

Constable Elementary School, NJ

ENERGY AUDIT – FINAL REPORT CEG PROJECT No. 9C08134

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I. EXECUTIVE SUMMARY

This report presents the findings of an energy audit conducted for:

Constable Elementary School
29 Constable Road
Kendall Park, NJ 08824

Municipal Contact: Anthony Tonzini (Board Administrator)

Facility Contact: Perry Donato

This audit was performed in connection with the New Jersey Clean Energy Local Government Energy Audit Program. These energy audits are conducted to promote the office of Clean Energy's mission, which is to use innovation and technology to solve energy and environmental problems in a way that improves the State's economy. This can be achieved through the wiser and more efficient use of energy.

The annual energy costs at this facility are as follows:

| | |
|-------------|------------|
| Electricity | \$ 141,302 |
| Natural Gas | \$ 72,996 |
| Total | \$ 214,298 |

The potential annual energy cost savings are shown below in Table 1. Be aware that the measures are not additive because of the interrelation of several of the measures. The cost of each measure for this level of auditing is $\pm 20\%$ until detailed engineering, specifications, and hard proposals are obtained.

Table 1
Energy Conservation Measures (ECM's)

| ENERGY CONSERVATION MEASURES (ECM's) | | | | | |
|---|-----------------------|--|-----------------------------------|-----------------------------|----------------------------|
| ECM NO. | DESCRIPTION | NET INSTALLATION COST^A | ANNUAL SAVINGS^B | SIMPLE PAYBACK (Yrs) | SIMPLE LIFETIME ROI |
| ECM #1 | BOILER REPLACEMENT #1 | \$59,750 | \$7,423 | 8.0 | -39.2% |
| ECM #2 | BOILER REPLACEMENT #2 | \$40,000 | \$6,135 | 6.5 | -57.4% |
| ECM #3 | VARIABLE SPEED PUMPS | \$26,977 | \$4,707 | 5.7 | 63.0% |
| RENEWABLE ENERGY MEASURES (REM's) | | | | | |
| ECM NO. | DESCRIPTION | NET INSTALLATION COST | ANNUAL SAVINGS | SIMPLE PAYBACK (Yrs) | SIMPLE LIFETIME ROI |
| REM #1 | 226 KW SOLAR PV | \$2,038,950 | \$174,296 | 11.7 | -38.0% |

Notes: A. Cost takes into consideration applicable NJ Smart StartTM incentives.
B. Savings takes into consideration applicable maintenance savings.

The estimated demand and energy savings are shown below in Table 2. The information in this table corresponds to the ECM's in Table 1.

Table 2
Estimated Energy Savings

| ENERGY CONSERVATION MEASURES (ECM's) | | | | |
|---|-----------------------|---------------------------------|-----------------------------------|-----------------------------|
| ECM NO. | DESCRIPTION | ANNUAL UTILITY REDUCTION | | |
| | | ELECTRIC DEMAND (KW) | ELECTRIC CONSUMPTION (KWH) | NATURAL GAS (THERMS) |
| ECM #1 | BOILER REPLACEMENT #1 | 0 | 4,264 | 1,049 |
| ECM #2 | BOILER REPLACEMENT #2 | 0 | 4,437 | 276 |
| ECM #3 | VARIABLE SPEED PUMPS | 0 | 19,551 | 0 |
| RENEWABLE ENERGY MEASURES (REM's) | | | | |
| ECM NO. | DESCRIPTION | ANNUAL UTILITY REDUCTION | | |
| | | ELECTRIC DEMAND (KW) | ELECTRIC CONSUMPTION | NATURAL GAS (THERMS) |
| REM #1 | 226 KW SOLAR PV | 226 | 353,542 | 0 |

Recommendations:

Concord Engineering Group recommends the implementation of all ECM's that provide a calculated simple payback at or under ten (10) years. The potential energy and cost savings from these ECM's are economically justifiable. The following Energy Conservation Measures are recommended for the Constable Elementary School:

- **ECM #1: BOILER REPLACEMENT #1**
- **ECM #2: BOILER REPLACEMENT #2**
- **ECM #3: VARIABLE SPEED PUMPS**
- **REM #1: 226 KW SOLAR PV SYSTEM ***

*The PV Solar system is close to the 10 year simple payback and worth consideration.

II. INTRODUCTION

This comprehensive energy audit covers the Constable Elementary School located at 29 Constable Road, Kendall Park, NJ. Based on our survey and the documentation available, it was determined that the building area is approximately 70,000 SF.

The first task was to collect and review one year's worth of utility energy data for electricity and natural gas. This information was used to analyze operational characteristics, calculate energy benchmarks for comparison to industry averages, estimate savings potential, and establish a baseline to monitor the effectiveness of implemented measures. A computer spreadsheet was used to enter, sum, and calculate benchmarks and to graph utility information (see Appendix A).

The Energy Use Intensity (EUI) is expressed in British Thermal Units/square foot/year (BTU/ft²/yr) and can be used to compare energy consumption to similar building types or to track consumption from year to year in the same building. The EUI is calculated by converting annual consumption of all fuels to BTU's then dividing by the area (gross square footage) of the building. EUI is a good indicator of the relative potential for energy savings. A comparatively low EUI indicates less potential for large energy savings. Blueprints (where available) were obtained from the school district and were utilized to calculate/verify the gross area of the facility.

After gathering the utility data and calculating the EUI, the next step in the audit process is obtaining Architectural and Engineering drawings (where available). By reviewing the Architectural and Engineering drawings, questions regarding the building envelope, lighting systems/controls, HVAC equipment and controls are noted. These questions are then compared to the energy usage profiles developed during the utility data gathering step. Furthermore, through the review of the architectural and engineering drawings a building profile can be defined that documents building age, type, usage, major energy consuming equipment or systems, etc. After this information is gathered the next step in the process is the site visit.

The site visit was spent inspecting the actual systems and answering specific questions from the preliminary review. The building manager provided occupancy schedules, O & M practices, the building energy management program, and other information that has an impact on energy consumption.

The post-site work includes evaluation of the information gathered during the site visit, researching possible conservation opportunities, organizing the audit into a comprehensive report, and making recommendations on mechanical, lighting and building envelope improvements.

III. METHOD OF ANALYSIS

CEG completed the preliminary audit tasks noted in Section II preparing for the site survey. The site survey is a critical input in deciphering where energy opportunities exist within a facility. The auditor walks the entire site to inventory the building envelope (roof, windows, etc.), the heating, ventilation, and air conditioning equipment (HVAC), the lighting equipment, other facility-specific equipment, and to gain an understanding of how each facility is used.

The collected data is then processed using energy engineering calculations, Microsoft Excel spread sheets and Trane Trace 700™ building simulation software that calculate the anticipated energy usage for the proposed energy conservation measures (ECM's). The actual energy usage is entered directly from the utility bills provided by the Owner. The anticipated energy usage is compared to the actual usage to determine energy savings for the proposed ECM's.

It is pertinent to note, that the savings noted in this report are not duplicative. The savings for each recommendation may actually be higher if the individual recommendations were installed instead of the entire project. For example, the lighting module calculates the change in wattage and multiplies it by the new operating hours instead of the existing operating hours (if there was a change in the hours at all). The lighting controls module calculates the change in hours and multiplies it by the new system wattage instead of the existing wattage. Therefore, if you chose to install the recommended lighting system but not the lighting controls, the savings achieved with the new lighting system would actually be higher because there would have been no reduction in the hours of use.

The same principal follows for heating, cooling, and temperature recommendations – even with fuel switching. If there are recommendations to change the temperature settings to reduce fuel use, then the savings for the heating/cooling equipment recommendations are reduced, as well.

Our thermal module calculates the savings for temperature reductions utilizing automated engineering calculations within Microsoft Excel™ spreadsheets and Trane Trace 700™ building simulation software. The savings are calculated in “output” values – meaning energy, not fuel savings. To show fuel savings we multiply the energy values times the fuel conversion factor (these factors are different for electricity, natural gas, fuel oil, etc.) and also take into account the heating/cooling equipment efficiency. The temperature recommendation savings are lower when the heating/cooling equipment is more efficient or is using a cheaper fuel.

Thermal recommendations (insulation, windows, etc.) are evaluated by taking the difference in the thermal load due to reduced heat transfer. Again, the “thermal load” is the thermal load after the other recommendations have been accounted for.

Lastly, installation costs, refer to Appendix B, are then applied to each recommendation and simple paybacks are calculated. Costs are derived from Means Cost Data, other industry publications, and local contractors and suppliers. The NJ SmartStart Building® program incentives (refer to Appendix C) are calculated for the appropriate ECM's and subtracted from the installed cost prior to calculation of the simple payback. In addition, where applicable, maintenance cost savings are estimated and applied to the net savings. Simple return on

investment is calculated using the standard formula of the difference of gains minus investments, divided by the investments. Included within the gains are the annual energy savings, utility incentives and maintenance savings as a total sum. The calculation is completed assuming the project is 100% direct purchased by the Owner with an energy cost escalation of 2.4% for natural gas and 2.2% for electricity.

IV. HISTORIC ENERGY CONSUMPTION/COST

A. Energy Usage / Tariffs

Electric

Table 3 and Figure 1 represent the electrical usage for the surveyed facility from June-07 to May-08. PSE&G Electric Utility provides electricity to the facility. This electric rate has a component for consumption that is measured in kilowatt-hours (kWh). It is calculated by multiplying the wattage of the equipment times the hours that it operates. For example, a 1,000 Watt lamp operating for 5 hours would measure 5,000 Watt-hours. Since one kilowatt is equal to 1,000 Watts, the measured consumption would be 5 kWh. The basic usage charges are shown as generation service and delivery charges along with several non-utility generation charges. Rates used in this report reflect the most current rate structure available.

Natural Gas

Table 4 and Figure 2 show the natural gas energy usage from June-07 to May-08. Below is the average unit cost for the utilities at this facility. PSE&G Gas Utility supplies the natural gas and delivers the fuel to the burner at the facility. Below is the average unit cost for the utilities at this facility.

| <u>Description</u> | <u>Average</u> |
|--------------------|--------------------------------|
| Electricity | 14.3¢ / kWh (4.2¢ / kBtu) |
| *Natural Gas | \$1.73 / therm (1.7 / kBtu) |

*Note: The Natural Gas cost per Therm includes customer service charges.

**Table 3
Electricity Billing Data**

Constable Elementary

| Provider | Month | Start Date | End Date | Account | Utility Type | Billing Days | Peak Demand | Units | Off Peak Usage | Units | On Peak Usage | Units | Total Consumption | Units | Total \$ |
|------------------|--------|------------|-----------|-------------|--------------|--------------|-------------|-------|----------------|-------|---------------|-----------------|-------------------|---------------------|---------------|
| PSE&G Co (14101) | Jun-07 | 6/6/2007 | 7/6/2007 | 6207217810E | Electric | 30 | 161 | kw | 21960 | kwh | 54480 | kwh | 76440 | kwh | \$ 14,506.62 |
| PSE&G Co (14101) | Jul-07 | 7/6/2007 | 8/7/2007 | 6207217810E | Electric | 32 | 161 | kw | 25680 | kwh | 52080 | kwh | 77760 | kwh | \$ 13,761.42 |
| PSE&G Co (14101) | Aug-07 | 8/7/2007 | 9/5/2007 | 6207217810E | Electric | 29 | 161 | kw | 20520 | kwh | 47520 | kwh | 68040 | kwh | \$ 12,819.36 |
| PSE&G Co (14101) | Sep-07 | 9/5/2007 | 10/4/2007 | 6207217810E | Electric | 29 | 161 | kw | 20640 | kwh | 54240 | kwh | 74880 | kwh | \$ 11,477.91 |
| PSE&G Co (14101) | Oct-07 | 10/4/2007 | 11/2/2007 | 6207217810E | Electric | 29 | 161 | kw | 21960 | kwh | 49440 | kwh | 71400 | kwh | \$ 9,454.85 |
| PSE&G Co (14101) | Nov-07 | 11/2/2007 | 12/5/2007 | 6207217810E | Electric | 33 | 161 | kw | 40440 | kwh | 48600 | kwh | 89040 | kwh | \$ 10,678.66 |
| PSE&G Co (14101) | Dec-07 | 12/5/2007 | 1/7/2008 | 6207217810E | Electric | 33 | 238 | kw | 45720 | kwh | 50280 | kwh | 96000 | kwh | \$ 11,438.22 |
| PSE&G Co (14101) | Jan-08 | 1/7/2008 | 2/6/2008 | 6207217810E | Electric | 30 | 238 | kw | 44760 | kwh | 54000 | kwh | 98760 | kwh | \$ 12,054.78 |
| PSE&G Co (14101) | Feb-08 | 2/6/2008 | 3/6/2008 | 6207217810E | Electric | 29 | 238 | kw | 43920 | kwh | 50520 | kwh | 94440 | kwh | \$ 11,788.25 |
| PSE&G Co (14101) | Mar-08 | 3/6/2008 | 4/7/2008 | 6207217810E | Electric | 32 | 238 | kw | 45120 | kwh | 48480 | kwh | 93600 | kwh | \$ 11,335.72 |
| PSE&G Co (14101) | Apr-08 | 4/7/2008 | 5/6/2008 | 6207217810E | Electric | 29 | 238 | kw | 29400 | kwh | 44400 | kwh | 73800 | kwh | \$ 9,430.60 |
| PSE&G Co (14101) | May-08 | 5/6/2008 | 6/5/2008 | 6207217810E | Electric | 30 | 238 | kw | 27120 | kwh | 47280 | kwh | 74400 | kwh | \$ 12,555.19 |
| Max Peak: 238 kw | | | | | | | | | | | | 12 Month Total: | | 988,560 kwh | \$ 141,301.58 |
| | | | | | | | | | | | | | | Avg. Cost per kwh: | \$ 0.143 |
| | | | | | | | | | | | | | | Avg. Cost per kBtu: | \$ 0.042 |

Figure 1
Electricity Usage Profile

Constable Elementary School

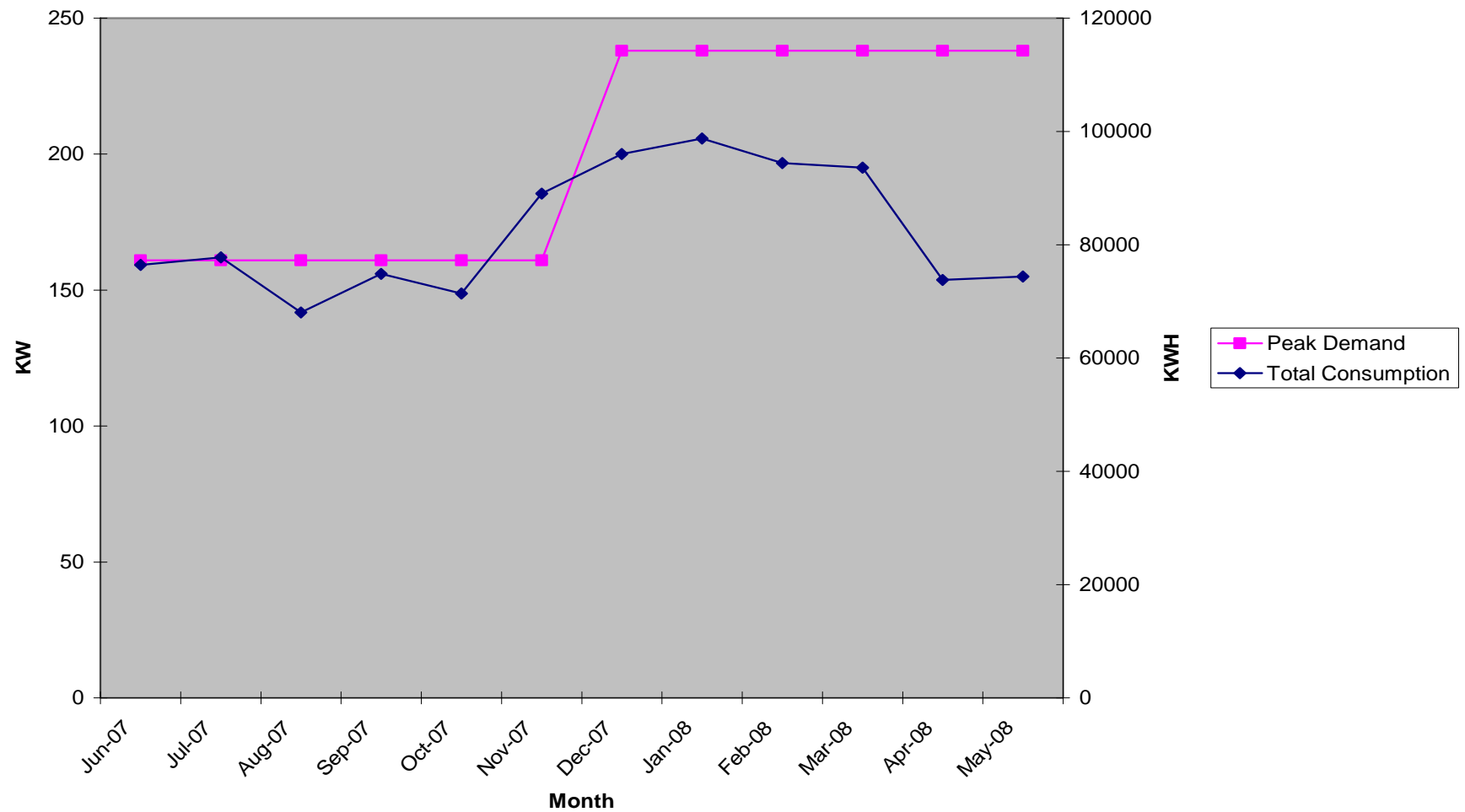


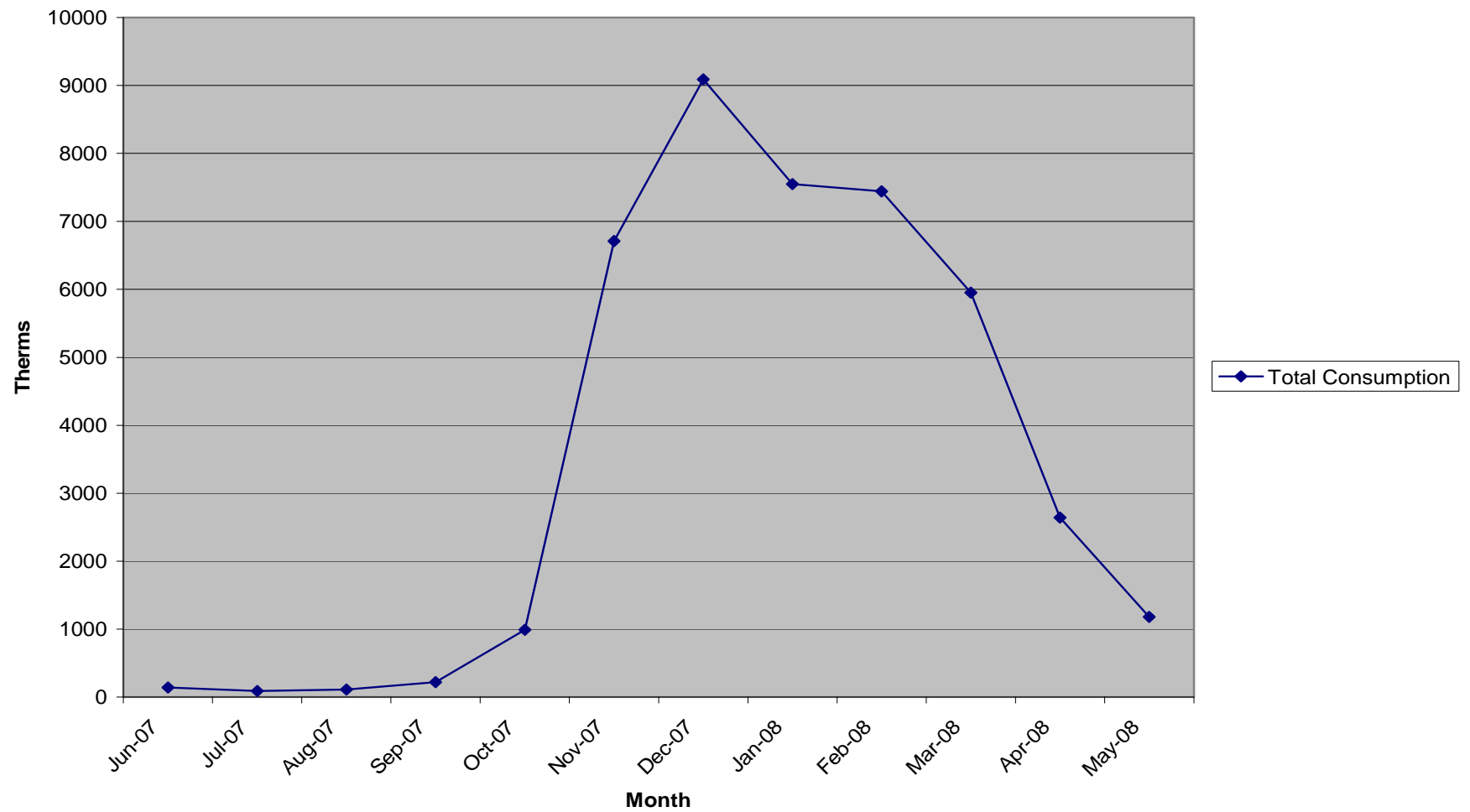
Table 4
Natural Gas Billing Data

Constable Elementary

| Provider | Month | Start Date | End Date | Account | Utility Type | Billing Days | Consumption | Units | Total \$ |
|--------------------------------|--------|------------|-----------|-------------|--------------|--------------|-------------|--------|--------------|
| PSE&G CO (14105) | Jun-07 | 6/6/2007 | 7/6/2007 | 6207217810G | Gas | 30 | 140 | therms | \$ 300.38 |
| PSE&G CO (14105) | Jul-07 | 7/6/2007 | 8/7/2007 | 6207217810G | Gas | 32 | 90 | therms | \$ 227.47 |
| PSE&G CO (14105) | Aug-07 | 8/7/2007 | 9/5/2007 | 6207217810G | Gas | 29 | 110 | therms | \$ 261.01 |
| PSE&G CO (14105) | Sep-07 | 9/5/2007 | 10/4/2007 | 6207217810G | Gas | 29 | 220 | therms | \$ 436.09 |
| PSE&G CO (14105) | Oct-07 | 10/4/2007 | 11/2/2007 | 6207217810G | Gas | 29 | 990 | therms | \$ 2,820.17 |
| PSE&G CO (14105) | Nov-07 | 11/2/2007 | 12/5/2007 | 6207217810G | Gas | 33 | 6710 | therms | \$ 11,954.81 |
| PSE&G CO (14105) | Dec-07 | 12/5/2007 | 1/7/2008 | 6207217810G | Gas | 33 | 9090 | therms | \$ 15,742.82 |
| PSE&G CO (14105) | Jan-08 | 1/7/2008 | 2/6/2008 | 6207217810G | Gas | 30 | 7550 | therms | \$ 13,284.66 |
| PSE&G CO (14105) | Feb-08 | 2/6/2008 | 3/6/2008 | 6207217810G | Gas | 29 | 7440 | therms | \$ 12,948.09 |
| PSE&G CO (14105) | Mar-08 | 3/6/2008 | 4/7/2008 | 6207217810G | Gas | 32 | 5950 | therms | \$ 9,044.86 |
| PSE&G CO (14105) | Apr-08 | 4/7/2008 | 5/6/2008 | 6207217810G | Gas | 29 | 2640 | therms | \$ 4,083.87 |
| PSE&G CO (14105) | May-08 | 5/6/2008 | 6/5/2008 | 6207217810G | Gas | 30 | 1180 | therms | \$ 1,891.50 |
| 12 Month Total: | | | | | | | 42,110 | therms | \$ 72,995.73 |
| Average Cost per therm: | | | | | | | \$ 1.73 | | |
| Average Cost per KBtu: | | | | | | | \$0.017 | | |

Figure 2
Natural Gas Usage Profile

Constable Elementary School



B. Energy Use Intensity (EUI)

Energy Use Intensity (EUI) is a measure of a building's annual energy utilization per square foot of building. This calculation is completed by converting all utility usage consumed by a building for one year, to British Thermal Units (BTU) and dividing this number by the building square footage. EUI is a good measure of a building's energy use and is utilized regularly for comparison of energy performance for similar building types. The Oak Ridge National Laboratory (ORNL) Buildings Technology Center under a contract with the U.S. Department of Energy maintains a Benchmarking Building Energy Performance Program. The ORNL website determines how a building's energy use compares with similar facilities throughout the U.S. and in a specific region or state.

Source use differs from site usage when comparing a building's energy consumption with the national average. Site energy use is the energy consumed by the building at the building site only. Source energy use includes the site energy use as well as all of the losses to create and distribute the energy to the building. Source energy represents the total amount of raw fuel that is required to operate the building. It incorporates all transmission, delivery, and production losses, which allows for a complete assessment of energy efficiency in a building. The type of utility purchased has a substantial impact on the source energy use of a building. The EPA has determined that source energy is the most comparable unit for evaluation purposes and overall global impact. Both the site and source EUI ratings for the building are provided to understand and compare the differences in energy use.

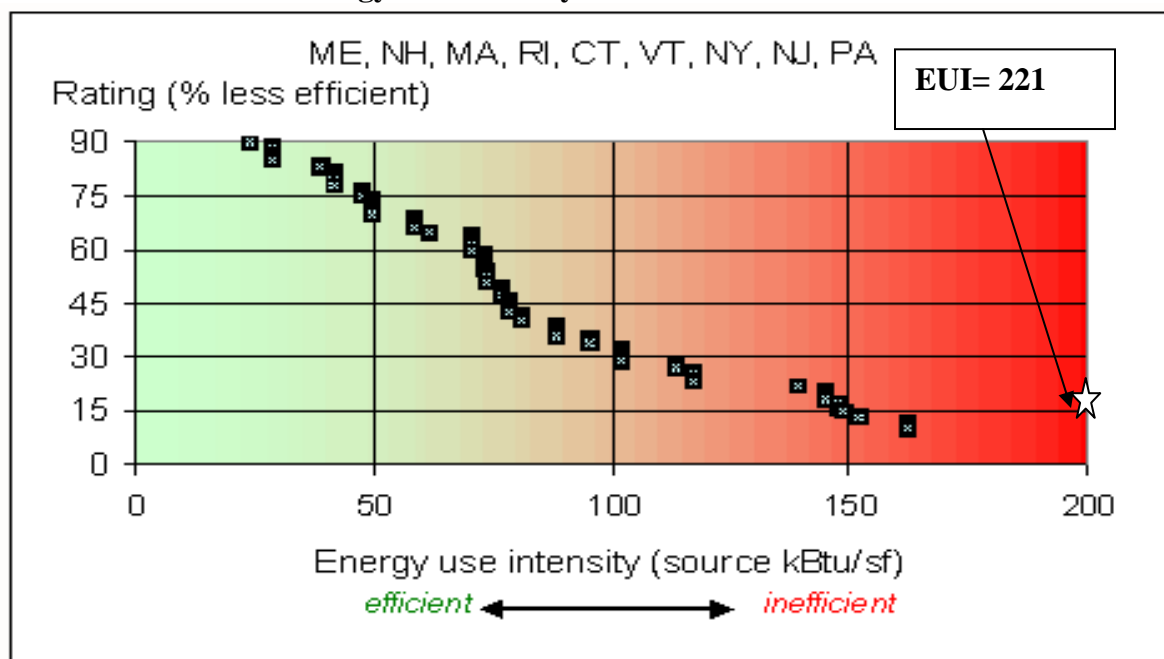
The site and source EUI for this facility is calculated as follows. (See Table 5 for details):

$$\text{Building Site EUI} = \frac{(\text{Electric Usage in kBtu} + \text{Gas Usage in kBtu})}{\text{Building Square Footage}}$$

$$\text{Building Source EUI} = \frac{(\text{Electric Usage in kBtu} \times \text{SS Ratio} + \text{Gas Usage in kBtu} \times \text{SS Ratio})}{\text{Building Square Footage}}$$

| ENERGY TYPE | BUILDING USE | | | SITE ENERGY | SITE-SOURCE | SOURCE ENERGY |
|---|---------------|-----------|-------------------|-------------|-------------|---------------|
| | kWh | Therms | Gallons | kBtu | RATIO | kBtu |
| ELECTRIC | 988,560 | | | 3,374,944 | 3.340 | 11,272,312 |
| NATURAL GAS | | 42,110.00 | | 4,211,000 | 1.047 | 4,408,917 |
| FUEL OIL | | | 0.00 | 0 | 1.010 | 0 |
| PROPANE | | | 0.00 | 0 | 1.010 | 0 |
| TOTAL | | | | 7,585,944 | | 15,681,229 |
| *Site - Source Ratio data is provided by the Energy Star Performance Rating Methodology for Incorporating Source Energy Use document issued Dec 2007. | | | | | | |
| BUILDING AREA | 70,973 | | SQUARE FEET | | | |
| BUILDING SITE EUI | 106.88 | | kBtu/SF/YR | | | |
| BUILDING SOURCE EUI | 220.95 | | kBtu/SF/YR | | | |

Figure 3
Energy Use Intensity Distributions – Schools



C. EPA Energy Benchmarking System

The United States Environmental Protection Agency (EPA) in an effort to promote energy management has created a system for benchmarking energy use amongst various end users. The benchmarking tool utilized for this analysis is entitled Portfolio Manager. The Portfolio Manager tool allows you to track and assess energy consumption via the template forms located on the ENERGY STAR website (www.energystar.gov). The importance of benchmarking for local government municipalities is becoming more important as utility costs continue to increase and more emphasis is being placed throughout multiple arenas on carbon reduction, greenhouse gas emissions and other environmental impacts.

Based on information gathered from the ENERGY STAR website, Government agencies spend more than \$10 billion a year on energy to provide public services and meet constituent needs. Furthermore, energy use in commercial buildings and industrial facilities is responsible for more than 50 percent of U.S. carbon dioxide emissions. Therefore, it is vital that local government municipalities assess their energy usage, benchmark this usage utilizing Portfolio Manager, set priorities and goals to lessen their energy usage and move forward with these priorities and goals. Saving energy will in-turn save the environment.

In accordance with the Local Government Energy Audit Program, CEG has created an Energy Star account for the school district in order to allow access to monitor their yearly energy usage as it compares to facilities of similar type. The login page for the account can be accessed at the following web address; the username and password are also listed below:

<https://www.energystar.gov/istar/pmpam/index.cfm?fuseaction=login.login>

| | |
|--------------------|--------------------------|
| User Name: | southbrunswick |
| Password: | lgeaceg09002 |
| Security Question: | What is your birth city? |
| Security Answer: | "South Brunswick" |

Utilizing the utility bills and other information gathered during the energy audit process, CEG entered the respective data into Portfolio Manager and the following is a summary of the results:

Table 5
ENERGY STAR Performance Rating

| FACILITY DESCRIPTION | ENERGY PERFORMANCE RATING | NATIONAL AVERAGE |
|----------------------|---------------------------|------------------|
| Constable Elementary | 23 | 50 |

Specific building types are detailed on the ENERGY STAR website. Non-typical buildings are covered by an “Other” category. The “Other” category is used if your building type or a section of the building is not represented by one of the specific categories. An Energy Performance Rating cannot be calculated if more than 10% of a building is classified as “Other,” or if the building is an office with less than 5,000 square feet of floor space.

The Energy Use Intensity (EUI) is also an important tool that can be used to track the energy efficiency of the building. Baselines for improvement can be set that the municipality can strive to meet. CEG recommends that the South Brunswick School District keep their Portfolio Manager account up to date to monitor the performance of the building.

The EUI calculated in the previous section and in the Energy Star Portfolio Manager is a good indicator of the energy performance of the Constable Elementary School, in addition to the Energy Star Performance Rating.

The EUI distribution, Figure 3, is specific for Schools. The Constable School has an EUI of 106.9 rating for this type of facility. The lower the EUI the less energy the facility uses per square foot. A low EUI indicates a more efficient building. There maybe some opportunity for improvement making the facility more energy efficient and saving more on the utility costs.

Refer to Appendix D for detailed energy benchmarking report entitled “STATEMENT OF ENERGY PERFORMANCE.”

V. FACILITY DESCRIPTION

The Constable Elementary School consists of a 70,973 square foot building built in 1959 with additions in 1961, 1988, and 2006.

Single story slab on grade building, face brick, 8" CMU, stick built, with seven modular buildings. The roof is mostly flat with some smaller buildings having an "A-Frame" type roof.

Cooling and Heating System

The primary cooling and heating system for the building consists of four (4) hot water boilers, unit ventilators with hot water coils, five (5) packaged rooftop gas fired heating and cooling units, five (5) packaged rooftop electric cooling with hot water coils in the supply duct, a gas fired MUA unit for the kitchen, and five (5) Energy Recovery Units with total energy heat recovery wheels that condition the gymnasium, cafeteria, stage area, and toilet rooms in the new addition. Approximately seven (7) classrooms in the older section utilize thru-the-wall heating and cool units. Cabinet heaters with hot water coils are used in the lobby entry ways.

Domestic Hot Water

Domestic Hot Water for the facility is provided by two (2) domestic hot water heaters with integral storage tanks, 125 gallon and a 50 gallon gas fired units.

Lighting System

Typical lighting throughout the building uses fluorescent tube fixtures with energy efficient T-8 lamps and electronic ballasts. A limited number of fixtures use compact fluorescent lamps.

The exterior lighting uses mainly high intensity discharge wall mounted fixtures.

The existing lighting control system utilizes energy efficient occupancy sensors and "A/B" switching in most areas. Standard switching is used in remaining locations. "A/B" switching allows the occupant the ability to control approximately 50% of the lighting in an area with one switch and the remaining 50% with a separate switch if increased light levels are needed.

School "As Built" drawings indicate that the facility has recently undergone a lighting and lighting controls upgrade and this was confirmed during the field survey. The light fixtures and lighting controls currently installed are estimated to be approximately three years old, energy efficient and are not recommended for replacement at this time.

Refer to Appendix E for a detailed Investment Grade Lighting Audit.

VI. MAJOR EQUIPMENT LIST

Following the completion of the field survey a detailed equipment list was created. The equipment within this list is considered major energy consuming equipment whose replacement could yield substantial savings. In addition, the list shows the major equipment in the facility and all pertinent information utilized in energy savings calculations. An approximate age was assigned to the equipment if a manufacturers date was not shown on the equipment's nameplate. The ASHRAE service life for the equipment along with the remaining useful life is also shown in the Appendix.

Equipment denoted by an asterisk indicates an estimate of the equipment ratings due to equipment inaccessibility, worn nameplates, lack of nameplates, etc.

Refer to Appendix C for the Major Equipment List for this facility.

VII. ENERGY CONSERVATION MEASURES (ECM)

ECM #1 Replace Existing Hot Water Boiler #1

Description:

Replace existing H B Smith hot water boiler 1330 MBH input.

The calculations for this ECM were performed using Trane Trace 700™ building simulation software and the estimated payback is approximately 8.0 years. Outputs from the simulation software are located in Appendix G. A summary of the calculations is shown below.

Energy Savings Summary:

| ECM #1 - ENERGY SAVINGS SUMMARY | |
|--|-------------|
| Installation Cost (\$): | \$64,875 |
| NJ Smart Start Equipment Incentive (\$): | \$5,125 |
| Net Installation Cost (\$): | \$59,750 |
| Maintenance Savings (\$/Yr): | \$5,000 |
| Energy Savings (\$/Yr): | \$2,423 |
| Total Yearly Savings (\$/Yr): | \$7,423 |
| Estimated ECM Lifetime (Yr): | 15 |
| Simple Payback | 8.0 |
| Simple Lifetime ROI | -39.2% |
| Simple Lifetime Maintenance Savings | \$75,000 |
| Simple Lifetime Savings | \$36,345 |
| Internal Rate of Return (IRR) | 9% |
| Net Present Value (NPV) | \$28,865.29 |

ECM #2 Replace Existing Hot Water Boiler #2

Description:

Replace existing American Standard hot water boiler 1,160 MBH input.

The calculations for this ECM were performed using Trane Trace 700™ building simulation software and the estimated payback is approximately 6.5 years. Outputs from the simulation software are located in Appendix G. A summary of the calculations is shown below.

Energy Savings Summary:

| ECM #2 - ENERGY SAVINGS SUMMARY | |
|--|-------------|
| Installation Cost (\$): | \$45,125 |
| NJ Smart Start Equipment Incentive (\$): | \$5,125 |
| Net Installation Cost (\$): | \$40,000 |
| Maintenance Savings (\$/Yr): | \$5,000 |
| Energy Savings (\$/Yr): | \$1,135 |
| Total Yearly Savings (\$/Yr): | \$6,135 |
| Estimated ECM Lifetime (Yr): | 15 |
| Simple Payback | 6.5 |
| Simple Lifetime ROI | -57.4% |
| Simple Lifetime Maintenance Savings | \$75,000 |
| Simple Lifetime Savings | \$17,025 |
| Internal Rate of Return (IRR) | 13% |
| Net Present Value (NPV) | \$33,239.23 |

ECM #3: Variable Speed Pumping

Description:

The existing hot water pumps are constant speed. The system has a bypass valve which allows for recirculation when terminal equipments' control valves close down. We suggest installing new pumps with variable frequency drives (VFD). The existing 2-way control valves at all of the terminal equipment can remain. The new pumps would be controlled by remote pressure sensors to keep the system charged properly. The VFD's modulate the pump's speed in order to maintain the necessary system pressure as prescribed at the BMS.

The calculations for this ECM were performed using Trane Trace 700™ building simulation software and the estimated payback is approximately 5.7 years. Outputs from the simulation software are located in Appendix G. A summary of the calculations is shown below.

Energy Savings Summary:

| ECM #3 - ENERGY SAVINGS SUMMARY | |
|--|-------------|
| Installation Cost (\$): | \$28,725 |
| NJ Smart Start Equipment Incentive (\$): | \$1,748 |
| Net Installation Cost (\$): | \$26,977 |
| Maintenance Savings (\$/Yr): | \$1,775 |
| Energy Savings (\$/Yr): | \$2,932 |
| Total Yearly Savings (\$/Yr): | \$4,707 |
| Estimated ECM Lifetime (Yr): | 15 |
| Simple Payback | 5.7 |
| Simple Lifetime ROI | 63.0% |
| Simple Lifetime Maintenance Savings | \$26,625 |
| Simple Lifetime Savings | \$43,980 |
| Internal Rate of Return (IRR) | 15% |
| Net Present Value (NPV) | \$29,214.86 |

VIII. RENEWABLE/DISTRIBUTED ENERGY MEASURES

Globally, renewable energy has become a priority affecting international and domestic energy policy. The State of New Jersey has taken a proactive approach, and has recently adopted in its Energy Master Plan a goal of 30% renewable energy by 2020. To help reach this goal New Jersey created the Office of Clean Energy under the direction of the Board of Public Utilities and instituted a Renewable Energy Incentive Program to provide additional funding to private and public entities for installing qualified renewable technologies. A renewable energy source can greatly reduce a building's operating expenses while producing clean environmentally friendly energy. CEG has assessed the feasibility of installing renewable energy technologies for the Constable Elementary School, to evaluate if there is any potential for solar or wind energy generation.

Solar energy produces clean energy and reduces a building's carbon footprint. This is accomplished via photovoltaic panels which will be mounted on all south and southwestern facades of the building. Flat roof, as well as sloped areas can be utilized; flat areas will have the panels turned to an optimum solar absorbing angle. (A structural survey of the roof would be necessary before the installation of PV panels is considered). Parking lots can also be utilized for the installation of a solar array. A truss system can be installed that is high enough to park a vehicle under the array, this way no parking lot area is lost. The state of NJ has instituted a program in which one Solar Renewable Energy Certificate (SREC) is given to the Owner for every 1000 kWh of generation. SREC's can be sold anytime on the market at their current market value. The value of the credit varies upon the current need of the power companies. The average value per credit is around \$350, this value was used in our financial calculations. This equates to \$0.35 per kWh generated.

CEG has reviewed the existing roof area of the building being audited for the purposes of determining a potential for a roof mounted photovoltaic system. A roof area of 14,490 S.F. can be utilized for a PV system on the roof. A depiction of the area utilized is shown in Appendix F following the financial calculations. Using this square footage it was determined that a system size of 226.55 kilowatts could be installed to help reduce the maximum peak monthly demand. The required square footage for a system of this size is approximately 14,400 S.F. and has an estimated kilowatt hour production of 353,542 KWh annually, reducing the overall electric consumption by approximately 35.7%. A detailed financial analysis can be found in Appendix F. This analysis illustrates the payback of the system over a 25 year period. The eventual degradation of the solar panels and the price of accumulated SREC's are factored into the payback.

CEG has reviewed financing options for the owner. Two options were studied and they are as follows: Self-financed and direct purchase without finance. Self-finance was calculated with 95% of the total project cost financed at a 7% interest rate over 25 years. Direct purchase involves the local government paying for 100% of the total project cost upfront. Both of these calculations include a utility inflation rate as well as the degradation of the solar panels over time. Based on our calculations the following are the payback periods for the respective method of payment:

| PAYMENT TYPE | SIMPLE PAYBACK | INTERNAL RATE OF RETURN |
|-----------------|-------------------|----------------------------|
| Self-Finance | 11.7 Years | 8.6 % |
| Direct Purchase | 11.7 Years | 7.5 % |

The above information is concluded as REM # 1 showing installation costs, energy savings and other pertinent summarized information in Section I of this report.

Wind energy production is another option available through the Renewable Energy Incentive Program. Small wind turbines can be utilized to produce clean energy on a per building basis. Cash incentives are available per kWh of electric usage. CEG has reviewed the applicability of wind energy for South Brunswick and has determined it is not a viable option. Low average wind speeds for the area are not adequate for wind turbine generation. Typical wind turbines start producing energy at 8 mph wind speeds. South Brunswick averages 4 mph wind speeds making this application impractical.

IX. ENERGY PURCHASING AND PROCUREMENT STRATEGY

Load Profile:

Load Profile analysis was performed to determine the seasonal energy usage of the facility. Irregularities in the load profile will indicate potential problems within the facility. Consequently based on the profile a recommendation will be made to remedy the irregularity in energy usage. For this report, the facility's energy consumption data was gathered in table format and plotted in graph form to create the load profile. The Electric and Natural Gas Usage Profiles included within this report to reference the respective electricity and natural gas usage load profile.

Electricity:

This facility was built in 1959 with additions in 1961, 1988, and 2006.

The Electric Usage Profile demonstrates a fairly atypical load profile. The profile is said to be atypical because the jump in consumption is primarily associated with the winter (November – March). The summer (April – October) has an elevated usage pattern but it is very consistent or flat. The summer usually has an increased load pattern due to cooling (air conditioner load). In this facility the cooling is provided five (5) packaged rooftop gas fired cooling units, five (5) packaged rooftop electric cooling with hot water coils in the supply duct, a gas fired MUA unit for the kitchen, and five (5) Energy Recovery Units with total energy heat recovery wheels that condition the gymnasium, cafeteria, stage area, and toilet rooms in the new addition.

Approximately seven (7) classrooms in the older section utilize thru-the-wall cooling units. This facility utilizes the Delivery service (GLP), and its Commodity service (BGS) from Public Service Electric and Gas Company (PSE&G). A base-load shaping is important because a flat consumption profile will yield more competitive pricing when shopping for a Third Party Supplier.

Natural Gas:

The Natural Gas Usage Profile demonstrates a typical heating load (November –March), and complimentary cooling load (April –October). Consequently there is a clear separation between summer and winter loads consistent with Wholesale Energy Pricing. Heating loads carry a much higher average cost because of the higher demand for natural gas during the winter. In this facility the primary heating is provided by four (4) hot water boilers, unit ventilators with hot water coils, five (5) packaged rooftop gas fired heating, five (5) packaged rooftop hot water coils in the supply duct, a gas fired MUA unit for the kitchen, and five (5) Energy Recovery Units with total energy heat recovery wheels that condition the gymnasium, cafeteria, stage area, and toilet rooms in the new addition. Approximately seven (7) classrooms in the older section utilize thru-the-wall heating. Cabinet heaters with hot water coils are used in the lobby entry ways. Domestic hot water is provided by (2) two natural gas fired units, one with 125 gallon capacity and one with 50 gallon capacity. This facility utilizes the Delivery service (LVG) from Public Service Electric and Gas (PSE&G) while it receives its Commodity service from Woodruff Energy, the Third Party Supplier.

Tariff Analysis:Electricity:

This facility receives electrical service through Public Service Electric and Gas Company (PSE&G) on a GLP (General Lighting and Power Service) rate schedule.

The GLP utility tariff is for Delivery service for general purposes at secondary distribution voltages. Customers may either purchase electric supply from a Third Party Supplier (TPS) or from Public Service's Basic Generation Service default service as detailed in this rate schedule.

This facility is currently receiving Generation service from PSE&G's Basic Generation Service.

The PSE&G Delivery service has the following charges: Service Charge, Distribution Charges, Societal Benefits Charges, Non-Utility Generation Charges, Securitization Transition Charges, System Control Charges, Customer Account Services Charges, Commercial and Industrial Energy Pricing Standby Fee (CIEP), Base Rate Distribution Kilowatt Adjustment Charge, Solar Pilot Recovery Charge and Capital Adjustment Charge.

A flat load profile will allow for a more competitive energy price when shopping for an "alternate energy source".

Natural Gas:

This facility receives natural gas service through Public Service Electric and Gas Company LVG (Large Volume Gas) rate class, when not receiving commodity by a Third Party Supplier. This utility tariff is for firm delivery service for general purposes. This rate schedule has a Delivery Charge, Balancing Charge, Societal Benefits Charge, Realignment Adjustment Charge, Margin Adjustment Charge, RGGI Charge and Customer Account Service Charge. The customer can elect to have the Commodity Charge serviced through the utility or by a Third Party Supplier (TPS). It is pertinent to note, should the TPS not deliver, the customer may receive service from PSE&G under Emergency Sales Service. Emergency Sales Service carries an extremely high penalty cost of service.

Imbalances occur when Third Party Suppliers are used to supply natural gas, full-delivery is not made, and when a new supplier is contracted or the customer returns to the utility. It is important when utilizing a Third Party Supplier, that an experienced regional supplier is used. Otherwise, imbalances can occur, jeopardizing economics and scheduling.

From review of the information provided by the school district, South Brunswick is utilizing the services of a Third Party Supplier, Woodruff Energy for natural gas service. The contract is administered through the Middlesex Regional Educational Services Commission (MRESC) for the term, August 1, 2008 through July 31, 2010. The agreement is between the MRESC and South Brunswick BOE and it does not define the full and final price. Based on the limited data available, it appears that South Brunswick is paying over 20% above market price.

Additionally, the MRESC charges \$.0325 per decatherm for administering this RFP. The South Brunswick BOE could realize additional savings by evaluating a new natural gas contract. It should be noted that there was not a Woodruff Energy Contract available for review, nor a complete delivered natural gas price.

Recommendations:

CEG recommends a global approach that will be consistent with all facilities. CEG's primary observation is seen in the electricity costs. South Brunswick's "weighted average price-to-compare" per kWh (kilowatt hour) for all buildings is \$.1479/kWh (kWh is the common unit of electric measure).

The price to compare is defined as the price that would be compared to the equivalent utility price extracting the utility transmission and distribution costs (wires charges). This would be a

market based price that would be supplied by a Third Party Supplier (TPS) or an alternative supplier.

The average “price-to-compare” per decatherm for natural gas is \$12.50/dth (Dth is the common unit of measure). Energy commodities are among the most volatile of all commodities, however at this point and time, energy is extremely competitive. South Brunswick could see significant savings if it were to take advantage of these current market prices quickly, before energy increases. Based on last year’s historical consumption (June 2007 through May 2008) and current electric rates, South Brunswick would see an improvement of over \$150,000 or over 20% annually. (Note: Savings were calculated using South Brunswick High School’s Average Annual Consumption of 5,749,304 kWh’s and a variance of approximately \$.03/kWh and utilizing a fixed one-year commodity contract). South Brunswick should aggregate its entire electric load to gain the most optimal energy costs. CEG recommends advisement for alternative sourcing and supply of energy on a “managed approach”.

CEG’s secondary recommendation coincides with South Brunswick’s natural gas costs and the contract with MRESC and Woodruff Energy. CEG recognized a segment of the natural gas cost is not competitive with current market prices. Based on the current market, South Brunswick is paying approximately \$1.717 per unit above market in the PSEG territory and about \$.58 per unit above market in the Elizabethtown Gas and New Jersey Natural Gas territories. CEG recommends further advisement on these prices. South Brunswick should also consider procuring energy (natural gas) on its own. By procuring energy through the MRESC it is paying a premium of \$.0325 per unit. CEG recommends alternative sourcing strategies.

CEG has observed that there is a cost differential from Phase I. For the facilities in Phase II CEG observes improvement of up to \$100,000 in natural gas costs. Since energy prices have dropped since last we analyzed the energy costs, South Brunswick could now see an improvement of up to 60% in the variance to market based pricing.

CEG recommends that South Brunswick schedule a meeting with their current utility providers to review their utility charges and current tariff structures for electricity and natural gas. This meeting would provide insight regarding alternative procurement options that might be available to South Brunswick. Through its meeting with the Local Distribution Company (LDC), South Brunswick will learn more about the competitive supply process. South Brunswick can acquire a list of approved Third Party Suppliers from the New Jersey Board of Public Utilities website at www.nj.gov/bpu. South Brunswick should also consider using a billing-auditing service to further analyze the utility invoices, manage the data and use the data to manage ongoing demand-side management projects. Furthermore, CEG recommends South Brunswick pay attention to credit mechanisms, imbalances, balancing charges and commodity charges when meeting with their utility representative. In addition, South Brunswick should also ask the utility representative about alternative billing options. Some utilities allow for consolidated billing options when utilizing the service of a Third Party Supplier.

Finally, if South Brunswick frequently changes its supplier for energy (natural gas), it needs to closely monitor balancing, particularly when the contract is close to termination.

X. INSTALLATION FUNDING OPTIONS

CEG has reviewed various funding options for the Owner to utilize in subsidizing the costs for installing the energy conservation measures noted within this report. Below are a few alternative funding methods:

- i. *Energy Savings Improvement Program (ESIP)* – Public Law 2009, Chapter 4 authorizes government entities to make energy related improvements to their facilities and pay for the costs using the value of energy savings that result from the improvements. The “Energy Savings Improvement Program (ESIP)” law provides a flexible approach that can allow all government agencies in New Jersey to improve and reduce energy usage with minimal expenditure of new financial resources.
- ii. *Municipal Bonds* – Municipal bonds are a bond issued by a city or other local government, or their agencies. Potential issuers of municipal bonds include cities, counties, redevelopment agencies, school districts, publicly owned airports and seaports, and any other governmental entity (or group of governments) below the state level. Municipal bonds may be general obligations of the issuer or secured by specified revenues. Interest income received by holders of municipal bonds is often exempt from the federal income tax and from the income tax of the state in which they are issued, although municipal bonds issued for certain purposes may not be tax exempt.
- iii. *Power Purchase Agreement* – Public Law 2008, Chapter 3 authorizes contractor of up to fifteen (15) years for contracts commonly known as “power purchase agreements.” These are programs where the contracting unit (Owner) procures a contract for, in most cases, a third party to install, maintain, and own a renewable energy system. These renewable energy systems are typically solar panels, windmills or other systems that create renewable energy. In exchange for the third party’s work of installing, maintaining and owning the renewable energy system, the contracting unit (Owner) agrees to purchase the power generated by the renewable energy system from the third party at agreed upon energy rates.

All in all, incentives provide financial motivation and much needed support for the implementation of energy conservation measures. Along with the NJ Smart Start program, the Pay for Performance Program incentives, sponsored by NJ Clean Energy Program, are applicable for this facility. The existing average operating demand above 200 KW and high energy consumption qualifies for the Pay for Performance Program. The incentive based on a 15% electrical energy reduction for this facility would qualify for an additional \$21,195 in the Pay for Performance Program. If natural gas consumption could be reduced by 15% the resultant incentive would be approximately \$10,949. This would equate to a total incentive equal to approximately \$32,144. This option is one to consider for a whole-building approach to energy reduction. The Pay for Performance Program represents a significant commitment to energy

reduction of a facility. This option should be reviewed in more detail with a Pay for Performance Program partner.

CEG recommends the Owner review the use of the above-listed funding options in addition to utilizing their standard method of financing for facilities upgrades in order to fund the proposed energy conservation measures.

XI. ADDITIONAL RECOMMENDATIONS

The following recommendations include no cost/low cost measures, Operation & Maintenance (O&M) items, and water conservation measures with attractive paybacks. These measures are not eligible for the Smart Start Buildings incentives from the office of Clean Energy but save energy none the less.

- A. Chemically clean the condenser and evaporator coils periodically to optimize efficiency. Poorly maintained heat transfer surfaces can reduce efficiency 5-10%.
- B. Maintain all weather stripping on windows and doors.
- C. Use cog-belts instead of v-belts on all belt-driven fans, etc. These can reduce electrical consumption of the motor by 2-5%.
- D. Reduce lighting in specified areas where the foot candle levels are above 70 in private offices and above 30 in corridor, lobbies, etc.
- E. Provide more frequent air filter changes to decrease overall fan horsepower requirements and maintain better IAQ.
- F. Recalibrate existing sensors serving the office spaces
- G. Install a Vending Miser system to turn off the vending machines in the lunch room when not in use.
- H. Clean all light fixtures to maximize light output.
- I. Confirm that outside air economizers on the rooftop units that serve the Office Areas are functioning properly to take advantage of free cooling.

APPENDIX

ECM COST & SAVINGS BREAKDOWN

CONCORD ENGINEERING GROUP

Brunswick Acres Elementary School

| ECM ENERGY AND FINANCIAL COSTS AND SAVINGS SUMMARY | | | | | | | | | | | | | | | |
|--|-----------------------|-------------------|----------|---------------------|-----------------------|----------------|---------------|-----------|--------------|--------------------------------|--------------------------------------|--|-----------------------------|--------------------------------------|-------------------------------------|
| ECM NO. | DESCRIPTION | INSTALLATION COST | | | | YEARLY SAVINGS | | | ECM LIFETIME | LIFETIME ENERGY SAVINGS | LIFETIME MAINTENANCE SAVINGS | LIFETIME ROI | SIMPLE PAYBACK | INTERNAL RATE OF RETURN | NET PRESENT VALUE (NPV) |
| | | MATERIAL | LABOR | REBATES, INCENTIVES | NET INSTALLATION COST | ENERGY | MAINT. / SREC | TOTAL | | (Yearly Saving * ECM Lifetime) | (Yearly Maint Saving * ECM Lifetime) | (Lifetime Savings - Net Cost) / (Net Cost) | (Net cost / Yearly Savings) | $\sum_{n=0}^N \frac{C_n}{(1+IRR)^n}$ | $\sum_{n=0}^N \frac{C_n}{(1+DR)^n}$ |
| | | (\$) | (\$) | (\$) | (\$) | (\$/Yr) | (\$/Yr) | (\$/Yr) | | (\$) | (\$) | (%) | (Yr) | (\$) | (\$) |
| ECM #1 | BOILER REPLACEMENT #1 | \$25,900 | \$38,975 | \$5,125 | \$69,750 | \$2,423 | \$5,000 | \$7,423 | 15 | \$36,345 | \$75,000 | -39.2% | 8.0 | 9.02% | \$28,865.29 |
| ECM #2 | BOILER REPLACEMENT #2 | \$18,000 | \$27,125 | \$5,125 | \$40,000 | \$1,135 | \$5,000 | \$6,135 | 15 | \$17,025 | \$75,000 | -57.4% | 6.5 | 12.83% | \$33,239.23 |
| ECM #3 | VARIABLE SPEED PUMPS | \$10,900 | \$17,825 | \$1,748 | \$26,977 | \$2,932 | \$1,775 | \$4,707 | 15 | \$43,980 | \$26,625 | 63.0% | 5.7 | 15.42% | \$29,214.86 |
| REM RENEWABLE ENERGY AND FINANCIAL COSTS AND SAVINGS SUMMARY | | | | | | | | | | | | | | | |
| REM #1 | 226 KW SOLAR PV | \$0 | \$0 | \$0 | \$2,038,950 | \$50,556 | \$123,740 | \$174,296 | 25 | \$1,263,900 | \$3,093,500 | -38.0% | 11.7 | 6.96% | \$996,091.99 |

- Notes:**
- 1) The variable Cn in the formulas for Internal Rate of Return and Net Present Value stands for the cash flow during each period.
 - 2) The variable DR in the NPV equation stands for Discount Rate
 - 3) For NPV and IRR calculations: From n=0 to N periods where N is the lifetime of ECM and Cn is the cash flow during each period.

| CONSTRUCTION COST AND REBATES | | | | | |
|---|------------|---------------------|--------------------|-----------------|--------------------|
| <u>BASE CASE - EXISTING EQUIPMENT</u> | <u>Qty</u> | <u>Unit Cost \$</u> | <u>Material \$</u> | <u>Labor \$</u> | <u>Total \$</u> |
| Total Cost | | | \$0 | \$0 | \$0 |
| | | | | | |
| <u>ECM # 1 - NEW BOILER #1</u> | <u>Qty</u> | <u>Unit Cost \$</u> | <u>Material \$</u> | <u>Labor \$</u> | <u>Total \$</u> |
| New Boiler 1500 MBH input 94% | 1 | \$25,400 | \$25,400 | \$38,100 | \$63,500 |
| Piping, Flue Package, Controls, & Demo | 1 | | \$500 | \$875 | \$1,375 |
| Salvage Value | 1 | \$2,500 | \$2,500 | | \$2,500 |
| Boiler Rebate (\$1.75/MBH) | 1 | | | | <u>\$2,625</u> |
| Total after Rebate | | | | | \$59,750 |
| | | | | | |
| <u>ECM # 2 - NEW BOILER #2</u> | <u>Qty</u> | <u>Unit Cost \$</u> | <u>Material \$</u> | <u>Labor \$</u> | <u>Total \$</u> |
| New Boiler 1060 MBH input 94% | 1 | \$17,500 | \$17,500 | \$26,250 | \$43,750 |
| Piping, Flue Package, Controls, & Demo | 1 | | \$500 | \$875 | \$1,375 |
| Salvage Value | 1 | \$2,500 | \$2,500 | | \$2,500 |
| Boiler Rebate (\$1.75/MBH) | 1 | | | | <u>\$2,625</u> |
| Total after Rebate | | | | | \$40,000 |
| | | | | | |
| <u>ECM # 3 - VARIABLE SPEED PUMPING</u> | <u>Qty</u> | <u>Unit Cost \$</u> | <u>Material \$</u> | <u>Labor \$</u> | <u>Total \$</u> |
| Hot Water Pump (5 HP) | 2 | \$1,800 | \$3,600 | \$6,300 | \$9,900 |
| Hot Water Pump (1.5 HP) | 2 | \$750 | \$1,500 | \$2,625 | \$4,125 |
| Variable Frequency Drive < 5HP | 4 | \$1,250 | \$5,000 | \$7,500 | \$12,500 |
| Controls | 4 | \$200 | \$800 | \$1,400 | \$2,200 |
| VFD Rebate (\$155/HP above 5HP) | | | | | \$1,550 |
| Premium Eff Motor Rebate | | | | | <u>\$198</u> |
| Total after Rebate | | | | | \$26,977 |
| | | | | | |
| <u>ECM # 6 - PV SOLAR</u> | <u>Qty</u> | <u>Unit Cost \$</u> | <u>Material \$</u> | <u>Labor \$</u> | <u>Total \$</u> |
| PV Solar | 1,000 | \$1,525 | \$1,525,000 | \$915,000 | \$2,440,000 |
| Total | | | | | \$2,440,000 |

| Annual Maintenance Cost | | | | |
|----------------------------------|----------|------------|----------|----------|
| ECM | Base | Additional | Solar PV | Total |
| BASE CASE - EXISTING EQUIPMENT | \$17,750 | \$0 | \$0 | \$17,750 |
| ECM # 1 - REPLACE BOILER #1 | \$17,750 | -\$5,000 | \$0 | \$12,750 |
| ECM # 2 - REPLACE BOILER #2 | \$17,750 | -\$5,000 | \$0 | \$12,750 |
| ECM # 3 - VARIABLE SPEED PUMPING | \$17,750 | -\$1,775 | \$0 | \$15,975 |
| REM # 1 - SOLAR PV SYSTEM | \$17,750 | \$0 | \$1,500 | \$19,250 |

| EQUIPMENT REPLACEMENT COST FOR EACH ALTERNATE | | | |
|---|-------------|------|-------------|
| BASE CASE - EXISTING EQUIPMENT | | | |
| | \$ | Life | Yr Incurred |
| Existing H B Smith Boiler 1330 MBH | \$28,400 | 25 | 1 |
| Existing American Standard Boiler 1160 MBH | \$20,500 | 25 | 1 |
| Existing Constant Speed Pumps | \$8,500 | 20 | 10 |
| New Boiler 1500 MBH input 94% | \$0 | 20 | 20 |
| New Boiler 1060 MBH input 94% | \$0 | 25 | 25 |
| New Variable Speed Pumps | \$0 | 24 | 24 |
| New PV Solar Panel System | \$0 | 25 | 25 |
| ECM # 1 - NEW BOILER #1 | | | |
| | \$ | Life | Yr Incurred |
| Existing H B Smith Boiler 1330 MBH | \$28,400 | 25 | 1 |
| Existing American Standard Boiler 1160 MBH | \$20,500 | 25 | 1 |
| Existing Constant Speed Pumps | \$8,500 | 20 | 10 |
| New H B Smith Boiler 1330 MBH | \$76,850 | 20 | 20 |
| New American Standard Boiler 1160 MBH | \$0 | 25 | 25 |
| New Variable Speed Pumps | \$0 | 24 | 24 |
| New PV Solar Panel System | \$0 | 25 | 25 |
| ECM # 2 - NEW BOILER #2 | | | |
| | \$ | Life | Yr Incurred |
| Existing H B Smith Boiler 1330 MBH | \$28,400 | 25 | 1 |
| Existing American Standard Boiler 1160 MBH | \$20,500 | 25 | 1 |
| Existing Constant Speed Pumps | \$8,500 | 20 | 10 |
| New H B Smith Boiler 1330 MBH | \$0 | 20 | 20 |
| New American Standard Boiler 1160 MBH | \$55,125 | 25 | 25 |
| New Variable Speed Pumps | \$0 | 24 | 24 |
| New PV Solar Panel System | \$0 | 25 | 25 |
| ECM # 3 - VARIABLE SPEED HW PUMPS | | | |
| | \$ | Life | Yr Incurred |
| Existing H B Smith Boiler 1330 MBH | \$28,400 | 25 | 1 |
| Existing American Standard Boiler 1160 MBH | \$20,500 | 25 | 1 |
| Existing Constant Speed Pumps | \$8,500 | 20 | 10 |
| New H B Smith Boiler 1330 MBH | \$0 | 20 | 20 |
| New American Standard Boiler 1160 MBH | \$0 | 25 | 25 |
| New Variable Speed Pumps | \$32,502 | 24 | 24 |
| New PV Solar Panel System | \$0 | 25 | 25 |
| REM # 6 - PV SOLAR | | | |
| | \$ | Life | Yr Incurred |
| Existing H B Smith Boiler 1330 MBH | \$28,400 | 25 | 1 |
| Existing American Standard Boiler 1160 MBH | \$20,500 | 25 | 1 |
| Existing Constant Speed Pumps | \$8,500 | 20 | 10 |
| New H B Smith Boiler 1330 MBH | \$0 | 20 | 20 |
| New American Standard Boiler 1160 MBH | \$0 | 25 | 25 |
| New Variable Speed Pumps | \$0 | 24 | 24 |
| New PV Solar Panel System | \$2,038,950 | 25 | 25 |

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SmartStart Building Incentives

The NJ SmartStart Buildings Program offers financial incentives on a wide variety of building system equipment. The incentives were developed to help offset the initial cost of energy-efficient equipment. The following tables show the current available incentives as of January, 2009:

Electric Chillers

| | |
|-----------------------|----------------------|
| Water-Cooled Chillers | \$12 - \$170 per ton |
| Air-Cooled Chillers | \$8 - \$52 per ton |

Gas Cooling

| | |
|----------------------------|---|
| Gas Absorption Chillers | \$185 - \$400 per ton |
| Gas Engine-Driven Chillers | Calculated through custom measure path) |

Desiccant Systems

| | |
|--|----------------------------------|
| | \$1.00 per cfm – gas or electric |
|--|----------------------------------|

Electric Unitary HVAC

| | |
|-----------------------------------|---------------------|
| Unitary AC and Split Systems | \$73 - \$93 per ton |
| Air-to-Air Heat Pumps | \$73 - \$92 per ton |
| Water-Source Heat Pumps | \$81 per ton |
| Packaged Terminal AC & HP | \$65 per ton |
| Central DX AC Systems | \$40- \$72 per ton |
| Dual Enthalpy Economizer Controls | \$250 |

Ground Source Heat Pumps

| | |
|-------------------------|---------------|
| Closed Loop & Open Loop | \$370 per ton |
|-------------------------|---------------|

Gas Heating

| | |
|--------------------------------------|--|
| Gas Fired Boilers < 300 MBH | \$300 per unit |
| Gas Fired Boilers ≥ 300 - 1500 MBH | \$1.75 per MBH |
| Gas Fired Boilers ≥1500 - ≤ 4000 MBH | \$1.00 per MBH |
| Gas Fired Boilers > 4000 MBH | (Calculated through Custom Measure Path) |
| Gas Furnaces | \$300 - \$400 per unit |

Variable Frequency Drives

| | |
|---------------------|----------------------------------|
| Variable Air Volume | \$65 - \$155 per hp |
| Chilled-Water Pumps | \$60 per hp |
| Compressors | \$5,250 to \$12,500 per drive |

Natural Gas Water Heating

| | |
|--|-------------------------|
| Gas Water Heaters ≤ 50 gallons | \$50 per unit |
| Gas-Fired Water Heaters >50 gallons | \$1.00 - \$2.00 per MBH |
| Gas-Fired Booster Water Heaters | \$17 - \$35 per MBH |

Premium Motors

| | |
|--------------------|------------------------|
| Three-Phase Motors | \$45 - \$700 per motor |
|--------------------|------------------------|

Prescriptive Lighting

| | |
|---|---|
| T-5 and T-8 Lamps w/Electronic Ballast in Existing Facilities | \$10 - \$30 per fixture, (depending on quantity) |
| Hard-Wired Compact Fluorescent | \$25 - \$30 per fixture |
| Metal Halide w/Pulse Start | \$25 per fixture |
| LED Exit Signs | \$10 - \$20 per fixture |
| T-5 and T-8 High Bay Fixtures | \$16 - \$284 per fixture |

Lighting Controls – Occupancy Sensors

| | |
|--|-----------------------------|
| Wall Mounted | \$20 per control |
| Remote Mounted | \$35 per control |
| Daylight Dimmers | \$25 per fixture |
| Occupancy Controlled hi- low Fluorescent Controls | \$25 per fixture controlled |

Lighting Controls – HID or Fluorescent Hi-Bay Controls

| | |
|------------------|-----------------------------|
| Occupancy hi-low | \$75 per fixture controlled |
| Daylight Dimming | \$75 per fixture controlled |

Other Equipment Incentives

| | |
|---|---|
| Performance Lighting | \$1.00 per watt per SF below program incentive threshold, currently 5% more energy efficient than ASHRAE 90.1-2004 for New Construction and Complete Renovation |
| Custom Electric and Gas Equipment Incentives | not prescriptive |

Constable Elementary School

| TAG | MAKE | MODEL | TYPE | CAPACITY | EFFICIENCY | SERVES | LOCATION | REMAINING USEFUL LIFE | NOTES |
|------------------|----------|-----------------------|--|---|---------------------------------|---|---|--------------------------|---|
| RTU-1 | LENNOX | LGA120H2-BS36 | DX / GAS FIRED PACKAGED UNIT | 4000 CFM, 10 TON, 130 MBH INPUT, 104 MBH OUTPUT | 11.7 EER, 80 % | FACULTY / CHILD STUDY AREAS | PAD MOUNTED REAR OF NORTHWEST FACULTY ROOM | 11 YEARS | BYPASS VAV SYSTEM IN FACULTY / CHILD STUDY AREA, ECONOMIZER, POWER EXHAUST. |
| RTU-2 | LENNOX | LGA090H2-BS36 | DX / GAS FIRED PACKAGED UNIT | 3000 CFM, 7.5 TON, 130MBH INPUT, 104 MBH OUTPUT | 11.3 EER, 80 % | MEDIA CENTER | PAD MOUNTED SIDE OF MEDIA CENTER | 11 YEARS | CONSTANT VOLUME, SINGLE ZONE, ECONOMIZER. |
| RTU-3 | LENNOX | LGA120H2-BS36 | DX / GAS FIRED PACKAGED ROOFTOP UNIT | 4100 CFM, 10 TON, 130 MBH INPUT, 104 MBH OUTPUT | 11 EER, 80 % | CLASSROOMS F609, F610, CORRIDOR / STORAGE | ROOF OVER CLASSROOMS | 11 YEARS | BYPASS VAV SYSTEM, ECONOMIZER, POWER EXHAUST. |
| RTU-4 | LENNOX | LGA060H2-BS2G | DX / GAS FIRED PACKAGED ROOFTOP UNIT | 1950 CFM, 5 TON, 78 MBH INPUT, 64 MBH OUTPUT | 11 EER, 80 % | MAIN OFFICE, PRIN. OFFICE, CONFERENCE ROOM | ROOF OVER OFFICES - FRONT OF BUILDING | 11 YEARS | CONSTANT VOLUME, SINGLE ZONE, ECONOMIZER, POWER EXHAUST. |
| RTU-5 | LENNOX | LCA120H2-BS2G | DX / PACKAGED ROOFTOP UNIT | 4000 CFM, 10 TON | 11 EER | CLASSROOMS B208, B209, C301, CORRIDOR | ROOF OVER CLASSROOMS | 11 YEARS | COOLING ONLY, ECONOMIZER, POWER EXHAUST, CONSTANT VOLUME, HW COILS IN DUCT. |
| RTU-6 | LENNOX | LCA240H2-BN1G | DX / PACKAGED ROOFTOP UNIT | 7000 CFM, 20 TON | 11.2 EER | GYM & CAFÉ, CORR., CLASS RMS., C302, C303, C304, C305 | ROOF OVER CLASSROOM C305 | 11 YEARS | COOLING ONLY, ECONOMIZER, POWER EXHAUST, CONSTANT VOLUME, HW COILS IN DUCT. |
| RTU-7 | LENNOX | LCA060H2-BN1G | DX / PACKAGED ROOFTOP UNIT | 1950 CFM, 5 TON | 10.4 EER | ART CLASSROOM D401 & STORAGE ROOM | ROOF OVER CORRIDOR NEXT TO D401 | 11 YEARS | COOLING ONLY, ECONOMIZER, POWER EXHAUST, CONSTANT VOLUME, HW COILS IN DUCT. |
| RTU-8 | LENNOX | LCA072H2-BN1G | DX / PACKAGED ROOFTOP UNIT | 2400 CFM, 6 TON | 10.5 EER | MUSIC CLASSROOM D402 & STORAGE ROOM | ROOF OVER CORRIDOR NEXT TO D402 | 11 YEARS | COOLING ONLY, ECONOMIZER, POWER EXHAUST, CONSTANT VOLUME, HW COILS IN DUCT. |
| RTU-9 | LENNOX | LCA120H2-BN1G | DX / PACKAGED ROOFTOP UNIT | 4000 CFM, 10 TON | 9.8 EER | KITCHEN, PE OFFICE, STORAGE, LOCKERS, GYM STOR., JANITOR. | ROOF OVER KITCHEN | 11 YEARS | COOLING ONLY, ECONOMIZER, POWER EXHAUST, CONSTANT VOLUME, HW COILS IN DUCT. |
| RTU-10 | LENNOX | LGA036H2-BS2G | DX / GAS FIRED PACKAGED ROOFTOP UNIT | 1200 CFM, 3 TON | 11.2 EER, 80 % | A101, NURSE OFFICE, COT AREA | ROOF FRONT OF BLDG. | 11 YEARS | CONSTANT VOLUME, SINGLE ZONE, ECONOMIZER, POWER EXHAUST. |
| MAU-1 | STERLING | PV30A2C03K | ROOFTOP PACKAGED HEATING MUA | 4000 CFM, 300 MBH INPUT, 240 MBH OUTPUT. | 80% | KITCHEN | ROOF OVER KITCHEN | 11 YEARS | HEATING ONLY MAKE-UP-AIR. |
| ERU-1 | ANNEXAIR | ERP-E-04-HW- HC-AC | ROOFTOP ENERGY RECOVERY | 4500 CFM, 24 TONS, 154 MBH HEATING | WHEEL EFFECTIVENES S 75 % | NORTHEAST GYM | ROOF NEXT TO GYM | 11 YEARS | DX COOLING, HW HEATING, ENERGY RECOVERY WHEEL, INTEGRAL CONDENSING UNIT, EXHAUST FAN, VFD MOTORS |
| ERU-2 | ANNEXAIR | ERP-E-04-HW- HC-AC | ROOFTOP ENERGY RECOVERY | 4500 CFM, 24 TONS, 154 MBH HEATING | WHEEL EFFECTIVENES S 75 % | NORTHEAST GYM | ROOF NEXT TO GYM | 11 YEARS | DX COOLING, HW HEATING, ENERGY RECOVERY WHEEL, INTEGRAL CONDENSING UNIT, EXHAUST FAN, VFD MOTORS |
| ERU-3 | ANNEXAIR | ERP-E-04-HW- HC-AC | ROOFTOP ENERGY RECOVERY | 4000 CFM, 16.6 TONS, 136 MBH HEATING | WHEEL EFFECTIVENES S 76 % | STAGE | ROOF NEXT TO STAGE | 11 YEARS | DX COOLING, HW HEATING, ENERGY RECOVERY WHEEL, INTEGRAL CONDENSING UNIT, EXHAUST FAN, VFD MOTORS |
| ERU-4 | ANNEXAIR | ERP-E-04-HW- HC-AC | ROOFTOP ENERGY RECOVERY | 4500 CFM, 25 TONS, 187 MBH HEATING | WHEEL EFFECTIVENES S 74 % | CAFETERIA | ROOF NEXT TO CAFETERIA | 11 YEARS | DX COOLING, HW HEATING, ENERGY RECOVERY WHEEL, INTEGRAL CONDENSING UNIT, EXHAUST FAN, VFD MOTORS |
| ERU-5 | ANNEXAIR | ERP-E-01-FP- HC-AC | ROOFTOP ENERGY RECOVERY | 1000 CFM, 6.2 TONS, 53 MBH HEATING | WHEEL EFFECTIVENES S 57 % | TOILET ROOMS | NORTHWEST ROOF AREA | 11 YEARS | ENERGY RECOVERY PLATE TYPE HEAT-X, DX COOLING, HW HEATING, INTEGRAL CONDENSING UNIT, EXHAUST FAN, VFD MOTORS. |
| UV-1 | MCQUAY | UAVS5S15 | VERTICAL UNIT VENTILATOR | 1500 CFM, 3.5 TON, 59 MBH HEATING | 9.55 EER | CLASSROOMS | FLOOR MTD OUTSIDE WALL IN CLASSROOM | 16 YEARS | VERTICAL EXPOSED CABINET WITH INTEGRAL RETURN GRILLE, DX COOLING, HW HEATING COILS, ECONOMIZER. |
| UV-2 | MCQUAY | UAVS5S15 | VERTICAL UNIT VENTILATOR | 1500 CFM, 3.5 TON, 59 MBH HEATING | 9.55 EER | CLASSROOMS | FLOOR MTD OUTSIDE WALL IN CLASSROOM | 16 YEARS | VERTICAL EXPOSED CABINET WITH INTEGRAL RETURN GRILLE, DX COOLING, HW HEATING COILS, ECONOMIZER. |
| UV-3 | MCQUAY | UAVS5S15 | VERTICAL UNIT VENTILATOR | 1500 CFM, 3.5 TON, 59 MBH HEATING | 9.55 EER | CLASSROOMS | FLOOR MTD OUTSIDE WALL IN CLASSROOM | 16 YEARS | VERTICAL EXPOSED CABINET WITH INTEGRAL RETURN GRILLE, DX COOLING, HW HEATING COILS, ECONOMIZER. |
| UV-4 | MCQUAY | UAVS5S15 | VERTICAL UNIT VENTILATOR | 1500 CFM, 3.5 TON, 59 MBH HEATING | 9.55 EER | CLASSROOMS | FLOOR MTD OUTSIDE WALL IN CLASSROOM | 16 YEARS | VERTICAL EXPOSED CABINET WITH INTEGRAL RETURN GRILLE, DX COOLING, HW HEATING COILS, ECONOMIZER. |
| UV-5 | MCQUAY | UAVS5S15 | VERTICAL UNIT VENTILATOR | 1500 CFM, 3.5 TON, 59 MBH HEATING | 9.55 EER | CLASSROOMS | FLOOR MTD OUTSIDE WALL IN CLASSROOM | 16 YEARS | VERTICAL EXPOSED CABINET WITH INTEGRAL RETURN GRILLE, DX COOLING, HW HEATING COILS, ECONOMIZER. |
| UV-6 | MCQUAY | UAVS5S15 | VERTICAL UNIT VENTILATOR | 1500 CFM, 3.5 TON, 59 MBH HEATING | 9.55 EER | CLASSROOMS | FLOOR MTD OUTSIDE WALL IN CLASSROOM | 16 YEARS | VERTICAL EXPOSED CABINET WITH INTEGRAL RETURN GRILLE, DX COOLING, HW HEATING COILS, ECONOMIZER. |
| ACCU-1 Thru 6 | MCQUAY | HS-29-042 | REMOTE CONDENSING UNIT | 3.5 TONS | 9.55 EER | UV-1 TO 6 | PAD MOUNTED OUTSIDE CLASSROOM | 11 YEARS | R-22, CONDENSING UNITS |
| CUH-1 Thru 5 | STERLING | RC-03 | HORIZONTAL RECESSED CABINET HEATER | 335 CFM, 19 MBH | UNKNOWN | VESTIBULE, ENTRYWAYS | RECESSED IN CEILING ABOVE ENTRYWAY | 16 YEARS | HOT WATER CABINET HEATER |
| B-1 | AERCO | BMK-2.0-GWB | HOT WATER BOILER | 2000 INPUT, 1720 OUTPUT | 86% | BUILDING HOT WATER LOOP NEW ADDITION | NEW MECHANICAL ROOM | 21 YEARS | NATURAL GAS, B-1 & B-2, SEQUENCED FOR EQUAL OPERATING TIME. |
| B-2 | AERCO | BMK-2.0-GWB | HOT WATER BOILER | 2000 INPUT, 1720 OUTPUT | 86% | BUILDING HOT WATER LOOP NEW ADDITION | NEW MECHANICAL ROOM | 21 YEARS | NATURAL GAS, B-1 & B-2, SEQUENCED FOR EQUAL OPERATING TIME. |

Constable Elementary School

| TAG | MAKE | MODEL | TYPE | CAPACITY | EFFICIENCY | SERVES | LOCATION | REMAINING USEFUL LIFE | NOTES |
|-----------|----------------------|-----------------------|---|---|------------|--|-------------------------------------|--------------------------|--|
| HP-1 | PACO | LC-20953 | BASE MOUNTED END SUCTION - CONSTANT SPEED | 5 HP, 145 GPM, 50 FT. HD., 1750 RPM. | UNKNOWN | BUILDING HOT WATER LOOP NEW ADDITION | NEW MECHANICAL ROOM | 16 YEARS | LEAD / LAG HOT WATER PUMPS RUN WITH HEATING LOAD. ONE PUMP IS STAND-BY. |
| HP-2 | PACO | LC-20953 | BASE MOUNTED END SUCTION - CONSTANT SPEED | 5 HP, 145 GPM, 50 FT. HD., 1750 RPM. | UNKNOWN | BUILDING HOT WATER LOOP NEW ADDITION | NEW MECHANICAL ROOM | 16 YEARS | LEAD / LAG HOT WATER PUMPS RUN WITH HEATING LOAD. ONE PUMP IS STAND-BY. |
| B-1 (Old) | AMERICAN STANDARD | G-6011 | HOT WATER BOILER | 1160 MBH | UNKNOWN | OLD SECTION SCHOOL | OLD BOILER ROOM FRONT | 1 YEAR | NATURAL GAS |
| P-1 | B & G | - | IN-LINE, PIPE MOUNTED | 1.5 HP | UNKNOWN | OLD BOILER | OLD BOILER ROOM FRONT | 20 YEARS | CURRENTLY BEING REPLACED |
| B-2 | HB SMITH | - | HOT WATER BOILER | 1330 MBH | UNKNOWN | OLD SECTION SCHOOL | OLD BOILER ROOM SIDE OF BUILDING | 1 YEAR | NATURAL GAS |
| DHW-1 | PVI | MAXIM-14N- 125A-MX | DOMESTIC WATER HEATER & STORAGE TANK | 140 MBH, 125 GAL. | 83% | KITCHEN & NEW RESTROOMS | NEW MECHANICAL ROOM- REAR | 15 YEARS | NATURAL GAS NICKELSHIELD |
| DHW-2 | RUUD | GL50-60C | DOMESTIC WATER HEATER & STORAGE TANK | 60 MBH, 50 GAL. | 80% | RESTROOMS-OLD SECTION | OLD BOLIER ROOM FRONT | 15 YEARS | NATURAL GAS, RUUDGLAS COMMERCIAL |
| PTAC-1 | SANYO | NOT AVAILABLE | THRU-WALL HEAT & COOL | 18, 000 BTU | 10 EER | CLASROOMS B201 Thru B207 | IN CLASSROOMS | 5 YEARS | |
| KEF-1 | GREENHECK | USGF-200HP- 30-6 | EXHAUST FAN | 4050 CFM | N/A | KITCHEN | ROOF OVER KITCHEN | 4YEARS | KITCHEN HOOD EXHAUST FAN |



STATEMENT OF ENERGY PERFORMANCE

Constable Elementary

Building ID: 1819414

For 12-month Period Ending: May 31, 2008¹

Date SEP becomes ineligible: N/A

Date SEP Generated: August 13, 2009

Facility
Constable Elementary
29 Constable Road
Kendall Park, NJ 08824

Facility Owner
N/A

Primary Contact for this Facility
N/A

Year Built: 1959

Gross Floor Area (ft²): 70,973Energy Performance Rating² (1-100) 23**Site Energy Use Summary³**

| | |
|---------------------------------|-----------|
| Natural Gas (kBtu) ⁴ | 4,191,968 |
| Electricity (kBtu) | 3,332,023 |
| Total Energy (kBtu) | 7,523,991 |

Energy Intensity⁵

| | |
|-----------------------------------|-----|
| Site (kBtu/ft ² /yr) | 107 |
| Source (kBtu/ft ² /yr) | 221 |

Emissions (based on site energy use)

| | |
|---|-----|
| Greenhouse Gas Emissions (MtCO ₂ e/year) | 730 |
|---|-----|

Electric Distribution Utility

PSE&G - Public Service Elec & Gas Co

National Average Comparison

| | |
|---|-------------|
| National Average Site EUI | 83 |
| National Average Source EUI | 172 |
| % Difference from National Average Source EUI | 29% |
| 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 Standards⁶ 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. Natural Gas values in units of volume (e.g. cubic feet) are converted to kBtu with adjustments made for elevation based on Facility zip code.
5. Values represent energy intensity, annualized to a 12-month period.
6. Based on Meeting ASHRAE Standard 62 for ventilation for acceptable indoor air quality, ASHRAE Standard 55 for thermal comfort, and IESNA Lighting Handbook for lighting quality.

ENERGY STAR® Data Checklist for Commercial Buildings

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

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

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

| CRITERION | VALUE AS ENTERED IN PORTFOLIO MANAGER | VERIFICATION QUESTIONS | NOTES | <input checked="" type="checkbox"/> |
|--|---|---|-------|-------------------------------------|
| Building Name | Constable Elementary | Is this the official building name to be displayed in the ENERGY STAR Registry of Labeled Buildings? | | <input type="checkbox"/> |
| Type | K-12 School | Is this an accurate description of the space in question? | | <input type="checkbox"/> |
| Location | 29 Constable Road, Kendall Park, NJ 08824 | Is this address accurate and complete? Correct weather normalization requires an accurate zip code. | | <input type="checkbox"/> |
| Single Structure | Single Facility | Does this SEP represent a single structure? SEPs cannot be submitted for multiple-building campuses (with the exception of acute care or children's hospitals) nor can they be submitted as representing only a portion of a building | | <input type="checkbox"/> |
| Constable Elementary School (K-12 School) | | | | |
| CRITERION | VALUE AS ENTERED IN PORTFOLIO MANAGER | VERIFICATION QUESTIONS | NOTES | <input checked="" type="checkbox"/> |
| Gross Floor Area | 70,973 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"/> |
| Open Weekends? | Yes | 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"/> |
| Number of PCs | 124 (Default) | Is this the number of personal computers in the K12 School? | | <input type="checkbox"/> |
| Number of walk-in refrigeration/freezer units | 1 | Is this the total number of commercial walk-in type freezers and coolers? These units are typically found in storage and receiving areas. | | <input type="checkbox"/> |
| Presence of cooking facilities | Yes | Does this school have a dedicated space in which food is prepared and served to students? If the school has space in which food for students is only kept warm and/or served to students, or has only a galley that is used by teachers and staff then the answer is "no". | | <input type="checkbox"/> |
| Percent Cooled | 100 % | Is this the percentage of the total floor space within the facility that is served by mechanical cooling equipment? | | <input type="checkbox"/> |
| Percent Heated | 100 % | Is this the percentage of the total floor space within the facility that is served by mechanical heating equipment? | | <input type="checkbox"/> |

| | | | |
|---------------------|---------------|--|--------------------------|
| Months | 12 (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: PSE&G - Public Service Elec & Gas Co

| Fuel Type: Electricity | | |
|--|------------|--|
| Meter: Electric (kWh (thousand Watt-hours)) Space(s): Entire Facility | | |
| Start Date | End Date | Energy Use (kWh (thousand Watt-hours)) |
| 04/06/2008 | 05/05/2008 | 73,800.00 |
| 03/06/2008 | 04/05/2008 | 93,600.00 |
| 02/06/2008 | 03/05/2008 | 94,440.00 |
| 01/06/2008 | 02/05/2008 | 98,760.00 |
| 12/06/2007 | 01/05/2008 | 96,000.00 |
| 11/06/2007 | 12/05/2007 | 89,040.00 |
| 10/06/2007 | 11/05/2007 | 71,400.00 |
| 09/06/2007 | 10/05/2007 | 74,880.00 |
| 08/06/2007 | 09/05/2007 | 68,040.00 |
| 07/06/2007 | 08/05/2007 | 77,760.00 |
| 06/06/2007 | 07/05/2007 | 76,440.00 |
| Electric Consumption (kWh (thousand Watt-hours)) | | 914,160.00 |
| Electric Consumption (kBtu) | | 3,119,113.92 |
| Total Electricity Consumption (kBtu) | | 3,119,113.92 |
| Is this the total Electricity consumption at this building including all Electricity meters? | | <input type="checkbox"/> |

| Fuel Type: Natural Gas | | |
|--|------------|---------------------|
| Meter: Gas (therms) Space(s): Entire Facility | | |
| Start Date | End Date | Energy Use (therms) |
| 04/06/2008 | 05/05/2008 | 2,640.00 |
| 03/06/2008 | 04/05/2008 | 5,950.00 |
| 02/06/2008 | 03/05/2008 | 7,440.00 |
| 01/06/2008 | 02/05/2008 | 7,550.00 |
| 12/06/2007 | 01/05/2008 | 9,090.00 |
| 11/06/2007 | 12/05/2007 | 6,710.00 |
| 10/06/2007 | 11/05/2007 | 990.00 |
| 09/06/2007 | 10/05/2007 | 220.00 |
| 08/06/2007 | 09/05/2007 | 110.00 |
| 07/06/2007 | 08/05/2007 | 90.00 |

| | | |
|---|------------|--------------------------|
| 06/06/2007 | 07/05/2007 | 140.00 |
| Gas Consumption (therms) | | 40,930.00 |
| Gas Consumption (kBtu) | | 4,093,000.00 |
| Total Natural Gas Consumption (kBtu) | | 4,093,000.00 |
| Is this the total Natural Gas consumption at this building including all Natural Gas meters? | | <input type="checkbox"/> |

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

Certifying Professional

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

Name: _____ Date: _____

Signature: _____

Signature is required when applying for the ENERGY STAR.

FOR YOUR RECORDS ONLY. DO NOT SUBMIT TO EPA.

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

Facility
Constable Elementary
29 Constable Road
Kendall Park, NJ 08824

Facility Owner
N/A

Primary Contact for this Facility
N/A

General Information

| Constable Elementary | |
|--|--------------|
| Gross Floor Area Excluding Parking: (ft ²) | 70,973 |
| Year Built | 1959 |
| For 12-month Evaluation Period Ending Date: | May 31, 2008 |

Facility Space Use Summary

| Constable Elementary School | |
|---|-------------|
| Space Type | K-12 School |
| Gross Floor Area(ft ²) | 70,973 |
| Open Weekends? | Yes |
| Number of PCs ^d | 124 |
| Number of walk-in refrigeration/freezer units | 1 |
| Presence of cooking facilities | Yes |
| Percent Cooled | 100 |
| Percent Heated | 100 |
| Months ^o | 12 |
| High School? | No |
| School District ^o | N/A |

Energy Performance Comparison

| Performance Metrics | Evaluation Periods | | Comparisons | | |
|---|-------------------------------------|--------------------------------------|---------------|--------|------------------|
| | Current (Ending Date 05/31/2008) | Baseline (Ending Date 05/31/2008) | Rating of 75 | Target | National Average |
| Energy Performance Rating | 23 | 23 | 75 | N/A | 50 |
| Energy Intensity | | | | | |
| Site (kBtu/ft ²) | 107 | 107 | 65 | N/A | 83 |
| Source (kBtu/ft ²) | 221 | 221 | 135 | N/A | 172 |
| Energy Cost | | | | | |
| \$/year | \$ 211,967.20 | \$ 211,967.20 | \$ 129,011.48 | N/A | \$ 164,962.25 |
| \$/ft ² /year | \$ 2.99 | \$ 2.99 | \$ 1.82 | N/A | \$ 2.33 |
| Greenhouse Gas Emissions | | | | | |
| MtCO ₂ e/year | 730 | 730 | 444 | N/A | 568 |
| kgCO ₂ e/ft ² /year | 10 | 10 | 6 | N/A | 8 |

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 Average column presents energy performance data your building would have if your building had an average rating of 50.

Notes:

o - This attribute is optional.

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

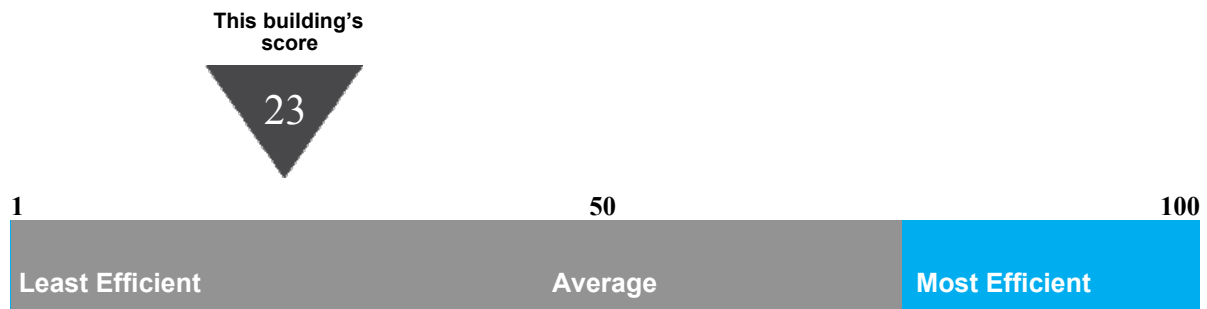
Statement of Energy Performance

2008

Constable Elementary
29 Constable Road
Kendall Park, NJ 08824

Portfolio Manager Building ID: 1819414

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



This building uses 221 kBtu per square foot per year.*

*Based on source energy intensity for the 12 month period ending May 2008

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

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

Date of certification



Lighting Analysis

Constable Elementary School

Appendix E

CEG Project #: 9C08134
Project Name : South Brunswick Schools Energy Audit
Address: 29 Constable Road Kendall Park, NJ 08824
City, State: Kendall Park, NJ 08824

Page 1 of 7
Date 10/28/09
kWh Cost \$0.143

| Fixture Location | Existing Lt Fixtures | | | | | Proposed Lt Fixtures | | | Proposed Ltg Savings | | | | Proposed Ltg Installation Cost | | |
|--|----------------------|-------------|---|------------------------------|--------------------------|----------------------|------------------------------|------------------------------|-----------------------------|------------------------------|-------------------|---------------------------|--------------------------------|--------------------------|--------------------|
| | Usage, Hrs/Yr | Fixt Qty | Lighting Fixture Description | Total Watts - Location | Annual Energy Cost | Fixt Qty | Lighting Fixture Description | Total Watts - Location | Energy Savings, Watts | Energy Savings, kWh/Yr | Savings/Yr, \$ | Simple Payback, Yrs | Unit Cost, Installed | Total Cost, Installed | Rebate Estimate |
| First Floor - Building "A" | | | | | | | | | | | | | | | |
| Existing Classroom | 1620 | 22 | (2)32w T8 Lamps. 1' x 4' Fixture w/Elec. Ballast - 55w | 1210 | \$280.31 | 22 | Existing to Remain | 1210 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Existing Classroom | 1620 | 21 | (2)32w T8 Lamps. 1' x 4' Fixture w/Elec. Ballast - 55w | 1155 | \$267.57 | 21 | Existing to Remain | 1155 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Waiting Area-Alteration | 800 | 4 | (3)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 87w | 348 | \$39.81 | 4 | Existing to Remain | 348 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Nurse's Office- Alteration | 1450 | 4 | (3)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 87w | 348 | \$72.16 | 4 | Existing to Remain | 348 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Nurse's Office Cot Area- Alteration | 500 | 7 | (3)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 87w | 609 | \$43.54 | 7 | Existing to Remain | 609 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Toilet Room-Alteration | 300 | 1 | (3)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 87w | 87 | \$3.73 | 1 | Existing to Remain | 87 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Main Office-Alteration | 2000 | 10 | (3)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 87w | 870 | \$248.82 | 10 | Existing to Remain | 870 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Staff Toilet Room- Alteration | 300 | 1 | (3)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 87w | 87 | \$3.73 | 1 | Existing to Remain | 87 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Copy Area-Alteration | 2000 | 3 | (3)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 87w | 261 | \$74.65 | 3 | Existing to Remain | 261 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Principal's Office-Alteration | 1500 | 6 | (3)32w T8 Lamps. 1' x 4' Fixture w/ Elect. Ballast - 87w | 522 | \$111.97 | 6 | Existing to Remain | 522 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Conference Room- Alteration | 1000 | 6 | (3)32w T8 Lamps. 1' x 4' Fixture w/ Elect. Ballast - 87w | 522 | \$74.65 | 6 | Existing to Remain | 522 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Existing Classroom | 1620 | 18 | (3)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 87w | 1566 | \$362.78 | 18 | Existing to Remain | 1566 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Existing Classroom | 1620 | 18 | (3)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 87w | 1566 | \$362.78 | 18 | Existing to Remain | 1566 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Existing Classroom | 1620 | 18 | (3)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 87w | 1566 | \$362.78 | 18 | Existing to Remain | 1566 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |

| | Existing Lt Fixtures | | | | | Proposed Lt Fixtures | | | Proposed Ltg Savings | | | | Proposed Ltg Installation Cost | | |
|--|----------------------|----------|--|------------------------|--------------------|----------------------|------------------------------|------------------------|-----------------------|------------------------|----------------|---------------------|--------------------------------|-----------------------|-----------------|
| Fixture Location | Usage, Hrs/Yr | Fixt Qty | Lighting Fixture Description | Total Watts - Location | Annual Energy Cost | Fixt Qty | Lighting Fixture Description | Total Watts - Location | Energy Savings, Watts | Energy Savings, kWh/Yr | Savings/Yr, \$ | Simple Payback, Yrs | Unit Cost, Installed | Total Cost, Installed | Rebate Estimate |
| Existing Classroom | 1620 | 18 | (3)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 87w | 1566 | \$362.78 | 18 | Existing to Remain | 1566 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Existing Classroom | 1620 | 18 | (3)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 87w | 1566 | \$362.78 | 18 | Existing to Remain | 1566 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Existing Classroom | 1620 | 18 | (3)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 87w | 1566 | \$362.78 | 18 | Existing to Remain | 1566 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Existing Classroom | 1620 | 27 | (2)32w T8 Lamps. 1' x 4' Fixture w/Elec. Ballast - 55w | 1485 | \$344.02 | 27 | Existing to Remain | 1485 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Existing Classroom | 1620 | 25 | (2)32w T8 Lamps. 1' x 4' Fixture w/Elec. Ballast - 55w | 1375 | \$318.53 | 25 | Existing to Remain | 1375 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Existing Classroom | 1620 | 21 | (2)32w T8 Lamps. 1' x 4' Fixture w/Elec. Ballast - 55w | 1155 | \$267.57 | 21 | Existing to Remain | 1155 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Existing Classroom | 1620 | 23 | (2)32w T8 Lamps. 1' x 4' Fixture w/Elec. Ballast - 55w | 1265 | \$293.05 | 23 | Existing to Remain | 1265 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Ass't. Principal's Office- Alteration | 1800 | 6 | (3)32w T8 Lamps. 1' x 4' Fixture w/ Elect. Ballast - 87w | 522 | \$134.36 | 6 | Existing to Remain | 522 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Faculty Room-Alteration | 600 | 10 | (4)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 108w | 1080 | \$92.66 | 10 | Existing to Remain | 1080 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Corridors to North Exit | 1800 | 9 | (3)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 87w | 783 | \$201.54 | 9 | Existing to Remain | 783 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Corridors to North Exit | 1800 | 8 | (2)32w T8 Lamps. 1' x 4' Fixture w/Elec. Ballast - 55w | 440 | \$113.26 | 8 | Existing to Remain | 440 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Staff Toilet Room- Alteration | 550 | 1 | (2)32w T8 Lamps. 1' x 4' Fixture w/Elec. Ballast - 55w | 55 | \$4.33 | 1 | Existing to Remain | 55 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Small Group Insruction- Alteration | 1620 | 4 | (4)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 108w | 432 | \$100.08 | 4 | Existing to Remain | 432 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Media Center-Alteration | 1800 | 53 | (2)32w T8 Lamps. Pendant Fixture w/Elec. Ballast - 55w | 2915 | \$750.32 | 53 | Existing to Remain | 2915 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Work Room-Alteration | 800 | 4 | (4)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 108w | 432 | \$49.42 | 4 | Existing to Remain | 432 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Child Study Team Office- Alteration | 1450 | 2 | (4)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 108w | 216 | \$44.79 | 2 | Existing to Remain | 216 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Child Study Team Waiting room-Alteration | 1450 | 2 | (4)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 108w | 216 | \$44.79 | 2 | Existing to Remain | 216 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Child Study Team Office- Alteration | 1450 | 2 | (4)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 108w | 216 | \$44.79 | 2 | Existing to Remain | 216 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |

| | Existing Lt Fixtures | | | | | Proposed Lt Fixtures | | | Proposed Ltg Savings | | | | Proposed Ltg Installation Cost | | |
|-------------------------------|----------------------|----------|--|------------------------|--------------------|----------------------|------------------------------|------------------------|-----------------------|------------------------|----------------|---------------------|--------------------------------|-----------------------|-----------------|
| Fixture Location | Usage, Hrs/Yr | Fixt Qty | Lighting Fixture Description | Total Watts - Location | Annual Energy Cost | Fixt Qty | Lighting Fixture Description | Total Watts - Location | Energy Savings, Watts | Energy Savings, kWh/Yr | Savings/Yr, \$ | Simple Payback, Yrs | Unit Cost, Installed | Total Cost, Installed | Rebate Estimate |
| Conference Room- Alteration | 1000 | 4 | (4)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 108w | 432 | \$61.78 | 4 | Existing to Remain | 432 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Existing Girls Toilet | 300 | 2 | (3)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 87w | 174 | \$7.46 | 2 | Existing to Remain | 174 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Existing Boys Toilet | 300 | 2 | (3)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 87w | 174 | \$7.46 | 2 | Existing to Remain | 174 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Existing Storage | 500 | 2 | (3)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 87w | 174 | \$12.44 | 2 | Existing to Remain | 174 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Existing Classroom | 1620 | 9 | (4)32w T8 Lamps. Recessed Fixture w/Elec. Ballast - 108w | 972 | \$225.17 | 9 | Existing to Remain | 972 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Existing Classroom | 1620 | 9 | (4)32w T8 Lamps. Recessed Fixture w/Elec. Ballast - 108w | 972 | \$225.17 | 9 | Existing to Remain | 972 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Existing Classroom | 1620 | 9 | (4)32w T8 Lamps. Recessed Fixture w/Elec. Ballast - 108w | 972 | \$225.17 | 9 | Existing to Remain | 972 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Existing Classroom | 1620 | 9 | (4)32w T8 Lamps. Recessed Fixture w/Elec. Ballast - 108w | 972 | \$225.17 | 9 | Existing to Remain | 972 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Corridor for G701 to G704 | 1800 | 8 | (3)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 87w | 696 | \$179.15 | 8 | Existing to Remain | 696 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Corridor & Lobby | 1800 | 4 | (2)32w T8 Lamps. 1' x 4' Fixture w/Elec. Ballast - 55w | 220 | \$56.63 | 4 | Existing to Remain | 220 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Existing Mechanical Room | 900 | 2 | (1)20w Spiral FLE Lamp. Fixture - 20w | 40 | \$5.15 | 2 | Existing to Remain | 40 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Existing Boys Toilet | 300 | 3 | (2)32w T8 Lamps. 1' x 4' Fixture w/Elec. Ballast - 55w | 165 | \$7.08 | 3 | Existing to Remain | 165 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Existing Girls Toilet | 300 | 2 | (2)32w T8 Lamps. 1' x 4' Fixture w/Elec. Ballast - 55w | 110 | \$4.72 | 2 | Existing to Remain | 110 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Corridor-Alteration | 1800 | 6 | (4)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 108w | 648 | \$166.80 | 6 | Existing to Remain | 648 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| General Classroom- Alteration | 1620 | 9 | (3)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 87w | 783 | \$181.39 | 9 | Existing to Remain | 783 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| General Classroom- Alteration | 1620 | 9 | (3)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 87w | 783 | \$181.39 | 9 | Existing to Remain | 783 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| General Classroom- Alteration | 1620 | 9 | (3)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 87w | 783 | \$181.39 | 9 | Existing to Remain | 783 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| General Classroom- Alteration | 1620 | 9 | (3)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 87w | 783 | \$181.39 | 9 | Existing to Remain | 783 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |

| | Existing Lt Fixtures | | | | | Proposed Lt Fixtures | | | Proposed Ltg Savings | | | | Proposed Ltg Installation Cost | | |
|--------------------------------------|----------------------|----------|--|------------------------|--------------------|----------------------|------------------------------|------------------------|-----------------------|------------------------|----------------|---------------------|--------------------------------|-----------------------|-----------------|
| Fixture Location | Usage, Hrs/Yr | Fixt Qty | Lighting Fixture Description | Total Watts - Location | Annual Energy Cost | Fixt Qty | Lighting Fixture Description | Total Watts - Location | Energy Savings, Watts | Energy Savings, kWh/Yr | Savings/Yr, \$ | Simple Payback, Yrs | Unit Cost, Installed | Total Cost, Installed | Rebate Estimate |
| Existing Conference Room | 1000 | 4 | (2)32w T8 Lamps. 1' x 4' Fixture w/Elec. Ballast - 55w | 220 | \$31.46 | 4 | Existing to Remain | 220 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Existing Conference Room | 1000 | 4 | (2)32w T8 Lamps. 1' x 4' Fixture w/Elec. Ballast - 55w | 220 | \$31.46 | 4 | Existing to Remain | 220 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Existing Classroom | 1620 | 9 | (4)32w T8 Lamps. Recessed Fixture w/Elec. Ballast - 108w | 972 | \$225.17 | 9 | Existing to Remain | 972 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Existing Small Group Classroom | 1620 | 12 | (3)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 87w | 1044 | \$241.85 | 12 | Existing to Remain | 1044 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Existing Faculty Lounge | 600 | 4 | (3)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 87w | 348 | \$29.86 | 4 | Existing to Remain | 348 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Existing Faculty Lounge | 600 | 1 | (3)13w CF Lamps. Surface Square' Fixture - 128w | 128 | \$10.98 | 1 | Existing to Remain | 128 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Existing Storage | 500 | 2 | (3)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 87w | 174 | \$12.44 | 2 | Existing to Remain | 174 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Existing Toilet-Faculty | 300 | 1 | (1)32w T8 Lamps. 6" x 4' Fixture w/Elec. Ballast - 25w | 25 | \$1.07 | 1 | Existing to Remain | 25 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Existing Classroom | 1620 | 9 | (4)32w T8 Lamps. Recessed Fixture w/Elec. Ballast - 108w | 972 | \$225.17 | 9 | Existing to Remain | 972 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Existing Boys Toilet | 300 | 2 | (2)32w T8 Lamps. 1' x 4' Fixture w/Elec. Ballast - 55w | 110 | \$4.72 | 2 | Existing to Remain | 110 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Existing Girls Toilet | 300 | 2 | (2)32w T8 Lamps. 1' x 4' Fixture w/Elec. Ballast - 55w | 110 | \$4.72 | 2 | Existing to Remain | 110 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Faculty Toilet | 550 | 1 | (1)32w T8 Lamps. 6" x 4' Fixture w/Elec. Ballast - 25w | 25 | \$1.97 | 1 | Existing to Remain | 25 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Mechanical Room | 900 | 2 | (1)20w Spiral FLE Lamp. Fixture - 20w | 40 | \$5.15 | 2 | Existing to Remain | 40 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Existing Corridor | 1800 | 8 | (3)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 87w | 696 | \$179.15 | 8 | Existing to Remain | 696 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Existing Corridor | 1800 | 2 | (2)32w T8 Lamps. 1' x 4' Fixture w/Elec. Ballast - 55w | 110 | \$28.31 | 2 | Existing to Remain | 110 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| First Floor - Building "A" Summary | | 560 | | 43049 | \$9,370 | 560 | | 43049 | 0 | 0 | \$0 | | | \$0 | \$0 |
| | | | | | | | | | | | | | | | |
| First Floor - Building "B" | | | | | | | | | | | | | | | |
| New Short Corridor into Building "B" | 1800 | 4 | (3)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 87w | 348 | \$89.58 | 4 | 0 | 0 | 348 | 626 | \$89.58 | 0.0 | \$0.00 | \$0.00 | \$0.00 |
| New East/ West Long Corridor | 1800 | 19 | (4)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 87w | 2052 | \$528.18 | 19 | 0 | 0 | 2052 | 3,694 | \$528.18 | 0.0 | \$0.00 | \$0.00 | \$0.00 |

| | Existing Lt Fixtures | | | | | Proposed Lt Fixtures | | | Proposed Ltg Savings | | | | Proposed Ltg Installation Cost | | |
|--|----------------------|-------------|--|------------------------------|--------------------------|----------------------|------------------------------|------------------------------|-----------------------------|------------------------------|-------------------|---------------------------|--------------------------------|--------------------------|--------------------|
| Fixture Location | Usage, Hrs/Yr | Fixt Qty | Lighting Fixture Description | Total Watts - Location | Annual Energy Cost | Fixt Qty | Lighting Fixture Description | Total Watts - Location | Energy Savings, Watts | Energy Savings, kWh/Yr | Savings/Yr, \$ | Simple Payback, Yrs | Unit Cost, Installed | Total Cost, Installed | Rebate Estimate |
| New General Classroom | 1620 | 12 | (3)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 87w | 1044 | \$241.85 | 12 | 0 | 0 | 1044 | 1,691 | \$241.85 | 0.0 | \$0.00 | \$0.00 | \$0.00 |
| New General Classroom | 1620 | 12 | (3)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 87w | 1044 | \$241.85 | 12 | Existing to Remain | 1044 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| New General Classroom | 1620 | 2 | (1)32w Triple Tube CF Lamp. Hi Hat Fixture - 32w | 64 | \$14.83 | 2 | Existing to Remain | 64 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| New General Classroom | 1620 | 12 | (3)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 87w | 1044 | \$241.85 | 12 | Existing to Remain | 1044 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| New General Classroom | 1620 | 2 | (1)32w Triple Tube CF Lamp. Hi Hat Fixture - 32w | 64 | \$14.83 | 2 | Existing to Remain | 64 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| New General Classroom | 1620 | 12 | (3)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 87w | 1044 | \$241.85 | 12 | Existing to Remain | 1044 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| New General Classroom | 1620 | 2 | (1)32w Triple Tube CF Lamp. Hi Hat Fixture - 32w | 64 | \$14.83 | 2 | Existing to Remain | 64 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| New General Classroom | 1620 | 12 | (3)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 87w | 1044 | \$241.85 | 12 | Existing to Remain | 1044 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| New General Classroom | 1620 | 2 | (1)32w Triple Tube CF Lamp. Hi Hat Fixture - 32w | 64 | \$14.83 | 2 | Existing to Remain | 64 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| New North/ South Corridor | 1800 | 10 | (4)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 108w | 1080 | \$277.99 | 10 | Existing to Remain | 1080 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| New North/ South Corridor | 1800 | 4 | (1)32w Triple Tube CF Lamp. Hi Hat Fixture - 32w | 128 | \$32.95 | 4 | Existing to Remain | 128 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| New Art Classroom | 1500 | 28 | (2)32w T8 Lamps. Pendant Fixture w/Elec. Ballast - 55w | 1540 | \$330.33 | 28 | Existing to Remain | 1540 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| New Storage Room | 500 | 2 | (2)32w T8 Lamps. 1' x 4' Fixture w/Elec. Ballast - 55w | 110 | \$7.87 | 2 | Existing to Remain | 110 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| New Storage Room | 500 | 2 | (2)32w T8 Lamps. 1' x 4' Fixture w/Elec. Ballast - 55w | 110 | \$7.87 | 2 | Existing to Remain | 110 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| New Boys Room | 300 | 2 | (2)32w T8 Lamps. 1' x 4' Fixture w/Elec. Ballast - 55w | 110 | \$4.72 | 2 | Existing to Remain | 110 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| New Boys Room | 300 | 1 | (3)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 87w | 87 | \$3.73 | 1 | Existing to Remain | 87 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| New Girls Room | 300 | 2 | (2)32w T8 Lamps. 1' x 4' Fixture w/Elec. Ballast - 55w | 110 | \$4.72 | 2 | Existing to Remain | 110 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| New Girls Room | 300 | 1 | (3)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 87w | 87 | \$3.73 | 1 | Existing to Remain | 87 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| New Janitor's Closet | 900 | 1 | (3)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 87w | 87 | \$11.20 | 1 | Existing to Remain | 87 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| New Music Classroom | 1500 | 19 | (3)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 87w | 1653 | \$354.57 | 19 | Existing to Remain | 1653 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| New Music Classroom - Relocated Practice Room | 800 | 4 | (2)32w T8 Lamps. 1' x 4' Fixture w/Elec. Ballast - 55w | 220 | \$25.17 | 4 | Existing to Remain | 220 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |

| | Existing Lt Fixtures | | | | | Proposed Lt Fixtures | | | Proposed Ltg Savings | | | | Proposed Ltg Installation Cost | | |
|--------------------------------|----------------------|----------|--|------------------------|--------------------|----------------------|------------------------------|------------------------|-----------------------|------------------------|----------------|---------------------|--------------------------------|-----------------------|-----------------|
| Fixture Location | Usage, Hrs/Yr | Fixt Qty | Lighting Fixture Description | Total Watts - Location | Annual Energy Cost | Fixt Qty | Lighting Fixture Description | Total Watts - Location | Energy Savings, Watts | Energy Savings, kWh/Yr | Savings/Yr, \$ | Simple Payback, Yrs | Unit Cost, Installed | Total Cost, Installed | Rebate Estimate |
| New Kitchen - Toilet Room | 300 | 1 | (1)32w T8 Lamps. 6" x 4' Fixture w/Elec. Ballast - 25w | 25 | \$1.07 | 1 | Existing to Remain | 25 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| New Kitchen - Lockers | 300 | 1 | (1)32w T8 Lamps. 6" x 4' Fixture w/Elec. Ballast - 25w | 25 | \$1.07 | 1 | Existing to Remain | 25 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| New Kitchen - Janitor's Closet | 900 | 1 | (1)32w T8 Lamps. 6" x 4' Fixture w/Elec. Ballast - 25w | 25 | \$3.22 | 1 | Existing to Remain | 25 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| New Kitchen - Office | 600 | 1 | (3)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 87w | 87 | \$7.46 | 1 | Existing to Remain | 87 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| New Kitchen - Work Area | 900 | 17 | (3)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 87w | 1479 | \$190.35 | 17 | Existing to Remain | 1479 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| New Kitchen - Serving Area | 900 | 5 | (1)32w Triple Tube CF Lamp. Hi Hat Fixture - 32w | 160 | \$20.59 | 5 | Existing to Remain | 160 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| New Kitchen - Storage Room | 300 | 2 | (2)32w T8 Lamps. 1' x 4' Fixture w/Elec. Ballast - 55w | 110 | \$4.72 | 2 | Existing to Remain | 110 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| New Stage - Cafeteria | 800 | 26 | (3)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 87w | 2262 | \$258.77 | 26 | Existing to Remain | 2262 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| New Stage - Ststorage | 300 | 4 | (2)32w T8 Lamps. 1' x 4' Fixture w/Elec. Ballast - 55w | 220 | \$9.44 | 4 | Existing to Remain | 220 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| Existing Corridor | 1800 | 6 | (3)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 87w | 522 | \$134.36 | 6 | Existing to Remain | 522 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| New Corridor | 1800 | 7 | (4)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 108w | 756 | \$194.59 | 7 | Existing to Remain | 756 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| New Corridor | 1800 | 84 | (1)32w Triple Tube CF Lamp. Hi Hat Fixture - 32w | 2688 | \$691.89 | 84 | Existing to Remain | 2688 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| General Classroom - Alteration | 1620 | 9 | (4)32w T8 Lamps. Recessed Fixture w/Elec. Ballast - 108w | 972 | \$225.17 | 9 | Existing to Remain | 972 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| General Classroom - Alteration | 1620 | 9 | (4)32w T8 Lamps. Recessed Fixture w/Elec. Ballast - 108w | 972 | \$225.17 | 9 | Existing to Remain | 972 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| New General Classroom | 1620 | 12 | (3)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 87w | 1044 | \$241.85 | 12 | Existing to Remain | 1044 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| New General Classroom | 1620 | 1 | (4)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 108w | 108 | \$25.02 | 1 | Existing to Remain | 108 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| New General Classroom | 1620 | 2 | (1)32w Triple Tube CF Lamp. Hi Hat Fixture - 32w | 64 | \$14.83 | 2 | Existing to Remain | 64 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| New General Classroom | 1620 | 12 | (3)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 87w | 1044 | \$241.85 | 12 | Existing to Remain | 1044 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| New General Classroom | 1620 | 1 | (4)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 108w | 108 | \$25.02 | 1 | Existing to Remain | 108 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| New General Classroom | 1620 | 2 | (1)32w Triple Tube CF Lamp. Hi Hat Fixture - 32w | 64 | \$14.83 | 2 | Existing to Remain | 64 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |

| | Existing Lt Fixtures | | | | | Proposed Lt Fixtures | | | Proposed Ltg Savings | | | | Proposed Ltg Installation Cost | | |
|--------------------------------------|----------------------|----------|--|------------------------|--------------------|----------------------|------------------------------|------------------------|-----------------------|------------------------|----------------|---------------------|--------------------------------|-----------------------|-----------------|
| Fixture Location | Usage, Hrs/Yr | Fixt Qty | Lighting Fixture Description | Total Watts - Location | Annual Energy Cost | Fixt Qty | Lighting Fixture Description | Total Watts - Location | Energy Savings, Watts | Energy Savings, kWh/Yr | Savings/Yr, \$ | Simple Payback, Yrs | Unit Cost, Installed | Total Cost, Installed | Rebate Estimate |
| New Storage Room | 500 | 5 | (2)32w T8 Lamps. 1' x 4' Fixture w/Elec. Ballast - 55w | 275 | \$19.66 | 5 | Existing to Remain | 275 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| New Small Group Instruction | 1620 | 8 | (3)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 87w | 696 | \$161.24 | 8 | Existing to Remain | 696 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| New Small Group Instruction | 1620 | 8 | (3)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 87w | 696 | \$161.24 | 8 | Existing to Remain | 696 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| New Storage Room | 500 | 4 | (2)32w T8 Lamps. 1' x 4' Fixture w/Elec. Ballast - 55w | 220 | \$15.73 | 4 | Existing to Remain | 220 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| New Gym/ Stage Exit - North Corridor | 4000 | 3 | (4)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 108w | 324 | \$185.33 | 3 | Existing to Remain | 324 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| New Mechanical Room | 900 | 8 | (3)32w T8 Lamps. Industrial Fixture w/ Wire Guard and Elect. Ballast - 87w | 696 | \$89.58 | 8 | Existing to Remain | 696 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| New Custodial Office | 1900 | 3 | (3)32w T8 Lamps. Industrial Fixture w/ Wire Guard and Elect. Ballast - 87w | 261 | \$70.91 | 3 | Existing to Remain | 261 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| New Maintenance Office | 2000 | 2 | (3)32w T8 Lamps. 2' x 4' Fixture w/Elec. Ballast - 87w | 174 | \$49.76 | 2 | Existing to Remain | 174 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| New Gym Storage | 900 | 5 | (3)32w T8 Lamps. Industrial Fixture w/ Wire Guard and Elect. Ballast - 87w | 435 | \$55.98 | 5 | Existing to Remain | 435 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| New Gym Lighting | 900 | 4 | (8)42w T42 Lamps. Hi-hat Fixture - 318w | 1272 | \$163.71 | 4 | Existing to Remain | 1272 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| New Gym Auxillary Lights | 300 | 6 | (1)300 Inc. Lamps. Hi-hat Fixture - 300w | 1800 | \$77.22 | 6 | Existing to Remain | 1800 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| New Stage Apron Downlights | 500 | 6 | (1)300 Inc. Lamps. Hi-hat Fixture - 300w | 1800 | \$128.70 | 6 | Existing to Remain | 1800 | 0 | 0 | \$0.00 | | \$0.00 | \$0.00 | \$0.00 |
| First Floor - Building "B" Summary | | 432 | | 34582 | \$6,662 | 432 | | 31138 | 3444 | 6011 | \$860 | 0.0 | | \$0 | \$0 |
| | | | | | | | | | | | | | | | |
| | Totals: | 992 | | 77631 | \$16,031 | 992 | | 74187 | 3444 | 6011 | \$860 | 0.0 | | \$0 | \$0 |
| COMMENTS: | | | | | | | | | | | | | | | |
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|--|------------------------|---|---------------------|------------------------|--------------|------------------------------|----------------|---------------|----------------------|
| Project Name: Constable Elementary School | | | | | | | | | |
| Location: Kendall Park, NJ | | | | | | | | | |
| Description: Photovoltaic System 95% Financing - 20 year | | | | | | | | | |
| Simple Payback Analysis | | | | | | | | | |
| | | Photovoltaic System 95% Financing - 20 year | | | | | | | |
| Total Construction Cost | | \$2,038,950 | | | | | | | |
| Annual kWh Production | | 353,542 | | | | | | | |
| Annual Energy Cost Reduction | | \$50,556 | | | | | | | |
| Annual SREC Revenue | | \$123,740 | | | | | | | |
| First Cost Premium | | \$2,038,950 | | | | | | | |
| Simple Payback: | | 11.70 | | | | | | Years | |
| Life Cycle Cost Analysis | | | | | | | | | |
| Analysis Period (years): | | 25 | | | | Financing %: | | 95% | |
| Financing Term (mths): | | 240 | | | | Maintenance Escalation Rate: | | 3.0% | |
| Average Energy Cost (\$/kWh) | | \$0.143 | | | | Energy Cost Escalation Rate: | | 3.0% | |
| Financing Rate: | | 7.00% | | | | SREC Value (\$/kWh) | | \$0.350 | |
| Period | Additional Cash Outlay | Energy kWh Production | Energy Cost Savings | Additional Maint Costs | SREC Revenue | Interest Expense | Loan Principal | Net Cash Flow | Cumulative Cash Flow |
| 0 | \$101,948 | 0 | 0 | 0 | \$0 | 0 | 0 | (101,948) | 0 |
| 1 | \$0 | 353,542 | \$50,556 | \$0 | \$123,740 | \$134,130 | \$46,080 | (\$5,915) | (\$107,862) |
| 2 | \$0 | 351,774 | \$52,073 | \$0 | \$123,121 | \$130,799 | \$49,411 | (\$5,017) | (\$112,879) |
| 3 | \$0 | 350,015 | \$53,635 | \$0 | \$122,505 | \$127,227 | \$52,983 | (\$4,070) | (\$116,949) |
| 4 | \$0 | 348,265 | \$55,244 | \$0 | \$121,893 | \$123,397 | \$56,814 | (\$3,074) | (\$120,022) |
| 5 | \$0 | 346,524 | \$56,902 | \$3,569 | \$121,283 | \$119,290 | \$60,921 | (\$5,595) | (\$125,617) |
| 6 | \$0 | 344,791 | \$58,609 | \$3,551 | \$120,677 | \$114,886 | \$65,325 | (\$4,476) | (\$130,094) |
| 7 | \$0 | 343,067 | \$60,367 | \$3,534 | \$120,074 | \$110,164 | \$70,047 | (\$3,304) | (\$133,397) |
| 8 | \$0 | 341,352 | \$62,178 | \$3,516 | \$119,473 | \$105,100 | \$75,111 | (\$2,075) | (\$135,473) |
| 9 | \$0 | 339,645 | \$64,043 | \$3,498 | \$118,876 | \$99,670 | \$80,540 | (\$790) | (\$136,263) |
| 10 | \$0 | 337,947 | \$65,965 | \$3,481 | \$118,281 | \$93,848 | \$86,363 | \$555 | (\$135,708) |
| 11 | \$0 | 336,257 | \$67,944 | \$3,463 | \$117,690 | \$87,605 | \$92,606 | \$1,959 | (\$133,749) |
| 12 | \$0 | 334,576 | \$69,982 | \$3,446 | \$117,102 | \$80,910 | \$99,300 | \$3,427 | (\$130,322) |
| 13 | \$0 | 332,903 | \$72,081 | \$3,429 | \$116,516 | \$73,732 | \$106,479 | \$4,958 | (\$125,364) |
| 14 | \$0 | 331,238 | \$74,244 | \$3,412 | \$115,933 | \$66,035 | \$114,176 | \$6,555 | (\$118,809) |
| 15 | \$0 | 329,582 | \$76,471 | \$3,395 | \$115,354 | \$57,781 | \$122,430 | \$8,220 | (\$110,590) |
| 16 | \$0 | 327,934 | \$78,765 | \$3,378 | \$114,777 | \$48,930 | \$131,280 | \$9,954 | (\$100,636) |
| 17 | \$0 | 326,295 | \$81,128 | \$3,361 | \$114,203 | \$39,440 | \$140,771 | \$11,760 | (\$88,876) |
| 18 | \$0 | 324,663 | \$83,562 | \$3,344 | \$113,632 | \$29,264 | \$150,947 | \$13,639 | (\$75,237) |
| 19 | \$0 | 323,040 | \$86,069 | \$3,327 | \$113,064 | \$18,352 | \$161,859 | \$15,595 | (\$59,642) |
| 20 | \$0 | 321,425 | \$88,651 | \$3,311 | \$112,499 | \$6,651 | \$173,560 | \$17,628 | (\$42,013) |
| 21 | \$0 | 319,818 | \$91,311 | \$3,294 | \$111,936 | \$5,639 | \$159,555 | \$34,759 | (\$7,254) |
| 22 | \$0 | 318,218 | \$94,050 | \$3,278 | \$111,376 | \$3,859 | \$131,299 | \$66,991 | \$59,737 |
| 23 | \$0 | 316,627 | \$96,871 | \$3,261 | \$110,820 | \$0 | \$0 | \$204,430 | \$264,166 |
| 24 | \$0 | 315,044 | \$99,778 | \$3,245 | \$110,265 | \$0 | \$0 | \$206,798 | \$470,964 |
| 25 | \$0 | 313,469 | \$102,771 | \$3,229 | \$109,714 | \$0 | \$0 | \$209,256 | \$680,221 |
| Totals: | | 6,744,835 | \$1,358,471 | \$55,015 | \$2,360,692 | \$1,667,212 | \$1,937,002 | \$2,227,856 | (\$771,669) |
| Net Present Value (NPV) | | | | | | | \$42,022 | | |
| Internal Rate of Return (IRR) | | | | | | | 8.6% | | |

| | | | | | | | |
|--|------------------------|---------------------------------------|---------------------|------------------------------|--------------|---------------|----------------------|
| Project Name: Constable Elementary School | | | | | | | |
| Location: Kendall Park, NJ | | | | | | | |
| Description: Photovoltaic System - Direct Purchase | | | | | | | |
| Simple Payback Analysis | | | | | | | |
| | | Photovoltaic System - Direct Purchase | | | | | |
| Total Construction Cost | | \$2,038,950 | | | | | |
| Annual kWh Production | | 353,542 | | | | | |
| Annual Energy Cost Reduction | | \$50,556 | | | | | |
| Annual SREC Revenue | | \$123,740 | | | | | |
| First Cost Premium | | \$2,038,950 | | | | | |
| Simple Payback: | | 11.70 | | | | | Years |
| Life Cycle Cost Analysis | | | | | | | |
| Analysis Period (years): | | 25 | | Financing %: | | 0% | |
| Financing Term (mths): | | 0 | | Maintenance Escalation Rate: | | 3.0% | |
| Average Energy Cost (\$/kWh) | | \$0.143 | | Energy Cost Escalation Rate: | | 3.0% | |
| Financing Rate: | | 0.00% | | SREC Value (\$/kWh) | | \$0.350 | |
| Period | Additional Cash Outlay | Energy kWh Production | Energy Cost Savings | Additional Maint Costs | SREC Revenue | Net Cash Flow | Cumulative Cash Flow |
| 0 | \$2,038,950 | 0 | 0 | 0 | \$0 | (2,038,950) | 0 |
| 1 | \$0 | 353,542 | \$50,556 | \$0 | \$123,740 | \$174,296 | (\$1,864,654) |
| 2 | \$0 | 351,774 | \$52,073 | \$0 | \$123,121 | \$175,194 | (\$1,689,460) |
| 3 | \$0 | 350,015 | \$53,635 | \$0 | \$122,505 | \$176,141 | (\$1,513,319) |
| 4 | \$0 | 348,265 | \$55,244 | \$0 | \$121,893 | \$177,137 | (\$1,336,182) |
| 5 | \$0 | 346,524 | \$56,902 | \$3,569 | \$121,283 | \$174,616 | (\$1,161,566) |
| 6 | \$0 | 344,791 | \$58,609 | \$3,551 | \$120,677 | \$175,734 | (\$985,832) |
| 7 | \$0 | 343,067 | \$60,367 | \$3,534 | \$120,074 | \$176,907 | (\$808,925) |
| 8 | \$0 | 341,352 | \$62,178 | \$3,516 | \$119,473 | \$178,135 | (\$630,790) |
| 9 | \$0 | 339,645 | \$64,043 | \$3,498 | \$118,876 | \$179,421 | (\$451,369) |
| 10 | \$0 | 337,947 | \$65,965 | \$3,481 | \$118,281 | \$180,765 | (\$270,604) |
| 11 | \$0 | 336,257 | \$67,944 | \$3,463 | \$117,690 | \$182,170 | (\$88,433) |
| 12 | \$0 | 334,576 | \$69,982 | \$3,446 | \$117,102 | \$183,637 | \$95,204 |
| 13 | \$0 | 332,903 | \$72,081 | \$3,429 | \$116,516 | \$185,169 | \$280,373 |
| 14 | \$0 | 331,238 | \$74,244 | \$3,412 | \$115,933 | \$186,766 | \$467,138 |
| 15 | \$0 | 329,582 | \$76,471 | \$3,395 | \$115,354 | \$188,430 | \$655,568 |
| 16 | \$0 | 327,934 | \$78,765 | \$3,378 | \$114,777 | \$190,165 | \$845,733 |
| 17 | \$0 | 326,295 | \$81,128 | \$3,361 | \$114,203 | \$191,971 | \$1,037,704 |
| 18 | \$0 | 324,663 | \$83,562 | \$3,344 | \$113,632 | \$193,850 | \$1,231,554 |
| 19 | \$0 | 323,040 | \$86,069 | \$3,327 | \$113,064 | \$195,806 | \$1,427,359 |
| 20 | \$0 | 321,425 | \$88,651 | \$3,311 | \$112,499 | \$197,839 | \$1,625,198 |
| 21 | \$1 | 319,818 | \$91,311 | \$3,294 | \$111,936 | \$199,953 | \$1,825,151 |
| 22 | \$2 | 318,218 | \$94,050 | \$3,278 | \$111,376 | \$202,149 | \$2,027,300 |
| 23 | \$3 | 316,627 | \$96,871 | \$3,261 | \$110,820 | \$204,430 | \$2,231,729 |
| 24 | \$4 | 315,044 | \$99,778 | \$3,245 | \$110,265 | \$206,798 | \$2,438,528 |
| 25 | \$5 | 313,469 | \$102,771 | \$3,229 | \$109,714 | \$209,256 | \$2,647,784 |
| Totals: | | 6,744,835 | \$1,358,471 | \$55,015 | \$2,360,692 | \$4,686,734 | \$3,664,148 |
| Net Present Value (NPV) | | | | | | \$2,647,809 | |
| Internal Rate of Return (IRR) | | | | | | 7.5% | |

| Building | Usable Roof Area (sq ft) | Panel | Qty | Panel Sq Ft | Panel Total Sq Ft | Total KW | Total Annual kWh | Panel Weight (33 lbs) | W/SQFT |
|----------------------|--------------------------|-----------------|-----|-------------|-------------------|----------|------------------|-----------------------|--------|
| Constable Elementary | 14,490 | Sunpower SPR230 | 985 | 14.7 | 14,484 | 226.55 | 353,542 | 32,505 | 15.64 |



| | | | | | | |
|-----------------|-----------------------|-----|-------------|------------|-----------|--|
| | .= Proposed PV Layout | | | | | |
| Roof Area | 9,600 | 90% | 8,640 S.F. | 587 Panels | 135.01 Kw | |
| Roof Area | 3,500 | 90% | 3,150 S.F. | 214 Panels | 49.22 Kw | |
| Roof Area | 3,000 | 90% | 2,700 S.F. | 184 Panels | 42.32 Kw | |
| Total Roof Area | | | 14,490 S.F. | 985 Panels | 226.55 Kw | |

Notes:

1. Estimated kWh based on 4.68 hours full output per day per 365 day year. Actual kWh will vary day to day.

ENERGY CONSUMPTION SUMMARY

By CAE

| | Elect Cons. (kWh) | Gas Cons. (kBtu) | % of Total Building Energy | Total Building Energy (kBtu/yr) | Total Source Energy* (kBtu/yr) |
|-----------------------------|-------------------------|------------------------|----------------------------------|---------------------------------------|--------------------------------------|
| Existing Syatem | | | | | |
| Primary heating | | | | | |
| Primary heating | 2,878 | 4,095,037 | 55.6 % | 4,104,859 | 4,340,035 |
| Other Htg Accessories | 34,989 | | 1.6 % | 119,416 | 358,285 |
| Heating Subtotal | 37,866 | 4,095,037 | 57.2 % | 4,224,275 | 4,698,319 |
| Primary cooling | | | | | |
| Cooling Compressor | 129,634 | | 6.0 % | 442,441 | 1,327,455 |
| Tower/Cond Fans | 17,775 | | 0.8 % | 60,667 | 182,019 |
| Condenser Pump | | | 0.0 % | 0 | 0 |
| Other Clg Accessories | 3,843 | | 0.2 % | 13,115 | 39,349 |
| Cooling Subtotal.... | 151,252 | | 7.0 % | 516,223 | 1,548,823 |
| Auxiliary | | | | | |
| Supply Fans | 253,202 | | 11.7 % | 864,177 | 2,592,790 |
| Pumps | 22,544 | | 1.0 % | 76,943 | 230,852 |
| Stand-alone Base Utilities | 11,863 | | 0.6 % | 40,487 | 121,472 |
| Aux Subtotal.... | 287,608 | | 13.3 % | 981,607 | 2,945,114 |
| Lighting | | | | | |
| Lighting | 286,081 | | 13.2 % | 976,396 | 2,929,480 |
| Receptacle | | | | | |
| Receptacles | 202,432 | | 9.4 % | 690,900 | 2,072,908 |
| Cogeneration | | | | | |
| Cogeneration | | | 0.0 % | 0 | 0 |
| Totals | | | | | |
| Totals** | 965,240 | 4,095,037 | 100.0 % | 7,389,401 | 14,194,645 |

* Note: Resource Utilization factors are included in the Total Source Energy value.

** Note: This report can display a maximum of 7 utilities. If additional utilities are used, they will be included in the total.

Project Name: Constable Elementary School
Dataset Name: P:\PROJECTS 2009\BS09-002 SOUTH BRUNS SCHOOLS LGEA\TRACE\CONSTABLE
ELEMENTARY\CONSTABLE.TRC

TRACE® 700 v6.2 calculated at 03:38 PM on 12/08/2009
Alternative - 1 Energy Consumption Summary report page 1

ENERGY CONSUMPTION SUMMARY

By CAE

| | Elect Cons. (kWh) | Gas Cons. (kBtu) | % of Total Building Energy | Total Building Energy (kBtu/yr) | Total Source Energy* (kBtu/yr) |
|-----------------------------|-------------------------|------------------------|----------------------------------|---------------------------------------|--------------------------------------|
| ECM # 1 Boiler | | | | | |
| Primary heating | | | | | |
| Primary heating | 2,878 | 3,990,099 | 55.0 % | 3,999,921 | 4,229,573 |
| Other Htg Accessories | 33,491 | | 1.6 % | 114,304 | 342,946 |
| Heating Subtotal | 36,369 | 3,990,099 | 56.6 % | 4,114,225 | 4,572,519 |
| Primary cooling | | | | | |
| Cooling Compressor | 129,634 | | 6.1 % | 442,441 | 1,327,455 |
| Tower/Cond Fans | 17,775 | | 0.8 % | 60,667 | 182,019 |
| Condenser Pump | | | 0.0 % | 0 | 0 |
| Other Clg Accessories | 3,843 | | 0.2 % | 13,115 | 39,349 |
| Cooling Subtotal.... | 151,252 | | 7.1 % | 516,223 | 1,548,823 |
| Auxiliary | | | | | |
| Supply Fans | 253,202 | | 11.9 % | 864,177 | 2,592,790 |
| Pumps | 19,778 | | 0.9 % | 67,501 | 202,523 |
| Stand-alone Base Utilities | 11,863 | | 0.6 % | 40,487 | 121,472 |
| Aux Subtotal.... | 284,842 | | 13.4 % | 972,164 | 2,916,785 |
| Lighting | | | | | |
| Lighting | 286,081 | | 13.4 % | 976,396 | 2,929,480 |
| Receptacle | | | | | |
| Receptacles | 202,432 | | 9.5 % | 690,900 | 2,072,908 |
| Cogeneration | | | | | |
| Cogeneration | | | 0.0 % | 0 | 0 |
| Totals | | | | | |
| Totals** | 960,976 | 3,990,099 | 100.0 % | 7,269,908 | 14,040,516 |

* Note: Resource Utilization factors are included in the Total Source Energy value.

** Note: This report can display a maximum of 7 utilities. If additional utilities are used, they will be included in the total.

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Alternative - 2 Energy Consumption Summary report page 1

ENERGY CONSUMPTION SUMMARY

By CAE

| | Elect Cons. (kWh) | Gas Cons. (kBtu) | % of Total Building Energy | Total Building Energy (kBtu/yr) | Total Source Energy* (kBtu/yr) |
|-----------------------------|-------------------------|------------------------|----------------------------------|---------------------------------------|--------------------------------------|
| ECM # 2 Boiler | | | | | |
| Primary heating | | | | | |
| Primary heating | 2,878 | 4,067,425 | 55.5 % | 4,077,247 | 4,310,969 |
| Other Htg Accessories | 33,263 | | 1.6 % | 113,525 | 340,609 |
| Heating Subtotal | 36,140 | 4,067,425 | 57.0 % | 4,190,772 | 4,651,578 |
| Primary cooling | | | | | |
| Cooling Compressor | 129,634 | | 6.0 % | 442,441 | 1,327,455 |
| Tower/Cond Fans | 17,775 | | 0.8 % | 60,667 | 182,019 |
| Condenser Pump | | | 0.0 % | 0 | 0 |
| Other Clg Accessories | 3,843 | | 0.2 % | 13,115 | 39,349 |
| Cooling Subtotal.... | 151,252 | | 7.0 % | 516,223 | 1,548,823 |
| Auxiliary | | | | | |
| Supply Fans | 253,202 | | 11.8 % | 864,177 | 2,592,790 |
| Pumps | 19,833 | | 0.9 % | 67,690 | 203,089 |
| Stand-alone Base Utilities | 11,863 | | 0.6 % | 40,487 | 121,472 |
| Aux Subtotal.... | 284,897 | | 13.2 % | 972,353 | 2,917,351 |
| Lighting | | | | | |
| Lighting | 286,081 | | 13.3 % | 976,396 | 2,929,480 |
| Receptacle | | | | | |
| Receptacles | 202,432 | | 9.4 % | 690,900 | 2,072,908 |
| Cogeneration | | | | | |
| Cogeneration | | | 0.0 % | 0 | 0 |
| Totals | | | | | |
| Totals** | 960,803 | 4,067,425 | 100.0 % | 7,346,644 | 14,120,141 |

* Note: Resource Utilization factors are included in the Total Source Energy value.

** Note: This report can display a maximum of 7 utilities. If additional utilities are used, they will be included in the total.

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Dataset Name: P:\PROJECTS 2009\BS09-002 SOUTH BRUNS SCHOOLS LGEA\TRACE\CONSTABLE
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Alternative - 3 Energy Consumption Summary report page 1

ENERGY CONSUMPTION SUMMARY

By CAE

| | Elect Cons. (kWh) | Gas Cons. (kBtu) | % of Total Building Energy | Total Building Energy (kBtu/yr) | Total Source Energy* (kBtu/yr) |
|-------------------------------|-------------------------|------------------------|----------------------------------|---------------------------------------|--------------------------------------|
| ECM # 3 Variable Speed | | | | | |
| Primary heating | | | | | |
| Primary heating | 2,878 | 4,095,037 | 56.1 % | 4,104,859 | 4,340,035 |
| Other Htg Accessories | 34,989 | | 1.6 % | 119,416 | 358,285 |
| Heating Subtotal | 37,866 | 4,095,037 | 57.7 % | 4,224,275 | 4,698,319 |
| Primary cooling | | | | | |
| Cooling Compressor | 129,634 | | 6.0 % | 442,441 | 1,327,455 |
| Tower/Cond Fans | 17,775 | | 0.8 % | 60,667 | 182,019 |
| Condenser Pump | | | 0.0 % | 0 | 0 |
| Other Clg Accessories | 3,843 | | 0.2 % | 13,115 | 39,349 |
| Cooling Subtotal.... | 151,252 | | 7.1 % | 516,223 | 1,548,823 |
| Auxiliary | | | | | |
| Supply Fans | 253,202 | | 11.8 % | 864,177 | 2,592,790 |
| Pumps | 2,993 | | 0.1 % | 10,214 | 30,645 |
| Stand-alone Base Utilities | 11,863 | | 0.6 % | 40,487 | 121,472 |
| Aux Subtotal.... | 268,057 | | 12.5 % | 914,877 | 2,744,907 |
| Lighting | | | | | |
| Lighting | 286,081 | | 13.3 % | 976,396 | 2,929,480 |
| Receptacle | | | | | |
| Receptacles | 202,432 | | 9.4 % | 690,900 | 2,072,908 |
| Cogeneration | | | | | |
| Cogeneration | | | 0.0 % | 0 | 0 |
| Totals | | | | | |
| Totals** | 945,689 | 4,095,037 | 100.0 % | 7,322,672 | 13,994,438 |

* Note: Resource Utilization factors are included in the Total Source Energy value.

** Note: This report can display a maximum of 7 utilities. If additional utilities are used, they will be included in the total.

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