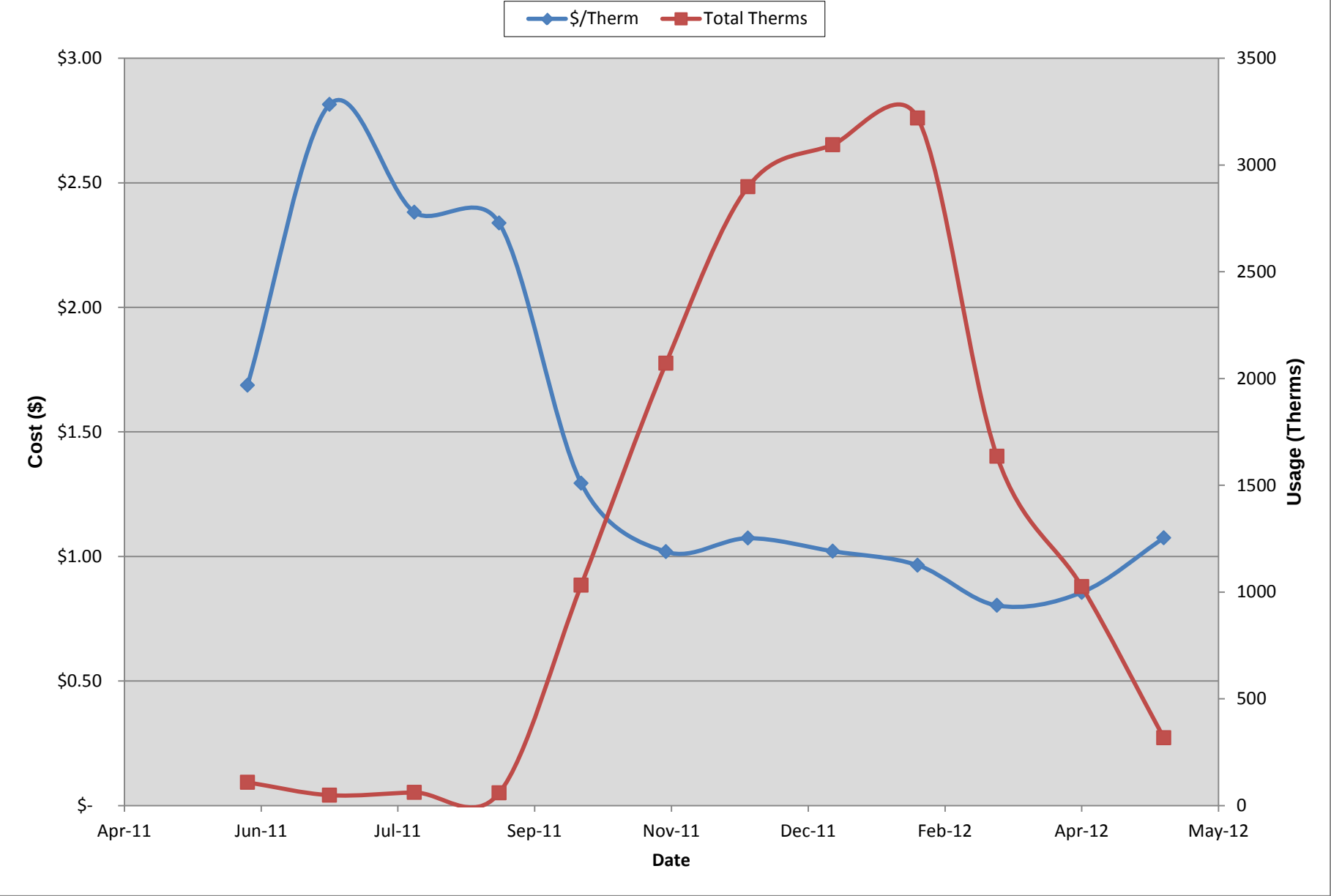
Franklin Lakes BOE  
490 Pulis Ave, Franklin Lakes, NJ 07417

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

For Service at: Franklin Avenue Middle School  
Account No.: 6516248702  
Meter No.: 2643362 / 3637797

| Month        | Total (\$)          | Delivery (\$)      | Supply (\$)        | Total Therms     | \$/Therm       |
|--------------|---------------------|--------------------|--------------------|------------------|----------------|
| Jun-11       | \$ 183.25           | \$ 112.81          | \$ 70.44           | 108.598          | \$ 1.69        |
| Jul-11       | \$ 136.53           | \$ 105.19          | \$ 31.34           | 48.515           | \$ 2.81        |
| Aug-11       | \$ 145.35           | \$ 108.39          | \$ 36.96           | 61.022           | \$ 2.38        |
| Sep-11       | \$ 138.00           | \$ 108.10          | \$ 29.90           | 59.01            | \$ 2.34        |
| Oct-11       | \$ 1,335.53         | \$ 818.42          | \$ 517.11          | 1032.143         | \$ 1.29        |
| Nov-11       | \$ 2,110.78         | \$ 1,014.56        | \$ 1,096.22        | 2071.54          | \$ 1.02        |
| Dec-11       | \$ 3,110.47         | \$ 1,171.30        | \$ 1,939.17        | 2898.216         | \$ 1.07        |
| Jan-12       | \$ 3,159.91         | \$ 1,105.34        | \$ 2,054.57        | 3095.107         | \$ 1.02        |
| Feb-12       | \$ 3,106.37         | \$ 1,115.74        | \$ 1,990.63        | 3219.846         | \$ 0.96        |
| Mar-12       | \$ 1,314.06         | \$ 302.55          | \$ 1,011.51        | 1636.007         | \$ 0.80        |
| Apr-12       | \$ 877.72           | \$ 243.71          | \$ 634.01          | 1025.585         | \$ 0.86        |
| May-12       | \$ 340.26           | \$ 144.40          | \$ 195.86          | 316.755          | \$ 1.07        |
| <b>Total</b> | <b>\$ 15,958.23</b> | <b>\$ 6,350.51</b> | <b>\$ 9,607.72</b> | <b>15572.344</b> | <b>\$ 1.02</b> |

# Natural Gas Usage - Franklin Avenue Middle School



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

Water Service  
Delivery -  
Supplier -

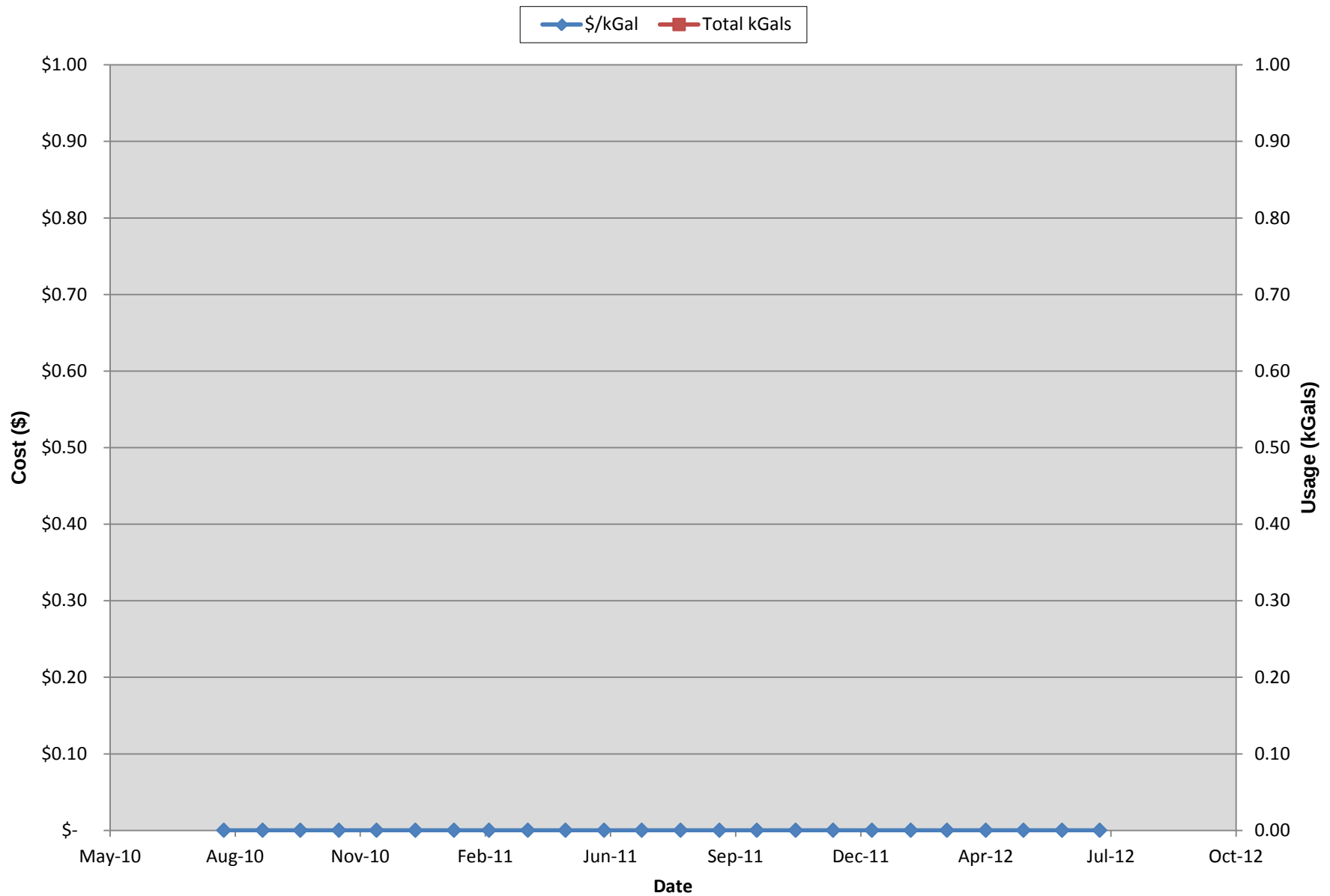
For Service at: Franklin Avenue Middle School - Heat

Account No.:

Meter No.:

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

## Water Usage - Franklin Avenue Middle School



**PSE&G ELECTRIC SERVICE TERRITORY**

Last Updated: 10/24/12

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

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

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

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

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

|                                                                                                              |                                                                                            |                               |
|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|-------------------------------|
| <b>UGI Energy Services, Inc. d/b/a GASMARK</b><br>224 Strawbridge Drive<br>Suite 107<br>Moorestown, NJ 08057 | (856) 273-9995<br><a href="http://www.ugienergyservices.com">www.ugienergyservices.com</a> | <b>C/I</b><br><b>ACTIVE</b>   |
| <b>Verde Energy USA, Inc.</b><br>50 East Palisades Avenue<br>Englewood, NJ 07631                             | (800) 388-3862<br><a href="http://www.lowcostpower.com">www.lowcostpower.com</a>           | <b>R/C/I</b><br><b>ACTIVE</b> |
| <b>Viridian Energy</b><br>2001 Route 46, Waterview<br>Plaza<br>Suite 310<br>Parsippany, NJ 07054             | (866) 663-2508<br><a href="http://www.viridian.com">www.viridian.com</a>                   | <b>R/C/I</b><br><b>ACTIVE</b> |
| <b>Xoom Energy New Jersey, LLC</b><br>744 Broad Street<br>Newark, NJ 07102                                   | (888) 997-8979<br><a href="http://www.xoomenergy.com">www.xoomenergy.com</a>               | <b>R/C/I</b><br><b>ACTIVE</b> |
| <b>YEP Energy</b><br>89 Headquarters Plaza North<br>#1463<br>Morristown, NJ 07960                            | (855) 363-7736<br><a href="http://www.yepenergyNJ.com">www.yepenergyNJ.com</a>             | <b>R/C/I</b><br><b>ACTIVE</b> |
| <b>Your Energy Holdings, LLC</b> One International<br>Boulevard Suite 400<br>Mahwah, NJ 07495-0400           | (855) 732-2493<br><a href="http://www.thisisyourenergy.com">www.thisisyourenergy.com</a>   | <b>R/C/I</b><br><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<br/>&amp; Web Site</b>                                                              | <b>*Customer<br/>Class</b> |
|----------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|----------------------------|
| <b>Ambit Northeast, LLC</b><br>103 Carnegie Center<br>Suite 300<br>Princeton, NJ 08540                                                 | (877)-30-AMBIT (877)<br>302-6248<br><a href="http://www.ambitenergy.com">www.ambitenergy.com</a> | <b>R/C<br/>ACTIVE</b>      |
| <b>Astral Energy LLC</b><br>16 Tyson Place<br>Bergenfield, NJ 07621                                                                    | 888-850-1872<br><a href="http://www.astralenergyllc.com">www.astralenergyllc.com</a>             | <b>R/C/I<br/>ACTIVE</b>    |
| <b>BBPC, LLC Great Eastern Energy</b><br>116 Village Blvd. Suite 200<br>Princeton, NJ 08540                                            | 888-651-4121<br><a href="http://www.greateasternenergy.com">www.greateasternenergy.com</a>       | <b>C/I<br/>ACTIVE</b>      |
| <b>Clearview Electric Inc. d/b/a Clearview Gas</b><br>1744 Lexington Ave.<br>Pennsauken, NJ 08110                                      | 800-746-4720<br><a href="http://www.clearviewenergy.com">www.clearviewenergy.com</a>             | <b>R/C<br/>ACTIVE</b>      |
| <b>Colonial Energy, Inc.</b><br>83 Harding Road<br>Wyckoff, NJ 07481                                                                   | 845-429-3229<br><a href="http://www.colonialgroupinc.com">www.colonialgroupinc.com</a>           | <b>C/I<br/>ACTIVE</b>      |
| <b>Commerce Energy, Inc.</b><br>7 Cedar Terrace<br>Ramsey, NJ 07746                                                                    | (888) 817-8572<br><a href="http://www.commerceenergy.com">www.commerceenergy.com</a>             | <b>R<br/>ACTIVE</b>        |
| <b>Compass Energy Services, Inc.</b><br>1085 Morris Avenue, Suite 150<br>Union, NJ 07083                                               | 866-867-8328<br>908-638-6605<br><a href="http://www.compassenergy.net">www.compassenergy.net</a> | <b>C/I<br/>ACTIVE</b>      |
| <b>ConocoPhillips Company</b><br>224 Strawbridge Drive, Suite 107<br>Moorestown, NJ 08057                                              | 800-646-4427<br><a href="http://www.conocophillips.com">www.conocophillips.com</a>               | <b>C/I ACTIVE</b>          |
| <b>Consolidated Edison Energy, Inc. d/b/a Con Edison Solutions</b><br>535 State Highway 38, Suite 140<br>Cherry Hill, NJ 08002         | 888-686-1383 x2130<br><a href="http://www.conedenergy.com">www.conedenergy.com</a>               |                            |
| <b>Consolidated Edison Solutions, Inc.</b><br>Cherry Tree Corporate Center<br>535 State Highway 38, Suite 140<br>Cherry Hill, NJ 08002 | 888-665-0955<br><a href="http://www.conedsolutions.com">www.conedsolutions.com</a>               | <b>C/I ACTIVE</b>          |
| <b>Constellation NewEnergy-Gas Division, LLC</b><br>900A Lake Street, Suite 2<br>Ramsey, NJ 07466                                      | (800) 900-1982<br><a href="http://www.constellation.com">www.constellation.com</a>               | <b>C/I<br/>ACTIVE</b>      |
| <b>Direct Energy Business, LLC</b><br>120 Wood Avenue, Suite 611<br>Iselin, NJ 08830                                                   | 888-925-9115<br><a href="http://www.directenergy.com">www.directenergy.com</a>                   | <b>C/I<br/>ACTIVE</b>      |
| <b>Direct Energy Services, LLP</b><br>120 Wood Avenue, Suite 611<br>Iselin, NJ 08830                                                   | 866-348-4193<br><a href="http://www.directenergy.com">www.directenergy.com</a>                   | <b>R<br/>ACTIVE</b>        |
| <b>Gateway Energy Services Corp.</b><br>44 Whispering Pines Lane<br>Lakewood, NJ 08701                                                 | 800-805-8586<br><a href="http://www.gesc.com">www.gesc.com</a>                                   | <b>R/C/I<br/>ACTIVE</b>    |
| <b>UGI Energy Services, Inc. d/b/a GASMARK</b><br>224 Strawbridge Drive, Suite 107<br>Moorestown, NJ 08057                             | 856-273-9995<br><a href="http://www.ugienergyservices.com">www.ugienergyservices.com</a>         | <b>C/I<br/>ACTIVE</b>      |
| <b>Global Energy Marketing, LLC</b><br>129 Wentz Avenue<br>Springfield, NJ 07081                                                       | 800-542-0778<br><a href="http://www.globalp.com">www.globalp.com</a>                             | <b>C/I<br/>ACTIVE</b>      |
| <b>Great Eastern Energy</b><br>116 Village Blvd., Suite 200<br>Princeton, NJ 08540                                                     | 888-651-4121 <a href="http://www.greateastern.com">www.greateastern.com</a>                      | <b>C/I ACTIVE</b>          |

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

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

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## **APPENDIX B**

### **Equipment Inventory**

Franklin Lakes Public Schools - NJBPU  
CHA Project #24497  
Franklin Avenue Elementary School

| Description   | QTY | Manufacturer Name | Model No.       | Serial No.                                       | Equipment Type / Utility | Capacity/Size /Efficiency                                       | Location   | Areas/Equipment Served    | Date Installed | Remaining Useful Life (years) | Other Info.    |
|---------------|-----|-------------------|-----------------|--------------------------------------------------|--------------------------|-----------------------------------------------------------------|------------|---------------------------|----------------|-------------------------------|----------------|
| B-1, B-2, B-3 | 3   | A.O. Smith        | LB 1000         | #1: K95 29370,<br>#2: J95 28995, #3<br>k95 29333 | Heating / Natural Gas    | Input: 1,000,000 BTU,<br>Output: 900,000 BTU, 90%<br>efficiency | Mech Room  | School                    | 1995           | 7                             | Good Condition |
| DWH           | 1   | Rheem             | G100-200A       | URNG0610G009<br>0                                | Heating / Natural Gas    | Input: 199,900, 100<br>gallons, 80%                             | Mech Room  | School                    | 2010           | 8                             | Good Condition |
| P-1, P-2, P-3 | 3   | B&G               | Series 60       | -                                                | Heating / Electric       | 1725 RPM, 1 HP, standard                                        | Mech Room  | School                    | 1995           | -                             | Good Condition |
| P-5, P-6      | 2   | Taco              | FE2508E2F1F2LOA | -                                                | Heating / Electric       | 7.5 HP, 1800 RPM, 85.5%<br>efficiency                           | Mech Room  | School                    | 1995           | -                             | Good Condition |
| UH-1          | 1   | McQuay            | UHH034BJ        | 61337604                                         | Heating / Natural Gas    | 1/20HP motor                                                    | Mech Room  | Mech Room                 | 1995           | -                             | Good Condition |
| UV            | 31  | Airedale          | CMX-4           | PA3012-U19886                                    | HVAC / Electric DX       | -                                                               | Classrooms | Classrooms                | 2005           | 13                            | Good Condition |
| HP-205        | 1   | Carrier           | 50JQ008--631QA  | 3695G30356                                       | HVAC / Electric DX       | -                                                               | Roof       | 210                       | 2005           | 13                            | Good Condition |
| HP-204        | 1   | Carrier           | 50JQ008--631QA  | 3695G30357                                       | HVAC / Electric DX       | -                                                               | Roof       | 208                       | 2005           | 13                            | Good Condition |
|               | 2   | Reznor            | RGB225-5MVJ     | EARD66K1N1830<br>0ZMV4                           | HVAC / Natural Gas       | -                                                               | Roof       | Vestibules                | 2005           | 13                            | Good Condition |
| CU-1          | 1   | Sanyo             | CL1872          | 84793                                            | HVAC / Electric DX       | 2-ton                                                           | Roof       | Weight Room               | 2009           | 17                            | Good Condition |
|               | 1   | Carrier           | 50JQ008--631AA  | 3495G30490                                       | HVAC / Electric DX       | -                                                               | Roof       | 206/202                   | 2005           | 13                            | Good Condition |
| AHU-1, AHU-2  | 2   | McQuay            | RD5708BY        | #1: 35L0067503,<br>#2: 35L0067403                | HVAC / Electric DX       | -                                                               | Roof       | Cafeteria / Stage         | 2005           | 13                            | Good Condition |
|               | 1   | McQuay            | ALP027C         | #1: 55L8505201,<br>#2: 55L8505101                | HVAC / Electric DX       | 26.2 tons                                                       | Roof       | -                         | 2005           | 13                            | Good Condition |
| HP-106        | 1   | Carrier           | 50JQ004--641QA  | 3595G20785                                       | HVAC / Electric DX       | -                                                               | Roof       | 119                       | 2005           | 13                            | Good Condition |
| HP-105        | 1   | Carrier           | 50JQ006--641AA  | 3695G20224                                       | HVAC / Electric DX       | -                                                               | Roof       | 113                       | 2005           | 13                            | Good Condition |
| HP-107        | 1   | Carrier           | 50JQ004--641QA  | 3595G20786                                       | HVAC / Electric DX       | -                                                               | Roof       | 122                       | 2005           | 13                            | Good Condition |
| HP-104        | 1   | Carrier           | 50JQ012--631AA  | 3495G30489                                       | HVAC / Electric DX       | -                                                               | Roof       | 114                       | 2005           | 13                            | Good Condition |
| HP-108        | 1   | Carrier           | 50JQ006--641AA  | 3695G20223                                       | HVAC / Electric DX       | -                                                               | Roof       | 135                       | 2005           | 13                            | Good Condition |
| HP-109        | 1   | Carrier           | 50JQ008--631QA  | 3695G30358                                       | HVAC / Electric DX       | -                                                               | Roof       | Main Office               | 2005           | 13                            | Good Condition |
| HP-102        | 1   | Carrier           | 50JQ004--541QA  | 3595G20787                                       | HVAC / Electric DX       | -                                                               | Roof       | -                         | 2005           | 13                            | Good Condition |
| HP-202        | 1   | Carrier           | 50JQ012--631AA  | 3495G30488                                       | HVAC / Electric DX       | -                                                               | Roof       | -                         | 2005           | 13                            | Good Condition |
| HP-206        | 1   | Carrier           | 50PQ016--610AA  | 4495F76981                                       | HVAC / Electric DX       | -                                                               | Roof       | Library                   | 2005           | 13                            | Good Condition |
| HP-103        | 1   | Carrier           | 50JQ008--631QA  | 2495G30549                                       | HVAC / Electric DX       | -                                                               | Roof       | 153 / 154                 | 2005           | 13                            | Good Condition |
| HP-201        | 1   | Carrier           | 50JQ012--631AA  | 3495G30491                                       | HVAC / Electric DX       | -                                                               | Roof       | 225 Computer Lab          | 2005           | 13                            | Good Condition |
| HP-101        | 1   | Carrier           | 50JQ006--641AA  | 3695G20222                                       | HVAC / Electric DX       | -                                                               | Roof       | 148                       | 2005           | 13                            | Good Condition |
|               | 1   | lennox            | 62K64-01        | 8303G00219                                       | HVAC / Electric DX       | -                                                               | Roof       | TV Studio                 | 2005           | 13                            | Good Condition |
| AHU-3         | 1   | McQuay            | RDS708BY        | 35L00676 03                                      | HVAC / Electric DX       | -                                                               | Roof       | Hallways / Common<br>Area | 2005           | 13                            | Good Condition |
| HV-1, HV-2    | 1   | Trane             | CLDB08AN0C      | #1: K82G64667,<br>#2: K82G64666                  | HVAC / Electric DX       | -                                                               | Roof       | Gym                       | 2005           | 13                            | Good Condition |
|               |     |                   |                 |                                                  |                          |                                                                 |            |                           |                |                               |                |

Energy Audit of Franklin Avenue Middle School

CHA Project No.24497

Existing Lighting

Cost of Electricity:

\$0.107 \$/kWh

\$6.74 \$/kW

| EXISTING CONDITIONS |                                                                                          |                                           |                                     |                                                                                                     |                                                 |                                                           |                              |                             |                                                     |                               |                                   |       |
|---------------------|------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------------------|-----------------------------------------------------------------------------------------------------|-------------------------------------------------|-----------------------------------------------------------|------------------------------|-----------------------------|-----------------------------------------------------|-------------------------------|-----------------------------------|-------|
|                     | Area Description                                                                         | Usage                                     | No. of Fixtures                     | Standard Fixture Code                                                                               | NYSERDA Fixture Code                            | Watts per Fixture                                         | kW/Space                     | Exist Control               | Annual Hours                                        | Retrofit Control              | Annual kWh                        |       |
| Field Code          | Unique description of the location - Room number/Room name: Floor number (if applicable) | Describe Usage Type using Operating Hours | No. of fixtures before the retrofit | "Lighting Fixture Code" Example<br>2T 40 R F(U) = 2'x2' Troff 40 w Recess. Floor<br>2 lamps U shape | Code from Table of Standard<br>Fixture Wattages | Value from<br>Table of<br>Standard<br>Fixture<br>Wattages | (Watts/Fixt) *<br>(Fixt No.) | Pre-inst. control<br>device | Estimated<br>annual hours<br>for the usage<br>group | Retrofit<br>control<br>device | (kW/space) *<br>(Annual<br>Hours) | Notes |
| 13                  | Boiler Room                                                                              | Boiler Room                               | 4                                   | S 32 P F 2 (ELE)                                                                                    | F42LL                                           | 60                                                        | 0.24                         | SW                          | 2000                                                | SW                            | 480                               | 1     |
| 201                 | 112 Classrom                                                                             | Classrooms                                | 9                                   | T 32 R F 3 (ELE)                                                                                    | F43ILL/2                                        | 90                                                        | 0.81                         | C-OCC                       | 2400                                                | C-OCC                         | 1,944                             | 2     |
| 258                 | 112 Classrom                                                                             | Classrooms                                | 3                                   | CFQ13W                                                                                              | CFQ13/2-L                                       | 28                                                        | 0.08                         | C-OCC                       | 2400                                                | C-OCC                         | 202                               | 3     |
| 201                 | 107 Storage                                                                              | Storage Areas                             | 1                                   | T 32 R F 3 (ELE)                                                                                    | F43ILL/2                                        | 90                                                        | 0.09                         | SW                          | 1000                                                | C-OCC                         | 90                                | 4     |
| 13                  | Elec                                                                                     | Mechanical Room                           | 4                                   | S 32 P F 2 (ELE)                                                                                    | F42LL                                           | 60                                                        | 0.24                         | SW                          | 1000                                                | SW                            | 240                               | 5     |
| 199                 | Boy's TR                                                                                 | Bath Room                                 | 1                                   | W 32 C F 1 (ELE)                                                                                    | F41LL                                           | 32                                                        | 0.03                         | SW                          | 2000                                                | C-OCC                         | 64                                | 6     |
| 199                 | Girl's TR                                                                                | Bath Room                                 | 1                                   | W 32 C F 1 (ELE)                                                                                    | F41LL                                           | 32                                                        | 0.03                         | SW                          | 2000                                                | C-OCC                         | 64                                | 7     |
| 201                 | 106 Storage                                                                              | Storage Areas                             | 2                                   | T 32 R F 3 (ELE)                                                                                    | F43ILL/2                                        | 90                                                        | 0.18                         | C-OCC                       | 1000                                                | C-OCC                         | 180                               | 8     |
| 201                 | 106 IDF Room                                                                             | Offices                                   | 1                                   | T 32 R F 3 (ELE)                                                                                    | F43ILL/2                                        | 90                                                        | 0.09                         | C-OCC                       | 2400                                                | C-OCC                         | 216                               | 9     |
| 201                 | New Wing Corridor                                                                        | Hallways                                  | 13                                  | T 32 R F 3 (ELE)                                                                                    | F43ILL/2                                        | 90                                                        | 1.17                         | SW                          | 2280                                                | C-OCC                         | 2,668                             | 10    |
| 256                 | Gym                                                                                      | Gynasium                                  | 30                                  | T 32 R F 5 (ELE)                                                                                    | F45ILL                                          | 148                                                       | 4.44                         | SW                          | 2000                                                | C-OCC                         | 8,880                             | 11    |
| 198                 | Gym                                                                                      | Gynasium                                  | 6                                   | 2T 17 R F 2 (ELE) REFLECTOR                                                                         | F22LL                                           | 31                                                        | 0.19                         | SW                          | 2000                                                | C-OCC                         | 372                               | 12    |
| 254                 | 210 Science                                                                              | Classrooms                                | 24                                  | T 32 R F 4 (ELE)                                                                                    | F44LL                                           | 118                                                       | 2.83                         | C-OCC                       | 2400                                                | C-OCC                         | 6,797                             | 13    |
| 254                 | Prep                                                                                     | Classrooms                                | 4                                   | T 32 R F 4 (ELE)                                                                                    | F44LL                                           | 118                                                       | 0.47                         | SW                          | 2400                                                | C-OCC                         | 1,133                             | 14    |
| 7                   | Vivarium                                                                                 | Classrooms                                | 4                                   | 2T 32 R F 2 (u) (ELE) Thin Tube                                                                     | FU2LL                                           | 60                                                        | 0.24                         | SW                          | 2400                                                | C-OCC                         | 576                               | 15    |
| 254                 | 208 Science                                                                              | Classrooms                                | 22                                  | T 32 R F 4 (ELE)                                                                                    | F44LL                                           | 118                                                       | 2.60                         | C-OCC                       | 2400                                                | C-OCC                         | 6,230                             | 16    |
| 254                 | Boy's TR                                                                                 | Bath Room                                 | 2                                   | T 32 R F 4 (ELE)                                                                                    | F44LL                                           | 118                                                       | 0.24                         | SW                          | 2000                                                | C-OCC                         | 472                               | 17    |
| 7                   | Boy's TR                                                                                 | Bath Room                                 | 1                                   | 2T 32 R F 2 (u) (ELE) Thin Tube                                                                     | FU2LL                                           | 60                                                        | 0.06                         | SW                          | 2000                                                | C-OCC                         | 120                               | 18    |
| 55                  | Corridor                                                                                 | Hallways                                  | 6                                   | 2T 17 R F 3 (ELE)                                                                                   | F23ILL                                          | 47                                                        | 0.28                         | SW                          | 2280                                                | C-OCC                         | 643                               | 19    |
| 55                  | Corridor                                                                                 | Hallways                                  | 12                                  | 2T 17 R F 3 (ELE)                                                                                   | F23ILL                                          | 47                                                        | 0.56                         | SW                          | 2280                                                | C-OCC                         | 1,286                             | 20    |
| 258                 | Corridor                                                                                 | Hallways                                  | 5                                   | CFQ13W                                                                                              | CFQ13/2-L                                       | 28                                                        | 0.14                         | SW                          | 2280                                                | C-OCC                         | 319                               | 21    |
| 13                  | Girl's TR                                                                                | Bath Room                                 | 4                                   | S 32 P F 2 (ELE)                                                                                    | F42LL                                           | 60                                                        | 0.24                         | SW                          | 2000                                                | C-OCC                         | 480                               | 22    |
| 201                 | 206 SGI                                                                                  | Classrooms                                | 7                                   | T 32 R F 3 (ELE)                                                                                    | F43ILL/2                                        | 90                                                        | 0.63                         | C-OCC                       | 2400                                                | C-OCC                         | 1,512                             | 23    |
| 13                  | Girl's TR                                                                                | Bath Room                                 | 8                                   | S 32 P F 2 (ELE)                                                                                    | F42LL                                           | 60                                                        | 0.48                         | SW                          | 2000                                                | C-OCC                         | 960                               | 24    |
| 13                  | Boy's TR                                                                                 | Bath Room                                 | 8                                   | S 32 P F 2 (ELE)                                                                                    | F42LL                                           | 60                                                        | 0.48                         | SW                          | 2000                                                | C-OCC                         | 960                               | 25    |
| 13                  | Cust Closet                                                                              | Storage/Janitor                           | 1                                   | S 32 P F 2 (ELE)                                                                                    | F42LL                                           | 60                                                        | 0.06                         | SW                          | 500                                                 | SW                            | 30                                | 26    |
| 254                 | Storage                                                                                  | Storage Areas                             | 4                                   | T 32 R F 4 (ELE)                                                                                    | F44LL                                           | 118                                                       | 0.47                         | SW                          | 1000                                                | C-OCC                         | 472                               | 27    |
| 201                 | 202 SGI                                                                                  | Classrooms                                | 5                                   | T 32 R F 3 (ELE)                                                                                    | F43ILL/2                                        | 90                                                        | 0.45                         | C-OCC                       | 2400                                                | C-OCC                         | 1,080                             | 28    |
| 7                   | 202 SGI                                                                                  | Classrooms                                | 1                                   | 2T 32 R F 2 (u) (ELE) Thin Tube                                                                     | FU2LL                                           | 60                                                        | 0.06                         | C-OCC                       | 2400                                                | C-OCC                         | 144                               | 29    |
| 201                 | 213 Classroom                                                                            | Classrooms                                | 12                                  | T 32 R F 3 (ELE)                                                                                    | F43ILL/2                                        | 90                                                        | 1.08                         | C-OCC                       | 2400                                                | C-OCC                         | 2,592                             | 30    |
| 201                 | 214 Classroom                                                                            | Classrooms                                | 12                                  | T 32 R F 3 (ELE)                                                                                    | F43ILL/2                                        | 90                                                        | 1.08                         | C-OCC                       | 2400                                                | C-OCC                         | 2,592                             | 31    |
| 254                 | Sprinkler Room                                                                           | Mechanical Room                           | 1                                   | T 32 R F 4 (ELE)                                                                                    | F44LL                                           | 118                                                       | 0.12                         | SW                          | 1000                                                | SW                            | 118                               | 32    |
| 257                 | 231 Library                                                                              | Classrooms                                | 60                                  | CFT40W                                                                                              | CFT40/2-BX                                      | 72                                                        | 4.32                         | SW                          | 2400                                                | C-OCC                         | 10,368                            | 33    |
| 7                   | 231 Library                                                                              | Classrooms                                | 20                                  | 2T 32 R F 2 (u) (ELE) Thin Tube                                                                     | FU2LL                                           | 60                                                        | 1.20                         | SW                          | 2400                                                | C-OCC                         | 2,880                             | 34    |
| 199                 | 231 Library                                                                              | Classrooms                                | 6                                   | W 32 C F 1 (ELE)                                                                                    | F41LL                                           | 32                                                        | 0.19                         | SW                          | 2400                                                | C-OCC                         | 461                               | 35    |
| 257                 | 227 Tech Service Lab                                                                     | Offices                                   | 4                                   | CFT40W                                                                                              | CFT40/2-BX                                      | 72                                                        | 0.29                         | SW                          | 2400                                                | C-OCC                         | 691                               | 36    |
| 254                 | Copy Room                                                                                | Offices                                   | 27                                  | T 32 R F 4 (ELE)                                                                                    | F44LL                                           | 118                                                       | 3.19                         | SW                          | 2400                                                | C-OCC                         | 7,646                             | 37    |
| 257                 | 230 Team Planning                                                                        | Offices                                   | 5                                   | CFT40W                                                                                              | CFT40/2-BX                                      | 72                                                        | 0.36                         | SW                          | 2400                                                | C-OCC                         | 864                               | 38    |
| 254                 | Network                                                                                  | Storage/Janitor                           | 2                                   | T 32 R F 4 (ELE)                                                                                    | F44LL                                           | 118                                                       | 0.24                         | SW                          | 500                                                 | SW                            | 118                               | 39    |
| 55                  | Corridor                                                                                 | Hallways                                  | 6                                   | 2T 17 R F 3 (ELE)                                                                                   | F23ILL                                          | 47                                                        | 0.28                         | SW                          | 2280                                                | C-OCC                         | 643                               | 40    |
| 254                 | 226 Office                                                                               | Offices                                   | 2                                   | T 32 R F 4 (ELE)                                                                                    | F44LL                                           | 118                                                       | 0.24                         | C-OCC                       | 2400                                                | C-OCC                         | 566                               | 41    |
| 13                  | 224 Computer Lab                                                                         | Classrooms                                | 24                                  | S 32 P F 2 (ELE)                                                                                    | F42LL                                           | 60                                                        | 1.44                         | SW                          | 2400                                                | C-OCC                         | 3,456                             | 42    |
| 13                  | 225 Computer Lab                                                                         | Classrooms                                | 24                                  | S 32 P F 2 (ELE)                                                                                    | F42LL                                           | 60                                                        | 1.44                         | SW                          | 2400                                                | C-OCC                         | 3,456                             | 43    |
| 201                 | 216 Classroom                                                                            | Classrooms                                | 12                                  | T 32 R F 3 (ELE)                                                                                    | F43ILL/2                                        | 90                                                        | 1.08                         | C-OCC                       | 2400                                                | C-OCC                         | 2,592                             | 44    |
| 201                 | 217 Classroom                                                                            | Classrooms                                | 12                                  | T 32 R F 3 (ELE)                                                                                    | F43ILL/2                                        | 90                                                        | 1.08                         | C-OCC                       | 2400                                                | C-OCC                         | 2,592                             | 45    |
| 201                 | 219 Classroom                                                                            | Classrooms                                | 9                                   | T 32 R F 3 (ELE)                                                                                    | F43ILL/2                                        | 90                                                        | 0.81                         | C-OCC                       | 2400                                                | C-OCC                         | 1,944                             | 46    |
| 55                  | 219 Classroom                                                                            | Classrooms                                | 3                                   | 2T 17 R F 3 (ELE)                                                                                   | F23ILL                                          | 47                                                        | 0.14                         | C-OCC                       | 2400                                                | C-OCC                         | 338                               | 47    |
| 201                 | 220 Classroom                                                                            | Classrooms                                | 9                                   | T 32 R F 3 (ELE)                                                                                    | F43ILL/2                                        | 90                                                        | 0.81                         | C-OCC                       | 2400                                                | C-OCC                         | 1,944                             | 48    |
| 55                  | 220 Classroom                                                                            | Classrooms                                | 3                                   | 2T 17 R F 3 (ELE)                                                                                   | F23ILL                                          | 47                                                        | 0.14                         | C-OCC                       | 2400                                                | C-OCC                         | 338                               | 49    |
| 201                 | 221 Classroom                                                                            | Classrooms                                | 9                                   | T 32 R F 3 (ELE)                                                                                    | F43ILL/2                                        | 90                                                        | 0.81                         | C-OCC                       | 2400                                                | C-OCC                         | 1,944                             | 50    |

Energy Audit of Franklin Avenue Middle School

CHA Project No.24497

Existing Lighting

Cost of Electricity:

\$0.107 \$/kWh

\$6.74 \$/kW

| EXISTING CONDITIONS |                                                                                          |                                           |                                     |                                                                                                     |                                                 |                                                           |                              |                             |                                                     |                               |                                   |       |
|---------------------|------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------------------|-----------------------------------------------------------------------------------------------------|-------------------------------------------------|-----------------------------------------------------------|------------------------------|-----------------------------|-----------------------------------------------------|-------------------------------|-----------------------------------|-------|
|                     | Area Description                                                                         | Usage                                     | No. of Fixtures                     | Standard Fixture Code                                                                               | NYSERDA Fixture Code                            | Watts per Fixture                                         | kW/Space                     | Exist Control               | Annual Hours                                        | Retrofit Control              | Annual kWh                        |       |
| Field Code          | Unique description of the location - Room number/Room name: Floor number (if applicable) | Describe Usage Type using Operating Hours | No. of fixtures before the retrofit | "Lighting Fixture Code" Example<br>2T 40 R F(U) = 2'x2' Troff 40 w Recess. Floor<br>2 lamps U shape | Code from Table of Standard<br>Fixture Wattages | Value from<br>Table of<br>Standard<br>Fixture<br>Wattages | (Watts/Fixt) *<br>(Fixt No.) | Pre-inst. control<br>device | Estimated<br>annual hours<br>for the usage<br>group | Retrofit<br>control<br>device | (kW/space) *<br>(Annual<br>Hours) | Notes |
| 55                  | 221 Classroom                                                                            | Classrooms                                | 3                                   | 2T 17 R F 3 (ELE)                                                                                   | F23ILL                                          | 47                                                        | 0.14                         | C-OCC                       | 2400                                                | C-OCC                         | 338                               | 51    |
| 201                 | 222 Classroom                                                                            | Classrooms                                | 9                                   | T 32 R F 3 (ELE)                                                                                    | F43ILL/2                                        | 90                                                        | 0.81                         | C-OCC                       | 2400                                                | C-OCC                         | 1,944                             | 52    |
| 55                  | 222 Classroom                                                                            | Classrooms                                | 3                                   | 2T 17 R F 3 (ELE)                                                                                   | F23ILL                                          | 47                                                        | 0.14                         | C-OCC                       | 2400                                                | C-OCC                         | 338                               | 53    |
| 7                   | Corridor                                                                                 | Hallways                                  | 10                                  | 2T 32 R F 2 (u) (ELE) Thin Tube                                                                     | FU2LL                                           | 60                                                        | 0.60                         | SW                          | 2280                                                | C-OCC                         | 1,368                             | 54    |
| 55                  | Corridor                                                                                 | Hallways                                  | 6                                   | 2T 17 R F 3 (ELE)                                                                                   | F23ILL                                          | 47                                                        | 0.28                         | SW                          | 2280                                                | C-OCC                         | 643                               | 55    |
| 201                 | 223 Classroom                                                                            | Classrooms                                | 12                                  | T 32 R F 3 (ELE)                                                                                    | F43ILL/2                                        | 90                                                        | 1.08                         | C-OCC                       | 2400                                                | C-OCC                         | 2,592                             | 56    |
| 201                 | 224 Classroom                                                                            | Classrooms                                | 12                                  | T 32 R F 3 (ELE)                                                                                    | F43ILL/2                                        | 90                                                        | 1.08                         | C-OCC                       | 2400                                                | C-OCC                         | 2,592                             | 57    |
| 201                 | 236 TV Studio                                                                            | Classrooms                                | 11                                  | T 32 R F 3 (ELE)                                                                                    | F43ILL/2                                        | 90                                                        | 0.99                         | SW                          | 2400                                                | SW                            | 2,376                             | 58    |
| 258                 | 235 Control Room                                                                         | Classrooms                                | 12                                  | CFQ13W                                                                                              | CFQ13/2-L                                       | 28                                                        | 0.34                         | SW                          | 2400                                                | C-OCC                         | 806                               | 59    |
| 258                 | 235 Control Room                                                                         | Classrooms                                | 3                                   | CFQ13W                                                                                              | CFQ13/2-L                                       | 28                                                        | 0.08                         | SW                          | 2400                                                | C-OCC                         | 202                               | 60    |
| 220                 | Cust Closet                                                                              | Storage/Janitor                           | 1                                   | S 17 C F 1(ELE)                                                                                     | F21ILL                                          | 20                                                        | 0.02                         | SW                          | 500                                                 | C-OCC                         | 10                                | 61    |
| 220                 | 204 Elec                                                                                 | Mechanical Room                           | 1                                   | S 17 C F 1(ELE)                                                                                     | F21ILL                                          | 20                                                        | 0.02                         | SW                          | 1000                                                | C-OCC                         | 20                                | 62    |
| 201                 | 237 Classroom                                                                            | Classrooms                                | 15                                  | T 32 R F 3 (ELE)                                                                                    | F43ILL/2                                        | 90                                                        | 1.35                         | C-OCC                       | 2400                                                | C-OCC                         | 3,240                             | 63    |
| 201                 | 238 Classroom                                                                            | Bath Room                                 | 25                                  | T 32 R F 3 (ELE)                                                                                    | F43ILL/2                                        | 90                                                        | 2.25                         | C-OCC                       | 2000                                                | C-OCC                         | 4,500                             | 64    |
| 254                 | Art Office                                                                               | Offices                                   | 1                                   | T 32 R F 4 (ELE)                                                                                    | F44LL                                           | 118                                                       | 0.12                         | SW                          | 2400                                                | C-OCC                         | 283                               | 65    |
| 254                 | Art Storage                                                                              | Storage Areas                             | 1                                   | T 32 R F 4 (ELE)                                                                                    | F44LL                                           | 118                                                       | 0.12                         | SW                          | 1000                                                | C-OCC                         | 118                               | 66    |
| 13                  | Stairs                                                                                   | Hallways                                  | 2                                   | S 32 P F 2 (ELE)                                                                                    | F42LL                                           | 60                                                        | 0.12                         | SW                          | 2280                                                | C-OCC                         | 274                               | 67    |
| 201                 | Stairs                                                                                   | Hallways                                  | 1                                   | T 32 R F 3 (ELE)                                                                                    | F43ILL/2                                        | 90                                                        | 0.09                         | SW                          | 2280                                                | C-OCC                         | 205                               | 68    |
| 254                 | 165 Woodshop                                                                             | Classrooms                                | 22                                  | T 32 R F 4 (ELE)                                                                                    | F44LL                                           | 118                                                       | 2.60                         | SW                          | 2400                                                | C-OCC                         | 6,230                             | 69    |
| 7                   | 165 Woodshop                                                                             | Classrooms                                | 1                                   | 2T 32 R F 2 (u) (ELE) Thin Tube                                                                     | FU2LL                                           | 60                                                        | 0.06                         | SW                          | 2400                                                | C-OCC                         | 144                               | 70    |
| 254                 | Finishing Room                                                                           | Classrooms                                | 2                                   | T 32 R F 4 (ELE)                                                                                    | F44LL                                           | 118                                                       | 0.24                         | SW                          | 2400                                                | C-OCC                         | 566                               | 71    |
| 55                  | Corridor                                                                                 | Hallways                                  | 9                                   | 2T 17 R F 3 (ELE)                                                                                   | F23ILL                                          | 47                                                        | 0.42                         | SW                          | 2280                                                | C-OCC                         | 964                               | 72    |
| 258                 | Corridor                                                                                 | Hallways                                  | 10                                  | CFQ13W                                                                                              | CFQ13/2-L                                       | 28                                                        | 0.28                         | SW                          | 2280                                                | C-OCC                         | 638                               | 73    |
| 201                 | 164 Science                                                                              | Classrooms                                | 25                                  | T 32 R F 3 (ELE)                                                                                    | F43ILL/2                                        | 90                                                        | 2.25                         | C-OCC                       | 2400                                                | C-OCC                         | 5,400                             | 74    |
| 201                 | 164 Office                                                                               | Offices                                   | 4                                   | T 32 R F 3 (ELE)                                                                                    | F43ILL/2                                        | 90                                                        | 0.36                         | SW                          | 2400                                                | C-OCC                         | 864                               | 75    |
| 55                  | Faculty TR                                                                               | Bath Room                                 | 1                                   | 2T 17 R F 3 (ELE)                                                                                   | F23ILL                                          | 47                                                        | 0.05                         | SW                          | 2000                                                | C-OCC                         | 94                                | 76    |
| 55                  | Storage                                                                                  | Storage Areas                             | 1                                   | 2T 17 R F 3 (ELE)                                                                                   | F23ILL                                          | 47                                                        | 0.05                         | SW                          | 1000                                                | C-OCC                         | 47                                | 77    |
| 254                 | Cust Office                                                                              | Offices                                   | 2                                   | T 32 R F 4 (ELE)                                                                                    | F44LL                                           | 118                                                       | 0.24                         | C-OCC                       | 2400                                                | C-OCC                         | 566                               | 78    |
| 201                 | 162 Classroom                                                                            | Classrooms                                | 12                                  | T 32 R F 3 (ELE)                                                                                    | F43ILL/2                                        | 90                                                        | 1.08                         | C-OCC                       | 2400                                                | C-OCC                         | 2,592                             | 79    |
| 201                 | 161 Classroom                                                                            | Classrooms                                | 12                                  | T 32 R F 3 (ELE)                                                                                    | F43ILL/2                                        | 90                                                        | 1.08                         | C-OCC                       | 2400                                                | C-OCC                         | 2,592                             | 80    |
| 201                 | 148 Classroom                                                                            | Classrooms                                | 11                                  | T 32 R F 3 (ELE)                                                                                    | F43ILL/2                                        | 90                                                        | 0.99                         | C-OCC                       | 2400                                                | C-OCC                         | 2,376                             | 81    |
| 201                 | Stairs                                                                                   | Hallways                                  | 1                                   | T 32 R F 3 (ELE)                                                                                    | F43ILL/2                                        | 90                                                        | 0.09                         | SW                          | 2280                                                | C-OCC                         | 205                               | 82    |
| 13                  | Stairs                                                                                   | Hallways                                  | 2                                   | S 32 P F 2 (ELE)                                                                                    | F42LL                                           | 60                                                        | 0.12                         | SW                          | 2280                                                | C-OCC                         | 274                               | 83    |
| 201                 | 144 Classroom                                                                            | Classrooms                                | 9                                   | T 32 R F 3 (ELE)                                                                                    | F43ILL/2                                        | 90                                                        | 0.81                         | C-OCC                       | 2400                                                | C-OCC                         | 1,944                             | 84    |
| 55                  | 144 Classroom                                                                            | Classrooms                                | 3                                   | 2T 17 R F 3 (ELE)                                                                                   | F23ILL                                          | 47                                                        | 0.14                         | C-OCC                       | 2400                                                | C-OCC                         | 338                               | 85    |
| 201                 | 143 Classroom                                                                            | Classrooms                                | 9                                   | T 32 R F 3 (ELE)                                                                                    | F43ILL/2                                        | 90                                                        | 0.81                         | C-OCC                       | 2400                                                | C-OCC                         | 1,944                             | 86    |
| 55                  | 143 Classroom                                                                            | Classrooms                                | 3                                   | 2T 17 R F 3 (ELE)                                                                                   | F23ILL                                          | 47                                                        | 0.14                         | C-OCC                       | 2400                                                | C-OCC                         | 338                               | 87    |
| 258                 | Corridor                                                                                 | Hallways                                  | 12                                  | CFQ13W                                                                                              | CFQ13/2-L                                       | 28                                                        | 0.34                         | SW                          | 2280                                                | C-OCC                         | 766                               | 88    |
| 55                  | Corridor                                                                                 | Hallways                                  | 10                                  | 2T 17 R F 3 (ELE)                                                                                   | F23ILL                                          | 47                                                        | 0.47                         | SW                          | 2280                                                | C-OCC                         | 1,072                             | 89    |
| 201                 | 142 Classroom                                                                            | Classrooms                                | 9                                   | T 32 R F 3 (ELE)                                                                                    | F43ILL/2                                        | 90                                                        | 0.81                         | C-OCC                       | 2400                                                | C-OCC                         | 1,944                             | 90    |
| 55                  | 142 Classroom                                                                            | Classrooms                                | 3                                   | 2T 17 R F 3 (ELE)                                                                                   | F23ILL                                          | 47                                                        | 0.14                         | C-OCC                       | 2400                                                | C-OCC                         | 338                               | 91    |
| 201                 | 141 Classroom                                                                            | Classrooms                                | 9                                   | T 32 R F 3 (ELE)                                                                                    | F43ILL/2                                        | 90                                                        | 0.81                         | C-OCC                       | 2400                                                | C-OCC                         | 1,944                             | 92    |
| 55                  | 141 Classroom                                                                            | Classrooms                                | 3                                   | 2T 17 R F 3 (ELE)                                                                                   | F23ILL                                          | 47                                                        | 0.14                         | C-OCC                       | 2400                                                | C-OCC                         | 338                               | 93    |
| 201                 | Stairs                                                                                   | Hallways                                  | 1                                   | T 32 R F 3 (ELE)                                                                                    | F43ILL/2                                        | 90                                                        | 0.09                         | SW                          | 2280                                                | C-OCC                         | 205                               | 94    |
| 55                  | Stairs                                                                                   | Hallways                                  | 2                                   | 2T 17 R F 3 (ELE)                                                                                   | F23ILL                                          | 47                                                        | 0.09                         | SW                          | 2280                                                | C-OCC                         | 214                               | 95    |
| 55                  | Nurse Waiting                                                                            | Offices                                   | 6                                   | 2T 17 R F 3 (ELE)                                                                                   | F23ILL                                          | 47                                                        | 0.28                         | SW                          | 2400                                                | C-OCC                         | 677                               | 96    |
| 55                  | 147 Nurse Office                                                                         | Offices                                   | 2                                   | 2T 17 R F 3 (ELE)                                                                                   | F23ILL                                          | 47                                                        | 0.09                         | SW                          | 2400                                                | C-OCC                         | 226                               | 97    |
| 13                  | Exam                                                                                     | Exam                                      | 2                                   | S 32 P F 2 (ELE)                                                                                    | F42LL                                           | 60                                                        | 0.12                         | SW                          | 3000                                                | C-OCC                         | 360                               | 98    |
| 257                 | Cot Area                                                                                 | Exam                                      | 8                                   | CFT40W                                                                                              | CFT40/2-BX                                      | 72                                                        | 0.58                         | SW                          | 3000                                                | C-OCC                         | 1,728                             | 99    |
| 7                   | TR                                                                                       | Bath Room                                 | 1                                   | 2T 32 R F 2 (u) (ELE) Thin Tube                                                                     | FU2LL                                           | 60                                                        | 0.06                         | SW                          | 2000                                                | C-OCC                         | 120                               | 100   |

Energy Audit of Franklin Avenue Middle School

CHA Project No.24497

Existing Lighting

Cost of Electricity:

\$0.107 \$/kWh

\$6.74 \$/kW

| EXISTING CONDITIONS |                                                                                          |                                           |                                     |                                                                                                     |                                                 |                                                           |                              |                             |                                                     |                               |                                   |       |
|---------------------|------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------------------|-----------------------------------------------------------------------------------------------------|-------------------------------------------------|-----------------------------------------------------------|------------------------------|-----------------------------|-----------------------------------------------------|-------------------------------|-----------------------------------|-------|
|                     | Area Description                                                                         | Usage                                     | No. of Fixtures                     | Standard Fixture Code                                                                               | NYSERDA Fixture Code                            | Watts per Fixture                                         | kW/Space                     | Exist Control               | Annual Hours                                        | Retrofit Control              | Annual kWh                        |       |
| Field Code          | Unique description of the location - Room number/Room name: Floor number (if applicable) | Describe Usage Type using Operating Hours | No. of fixtures before the retrofit | "Lighting Fixture Code" Example<br>2T 40 R F(U) = 2'x2' Troff 40 w Recess. Floor<br>2 lamps U shape | Code from Table of Standard<br>Fixture Wattages | Value from<br>Table of<br>Standard<br>Fixture<br>Wattages | (Watts/Fixt) *<br>(Fixt No.) | Pre-inst. control<br>device | Estimated<br>annual hours<br>for the usage<br>group | Retrofit<br>control<br>device | (kW/space) *<br>(Annual<br>Hours) | Notes |
| 55                  | Corridor                                                                                 | Hallways                                  | 5                                   | 2T 17 R F 3 (ELE)                                                                                   | F23ILL                                          | 47                                                        | 0.24                         | SW                          | 2280                                                | C-OCC                         | 536                               | 101   |
| 257                 | Main Office                                                                              | Offices                                   | 11                                  | CFT40W                                                                                              | CFT40/2-BX                                      | 72                                                        | 0.79                         | SW                          | 2400                                                | C-OCC                         | 1,901                             | 102   |
| 257                 | 135 Assist Prinicipal                                                                    | Offices                                   | 10                                  | CFT40W                                                                                              | CFT40/2-BX                                      | 72                                                        | 0.72                         | SW                          | 2400                                                | C-OCC                         | 1,728                             | 103   |
| 257                 | 138 Principal                                                                            | Offices                                   | 3                                   | CFT40W                                                                                              | CFT40/2-BX                                      | 72                                                        | 0.22                         | SW                          | 2400                                                | C-OCC                         | 518                               | 104   |
| 258                 | 138 Principal                                                                            | Offices                                   | 3                                   | CFQ13W                                                                                              | CFQ13/2-L                                       | 28                                                        | 0.08                         | SW                          | 2400                                                | C-OCC                         | 202                               | 105   |
| 55                  | Vest                                                                                     | Hallways                                  | 4                                   | 2T 17 R F 3 (ELE)                                                                                   | F23ILL                                          | 47                                                        | 0.19                         | SW                          | 2280                                                | C-OCC                         | 429                               | 106   |
| 257                 | 131 Guidance                                                                             | Offices                                   | 4                                   | CFT40W                                                                                              | CFT40/2-BX                                      | 72                                                        | 0.29                         | SW                          | 2400                                                | C-OCC                         | 691                               | 107   |
| 254                 | 134 Workroom                                                                             | Offices                                   | 4                                   | T 32 R F 4 (ELE)                                                                                    | F44LL                                           | 118                                                       | 0.47                         | SW                          | 2400                                                | C-OCC                         | 1,133                             | 108   |
| 257                 | 130 Guidance                                                                             | Offices                                   | 4                                   | CFT40W                                                                                              | CFT40/2-BX                                      | 72                                                        | 0.29                         | SW                          | 2400                                                | C-OCC                         | 691                               | 109   |
| 7                   | Women's TR                                                                               | Bath Room                                 | 1                                   | 2T 32 R F 2 (u) (ELE) Thin Tube                                                                     | FU2LL                                           | 60                                                        | 0.06                         | SW                          | 2000                                                | C-OCC                         | 120                               | 110   |
| 7                   | Men's TR                                                                                 | Bath Room                                 | 1                                   | 2T 32 R F 2 (u) (ELE) Thin Tube                                                                     | FU2LL                                           | 60                                                        | 0.06                         | SW                          | 2000                                                | C-OCC                         | 120                               | 111   |
| 257                 | 135 Office                                                                               | Offices                                   | 6                                   | CFT40W                                                                                              | CFT40/2-BX                                      | 72                                                        | 0.43                         | SW                          | 2400                                                | C-OCC                         | 1,037                             | 112   |
| 257                 | Child Study Room                                                                         | Offices                                   | 11                                  | CFT40W                                                                                              | CFT40/2-BX                                      | 72                                                        | 0.79                         | SW                          | 2400                                                | C-OCC                         | 1,901                             | 113   |
| 257                 | 129 Child Study Team                                                                     | Offices                                   | 4                                   | CFT40W                                                                                              | CFT40/2-BX                                      | 72                                                        | 0.29                         | SW                          | 2400                                                | C-OCC                         | 691                               | 114   |
| 254                 | 125B Gym Office                                                                          | Offices                                   | 2                                   | T 32 R F 4 (ELE)                                                                                    | F44LL                                           | 118                                                       | 0.24                         | SW                          | 2400                                                | C-OCC                         | 566                               | 115   |
| 55                  | 125B Gym Office                                                                          | Offices                                   | 1                                   | 2T 17 R F 3 (ELE)                                                                                   | F23ILL                                          | 47                                                        | 0.05                         | SW                          | 2400                                                | C-OCC                         | 113                               | 116   |
| 198                 | Women's TR                                                                               | Bath Room                                 | 1                                   | 2T 17 R F 2 (ELE) REFLECTOR                                                                         | F22LL                                           | 31                                                        | 0.03                         | SW                          | 2000                                                | C-OCC                         | 62                                | 117   |
| 254                 | 125A Office                                                                              | Offices                                   | 2                                   | T 32 R F 4 (ELE)                                                                                    | F44LL                                           | 118                                                       | 0.24                         | SW                          | 2400                                                | C-OCC                         | 566                               | 118   |
| 55                  | 125A Office                                                                              | Offices                                   | 1                                   | 2T 17 R F 3 (ELE)                                                                                   | F23ILL                                          | 47                                                        | 0.05                         | SW                          | 2400                                                | C-OCC                         | 113                               | 119   |
| 198                 | 125A Office                                                                              | Offices                                   | 1                                   | 2T 17 R F 2 (ELE) REFLECTOR                                                                         | F22LL                                           | 31                                                        | 0.03                         | SW                          | 2400                                                | C-OCC                         | 74                                | 120   |
| 257                 | Weight Room                                                                              | Weight Room                               | 4                                   | CFT40W                                                                                              | CFT40/2-BX                                      | 72                                                        | 0.29                         | SW                          | 1000                                                | C-OCC                         | 288                               | 121   |
| 257                 | Boy's Locker Room                                                                        | Locker                                    | 11                                  | CFT40W                                                                                              | CFT40/2-BX                                      | 72                                                        | 0.79                         | SW                          | 2800                                                | C-OCC                         | 2,218                             | 122   |
| 257                 | Boy's Locker Room TR                                                                     | Locker                                    | 4                                   | CFT40W                                                                                              | CFT40/2-BX                                      | 72                                                        | 0.29                         | SW                          | 2800                                                | C-OCC                         | 806                               | 123   |
| 257                 | Girl's Locker Room                                                                       | Locker                                    | 8                                   | CFT40W                                                                                              | CFT40/2-BX                                      | 72                                                        | 0.58                         | SW                          | 2800                                                | C-OCC                         | 1,613                             | 124   |
| 257                 | Girl's Locker Room TR                                                                    | Bath Room                                 | 4                                   | CFT40W                                                                                              | CFT40/2-BX                                      | 72                                                        | 0.29                         | SW                          | 2000                                                | C-OCC                         | 576                               | 125   |
| 257                 | Corridor                                                                                 | Hallways                                  | 8                                   | CFT40W                                                                                              | CFT40/2-BX                                      | 72                                                        | 0.58                         | SW                          | 2280                                                | C-OCC                         | 1,313                             | 126   |
| 257                 | Faculty Room                                                                             | Offices                                   | 11                                  | CFT40W                                                                                              | CFT40/2-BX                                      | 72                                                        | 0.79                         | SW                          | 2400                                                | C-OCC                         | 1,901                             | 127   |
| 7                   | Men's TR                                                                                 | Bath Room                                 | 1                                   | 2T 32 R F 2 (u) (ELE) Thin Tube                                                                     | FU2LL                                           | 60                                                        | 0.06                         | SW                          | 2000                                                | C-OCC                         | 120                               | 128   |
| 7                   | Women's TR                                                                               | Bath Room                                 | 1                                   | 2T 32 R F 2 (u) (ELE) Thin Tube                                                                     | FU2LL                                           | 60                                                        | 0.06                         | SW                          | 2000                                                | C-OCC                         | 120                               | 129   |
| 201                 | 119 SGI                                                                                  | Classrooms                                | 6                                   | T 32 R F 3 (ELE)                                                                                    | F43ILL/2                                        | 90                                                        | 0.54                         | C-OCC                       | 2400                                                | C-OCC                         | 1,296                             | 130   |
| 7                   | 119 SGI                                                                                  | Classrooms                                | 1                                   | 2T 32 R F 2 (u) (ELE) Thin Tube                                                                     | FU2LL                                           | 60                                                        | 0.06                         | C-OCC                       | 2400                                                | C-OCC                         | 144                               | 131   |
| 259                 | Multipurpose Room                                                                        | Break/Lunch Rooms                         | 12                                  | CFT40W                                                                                              | CFT40/8-BX                                      | 288                                                       | 3.46                         | SW                          | 3102.5                                              | C-OCC                         | 10,722                            | 132   |
| 199                 | Multipurpose Room                                                                        | Break/Lunch Rooms                         | 34                                  | W 32 C F 1 (ELE)                                                                                    | F41LL                                           | 32                                                        | 1.09                         | SW                          | 3102.5                                              | C-OCC                         | 3,376                             | 133   |
| 258                 | Corridor                                                                                 | Hallways                                  | 11                                  | CFQ13W                                                                                              | CFQ13/2-L                                       | 28                                                        | 0.31                         | SW                          | 2280                                                | C-OCC                         | 702                               | 134   |
| 55                  | Corridor                                                                                 | Hallways                                  | 11                                  | 2T 17 R F 3 (ELE)                                                                                   | F23ILL                                          | 47                                                        | 0.52                         | SW                          | 2280                                                | C-OCC                         | 1,179                             | 135   |
| 201                 | 114 Music                                                                                | Classrooms                                | 12                                  | T 32 R F 3 (ELE)                                                                                    | F43ILL/2                                        | 90                                                        | 1.08                         | SW                          | 2400                                                | C-OCC                         | 2,592                             | 136   |
| 13                  | 113 Music                                                                                | Classrooms                                | 42                                  | S 32 P F 2 (ELE)                                                                                    | F42LL                                           | 60                                                        | 2.52                         | SW                          | 2400                                                | C-OCC                         | 6,048                             | 137   |
| 7                   | 113 Office                                                                               | Classrooms                                | 4                                   | 2T 32 R F 2 (u) (ELE) Thin Tube                                                                     | FU2LL                                           | 60                                                        | 0.24                         | SW                          | 2400                                                | C-OCC                         | 576                               | 138   |
| 254                 | 113 Storage                                                                              | Storage Areas                             | 3                                   | T 32 R F 4 (ELE)                                                                                    | F44LL                                           | 118                                                       | 0.35                         | SW                          | 1000                                                | C-OCC                         | 354                               | 139   |
| 201                 | 127 Classroom                                                                            | Classrooms                                | 12                                  | T 32 R F 3 (ELE)                                                                                    | F43ILL/2                                        | 90                                                        | 1.08                         | C-OCC                       | 2400                                                | C-OCC                         | 2,592                             | 140   |
| 201                 | 126 Classroom                                                                            | Classrooms                                | 12                                  | T 32 R F 3 (ELE)                                                                                    | F43ILL/2                                        | 90                                                        | 1.08                         | C-OCC                       | 2400                                                | C-OCC                         | 2,592                             | 141   |
| 55                  | Corridor                                                                                 | Hallways                                  | 10                                  | 2T 17 R F 3 (ELE)                                                                                   | F23ILL                                          | 47                                                        | 0.47                         | SW                          | 2280                                                | C-OCC                         | 1,072                             | 142   |
| 258                 | Corridor                                                                                 | Hallways                                  | 7                                   | CFQ13W                                                                                              | CFQ13/2-L                                       | 28                                                        | 0.20                         | SW                          | 2280                                                | C-OCC                         | 447                               | 143   |
| 13                  | 157 Classroom                                                                            | Classrooms                                | 18                                  | S 32 P F 2 (ELE)                                                                                    | F42LL                                           | 60                                                        | 1.08                         | C-OCC                       | 2400                                                | C-OCC                         | 2,592                             | 144   |
| 201                 | 153 SGI                                                                                  | Classrooms                                | 9                                   | T 32 R F 3 (ELE)                                                                                    | F43ILL/2                                        | 90                                                        | 0.81                         | C-OCC                       | 2400                                                | C-OCC                         | 1,944                             | 145   |
| 201                 | 154 SGI                                                                                  | Classrooms                                | 9                                   | T 32 R F 3 (ELE)                                                                                    | F43ILL/2                                        | 90                                                        | 0.81                         | C-OCC                       | 2400                                                | C-OCC                         | 1,944                             | 146   |
| 13                  | Boy's TR                                                                                 | Bath Room                                 | 12                                  | S 32 P F 2 (ELE)                                                                                    | F42LL                                           | 60                                                        | 0.72                         | SW                          | 2000                                                | C-OCC                         | 1,440                             | 147   |
| 13                  | Girl's TR                                                                                | Bath Room                                 | 12                                  | S 32 P F 2 (ELE)                                                                                    | F42LL                                           | 60                                                        | 0.72                         | SW                          | 2000                                                | C-OCC                         | 1,440                             | 148   |
| 13                  | 158 Classroom                                                                            | Classrooms                                | 18                                  | S 32 P F 2 (ELE)                                                                                    | F42LL                                           | 60                                                        | 1.08                         | C-OCC                       | 2400                                                | C-OCC                         | 2,592                             | 149   |
|                     | Total                                                                                    |                                           | 1,176                               |                                                                                                     |                                                 |                                                           | 91.14                        |                             |                                                     |                               | 214,449                           |       |

## **APPENDIX C**

### **ECM Calculations**

| Summary of Energy Conservation Measures |                                                                  |                    |                           |                               |                           |                              |                                |
|-----------------------------------------|------------------------------------------------------------------|--------------------|---------------------------|-------------------------------|---------------------------|------------------------------|--------------------------------|
| Energy Conservation Measure             |                                                                  | Approx. Costs (\$) | Approx. Savings (\$/year) | Payback (Years) w/o Incentive | Potential Incentive (\$)* | Payback (Years) w/ Incentive | Recommended For Implementation |
| ECM-1                                   | Air Handler Replacement (AHU-1 & AHU-2)                          | 116,000            | 900                       | >20                           | 4,300                     | >20                          |                                |
| ECM-2                                   | Boiler Replacement                                               | 265,000            | 300                       | >20                           | 9,000                     | >20                          |                                |
| ECM-3                                   | Replace DWH                                                      | 7,000              | 300                       | >20                           | 500                       | >20                          |                                |
| ECM-4                                   | Install VSD & Premium Motors on HW Pumps                         | 10,000             | 1,900                     | 5                             | 2,300                     | 4                            | X                              |
| ECM-5                                   | Demand Controlled Ventilation (Gym & Cafeteria)                  | 20,000             | 1,500                     | 13                            | 0                         | 13                           | X                              |
| ECM-6                                   | Walk-in Cooler Controls                                          | 15,000             | 900                       | 17                            | 0                         | 17                           |                                |
| ECM-7                                   | Seal Windows Properly                                            | 14,000             | 700                       | 20                            | 0                         | 20                           |                                |
| ECM-8                                   | Lighting Replacement / Upgrades                                  | 50,000             | 2,800                     | 18                            | 5,500                     | 16                           |                                |
| ECM-9                                   | Install Lighting Controls (Occupancy Sensors)                    | 22,000             | 5,700                     | 4                             | 3,900                     | 3                            | X                              |
| ECM-10                                  | Lighting Replacements with Lighting Controls (Occupancy Sensors) | 72,000             | 7,900                     | 9                             | 9,400                     | 8                            |                                |
| ECM-11                                  | Install Low Flow Plumbing Fixtures                               | 6,000              | 700                       | 9                             | 0                         | 9                            | X                              |

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ECM Summary Sheet

ECM-1 Air Handler Replacement (AHU-1 & AHU-2)

| Budgetary<br>Cost | Annual Utility Savings |                |                   |             | Estimated<br>Maintenance<br>Savings | Total<br>Savings | ROI   | Incentive * | Payback<br>(without<br>incentive)<br>Years | Payback<br>(with<br>incentive)<br>Years |
|-------------------|------------------------|----------------|-------------------|-------------|-------------------------------------|------------------|-------|-------------|--------------------------------------------|-----------------------------------------|
|                   | Electric<br>kWh        | Electric<br>kW | Nat Gas<br>Therms | Total<br>\$ |                                     |                  |       |             |                                            |                                         |
| \$                |                        |                |                   | \$          | \$                                  | \$               |       | \$          |                                            |                                         |
| 116,000           | 6,500                  | 0              | 0                 | 900         | 0                                   | 900              | (0.8) | 4,300       | >20                                        | >20                                     |

ECM-2 Boiler Replacement

| Budgetary<br>Cost | Annual Utility Savings |                |                   |             | Estimated<br>Maintenance<br>Savings | Total<br>Savings | ROI   | Incentive * | Payback<br>(without<br>incentive)<br>Years | Payback<br>(with<br>incentive)<br>Years |
|-------------------|------------------------|----------------|-------------------|-------------|-------------------------------------|------------------|-------|-------------|--------------------------------------------|-----------------------------------------|
|                   | Electric<br>kWh        | Electric<br>kW | Nat Gas<br>Therms | Total<br>\$ |                                     |                  |       |             |                                            |                                         |
| \$                |                        |                |                   | \$          | \$                                  | \$               |       | \$          |                                            |                                         |
| 265,000           | 0                      | 0              | 300               | 300         | 0                                   | 300              | (1.0) | 9,000       | >20                                        | >20                                     |

ECM-3 Replace DWH

| Budgetary<br>Cost | Annual Utility Savings |                |                   |             | Estimated<br>Maintenance<br>Savings | Total<br>Savings | ROI   | Incentive * | Payback<br>(without<br>incentive)<br>Years | Payback<br>(with<br>incentive)<br>Years |
|-------------------|------------------------|----------------|-------------------|-------------|-------------------------------------|------------------|-------|-------------|--------------------------------------------|-----------------------------------------|
|                   | Electric<br>kWh        | Electric<br>kW | Nat Gas<br>Therms | Total<br>\$ |                                     |                  |       |             |                                            |                                         |
| \$                |                        |                |                   | \$          | \$                                  | \$               |       | \$          |                                            |                                         |
| 7,000             | 0                      | 0              | 300               | 300         | 0                                   | 300              | (0.5) | 500         | >20                                        | >20                                     |

ECM-4 Install VSD & Premium Motors on HW Pumps

| Budgetary<br>Cost | Annual Utility Savings |                |                   |             | Estimated<br>Maintenance<br>Savings | Total<br>Savings | ROI | Incentive * | Payback<br>(without<br>incentive)<br>Years | Payback<br>(with<br>incentive)<br>Years |
|-------------------|------------------------|----------------|-------------------|-------------|-------------------------------------|------------------|-----|-------------|--------------------------------------------|-----------------------------------------|
|                   | Electric<br>kWh        | Electric<br>kW | Nat Gas<br>Therms | Total<br>\$ |                                     |                  |     |             |                                            |                                         |
| \$                |                        |                |                   | \$          | \$                                  | \$               |     | \$          |                                            |                                         |
| 10,000            | 14,200                 | 0              | 0                 | 1,900       | 0                                   | 1,900            | 2.8 | 2,300       | 5.3                                        | 4.1                                     |

ECM-5 Demand Controlled Ventilation (Gym & Cafeteria)

| Budgetary<br>Cost | Annual Utility Savings |                |                   |             | Estimated<br>Maintenance<br>Savings | Total<br>Savings | ROI | Incentive * | Payback<br>(without<br>incentive)<br>Years | Payback<br>(with<br>incentive)<br>Years |
|-------------------|------------------------|----------------|-------------------|-------------|-------------------------------------|------------------|-----|-------------|--------------------------------------------|-----------------------------------------|
|                   | Electric<br>kWh        | Electric<br>kW | Nat Gas<br>Therms | Total<br>\$ |                                     |                  |     |             |                                            |                                         |
| \$                |                        |                |                   | \$          | \$                                  | \$               |     | \$          |                                            |                                         |
| 20,000            | 5,700                  | 0              | 700               | 1,500       | 0                                   | 1,500            | 0.1 | 0           | 13.3                                       | 13.3                                    |

ECM-6 Walk-in Cooler Controls

| Budgetary<br>Cost | Annual Utility Savings |                |                   |             | Estimated<br>Maintenance<br>Savings | Total<br>Savings | ROI   | Incentive * | Payback<br>(without<br>incentive)<br>Years | Payback<br>(with<br>incentive)<br>Years |
|-------------------|------------------------|----------------|-------------------|-------------|-------------------------------------|------------------|-------|-------------|--------------------------------------------|-----------------------------------------|
|                   | Electric<br>kWh        | Electric<br>kW | Nat Gas<br>Therms | Total<br>\$ |                                     |                  |       |             |                                            |                                         |
| \$                |                        |                |                   | \$          | \$                                  | \$               |       | \$          |                                            |                                         |
| 15,000            | 6,300                  | 0              | 0                 | 900         | 0                                   | 900              | (0.1) | 0           | 16.7                                       | 16.7                                    |

ECM-7 Seal Windows Properly

| Budgetary<br>Cost | Annual Utility Savings |                |                   |             | Estimated<br>Maintenance<br>Savings | Total<br>Savings | ROI   | Incentive * | Payback<br>(without<br>incentive)<br>Years | Payback<br>(with<br>incentive)<br>Years |
|-------------------|------------------------|----------------|-------------------|-------------|-------------------------------------|------------------|-------|-------------|--------------------------------------------|-----------------------------------------|
|                   | Electric<br>kWh        | Electric<br>kW | Nat Gas<br>Therms | Total<br>\$ |                                     |                  |       |             |                                            |                                         |
| \$                |                        |                |                   | \$          | \$                                  | \$               |       | \$          |                                            |                                         |
| 14,000            | 900                    | 0              | 600               | 700         | 0                                   | 700              | (0.4) | 0           | 20.0                                       | 20.0                                    |

ECM-8 Lighting Replacement / Upgrades

| Budgetary<br>Cost | Annual Utility Savings |                |                   |             | Estimated<br>Maintenance<br>Savings | Total<br>Savings | ROI   | Incentive * | Payback<br>(without<br>incentive)<br>Years | Payback<br>(with<br>incentive)<br>Years |
|-------------------|------------------------|----------------|-------------------|-------------|-------------------------------------|------------------|-------|-------------|--------------------------------------------|-----------------------------------------|
|                   | Electric<br>kWh        | Electric<br>kW | Nat Gas<br>Therms | Total<br>\$ |                                     |                  |       |             |                                            |                                         |
| \$                |                        |                |                   | \$          | \$                                  | \$               |       | \$          |                                            |                                         |
| 50,000            | 19,000                 | 8.3            | 0                 | 2,800       | 0                                   | 2,800            | (0.2) | 5,500       | 17.9                                       | 15.9                                    |

ECM-9 Install Lighting Controls (Occupancy Sensors)

| Budgetary<br>Cost | Annual Utility Savings |                |                   |             | Estimated<br>Maintenance<br>Savings | Total<br>Savings | ROI | Incentive * | Payback<br>(without<br>incentive)<br>Years | Payback<br>(with<br>incentive)<br>Years |
|-------------------|------------------------|----------------|-------------------|-------------|-------------------------------------|------------------|-----|-------------|--------------------------------------------|-----------------------------------------|
|                   | Electric<br>kWh        | Electric<br>kW | Nat Gas<br>Therms | Total<br>\$ |                                     |                  |     |             |                                            |                                         |
| \$                |                        |                |                   | \$          | \$                                  | \$               |     | \$          |                                            |                                         |
| 22,000            | 43,900                 | 0              | 0                 | 5,700       | 0                                   | 5,700            | 3.0 | 3,900       | 3.9                                        | 3.2                                     |

ECM-10 Lighting Replacements with Lighting Controls (Occupancy Sensors)

| Budgetary<br>Cost | Annual Utility Savings |                |                   |             | Estimated<br>Maintenance<br>Savings | Total<br>Savings | ROI | Incentive * | Payback<br>(without<br>incentive)<br>Years | Payback<br>(with<br>incentive)<br>Years |
|-------------------|------------------------|----------------|-------------------|-------------|-------------------------------------|------------------|-----|-------------|--------------------------------------------|-----------------------------------------|
|                   | Electric<br>kWh        | Electric<br>kW | Nat Gas<br>Therms | Total<br>\$ |                                     |                  |     |             |                                            |                                         |
| \$                |                        |                |                   | \$          | \$                                  | \$               |     | \$          |                                            |                                         |
| 72,000            | 58,500                 | 8.3            | 0                 | 7,900       | 0                                   | 7,900            | 0.6 | 9,400       | 9.1                                        | 7.9                                     |

ECM-11 Install Low Flow Plumbing Fixtures

| Budgetary<br>Cost | Annual Utility Savings |                |                  |             | Estimated<br>Maintenance<br>Savings | Total<br>Savings | ROI | Incentive * | Payback<br>(without<br>incentive)<br>Years | Payback<br>(with<br>incentive)<br>Years |
|-------------------|------------------------|----------------|------------------|-------------|-------------------------------------|------------------|-----|-------------|--------------------------------------------|-----------------------------------------|
|                   | Electric<br>kWh        | Electric<br>kW | Water<br>kgal/yr | Total<br>\$ |                                     |                  |     |             |                                            |                                         |
| \$                |                        |                |                  | \$          | \$                                  | \$               |     | \$          |                                            |                                         |
| 6,000             | 0                      | 0              | 100              | 700         | 0                                   | 700              | 0.9 | 0           | 8.6                                        | 8.6                                     |

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| Utility Costs |       | Yearly Usage   | MTCDE      | Building Area | Annual Utility Cost |             |
|---------------|-------|----------------|------------|---------------|---------------------|-------------|
| \$            | 0.135 | \$/kWh blended | 0.00042021 | 85,106        | Electric            | Natural Gas |
| \$            | 0.130 | \$/kWh supply  | 1,166,200  | 0.00042021    | \$157,855.54        | \$15,958.23 |
| \$            | 3.44  | \$/kW          | 164        | 0             |                     |             |
| \$            | 1.02  | \$/Therm       | 15,572     | 0.00533471    |                     |             |
| \$            | 10.04 | \$/kgals       | 569        | 0             |                     |             |

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|        | Item                                                             | Savings |        |        |             |         |           | Cost       | Simple Payback | MTCDE | Life Expectancy | NJ Smart Start Incentives | Direct Install Eligible (Y/N)* | Direct Install Incentives** | Max Incentives | Payback w/ Incentives*** | Simple Projected Lifetime Savings |           |        |         |         |            | ROI   |
|--------|------------------------------------------------------------------|---------|--------|--------|-------------|---------|-----------|------------|----------------|-------|-----------------|---------------------------|--------------------------------|-----------------------------|----------------|--------------------------|-----------------------------------|-----------|--------|---------|---------|------------|-------|
|        |                                                                  | kW      | kWh    | therms | cooling kWh | kgal/yr | \$        |            |                |       |                 |                           |                                |                             |                |                          | kW                                | kWh       | therms | cooling | kgal/yr | \$         |       |
| ECM-1  | Air Handler Replacement (AHU-1 & AHU-2)                          | 0.0     | 0      | 0      | 6,482       | 0       | \$ 900    | \$ 115,600 | 128.4          | 2.7   | 25              | \$ 4,320                  | Y                              | \$ 75,000                   | \$ 4,320       | 123.6                    | 0.0                               | 0         | 0      | 162,050 | 0       | \$ 21,899  | (0.8) |
| ECM-2  | Boiler Replacement                                               | 0.0     | 0      | 284    | 0           | 0       | \$ 300    | \$ 265,127 | 883.8          | 1.5   | 25              | \$ 9,000                  | Y                              | \$ 75,000                   | \$ 9,000       | 853.8                    | 0.0                               | 0         | 7,094  | 0       | 0       | \$ 7,270   | (1.0) |
| ECM-3  | Replace DWH                                                      | 0.0     | 0      | 303    | 0           | 0       | \$ 300    | \$ 7,482   | 24.9           | 1.6   | 12              | \$ 500                    | Y                              | \$ 5,200                    | \$ 500         | 23.3                     | 0.0                               | 0         | 3,632  | 0       | 0       | \$ 3,722   | (0.5) |
| ECM-4  | Install VSD & Premium Motors on HW Pumps                         | 0.0     | 14,243 | 0      | 0           | 0       | \$ 1,900  | \$ 10,197  | 5.4            | 6.0   | 20              | \$ 2,300                  | Y                              | \$ 7,100                    | \$ 2,300       | 4.2                      | 0.0                               | 284,855   | 0      | 0       | 0       | \$ 38,495  | 2.8   |
| ECM-5  | Demand Controlled Ventilation (Gym & Cafeteria)                  | 0.0     | 0      | 686    | 5,741       | 0       | \$ 1,500  | \$ 20,000  | 13.3           | 6.1   | 15              |                           |                                | \$ -                        | \$ -           | 13.3                     | 0.0                               | 0         | 10,288 | 86,122  | 0       | \$ 22,181  | 0.1   |
| ECM-6  | Walk-in Cooler Controls                                          | 0.0     | 6,297  | 0      | 0           | 0       | \$ 900    | \$ 15,000  | 16.7           | 2.6   | 15              |                           |                                | \$ -                        | \$ -           | 16.7                     | 0.0                               | 94,462    | 0      | 0       | 0       | \$ 12,766  | (0.1) |
| ECM-7  | Seal Windows Properly                                            | 0.0     | 0      | 579    | 880         | 0       | \$ 700    | \$ 14,000  | 20.0           | 3.5   | 12              |                           |                                | \$ -                        | \$ -           | 20.0                     | 0.0                               | 0         | 6,951  | 10,562  | 0       | \$ 8,550   | (0.4) |
| ECM-8  | Lighting Replacement / Upgrades                                  | 8.3     | 18,966 | 0      | 0           | 0       | \$ 2,800  | \$ 49,929  | 17.8           | 8.0   | 15              | \$ 5,540                  | Y                              | \$ 35,000                   | \$ 5,540       | 15.9                     | 123.9                             | 284,497   | 0      | 0       | 0       | \$ 41,988  | (0.2) |
| ECM-9  | Install Lighting Controls (Occupancy Sensors)                    | 0.0     | 43,941 | 0      | 0           | 0       | \$ 5,700  | \$ 22,275  | 3.9            | 18.5  | 15              | \$ 3,850                  | Y                              | \$ 15,600                   | \$ 3,850       | 3.2                      | 0.0                               | 659,109   | 0      | 0       | 0       | \$ 89,072  | 3.0   |
| ECM-10 | Lighting Replacements with Lighting Controls (Occupancy Sensors) | 8.3     | 58,518 | 0      | 0           | 0       | \$ 7,900  | \$ 72,204  | 9.1            | 24.6  | 15              | \$ 9,390                  | Y                              | \$ 50,500                   | \$ 9,390       | 8.0                      | 123.9                             | 877,763   | 0      | 0       | 0       | \$ 118,889 | 0.6   |
| ECM-11 | Install Low Flow Plumbing Fixtures                               | 0.0     | 0      | 0      | 0           | 69      | \$ 700    | \$ 5,516   | 7.9            | 0.0   | 15              |                           |                                | \$ -                        | \$ -           | 7.9                      | 0.0                               | 0         | 0      | 0       | 1,030   | \$ 10,337  | 0.9   |
|        | Total (Does Not Include ECM-9 & ECM-10)                          | 8.3     | 79,058 | 1,852  | 13,104      | 69      | \$ 15,100 | \$ 525,126 | 34.8           |       | 17              | \$ 25,510                 |                                | \$ 212,800                  | \$ 25,510      | 33.1                     | 123.9                             | 1,257,080 | 27,965 | 258,734 | 1,030   | \$ 244,109 | (0.5) |
|        | Total Measures with Payback <15                                  | 8.3     | 72,760 | 0      | 0           | 69      | \$ 10,500 | \$ 87,917  | 8.4            |       | 16              | \$ 11,690                 |                                | \$ 57,600                   | \$ 11,690      | 7.3                      | 123.9                             | 1,162,618 | 0      | 0       | 1,030   | \$ 167,721 | 0.9   |
|        | % of Existing                                                    | 5%      | 7%     | 12%    | 1%          | 12%     |           |            |                |       |                 |                           |                                |                             |                |                          |                                   |           |        |         |         |            |       |

Franklin Lakes Public Schools - NJBPU  
CHA Project #24497  
Franklin Avenue Middle School

| EQUIPMENT                  | AREA SERVED | COOLING CAPACITY<br>(MBH) |
|----------------------------|-------------|---------------------------|
| AHU-1                      | Cafeteria   | 318.0                     |
| AHU-2                      | Stage       | 318.0                     |
| Total Electric DX Cooling: |             | 636 MBH                   |

ECM-1: Air Handler Replacement (AHU-1 & AHU-2)

| ASSUMPTIONS                          |  |                  | Comments                                                   |  |
|--------------------------------------|--|------------------|------------------------------------------------------------|--|
| Electric Cost                        |  | \$0.135 / kWh    |                                                            |  |
| Average run hours per Week           |  | 60 Hours         | Unit is manually turned on (even if after hours)           |  |
| Space Balance Point                  |  | 55 F             |                                                            |  |
| Space Temperature Setpoint           |  | 74 deg F         | setpoint                                                   |  |
| Avg. BTU / Hr Rating of existing RTU |  | 636,000 Btu / Hr | (typical size for cooling spaces in this type of building) |  |
| Average EER                          |  | 10.0             |                                                            |  |

| Item                           | Value  | Units | Comments                                                                |
|--------------------------------|--------|-------|-------------------------------------------------------------------------|
| Total Number of Units          | 2      |       |                                                                         |
| Existing Annual Electric Usage | 24,488 | kWh   |                                                                         |
| Proposed EER                   | 13.6   |       | New VAV RTU (per manufacturer)                                          |
| Proposed Annual Electric Usage | 18,006 | kWh   | Unit will cycle on w/ temp of room. Possible operating time shown below |

| ANNUAL SAVINGS      |       |     |
|---------------------|-------|-----|
| Annual Savings      | 6,482 | kWh |
| Annual Cost Savings | \$876 |     |

| OAT - DB<br>Bin<br>Temp F | Annual<br>Hours | Cooling Hrs<br>at Temp Above<br>balance point | Assumed % of<br>time of operation | Assumed<br>hrs of<br>Operation |
|---------------------------|-----------------|-----------------------------------------------|-----------------------------------|--------------------------------|
| 102.5                     | 0               | 0                                             | 100%                              | 0                              |
| 97.5                      | 6               | 2                                             | 89%                               | 2                              |
| 92.5                      | 45              | 16                                            | 79%                               | 13                             |
| 87.5                      | 146             | 52                                            | 68%                               | 36                             |
| 82.5                      | 298             | 106                                           | 58%                               | 62                             |
| 77.5                      | 476             | 170                                           | 47%                               | 81                             |
| 72.5                      | 662             | 0                                             | 0%                                | 0                              |
| 67.5                      | 740             | 0                                             | 0%                                | 0                              |
| 62.5                      | 765             | 0                                             | 0%                                | 0                              |
| 57.5                      | 733             | 0                                             | 0%                                | 0                              |
| 52.5                      | 668             | 0                                             | 0%                                | 0                              |
| 47.5                      | 659             | 0                                             | 0%                                | 0                              |
| 42.5                      | 685             | 0                                             | 0%                                | 0                              |
| 37.5                      | 739             | 0                                             | 0%                                | 0                              |
| 32.5                      | 717             | 0                                             | 0%                                | 0                              |
| 27.5                      | 543             | 0                                             | 0%                                | 0                              |
| 22.5                      | 318             | 0                                             | 0%                                | 0                              |
| 17.5                      | 245             | 0                                             | 0%                                | 0                              |
| 12.5                      | 156             | 0                                             | 0%                                | 0                              |
| 7.5                       | 92              | 0                                             | 0%                                | 0                              |
| 2.5                       | 36              | 0                                             | 0%                                | 0                              |
| -2.5                      | 19              | 0                                             | 0%                                | 0                              |
| -7.5                      | 8               | 0                                             | 0%                                | 0                              |
| Total                     | 8,760           | 347                                           | 55%                               | 193                            |

Franklin Lakes Public Schools - NJBPU  
CHA Project #24497  
Franklin Avenue Middle School

ECM-1: Air Handler Replacement (AHU-1 & AHU-2) - Cost

|             |      |
|-------------|------|
| Multipliers |      |
| Material:   | 1.10 |
| Labor:      | 1.35 |
| Equipment:  | 1.10 |

| Description                        | QTY | UNIT | UNIT COSTS |          |        | SUBTOTAL COSTS |          |        | TOTAL COST | REMARKS |
|------------------------------------|-----|------|------------|----------|--------|----------------|----------|--------|------------|---------|
|                                    |     |      | MAT.       | LABOR    | EQUIP. | MAT.           | LABOR    | EQUIP. |            |         |
|                                    |     |      |            |          |        | \$ -           | \$ -     | \$ -   | \$ -       |         |
| Existing (2) RTUs demolition       | 2   | EA   | \$ 100     | \$ 1,500 |        | \$ 220         | \$ 4,050 | \$ -   | \$ 4,270   |         |
| (1) RTU, 30.0 tons with DX cooling | 2   | EA   | \$ 30,000  | \$ 3,500 |        | \$ 66,000      | \$ 9,450 | \$ -   | \$ 75,450  |         |
| Electrical - misc.                 | 1   | LS   | \$ 1,000   | \$ 5,000 |        | \$ 1,100       | \$ 6,750 | \$ -   | \$ 7,850   |         |
|                                    |     |      |            |          |        | \$ -           | \$ -     | \$ -   | \$ -       |         |

|            |                    |
|------------|--------------------|
| \$ 87,570  | Subtotal           |
| \$ 8,757   | 10% Contingency    |
| \$ 19,265  | 20% Contractor O&P |
| \$ -       | 0% Engineering     |
| \$ 115,600 | Total              |

## ECM-2: Boiler Replacement

Existing Fuel

Nat.Gas



Proposed Fuel

Nat.Gas



| Item                             | Value     | Units   | Formula/Comments                                             |
|----------------------------------|-----------|---------|--------------------------------------------------------------|
| Baseline Fuel Cost               | \$ 1.02   | / Therm |                                                              |
| Proposed Fuel Cost               | \$ 1.02   | / Therm |                                                              |
| Baseline Fuel Use                | 12,769    | Therms  | Based on historical utility data                             |
| Existing Boiler Plant Efficiency | 88%       |         | Estimated or Measured                                        |
| Baseline Boiler Load             | 1,123,700 | Mbtu/yr | Baseline Fuel Use x Existing Efficiency x 100 Mbtu/Therms    |
| Baseline Fuel Cost               | \$ 13,086 |         |                                                              |
| Proposed Boiler Plant Efficiency | 90%       |         | New Boiler Efficiency                                        |
| Proposed Fuel Use                | 12,486    | Therms  | Baseline Boiler Load / Proposed Efficiency / 100 Mbtu/Therms |
| Proposed Fuel Cost               | \$ 12,795 |         |                                                              |

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

| BOILER REPLACEMENT SAVINGS SUMMARY |                 |                |               |        |            |
|------------------------------------|-----------------|----------------|---------------|--------|------------|
|                                    | Electric Demand | Electric Usage | Nat Gas Usage | Maint. | Total Cost |
|                                    | ( kW )          | ( kWh )        | ( Therms )    | ( \$ ) | ( \$ )     |
| Savings                            | 0               | 0              | 284           | \$0    | \$291      |

| Multipliers |      |
|-------------|------|
| Material:   | 1.10 |
| Labor:      | 1.35 |
| Equipment:  | 1.10 |

# **ECM-2: Boiler Replacement - Cost**

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

|                   |                    |
|-------------------|--------------------|
| \$ 200,854        | Subtotal           |
| \$ 20,085.38      | 10% Contingency    |
| \$ 44,187.83      | 20% Contractor O&P |
| \$ -              |                    |
| <b>\$ 265,127</b> | <b>Total</b>       |

### ECM-3: Replace DWH

#### Summary

| Item                                              | Value   | Units        | Formula/Comments                                                    |
|---------------------------------------------------|---------|--------------|---------------------------------------------------------------------|
| Avg. Monthly Utility Demand by Water Heater       | 104     | Therms/month | Calculated from utility bill                                        |
| Total Annual Utility Demand by Water Heater       | 124,579 | MBTU/yr      | 1therm = 100 MBTU                                                   |
| Existing DHW Heater Efficiency                    | 80%     |              | Per manufacturer nameplate                                          |
| Total Annual Hot Water Demand (w/ standby losses) | 99,663  | MBTU/yr      |                                                                     |
| Existing Tank Size                                | 100     | Gallons      | Per manufacturer nameplate                                          |
| Hot Water Piping System Capacity                  | 200     | Gallons      | Estimated Per existing system (includes HWR piping)                 |
| Hot Water Temperature                             | 120     | °F           | Per building personnel                                              |
| Room Temperature                                  | 70      | °F           |                                                                     |
| Standby Losses (% by Volume)                      | 2.5%    |              | ( 2.5% of stored capacity per hour, per U.S. Department of Energy ) |
| Standby Losses (Heat Loss)                        | 3.1     | MBH          |                                                                     |
| Annual Standby Hot Water Load                     | 27,375  | MBTU/yr      |                                                                     |
| New Tank Size                                     | 0       | Gallons      | Based on Takagi Flash T-H1 instantaneous, condensing DHW Heater     |
| Hot Water Piping System Capacity                  | 200     | Gallons      | Estimated Per existing system (includes HWR piping)                 |
| Hot Water Temperature                             | 120     | °F           |                                                                     |
| Room Temperature                                  | 70      | °F           |                                                                     |
| Standby Losses (% by Volume)                      | 2.5%    |              | ( 2.5% of stored capacity per hour, per U.S. Department of Energy ) |
| Standby Losses (Heat Loss)                        | 2.1     | MBH          |                                                                     |
| Annual Standby Hot Water Load                     | 18,250  | MBTU/yr      |                                                                     |
| Total Annual Hot Water Demand                     | 90,538  | MBTU/yr      |                                                                     |
| Proposed Avg. Hot water heater efficiency         | 96%     |              | Based on Takagi Flash T-H1 instantaneous, condensing DHW Heater     |
| Proposed Fuel Use                                 | 943     | Therms       | Standby Losses and inefficient DHW heater eliminated                |
| Utility Cost                                      | \$1.02  | \$/Therm     |                                                                     |
| Existing Operating Cost of DHW                    | \$1,277 | \$/yr        |                                                                     |
| Proposed Operating Cost of DHW                    | \$966   | \$/yr        |                                                                     |

#### Savings Summary:

| Utility   | Energy Savings | Cost Savings |
|-----------|----------------|--------------|
| Therms/yr | 303            | \$310        |

| Multipliers |      |
|-------------|------|
| Material:   | 1.10 |
| Labor:      | 1.35 |
| Equipment:  | 1.10 |

ECM-3: Replace DWH - Cost

| Description                                   | QTY | UNIT | UNIT COSTS |        |        | SUBTOTAL COSTS |        |        | TOTAL COST | REMARKS |
|-----------------------------------------------|-----|------|------------|--------|--------|----------------|--------|--------|------------|---------|
|                                               |     |      | MAT.       | LABOR  | EQUIP. | MAT.           | LABOR  | EQUIP. |            |         |
| Gas-Fired DHW Heater Removal                  | 1   | LS   |            | \$ 50  |        | \$ -           | \$ 68  | \$ -   | \$ 68      |         |
| High Efficiency Tankless Gas-Fired DHW Heater | 1   | LS   | \$ 3,000   | \$ 280 |        | \$ 3,300       | \$ 378 | \$ -   | \$ 3,678   |         |
| Miscellaneous Electrical                      | 1   | LS   | \$ 300     |        |        | \$ 330         | \$ -   | \$ -   | \$ 330     |         |
| Venting Kit                                   | 1   | EA   | \$ 450     | \$ 650 |        | \$ 495         | \$ 878 | \$ -   | \$ 1,373   |         |
| Miscellaneous Piping and Valves               | 1   | LS   | \$ 200     |        |        | \$ 220         | \$ -   | \$ -   | \$ 220     |         |
|                                               |     |      |            |        |        | \$ -           | \$ -   | \$ -   | \$ -       |         |
|                                               |     |      |            |        |        | \$ -           | \$ -   | \$ -   | \$ -       |         |
|                                               |     |      |            |        |        | \$ -           | \$ -   | \$ -   | \$ -       |         |
|                                               |     |      |            |        |        | \$ -           | \$ -   | \$ -   | \$ -       |         |
|                                               |     |      |            |        |        |                |        |        |            |         |

|          |                    |
|----------|--------------------|
| \$ 5,668 | Subtotal           |
| \$ 567   | 10% Contingency    |
| \$ 1,247 | 20% Contractor O&P |
| \$ -     |                    |
| \$ 7,482 | Total              |

ECM-4: Install VSD & Premium Motors on HW Pumps

Variable Inputs

|                           |        |
|---------------------------|--------|
| Blended Electric Rate     | \$0.14 |
| Heating System "On" Point | 55     |
| VFD Efficiency            | 98.5%  |

ECM Description Summary

| PUMP SCHEDULE |     |     |          |                           |                      |                        |                     |
|---------------|-----|-----|----------|---------------------------|----------------------|------------------------|---------------------|
| Pump ID       | Qty | HP  | Total HP | Existing Motor Motor Eff. | New Motor Motor Eff. | Exist. Motor kW Note 1 | New Motor kW Note 2 |
| P-5, P-6      | 1   | 7.5 | 7.5      | 85.5%                     | 92.0%                | 5.24                   | 4.87                |
|               |     |     |          |                           | Total:               | 5.24                   | 4.87                |

| SAVINGS ANALYSIS    |                     |                     |                      |                                               |                   |                     |                    |                   |                      |
|---------------------|---------------------|---------------------|----------------------|-----------------------------------------------|-------------------|---------------------|--------------------|-------------------|----------------------|
| OAT - DB Avg Temp F | OAT - WB Avg Temp F | Annual Hours in Bin | Heating Hours Bin    | Pump Load %                                   | Existing Pump kWh | Proposed Pump kW    | Speed efficiency % | Proposed Pump kWh | Proposed Savings kWh |
| (A)                 | (B)                 | (C )                | (D)<br>=IF(A>TP,0,C) | (E)<br>=0.5+0.5*(50-A)/(50-10))<br>See Note 4 | (F)<br>=D*AA      | (G)<br>=BB*E^2.5/CC | (H)                | (I)<br>=D*G       | (J)<br>=F-H          |
| See Note 3          | See Note 3          | See Note 3          |                      |                                               |                   | See Note 5          |                    |                   |                      |
| 97.5                | 75                  | 6                   | 0                    | 0%                                            | 0                 | 0.0                 | 0.0%               | 0                 | 0                    |
| 92.5                | 74                  | 45                  | 0                    | 0%                                            | 0                 | 0.0                 | 0.0%               | 0                 | 0                    |
| 87.5                | 72                  | 146                 | 0                    | 0%                                            | 0                 | 0.0                 | 0.0%               | 0                 | 0                    |
| 82.5                | 69                  | 298                 | 0                    | 0%                                            | 0                 | 0.0                 | 0.0%               | 0                 | 0                    |
| 77.5                | 67                  | 476                 | 0                    | 0%                                            | 0                 | 0.0                 | 0.0%               | 0                 | 0                    |
| 72.5                | 64                  | 662                 | 0                    | 0%                                            | 0                 | 0.0                 | 0.0%               | 0                 | 0                    |
| 67.5                | 62                  | 740                 | 0                    | 0%                                            | 0                 | 0.0                 | 0.0%               | 0                 | 0                    |
| 62.5                | 58                  | 765                 | 0                    | 0%                                            | 0                 | 0.0                 | 0.0%               | 0                 | 0                    |
| 57.5                | 53                  | 733                 | 0                    | 0%                                            | 0                 | 0.0                 | 0.0%               | 0                 | 0                    |
| 52.5                | 47                  | 668                 | 668                  | 53%                                           | 3,499             | 1.0                 | 84.1%              | 794               | 2,705                |
| 47.5                | 43                  | 659                 | 659                  | 58%                                           | 3,451             | 1.3                 | 88.8%              | 953               | 2,499                |
| 42.5                | 38                  | 685                 | 685                  | 64%                                           | 3,588             | 1.6                 | 92.7%              | 1,191             | 2,397                |
| 37.5                | 34                  | 739                 | 739                  | 69%                                           | 3,870             | 2.0                 | 95.9%              | 1,531             | 2,340                |
| 32.5                | 30                  | 717                 | 717                  | 75%                                           | 3,755             | 2.4                 | 98.2%              | 1,758             | 1,998                |
| 27.5                | 25                  | 543                 | 543                  | 81%                                           | 2,844             | 2.9                 | 99.8%              | 1,567             | 1,277                |
| 22.5                | 20                  | 318                 | 318                  | 86%                                           | 1,666             | 3.4                 | 100.0%             | 1,081             | 584                  |
| 17.5                | 16                  | 245                 | 245                  | 92%                                           | 1,283             | 4.0                 | 100.0%             | 974               | 309                  |
| 12.5                | 11                  | 156                 | 156                  | 97%                                           | 817               | 4.6                 | 99.7%              | 721               | 97                   |
| 7.5                 | 6                   | 92                  | 92                   | 100%                                          | 482               | 4.9                 | 99.0%              | 459               | 23                   |
| 2.5                 | 2                   | 36                  | 36                   | 100%                                          | 189               | 4.9                 | 99.0%              | 180               | 9                    |
| -2.5                | -3                  | 19                  | 19                   | 100%                                          | 100               | 4.9                 | 99.0%              | 95                | 5                    |
| -7.5                | -8                  | 8                   | 8                    | 100%                                          | 42                | 4.9                 | 99.0%              | 40                | 2                    |
|                     |                     | 8,760               | 4,887                |                                               | 25,585            |                     |                    | 11,342            | 14,243               |

Notes:

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

| HW PUMP VFD - SAVINGS SUMMARY |                 |                |               |        |            |
|-------------------------------|-----------------|----------------|---------------|--------|------------|
|                               | Electric Demand | Electric Usage | Nat Gas Usage | Maint. | Total Cost |
|                               | ( kW )          | ( kWh )        | ( Therms )    | ( \$ ) | ( \$ )     |
| Savings                       | 0               | 14,243         | 0             | \$0    | \$1,925    |

|             |      |
|-------------|------|
| Multipliers |      |
| Material:   | 1.10 |
| Labor:      | 1.35 |
| Equipment:  | 1.00 |

**ECM-4: Install VSD & Premium Motors on HW Pumps - Cost**

| Description                      | QTY | UNIT | UNIT COSTS |        |        | SUBTOTAL COSTS |          |        | TOTAL COST | REMARKS |
|----------------------------------|-----|------|------------|--------|--------|----------------|----------|--------|------------|---------|
|                                  |     |      | MAT.       | LABOR  | EQUIP. | MAT.           | LABOR    | EQUIP. |            |         |
|                                  |     |      |            |        |        | \$ -           | \$ -     | \$ -   | \$ -       |         |
| 7.5 HP VFD                       | 2   | ea   | \$ 2,021   | \$ 509 |        | \$ 4,447       | \$ 1,375 | \$ -   | \$ 5,822   |         |
| 7.5 HP Motor                     | 2   | ea   | \$ 536     | \$ 84  |        | \$ 1,178       | \$ 227   | \$ -   | \$ 1,405   |         |
| Electrical - misc.               | 2   | ls   | \$ 200     | \$ 150 |        | \$ 440         | \$ 405   | \$ -   | \$ 845     |         |
| Duct pressure sensor/transmitter | 2   | ea   | \$ 500     | \$ 200 |        | \$ 1,100       | \$ 540   | \$ -   | \$ 1,640   |         |
|                                  |     |      |            |        |        | \$ -           | \$ -     | \$ -   | \$ -       |         |
|                                  |     |      |            |        |        | \$ -           | \$ -     | \$ -   | \$ -       |         |

|                  |                |
|------------------|----------------|
| \$ 9,712         | Subtotal       |
| \$ 486           | 5% contingency |
| \$ -             |                |
| \$ -             |                |
| <b>\$ 10,197</b> | <b>Total</b>   |

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| AIR HANDLER | AREA SERVED       | FAN<br>MOTOR<br>HP | CFM    | OA<br>CFM |
|-------------|-------------------|--------------------|--------|-----------|
| AHU-1       | Cafeteria / Stage | 5.0                | 8,000  | 1,200     |
| AHU-2       | Cafeteria / Stage | 5.0                | 8,000  | 1,200     |
| HV-1        | Gym               | 15.0               | 12,000 | 1,800     |
| HV-2        | Gym               | 15.0               | 12,000 | 1,800     |
|             |                   | 40.0               | HP     | 6,000 CFM |

**ECM 5: Demand Controlled Ventilation (GYM & Cafeteria)**

**ECM Description Summary**

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

|                                     |    |                 |                             |
|-------------------------------------|----|-----------------|-----------------------------|
| Electric Cost                       | \$ | 0.14            | /kWh                        |
| Natural Gas Cost                    | \$ | 1.30            | /therm                      |
| Facility Ventilation Heating Load   |    | 226,800         | BTU/Hour <sup>1,2,3,4</sup> |
| Facility Ventilation Cooling Load   |    | 64,800          | BTU/Hour <sup>1,2,3,4</sup> |
| Existing Ventilation Heating Usage  |    | 3,429           | therms <sup>6</sup>         |
| Existing Ventilation Cooling Usage  |    | 28,707          | kWh <sup>6</sup>            |
|                                     |    |                 |                             |
| Proposed Ventilation Heating Usage  |    | 2,743           | therms <sup>7</sup>         |
| Proposed Ventilation Cooling Usage  |    | 22,966          | kWh <sup>7</sup>            |
| Proposed Ventilation Fan Savings    |    | 0               | kWh <sup>5,8</sup>          |
| <b>Total heating savings</b>        |    | <b>686</b>      | <b>therms</b>               |
| <b>Total cooling savings</b>        |    | <b>5,741</b>    | <b>kWh</b>                  |
| <b>Total cost savings</b>           |    | <b>1,669</b>    |                             |
| <b>Estimated Total Project Cost</b> |    | <b>\$20,000</b> | <sup>9</sup>                |
| <b>Simple Payback</b>               |    | <b>12</b>       | <b>years</b>                |

Assumptions

- 6,000 OA AHU airflow based existing design drawing schedules
- 35 °F, Assumed average heating Δt (mixed air and supply)
- 10 °F, Assumed average cooling Δt (mixed air and supply)
- 100% Typical energy recovery unit efficiency assumed based on prior project experience
- 0.0 kW of existing supply fan motor calculated based on electrical data from nameplate
- 1,512 AHU run time per heating/cooling seasons [12 hours/day, 21 days/month, 6 months/year]
- 20% Estimated savings for DCV based on reducing unit run time from 12 hours to 10 hours per day
- 504 Assumed supply fan run time reduction based on 2 hours/day fan is "off" due to DCV
- \$ 20,000 estimated measure cost for installation of sensors and associated controls

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ECM-6: Walk-in Cooler & Freezer Controls

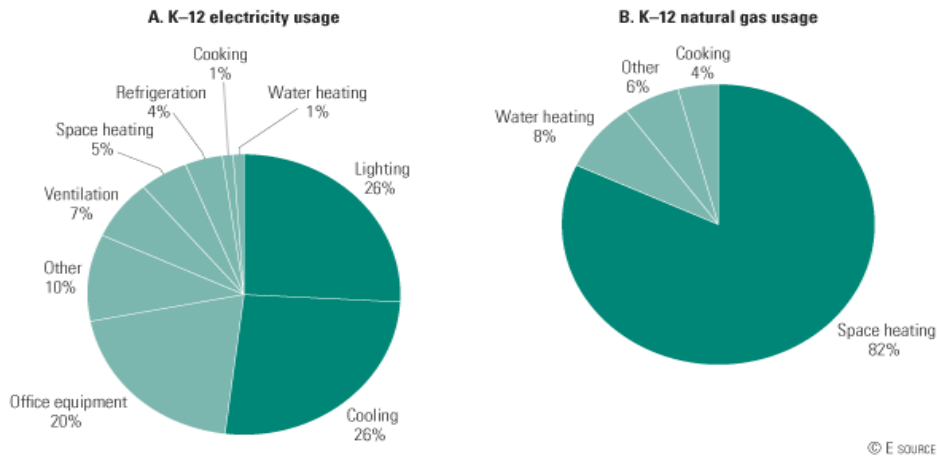
ECM Description Summary

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

| EXISTING CONDITIONS                             |           |                  |
|-------------------------------------------------|-----------|------------------|
| Existing Facility Total Electric usage          | 1,166,200 | kWh              |
| Existing Facility Refridgeration Electric usage | 69,972    | kWh <sup>1</sup> |
| Existing Facility Walk-In Electric usage        | 20,992    | kWh <sup>2</sup> |
| Walk-In Controls System Annual Electric savings | 6,297     | kWh <sup>3</sup> |
| SAVINGS                                         |           |                  |
| Walk-In Controls Electric Usage Savings         | 6,297     | kWh              |
| Total cost savings                              | \$ 851.04 |                  |
| Estimated Total Project Cost                    | \$ 15,000 | <sup>4</sup>     |
| Simple Payback                                  | 17.6      | years            |

Assumptions

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



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ECM-7 Seal Windows Properly

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

|                              |                |                                 |             |                           |                  |
|------------------------------|----------------|---------------------------------|-------------|---------------------------|------------------|
| Linear Feet of window Edge   | 3,343.6 LF     | Cooling System Efficiency       | 1.2 kW/ton  | Heating System Efficiency | 80%              |
| Area of window glass         | 2,630.5 SF     | Ex Occupied CIng Temp.          | 74 °F       | Heating On Temp.          | 60 °F            |
| Existing Infiltration Factor | 0.20 cfm/LF    | Ex Unoccupied CIng Temp.        | 76 °F       | Ex Occupied Htg Temp.     | 68 °F            |
| Proposed Infiltration Factor | 0.10 cfm/LF    | Cooling Occ Enthalpy Setpoint   | 27.5 Btu/lb | Ex Unoccupied Htg Temp.   | 58 °F            |
| Existing U Value             | 0.45 Btuh/SF°F | Cooling Unocc Enthalpy Setpoint | 27.5 Btu/lb | Electricity               | \$ 0.135 \$/kWh  |
| Proposed U Value             | 0.45 Btuh/SF°F |                                 |             | Natural Gas               | \$ 1.02 \$/therm |

|                               |                          |                              |                              |                                | EXISTING LOADS                                |                                                 | PROPOSED LOADS                                |                                                 | COOLING ENERGY              |                             | HEATING ENERGY                 |                                |
|-------------------------------|--------------------------|------------------------------|------------------------------|--------------------------------|-----------------------------------------------|-------------------------------------------------|-----------------------------------------------|-------------------------------------------------|-----------------------------|-----------------------------|--------------------------------|--------------------------------|
| Avg Outdoor Air Temp. Bins °F | Avg Outdoor Air Enthalpy | Existing Equipment Bin Hours | Occupied Equipment Bin Hours | Unoccupied Equipment Bin Hours | Occupied Window Infiltration & Heat Load BTUH | Unoccupied Window Infiltration & Heat Load BTUH | Occupied Window Infiltration & Heat Load BTUH | Unoccupied Window Infiltration & Heat Load BTUH | Existing Cooling Energy kWh | Proposed Cooling Energy kWh | Existing Heating Energy Therms | Proposed Heating Energy Therms |
|                               |                          |                              |                              |                                | E                                             | F                                               | G                                             | H                                               | I                           | J                           | K                              | L                              |
| 102.5                         | 50.1                     | 0                            | 0                            | 0                              | -101,745                                      | -99,378                                         | -67,741                                       | -65,373                                         | 0                           | 0                           | 0                              | 0                              |
| 97.5                          | 42.5                     | 6                            | 2                            | 4                              | -72,956                                       | -70,589                                         | -50,387                                       | -48,020                                         | 43                          | 29                          | 0                              | 0                              |
| 92.5                          | 39.5                     | 45                           | 16                           | 29                             | -58,010                                       | -55,643                                         | -39,955                                       | -37,587                                         | 254                         | 173                         | 0                              | 0                              |
| 87.5                          | 36.6                     | 146                          | 52                           | 94                             | -43,365                                       | -40,997                                         | -29,673                                       | -27,305                                         | 611                         | 411                         | 0                              | 0                              |
| 82.5                          | 34.0                     | 298                          | 106                          | 192                            | -29,622                                       | -27,254                                         | -19,842                                       | -17,474                                         | 838                         | 546                         | 0                              | 0                              |
| 77.5                          | 31.6                     | 476                          | 170                          | 306                            | -16,481                                       | -14,113                                         | -10,312                                       | -7,945                                          | 712                         | 419                         | 0                              | 0                              |
| 72.5                          | 29.2                     | 662                          | 237                          | 426                            | 0                                             | 0                                               | 0                                             | 0                                               | 0                           | 0                           | 0                              | 0                              |
| 67.5                          | 27.0                     | 740                          | 264                          | 476                            | 0                                             | 0                                               | 0                                             | 0                                               | 0                           | 0                           | 0                              | 0                              |
| 62.5                          | 24.5                     | 765                          | 273                          | 492                            | 0                                             | 0                                               | 0                                             | 0                                               | 0                           | 0                           | 0                              | 0                              |
| 57.5                          | 21.4                     | 733                          | 262                          | 471                            | 20,013                                        | 953                                             | 16,221                                        | 772                                             | 0                           | 0                           | 71                             | 58                             |
| 52.5                          | 18.7                     | 668                          | 239                          | 430                            | 29,542                                        | 10,483                                          | 23,945                                        | 8,497                                           | 0                           | 0                           | 144                            | 117                            |
| 47.5                          | 16.2                     | 659                          | 235                          | 424                            | 39,072                                        | 20,013                                          | 31,669                                        | 16,221                                          | 0                           | 0                           | 221                            | 179                            |
| 42.5                          | 14.4                     | 685                          | 245                          | 441                            | 48,602                                        | 29,542                                          | 39,394                                        | 23,945                                          | 0                           | 0                           | 311                            | 252                            |
| 37.5                          | 12.6                     | 739                          | 264                          | 475                            | 58,132                                        | 39,072                                          | 47,118                                        | 31,669                                          | 0                           | 0                           | 424                            | 344                            |
| 32.5                          | 10.7                     | 717                          | 256                          | 461                            | 67,661                                        | 48,602                                          | 54,842                                        | 39,394                                          | 0                           | 0                           | 497                            | 403                            |
| 27.5                          | 8.6                      | 543                          | 194                          | 349                            | 77,191                                        | 58,132                                          | 62,566                                        | 47,118                                          | 0                           | 0                           | 441                            | 357                            |
| 22.5                          | 6.8                      | 318                          | 114                          | 205                            | 86,721                                        | 67,661                                          | 70,291                                        | 54,842                                          | 0                           | 0                           | 296                            | 240                            |
| 17.5                          | 5.5                      | 245                          | 88                           | 158                            | 96,251                                        | 77,191                                          | 78,015                                        | 62,566                                          | 0                           | 0                           | 257                            | 209                            |
| 12.5                          | 4.1                      | 156                          | 56                           | 100                            | 105,781                                       | 86,721                                          | 85,739                                        | 70,291                                          | 0                           | 0                           | 182                            | 148                            |
| 7.5                           | 2.6                      | 92                           | 33                           | 59                             | 115,310                                       | 96,251                                          | 93,463                                        | 78,015                                          | 0                           | 0                           | 119                            | 96                             |
| 2.5                           | 1.0                      | 36                           | 13                           | 23                             | 124,840                                       | 105,781                                         | 101,187                                       | 85,739                                          | 0                           | 0                           | 51                             | 41                             |
| -2.5                          | 0.0                      | 19                           | 7                            | 12                             | 134,370                                       | 115,310                                         | 108,912                                       | 93,463                                          | 0                           | 0                           | 29                             | 24                             |
| -7.5                          | -1.5                     | 8                            | 3                            | 5                              | 143,900                                       | 124,840                                         | 116,636                                       | 101,187                                         | 0                           | 0                           | 13                             | 11                             |
| TOTALS                        |                          | 8,760                        | 3,129                        | 5,631                          |                                               |                                                 |                                               |                                                 | 2459                        | 1578                        | 3,057                          | 2,478                          |

|                               |               |         |            |        |
|-------------------------------|---------------|---------|------------|--------|
| Existing Window Infiltration  | 669 cfm       | Savings | 579 Therms | \$ 594 |
| Existing Window Heat Transfer | 1,184 Btuh/°F |         | 880 kWh    | \$ 119 |
| Proposed Window Infiltration  | 334 cfm       |         |            | \$ 713 |
| Proposed Window Heat Transfer | 1,184 Btuh/°F |         |            |        |

| Window ID | Location      | Quantity | Width (ft) | Height (ft) | Linear Feet (LF) | Area (SF) | Infiltration Rate (CFM/LF) | U Value (Btuh/SF°F) | Infiltration (CFM) | Heat Transfer (Btuh/°F) |
|-----------|---------------|----------|------------|-------------|------------------|-----------|----------------------------|---------------------|--------------------|-------------------------|
| 1         | Exterior Wall | 210      | 2.3        | 5.3         | 3192.0           | 2559.9    | 0.2                        | 0.45                | 638.4              | 1152.0                  |
| 2         | Exterior Wall | 3        | 2.3        | 2.7         | 30.0             | 18.6      | 0.2                        | 0.45                | 6.0                | 8.4                     |
| 3         | Exterior Wall | 16       | 1.3        | 2.5         | 121.6            | 52.0      | 0.2                        | 0.45                | 24.3               | 23.4                    |
| Total     |               | 229      | 5.9        | 10.5        | 3,343.6          | 2,630.5   | 0.20                       | 0.45                | 668.7              | 1183.7                  |

**ECM-11 Install Low Flow Plumbing Fixtures**

| EXISTING CONDITIONS                |         |           |
|------------------------------------|---------|-----------|
| Cost of Water / 1000 Gallons       | \$10.04 | \$ / kGal |
| Toilets in Building                | 8       |           |
| Average Flushes / Toilet (per Day) | 9       |           |
| Average Gallons / Flush            | 3.5     | Gal       |

| PROPOSED CONDITIONS                            |         |     |
|------------------------------------------------|---------|-----|
| Proposed Toilets to be Replaced                | 8       |     |
| Proposed Gallons / Flush                       | 1.6     | Gal |
| Proposed Material Cost of new Flush Valves     | \$315   |     |
| Proposed Installation cost of new Flush Valves | \$139   |     |
| Total cost of new toilets & valves             | \$3,630 |     |

| SAVINGS                   |       |             |
|---------------------------|-------|-------------|
| Current Toilet Water Use  | 92    | kGal / year |
| Proposed Toilet Water Use | 42    | kGal / year |
| Water Savings             | 50    | kGal / year |
| Cost Savings              | \$501 | / year      |
| Simple Payback            | 7.2   | years       |

**ECM-11: Install Low Flow Plumbing Fixtures**

| EXISTING CONDITIONS                |         |           |
|------------------------------------|---------|-----------|
| Cost of Water / 1000 Gallons       | \$10.04 | \$ / kGal |
| Urinals in Building                | 3       |           |
| Average Flushes / Urinal (per Day) | 9       |           |
| Average Gallons / Flush            | 3.5     | Gal       |

| PROPOSED CONDITIONS                |         |     |
|------------------------------------|---------|-----|
| Proposed Urinals to be Replaced    | 3       |     |
| Proposed Gallons / Flush           | 1.6     | Gal |
| Proposed Material Cost             | \$360   |     |
| Proposed Installation Cost         | \$269   |     |
| Total cost of new urinals & valves | \$1,886 |     |

| SAVINGS                   |       |             |
|---------------------------|-------|-------------|
| Current Urinal Water Use  | 34    | kGal / year |
| Proposed Urinal Water Use | 16    | kGal / year |
| Water Savings             | 19    | kGal / year |
| Cost Savings              | \$188 | / year      |
| Simple Payback            | 10.0  | years       |

Energy Audit of Franklin Avenue Middle School  
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ECM-1 Lighting Replacements

| Budgetary | Annual Utility Savings |        |        |         | Estimated   | Total   | New Jersey | Payback             | Payback          |
|-----------|------------------------|--------|--------|---------|-------------|---------|------------|---------------------|------------------|
| Cost      |                        |        |        |         | Maintenance | Savings | Incentive  | (without incentive) | (with incentive) |
|           |                        |        |        |         | Savings     |         |            |                     |                  |
| \$        | kW                     | kWh    | therms | \$      | \$          | \$      | \$         | Years               | Years            |
| \$49,929  | 8.3                    | 18,966 | 0      | \$2,977 | 0           | \$2,977 | \$5,540    | 16.8                | 14.9             |

\*Incentive based on New Jersey Smart Start Prescriptive Lighting Measures

ECM-2 Install Occupancy Sensors

| Budgetary | Annual Utility Savings |        |        |         | Estimated   | Total   | New Jersey | Payback             | Payback          |
|-----------|------------------------|--------|--------|---------|-------------|---------|------------|---------------------|------------------|
| Cost      |                        |        |        |         | Maintenance | Savings | Incentive  | (without incentive) | (with incentive) |
|           |                        |        |        |         | Savings     |         |            |                     |                  |
| \$        | kW                     | kWh    | therms | \$      | \$          | \$      | \$         | Years               | Years            |
| \$22,275  | 0.0                    | 43,941 | 0      | \$4,702 | 0           | \$4,702 | \$3,850    | 4.7                 | 3.9              |

\*Incentive based on New Jersey Smart Start Prescriptive Lighting Measures

ECM-3 Lighting Replacements with Occupancy Sensors

| Budgetary | Annual Utility Savings |        |        |         | Estimated   | Total   | New Jersey | Payback             | Payback          |
|-----------|------------------------|--------|--------|---------|-------------|---------|------------|---------------------|------------------|
| Cost      |                        |        |        |         | Maintenance | Savings | Incentive  | (without incentive) | (with incentive) |
|           |                        |        |        |         | Savings     |         |            |                     |                  |
| \$        | kW                     | kWh    | therms | \$      | \$          | \$      | \$         | Years               | Years            |
| \$72,204  | 8.3                    | 58,518 | 0      | \$6,930 | 0           | \$6,930 | \$9,390    | 10.4                | 9.1              |

\*Incentive based on New Jersey Smart Start Prescriptive Lighting Measures

Energy Audit of Franklin Avenue Middle School

CHA Project No.24497

ECM-1 Lighting Replacements

Cost of Electricity: \$0.125 \$/kWh  
\$6.07 \$/kW

|            |                                                                                          | EXISTING CONDITIONS                 |                                                                                               |                                              |                                               |                           |                          |                                           |                             | RETROFIT CONDITIONS                   |                                                                              |                                              |                                               |                                     |                         |                                            |                             | COST & SAVINGS ANALYSIS                       |                                             |                        |                                         |                                   |                                                     |                                                     |  |
|------------|------------------------------------------------------------------------------------------|-------------------------------------|-----------------------------------------------------------------------------------------------|----------------------------------------------|-----------------------------------------------|---------------------------|--------------------------|-------------------------------------------|-----------------------------|---------------------------------------|------------------------------------------------------------------------------|----------------------------------------------|-----------------------------------------------|-------------------------------------|-------------------------|--------------------------------------------|-----------------------------|-----------------------------------------------|---------------------------------------------|------------------------|-----------------------------------------|-----------------------------------|-----------------------------------------------------|-----------------------------------------------------|--|
|            | Area Description                                                                         | No. of Fixtures before the retrofit | Standard Fixture Code                                                                         | NYSERDA Fixture Code                         | Watts per Fixture                             | kW/Space                  | Exist Control            | Annual Hours                              | Annual kWh                  | Number of Fixtures after the retrofit | Standard Fixture Code                                                        | Fixture Code                                 | Watts per Fixture                             | kW/Space                            | Retrofit Control        | Annual Hours                               | Annual kWh                  | Annual kWh Saved                              | Annual kW Saved                             | Annual \$ Saved        | Retrofit Cost                           | NJ Smart Start Lighting Incentive | Simple Payback With Out Incentive                   | Simple Payback                                      |  |
| Field Code | Unique description of the location - Room number/Room name: Floor number (if applicable) | No. of fixtures before the retrofit | "Lighting Fixture Code" Example 2T 40 R F(U) = 2'x2' Troff 40 w Recess. Floor 2 lamps U shape | Code from Table of Standard Fixture Wattages | Value from Table of Standard Fixture Wattages | (Watts/Fixt) * (Fixt No.) | Pre-inst. control device | Estimated daily hours for the usage group | (kW/Space) * (Annual Hours) | No. of fixtures after the retrofit    | "Lighting Fixture Code" Example 2T 40 R F(U) w Recess. Floor 2 lamps U shape | Code from Table of Standard Fixture Wattages | Value from Table of Standard Fixture Wattages | (Watts/Fixt) * (Number of Fixtures) | Retrofit control device | Estimated annual hours for the usage group | (kW/Space) * (Annual Hours) | (Original Annual kWh) - (Retrofit Annual kWh) | (Original Annual kW) - (Retrofit Annual kW) | (kWh Saved) * (\$/kWh) | Cost for renovations to lighting system | Prescriptive Lighting Measures    | Length of time for renovations cost to be recovered | Length of time for renovations cost to be recovered |  |
| 13         | Boiler Room                                                                              | 4                                   | S 32 P F 2 (ELE)                                                                              | F42LL                                        | 60                                            | 0.2                       | SW                       | 2000                                      | 480                         | 4                                     | 0                                                                            | F42SSILL                                     | 48                                            | 0.2                                 | SW                      | 2,000                                      | 384                         | 96                                            | 0.0                                         | \$ 15.52               | \$ 425.00                               | \$40                              | 27.4                                                | 4.0                                                 |  |
| 201        | 112 Classroom                                                                            | 9                                   | T 32 R F 3 (ELE)                                                                              | F43ILL/2                                     | 90                                            | 0.8                       | C-OCC                    | 2400                                      | 1,944                       | 9                                     | 0                                                                            | F43SSILL                                     | 72                                            | 0.6                                 | C-OCC                   | 2,400                                      | 1,555                       | 389                                           | 0.2                                         | \$ 60.50               | \$ 956.25                               | \$135                             | 15.8                                                | 2.1                                                 |  |
| 258        | 112 Classroom                                                                            | 3                                   | CFQ13W                                                                                        | CFQ13/2-L                                    | 28                                            | 0.1                       | C-OCC                    | 2400                                      | 202                         | 3                                     | CFQ13W                                                                       | CFQ13/2-L                                    | 28                                            | 0.1                                 | C-OCC                   | 2,400                                      | 202                         | - 0.0                                         | \$ -                                        | \$ -                   | \$0                                     |                                   | #DIV/0!                                             |                                                     |  |
| 201        | 107 Storage                                                                              | 1                                   | T 32 R F 3 (ELE)                                                                              | F43ILL/2                                     | 90                                            | 0.1                       | SW                       | 1000                                      | 90                          | 1                                     | 0                                                                            | F43SSILL                                     | 72                                            | 0.1                                 | SW                      | 1,000                                      | 72                          | 18                                            | 0.0                                         | \$ 3.57                | \$ 106.25                               | \$15                              | 29.8                                                | 5.1                                                 |  |
| 13         | Elec                                                                                     | 4                                   | S 32 P F 2 (ELE)                                                                              | F42LL                                        | 60                                            | 0.2                       | SW                       | 1000                                      | 240                         | 4                                     | 0                                                                            | F42SSILL                                     | 48                                            | 0.2                                 | SW                      | 1,000                                      | 192                         | 48                                            | 0.0                                         | \$ 9.51                | \$ 425.00                               | \$40                              | 44.7                                                | 8.0                                                 |  |
| 199        | Boy's TR                                                                                 | 1                                   | W 32 C F 1 (ELE)                                                                              | F41LL                                        | 32                                            | 0.0                       | SW                       | 2000                                      | 64                          | 1                                     | 0                                                                            | F41SSILL                                     | 26                                            | 0.0                                 | SW                      | 2,000                                      | 52                          | 12                                            | 0.0                                         | \$ 1.94                | \$ 106.25                               | \$15                              | 54.8                                                | 7.6                                                 |  |
| 199        | Girl's TR                                                                                | 1                                   | W 32 C F 1 (ELE)                                                                              | F41LL                                        | 32                                            | 0.0                       | SW                       | 2000                                      | 64                          | 1                                     | 0                                                                            | F41SSILL                                     | 26                                            | 0.0                                 | SW                      | 2,000                                      | 52                          | 12                                            | 0.0                                         | \$ 1.94                | \$ 106.25                               | \$15                              | 54.8                                                | 7.6                                                 |  |
| 201        | 106 Storage                                                                              | 2                                   | T 32 R F 3 (ELE)                                                                              | F43ILL/2                                     | 90                                            | 0.2                       | C-OCC                    | 1000                                      | 180                         | 2                                     | 0                                                                            | F43SSILL                                     | 72                                            | 0.1                                 | C-OCC                   | 1,000                                      | 144                         | 36                                            | 0.0                                         | \$ 7.13                | \$ 212.50                               | \$30                              | 29.8                                                | 5.1                                                 |  |
| 201        | 106 IDF Room                                                                             | 1                                   | T 32 R F 3 (ELE)                                                                              | F43ILL/2                                     | 90                                            | 0.1                       | C-OCC                    | 2400                                      | 216                         | 1                                     | 0                                                                            | F43SSILL                                     | 72                                            | 0.1                                 | C-OCC                   | 2,400                                      | 173                         | 43                                            | 0.0                                         | \$ 6.72                | \$ 106.25                               | \$15                              | 15.8                                                | 2.1                                                 |  |
| 201        | New Wing Corridor                                                                        | 13                                  | T 32 R F 3 (ELE)                                                                              | F43ILL/2                                     | 90                                            | 1.2                       | SW                       | 2280                                      | 2,668                       | 13                                    | 0                                                                            | F43SSILL                                     | 72                                            | 0.9                                 | SW                      | 2,280                                      | 2,134                       | 534                                           | 0.2                                         | \$ 83.87               | \$ 1,381.25                             | \$195                             | 16.5                                                | 2.2                                                 |  |
| 256        | Gym                                                                                      | 30                                  | T 32 R F 5 (ELE)                                                                              | F45ILL                                       | 148                                           | 4.4                       | SW                       | 2000                                      | 8,880                       | 30                                    | F45T8                                                                        | F45SILL                                      | 120                                           | 3.6                                 | SW                      | 2,000                                      | 7,200                       | 1,680                                         | 0.8                                         | \$ 271.60              | \$ 3,697.50                             | \$0                               | 13.6                                                | 2.2                                                 |  |
| 198        | Gym                                                                                      | 6                                   | 2T 17 R F 2 (ELE) REFLECTOR                                                                   | F22LL                                        | 31                                            | 0.2                       | SW                       | 2000                                      | 372                         | 6                                     | 0                                                                            | F42SSILL                                     | 48                                            | 0.3                                 | SW                      | 2,000                                      | 576                         | (204)(0.1)                                    | \$ -                                        | \$ (32.98)             | \$ 637.50                               | \$90                              |                                                     | -2.7                                                |  |
| 254        | 210 Science                                                                              | 24                                  | T 32 R F 4 (ELE)                                                                              | F44LL                                        | 118                                           | 2.8                       | C-OCC                    | 2400                                      | 6,797                       | 24                                    | T 32 R F 4 (ELE)                                                             | F44LL                                        | 118                                           | 2.8                                 | C-OCC                   | 2,400                                      | 6,797                       | - 0.0                                         | \$ -                                        | \$ -                   | \$0                                     |                                   | #DIV/0!                                             |                                                     |  |
| 254        | Prep                                                                                     | 4                                   | T 32 R F 4 (ELE)                                                                              | F44LL                                        | 118                                           | 0.5                       | SW                       | 2400                                      | 1,133                       | 4                                     | T 32 R F 4 (ELE)                                                             | F44LL                                        | 118                                           | 0.5                                 | SW                      | 2,400                                      | 1,133                       | - 0.0                                         | \$ -                                        | \$ -                   | \$0                                     |                                   | #DIV/0!                                             |                                                     |  |
| 7          | Vivarium                                                                                 | 4                                   | 2T 32 R F 2 (u) (ELE) Thin Tube                                                               | FU2LL                                        | 60                                            | 0.2                       | SW                       | 2400                                      | 576                         | 4                                     | 2T 17 R F 2 (ELE)                                                            | F22ILL                                       | 33                                            | 0.1                                 | SW                      | 2,400                                      | 317                         | 259                                           | 0.1                                         | \$ 40.33               | \$ 405.00                               | \$0                               | 10.0                                                | 1.6                                                 |  |
| 254        | 208 Science                                                                              | 22                                  | T 32 R F 4 (ELE)                                                                              | F44LL                                        | 118                                           | 2.6                       | C-OCC                    | 2400                                      | 6,230                       | 22                                    | T 32 R F 4 (ELE)                                                             | F44LL                                        | 118                                           | 2.6                                 | C-OCC                   | 2,400                                      | 6,230                       | - 0.0                                         | \$ -                                        | \$ -                   | \$0                                     |                                   | #DIV/0!                                             |                                                     |  |
| 254        | Boy's TR                                                                                 | 2                                   | T 32 R F 4 (ELE)                                                                              | F44LL                                        | 118                                           | 0.2                       | SW                       | 2000                                      | 472                         | 2                                     | T 32 R F 4 (ELE)                                                             | F44LL                                        | 118                                           | 0.2                                 | SW                      | 2,000                                      | 472                         | - 0.0                                         | \$ -                                        | \$ -                   | \$0                                     |                                   | #DIV/0!                                             |                                                     |  |
| 7          | Boy's TR                                                                                 | 1                                   | 2T 32 R F 2 (u) (ELE) Thin Tube                                                               | FU2LL                                        | 60                                            | 0.1                       | SW                       | 2000                                      | 120                         | 1                                     | 2T 17 R F 2 (ELE)                                                            | F22ILL                                       | 33                                            | 0.0                                 | SW                      | 2,000                                      | 66                          | 54                                            | 0.0                                         | \$ 8.73                | \$ 101.25                               | \$0                               | 11.6                                                | 1.9                                                 |  |
| 55         | Corridor                                                                                 | 6                                   | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.3                       | SW                       | 2280                                      | 643                         | 6                                     | 2T 17 R F 3 (ELE)                                                            | F23ILL                                       | 47                                            | 0.3                                 | SW                      | 2,280                                      | 643                         | - 0.0                                         | \$ -                                        | \$ -                   | \$0                                     |                                   | #DIV/0!                                             |                                                     |  |
| 55         | Corridor                                                                                 | 12                                  | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.6                       | SW                       | 2280                                      | 1,286                       | 12                                    | 2T 17 R F 3 (ELE)                                                            | F23ILL                                       | 47                                            | 0.6                                 | SW                      | 2,280                                      | 1,286                       | - 0.0                                         | \$ -                                        | \$ -                   | \$0                                     |                                   | #DIV/0!                                             |                                                     |  |
| 258        | Corridor                                                                                 | 5                                   | CFQ13W                                                                                        | CFQ13/2-L                                    | 28                                            | 0.1                       | SW                       | 2280                                      | 319                         | 5                                     | CFQ13W                                                                       | CFQ13/2-L                                    | 28                                            | 0.1                                 | SW                      | 2,280                                      | 319                         | - 0.0                                         | \$ -                                        | \$ -                   | \$0                                     |                                   | #DIV/0!                                             |                                                     |  |
| 13         | Girl's TR                                                                                | 4                                   | S 32 P F 2 (ELE)                                                                              | F42LL                                        | 60                                            | 0.2                       | SW                       | 2000                                      | 480                         | 4                                     | 0                                                                            | F42SSILL                                     | 48                                            | 0.2                                 | SW                      | 2,000                                      | 384                         | 96                                            | 0.0                                         | \$ 15.52               | \$ 425.00                               | \$40                              | 27.4                                                | 4.0                                                 |  |
| 201        | 206 SGI                                                                                  | 7                                   | T 32 R F 3 (ELE)                                                                              | F43ILL/2                                     | 90                                            | 0.6                       | C-OCC                    | 2400                                      | 1,512                       | 7                                     | 0                                                                            | F43SSILL                                     | 72                                            | 0.5                                 | C-OCC                   | 2,400                                      | 1,210                       | 302                                           | 0.1                                         | \$ 47.05               | \$ 743.75                               | \$105                             | 15.8                                                | 2.1                                                 |  |
| 13         | Girl's TR                                                                                | 8                                   | S 32 P F 2 (ELE)                                                                              | F42LL                                        | 60                                            | 0.5                       | SW                       | 2000                                      | 960                         | 8                                     | 0                                                                            | F42SSILL                                     | 48                                            | 0.4                                 | SW                      | 2,000                                      | 768                         | 192                                           | 0.1                                         | \$ 31.04               | \$ 850.00                               | \$80                              | 27.4                                                | 4.0                                                 |  |
| 13         | Boy's TR                                                                                 | 8                                   | S 32 P F 2 (ELE)                                                                              | F42LL                                        | 60                                            | 0.5                       | SW                       | 2000                                      | 960                         | 8                                     | 0                                                                            | F42SSILL                                     | 48                                            | 0.4                                 | SW                      | 2,000                                      | 768                         | 192                                           | 0.1                                         | \$ 31.04               | \$ 850.00                               | \$80                              | 27.4                                                | 4.0                                                 |  |
| 13         | Cust Closet                                                                              | 1                                   | S 32 P F 2 (ELE)                                                                              | F42LL                                        | 60                                            | 0.1                       | SW                       | 500                                       | 30                          | 1                                     | 0                                                                            | F42SSILL                                     | 48                                            | 0.0                                 | SW                      | 500                                        | 24                          | 6                                             | 0.0                                         | \$ 1.63                | \$ 106.25                               | \$10                              | 65.4                                                | 16.0                                                |  |
| 254        | Storage                                                                                  | 4                                   | T 32 R F 4 (ELE)                                                                              | F44LL                                        | 118                                           | 0.5                       | SW                       | 1000                                      | 472                         | 4                                     | T 32 R F 4 (ELE)                                                             | F44LL                                        | 118                                           | 0.5                                 | SW                      | 1,000                                      | 472                         | - 0.0                                         | \$ -                                        | \$ -                   | \$0                                     |                                   | #DIV/0!                                             |                                                     |  |
| 201        | 202 SGI                                                                                  | 5                                   | T 32 R F 3 (ELE)                                                                              | F43ILL/2                                     | 90                                            | 0.5                       | C-OCC                    | 2400                                      | 1,080                       | 5                                     | 0                                                                            | F43SSILL                                     | 72                                            | 0.4                                 | C-OCC                   | 2,400                                      | 864                         | 216                                           | 0.1                                         | \$ 33.61               | \$ 531.25                               | \$75                              | 15.8                                                | 2.1                                                 |  |
| 7          | 202 SGI                                                                                  | 1                                   | 2T 32 R F 2 (u) (ELE) Thin Tube                                                               | FU2LL                                        | 60                                            | 0.1                       | C-OCC                    | 2400                                      | 144                         | 1                                     | 2T 17 R F 2 (ELE)                                                            | F22ILL                                       | 33                                            | 0.0                                 | C-OCC                   | 2,400                                      | 79                          | 65                                            | 0.0                                         | \$ 10.08               | \$ 101.25                               | \$0                               | 10.0                                                | 1.6                                                 |  |
| 201        | 213 Classroom                                                                            | 12                                  | T 32 R F 3 (ELE)                                                                              | F43ILL/2                                     | 90                                            | 1.1                       | C-OCC                    | 2400                                      | 2,592                       | 12                                    | 0                                                                            | F43SSILL                                     | 72                                            | 0.9                                 | C-OCC                   | 2,400                                      | 2,074                       | 518                                           | 0.2                                         | \$ 80.66               | \$ 1,275.00                             | \$180                             | 15.8                                                | 2.1                                                 |  |
| 201        | 214 Classroom                                                                            | 12                                  | T 32 R F 3 (ELE)                                                                              | F43ILL/2                                     | 90                                            | 1.1                       | C-OCC                    | 2400                                      | 2,592                       | 12                                    | 0                                                                            | F43SSILL                                     | 72                                            | 0.9                                 | C-OCC                   | 2,400                                      | 2,074                       | 518                                           | 0.2                                         | \$ 80.66               | \$ 1,275.00                             | \$180                             | 15.8                                                | 2.1                                                 |  |
| 254        | Sprinkler Room                                                                           | 1                                   | T 32 R F 4 (ELE)                                                                              | F44LL                                        | 118                                           | 0.1                       | SW                       | 1000                                      | 118                         | 1                                     | T 32 R F 4 (ELE)                                                             | F44LL                                        | 118                                           | 0.1                                 | SW                      | 1,000                                      | 118                         | - 0.0                                         | \$ -                                        | \$ -                   | \$0                                     |                                   | #DIV/0!                                             |                                                     |  |
| 257        | 231 Library                                                                              | 60                                  | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 4.3                       | SW                       | 2400                                      | 10,368                      | 60                                    | CFT40W                                                                       | CFT40/2-BX                                   | 72                                            | 4.3                                 | SW                      | 2,400                                      | 10,368                      | - 0.0                                         | \$ -                                        | \$ -                   | \$0                                     |                                   | #DIV/0!                                             |                                                     |  |
| 7          | 231 Library                                                                              | 20                                  | 2T 32 R F 2 (u) (ELE) Thin Tube                                                               | FU2LL                                        | 60                                            | 1.2                       | SW                       | 2400                                      | 2,880                       | 20                                    | 2T 17 R F 2 (ELE)                                                            | F22ILL                                       | 33                                            | 0.7                                 | SW                      | 2,400                                      | 1,584                       | 1,296                                         | 0.5                                         | \$ 201.66              | \$ 2,025.00                             | \$0                               | 10.0                                                | 1.6                                                 |  |
| 199        | 231 Library                                                                              | 6                                   | W 32 C F 1 (ELE)                                                                              | F41LL                                        | 32                                            | 0.2                       | SW                       | 2400                                      | 461                         | 6                                     | 0                                                                            | F41SSILL                                     | 26                                            | 0.2                                 | SW                      | 2,400                                      | 374                         | 86                                            | 0.0                                         | \$ 13.44               | \$ 637.50                               | \$90                              | 47.4                                                | 6.3                                                 |  |
| 257        | 227 Tech Service Lab                                                                     | 4                                   | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.3                       | SW                       | 2400                                      | 691                         | 4                                     | CFT40W                                                                       | CFT40/2-BX                                   | 72                                            | 0.3                                 | SW                      | 2,400                                      | 691                         | - 0.0                                         | \$ -                                        | \$ -                   | \$0                                     |                                   | #DIV/0!                                             |                                                     |  |
| 254        | Copy Room                                                                                | 27                                  | T 32 R F 4 (ELE)                                                                              | F44LL                                        | 118                                           | 3.2                       | SW                       | 2400                                      | 7,646                       | 27                                    |                                                                              |                                              |                                               |                                     |                         |                                            |                             |                                               |                                             |                        |                                         |                                   |                                                     |                                                     |  |

Energy Audit of Franklin Avenue Middle School

CHA Project No.24497

ECM-1 Lighting Replacements

Cost of Electricity: \$0.125 \$/kWh  
\$6.07 \$/kW

|            |                                                                                          | EXISTING CONDITIONS                 |                                                                                               |                                              |                                               |                           |                          |                                           |                             | RETROFIT CONDITIONS                |                                                                                               |                                              |                                               |                                     |                         |                                            |                             | COST & SAVINGS ANALYSIS                       |                                             |                        |                                         |                                   |                                                     |                                                     |  |
|------------|------------------------------------------------------------------------------------------|-------------------------------------|-----------------------------------------------------------------------------------------------|----------------------------------------------|-----------------------------------------------|---------------------------|--------------------------|-------------------------------------------|-----------------------------|------------------------------------|-----------------------------------------------------------------------------------------------|----------------------------------------------|-----------------------------------------------|-------------------------------------|-------------------------|--------------------------------------------|-----------------------------|-----------------------------------------------|---------------------------------------------|------------------------|-----------------------------------------|-----------------------------------|-----------------------------------------------------|-----------------------------------------------------|--|
|            | Area Description                                                                         | No. of Fixtures                     | Standard Fixture Code                                                                         | NYSERDA Fixture Code                         | Watts per Fixture                             | kW/Space                  | Exist Control            | Annual Hours                              | Annual kWh                  | Number of Fixtures                 | Standard Fixture Code                                                                         | Fixture Code                                 | Watts per Fixture                             | kW/Space                            | Retrofit Control        | Annual Hours                               | Annual kWh                  | Annual kWh Saved                              | Annual kW Saved                             | Annual \$ Saved        | Retrofit Cost                           | NJ Smart Start Lighting Incentive | Simple Payback With Out Incentive                   | Simple Payback                                      |  |
| Field Code | Unique description of the location - Room number/Room name: Floor number (if applicable) | No. of fixtures before the retrofit | "Lighting Fixture Code" Example 2T 40 R F(U) = 2'x2' Troff 40 w Recess. Floor 2 lamps U shape | Code from Table of Standard Fixture Wattages | Value from Table of Standard Fixture Wattages | (Watts/Fixt) * (Fixt No.) | Pre-inst. control device | Estimated daily hours for the usage group | (kW/Space) * (Annual Hours) | No. of fixtures after the retrofit | "Lighting Fixture Code" Example 2T 40 R F(U) = 2'x2' Troff 40 w Recess. Floor 2 lamps U shape | Code from Table of Standard Fixture Wattages | Value from Table of Standard Fixture Wattages | (Watts/Fixt) * (Number of Fixtures) | Retrofit control device | Estimated annual hours for the usage group | (kW/Space) * (Annual Hours) | (Original Annual kWh) - (Retrofit Annual kWh) | (Original Annual kW) - (Retrofit Annual kW) | (kWh Saved) * (\$/kWh) | Cost for renovations to lighting system | Prescriptive Lighting Measures    | Length of time for renovations cost to be recovered | Length of time for renovations cost to be recovered |  |
| 258        | Corridor                                                                                 | 12                                  | CFQ13W                                                                                        | CFQ13/2-L                                    | 28                                            | 0.3                       | SW                       | 2280                                      | 766                         | 12                                 | CFQ13W                                                                                        | CFQ13/2-L                                    | 28                                            | 0.3                                 | SW                      | 2,280                                      | 766                         | - 0.0                                         | \$ -                                        | \$ -                   | \$0                                     |                                   |                                                     | #DIV/0!                                             |  |
| 55         | Corridor                                                                                 | 10                                  | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.5                       | SW                       | 2280                                      | 1,072                       | 10                                 | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.5                                 | SW                      | 2,280                                      | 1,072                       | - 0.0                                         | \$ -                                        | \$ -                   | \$0                                     |                                   |                                                     | #DIV/0!                                             |  |
| 201        | 142 Classroom                                                                            | 9                                   | T 32 R F 3 (ELE)                                                                              | F43ILL/2                                     | 90                                            | 0.8                       | C-OCC                    | 2400                                      | 1,944                       | 9                                  | 0                                                                                             | F43SSILL                                     | 72                                            | 0.6                                 | C-OCC                   | 2,400                                      | 1,555                       | 389 0.2                                       | \$ 60.50                                    | \$ 956.25              | \$135                                   | 15.8                              | 2.1                                                 |                                                     |  |
| 55         | 142 Classroom                                                                            | 3                                   | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.1                       | C-OCC                    | 2400                                      | 338                         | 3                                  | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.1                                 | C-OCC                   | 2,400                                      | 338                         | - 0.0                                         | \$ -                                        | \$ -                   | \$0                                     |                                   |                                                     | #DIV/0!                                             |  |
| 201        | 141 Classroom                                                                            | 9                                   | T 32 R F 3 (ELE)                                                                              | F43ILL/2                                     | 90                                            | 0.8                       | C-OCC                    | 2400                                      | 1,944                       | 9                                  | 0                                                                                             | F43SSILL                                     | 72                                            | 0.6                                 | C-OCC                   | 2,400                                      | 1,555                       | 389 0.2                                       | \$ 60.50                                    | \$ 956.25              | \$135                                   | 15.8                              | 2.1                                                 |                                                     |  |
| 55         | 141 Classroom                                                                            | 3                                   | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.1                       | C-OCC                    | 2400                                      | 338                         | 3                                  | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.1                                 | C-OCC                   | 2,400                                      | 338                         | - 0.0                                         | \$ -                                        | \$ -                   | \$0                                     |                                   |                                                     | #DIV/0!                                             |  |
| 201        | Stairs                                                                                   | 1                                   | T 32 R F 3 (ELE)                                                                              | F43ILL/2                                     | 90                                            | 0.1                       | SW                       | 2280                                      | 205                         | 1                                  | 0                                                                                             | F43SSILL                                     | 72                                            | 0.1                                 | SW                      | 2,280                                      | 164                         | 41 0.0                                        | \$ 6.45                                     | \$ 106.25              | \$15                                    | 16.5                              | 2.2                                                 |                                                     |  |
| 55         | Stairs                                                                                   | 2                                   | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.1                       | SW                       | 2280                                      | 214                         | 2                                  | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.1                                 | SW                      | 2,280                                      | 214                         | - 0.0                                         | \$ -                                        | \$ -                   | \$0                                     |                                   |                                                     | #DIV/0!                                             |  |
| 55         | Nurse Waiting                                                                            | 6                                   | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.3                       | SW                       | 2400                                      | 677                         | 6                                  | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.3                                 | SW                      | 2,400                                      | 677                         | - 0.0                                         | \$ -                                        | \$ -                   | \$0                                     |                                   |                                                     | #DIV/0!                                             |  |
| 55         | 147 Nurse Office                                                                         | 2                                   | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.1                       | SW                       | 2400                                      | 226                         | 2                                  | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.1                                 | SW                      | 2,400                                      | 226                         | - 0.0                                         | \$ -                                        | \$ -                   | \$0                                     |                                   |                                                     | #DIV/0!                                             |  |
| 13         | Exam                                                                                     | 2                                   | S 32 P F 2 (ELE)                                                                              | F42LL                                        | 60                                            | 0.1                       | SW                       | 3000                                      | 360                         | 2                                  | 0                                                                                             | F42SSILL                                     | 48                                            | 0.1                                 | SW                      | 3,000                                      | 288                         | 72 0.0                                        | \$ 10.77                                    | \$ 212.50              | \$20                                    | 19.7                              | 2.7                                                 |                                                     |  |
| 257        | Cot Area                                                                                 | 8                                   | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.6                       | SW                       | 3000                                      | 1,728                       | 8                                  | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.6                                 | SW                      | 3,000                                      | 1,728                       | - 0.0                                         | \$ -                                        | \$ -                   | \$0                                     |                                   |                                                     | #DIV/0!                                             |  |
| 7          | TR                                                                                       | 1                                   | 2T 32 R F 2 (u) (ELE) Thin Tube                                                               | FU2LL                                        | 60                                            | 0.1                       | SW                       | 2000                                      | 120                         | 1                                  | 2T 17 R F 2 (ELE)                                                                             | F22ILL                                       | 33                                            | 0.0                                 | SW                      | 2,000                                      | 66                          | 54 0.0                                        | \$ 8.73                                     | \$ 101.25              | \$0                                     | 11.6                              | 1.9                                                 |                                                     |  |
| 55         | Corridor                                                                                 | 5                                   | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.2                       | SW                       | 2280                                      | 536                         | 5                                  | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.2                                 | SW                      | 2,280                                      | 536                         | - 0.0                                         | \$ -                                        | \$ -                   | \$0                                     |                                   |                                                     | #DIV/0!                                             |  |
| 257        | Main Office                                                                              | 11                                  | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.8                       | SW                       | 2400                                      | 1,901                       | 11                                 | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.8                                 | SW                      | 2,400                                      | 1,901                       | - 0.0                                         | \$ -                                        | \$ -                   | \$0                                     |                                   |                                                     | #DIV/0!                                             |  |
| 257        | 135 Assist Prinipcal                                                                     | 10                                  | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.7                       | SW                       | 2400                                      | 1,728                       | 10                                 | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.7                                 | SW                      | 2,400                                      | 1,728                       | - 0.0                                         | \$ -                                        | \$ -                   | \$0                                     |                                   |                                                     | #DIV/0!                                             |  |
| 257        | 138 Principal                                                                            | 3                                   | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.2                       | SW                       | 2400                                      | 518                         | 3                                  | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.2                                 | SW                      | 2,400                                      | 518                         | - 0.0                                         | \$ -                                        | \$ -                   | \$0                                     |                                   |                                                     | #DIV/0!                                             |  |
| 258        | 138 Principal                                                                            | 3                                   | CFQ13W                                                                                        | CFQ13/2-L                                    | 28                                            | 0.1                       | SW                       | 2400                                      | 202                         | 3                                  | CFQ13W                                                                                        | CFQ13/2-L                                    | 28                                            | 0.1                                 | SW                      | 2,400                                      | 202                         | - 0.0                                         | \$ -                                        | \$ -                   | \$0                                     |                                   |                                                     | #DIV/0!                                             |  |
| 55         | Vest                                                                                     | 4                                   | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.2                       | SW                       | 2280                                      | 429                         | 4                                  | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.2                                 | SW                      | 2,280                                      | 429                         | - 0.0                                         | \$ -                                        | \$ -                   | \$0                                     |                                   |                                                     | #DIV/0!                                             |  |
| 257        | 131 Guidance                                                                             | 4                                   | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.3                       | SW                       | 2400                                      | 691                         | 4                                  | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.3                                 | SW                      | 2,400                                      | 691                         | - 0.0                                         | \$ -                                        | \$ -                   | \$0                                     |                                   |                                                     | #DIV/0!                                             |  |
| 254        | 134 Workroom                                                                             | 4                                   | T 32 R F 4 (ELE)                                                                              | F44LL                                        | 118                                           | 0.5                       | SW                       | 2400                                      | 1,133                       | 4                                  | T 32 R F 4 (ELE)                                                                              | F44LL                                        | 118                                           | 0.5                                 | SW                      | 2,400                                      | 1,133                       | - 0.0                                         | \$ -                                        | \$ -                   | \$0                                     |                                   |                                                     | #DIV/0!                                             |  |
| 257        | 130 Guidance                                                                             | 4                                   | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.3                       | SW                       | 2400                                      | 691                         | 4                                  | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.3                                 | SW                      | 2,400                                      | 691                         | - 0.0                                         | \$ -                                        | \$ -                   | \$0                                     |                                   |                                                     | #DIV/0!                                             |  |
| 7          | Women's TR                                                                               | 1                                   | 2T 32 R F 2 (u) (ELE) Thin Tube                                                               | FU2LL                                        | 60                                            | 0.1                       | SW                       | 2000                                      | 120                         | 1                                  | 2T 17 R F 2 (ELE)                                                                             | F22ILL                                       | 33                                            | 0.0                                 | SW                      | 2,000                                      | 66                          | 54 0.0                                        | \$ 8.73                                     | \$ 101.25              | \$0                                     | 11.6                              | 1.9                                                 |                                                     |  |
| 7          | Men's TR                                                                                 | 1                                   | 2T 32 R F 2 (u) (ELE) Thin Tube                                                               | FU2LL                                        | 60                                            | 0.1                       | SW                       | 2000                                      | 120                         | 1                                  | 2T 17 R F 2 (ELE)                                                                             | F22ILL                                       | 33                                            | 0.0                                 | SW                      | 2,000                                      | 66                          | 54 0.0                                        | \$ 8.73                                     | \$ 101.25              | \$0                                     | 11.6                              | 1.9                                                 |                                                     |  |
| 257        | 135 Office                                                                               | 6                                   | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.4                       | SW                       | 2400                                      | 1,037                       | 6                                  | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.4                                 | SW                      | 2,400                                      | 1,037                       | - 0.0                                         | \$ -                                        | \$ -                   | \$0                                     |                                   |                                                     | #DIV/0!                                             |  |
| 257        | Child Study Room                                                                         | 11                                  | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.8                       | SW                       | 2400                                      | 1,901                       | 11                                 | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.8                                 | SW                      | 2,400                                      | 1,901                       | - 0.0                                         | \$ -                                        | \$ -                   | \$0                                     |                                   |                                                     | #DIV/0!                                             |  |
| 257        | 129 Child Study Team                                                                     | 4                                   | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.3                       | SW                       | 2400                                      | 691                         | 4                                  | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.3                                 | SW                      | 2,400                                      | 691                         | - 0.0                                         | \$ -                                        | \$ -                   | \$0                                     |                                   |                                                     | #DIV/0!                                             |  |
| 254        | 125B Gym Office                                                                          | 2                                   | T 32 R F 4 (ELE)                                                                              | F44LL                                        | 118                                           | 0.2                       | SW                       | 2400                                      | 566                         | 2                                  | T 32 R F 4 (ELE)                                                                              | F44LL                                        | 118                                           | 0.2                                 | SW                      | 2,400                                      | 566                         | - 0.0                                         | \$ -                                        | \$ -                   | \$0                                     |                                   |                                                     | #DIV/0!                                             |  |
| 55         | 125B Gym Office                                                                          | 1                                   | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.0                       | SW                       | 2400                                      | 113                         | 1                                  | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.0                                 | SW                      | 2,400                                      | 113                         | - 0.0                                         | \$ -                                        | \$ -                   | \$0                                     |                                   |                                                     | #DIV/0!                                             |  |
| 198        | Women's TR                                                                               | 1                                   | 2T 17 R F 2 (ELE) REFLECTOR                                                                   | F22LL                                        | 31                                            | 0.0                       | SW                       | 2000                                      | 62                          | 1                                  | 0                                                                                             | F42SSILL                                     | 48                                            | 0.0                                 | SW                      | 2,000                                      | 96                          | (34) 0.0                                      | \$ (5.50)                                   | \$ 106.25              | \$15                                    |                                   | -2.7                                                |                                                     |  |
| 254        | 125A Office                                                                              | 2                                   | T 32 R F 4 (ELE)                                                                              | F44LL                                        | 118                                           | 0.2                       | SW                       | 2400                                      | 566                         | 2                                  | T 32 R F 4 (ELE)                                                                              | F44LL                                        | 118                                           | 0.2                                 | SW                      | 2,400                                      | 566                         | - 0.0                                         | \$ -                                        | \$ -                   | \$0                                     |                                   |                                                     | #DIV/0!                                             |  |
| 55         | 125A Office                                                                              | 1                                   | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.0                       | SW                       | 2400                                      | 113                         | 1                                  | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.0                                 | SW                      | 2,400                                      | 113                         | - 0.0                                         | \$ -                                        | \$ -                   | \$0                                     |                                   |                                                     | #DIV/0!                                             |  |
| 198        | 125A Office                                                                              | 1                                   | 2T 17 R F 2 (ELE) REFLECTOR                                                                   | F22LL                                        | 31                                            | 0.0                       | SW                       | 2400                                      | 74                          | 1                                  | 0                                                                                             | F42SSILL                                     | 48                                            | 0.0                                 | SW                      | 2,400                                      | 115                         | (41) 0.0                                      | \$ (6.35)                                   | \$ 106.25              | \$15                                    |                                   | -2.2                                                |                                                     |  |
| 257        | Weight Room                                                                              | 4                                   | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.3                       | SW                       | 1000                                      | 288                         | 4                                  | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.3                                 | SW                      | 1,000                                      | 288                         | - 0.0                                         | \$ -                                        | \$ -                   | \$0                                     |                                   |                                                     | #DIV/0!                                             |  |
| 257        | Boy's Locker Room                                                                        | 11                                  | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.8                       | SW                       | 2800                                      | 2,218                       | 11                                 | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.8                                 | SW                      | 2,800                                      | 2,218                       | - 0.0                                         | \$ -                                        | \$ -                   | \$0                                     |                                   |                                                     | #DIV/0!                                             |  |
| 257        | Boy's Locker Room TR                                                                     | 4                                   | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.3                       | SW                       | 2800                                      | 806                         | 4                                  | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.3                                 | SW                      | 2,800                                      | 806                         | - 0.0                                         | \$ -                                        | \$ -                   | \$0                                     |                                   |                                                     | #DIV/0!                                             |  |
| 257        | Girl's Locker Room                                                                       | 8                                   | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.6                       | SW                       | 2800                                      | 1,613                       | 8                                  | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.6                                 | SW                      | 2,800                                      | 1,613                       | - 0.0                                         | \$ -                                        | \$ -                   | \$0                                     |                                   |                                                     | #DIV/0!                                             |  |
| 257        | Girl's Locker Room TR                                                                    | 4                                   | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.3                       | SW                       | 2000                                      | 576                         | 4                                  | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.3                                 | SW                      | 2,000                                      | 576                         | - 0.0                                         | \$ -                                        | \$ -                   | \$0                                     |                                   |                                                     | #DIV/0!                                             |  |
| 257        | Corridor                                                                                 | 8                                   | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.6                       | SW                       | 2280                                      | 1,313                       | 8                                  | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.6                                 | SW                      | 2,280                                      | 1,313                       | - 0.0                                         | \$ -                                        | \$ -                   | \$0                                     |                                   |                                                     | #DIV/0!                                             |  |
| 257        | Faculty Room                                                                             | 11                                  | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.8                       | SW                       | 2400                                      | 1,901                       | 11                                 | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.8                                 | SW                      | 2,400                                      | 1,901                       | - 0.0                                         | \$ -                                        | \$ -                   | \$0                                     |                                   |                                                     | #DIV/0!                                             |  |
| 7          | Men's TR                                                                                 | 1                                   | 2T 32 R F 2 (u) (ELE) Thin Tube                                                               | FU2LL                                        | 60                                            | 0.1                       | SW                       | 2000                                      | 120                         | 1                                  | 2T 17 R F 2 (ELE)                                                                             | F22ILL                                       | 33                                            | 0.0                                 | SW                      | 2,000                                      | 66                          | 54 0.0                                        | \$ 8.73                                     | \$ 101.25              | \$0                                     | 11.6                              | 1.9                                                 |                                                     |  |
| 7          | Women's TR                                                                               | 1                                   | 2T 32 R F 2 (u) (ELE) Thin Tube                                                               | FU2                                          |                                               |                           |                          |                                           |                             |                                    |                                                                                               |                                              |                                               |                                     |                         |                                            |                             |                                               |                                             |                        |                                         |                                   |                                                     |                                                     |  |

Energy Audit of Franklin Avenue Middle School  
CHA Project No.24497  
ECM-2 Install Occupancy Sensors

Cost of Electricity: \$0.107 \$/kWh  
\$6.74 \$/kW

|            | EXISTING CONDITIONS                                                                      |                                     |                                                                                               |                                              |                                               |                           |                          |                                            |                             | RETROFIT CONDITIONS                |                                                                                               |                                              |                                               |                                     |                         |                                            |                             |                                               | COST & SAVINGS ANALYSIS                     |                       |                                         |                                                     |                                                     |                |  |  |
|------------|------------------------------------------------------------------------------------------|-------------------------------------|-----------------------------------------------------------------------------------------------|----------------------------------------------|-----------------------------------------------|---------------------------|--------------------------|--------------------------------------------|-----------------------------|------------------------------------|-----------------------------------------------------------------------------------------------|----------------------------------------------|-----------------------------------------------|-------------------------------------|-------------------------|--------------------------------------------|-----------------------------|-----------------------------------------------|---------------------------------------------|-----------------------|-----------------------------------------|-----------------------------------------------------|-----------------------------------------------------|----------------|--|--|
|            | Area Description                                                                         | No. of Fixtures                     | Standard Fixture Code                                                                         | NYSERDA Fixture Code                         | Watts per Fixture                             | kW/Space                  | Exist Control            | Annual Hours                               | Annual kWh                  | Number of Fixtures                 | Standard Fixture Code                                                                         | Fixture Code                                 | Watts per Fixture                             | kW/Space                            | Retrofit Control        | Annual Hours                               | Annual kWh                  | Annual kWh Saved                              | Annual kW Saved                             | Annual \$ Saved       | Retrofit Cost                           | NJ Smart Start Lighting Incentive                   | Simple Payback With Out Incentive                   | Simple Payback |  |  |
| Field Code | Unique description of the location - Room number/Room name: Floor number (if applicable) | No. of fixtures before the retrofit | "Lighting Fixture Code" Example 2T 40 R F(U) = 2'x2' Troff 40 w Recess. Floor 2 lamps U shape | Code from Table of Standard Fixture Wattages | Value from Table of Standard Fixture Wattages | (Watts/Fixt) * (Fixt No.) | Pre-inst. control device | Estimated annual hours for the usage group | (kW/Space) * (Annual Hours) | No. of fixtures after the retrofit | "Lighting Fixture Code" Example 2T 40 R F(U) = 2'x2' Troff 40 w Recess. Floor 2 lamps U shape | Code from Table of Standard Fixture Wattages | Value from Table of Standard Fixture Wattages | (Watts/Fixt) * (Number of Fixtures) | Retrofit control device | Estimated annual hours for the usage group | (kW/Space) * (Annual Hours) | (Original Annual kWh) - (Retrofit Annual kWh) | (Original Annual kW) - (Retrofit Annual kW) | (kW Saved) * (\$/kWh) | Cost for renovations to lighting system | Length of time for renovations cost to be recovered | Length of time for renovations cost to be recovered |                |  |  |
| 13         | Boiler Room                                                                              | 4                                   | S 32 P F 2 (ELE)                                                                              | F42LL                                        | 60                                            | 0.2                       | SW                       | 2000                                       | 480.0                       | 4                                  | S 32 P F 2 (ELE)                                                                              | F42LL                                        | 60                                            | 0.2                                 | SW                      | 2000                                       | 480.0                       | 0.0                                           | 0.0                                         | \$0.00                | \$0.00                                  | \$0.00                                              |                                                     | #DIV/0!        |  |  |
| 201        | 112 Classroom                                                                            | 9                                   | T 32 R F 3 (ELE)                                                                              | F43IL/2                                      | 90                                            | 0.8                       | C-OCC                    | 2400                                       | 1,944.0                     | 9                                  | T 32 R F 3 (ELE)                                                                              | F43IL/2                                      | 90                                            | 0.8                                 | C-OCC                   | 1680                                       | 1,360.8                     | 583.2                                         | 0.0                                         | \$62.40               | \$202.50                                | \$35.00                                             | 3.2                                                 | 2.7            |  |  |
| 258        | 112 Classroom                                                                            | 3                                   | CFQ13W                                                                                        | CFQ13/2-L                                    | 28                                            | 0.1                       | C-OCC                    | 2400                                       | 201.6                       | 3                                  | CFQ13W                                                                                        | CFQ13/2-L                                    | 28                                            | 0.1                                 | C-OCC                   | 1680                                       | 141.1                       | 60.5                                          | 0.0                                         | \$6.47                | \$202.50                                | \$35.00                                             | 31.3                                                | 25.9           |  |  |
| 201        | 107 Storage                                                                              | 1                                   | T 32 R F 3 (ELE)                                                                              | F43IL/2                                      | 90                                            | 0.1                       | SW                       | 1000                                       | 90.0                        | 1                                  | T 32 R F 3 (ELE)                                                                              | F43IL/2                                      | 90                                            | 0.1                                 | C-OCC                   | 250                                        | 22.5                        | 67.5                                          | 0.0                                         | \$7.22                | \$202.50                                | \$35.00                                             | 28.0                                                | 23.2           |  |  |
| 13         | Elec                                                                                     | 4                                   | S 32 P F 2 (ELE)                                                                              | F42LL                                        | 60                                            | 0.2                       | SW                       | 1000                                       | 240.0                       | 4                                  | S 32 P F 2 (ELE)                                                                              | F42LL                                        | 60                                            | 0.2                                 | SW                      | 1000                                       | 240.0                       | 0.0                                           | 0.0                                         | \$0.00                | \$0.00                                  | \$0.00                                              |                                                     | #DIV/0!        |  |  |
| 199        | Boy's TR                                                                                 | 1                                   | W 32 C F 1 (ELE)                                                                              | F41LL                                        | 32                                            | 0.0                       | SW                       | 2000                                       | 64.0                        | 1                                  | W 32 C F 1 (ELE)                                                                              | F41LL                                        | 32                                            | 0.0                                 | C-OCC                   | 2000                                       | 64.0                        | 0.0                                           | 0.0                                         | \$0.00                | \$202.50                                | \$35.00                                             |                                                     | #DIV/0!        |  |  |
| 199        | Girl's TR                                                                                | 1                                   | W 32 C F 1 (ELE)                                                                              | F41LL                                        | 32                                            | 0.0                       | SW                       | 2000                                       | 64.0                        | 1                                  | W 32 C F 1 (ELE)                                                                              | F41LL                                        | 32                                            | 0.0                                 | C-OCC                   | 2000                                       | 64.0                        | 0.0                                           | 0.0                                         | \$0.00                | \$202.50                                | \$35.00                                             |                                                     | #DIV/0!        |  |  |
| 201        | 106 Storage                                                                              | 2                                   | T 32 R F 3 (ELE)                                                                              | F43IL/2                                      | 90                                            | 0.2                       | C-OCC                    | 1000                                       | 180.0                       | 2                                  | T 32 R F 3 (ELE)                                                                              | F43IL/2                                      | 90                                            | 0.2                                 | C-OCC                   | 250                                        | 45.0                        | 135.0                                         | 0.0                                         | \$14.45               | \$202.50                                | \$35.00                                             | 14.0                                                | 11.6           |  |  |
| 201        | 106 IDF Room                                                                             | 1                                   | T 32 R F 3 (ELE)                                                                              | F43IL/2                                      | 90                                            | 0.1                       | C-OCC                    | 2400                                       | 216.0                       | 1                                  | T 32 R F 3 (ELE)                                                                              | F43IL/2                                      | 90                                            | 0.1                                 | C-OCC                   | 1200                                       | 108.0                       | 108.0                                         | 0.0                                         | \$11.56               | \$202.50                                | \$35.00                                             | 17.5                                                | 14.5           |  |  |
| 201        | New Wing Corridor                                                                        | 13                                  | T 32 R F 3 (ELE)                                                                              | F43IL/2                                      | 90                                            | 1.2                       | SW                       | 2280                                       | 2,667.6                     | 13                                 | T 32 R F 3 (ELE)                                                                              | F43IL/2                                      | 90                                            | 1.2                                 | C-OCC                   | 2280                                       | 2,667.6                     | 0.0                                           | 0.0                                         | \$0.00                | \$202.50                                | \$35.00                                             |                                                     | #DIV/0!        |  |  |
| 256        | Gym                                                                                      | 30                                  | T 32 R F 5 (ELE)                                                                              | F45ILL                                       | 148                                           | 4.4                       | SW                       | 2000                                       | 8,880.0                     | 30                                 | T 32 R F 5 (ELE)                                                                              | F45ILL                                       | 148                                           | 4.4                                 | C-OCC                   | 2000                                       | 8,880.0                     | 0.0                                           | 0.0                                         | \$0.00                | \$202.50                                | \$35.00                                             |                                                     | #DIV/0!        |  |  |
| 198        | Gym                                                                                      | 6                                   | 2T 17 R F 2 (ELE) REFLECTOR                                                                   | F22LL                                        | 31                                            | 0.2                       | SW                       | 2000                                       | 372.0                       | 6                                  | 2T 17 R F 2 (ELE) REFLECTOR                                                                   | F22LL                                        | 31                                            | 0.2                                 | C-OCC                   | 2000                                       | 372.0                       | 0.0                                           | 0.0                                         | \$0.00                | \$202.50                                | \$35.00                                             |                                                     | #DIV/0!        |  |  |
| 254        | 210 Science                                                                              | 24                                  | T 32 R F 4 (ELE)                                                                              | F44LL                                        | 118                                           | 2.8                       | C-OCC                    | 2400                                       | 6,796.8                     | 24                                 | T 32 R F 4 (ELE)                                                                              | F44LL                                        | 118                                           | 2.8                                 | C-OCC                   | 1680                                       | 4,757.8                     | 2,039.0                                       | 0.0                                         | \$218.18              | \$202.50                                | \$35.00                                             | 0.9                                                 | 0.8            |  |  |
| 254        | Prep                                                                                     | 4                                   | T 32 R F 4 (ELE)                                                                              | F44LL                                        | 118                                           | 0.5                       | SW                       | 2400                                       | 1,132.8                     | 4                                  | T 32 R F 4 (ELE)                                                                              | F44LL                                        | 118                                           | 0.5                                 | C-OCC                   | 1680                                       | 793.0                       | 339.8                                         | 0.0                                         | \$36.36               | \$202.50                                | \$35.00                                             | 5.6                                                 | 4.6            |  |  |
| 7          | Vivarium                                                                                 | 4                                   | 2T 32 R F 2 (u) (ELE) Thin Tube                                                               | FU2LL                                        | 60                                            | 0.2                       | SW                       | 2400                                       | 576.0                       | 4                                  | 2T 32 R F 2 (u) (ELE) Thin Tube                                                               | FU2LL                                        | 60                                            | 0.2                                 | C-OCC                   | 1680                                       | 403.2                       | 172.8                                         | 0.0                                         | \$18.49               | \$202.50                                | \$35.00                                             | 11.0                                                | 9.1            |  |  |
| 254        | 208 Science                                                                              | 22                                  | T 32 R F 4 (ELE)                                                                              | F44LL                                        | 118                                           | 2.6                       | C-OCC                    | 2400                                       | 6,230.4                     | 22                                 | T 32 R F 4 (ELE)                                                                              | F44LL                                        | 118                                           | 2.6                                 | C-OCC                   | 1680                                       | 4,361.3                     | 1,869.1                                       | 0.0                                         | \$200.00              | \$202.50                                | \$35.00                                             | 1.0                                                 | 0.8            |  |  |
| 254        | Boy's TR                                                                                 | 2                                   | T 32 R F 4 (ELE)                                                                              | F44LL                                        | 118                                           | 0.2                       | SW                       | 2000                                       | 472.0                       | 2                                  | T 32 R F 4 (ELE)                                                                              | F44LL                                        | 118                                           | 0.2                                 | C-OCC                   | 2000                                       | 472.0                       | 0.0                                           | 0.0                                         | \$0.00                | \$202.50                                | \$35.00                                             |                                                     | #DIV/0!        |  |  |
| 7          | Boy's TR                                                                                 | 1                                   | 2T 32 R F 2 (u) (ELE) Thin Tube                                                               | FU2LL                                        | 60                                            | 0.1                       | SW                       | 2000                                       | 120.0                       | 1                                  | 2T 32 R F 2 (u) (ELE) Thin Tube                                                               | FU2LL                                        | 60                                            | 0.1                                 | C-OCC                   | 2000                                       | 120.0                       | 0.0                                           | 0.0                                         | \$0.00                | \$202.50                                | \$35.00                                             |                                                     | #DIV/0!        |  |  |
| 55         | Corridor                                                                                 | 6                                   | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.3                       | SW                       | 2280                                       | 643.0                       | 6                                  | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.3                                 | C-OCC                   | 2280                                       | 643.0                       | 0.0                                           | 0.0                                         | \$0.00                | \$202.50                                | \$35.00                                             |                                                     | #DIV/0!        |  |  |
| 55         | Corridor                                                                                 | 12                                  | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.6                       | SW                       | 2280                                       | 1,285.9                     | 12                                 | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.6                                 | C-OCC                   | 2280                                       | 1,285.9                     | 0.0                                           | 0.0                                         | \$0.00                | \$202.50                                | \$35.00                                             |                                                     | #DIV/0!        |  |  |
| 258        | Corridor                                                                                 | 5                                   | CFQ13W                                                                                        | CFQ13/2-L                                    | 28                                            | 0.1                       | SW                       | 2280                                       | 319.2                       | 5                                  | CFQ13W                                                                                        | CFQ13/2-L                                    | 28                                            | 0.1                                 | C-OCC                   | 2280                                       | 319.2                       | 0.0                                           | 0.0                                         | \$0.00                | \$202.50                                | \$35.00                                             |                                                     | #DIV/0!        |  |  |
| 13         | Girl's TR                                                                                | 4                                   | S 32 P F 2 (ELE)                                                                              | F42LL                                        | 60                                            | 0.2                       | SW                       | 2000                                       | 480.0                       | 4                                  | S 32 P F 2 (ELE)                                                                              | F42LL                                        | 60                                            | 0.2                                 | C-OCC                   | 2000                                       | 480.0                       | 0.0                                           | 0.0                                         | \$0.00                | \$202.50                                | \$35.00                                             |                                                     | #DIV/0!        |  |  |
| 201        | 206 SGI                                                                                  | 7                                   | T 32 R F 3 (ELE)                                                                              | F43IL/2                                      | 90                                            | 0.6                       | C-OCC                    | 2400                                       | 1,512.0                     | 7                                  | T 32 R F 3 (ELE)                                                                              | F43IL/2                                      | 90                                            | 0.6                                 | C-OCC                   | 1680                                       | 1,058.4                     | 453.6                                         | 0.0                                         | \$48.54               | \$202.50                                | \$35.00                                             | 4.2                                                 | 3.5            |  |  |
| 13         | Girl's TR                                                                                | 8                                   | S 32 P F 2 (ELE)                                                                              | F42LL                                        | 60                                            | 0.5                       | SW                       | 2000                                       | 960.0                       | 8                                  | S 32 P F 2 (ELE)                                                                              | F42LL                                        | 60                                            | 0.5                                 | C-OCC                   | 2000                                       | 960.0                       | 0.0                                           | 0.0                                         | \$0.00                | \$202.50                                | \$35.00                                             |                                                     | #DIV/0!        |  |  |
| 13         | Boy's TR                                                                                 | 8                                   | S 32 P F 2 (ELE)                                                                              | F42LL                                        | 60                                            | 0.5                       | SW                       | 2000                                       | 960.0                       | 8                                  | S 32 P F 2 (ELE)                                                                              | F42LL                                        | 60                                            | 0.5                                 | C-OCC                   | 2000                                       | 960.0                       | 0.0                                           | 0.0                                         | \$0.00                | \$202.50                                | \$35.00                                             |                                                     | #DIV/0!        |  |  |
| 13         | Cust Closet                                                                              | 1                                   | S 32 P F 2 (ELE)                                                                              | F42LL                                        | 60                                            | 0.1                       | SW                       | 500                                        | 30.0                        | 1                                  | S 32 P F 2 (ELE)                                                                              | F42LL                                        | 60                                            | 0.1                                 | SW                      | 0                                          | 0.0                         | 30.0                                          | 0.0                                         | \$3.21                | \$0.00                                  | \$0.00                                              | 0.0                                                 | 0.0            |  |  |
| 254        | Storage                                                                                  | 4                                   | T 32 R F 4 (ELE)                                                                              | F44LL                                        | 118                                           | 0.5                       | SW                       | 1000                                       | 472.0                       | 4                                  | T 32 R F 4 (ELE)                                                                              | F44LL                                        | 118                                           | 0.5                                 | C-OCC                   | 250                                        | 118.0                       | 354.0                                         | 0.0                                         | \$37.88               | \$202.50                                | \$35.00                                             | 5.3                                                 | 4.4            |  |  |
| 201        | 202 SGI                                                                                  | 5                                   | T 32 R F 3 (ELE)                                                                              | F43IL/2                                      | 90                                            | 0.5                       | C-OCC                    | 2400                                       | 1,080.0                     | 5                                  | T 32 R F 3 (ELE)                                                                              | F43IL/2                                      | 90                                            | 0.5                                 | C-OCC                   | 1680                                       | 756.0                       | 324.0                                         | 0.0                                         | \$34.67               | \$202.50                                | \$35.00                                             | 5.8                                                 | 4.8            |  |  |
| 7          | 202 SGI                                                                                  | 1                                   | 2T 32 R F 2 (u) (ELE) Thin Tube                                                               | FU2LL                                        | 60                                            | 0.1                       | C-OCC                    | 2400                                       | 144.0                       | 1                                  | 2T 32 R F 2 (u) (ELE) Thin Tube                                                               | FU2LL                                        | 60                                            | 0.1                                 | C-OCC                   | 1680                                       | 100.8                       | 43.2                                          | 0.0                                         | \$4.62                | \$202.50                                | \$35.00                                             | 43.8                                                | 36.2           |  |  |
| 201        | 213 Classroom                                                                            | 12                                  | T 32 R F 3 (ELE)                                                                              | F43IL/2                                      | 90                                            | 1.1                       | C-OCC                    | 2400                                       | 2,592.0                     | 12                                 | T 32 R F 3 (ELE)                                                                              | F43IL/2                                      | 90                                            | 1.1                                 | C-OCC                   | 1680                                       | 1,814.4                     | 777.6                                         | 0.0                                         | \$83.20               | \$202.50                                | \$35.00                                             | 2.4                                                 | 2.0            |  |  |
| 201        | 214 Classroom                                                                            | 12                                  | T 32 R F 3 (ELE)                                                                              | F43IL/2                                      | 90                                            | 1.1                       | C-OCC                    | 2400                                       | 2,592.0                     | 12                                 | T 32 R F 3 (ELE)                                                                              | F43IL/2                                      | 90                                            | 1.1                                 | C-OCC                   | 1680                                       | 1,814.4                     | 777.6                                         | 0.0                                         | \$83.20               | \$202.50                                | \$35.00                                             | 2.4                                                 | 2.0            |  |  |
| 254        | Sprinkler Room                                                                           | 1                                   | T 32 R F 4 (ELE)                                                                              | F44LL                                        | 118                                           | 0.1                       | SW                       | 1000                                       | 118.0                       | 1                                  | T 32 R F 4 (ELE)                                                                              | F44LL                                        | 118                                           | 0.1                                 | SW                      | 1000                                       | 118.0                       | 0.0                                           | 0.0                                         | \$0.00                | \$0.00                                  | \$0.00                                              |                                                     | #DIV/0!        |  |  |
| 257        | 231 Library                                                                              | 60                                  | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 4.3                       | SW                       | 2400                                       |                             |                                    |                                                                                               |                                              |                                               |                                     |                         |                                            |                             |                                               |                                             |                       |                                         |                                                     |                                                     |                |  |  |

|            | EXISTING CONDITIONS                                                                      |                                     |                                                                                               |                                              |                                               |                           |                          |                                            |                             | RETROFIT CONDITIONS                |                                                                                               |                                              |                                               |                                     |                         |                                            |                             | COST & SAVINGS ANALYSIS                       |                                             |                       |                                         |                                   |                                                     |                                                     |  |
|------------|------------------------------------------------------------------------------------------|-------------------------------------|-----------------------------------------------------------------------------------------------|----------------------------------------------|-----------------------------------------------|---------------------------|--------------------------|--------------------------------------------|-----------------------------|------------------------------------|-----------------------------------------------------------------------------------------------|----------------------------------------------|-----------------------------------------------|-------------------------------------|-------------------------|--------------------------------------------|-----------------------------|-----------------------------------------------|---------------------------------------------|-----------------------|-----------------------------------------|-----------------------------------|-----------------------------------------------------|-----------------------------------------------------|--|
|            | Area Description                                                                         | No. of Fixtures                     | Standard Fixture Code                                                                         | NYSERDA Fixture Code                         | Watts per Fixture                             | kW/Space                  | Exist Control            | Annual Hours                               | Annual kWh                  | Number of Fixtures                 | Standard Fixture Code                                                                         | Fixture Code                                 | Watts per Fixture                             | kW/Space                            | Retrofit Control        | Annual Hours                               | Annual kWh                  | Annual kWh Saved                              | Annual kW Saved                             | Annual \$ Saved       | Retrofit Cost                           | NJ Smart Start Lighting Incentive | Simple Payback With Out Incentive                   | Simple Payback                                      |  |
| Field Code | Unique description of the location - Room number/Room name: Floor number (if applicable) | No. of fixtures before the retrofit | "Lighting Fixture Code" Example 2T 40 R F (U) = 2x2' Troff 40 w Recess. Floor 2 lamps U shape | Code from Table of Standard Fixture Wattages | Value from Table of Standard Fixture Wattages | (Watts/Fixt) * (Fixt No.) | Pre-inst. control device | Estimated annual hours for the usage group | (kW/Space) * (Annual Hours) | No. of fixtures after the retrofit | "Lighting Fixture Code" Example 2T 40 R F (U) = 2x2' Troff 40 w Recess. Floor 2 lamps U shape | Code from Table of Standard Fixture Wattages | Value from Table of Standard Fixture Wattages | (Watts/Fixt) * (Number of Fixtures) | Retrofit control device | Estimated annual hours for the usage group | (kW/Space) * (Annual Hours) | (Original Annual kWh) - (Retrofit Annual kWh) | (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 |  |
| 258        | Corridor                                                                                 | 12                                  | CFQ13W                                                                                        | CFQ13/2-L                                    | 28                                            | 0.3                       | SW                       | 2280                                       | 766.1                       | 12                                 | CFQ13W                                                                                        | CFQ13/2-L                                    | 28                                            | 0.3                                 | C-OCC                   | 2280                                       | 766.1                       | 0.0                                           | 0.0                                         | \$0.00                | \$202.50                                | \$35.00                           |                                                     | #DIV/0!                                             |  |
| 55         | Corridor                                                                                 | 10                                  | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.5                       | SW                       | 2280                                       | 1,071.6                     | 10                                 | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.5                                 | C-OCC                   | 2280                                       | 1,071.6                     | 0.0                                           | 0.0                                         | \$0.00                | \$202.50                                | \$35.00                           |                                                     | #DIV/0!                                             |  |
| 201        | 142 Classroom                                                                            | 9                                   | T 32 R F 3 (ELE)                                                                              | F43ILL/2                                     | 90                                            | 0.8                       | C-OCC                    | 2400                                       | 1,944.0                     | 9                                  | T 32 R F 3 (ELE)                                                                              | F43ILL/2                                     | 90                                            | 0.8                                 | C-OCC                   | 1680                                       | 1,360.8                     | 583.2                                         | 0.0                                         | \$62.40               | \$202.50                                | \$35.00                           | 3.2                                                 | 2.7                                                 |  |
| 55         | 142 Classroom                                                                            | 3                                   | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.1                       | C-OCC                    | 2400                                       | 338.4                       | 3                                  | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.1                                 | C-OCC                   | 1680                                       | 236.9                       | 101.5                                         | 0.0                                         | \$10.86               | \$202.50                                | \$35.00                           | 18.6                                                | 15.4                                                |  |
| 201        | 141 Classroom                                                                            | 9                                   | T 32 R F 3 (ELE)                                                                              | F43ILL/2                                     | 90                                            | 0.8                       | C-OCC                    | 2400                                       | 1,944.0                     | 9                                  | T 32 R F 3 (ELE)                                                                              | F43ILL/2                                     | 90                                            | 0.8                                 | C-OCC                   | 1680                                       | 1,360.8                     | 583.2                                         | 0.0                                         | \$62.40               | \$202.50                                | \$35.00                           | 3.2                                                 | 2.7                                                 |  |
| 55         | 141 Classroom                                                                            | 3                                   | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.1                       | C-OCC                    | 2400                                       | 338.4                       | 3                                  | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.1                                 | C-OCC                   | 1680                                       | 236.9                       | 101.5                                         | 0.0                                         | \$10.86               | \$202.50                                | \$35.00                           | 18.6                                                | 15.4                                                |  |
| 201        | Stairs                                                                                   | 1                                   | T 32 R F 3 (ELE)                                                                              | F43ILL/2                                     | 90                                            | 0.1                       | SW                       | 2280                                       | 205.2                       | 1                                  | T 32 R F 3 (ELE)                                                                              | F43ILL/2                                     | 90                                            | 0.1                                 | C-OCC                   | 2280                                       | 205.2                       | 0.0                                           | 0.0                                         | \$0.00                | \$202.50                                | \$35.00                           |                                                     | #DIV/0!                                             |  |
| 55         | Stairs                                                                                   | 2                                   | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.1                       | SW                       | 2280                                       | 214.3                       | 2                                  | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.1                                 | C-OCC                   | 2280                                       | 214.3                       | 0.0                                           | 0.0                                         | \$0.00                | \$202.50                                | \$35.00                           |                                                     | #DIV/0!                                             |  |
| 55         | Nurse Waiting                                                                            | 6                                   | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.3                       | SW                       | 2400                                       | 676.8                       | 6                                  | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.3                                 | C-OCC                   | 1200                                       | 338.4                       | 338.4                                         | 0.0                                         | \$36.21               | \$202.50                                | \$35.00                           | 5.6                                                 | 4.6                                                 |  |
| 55         | 147 Nurse Office                                                                         | 2                                   | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.1                       | SW                       | 2400                                       | 225.6                       | 2                                  | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.1                                 | C-OCC                   | 1200                                       | 112.8                       | 112.8                                         | 0.0                                         | \$12.07               | \$202.50                                | \$35.00                           | 16.8                                                | 13.9                                                |  |
| 13         | Exam                                                                                     | 2                                   | S 32 P F 2 (ELE)                                                                              | F42LL                                        | 60                                            | 0.1                       | SW                       | 3000                                       | 360.0                       | 2                                  | S 32 P F 2 (ELE)                                                                              | F42LL                                        | 60                                            | 0.1                                 | C-OCC                   | 1500                                       | 180.0                       | 180.0                                         | 0.0                                         | \$19.26               | \$202.50                                | \$35.00                           | 10.5                                                | 8.7                                                 |  |
| 257        | Cot Area                                                                                 | 8                                   | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.6                       | SW                       | 3000                                       | 1,728.0                     | 8                                  | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.6                                 | C-OCC                   | 1500                                       | 864.0                       | 864.0                                         | 0.0                                         | \$92.45               | \$202.50                                | \$35.00                           | 2.2                                                 | 1.8                                                 |  |
| 7          | TR                                                                                       | 1                                   | 2T 32 R F 2 (u) (ELE) Thin Tube                                                               | FU2LL                                        | 60                                            | 0.1                       | SW                       | 2000                                       | 120.0                       | 1                                  | 2T 32 R F 2 (u) (ELE) Thin Tube                                                               | FU2LL                                        | 60                                            | 0.1                                 | C-OCC                   | 2000                                       | 120.0                       | 0.0                                           | 0.0                                         | \$0.00                | \$202.50                                | \$35.00                           |                                                     | #DIV/0!                                             |  |
| 55         | Corridor                                                                                 | 5                                   | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.2                       | SW                       | 2280                                       | 535.8                       | 5                                  | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.2                                 | C-OCC                   | 2280                                       | 535.8                       | 0.0                                           | 0.0                                         | \$0.00                | \$202.50                                | \$35.00                           |                                                     | #DIV/0!                                             |  |
| 257        | Main Office                                                                              | 11                                  | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.8                       | SW                       | 2400                                       | 1,900.8                     | 11                                 | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.8                                 | C-OCC                   | 1200                                       | 950.4                       | 950.4                                         | 0.0                                         | \$101.69              | \$202.50                                | \$35.00                           | 2.0                                                 | 1.6                                                 |  |
| 257        | 135 Assist Prinipcal                                                                     | 10                                  | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.7                       | SW                       | 2400                                       | 1,728.0                     | 10                                 | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.7                                 | C-OCC                   | 1200                                       | 864.0                       | 864.0                                         | 0.0                                         | \$92.45               | \$202.50                                | \$35.00                           | 2.2                                                 | 1.8                                                 |  |
| 257        | 138 Principal                                                                            | 3                                   | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.2                       | SW                       | 2400                                       | 518.4                       | 3                                  | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.2                                 | C-OCC                   | 1200                                       | 259.2                       | 259.2                                         | 0.0                                         | \$27.73               | \$202.50                                | \$35.00                           | 7.3                                                 | 6.0                                                 |  |
| 258        | 138 Principal                                                                            | 3                                   | CFQ13W                                                                                        | CFQ13/2-L                                    | 28                                            | 0.1                       | SW                       | 2400                                       | 201.6                       | 3                                  | CFQ13W                                                                                        | CFQ13/2-L                                    | 28                                            | 0.1                                 | C-OCC                   | 1200                                       | 100.8                       | 100.8                                         | 0.0                                         | \$10.79               | \$202.50                                | \$35.00                           | 18.8                                                | 15.5                                                |  |
| 55         | Vest                                                                                     | 4                                   | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.2                       | SW                       | 2280                                       | 428.6                       | 4                                  | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.2                                 | C-OCC                   | 2280                                       | 428.6                       | 0.0                                           | 0.0                                         | \$0.00                | \$202.50                                | \$35.00                           |                                                     | #DIV/0!                                             |  |
| 257        | 131 Guidance                                                                             | 4                                   | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.3                       | SW                       | 2400                                       | 691.2                       | 4                                  | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.3                                 | C-OCC                   | 1200                                       | 345.6                       | 345.6                                         | 0.0                                         | \$36.98               | \$202.50                                | \$35.00                           | 5.5                                                 | 4.5                                                 |  |
| 254        | 134 Workroom                                                                             | 4                                   | T 32 R F 4 (ELE)                                                                              | F44LL                                        | 118                                           | 0.5                       | SW                       | 2400                                       | 1,132.8                     | 4                                  | T 32 R F 4 (ELE)                                                                              | F44LL                                        | 118                                           | 0.5                                 | C-OCC                   | 1200                                       | 566.4                       | 566.4                                         | 0.0                                         | \$60.60               | \$202.50                                | \$35.00                           | 3.3                                                 | 2.8                                                 |  |
| 257        | 130 Guidance                                                                             | 4                                   | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.3                       | SW                       | 2400                                       | 691.2                       | 4                                  | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.3                                 | C-OCC                   | 1200                                       | 345.6                       | 345.6                                         | 0.0                                         | \$36.98               | \$202.50                                | \$35.00                           | 5.5                                                 | 4.5                                                 |  |
| 7          | Women's TR                                                                               | 1                                   | 2T 32 R F 2 (u) (ELE) Thin Tube                                                               | FU2LL                                        | 60                                            | 0.1                       | SW                       | 2000                                       | 120.0                       | 1                                  | 2T 32 R F 2 (u) (ELE) Thin Tube                                                               | FU2LL                                        | 60                                            | 0.1                                 | C-OCC                   | 2000                                       | 120.0                       | 0.0                                           | 0.0                                         | \$0.00                | \$202.50                                | \$35.00                           |                                                     | #DIV/0!                                             |  |
| 7          | Men's TR                                                                                 | 1                                   | 2T 32 R F 2 (u) (ELE) Thin Tube                                                               | FU2LL                                        | 60                                            | 0.1                       | SW                       | 2000                                       | 120.0                       | 1                                  | 2T 32 R F 2 (u) (ELE) Thin Tube                                                               | FU2LL                                        | 60                                            | 0.1                                 | C-OCC                   | 2000                                       | 120.0                       | 0.0                                           | 0.0                                         | \$0.00                | \$202.50                                | \$35.00                           |                                                     | #DIV/0!                                             |  |
| 257        | 135 Office                                                                               | 6                                   | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.4                       | SW                       | 2400                                       | 1,036.8                     | 6                                  | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.4                                 | C-OCC                   | 1200                                       | 518.4                       | 518.4                                         | 0.0                                         | \$55.47               | \$202.50                                | \$35.00                           | 3.7                                                 | 3.0                                                 |  |
| 257        | Child Study Room                                                                         | 11                                  | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.8                       | SW                       | 2400                                       | 1,900.8                     | 11                                 | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.8                                 | C-OCC                   | 1200                                       | 950.4                       | 950.4                                         | 0.0                                         | \$101.69              | \$202.50                                | \$35.00                           | 2.0                                                 | 1.6                                                 |  |
| 257        | 129 Child Study Team                                                                     | 4                                   | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.3                       | SW                       | 2400                                       | 691.2                       | 4                                  | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.3                                 | C-OCC                   | 1200                                       | 345.6                       | 345.6                                         | 0.0                                         | \$36.98               | \$202.50                                | \$35.00                           | 5.5                                                 | 4.5                                                 |  |
| 254        | 125B Gym Office                                                                          | 2                                   | T 32 R F 4 (ELE)                                                                              | F44LL                                        | 118                                           | 0.2                       | SW                       | 2400                                       | 566.4                       | 2                                  | T 32 R F 4 (ELE)                                                                              | F44LL                                        | 118                                           | 0.2                                 | C-OCC                   | 1200                                       | 283.2                       | 283.2                                         | 0.0                                         | \$30.30               | \$202.50                                | \$35.00                           | 6.7                                                 | 5.5                                                 |  |
| 55         | 125B Gym Office                                                                          | 1                                   | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.0                       | SW                       | 2400                                       | 112.8                       | 1                                  | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.0                                 | C-OCC                   | 1200                                       | 56.4                        | 56.4                                          | 0.0                                         | \$6.03                | \$202.50                                | \$35.00                           | 33.6                                                | 27.8                                                |  |
| 198        | Women's TR                                                                               | 1                                   | 2T 17 R F 2 (ELE) REFLECTOR                                                                   | F22LL                                        | 31                                            | 0.0                       | SW                       | 2000                                       | 62.0                        | 1                                  | 2T 17 R F 2 (ELE) REFLECTOR                                                                   | F22LL                                        | 31                                            | 0.0                                 | C-OCC                   | 2000                                       | 62.0                        | 0.0                                           | 0.0                                         | \$0.00                | \$202.50                                | \$35.00                           |                                                     | #DIV/0!                                             |  |
| 254        | 125A Office                                                                              | 2                                   | T 32 R F 4 (ELE)                                                                              | F44LL                                        | 118                                           | 0.2                       | SW                       | 2400                                       | 566.4                       | 2                                  | T 32 R F 4 (ELE)                                                                              | F44LL                                        | 118                                           | 0.2                                 | C-OCC                   | 1200                                       | 283.2                       | 283.2                                         | 0.0                                         | \$30.30               | \$202.50                                | \$35.00                           | 6.7                                                 | 5.5                                                 |  |
| 55         | 125A Office                                                                              | 1                                   | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.0                       | SW                       | 2400                                       | 112.8                       | 1                                  | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.0                                 | C-OCC                   | 1200                                       | 56.4                        | 56.4                                          | 0.0                                         | \$6.03                | \$202.50                                | \$35.00                           | 33.6                                                | 27.8                                                |  |
| 198        | 125A Office                                                                              | 1                                   | 2T 17 R F 2 (ELE) REFLECTOR                                                                   | F22LL                                        | 31                                            | 0.0                       | SW                       | 2400                                       | 74.4                        | 1                                  | 2T 17 R F 2 (ELE) REFLECTOR                                                                   | F22LL                                        | 31                                            | 0.0                                 | C-OCC                   | 1200                                       | 37.2                        | 37.2                                          | 0.0                                         | \$3.98                | \$202.50                                | \$35.00                           | 50.9                                                | 42.1                                                |  |
| 257        | Weight Room                                                                              | 4                                   | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.3                       | SW                       | 1000                                       | 288.0                       | 4                                  | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.3                                 | C-OCC                   | 1000                                       | 288.0                       | 0.0                                           | 0.0                                         | \$0.00                | \$202.50                                | \$35.00                           |                                                     | #DIV/0!                                             |  |
| 257        | Boy's Locker Room                                                                        | 11                                  | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.8                       | SW                       | 2800                                       | 2,217.6                     | 11                                 | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.8                                 | C-OCC                   | 2000                                       | 1,584.0                     | 633.6                                         | 0.0                                         | \$67.80               | \$202.50                                | \$35.00                           | 3.0                                                 | 2.5                                                 |  |
| 257        | Boy's Locker Room TR                                                                     | 4                                   | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.3                       | SW                       | 2800                                       | 806.4                       | 4                                  | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.3                                 | C-OCC                   | 2000                                       | 576.0                       | 230.4                                         | 0.0                                         | \$24.65               | \$202.50                                | \$35.00                           | 8.2                                                 | 6.8                                                 |  |
| 257        | Girl's Locker Room                                                                       | 8                                   | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.6                       | SW                       | 2800                                       | 1,612.8                     | 8                                  | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.6                                 | C-OCC                   | 2000                                       | 1,152.0                     | 460.8                                         | 0.0                                         | \$49.31               | \$202.50                                | \$3                               |                                                     |                                                     |  |

Energy Audit of Franklin Avenue Middle School  
CHA Project No.24497  
ECM-3 Lighting Replacements with Occupancy Sensors

Cost of Electricity: \$0.107 \$/kWh  
\$6.74 \$/kW

|            |                                                                                          | EXISTING CONDITIONS                 |                                                                                               |                                              |                                               |                           |                          |                                           |                             | RETROFIT CONDITIONS                |                                                                                               |                                              |                                               |                                     |                         |                                            |                             | COST & SAVINGS ANALYSIS                       |                                             |                        |                                         |                                   |                                                     |                                                     |  |  |
|------------|------------------------------------------------------------------------------------------|-------------------------------------|-----------------------------------------------------------------------------------------------|----------------------------------------------|-----------------------------------------------|---------------------------|--------------------------|-------------------------------------------|-----------------------------|------------------------------------|-----------------------------------------------------------------------------------------------|----------------------------------------------|-----------------------------------------------|-------------------------------------|-------------------------|--------------------------------------------|-----------------------------|-----------------------------------------------|---------------------------------------------|------------------------|-----------------------------------------|-----------------------------------|-----------------------------------------------------|-----------------------------------------------------|--|--|
|            | Area Description                                                                         | No. of Fixtures                     | Standard Fixture Code                                                                         | NYSERDA Fixture Code                         | Watts per Fixture                             | kW/Space                  | Exist Control            | Annual Hours                              | Annual kWh                  | Number of Fixtures                 | Standard Fixture Code                                                                         | Fixture Code                                 | Watts per Fixture                             | kW/Space                            | Retrofit Control        | Annual Hours                               | Annual kWh                  | Annual kWh Saved                              | Annual kW Saved                             | Annual \$ Saved        | Retrofit Cost                           | NJ Smart Start Lighting Incentive | Simple Payback With Out Incentive                   | Simple Payback                                      |  |  |
| Field Code | Unique description of the location - Room number/Room name: Floor number (if applicable) | No. of fixtures before the retrofit | "Lighting Fixture Code" Example 2T 40 R F(U) = 2'x2' Troff 40 w Recess. Floor 2 lamps U shape | Code from Table of Standard Fixture Wattages | Value from Table of Standard Fixture Wattages | (Watts/Fixt) * (Fixt No.) | Pre-inst. control device | Estimated daily hours for the usage group | (kW/Space) * (Annual Hours) | No. of fixtures after the retrofit | "Lighting Fixture Code" Example 2T 40 R F(U) = 2'x2' Troff 40 w Recess. Floor 2 lamps U shape | Code from Table of Standard Fixture Wattages | Value from Table of Standard Fixture Wattages | (Watts/Fixt) * (Number of Fixtures) | Retrofit control device | Estimated annual hours for the usage group | (kW/Space) * (Annual Hours) | (Original Annual kWh) - (Retrofit Annual kWh) | (Original Annual kW) - (Retrofit Annual kW) | (kWh Saved) * (\$/kWh) | Cost for renovations to lighting system | Prescriptive Lighting Measures    | Length of time for renovations cost to be recovered | Length of time for renovations cost to be recovered |  |  |
| 13         | Boiler Room                                                                              | 4                                   | S 32 P F 2 (ELE)                                                                              | F42LL                                        | 60                                            | 0.2                       | SW                       | 2000                                      | 480                         | 4                                  | 0                                                                                             | F42SSILL                                     | 48                                            | 0.2                                 | SW                      | 2,000                                      | 384                         | 96                                            | 0.0                                         | \$ 14.15               | \$ 425.00                               | \$ 40                             | 30.0                                                | 27.2                                                |  |  |
| 201        | 112 Classroom                                                                            | 9                                   | T 32 R F 3 (ELE)                                                                              | F43ILL/2                                     | 90                                            | 0.8                       | C-OCC                    | 2400                                      | 1,944                       | 9                                  | 0                                                                                             | F43SSILL                                     | 72                                            | 0.6                                 | C-OCC                   | 1,680                                      | 1,089                       | 855                                           | 0.2                                         | \$ 104.63              | \$ 1,158.75                             | \$ 170                            | 11.1                                                | 9.5                                                 |  |  |
| 258        | 112 Classroom                                                                            | 3                                   | CFQ13W                                                                                        | CFQ13/2-L                                    | 28                                            | 0.1                       | C-OCC                    | 2400                                      | 202                         | 3                                  | CFQ13W                                                                                        | CFQ13/2-L                                    | 28                                            | 0.1                                 | C-OCC                   | 1,680                                      | 141                         | 60                                            | 0.0                                         | \$ 6.47                | \$ 202.50                               | \$ 35                             | 31.3                                                | 25.9                                                |  |  |
| 201        | 107 Storage                                                                              | 1                                   | T 32 R F 3 (ELE)                                                                              | F43ILL/2                                     | 90                                            | 0.1                       | SW                       | 1000                                      | 90                          | 1                                  | 0                                                                                             | F43SSILL                                     | 72                                            | 0.1                                 | C-OCC                   | 250                                        | 18                          | 72                                            | 0.0                                         | \$ 9.16                | \$ 308.75                               | \$ 50                             | 33.7                                                | 28.2                                                |  |  |
| 13         | Elec                                                                                     | 4                                   | S 32 P F 2 (ELE)                                                                              | F42LL                                        | 60                                            | 0.2                       | SW                       | 1000                                      | 240                         | 4                                  | 0                                                                                             | F42SSILL                                     | 48                                            | 0.2                                 | SW                      | 1,000                                      | 192                         | 48                                            | 0.0                                         | \$ 9.02                | \$ 425.00                               | \$ 40                             | 47.1                                                | 42.7                                                |  |  |
| 199        | Boy's TR                                                                                 | 1                                   | W 32 C F 1 (ELE)                                                                              | F41LL                                        | 32                                            | 0.0                       | SW                       | 2000                                      | 64                          | 1                                  | 0                                                                                             | F41SSILL                                     | 26                                            | 0.0                                 | C-OCC                   | 2,000                                      | 52                          | 12                                            | 0.0                                         | \$ 1.77                | \$ 308.75                               | \$ 50                             | 174.5                                               | 146.2                                               |  |  |
| 199        | Girl's TR                                                                                | 1                                   | W 32 C F 1 (ELE)                                                                              | F41LL                                        | 32                                            | 0.0                       | SW                       | 2000                                      | 64                          | 1                                  | 0                                                                                             | F41SSILL                                     | 26                                            | 0.0                                 | C-OCC                   | 2,000                                      | 52                          | 12                                            | 0.0                                         | \$ 1.77                | \$ 308.75                               | \$ 50                             | 174.5                                               | 146.2                                               |  |  |
| 201        | 106 Storage                                                                              | 2                                   | T 32 R F 3 (ELE)                                                                              | F43ILL/2                                     | 90                                            | 0.2                       | C-OCC                    | 1000                                      | 180                         | 2                                  | 0                                                                                             | F43SSILL                                     | 72                                            | 0.1                                 | C-OCC                   | 250                                        | 36                          | 144                                           | 0.0                                         | \$ 18.32               | \$ 415.00                               | \$ 65                             | 22.7                                                | 19.1                                                |  |  |
| 201        | 106 IDF Room                                                                             | 1                                   | T 32 R F 3 (ELE)                                                                              | F43ILL/2                                     | 90                                            | 0.1                       | C-OCC                    | 2400                                      | 216                         | 1                                  | 0                                                                                             | F43SSILL                                     | 72                                            | 0.1                                 | C-OCC                   | 1,200                                      | 86                          | 130                                           | 0.0                                         | \$ 15.32               | \$ 308.75                               | \$ 50                             | 20.1                                                | 16.9                                                |  |  |
| 201        | New Wing Corridor                                                                        | 13                                  | T 32 R F 3 (ELE)                                                                              | F43ILL/2                                     | 90                                            | 1.2                       | SW                       | 2280                                      | 2,668                       | 13                                 | 0                                                                                             | F43SSILL                                     | 72                                            | 0.9                                 | C-OCC                   | 2,280                                      | 2,134                       | 534                                           | 0.2                                         | \$ 76.01               | \$ 1,583.75                             | \$ 230                            | 20.8                                                | 17.8                                                |  |  |
| 256        | Gym                                                                                      | 30                                  | T 32 R F 5 (ELE)                                                                              | F45ILL                                       | 148                                           | 4.4                       | SW                       | 2000                                      | 8,880                       | 30                                 | F45T8                                                                                         | F45SILL                                      | 120                                           | 3.6                                 | C-OCC                   | 2,000                                      | 7,200                       | 1,680                                         | 0.8                                         | \$ 247.70              | \$ 3,900.00                             | \$ 35                             | 15.7                                                | 15.6                                                |  |  |
| 198        | Gym                                                                                      | 6                                   | 2T 17 R F 2 (ELE) REFLECTOR                                                                   | F22LL                                        | 31                                            | 0.2                       | SW                       | 2000                                      | 372                         | 6                                  | 0                                                                                             | F42SSILL                                     | 48                                            | 0.3                                 | C-OCC                   | 2,000                                      | 576                         | (204)(0.1)                                    |                                             | \$ (30.08)             | \$ 840.00                               | \$ 125                            |                                                     |                                                     |  |  |
| 254        | 210 Science                                                                              | 24                                  | T 32 R F 4 (ELE)                                                                              | F44LL                                        | 118                                           | 2.8                       | C-OCC                    | 2400                                      | 6,797                       | 24                                 | T 32 R F 4 (ELE)                                                                              | F44LL                                        | 118                                           | 2.8                                 | C-OCC                   | 1,680                                      | 4,758                       | 2,039                                         | 0.0                                         | \$ 218.18              | \$ 202.50                               | \$ 35                             | 0.9                                                 | 0.8                                                 |  |  |
| 254        | Prep                                                                                     | 4                                   | T 32 R F 4 (ELE)                                                                              | F44LL                                        | 118                                           | 0.5                       | SW                       | 2400                                      | 1,133                       | 4                                  | T 32 R F 4 (ELE)                                                                              | F44LL                                        | 118                                           | 0.5                                 | C-OCC                   | 1,680                                      | 793                         | 340                                           | 0.0                                         | \$ 36.36               | \$ 202.50                               | \$ 35                             | 5.6                                                 | 4.6                                                 |  |  |
| 7          | Vivarium                                                                                 | 4                                   | 2T 32 R F 2 (u) (ELE) Thin Tube                                                               | FU2LL                                        | 60                                            | 0.2                       | SW                       | 2400                                      | 576                         | 4                                  | 2T 17 R F 2 (ELE)                                                                             | F22ILL                                       | 33                                            | 0.1                                 | C-OCC                   | 1,680                                      | 222                         | 354                                           | 0.1                                         | \$ 46.64               | \$ 607.50                               | \$ 35                             | 13.0                                                | 12.3                                                |  |  |
| 254        | 208 Science                                                                              | 22                                  | T 32 R F 4 (ELE)                                                                              | F44LL                                        | 118                                           | 2.6                       | C-OCC                    | 2400                                      | 6,230                       | 22                                 | T 32 R F 4 (ELE)                                                                              | F44LL                                        | 118                                           | 2.6                                 | C-OCC                   | 1,680                                      | 4,361                       | 1,869                                         | 0.0                                         | \$ 200.00              | \$ 202.50                               | \$ 35                             | 1.0                                                 | 0.8                                                 |  |  |
| 254        | Boy's TR                                                                                 | 2                                   | T 32 R F 4 (ELE)                                                                              | F44LL                                        | 118                                           | 0.2                       | SW                       | 2000                                      | 472                         | 2                                  | T 32 R F 4 (ELE)                                                                              | F44LL                                        | 118                                           | 0.2                                 | C-OCC                   | 2,000                                      | 472                         | -                                             | 0.0                                         | \$ -                   | \$ 202.50                               | \$ 35                             |                                                     |                                                     |  |  |
| 7          | Boy's TR                                                                                 | 1                                   | 2T 32 R F 2 (u) (ELE) Thin Tube                                                               | FU2LL                                        | 60                                            | 0.1                       | SW                       | 2000                                      | 120                         | 1                                  | 2T 17 R F 2 (ELE)                                                                             | F22ILL                                       | 33                                            | 0.0                                 | C-OCC                   | 2,000                                      | 66                          | 54                                            | 0.0                                         | \$ 7.96                | \$ 303.75                               | \$ 35                             | 38.2                                                | 33.8                                                |  |  |
| 55         | Corridor                                                                                 | 6                                   | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.3                       | SW                       | 2280                                      | 643                         | 6                                  | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.3                                 | C-OCC                   | 2,280                                      | 643                         | -                                             | 0.0                                         | \$ -                   | \$ 202.50                               | \$ 35                             |                                                     |                                                     |  |  |
| 55         | Corridor                                                                                 | 12                                  | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.6                       | SW                       | 2280                                      | 1,286                       | 12                                 | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.6                                 | C-OCC                   | 2,280                                      | 1,286                       | -                                             | 0.0                                         | \$ -                   | \$ 202.50                               | \$ 35                             |                                                     |                                                     |  |  |
| 258        | Corridor                                                                                 | 5                                   | CFQ13W                                                                                        | CFQ13/2-L                                    | 28                                            | 0.1                       | SW                       | 2280                                      | 319                         | 5                                  | CFQ13W                                                                                        | CFQ13/2-L                                    | 28                                            | 0.1                                 | C-OCC                   | 2,280                                      | 319                         | -                                             | 0.0                                         | \$ -                   | \$ 202.50                               | \$ 35                             |                                                     |                                                     |  |  |
| 13         | Girl's TR                                                                                | 4                                   | S 32 P F 2 (ELE)                                                                              | F42LL                                        | 60                                            | 0.2                       | SW                       | 2000                                      | 480                         | 4                                  | 0                                                                                             | F42SSILL                                     | 48                                            | 0.2                                 | C-OCC                   | 2,000                                      | 384                         | 96                                            | 0.0                                         | \$ 14.15               | \$ 627.50                               | \$ 75                             | 44.3                                                | 39.0                                                |  |  |
| 201        | 206 SGI                                                                                  | 7                                   | T 32 R F 3 (ELE)                                                                              | F43ILL/2                                     | 90                                            | 0.6                       | C-OCC                    | 2400                                      | 1,512                       | 7                                  | 0                                                                                             | F43SSILL                                     | 72                                            | 0.5                                 | C-OCC                   | 1,680                                      | 847                         | 665                                           | 0.1                                         | \$ 81.38               | \$ 946.25                               | \$ 140                            | 11.6                                                | 9.9                                                 |  |  |
| 13         | Girl's TR                                                                                | 8                                   | S 32 P F 2 (ELE)                                                                              | F42LL                                        | 60                                            | 0.5                       | SW                       | 2000                                      | 960                         | 8                                  | 0                                                                                             | F42SSILL                                     | 48                                            | 0.4                                 | C-OCC                   | 2,000                                      | 768                         | 192                                           | 0.1                                         | \$ 28.31               | \$ 1,052.50                             | \$ 115                            | 37.2                                                | 33.1                                                |  |  |
| 13         | Boy's TR                                                                                 | 8                                   | S 32 P F 2 (ELE)                                                                              | F42LL                                        | 60                                            | 0.5                       | SW                       | 2000                                      | 960                         | 8                                  | 0                                                                                             | F42SSILL                                     | 48                                            | 0.4                                 | C-OCC                   | 2,000                                      | 768                         | 192                                           | 0.1                                         | \$ 28.31               | \$ 1,052.50                             | \$ 115                            | 37.2                                                | 33.1                                                |  |  |
| 13         | Cust Closet                                                                              | 1                                   | S 32 P F 2 (ELE)                                                                              | F42LL                                        | 60                                            | 0.1                       | SW                       | 500                                       | 30                          | 1                                  | 0                                                                                             | F42SSILL                                     | 48                                            | 0.0                                 | SW                      | -                                          | -                           | 30                                            | 0.0                                         | \$ 4.18                | \$ 106.25                               | \$ 10                             | 25.4                                                | 23.0                                                |  |  |
| 254        | Storage                                                                                  | 4                                   | T 32 R F 4 (ELE)                                                                              | F44LL                                        | 118                                           | 0.5                       | SW                       | 1000                                      | 472                         | 4                                  | T 32 R F 4 (ELE)                                                                              | F44LL                                        | 118                                           | 0.5                                 | C-OCC                   | 250                                        | 118                         | 354                                           | 0.0                                         | \$ 37.88               | \$ 202.50                               | \$ 35                             | 5.3                                                 | 4.4                                                 |  |  |
| 201        | 202 SGI                                                                                  | 5                                   | T 32 R F 3 (ELE)                                                                              | F43ILL/2                                     | 90                                            | 0.5                       | C-OCC                    | 2400                                      | 1,080                       | 5                                  | 0                                                                                             | F43SSILL                                     | 72                                            | 0.4                                 | C-OCC                   | 1,680                                      | 605                         | 475                                           | 0.1                                         | \$ 58.13               | \$ 733.75                               | \$ 110                            | 12.6                                                | 10.7                                                |  |  |
| 7          | 202 SGI                                                                                  | 1                                   | 2T 32 R F 2 (u) (ELE) Thin Tube                                                               | FU2LL                                        | 60                                            | 0.1                       | C-OCC                    | 2400                                      | 144                         | 1                                  | 2T 17 R F 2 (ELE)                                                                             | F22ILL                                       | 33                                            | 0.0                                 | C-OCC                   | 1,680                                      | 55                          | 89                                            | 0.0                                         | \$ 11.66               | \$ 303.75                               | \$ 35                             | 26.1                                                | 23.0                                                |  |  |
| 201        | 213 Classroom                                                                            | 12                                  | T 32 R F 3 (ELE)                                                                              | F43ILL/2                                     | 90                                            | 1.1                       | C-OCC                    | 2400                                      | 2,592                       | 12                                 | 0                                                                                             | F43SSILL                                     | 72                                            | 0.9                                 | C-OCC                   | 1,680                                      | 1,452                       | 1,140                                         | 0.2                                         | \$ 139.50              | \$ 1,477.50                             | \$ 215                            | 10.6                                                | 9.1                                                 |  |  |
| 201        | 214 Classroom                                                                            | 12                                  | T 32 R F 3 (ELE)                                                                              | F43ILL/2                                     | 90                                            | 1.1                       | C-OCC                    | 2400                                      | 2,592                       | 12                                 | 0                                                                                             | F43SSILL                                     | 72                                            | 0.9                                 | C-OCC                   | 1,680                                      | 1,452                       | 1,140                                         | 0.2                                         | \$ 139.50              | \$ 1,477.50                             | \$ 215                            | 10.6                                                | 9.1                                                 |  |  |
| 254        | Sprinkler Room                                                                           | 1                                   | T 32 R F 4 (ELE)                                                                              | F44LL                                        | 118                                           | 0.1                       | SW                       | 1000                                      | 118                         | 1                                  | T 32 R F 4 (ELE)                                                                              | F44LL                                        | 118                                           | 0.1                                 | SW                      | 1,000                                      | 118                         | -                                             | 0.0                                         | \$ -                   | \$ -                                    | \$ -                              |                                                     |                                                     |  |  |
| 257        | 231 Library                                                                              | 60                                  | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 4.3                       | SW                       | 2400                                      | 10,368                      | 60                                 | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 4.3                                 | C-OCC                   | 1,680                                      | 7,258                       | 3,110                                         | 0.0                                         | \$ 332.81              | \$ 202.50                               | \$ 35                             | 0.6                                                 | 0.5                                                 |  |  |
| 7          | 231 Library                                                                              | 20                                  | 2T 32 R F 2 (u) (ELE) Thin Tube                                                               | FU2LL                                        | 60                                            | 1.2                       | SW                       | 2400                                      | 2,880                       | 20                                 | 2T 17 R F 2 R                                                                                 |                                              |                                               |                                     |                         |                                            |                             |                                               |                                             |                        |                                         |                                   |                                                     |                                                     |  |  |

Energy Audit of Franklin Avenue Middle School

CHA Project No.24497

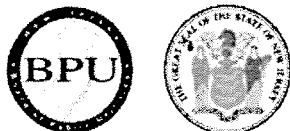
ECM-3 Lighting Replacements with Occupancy Sensors

Cost of Electricity: \$0.107 \$/kWh  
\$6.74 \$/kW

|            | EXISTING CONDITIONS                                                                      |                                     |                                                                                               |                                              |                                               |                           |                          |                                           |                             | RETROFIT CONDITIONS                |                                                                                               |                                              |                                               |                                     |                         |                                            |                             | COST & SAVINGS ANALYSIS                       |                                             |                        |                                         |                                   |                                                     |                                                     |  |  |
|------------|------------------------------------------------------------------------------------------|-------------------------------------|-----------------------------------------------------------------------------------------------|----------------------------------------------|-----------------------------------------------|---------------------------|--------------------------|-------------------------------------------|-----------------------------|------------------------------------|-----------------------------------------------------------------------------------------------|----------------------------------------------|-----------------------------------------------|-------------------------------------|-------------------------|--------------------------------------------|-----------------------------|-----------------------------------------------|---------------------------------------------|------------------------|-----------------------------------------|-----------------------------------|-----------------------------------------------------|-----------------------------------------------------|--|--|
|            | Area Description                                                                         | No. of Fixtures                     | Standard Fixture Code                                                                         | NYSERDA Fixture Code                         | Watts per Fixture                             | kW/Space                  | Exist Control            | Annual Hours                              | Annual kWh                  | Number of Fixtures                 | Standard Fixture Code                                                                         | Fixture Code                                 | Watts per Fixture                             | kW/Space                            | Retrofit Control        | Annual Hours                               | Annual kWh                  | Annual kWh Saved                              | Annual kW Saved                             | Annual \$ Saved        | Retrofit Cost                           | NJ Smart Start Lighting Incentive | Simple Payback With Out Incentive                   | Simple Payback                                      |  |  |
| Field Code | Unique description of the location - Room number/Room name: Floor number (if applicable) | No. of fixtures before the retrofit | "Lighting Fixture Code" Example 2T 40 R F(U) = 2'x2' Troff 40 w Recess. Floor 2 lamps U shape | Code from Table of Standard Fixture Wattages | Value from Table of Standard Fixture Wattages | (Watts/Fixt) * (Fixt No.) | Pre-inst. control device | Estimated daily hours for the usage group | (kW/Space) * (Annual Hours) | No. of fixtures after the retrofit | "Lighting Fixture Code" Example 2T 40 R F(U) = 2'x2' Troff 40 w Recess. Floor 2 lamps U shape | Code from Table of Standard Fixture Wattages | Value from Table of Standard Fixture Wattages | (Watts/Fixt) * (Number of Fixtures) | Retrofit control device | Estimated annual hours for the usage group | (kW/Space) * (Annual Hours) | (Original Annual kWh) - (Retrofit Annual kWh) | (Original Annual kW) - (Retrofit Annual kW) | (kWh Saved) * (\$/kWh) | Cost for renovations to lighting system | Prescriptive Lighting Measures    | Length of time for renovations cost to be recovered | Length of time for renovations cost to be recovered |  |  |
| 258        | Corridor                                                                                 | 12                                  | CFQ13W                                                                                        | CFQ13/2-L                                    | 28                                            | 0.3                       | SW                       | 2280                                      | 766                         | 12                                 | CFQ13W                                                                                        | CFQ13/2-L                                    | 28                                            | 0.3                                 | C-OCC                   | 2,280                                      | 766                         | -                                             | 0.0                                         | \$ -                   | \$ 202.50                               | \$ 35                             |                                                     |                                                     |  |  |
| 55         | Corridor                                                                                 | 10                                  | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.5                       | SW                       | 2280                                      | 1,072                       | 10                                 | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.5                                 | C-OCC                   | 2,280                                      | 1,072                       | -                                             | 0.0                                         | \$ -                   | \$ 202.50                               | \$ 35                             |                                                     |                                                     |  |  |
| 201        | 142 Classroom                                                                            | 9                                   | T 32 R F 3 (ELE)                                                                              | F43ILL/2                                     | 90                                            | 0.8                       | C-OCC                    | 2400                                      | 1,944                       | 9                                  | 0                                                                                             | F43SSILL                                     | 72                                            | 0.6                                 | C-OCC                   | 1,680                                      | 1,089                       | 855                                           | 0.2                                         | \$ 104.63              | \$ 1,158.75                             | \$ 170                            | 11.1                                                | 9.5                                                 |  |  |
| 55         | 142 Classroom                                                                            | 3                                   | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.1                       | C-OCC                    | 2400                                      | 338                         | 3                                  | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.1                                 | C-OCC                   | 1,680                                      | 237                         | 102                                           | 0.0                                         | \$ 10.86               | \$ 202.50                               | \$ 35                             | 18.6                                                | 15.4                                                |  |  |
| 201        | 141 Classroom                                                                            | 9                                   | T 32 R F 3 (ELE)                                                                              | F43ILL/2                                     | 90                                            | 0.8                       | C-OCC                    | 2400                                      | 1,944                       | 9                                  | 0                                                                                             | F43SSILL                                     | 72                                            | 0.6                                 | C-OCC                   | 1,680                                      | 1,089                       | 855                                           | 0.2                                         | \$ 104.63              | \$ 1,158.75                             | \$ 170                            | 11.1                                                | 9.5                                                 |  |  |
| 55         | 141 Classroom                                                                            | 3                                   | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.1                       | C-OCC                    | 2400                                      | 338                         | 3                                  | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.1                                 | C-OCC                   | 1,680                                      | 237                         | 102                                           | 0.0                                         | \$ 10.86               | \$ 202.50                               | \$ 35                             | 18.6                                                | 15.4                                                |  |  |
| 201        | Stairs                                                                                   | 1                                   | T 32 R F 3 (ELE)                                                                              | F43ILL/2                                     | 90                                            | 0.1                       | SW                       | 2280                                      | 205                         | 1                                  | 0                                                                                             | F43SSILL                                     | 72                                            | 0.1                                 | C-OCC                   | 2,280                                      | 164                         | 41                                            | 0.0                                         | \$ 5.85                | \$ 308.75                               | \$ 50                             | 52.8                                                | 44.3                                                |  |  |
| 55         | Stairs                                                                                   | 2                                   | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.1                       | SW                       | 2280                                      | 214                         | 2                                  | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.1                                 | C-OCC                   | 2,280                                      | 214                         | -                                             | 0.0                                         | \$ -                   | \$ 202.50                               | \$ 35                             |                                                     |                                                     |  |  |
| 55         | Nurse Waiting                                                                            | 6                                   | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.3                       | SW                       | 2400                                      | 677                         | 6                                  | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.3                                 | C-OCC                   | 1,200                                      | 338                         | 338                                           | 0.0                                         | \$ 36.21               | \$ 202.50                               | \$ 35                             | 5.6                                                 | 4.6                                                 |  |  |
| 55         | 147 Nurse Office                                                                         | 2                                   | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.1                       | SW                       | 2400                                      | 226                         | 2                                  | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.1                                 | C-OCC                   | 1,200                                      | 113                         | 113                                           | 0.0                                         | \$ 12.07               | \$ 202.50                               | \$ 35                             | 16.8                                                | 13.9                                                |  |  |
| 13         | Exam                                                                                     | 2                                   | S 32 P F 2 (ELE)                                                                              | F42LL                                        | 60                                            | 0.1                       | SW                       | 3000                                      | 360                         | 2                                  | 0                                                                                             | F42SSILL                                     | 48                                            | 0.1                                 | C-OCC                   | 1,500                                      | 144                         | 216                                           | 0.0                                         | \$ 25.05               | \$ 415.00                               | \$ 55                             | 16.6                                                | 14.4                                                |  |  |
| 257        | Cot Area                                                                                 | 8                                   | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.6                       | SW                       | 3000                                      | 1,728                       | 8                                  | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.6                                 | C-OCC                   | 1,500                                      | 864                         | 864                                           | 0.0                                         | \$ 92.45               | \$ 202.50                               | \$ 35                             | 2.2                                                 | 1.8                                                 |  |  |
| 7          | TR                                                                                       | 1                                   | 2T 32 R F 2 (u) (ELE) Thin Tube                                                               | FU2LL                                        | 60                                            | 0.1                       | SW                       | 2000                                      | 120                         | 1                                  | 2T 17 R F 2 (ELE)                                                                             | F22ILL                                       | 33                                            | 0.0                                 | C-OCC                   | 2,000                                      | 66                          | 54                                            | 0.0                                         | \$ 7.96                | \$ 303.75                               | \$ 35                             | 38.2                                                | 33.8                                                |  |  |
| 55         | Corridor                                                                                 | 5                                   | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.2                       | SW                       | 2280                                      | 536                         | 5                                  | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.2                                 | C-OCC                   | 2,280                                      | 536                         | -                                             | 0.0                                         | \$ -                   | \$ 202.50                               | \$ 35                             |                                                     |                                                     |  |  |
| 257        | Main Office                                                                              | 11                                  | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.8                       | SW                       | 2400                                      | 1,901                       | 11                                 | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.8                                 | C-OCC                   | 1,200                                      | 950                         | 950                                           | 0.0                                         | \$ 101.69              | \$ 202.50                               | \$ 35                             | 2.0                                                 | 1.6                                                 |  |  |
| 257        | 135 Assist Prinipcal                                                                     | 10                                  | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.7                       | SW                       | 2400                                      | 1,728                       | 10                                 | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.7                                 | C-OCC                   | 1,200                                      | 864                         | 864                                           | 0.0                                         | \$ 92.45               | \$ 202.50                               | \$ 35                             | 2.2                                                 | 1.8                                                 |  |  |
| 257        | 138 Principal                                                                            | 3                                   | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.2                       | SW                       | 2400                                      | 518                         | 3                                  | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.2                                 | C-OCC                   | 1,200                                      | 259                         | 259                                           | 0.0                                         | \$ 27.73               | \$ 202.50                               | \$ 35                             | 7.3                                                 | 6.0                                                 |  |  |
| 258        | 138 Principal                                                                            | 3                                   | CFQ13W                                                                                        | CFQ13/2-L                                    | 28                                            | 0.1                       | SW                       | 2400                                      | 202                         | 3                                  | CFQ13W                                                                                        | CFQ13/2-L                                    | 28                                            | 0.1                                 | C-OCC                   | 1,200                                      | 101                         | 101                                           | 0.0                                         | \$ 10.79               | \$ 202.50                               | \$ 35                             | 18.8                                                | 15.5                                                |  |  |
| 55         | Vest                                                                                     | 4                                   | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.2                       | SW                       | 2280                                      | 429                         | 4                                  | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.2                                 | C-OCC                   | 2,280                                      | 429                         | -                                             | 0.0                                         | \$ -                   | \$ 202.50                               | \$ 35                             |                                                     |                                                     |  |  |
| 257        | 131 Guidance                                                                             | 4                                   | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.3                       | SW                       | 2400                                      | 691                         | 4                                  | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.3                                 | C-OCC                   | 1,200                                      | 346                         | 346                                           | 0.0                                         | \$ 36.98               | \$ 202.50                               | \$ 35                             | 5.5                                                 | 4.5                                                 |  |  |
| 254        | 134 Workroom                                                                             | 4                                   | T 32 R F 4 (ELE)                                                                              | F44LL                                        | 118                                           | 0.5                       | SW                       | 2400                                      | 1,133                       | 4                                  | T 32 R F 4 (ELE)                                                                              | F44LL                                        | 118                                           | 0.5                                 | C-OCC                   | 1,200                                      | 566                         | 566                                           | 0.0                                         | \$ 60.60               | \$ 202.50                               | \$ 35                             | 3.3                                                 | 2.8                                                 |  |  |
| 257        | 130 Guidance                                                                             | 4                                   | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.3                       | SW                       | 2400                                      | 691                         | 4                                  | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.3                                 | C-OCC                   | 1,200                                      | 346                         | 346                                           | 0.0                                         | \$ 36.98               | \$ 202.50                               | \$ 35                             | 5.5                                                 | 4.5                                                 |  |  |
| 7          | Women's TR                                                                               | 1                                   | 2T 32 R F 2 (u) (ELE) Thin Tube                                                               | FU2LL                                        | 60                                            | 0.1                       | SW                       | 2000                                      | 120                         | 1                                  | 2T 17 R F 2 (ELE)                                                                             | F22ILL                                       | 33                                            | 0.0                                 | C-OCC                   | 2,000                                      | 66                          | 54                                            | 0.0                                         | \$ 7.96                | \$ 303.75                               | \$ 35                             | 38.2                                                | 33.8                                                |  |  |
| 7          | Men's TR                                                                                 | 1                                   | 2T 32 R F 2 (u) (ELE) Thin Tube                                                               | FU2LL                                        | 60                                            | 0.1                       | SW                       | 2000                                      | 120                         | 1                                  | 2T 17 R F 2 (ELE)                                                                             | F22ILL                                       | 33                                            | 0.0                                 | C-OCC                   | 2,000                                      | 66                          | 54                                            | 0.0                                         | \$ 7.96                | \$ 303.75                               | \$ 35                             | 38.2                                                | 33.8                                                |  |  |
| 257        | 135 Office                                                                               | 6                                   | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.4                       | SW                       | 2400                                      | 1,037                       | 6                                  | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.4                                 | C-OCC                   | 1,200                                      | 518                         | 518                                           | 0.0                                         | \$ 55.47               | \$ 202.50                               | \$ 35                             | 3.7                                                 | 3.0                                                 |  |  |
| 257        | Child Study Room                                                                         | 11                                  | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.8                       | SW                       | 2400                                      | 1,901                       | 11                                 | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.8                                 | C-OCC                   | 1,200                                      | 950                         | 950                                           | 0.0                                         | \$ 101.69              | \$ 202.50                               | \$ 35                             | 2.0                                                 | 1.6                                                 |  |  |
| 257        | 129 Child Study Team                                                                     | 4                                   | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.3                       | SW                       | 2400                                      | 691                         | 4                                  | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.3                                 | C-OCC                   | 1,200                                      | 346                         | 346                                           | 0.0                                         | \$ 36.98               | \$ 202.50                               | \$ 35                             | 5.5                                                 | 4.5                                                 |  |  |
| 254        | 125B Gym Office                                                                          | 2                                   | T 32 R F 4 (ELE)                                                                              | F44LL                                        | 118                                           | 0.2                       | SW                       | 2400                                      | 566                         | 2                                  | T 32 R F 4 (ELE)                                                                              | F44LL                                        | 118                                           | 0.2                                 | C-OCC                   | 1,200                                      | 283                         | 283                                           | 0.0                                         | \$ 30.30               | \$ 202.50                               | \$ 35                             | 6.7                                                 | 5.5                                                 |  |  |
| 55         | 125B Gym Office                                                                          | 1                                   | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.0                       | SW                       | 2400                                      | 113                         | 1                                  | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.0                                 | C-OCC                   | 1,200                                      | 56                          | 56                                            | 0.0                                         | \$ 6.03                | \$ 202.50                               | \$ 35                             | 33.6                                                | 27.8                                                |  |  |
| 198        | Women's TR                                                                               | 1                                   | 2T 17 R F 2 (ELE) REFLECTOR                                                                   | F22LL                                        | 31                                            | 0.0                       | SW                       | 2000                                      | 62                          | 1                                  | 0                                                                                             | F42SSILL                                     | 48                                            | 0.0                                 | C-OCC                   | 2,000                                      | 96                          | (34) (0.0)                                    | \$ (5.01)                                   | \$ 308.75              | \$ 50                                   |                                   |                                                     |                                                     |  |  |
| 254        | 125A Office                                                                              | 2                                   | T 32 R F 4 (ELE)                                                                              | F44LL                                        | 118                                           | 0.2                       | SW                       | 2400                                      | 566                         | 2                                  | T 32 R F 4 (ELE)                                                                              | F44LL                                        | 118                                           | 0.2                                 | C-OCC                   | 1,200                                      | 283                         | 283                                           | 0.0                                         | \$ 30.30               | \$ 202.50                               | \$ 35                             | 6.7                                                 | 5.5                                                 |  |  |
| 55         | 125A Office                                                                              | 1                                   | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.0                       | SW                       | 2400                                      | 113                         | 1                                  | 2T 17 R F 3 (ELE)                                                                             | F23ILL                                       | 47                                            | 0.0                                 | C-OCC                   | 1,200                                      | 56                          | 56                                            | 0.0                                         | \$ 6.03                | \$ 202.50                               | \$ 35                             | 33.6                                                | 27.8                                                |  |  |
| 198        | 125A Office                                                                              | 1                                   | 2T 17 R F 2 (ELE) REFLECTOR                                                                   | F22LL                                        | 31                                            | 0.0                       | SW                       | 2400                                      | 74                          | 1                                  | 0                                                                                             | F42SSILL                                     | 48                                            | 0.0                                 | C-OCC                   | 1,200                                      | 58                          | 17 (0.0)                                      | \$ 0.42                                     | \$ 308.75              | \$ 50                                   | 730.5                             | 612.2                                               |                                                     |  |  |
| 257        | Weight Room                                                                              | 4                                   | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.3                       | SW                       | 1000                                      | 288                         | 4                                  | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.3                                 | C-OCC                   | 1,000                                      | 288                         | -                                             | 0.0                                         | \$ -                   | \$ 202.50                               | \$ 35                             |                                                     |                                                     |  |  |
| 257        | Boy's Locker Room                                                                        | 11                                  | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.8                       | SW                       | 2800                                      | 2,218                       | 11                                 | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.8                                 | C-OCC                   | 2,000                                      | 1,584                       | 634                                           | 0.0                                         | \$ 67.80               | \$ 202.50                               | \$ 35                             | 3.0                                                 | 2.5                                                 |  |  |
| 257        | Boy's Locker Room TR                                                                     | 4                                   | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.3                       | SW                       | 2800                                      | 806                         | 4                                  | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.3                                 | C-OCC                   | 2,000                                      | 576                         | 230                                           | 0.0                                         | \$ 24.65               | \$ 202.50                               | \$ 35                             | 8.2                                                 | 6.8                                                 |  |  |
| 257        | Girl's Locker Room                                                                       | 8                                   | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.6                       | SW                       | 2800                                      | 1,613                       | 8                                  | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.6                                 | C-OCC                   | 2,000                                      | 1,152                       | 461                                           | 0.0                                         | \$ 49.31               | \$ 202.50                               | \$ 35                             | 4.1                                                 | 3.4                                                 |  |  |
| 257        | Girl's Locker Room TR                                                                    | 4                                   | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.3                       | SW                       | 2000                                      | 576                         | 4                                  | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.3                                 | C-OCC                   | 2,000                                      | 576                         | -                                             | 0.0                                         | \$ -                   | \$ 202.50                               | \$ 35                             |                                                     |                                                     |  |  |
| 257        | Corridor                                                                                 | 8                                   | CFT40W                                                                                        | CFT40/2-BX                                   | 72                                            | 0.6                       | SW                       | 2280                                      | 1,313                       | 8                                  | CFT40W                                                                                        | CFT40/2-BX                                   | 7                                             |                                     |                         |                                            |                             |                                               |                                             |                        |                                         |                                   |                                                     |                                                     |  |  |

## **APPENDIX D**

### **New Jersey Pay For Performance Incentive Program**



## COMMERCIAL, INDUSTRIAL AND LOCAL GOVERNMENT

### PROGRAMS

NJ SMARTSTART BUILDINGS

PAY FOR PERFORMANCE

EXISTING BUILDINGS

PARTICIPATION STEPS

APPLICATIONS AND  
FORMS

APPROVED PARTNERS

NEW CONSTRUCTION

FAQS

BECOME A PARTNER

COMBINED HEAT & POWER AND  
FUEL CELLS

LOCAL GOVERNMENT ENERGY  
AUDIT

LARGE ENERGY USERS PILOT

ENERGY SAVINGS IMPROVEMENT  
PLAN

DIRECT INSTALL

ARRA

ENERGY BENCHMARKING

OIL, PROPANE & MUNICIPAL  
ELECTRIC CUSTOMERS

TEACH

EDA PROGRAMS

TECHNOLOGIES

TOOLS AND RESOURCES

PROGRAM UPDATES

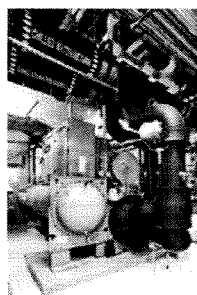
Home » Commercial & Industrial » Programs » Pay for Performance

## Pay for Performance - Existing Buildings

Download program applications and incentive forms.

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

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



### Eligibility

Existing commercial, industrial and institutional buildings with a peak demand over 100 kW for any of the preceding twelve months are eligible to participate including hotels and casinos, large office buildings, multi-family buildings, supermarkets, manufacturing facilities, schools, shopping malls and restaurants. Buildings that fall into the following five customer classes are not required to meet the 100 kW demand in order

to participate in the program: hospitals, public colleges and universities, 501(c)(3) non-profits, affordable multifamily housing, and local governmental entities. Your energy reduction plan must define a comprehensive package of measures capable of reducing the existing energy consumption of your building by 15% or more.

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

### ENERGY STAR Portfolio Manager

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



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

### Incentives

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

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

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

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



### Program

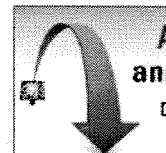
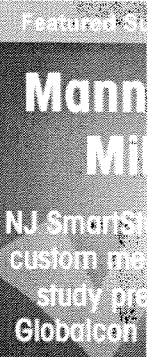
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Announcement

Economic Devel  
Introduces Rev  
Pay for Perform

Incentives Now  
Screw-in Lamps

Other updates pos



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

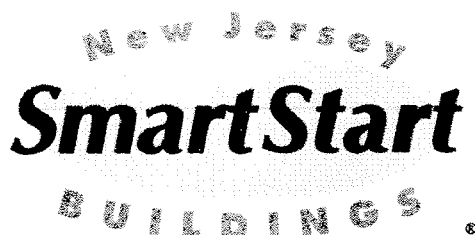
**Energy Efficiency Revolving Loan Fund (EE RLF)**

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

**Steps to Participation**

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

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## 2012 PAY FOR PERFORMANCE PROGRAM Existing Buildings Incentive Structure

### Incentive #1: Energy Reduction Plan

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

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

### Incentive #2: Installation of Recommended Measures

Minimum Performance Target:.....15%

#### Electric Incentives

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

#### Gas Incentives

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

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

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

### Incentive #3: Post-Construction Benchmarking Report

Minimum Performance Target:.....15%

#### Electric Incentives

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

#### Gas Incentives

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

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

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

## New Jersey Pay For Performance Incentive Program

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

|                                      |        |
|--------------------------------------|--------|
| Total Building Area (Square Feet)    | 85,106 |
| Is this audit funded by NJ BPU (Y/N) | Yes    |

Board of Public Utilities (BPU)

| Incentive #1              |        |         |
|---------------------------|--------|---------|
| Audit is funded by NJ BPU | \$0.10 | \$/sqft |

|                               | Annual Utilities |          |
|-------------------------------|------------------|----------|
|                               | kWh              | Therms   |
| Existing Cost (from utility)  | \$157,856        | \$15,958 |
| Existing Usage (from utility) | 1,166,200        | 15,572   |
| Proposed Savings              | 92,161           | 1,852    |
| Existing Total MMBtus         | 5,537            |          |
| Proposed Savings MMBtus       | 500              |          |
| % Energy Reduction            | 9.0%             |          |
| Proposed Annual Savings       | \$10,500         |          |

|              | Min (Savings = 15%) |          | Increase (Savings > 15%) |          | Max Incentive |          | Achieved Incentive |          |
|--------------|---------------------|----------|--------------------------|----------|---------------|----------|--------------------|----------|
|              | \$/kWh              | \$/therm | \$/kWh                   | \$/therm | \$/kWh        | \$/therm | \$/kWh             | \$/therm |
| Incentive #2 | \$0.09              | \$0.90   | \$0.005                  | \$0.05   | \$0.11        | \$1.25   | \$0.00             | \$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 | \$8,511 |
| Incentive #2         | \$0           | \$0 | \$0     |
| Incentive #3         | \$0           | \$0 | \$0     |
| Total All Incentives | \$0           | \$0 | \$8,511 |

|                    |           |
|--------------------|-----------|
| Total Project Cost | \$525,126 |
|--------------------|-----------|

|                                   |           | Allowable Incentive |
|-----------------------------------|-----------|---------------------|
| % Incentives #1 of Utility Cost*  | 4.9%      | \$8,511             |
| % Incentives #2 of Project Cost** | 0.0%      | \$0                 |
| % Incentives #3 of Project Cost** | 0.0%      | \$0                 |
| Total Eligible Incentives***      | \$8,511   |                     |
| Project Cost w/ Incentives        | \$516,615 |                     |

| Project Payback (years) |               |
|-------------------------|---------------|
| w/o Incentives          | w/ Incentives |
| 50.0                    | 49.2          |

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

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

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

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

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

## **APPENDIX E**

### **Energy Savings Improvement Plan (ESIP)**



Your Power to Save  
At Home, for Business, and for the Future

HOME

RESIDENTIAL

COMMERCIAL, INDUSTRIAL  
AND LOCAL GOVERNMENT

RENEWABLE ENERGY



COMMERCIAL, INDUSTRIAL  
AND LOCAL GOVERNMENT

PROGRAMS

- NJ SMARTSTART BUILDINGS
- PAY FOR PERFORMANCE
- COMBINED HEAT & POWER AND FUEL CELLS
- LOCAL GOVERNMENT ENERGY AUDIT
- LARGE ENERGY USERS PILOT
- ENERGY SAVINGS IMPROVEMENT PLAN
- DIRECT INSTALL
- ENERGY BENCHMARKING
- T-12 SCHOOLS LIGHTING INITIATIVE
- OIL, PROPANE & MUNICIPAL ELECTRIC CUSTOMERS
- EDA PROGRAMS
- TEACH
- ARRA
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Energy Savings Improvement Plan

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

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

- Local Government
- School Districts (K-12)

The Board also adopted [protocols](#) to measure energy savings.

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

FIRST STEP – ENERGY AUDIT

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

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

ENERGY REDUCTION PLANS

If you have an ESIP plan you would like to submit to the Board of Public Utilities, please email it to [ESIP@bpu.state.nj.us](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)

Program Updates

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

Featured Success Story

Rutgers  
University:  
Continued  
Commitment to  
Saving Energy

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## **APPENDIX F**

### **Solar Photovoltaic Analysis**

# Photovoltaic (PV) Solar Power Generation - Screening Assessment

## Franklin Lakes Public Schools - NJBPU Franklin Avenue Middle School

|                     |           |        |
|---------------------|-----------|--------|
| Cost of Electricity | \$0.135   | /kWh   |
| Electricity Usage   | 1,166,200 | 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      |
| \$680,000 | 170.0                  | 221,567 | 0      | \$29,912 | 0           | \$29,912 | \$0         | \$16,618   | 22.7       | 14.6       |

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

### Area Output\*

3,599 m2  
38,734 ft2

### Perimeter Output\*

407 m  
1,335 ft

### Available Roof Space for PV:

(Area Output - 10 ft x Perimeter) x 85%  
21,574 ft2

### Approximate System Size:

Is the roof flat? (Yes/No) Yes

8 watt/ft2  
172,592 DC watts  
170 kW  
Enter into PV Watts

### PV Watts Inputs\*\*\*

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



### PV Watts Output

221,567 annual kWh calculated in PV Watts program

### % Offset Calc

Usage 1,166,200 (from utilities)  
PV Generation 221,567 (generated using PV Watts )  
% offset 19%

\* <http://www.freemaptools.com/area-calculator.htm>

\*\* <http://www.flettexchange.com>

\*\*\* [http://gisatnrel.nrel.gov/PVWatts\\_View/index.html](http://gisatnrel.nrel.gov/PVWatts_View/index.html)



\*\*\*\*\*

## AC Energy & Cost Savings

\*\*\*\*\*



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

| Station Identification                                              |            | Results                                               |                                              |                    |                      |
|---------------------------------------------------------------------|------------|-------------------------------------------------------|----------------------------------------------|--------------------|----------------------|
| Cell ID:                                                            | 0268370    | Month                                                 | Solar Radiation<br>(kWh/m <sup>2</sup> /day) | AC Energy<br>(kWh) | Energy Value<br>(\$) |
| State:                                                              | New Jersey | 1                                                     | 2.65                                         | 11876              | 1603.26              |
| Latitude:                                                           | 40.9 ° N   | 2                                                     | 3.47                                         | 14065              | 1898.78              |
| Longitude:                                                          | 74.2 ° W   | 3                                                     | 4.83                                         | 20875              | 2818.12              |
| <b>PV System Specifications</b>                                     |            | 4                                                     | 5.28                                         | 21397              | 2888.60              |
| DC Rating:                                                          | 170.0 kW   | 5                                                     | 5.93                                         | 24412              | 3295.62              |
| DC to AC Derate Factor:                                             | 0.830      | 6                                                     | 6.32                                         | 24512              | 3309.12              |
| AC Rating:                                                          | 141.1 kW   | 7                                                     | 5.87                                         | 23073              | 3114.86              |
| Array Type:                                                         | Fixed Tilt | 8                                                     | 5.55                                         | 21965              | 2965.28              |
| Array Tilt:                                                         | 20.0 °     | 9                                                     | 5.04                                         | 19661              | 2654.24              |
| Array Azimuth:                                                      | 180.0 °    | 10                                                    | 4.14                                         | 17289              | 2334.01              |
| <b>Energy Specifications</b>                                        |            | 11                                                    | 2.82                                         | 11611              | 1567.49              |
| Cost of Electricity:                                                | 13.5 ¢/kWh | 12                                                    | 2.46                                         | 10831              | 1462.18              |
|                                                                     |            | Year                                                  | 4.54                                         | 221567             | 29911.55             |
| <input type="button" value="Output Hourly Performance Data"/>       |            | <input type="button" value="Output Results as Text"/> |                                              |                    |                      |
| <i>(Gridded data is monthly, hourly output not available.)</i>      |            | <a href="#">Saving Text from a Browser</a>            |                                              |                    |                      |
| <input type="button" value="Run PVWATTS v.2 for another location"/> |            | <input type="button" value="Run PVWATTS v.1"/>        |                                              |                    |                      |

Please send questions and comments to [Webmaster](#)

[Disclaimer and copyright notice.](#)



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

## **APPENDIX G**

### **EPA Portfolio Manager**



# STATEMENT OF ENERGY PERFORMANCE

## Franklin Avenue Middle School

Building ID: 3257007

For 12-month Period Ending: May 31, 2012<sup>1</sup>

Date SEP becomes ineligible: N/A

Date SEP Generated: August 17, 2012

**Facility**

Franklin Avenue Middle School  
755 Franklin Ave.  
Franklin Lakes, NJ 07417

**Facility Owner**

N/A

**Primary Contact for this Facility**

N/A

**Year Built:** 1995**Gross Floor Area (ft<sup>2</sup>):** 85,106**Energy Performance Rating<sup>2</sup>** (1-100) 31**Site Energy Use Summary<sup>3</sup>**

|                                   |           |
|-----------------------------------|-----------|
| Electricity - Grid Purchase(kBtu) | 3,979,074 |
| Natural Gas (kBtu) <sup>4</sup>   | 1,557,237 |
| Total Energy (kBtu)               | 5,536,311 |

**Energy Intensity<sup>4</sup>**

|                                   |     |
|-----------------------------------|-----|
| Site (kBtu/ft <sup>2</sup> /yr)   | 65  |
| Source (kBtu/ft <sup>2</sup> /yr) | 175 |

**Emissions** (based on site energy use)

|                                                     |     |
|-----------------------------------------------------|-----|
| Greenhouse Gas Emissions (MtCO <sub>2</sub> e/year) | 446 |
|-----------------------------------------------------|-----|

**Electric Distribution Utility**

Rockland Electric Co [Consolidated Edison Inc]

**National Median Comparison**

|                                              |             |
|----------------------------------------------|-------------|
| National Median Site EUI                     | 55          |
| National Median Source EUI                   | 148         |
| % Difference from National Median Source EUI | 18%         |
| Building Type                                | K-12 School |

Stamp of Certifying Professional

Based on the conditions observed at the time of my visit to this building, I certify that the information contained within this statement is accurate.

**Meets Industry Standards<sup>5</sup> for Indoor Environmental Conditions:**

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

**Certifying Professional**

N/A

**Notes:**

1. Application for the ENERGY STAR must be submitted to EPA within 4 months of the Period Ending date. Award of the ENERGY STAR is not final until approval is received from EPA.
2. The EPA Energy Performance Rating is based on total source energy. A rating of 75 is the minimum to be eligible for the ENERGY STAR.
3. Values represent energy consumption, annualized to a 12-month period.
4. Values represent energy intensity, annualized to a 12-month period.
5. Based on Meeting ASHRAE Standard 62 for ventilation for acceptable indoor air quality, ASHRAE Standard 55 for thermal comfort, and IESNA Lighting Handbook for lighting quality.

## ENERGY STAR® Data Checklist for Commercial Buildings

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

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

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

| CRITERION                                            | VALUE AS ENTERED IN PORTFOLIO MANAGER       | VERIFICATION QUESTIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | NOTES | <input checked="" type="checkbox"/> |
|------------------------------------------------------|---------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------------------------------------|
| <b>Building Name</b>                                 | Franklin Avenue Middle School               | Is this the official building name to be displayed in the ENERGY STAR Registry of Labeled Buildings?                                                                                                                                                                                                                                                                                                                                                                                                                                                    |       | <input type="checkbox"/>            |
| <b>Type</b>                                          | K-12 School                                 | Is this an accurate description of the space in question?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |       | <input type="checkbox"/>            |
| <b>Location</b>                                      | 755 Franklin Ave., Franklin Lakes, NJ 07417 | Is this address accurate and complete? Correct weather normalization requires an accurate zip code.                                                                                                                                                                                                                                                                                                                                                                                                                                                     |       | <input type="checkbox"/>            |
| <b>Single Structure</b>                              | Single Facility                             | Does this SEP represent a single structure? SEPs cannot be submitted for multiple-building campuses (with the exception of a hospital, k-12 school, hotel and senior care facility) nor can they be submitted as representing only a portion of a building.                                                                                                                                                                                                                                                                                             |       | <input type="checkbox"/>            |
| School (K-12 School)                                 |                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |       |                                     |
| CRITERION                                            | VALUE AS ENTERED IN PORTFOLIO MANAGER       | VERIFICATION QUESTIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | NOTES | <input checked="" type="checkbox"/> |
| <b>Gross Floor Area</b>                              | 85,106 Sq. Ft.                              | Does this square footage include all supporting functions such as kitchens and break rooms used by staff, storage areas, administrative areas, elevators, stairwells, atria, vent shafts, etc. Also note that existing atriums should only include the base floor area that it occupies. Interstitial (plenum) space between floors should not be included in the total. Finally gross floor area is not the same as leasable space. Leasable space is a subset of gross floor area.                                                                    |       | <input type="checkbox"/>            |
| <b>Open Weekends?</b>                                | No (Default)                                | Is this building normally open at all on the weekends? This includes activities beyond the work conducted by maintenance, cleaning, and security personnel. Weekend activity could include any time when the space is used for classes, performances or other school or community activities. If the building is open on the weekend as part of the standard schedule during one or more seasons, the building should select ?yes? for open weekends. The ?yes? response should apply whether the building is open for one or both of the weekend days. |       | <input type="checkbox"/>            |
| <b>Number of PCs</b>                                 | 149 (Default)                               | Is this the number of personal computers in the K12 School?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |       | <input type="checkbox"/>            |
| <b>Number of walk-in refrigeration/freezer units</b> | 1 (Default)                                 | Is this the total number of commercial walk-in type freezers and coolers? These units are typically found in storage and receiving areas.                                                                                                                                                                                                                                                                                                                                                                                                               |       | <input type="checkbox"/>            |
| <b>Presence of cooking facilities</b>                | Yes (Default)                               | Does this school have a dedicated space in which food is prepared and served to students? If the school has space in which food for students is only kept warm and/or served to students, or has only a galley that is used by teachers and staff then the answer is "no".                                                                                                                                                                                                                                                                              |       | <input type="checkbox"/>            |
| <b>Percent Cooled</b>                                | 100 % (Default)                             | Is this the percentage of the total floor space within the facility that is served by mechanical cooling equipment?                                                                                                                                                                                                                                                                                                                                                                                                                                     |       | <input type="checkbox"/>            |
| <b>Percent Heated</b>                                | 100 % (Default)                             | Is this the percentage of the total floor space within the facility that is served by mechanical heating equipment?                                                                                                                                                                                                                                                                                                                                                                                                                                     |       | <input type="checkbox"/>            |
| <b>Months</b>                                        | N/A(Optional)                               | Is this school in operation for at least 8 months of the year?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |       | <input type="checkbox"/>            |

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

# ENERGY STAR® Data Checklist for Commercial Buildings

## Energy Consumption

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

| Fuel Type: Electricity                                                                                                                      |            |                                        |
|---------------------------------------------------------------------------------------------------------------------------------------------|------------|----------------------------------------|
| <b>Meter: Electricity (Heat) (kWh (thousand Watt-hours))</b><br><b>Space(s):</b> Entire Facility<br><b>Generation Method:</b> Grid Purchase |            |                                        |
| Start Date                                                                                                                                  | End Date   | Energy Use (kWh (thousand Watt-hours)) |
| 05/01/2012                                                                                                                                  | 05/31/2012 | 44,800.00                              |
| 04/01/2012                                                                                                                                  | 04/30/2012 | 32,800.00                              |
| 03/01/2012                                                                                                                                  | 03/31/2012 | 43,200.00                              |
| 02/01/2012                                                                                                                                  | 02/29/2012 | 47,200.00                              |
| 01/01/2012                                                                                                                                  | 01/31/2012 | 52,400.00                              |
| 12/01/2011                                                                                                                                  | 12/31/2011 | 65,200.00                              |
| 11/01/2011                                                                                                                                  | 11/30/2011 | 37,200.00                              |
| 10/01/2011                                                                                                                                  | 10/31/2011 | 33,200.00                              |
| 09/01/2011                                                                                                                                  | 09/30/2011 | 42,000.00                              |
| 08/01/2011                                                                                                                                  | 08/31/2011 | 45,200.00                              |
| 07/01/2011                                                                                                                                  | 07/31/2011 | 54,800.00                              |
| 06/01/2011                                                                                                                                  | 06/30/2011 | 55,200.00                              |
| <b>Electricity (Heat) Consumption (kWh (thousand Watt-hours))</b>                                                                           |            | <b>553,200.00</b>                      |
| <b>Electricity (Heat) Consumption (kBtu (thousand Btu))</b>                                                                                 |            | <b>1,887,518.40</b>                    |
| <b>Meter: Electricity (kWh (thousand Watt-hours))</b><br><b>Space(s):</b> Entire Facility<br><b>Generation Method:</b> Grid Purchase        |            |                                        |
| Start Date                                                                                                                                  | End Date   | Energy Use (kWh (thousand Watt-hours)) |
| 05/01/2012                                                                                                                                  | 05/31/2012 | 59,200.00                              |
| 04/01/2012                                                                                                                                  | 04/30/2012 | 53,800.00                              |
| 03/01/2012                                                                                                                                  | 03/31/2012 | 52,600.00                              |
| 02/01/2012                                                                                                                                  | 02/29/2012 | 59,000.00                              |
| 01/01/2012                                                                                                                                  | 01/31/2012 | 53,800.00                              |
| 12/01/2011                                                                                                                                  | 12/31/2011 | 60,000.00                              |
| 11/01/2011                                                                                                                                  | 11/30/2011 | 55,000.00                              |
| 10/01/2011                                                                                                                                  | 10/31/2011 | 50,800.00                              |
| 09/01/2011                                                                                                                                  | 09/30/2011 | 52,400.00                              |
| 08/01/2011                                                                                                                                  | 08/31/2011 | 39,200.00                              |
| 07/01/2011                                                                                                                                  | 07/31/2011 | 34,800.00                              |
| 06/01/2011                                                                                                                                  | 06/30/2011 | 42,400.00                              |
| <b>Electricity Consumption (kWh (thousand Watt-hours))</b>                                                                                  |            | <b>613,000.00</b>                      |

|                                                                                                                     |                          |
|---------------------------------------------------------------------------------------------------------------------|--------------------------|
| <b>Electricity Consumption (kBtu (thousand Btu))</b>                                                                | <b>2,091,556.00</b>      |
| <b>Total Electricity (Grid Purchase) Consumption (kBtu (thousand Btu))</b>                                          | <b>3,979,074.40</b>      |
| <b>Is this the total Electricity (Grid Purchase) consumption at this building including all Electricity meters?</b> | <input type="checkbox"/> |
| <b>Fuel Type: Natural Gas</b>                                                                                       |                          |
| <b>Meter: Natural Gas (therms)</b>                                                                                  |                          |
| <b>Space(s): Entire Facility</b>                                                                                    |                          |
| <b>Start Date</b>                                                                                                   | <b>End Date</b>          |
| 05/01/2012                                                                                                          | 05/31/2012               |
| 04/01/2012                                                                                                          | 04/30/2012               |
| 03/01/2012                                                                                                          | 03/31/2012               |
| 02/01/2012                                                                                                          | 02/29/2012               |
| 01/01/2012                                                                                                          | 01/31/2012               |
| 12/01/2011                                                                                                          | 12/31/2011               |
| 11/01/2011                                                                                                          | 11/30/2011               |
| 10/01/2011                                                                                                          | 10/31/2011               |
| 09/01/2011                                                                                                          | 09/30/2011               |
| 08/01/2011                                                                                                          | 08/31/2011               |
| 07/01/2011                                                                                                          | 07/31/2011               |
| 06/01/2011                                                                                                          | 06/30/2011               |
| <b>Natural Gas Consumption (therms)</b>                                                                             | <b>15,572.37</b>         |
| <b>Natural Gas Consumption (kBtu (thousand Btu))</b>                                                                | <b>1,557,237.00</b>      |
| <b>Total Natural Gas Consumption (kBtu (thousand Btu))</b>                                                          | <b>1,557,237.00</b>      |
| <b>Is this the total Natural Gas consumption at this building including all Natural Gas meters?</b>                 | <input type="checkbox"/> |

|                                                                                                                                                                                                          |                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| <b>Additional Fuels</b>                                                                                                                                                                                  |                          |
| Do the fuel consumption totals shown above represent the total energy use of this building?<br>Please confirm there are no additional fuels (district energy, generator fuel oil) used in this facility. | <input type="checkbox"/> |

|                                                                                                                                                                                                                                                     |                          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| <b>On-Site Solar and Wind Energy</b>                                                                                                                                                                                                                |                          |
| Do the fuel consumption totals shown above include all on-site solar and/or wind power located at your facility? Please confirm that no on-site solar or wind installations have been omitted from this list. All on-site systems must be reported. | <input type="checkbox"/> |

## Certifying Professional

(When applying for the ENERGY STAR, the Certifying Professional must be the same PE or RA that signed and stamped the SEP.)

Name: \_\_\_\_\_ Date: \_\_\_\_\_

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

Signature is required when applying for the ENERGY STAR.

# FOR YOUR RECORDS ONLY. DO NOT SUBMIT TO EPA.

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

## Facility

Franklin Avenue Middle School  
755 Franklin Ave.  
Franklin Lakes, NJ 07417

## Facility Owner

N/A

## Primary Contact for this Facility

N/A

## General Information

| Franklin Avenue Middle School                          |              |
|--------------------------------------------------------|--------------|
| Gross Floor Area Excluding Parking: (ft <sup>2</sup> ) | 85,106       |
| Year Built                                             | 1995         |
| For 12-month Evaluation Period Ending Date:            | May 31, 2012 |

## Facility Space Use Summary

| School                                                     |             |
|------------------------------------------------------------|-------------|
| Space Type                                                 | K-12 School |
| Gross Floor Area (ft <sup>2</sup> )                        | 85,106      |
| Open Weekends? <sup>d</sup>                                | No          |
| Number of PCs <sup>d</sup>                                 | 149         |
| Number of walk-in refrigeration/freezer units <sup>d</sup> | 1           |
| Presence of cooking facilities <sup>d</sup>                | Yes         |
| Percent Cooled <sup>d</sup>                                | 100         |
| Percent Heated <sup>d</sup>                                | 100         |
| Months <sup>o</sup>                                        | N/A         |
| High School?                                               | No          |
| School District <sup>o</sup>                               | N/A         |

## Energy Performance Comparison

| Performance Metrics                       | Evaluation Periods                  |                                      | Comparisons   |        |                 |
|-------------------------------------------|-------------------------------------|--------------------------------------|---------------|--------|-----------------|
|                                           | Current<br>(Ending Date 05/31/2012) | Baseline<br>(Ending Date 05/31/2012) | Rating of 75  | Target | National Median |
| Energy Performance Rating                 | 31                                  | 31                                   | 75            | N/A    | 50              |
| Energy Intensity                          |                                     |                                      |               |        |                 |
| Site (kBtu/ft <sup>2</sup> )              | 65                                  | 65                                   | 43            | N/A    | 55              |
| Source (kBtu/ft <sup>2</sup> )            | 175                                 | 175                                  | 116           | N/A    | 148             |
| Energy Cost                               |                                     |                                      |               |        |                 |
| \$/year                                   | \$ 168,558.34                       | \$ 168,558.34                        | \$ 111,577.59 | N/A    | \$ 142,698.04   |
| \$/ft <sup>2</sup> /year                  | \$ 1.98                             | \$ 1.98                              | \$ 1.31       | N/A    | \$ 1.68         |
| Greenhouse Gas Emissions                  |                                     |                                      |               |        |                 |
| MtCO <sub>2</sub> e/year                  | 446                                 | 446                                  | 295           | N/A    | 378             |
| kgCO <sub>2</sub> e/ft <sup>2</sup> /year | 5                                   | 5                                    | 3             | N/A    | 4               |

More than 50% of your building is defined as K-12 School. Please note that your rating accounts for all of the spaces listed. The National Median column presents energy performance data your building would have if your building had a median rating of 50.

Notes:

o - This attribute is optional.

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

# Statement of Energy Performance

## 2012

Franklin Avenue Middle School  
755 Franklin Ave.  
Franklin Lakes, NJ 07417

Portfolio Manager Building ID: 3257007

The energy use of this building has been measured and compared to other similar buildings using the Environmental Protection Agency's (EPA's) Energy Performance Scale of 1–100, with 1 being the least energy efficient and 100 the most energy efficient. For more information, visit [energystar.gov/benchmark](http://energystar.gov/benchmark).



This building uses 175 kBtu per square foot per year.\*

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

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

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

Date of certification

