ENERGY AUDIT – FINAL REPORT

WINSLOW TOWNSHIP – UTILITIES BUILDING

700 CHEWS LANDING ROAD
SICKLERVILLE, NJ 08081
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I. EXECUTIVE SUMMARY

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

Winslow Township
Utilities Building
700 Chews Landing Road
Sicklerville, NJ 08081

Municipal Contact Person: Robert J. Castagna, Purchasing Agent

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	$ 3,815
Natural Gas	$ 706
Total	$ 4,521

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 ± 20% until detailed engineering, specifications, and hard proposals are obtained.

Table 1
Energy Conservation Measures (ECM's)

ECM NO.	DESCRIPTION	COST	ANNUAL SAVINGS	SIMPLE PAYBACK (YEARS)	SIMPLE RETURN ON INVESTMENT
1	Install Programmable Thermostats	$200	$83	2.4	43.6 %
2	Lighting Upgrade – Lighting Controls	$385	$159	2.4	43.4 %

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

ECM NO.	DESCRIPTION	ANNUAL UTILITY REDUCTION		
		ELECT DEMAND (KW)	ELECT CONSUMPTION (KWH)	NAT GAS (THERMS)
1	Install Programmable Thermostats	-	1.0	0.15
2	Lighting Upgrade – Lighting Controls	-	934	-

Recommendations:

Concord Engineering Group recommends the implementation of all ECM's that provide a calculated simple payback at or under seven (7) years. The potential energy and cost savings from these ECM's are economically justifiable. The following Energy Conservation Measures are recommended for the Winslow Township, Utilities Building:

- **ECM #1:** Install Programmable Thermostats
- **ECM #2:** Interior Lighting Controls – Occupancy Sensors

II. INTRODUCTION

This comprehensive energy audit covers the 2,000 square foot Utilities Building that includes; an operation center, basement, utility room, locker / toilet rooms, administrative offices, meeting room, and storage.

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 ($BTU/ft^2/yr$) 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 municipality 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 to 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. 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

Table 3 and Figure 1 represent the electrical usage for the surveyed facility from April-08 to March-09. Atlantic City Electric provides electricity to the facility under the MGS / Monthly General Service Rate Schedule. 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.

Table 4 and Figure 2 show the natural gas energy usage for the surveyed Annex Building from April-08 to March-09. South Jersey Gas supplies the natural gas and delivers the fuel to the burner at the facility under the GSG / General Service, firm transportation rate. Below is the average unit cost for the utilities at this facility.

Description	Average
Electricity	17¢/kWh
Natural Gas	$2.17/Therm

Table 3
Electricity Billing Data

Utilities Building Monthly General Service

Provider	Month	Start Date	End Date	Account	Utility Type	Billing Days	Peak Demand	Units	Load Factor (%)	Total Consumption	Units	Supply Charge	Delivery Charge	Total $
Atlantic City Electric	April	3/28/2008	4/28/2008	0220 5429 9858	Electric	31	10.42	kw	19.10%	1481	kwh	$ 129.93	$ 109.01	$ 238.94
Atlantic City Electric	May	4/28/2008	5/28/2008	0220 5429 9858	Electric	30	12.4	kw	18.37%	1640	kwh	$ 143.88	$ 120.03	$ 263.91
Atlantic City Electric	June	5/28/2008	6/26/2008	0220 5429 9858	Electric	29	12.13	kw	24.67%	2083	kwh	$ 262.30	$ 119.97	$ 382.27
Atlantic City Electric	July	6/26/2008	7/28/2008	0220 5429 9858	Electric	32	12.02	kw	30.86%	2849	kwh	$ 371.29	$ 158.00	$ 529.29
Atlantic City Electric	August	7/28/2008	8/26/2008	0220 5429 9858	Electric	29	12.02	kw	26.92%	2252	kwh	$ 293.49	$ 125.47	$ 418.96
Atlantic City Electric	September	8/26/2008	9/25/2008	0220 5429 9858	Electric	30	12.24	kw	25.38%	2237	kwh	$ 291.54	$ 124.83	$ 416.37
Atlantic City Electric	October	9/25/2008	10/28/2008	0220 5429 9858	Electric	33	12.05	kw	19.65%	1875	kwh	$ 201.66	$ 105.55	$ 307.21
Atlantic City Electric	November	10/28/2008	11/25/2008	0220 5429 9858	Electric	28	10.7	kw	18.71%	1345	kwh	$ 139.18	$ 77.22	$ 216.40
Atlantic City Electric	December	11/25/2008	12/26/2008	0220 5429 9858	Electric	31	8.98	kw	22.02%	1471	kwh	$ 152.23	$ 84.49	$ 236.72
Atlantic City Electric	January	12/26/2008	1/27/2009	0220 5429 9858	Electric	32	10.57	kw	25.46%	2067	kwh	$ 240.46	$ 100.32	$ 340.78
Atlantic City Electric	February	1/27/2009	2/26/2009	0220 5429 9858	Electric	30	10.62	kw	19.62%	1500	kwh	$ 155.55	$ 85.88	$ 241.43
Atlantic City Electric	March	2/26/2009	3/27/2009	0220 5429 9858	Electric	29	10.62	kw	18.70%	1382	kwh	$ 143.31	$ 79.35	$ 222.66
						Max Peak:	12.4	kw	**Total:**	22,182	kwh		**Total:**	$ 3,814.94
													Avg. Cost per kwh:	$ 0.17

Figure 1
Electricity Usage Profile

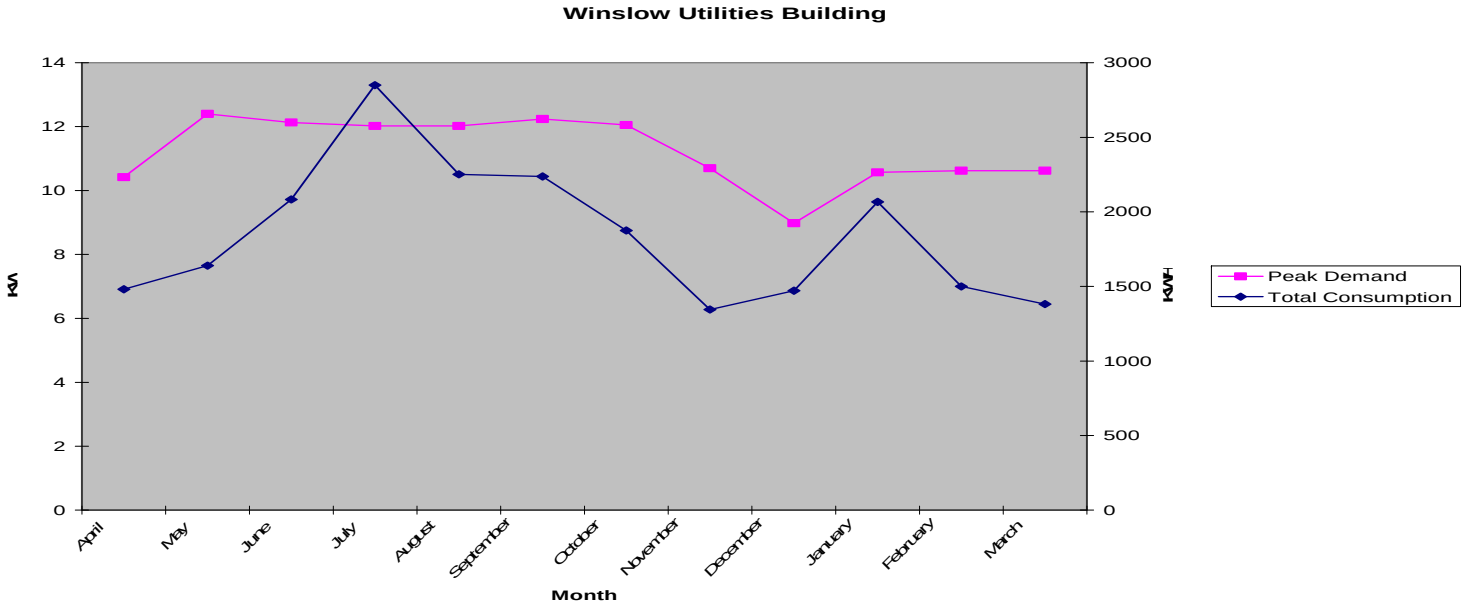
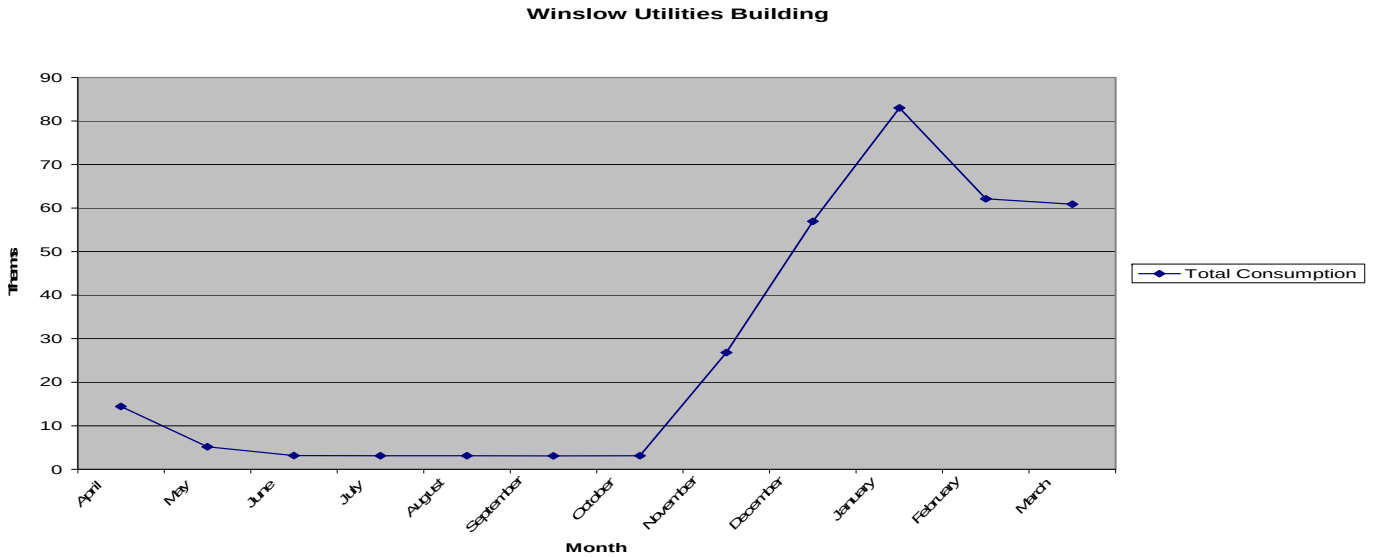


Table 4
Natural Gas Billing Data

Utilites Building

Provider	Month	Start Date	End Date	Account	Utility Type	Billing Days	Consumption	Units	Total $
South Jersey Gas	April	3/27/2008	4/25/2008	2 1 9 42 7284 0 9	Gas	29	14.43	therms	$ 37.72
South Jersey Gas	May	4/25/2008	5/28/2008	2 1 9 42 7284 0 9	Gas	33	5.16	therms	$ 27.62
South Jersey Gas	June	5/28/2008	6/25/2008	2 1 9 42 7284 0 9	Gas	28	3.12	therms	$ 21.73
South Jersey Gas	July	6/25/2008	7/28/2008	2 1 9 42 7284 0 9	Gas	33	3.11	therms	$ 24.84
South Jersey Gas	August	7/28/2008	8/26/2008	2 1 9 42 7284 0 9	Gas	29	3.10	therms	$ 22.32
South Jersey Gas	September	8/26/2008	9/24/2008	2 1 9 42 7284 0 9	Gas	29	3.08	therms	$ 22.30
South Jersey Gas	October	9/24/2008	10/27/2008	2 1 9 42 7284 0 9	Gas	33	3.11	therms	$ 24.84
South Jersey Gas	November	10/27/2008	11/24/2008	2 1 9 42 7284 0 9	Gas	28	26.83	therms	$ 54.65
South Jersey Gas	December	11/24/2008	12/26/2008	2 1 9 42 7284 0 9	Gas	32	56.98	therms	$ 105.84
South Jersey Gas	January	12/26/2008	1/26/2009	2 1 9 42 7284 0 9	Gas	31	83.04	therms	$ 143.40
South Jersey Gas	February	1/26/2009	2/25/2009	2 1 9 42 7284 0 9	Gas	30	62.16	therms	$ 111.46
South Jersey Gas	March	2/25/2009	3/27/2009	2 1 9 42 7284 0 9	Gas	30	60.89	therms	$ 109.56
						12 Month Total:	325.01	therms	$ 706.28
						Average Cost per therm:	$ 2.17		

Figure 2
Natural Gas Usage Profile



B. Energy Use Intensity (EUI)

Energy Use Intensity (EUI) is a measure of a building's energy utilization per square foot of building. This calculation is completed by converting all utility usage (gas, electric, oil) consumed by a building over a specified time period, typically 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 among buildings of similar type. The EUI for this facility is calculated as follows:

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

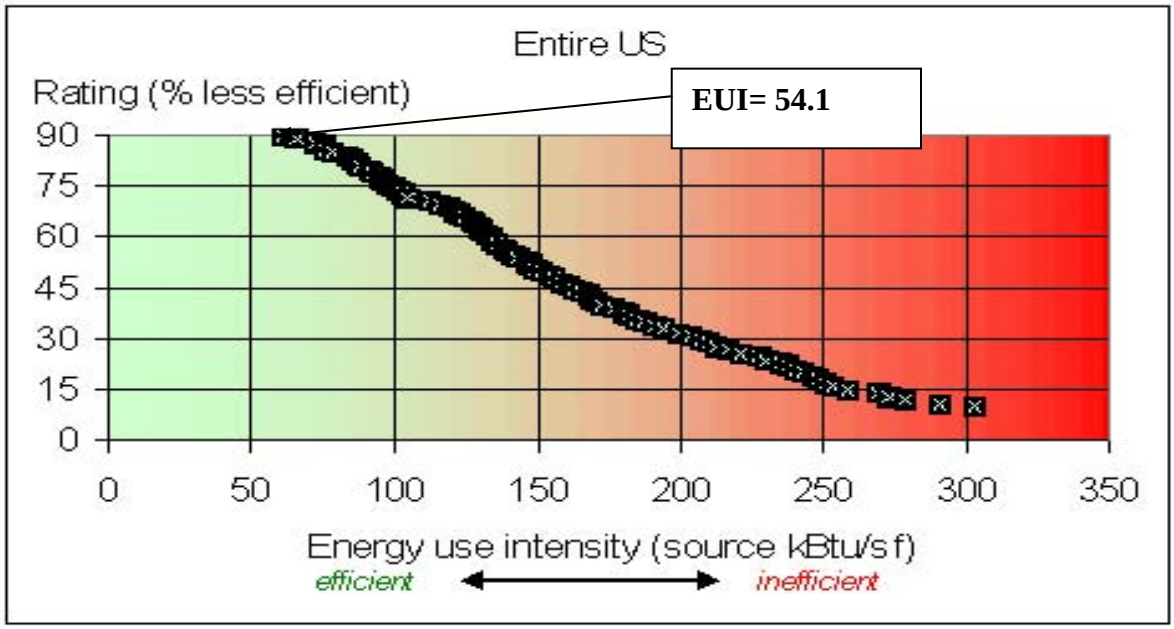
Electric = ((22,182 kWh) * (1000 W/kW) * (3.414 Btu/h / 1 W))/ (1000 Btu/h / 1 kBtu/h)
= 75,729 kBtu/h

Gas = ((325.01 therms) * (100,000 Btu/h / 1 W)) / (1000 Btu/h / 1 kBtu/h) = 32,501 kBtu/h

$$\text{Building EUI} = \frac{(75{,}729 \text{ kBTU / h} + 32{,}501 \text{ kBtu / h})}{2{,}000 \text{ SF}} = \frac{108{,}230 \text{ kBtu / h}}{2{,}000 \text{ SF}} = 54.1 \text{ kBtu/SF}$$

Utilities Building EUI = 54.1 kBtu/SF

Figure 3
Energy Use Intensity Distributions – Offices



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 priorites 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 municipality in order to allow access to monitor their yearly energy usage as it compares to facilities of similar type. The following is the user name and password for this account:

User Name:	winslowtownship
Password:	rcastagna

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
Winslow Utilities Bldg.	N/A	N/A

Specific building types are detailed on the ENERGY STAR website. Non-typical buildings are covered by an "Other" category. The Utilities Building falls under this "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 then 10% of a building is classified as "Other." In addition, office buildings with less than 5000 S.F. cannot generate an Energy Performance Rating. Refer to Appendix G for detailed energy benchmarking report entitled "STATEMENT OF ENERGY PERFORMANCE."

Due to the square footage of the Utilities Building being less than 5000 S.F. of floor space, an Energy Performance rating could not be calculated. Despite this, the Portfolio Manager also calculates the building Energy Use Intensity (EUI).

The 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 Winslow Township 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 in the absence of the Energy Star Performance Rating.

The EUI distribution, Figure 3, is specific for Office Buildings. The Utilities Dept. facility has an EUI of 54.1 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.

V. FACILITY DESCRIPTION

Facility Description

The Winslow Township Municipal Utilities Operation Building is located at 700 Chews Landing Road in Sicklerville, NJ. The building is a one-story, wood frame structure having a full basement. Basement walls are monolithic poured concrete as is the basement floor. Exterior walls are comprised of 2 x 6 stud framing and R-19 batt insulation. Siding includes 5/8" thick sheathing and clapboard siding. The roof is insulated with R-30, fiberglass batt insulation and all widows and doors are insulating type. Windows are double-pane with vinyl clad wood framing as manufactured by Andersen.

The building was constructed in 2005 and is occupied Monday through Friday from 7AM to 5PM. It is unoccupied Saturday and Sunday with the exception of a few hours at random times.

Heating System

The heating system consists of a gas-fired furnace manufactured by Rheem. The furnace is model 90RJ07EFS01, has 75,000 BTU/HR input and is 92% efficient. Supply and return air ducts extend from the furnace across the basement ceiling with branch ducts serving first floor outlets and return grilles. The furnace is controlled by a standard, heating and cooling digital thermostat.

Domestic Hot Water

Domestic hot water is produced by a Bradford White 75 gallon, gas-fired, hot water heater model MIITW75T6BN12 with 76,000 BTU/HR natural gas input, vent fan and PVC venting.

The water heater provides domestic hot water for the Men's and Women's locker rooms, break room sink and mop sink in the Janitor's Closet. A clothes washer and utility sink in the basement are also served from the water heater.

Cooling System

Cooling for the Utilities building is generated by use of the heating furnace and an add-on cooling coil along with a remote, air cooled condensing unit. The condensing unit is a Rheem model 10AJB48A01 and has a capacity of 4 tons of refrigeration. The three components of the system operate on an "as-needed" basis on a call for cooling by the remote mounted space thermostat

Lighting

All general spaces including; corridor, offices, lunch room, locker/bath rooms, file room and stairway are lit via 2-foot by 2-foot lay-in fixtures containing T8 lamps and electronic ballasts. Standard switching is utilized and there are no other types of lighting controls present.

The janitor's closet is lit via vanity fixture containing T8 lamps and electronic ballast. Standard switching is utilized and there are not other types of lighting controls present.

The lower level stairway is lit via wall mounted fixture containing T8 lamps and electronic ballast (same as janitor's closet). Standard switching is utilized and there are no other types of lighting controls present.

The basement is lit via 1-foot by 8-foot industrial channel fixtures containing T8 lamps and electronic ballast. Standard switching is utilized and there are no other types of lighting controls present.

Exit signs throughout the building contain LED lamps and consume an estimated 3 watts per sign.

The exterior lighting is wall mounted fixtures containing compact fluorescent lamps.

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 D for the Major Equipment List for this facility.

VII. ENERGY CONSERVATION MEASURES

ECM #1: Programmable Thermostat

Description:

There is one standard, manual wall thermostat for the 4 ton furnace which provides heating and cooling. These aged, indoor temperature controls are inaccurate due to temperature drift, age, and not having been re-calibrated. These units also do not have unoccupied setback features.

New programmable thermostats are available that utilize programming schedules for occupied and unoccupied times and can be set to vary space temperature at these respective times. In addition, the programmable thermostats can be used in conjunction with a motion sensor. When the space is not occupied the equipment can operate at the unoccupied setpoint. Once the space becomes occupied the motion sensor sends a signal to the thermostat to raise the temperature of the space to the occupied setpoint. This control system approach is ideal for facilities with intermittent occupancy.

This energy conservation measure would replace the various HVAC unit thermostat with a programmable 7-day thermostat with night time setback control. The recommended thermostat setpoints for heating and cooling are as follows:

Occupied heating = 70° F
Occupied cooling = 74° F
Unoccupied heating = 60° F
Unoccupied cooling = 85° F

CEG recommends replacement of the existing remote thermostats with Honeywell RTH7500D 7-day programmable thermostat or equivalent.

Energy Savings Calculations:

The energy savings of a 7-day programmable thermostat was calculated by using Energy Star Life Cycle Cost Estimate software for qualified programmable thermostats. The referenced calculator can be found at www.energystar.gov.

Total ECM Lifetime Energy Savings = 15 Years (Est.) x $83 / yr. = $1,245

Energy Savings Summary:

ECM #1 - ENERGY SAVINGS SUMMARY	
Installation Cost ($):	**$200**
NJ Smart Start Equipment Incentive ($):	**($0)**
Maintenance Savings ($):	**($0)**
Net Installation Cost ($):	**$200**
Total Energy Savings ($ / yr):	**$83**
Estimated ECM Lifetime (yrs):	**15**
Simple Lifetime Energy Savings ($):	**$1,245**
Simple Payback (yrs):	**2.4**
Simple Return on Investment:	**43.6 %**

ECM #2: Lighting Upgrade – Install Lighting Controls

Description:

In some areas the lighting is left on unnecessarily. There has been a belief that it is better to keep the lights on rather than to continuously switch them on and off. The on/off dilemma was studied and it was determined that the best option is to turn the lights off whenever possible. Although this practice reduces the lamp life, the energy savings far outweigh the lamp replacement costs.

Lighting controls are available in many forms. Lighting controls can be as simplistic as an additional switch. Time-clocks are often used which allows the user to set an on/off schedule. Time-clocks range from a dial clock with on/off indicators to a small box the size of a thermostat with user programs for on/off schedule in a digital format. Occupancy sensors detect motion and will switch the lights on when the room is occupied. They can either be mounted in place of the current wall switch, or they can be mounted on the ceiling to cover large areas. Lastly, photocells are a lighting control that sense light levels and will turn the lights off when there is adequate daylight. These are mostly used outside, but they are becoming much more popular in energy-efficient office designs as well.

To determine an estimated savings for lighting controls, we used ASHRAE 90.1-2004 (NJ Energy Code). Appendix G states that occupancy sensors have a 10% power adjustment factor for daytime occupancies for buildings over 5,000 SF. CEG recommends the installation of dual technology occupancy sensors in all private offices, conference rooms, mechanical rooms, storage rooms, file rooms, etc.

CEG would recommend wall switches for individual rooms, ceiling mount sensors for large office areas or restrooms, and fixture mount box sensors for some applications as manufactured by Sensorswitch, Watt Stopper, etc.

Energy Savings Calculations:

From Appendix E of this report, we calculated the lighting power density (Watts/ft^2) of the existing facility to be 1.69 Watts/SF. Ten percent of this value is the resultant energy savings due to installation of occupancy sensors:

Savings = 10% x 1.69 Watts/SF x 2953 SF x 1,872 hrs/yr.

= 934 kWh/yr. x $0.17/kWh

Annual Savings = $159 / yr

Installation cost per dual-technology sensor is $75/unit.

The SmartStart Buildings® incentive is $20 per control which equates to an installed cost of $55/unit. Total number of rooms to be retrofitted is 7 (2953 SF).

Total cost to install sensors is $55 x 7 units = $385.

Total ECM Lifetime Energy Savings = 15 Years (Est.) x $159 / yr. = $2,385

Energy Savings Summary:

ECM #2 - ENERGY SAVINGS SUMMARY	
Installation Cost ($):	**$525**
NJ Smart Start Equipment Incentive ($):	**($140)**
Maintenance Savings ($):	**$0**
Net Installation Cost ($):	**$385**
Total Energy Savings ($ / yr):	**$159**
Estimated ECM Lifetime (yrs):	**15**
Simple Lifetime Energy Savings ($):	**$2,385**
Simple Payback (yrs):	**2.4**
Simple Return on Investment:	**43.4 %**

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 Winslow Township Annex Building, and concluded that there is potential for solar 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). 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 predominantly south or south western pitched roof exposure is required for a PV system to adequately produce the required kilowatt hours of electricity to justify the cost. Due to the pitched roof areas facing east and west, the extensive tree shading, and the additional shading from the water tower, it is our opinion that a roof mounted system is not plausible for a PV system on the Utilities Building. A depiction of the building and pitched roof direction, and the adjacent areas, are shown in Appendix F.

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 Winslow Township 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. Winslow Township 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. Refer to Section IV, Figures 1 and 2 included within this report to reference the respective electricity and natural gas usage load profile for April 2008 through March 2009.

Electricity:

Section IV, Figure 1 demonstrates a typical cooling profile, (April –October), complimenting the heating load (November – March). It is evident that there is a reduction in the consumption from October to December 2008 but the load profile indicates a jump in consumption December through February. The Summer-time load profile is typical for an air conditioning load with some expected increased consumption June-August. The Base-load shaping is important because a flat consumption profile will yield more competitive energy procurement pricing. The demand for electricity is increased during the summer season because of the call for electricity from air conditioners. Air conditioning is provided by a central system.

Natural Gas:

Section IV, Figure 2 demonstrates a typical heating load (November –March), and a very complimentary cooling load (April –October). Consequently there is a clear separation between summer and winter loads consistent with energy commodity prices traded on the New York Mercantile Exchange. Heating loads carry a much higher average cost because of the higher demand for natural gas during the winter heating period. The demand for natural gas is increased during the heating season because of the call for natural gas for heating. This building is heated by natural gas.

Tariff Analysis:

Electricity:

The Utilities Building receives electrical service from Atlantic City Electric on a MGS (Monthly General Service) and (BGS) Basic General Service rate.

MGS:

Available at any point of Company's system where facilities of adequate character and capacity exist for the entire electric service requirements of any customer delivered at one point and metered on at or compensated to the voltage of delivery. This schedule is not available to

residential customers. This service has the following charges: Delivery Service Charge, Customer Charge, Single Phase Charge, Three Phase Charge, Distribution Demand Charge, Reactive Demand Charge, Distribution Rates, Non-Utility Generation Charge, Societal Benefits Charge, Regulatory Assets Charge, Transition Bond Charge, Market Transition Charge Tax, System Control Charge, CIEP Standby Charge, Transition Enhancement Charge, Basic Generation Service Charge and Regional Greenhouse Gas Initiative Recovery Charge.

BGS:

Since the passage and implementation of the Electric Discount and Competition Act (EDECA) in 1999, there have been many changes brought about by deregulation of the electric energy industry in New Jersey. Since that time, customers in New Jersey have been able to choose their electric supplier. Customers who do not choose to switch to a Third Party Supplier (TPS), or who leave a TPS to return to their Electric Delivery Company are supplied with Basic Generation Service (BGS). BGS is the default electric supply service provided by Atlantic City Electric. The customer can elect to have the Commodity Charge serviced through the utility or by a Third Party Supplier (TPS).

While may be on a typical rate structure with the local utility some variations in price do suggest that they be investigated further. In particular, CEG believes that this facility could see improvement in summer times electric costs. Winslow should consider aggregating this electric load with its other accounts for optimum costs.

Natural Gas:

The Utilities Building receives natural gas service through South Jersey Gas Company (SJG) on a BGSS (Basic Gas Supply Service) rate class, when not receiving commodity by a Third Party Supplier. This tariff is designed to cover SJG's cost of gas applicable to customers who purchased gas from SJG. The company earns no profit from BGSS. BGSS consists of two (2) pricing mechanisms:

1. Periodic BGSS pricing is applicable to residential customers and commercial customers who consume less than 5000 therms annually.

2. Monthly BGSS pricing is applicable to commercial and industrial customers who consume at least 5000 therms annually.

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, and the customer will receive replacement service from the utility which carries an extremely high penalty cost of service.

Imbalances can 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, under delivery can occur, jeopardizing economics and scheduling.

From review of the information provided, this facility is utilizing the services of a Third Party Supplier (TPS), Woodruff Energy. Comparing Winslow's contracted natural gas costs to average market based costs. CEG believes that Winslow can improve its natural gas costs by over 43%. CEG recommends the use of an energy advisor while contracting with a Third Party Supplier.

Recommendations:

CEG recommends a global approach that will be consistent with all facilities within the Township. CEG's primary observation is seen in the electricity costs. The "Price to Compare" (comparing the utility price) per kWh (kWh) for all buildings is $12.71 / kWh, (kWh, kilowatt hour is the common unit of electric measure). Energy commodities are among the most volatile of all commodities, however at this point and time, energy is extremely competitive. The Township 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 (April – March 2009) and current electric rates, savings of over $27,000 per year could be realized (Note: Savings were calculated using Winslow's Average Annual Consumption of 855,185 kWh and a variance of $.0321//kWh utilizing a fixed one-year commodity contract). CEG recommends aggregating the entire electric load to gain the most optimal energy costs. CEG also recommends advisement for alternative sourcing and supply of energy on a "managed approach".

CEG's secondary recommendation coincides with the natural gas costs. CEG recognized the natural gas cost could be improved as compared to current market prices. Based on the current market Winslow is paying approximately $4.12 / dth (per unit of measure) above market in the South Jersey Gas service territory or over $13,000 / year in savings. CEG recommends further advisement on these prices. Winslow should also consider procuring energy (natural gas) on its own. CEG recommends alternative sourcing strategies.

CEG also recommends that Winslow Township 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 are currently available. Through its meeting with the Local Distribution Company (LDC), the Township will learn more about the competitive supply process and can acquire a list of approved Third Party Suppliers from the New Jersey Board of Public Utilities website at www.nj.gov/bpu. They 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 special attention to credit mechanisms, imbalances, balancing charges and commodity charges when meeting with their utility representative. In addition, Winslow 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 the Winslow Township 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 par 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.

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

Electric Cost Summary

Winslow Township
Utilities Building
ATLANTIC CITY
ELECTRIC
Acct.No:0220 5429 9858

Appendix A

Month	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Sep-08	Oct-08	Nov-08	Dec-08	Jan-09	Feb-09	Mar-09	Total
Last Meter Read Date	3/28/2008	4/28/2008	5/28/2008	6/26/2008	7/28/2008	8/26/2008	9/25/2008	10/28/2008	11/25/2008	12/26/2008	1/27/2009	2/26/2009	3/28/2009
Current Meter Read Date	4/28/2008	5/28/2008	6/26/2008	7/28/2008	8/26/2008	9/25/2008	10/28/2008	11/25/2008	12/26/2008	1/27/2009	2/26/2009	3/27/2009	3/17/2009
Billing Days	31	30	29	32	29	30	33	28	31	32	30	29	364
KWH	1,481	1,640	2,083	2,849	2,252	2,237	1,875	1,345	1,471	2,067	1,500	1,382	22,182
KW	10	12	12	12	12	12	12	11	9	11	11	11	12
Monthly Load Factor	19%	18%	25%	31%	27%	25%	20%	19%	22%	25%	20%	19%	22%
Electric Delivery, $	$109	$120	$120	$158	$125	$125	$106	$77	$84	$100	$86	$79	$1,290
Delivery $/kwh	$0.074	$0.073	$0.058	$0.055	$0.056	$0.056	$0.056	$0.057	$0.057	$0.049	$0.057	$0.057	$0.059
Electric Supply, $	$130	$144	$262	$371	$293	$292	$202	$139	$152	$240	$156	$143	$2,525
Supply $/kwh	$0.088	$0.088	$0.126	$0.130	$0.130	$0.130	$0.108	$0.103	$0.103	$0.116	$0.104	$0.104	$0.111
Total Cost, $	$239	$264	$382	$529	$419	$416	$307	$216	$237	$341	$241	$223	$3,815
$/KWH	$0.1613	$0.1609	$0.1835	$0.1858	$0.1860	$0.1861	$0.1638	$0.1609	$0.1609	$0.1649	$0.1610	$0.1611	$0.1720

Natural Gas Cost Summary

Winslow Township
Utilities Building
SOUTH JERSEY GAS
Acct. No. 219 42 7284 09

Month	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Sep-08	Oct-08	Nov-08	Dec-08	Jan-09	Feb-09	Mar-09	Total
Billing Days	29	33	28	33	29	29	33	28	32	31	30	30	365
Last Meter Read Date	3/27/2008	4/25/2008	5/28/2008	6/25/2008	7/28/2008	8/26/2008	9/24/2008	10/27/2008	11/24/2008	12/26/2008	1/26/2009	2/25/2009	3/27/2008
Current Meter Read Date	4/25/2008	5/28/2008	6/25/2008	7/28/2008	8/26/2008	9/24/2008	10/27/2008	11/24/2008	12/26/2008	1/26/2009	2/25/2009	3/27/2009	3/27/2009
Gas Used per 100 cu ft	14	5	3	3	3	3	3	26	55	80	60	59	314
BTU Factor	1.03	1.03	1.04	1.04	1.03	1.03	1.04	1.03	1.04	1.04	1.04	1.03	1.03
Therms (Burner Tip)	14	5	3	3	3	3	3	27	57	83	62	61	325
Total Distribution Cost	$24	$23	$19	$22	$19	$19	$22	$28	$43	$55	$45	$45	$365
Cost per Therm	$1.657	$4.400	$6.010	$7.030	$6.253	$6.274	$7.037	$1.060	$0.760	$0.660	$0.730	$0.737	$3.551
Total Commodity Cost	$14	$5	$3	$3	$3	$3	$3	$26	$63	$89	$66	$65	$342
Cost per Therm	$0.96	$0.96	$0.96	$0.95	$0.96	$0.96	$0.96	$0.98	$1.10	$1.07	$1.06	$1.06	$1.00
Total Cost	$38	$28	$22	$25	$22	$22	$25	$55	$106	$143	$111	$110	$706
Cost per Therm	$2.61	$5.36	$6.96	$7.98	$7.21	$7.23	$7.99	$2.04	$1.86	$1.73	$1.79	$1.80	$2.17

Utility Building

CONSTRUCTION COST AND REBATES					
ECM # 1 - PROGRAMMABLE THERMOSTAT	Qty	Unit Cost $	Material $	Labor $	Total $
Programmable Thermostat	1	$100	$100	$100	$200
Total Cost					$200
Utility Incentive					$0
Total Net Cost					**$200**
ECM # 2 - INSTALL LIGHTING CONTROLS	Qty	Unit Cost $	Material $	Labor $	Total $
Occupancy Sensors	7	$75	$525	$0	$525
Total Cost					$525
Utility Incentive					-$140
Total Net Cost					**$385**

Concord Engineering Group, Inc.

520 BURNT MILL ROAD
VOORHEES, NEW JERSEY 08043
PHONE: (856) 427-0200
FAX: (856) 427-6508

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

Winslow Township Utilities Building

TAG	MAKE	MODEL	TYPE	CAPACITY	EFFICIENCY	SERVES	LOCATION	REMAINING USEFUL LIFE	NOTES
FURN-1	RHEEM	90RJ07EFS01	NATURAL GAS FIRED FURNACE	75 MBH INPUT, 70 MBH OUTPUT	93.3%	ENTIRE BUILDING	BASEMENT	14 YEARS	VERTICAL UPFLOW FLOOR MOUNTED W/ DX COOLING COIL
CU-1	RHEEM	10AJB48A01	CONDENSING UNIT	4 TONS	13 SEER	FURN-1 / ENTIRE BUILDING	PAD MOUNTED OUTSIDE	11 YEARS	MATCHED TO FURNACE - 208/230/60/1
HWH-1	BRADFORD WHITE	MIITW75T6BN12	NATURAL GAS FIRED HOT WATER HEATER	76 MBH, 75 GALLON	80%	ENTIRE BUILDING	BASEMENT	11 YEARS	GAS FIRED HOT WATER HEATER WITH STORAGE

INVESTMENT GRADE LIGHTING AUDIT

CONCORD ENERGY SERVICES

CEG Project #: BS09-011
Project Name : WINSLOW TOWNSHIP DEPT. OF UTILITIES
Address: 700 CHEWS LANDING ROAD
City, State: WINSLOW TWP., N.J.
Building SF: 2000

kWh Cost: 0.17
Burn Hrs: 8760

	Existing Fixtures								Proposed Fixtures											Fixtures Retrofitted			Unit Installation Cost							
Existing Lighting Fixture Type	Room Number	Room Name	Lighting Fixture Description	Lamps per Fixture	Voltage	Watts	Qty of Fixtures	Total Watts	New Lighting Fixture Type	Existing/Replace	Description	Lamps per Fixture	Watts	Qty of Fixtures	Total Watts	Wattage Reduction	Average Burn Hours	Ave $/kwh	Energy Savings, kWh	Energy Savings, $	Qty	Material Each	Labor Each	Total Each	Total Materials	Total Labor	Total All	Rebate Estimate	Simple Payback
Basement																														
A		Basement Space	2L-T8 96w (8') Surface Mtd.	2	120	109	7	763	NA	Existing to Remain	Existing to Remain	2	109	7	763	0	8760	$0.17	0	$0.00	0	0	0	$0.00	$0.00	$0.00	$0.00	$0.00		
																	8760	$0.17			0									
																	8760	$0.17			0									
Total Basement							7	763						7	763	0			0	$0.00	0				$0	$0	$0	$0		
First Floor																														
B	111	Main Corridor	2L-T8-U 32w 2'x2' Recessed Troffer	2	120	55	9	495	NB	Existing to Remain	Existing to Remain	2	55	9	495	0	8760	$0.17	0	$0.00	0	0	0	$0.00	$0.00	$0.00	$0.00	$0.00		
B	110	Superintendents Office	2L-T8-U 32w 2'x2' Recessed Troffer	2	120	55	4	220	NB	Existing to Remain	Existing to Remain	2	55	4	220	0	8760	$0.17	0	$0.00	0	0	0	$0.00	$0.00	$0.00	$0.00	$0.00		
B	109	Plan/File Room	2L-T8-U 32w 2'x2' Recessed Troffer	2	120	55	6	330	NB	Existing to Remain	Existing to Remain	2	55	6	330	0	8760	$0.17	0	$0.00	0	0	0	$0.00	$0.00	$0.00	$0.00	$0.00		
B	106	Lunch/Meeting Room	2L-T8-U 32w 2'x2' Recessed Troffer	2	120	55	6	330	NB	Existing to Remain	Existing to Remain	2	55	6	330	0	8760	$0.17	0	$0.00	0	0	0	$0.00	$0.00	$0.00	$0.00	$0.00		
C	105	Janitor's Closet	1L-T8 21w (24") Vanity Fixture	1	120	21	1	21	NC	Existing to Remain	Existing to Remain	1	21	1	21	0	8760	$0.17	0	$0.00	0	0	0	$0.00	$0.00	$0.00	$0.00	$0.00		
B	104	Mens Locker Room	2L-T8-U 32w 2'x2' Recessed Troffer	2	120	55	8	440	NB	Existing to Remain	Existing to Remain	2	55	8	440	0	8760	$0.17	0	$0.00	0	0	0	$0.00	$0.00	$0.00	$0.00	$0.00		
B	103	Womens Locker Room	2L-T8-U 32w 2'x2' Recessed Troffer	2	120	55	4	220	NB	Existing to Remain	Existing to Remain	2	55	4	220	0	8760	$0.17	0	$0.00	0	0	0	$0.00	$0.00	$0.00	$0.00	$0.00		
B	102	Stairwell (upper)	2L-T8-U 32w 2'x2' Recessed Troffer	2	120	55	2	110	NB	Existing to Remain	Existing to Remain	2	55	2	110	0	8760	$0.17	0	$0.00	0	0	0	$0.00	$0.00	$0.00	$0.00	$0.00		
C	102	Stairwell (lower)	1L-T8 21w (24") Vanity Fixture	1	120	21	1	21	NC	Existing to Remain	Existing to Remain	1	21	1	21	0	8760	$0.17	0	$0.00	0	0	0	$0.00	$0.00	$0.00	$0.00	$0.00		
B	101	Operation Center	2L-T8-U 32w 2'x2' Recessed Troffer	2	120	55	6	330	NB	Existing to Remain	Existing to Remain	2	55	6	330	0	8760	$0.17	0	$0.00	0	0	0	$0.00	$0.00	$0.00	$0.00	$0.00		
D		Exterior Lighting	1L-CPF 18w Wall Fixture	1	120	18	5	90	ND	Existing to Remain	Existing to Remain	1	18	5	90	0	8760	$0.17	0	$0.00	0	0	0	$0.00	$0.00	$0.00	$0.00	$0.00		
Total First Floor							52	2607						19	1045	0			0	$0.00	0				$0	$0	$0	$0		

APPENDIX F

Winslow Township Utilities Building
700 Chews Landing Road
Sicklerville, NJ 08081

↑ **North**

OMB No. 2060-0347

STATEMENT OF ENERGY PERFORMANCE
Utilities Building

Building ID: 1845040
For 12-month Period Ending: February 28, 2009[1]
Date SEP becomes ineligible: N/A

Date SEP Generated: September 03, 2009

Facility
Utilities Building
700 Chews Landing Road
Sicklerville, NJ 08081

Facility Owner
N/A

Primary Contact for this Facility
N/A

Year Built: 2005
Gross Floor Area (ft²): 2,000

Energy Performance Rating[2] (1-100) N/A

Site Energy Use Summary[3]	
Electricity - Grid Purchase(kBtu)	76,821
Natural Gas (kBtu)[4]	28,757
Total Energy (kBtu)	105,578

Energy Intensity[5]	
Site (kBtu/ft²/yr)	53
Source (kBtu/ft²/yr)	143

Emissions (based on site energy use)	
Greenhouse Gas Emissions ($MtCO_2e$/year)	13

Electric Distribution Utility
Atlantic City Electric Co

National Average Comparison	
National Average Site EUI	77
National Average Source EUI	182
% Difference from National Average Source EUI	-21%
Building Type	Office

Stamp of Certifying Professional

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

Certifying Professional
N/A

Meets Industry Standards[6] **for Indoor Environmental Conditions:**	
Ventilation for Acceptable Indoor Air Quality	**N/A**
Acceptable Thermal Environmental Conditions	**N/A**
Adequate Illumination	**N/A**

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

ENERGY STAR® Data Checklist for Commercial Buildings

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

Please complete and sign this checklist and include it with the stamped, signed Statement of Energy Performance.
NOTE: You must check each box to indicate that each value is correct, OR include a note.

CRITERION	VALUE AS ENTERED IN PORTFOLIO MANAGER	VERIFICATION QUESTIONS	NOTES	☑
Building Name	Utilities Building	Is this the official building name to be displayed in the ENERGY STAR Registry of Labeled Buildings?		☐
Type	Office	Is this an accurate description of the space in question?		☐
Location	700 Chews Landing Road, Sicklerville, NJ 08081	Is this address accurate and complete? Correct weather normalization requires an accurate zip code.		☐
Single Structure	Single Facility	Does this SEP represent a single structure? SEPs cannot be submitted for multiple-building campuses (with the exception of acute care or children's hospitals) nor can they be submitted as representing only a portion of a building		☐
Utilities Building (Office)				
CRITERION	**VALUE AS ENTERED IN PORTFOLIO MANAGER**	**VERIFICATION QUESTIONS**	**NOTES**	☑
Gross Floor Area	2,000 Sq. Ft.	Does this square footage include all supporting functions such as kitchens and break rooms used by staff, storage areas, administrative areas, elevators, stairwells, atria, vent shafts, etc. Also note that existing atriums should only include the base floor area that it occupies. Interstitial (plenum) space between floors should not be included in the total. Finally gross floor area is not the same as leasable space. Leasable space is a subset of gross floor area.		☐
Weekly operating hours	40 Hours	Is this the total number of hours per week that the Office space is 75% occupied? This number should exclude hours when the facility is occupied only by maintenance, security, or other support personnel. For facilities with a schedule that varies during the year, "operating hours/week" refers to the total weekly hours for the schedule most often followed.		☐
Workers on Main Shift	10	Is this the number of employees present during the main shift? Note this is not the total number of employees or visitors who are in a building during an entire 24 hour period. For example, if there are two daily 8 hour shifts of 100 workers each, the Workers on Main Shift value is 100. The normal worker density ranges between 0.3 and 10 workers per 1000 square feet (92.8 square meters)		☐
Number of PCs	5	Is this the number of personal computers in the Office?		☐
Percent Cooled	50% or more	Is this the percentage of the total floor space within the facility that is served by mechanical cooling equipment?		☐
Percent Heated	50% or more	Is this the percentage of the total floor space within the facility that is served by mechanical heating equipment?		☐

ENERGY STAR® Data Checklist for Commercial Buildings

Energy Consumption

Power Generation Plant or Distribution Utility: Atlantic City Electric Co

Fuel Type: Electricity

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

Start Date	End Date	Energy Use (kWh (thousand Watt-hours))
01/28/2009	02/27/2009	1,500.00
12/28/2008	01/27/2009	2,067.00
11/28/2008	12/27/2008	1,471.00
10/28/2008	11/27/2008	1,345.00
09/28/2008	10/27/2008	1,875.00
08/28/2008	09/27/2008	2,237.00
07/28/2008	08/27/2008	2,252.00
06/28/2008	07/27/2008	2,849.00
05/28/2008	06/27/2008	2,083.00
04/28/2008	05/27/2008	1,640.00
03/28/2008	04/27/2008	1,481.00
Electric Consumption (kWh (thousand Watt-hours))		**20,800.00**
Electric Consumption (kBtu (thousand Btu))		**70,969.60**
Total Electricity (Grid Purchase) Consumption (kBtu (thousand Btu))		**70,969.60**
Is this the total Electricity (Grid Purchase) consumption at this building including all Electricity meters?		☐

Fuel Type: Natural Gas

Meter: GAS (therms)
Space(s): Entire Facility

Start Date	End Date	Energy Use (therms)
01/28/2009	02/27/2009	62.16
12/28/2008	01/27/2009	83.04
11/28/2008	12/27/2008	56.98
10/28/2008	11/27/2008	26.83
09/28/2008	10/27/2008	3.11
08/28/2008	09/27/2008	3.08
07/28/2008	08/27/2008	3.10
06/28/2008	07/27/2008	3.11
05/28/2008	06/27/2008	3.12
04/28/2008	05/27/2008	5.16
03/28/2008	04/27/2008	14.43

GAS Consumption (therms)	**264.12**
GAS Consumption (kBtu (thousand Btu))	**26,412.00**
Total Natural Gas Consumption (kBtu (thousand Btu))	**26,412.00**
Is this the total Natural Gas consumption at this building including all Natural Gas meters?	☐

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

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

Certifying Professional

(When applying for the ENERGY STAR, the Certifying Professional must be the same as the 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
Utilities Building
700 Chews Landing Road
Sicklerville, NJ 08081

Facility Owner
N/A

Primary Contact for this Facility
N/A

General Information

Utilities Building	
Gross Floor Area Excluding Parking: (ft^2)	2,000
Year Built	2005
For 12-month Evaluation Period Ending Date:	February 28, 2009

Facility Space Use Summary

Utilities Building	
Space Type	Office
Gross Floor Area(ft^2)	2,000
Weekly operating hours	40
Workers on Main Shift	10
Number of PCs	5
Percent Cooled	50% or more
Percent Heated	50% or more

Energy Performance Comparison

	Evaluation Periods		Comparisons		
Performance Metrics	**Current** (Ending Date 02/28/2009)	**Baseline** (Ending Date 02/28/2009)	**Rating of 75**	**Target**	**National Average**
Energy Performance Rating	N/A	N/A	75	N/A	N/A
Energy Intensity					
Site (kBtu/ft^2)	53	53	32	N/A	77
Source (kBtu/ft^2)	143	143	86	N/A	182
Energy Cost					
$/year	$ 4,200.87	$ 4,200.87	$ 2,515.43	N/A	$ 6,127.43
$/$ft^2$/year	$ 2.10	$ 2.10	$ 1.26	N/A	$ 3.06
Greenhouse Gas Emissions					
$MtCO_2e$/year	13	13	8	N/A	19
$kgCO_2e/ft^2$/year	7	7	4	N/A	10

More than 50% of your building is defined as Office. This building is currently ineligible for a rating. Please note the National Average column represents the CBECS national average data for Office. This building uses X% less energy per square foot than the CBECS national average for Office.

Notes:
o - This attribute is optional.
d - A default value has been supplied by Portfolio Manager.