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March 29, 2010

Local Government Energy Program
Final Energy Audit Report

For

Evesham Firehouse
Marlton Fire Station 221
26 East Main Street
Marlton, NJ 08053

Project Number: LGEA36

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INTRODUCTION

On January 7th, Steven Winter Associates, Inc. (SWA) and PMK performed an energy audit and assessment of the Evesham Fire Station 221, Marlton, NJ. Current conditions and energy-related information were collected in order to analyze and facilitate the implementation of energy conservation measures for the building.

The Marlton Fire Station 221 is a three story building with a basement that was built in 1998 and is approximately 11,500 sq. ft. The firehouse contains a large 3rd floor meeting / Training room, conference rooms, fitness room, library, kitchen and eating area. The second or mezzanine level contains : uniform and EMS storage rooms, bunk rooms, the fire chief's office and administrative offices. The majority of the first floor consists of the five bay EMS and fire engine bays. The remaining areas on the east and west side of the garage include;a dispatch area, administrative offices, equipment repair and maintenance shop, SCBA (Self Contained Breathing Apparatus) storage and maintenance areas, along with an EMS equipment room. The building has an east and west basement that contains a mechanical room, building air compressor, laundry area, and supplies.

The Fire House is occupied in two shifts by 12 people each for 11 hours, seven days a week. Dispatch is occupied 24hrs. per day all year.

Energy data and building information collected in the field were analyzed to determine the baseline energy performance of each building. Using spreadsheet-based calculation methods, SWA and PMK estimated the energy and cost savings associated with the installation of each of the recommended energy conservation measures. The findings for the building are summarized in this report.

The goal of this energy audit is to provide sufficient information to make decisions regarding the implementation of the most appropriate and most cost effective energy conservation measures for the building.

Launched in 2008, the LGEA Program provides subsidized energy audits for municipal and local government-owned facilities, including offices, courtrooms, town halls, police and fire stations, sanitation buildings, transportation structures, schools and community centers. The Program will subsidize 75% of the cost of the audit. If the net cost of the installed measures recommended by the audit, after applying eligible NJ SmartStart Buildings incentives, exceeds the remaining cost of the audit, then that additional 25% will also be paid by the program. The Board of Public Utilities (BPU's) Office of Clean Energy has assigned TRC Energy Services to administer the Program.

EXECUTIVE SUMMARY

This document contains the energy audit report for the Marlton fire station 221 located at 26 East Main Street Evesham, NJ 08053.

Based on the field visit performed by Steven Winter Associates (SWA) and PMK staff on January 7th, 2010 and the results of a comprehensive energy analysis, this report describes the site's current conditions and recommendations for improvements. Suggestions for measures related to energy conservation and improved comfort are provided in the scope of work. Energy and resource savings are estimated for each measure that results in a reduction of heating, cooling, and electric usage.

Current conditions

In the most recent full year of data collected, March, 2008 through February, 2009, the Facility consumed a total of 280,640 kWh of electricity for a total cost of $43,602 and 12,746 therms of natural gas, for a total cost of $15,840.

The building consumed 2,244 MMBtus of energy at a total cost of $51,066.

SWA/BSG-PMK has entered energy information about the Evesham Main Street Firehouse in the U.S. Environmental Protection Agency's (EPA) *Energy Star Portfolio Manager* Energy benchmarking system. The building performance rating was not able to be determined because the building use is classified as Other in the Portfolio Manager system for which there isn't yet a rating.
Based on the assessment of the Evesham Main Street Firehouse, BSG-PMK and SWA has separated the recommendations into three categories (See Section 4 for more details). These are summarized as follows:

Category I Recommendations: Capital Improvements:

- Based on the results of SWA/BSG-PMK's survey, the water heater at this Station has passed its useful life and it is recommended that it be replaced with new, higher efficient unit.

Category II: Operations & Maintenance:

- It is recommended to replace the refrigerant line insulation of several of the roof mounted York condensers.

- It is recommended to replace Damaged or missing weather stripping on all doors.

Category III: Energy Conservation Measures:

At this time, SWA/BSG-PMK highly recommends a total of **2** Energy Conservation Measures (ECMs) for the Evesham Main Street Firehouse that is summarized in the following table. The total investment cost for these ECMs, with incentives, is **$33,116**. SWA/BSG-PMK estimates a first year savings of **$11,814** with an aggregated simple payback of **2.8 years**. SWA/BSG-PMK estimates that implementing the highly recommended ECMs will reduce the carbon footprint of the fire houses by **102,476 lbs of CO_2**.

Using an average of $0.15/kWh The Marlton Fire Station 221 could save approximately $2,806 on their electric bills. The Fire District already purchases natural gas for $1.41/therm which is lower than the average rate of $1.55/therm. Appendix B contains a complete list of third party energy suppliers. There are various incentives that the Marlton Fire house could apply for that could also help lower the cost of installing the ECMs. SWA/BSG-PMK recommends that Evesham apply for the NJ SmartStart and Direct Install programs through the New Jersey Office of Clean Energy These incentives can help provide technical assistance for the building and the implementation phase of many energy conservation project.

ECM SUMMARY TABLES

ROI: Return on Investment (%)

Assumptions:

Discount rate:	3.2%	per DOE FEMP guidelines	Electricity rate	$0.16	$/kWh
Energy price escalation rate:	0%	per DOE FEMP guidelines	Gas rate	$1.24	$/therm

Avg. Annual Demand: 0.00245 Area of Building (SF) 11,500

Table 1 - Highly Recommended 0-5 Year Payback ECMs

ECM #	ECM description	Source	Est. Installed Cost, $	Est. Incentives, $	Net Est. ECM Cost with Incentives, $	kWh, 1st Yr Savings	kW, Demand Reduction/Mo	Therms, 1st Yr Savings	kBtu/sq ft, 1st Yr Savings	Est. Operating Cost, 1st Yr Savings, $	Total 1st Yr Savings, $	Life of Measure, Yrs	Est. Lifetime Energy Cost Savings, $	Simple Payback, Yrs	Lifetime Return on Investment, %	Annual Return on Investment, %	Internal Rate of Return, %	Net Present Value, $	CO_2 Reduced, lbs/yr
1	Lighting Upgrades	Empirical Data	$17,776	$3,660	$14,116	29,535	6.04	0	8.76	$0	$4,726	15	$55,607	2.99	294%	20%	33%	$42,298	40,463
	Occupancy Sensors		$2,960	$1,960	$1,000	2,902	0.00	0	0.86	$0	$464	10	$3,921	2.15	292%	29%	45%	$2,961	3,976
2	Upgrade Rooftop Units	Similar Projects	$90,000	$72,000	$18,000	31,976	6.54	1,216	20.06	$0	$6,624	15	$77,949	2.72	333%	22%	36%	$61,081	58,037
TOTAL			$110,736	$77,620	$33,116	64,413	12.58	1,216	29.69	$0.00	$11,814	-	$137,476	2.80	-	-	-	$106,339	102,476

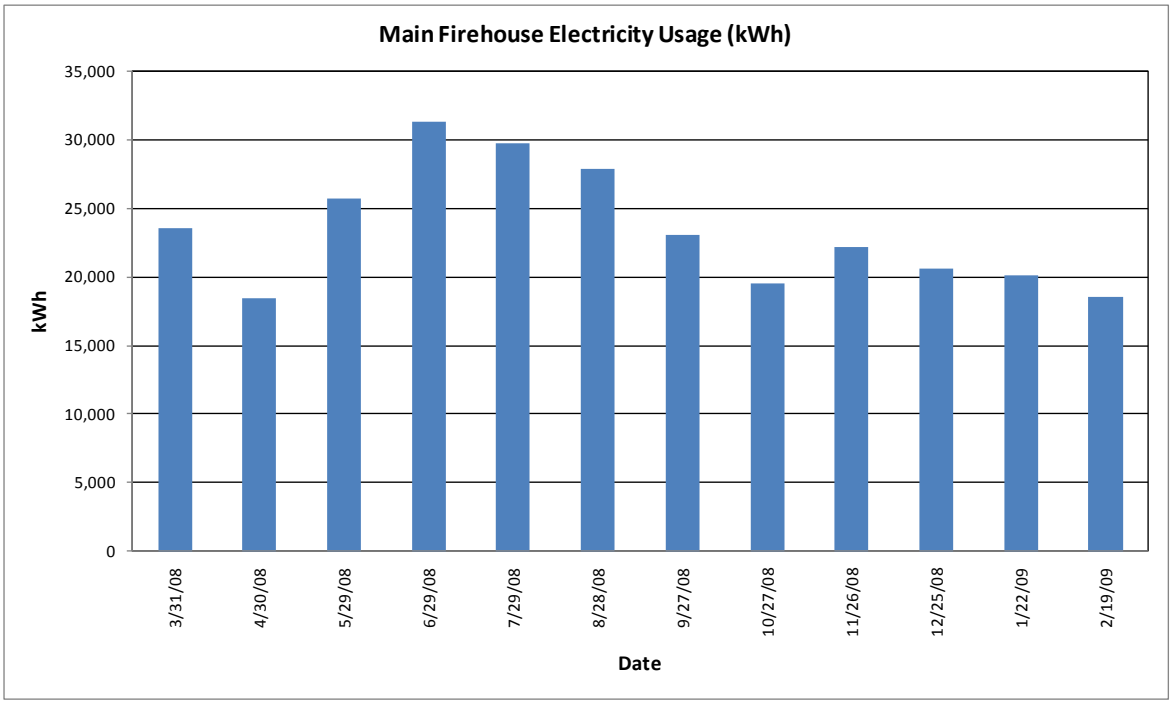
1. HISTORIC ENERGY CONSUMPTION

1.1. Energy usage and cost analysis

BSG-PMK and SWA analyzed utility bills that were received from the utility companies supplying the The Evesham - Marlton Fire Station 221 with electric and natural gas from October, 2007 to February, 2009.

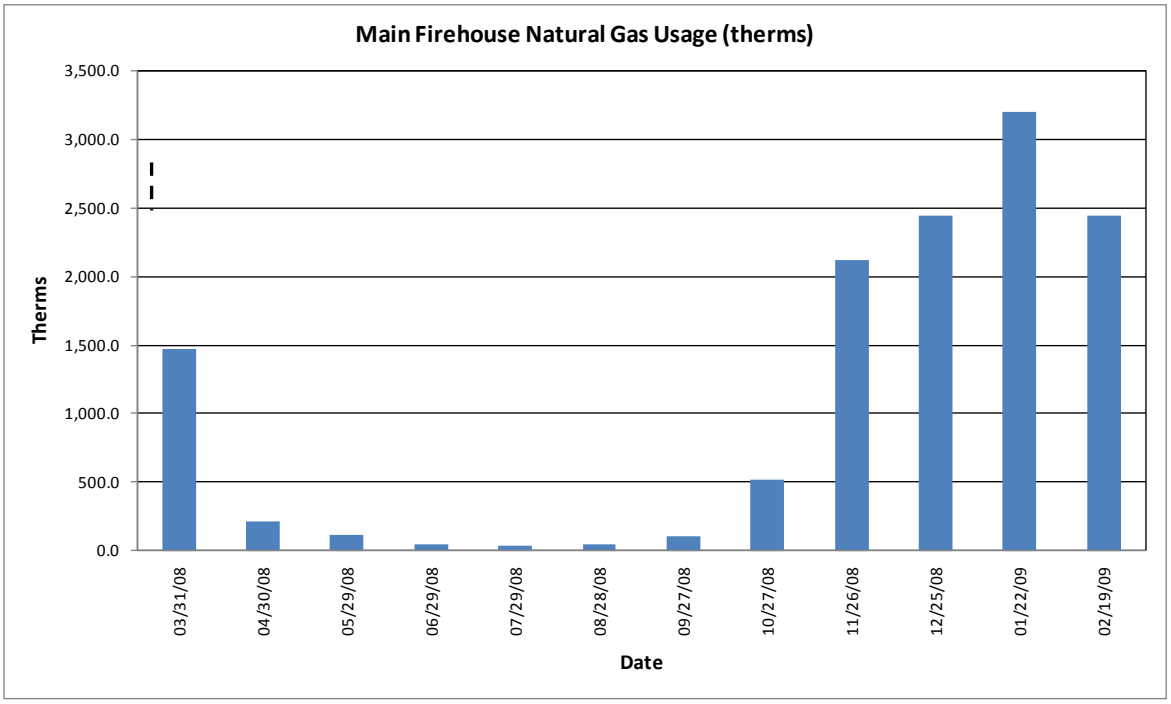
Electricity – The Evesham - Marlton Fire Station 221 is currently served by one electric meter. The The Evesham - Marlton Fire Station 221 currently receives electricity from PSE&G at **an average rate of $0.16/kWh** based on 12 months of utility bills from March 2008 to February 2009. The Evesham - Marlton Fire Station 221 building purchased **approximately 280,640 kWh or $43,602 worth of electricity** in the previous year with an average monthly demand of 57.4 kW.

The following charts show electricity usage for The Evesham - Marlton Fire Station 221 based on utility bills for the 2008-2009 billing period.



Natural Gas – The Evesham - Marlton Fire Station 221 is currently served by one meter for natural gas. The Evesham - Marlton Fire Station 221 currently receives natural gas from PSE&G at **an average aggregated rate of $1.24/therm** based on 12 months of utility bills for March, 2008 to February, 2009. The Evesham - Marlton Fire Station 221 purchased **approximately 12,746 therms or $15,840 worth of natural gas** in the previous year.

The following charts show the natural gas usage for the The Evesham - Marlton Fire Station 221 based on utility bills for the year of 2008 to 2009.



The natural gas usage follows seasonal needs for heating the building. The minimal usage from April to September is a good indicator that natural gas is used only for heating.

1.2. Utility rate

The Evesham - Marlton Fire Station 221 currently purchases electricity from Public Service Electric and Gas at a general service market rate for electricity use (kWh) with (kW) demand charge. The Evesham - Marlton Fire Station 221 currently pays an average rate of approximately $0.155/kWh based on the most recent 12 months of utility bills.

The Evesham - Marlton Fire Station 221 currently purchases natural gas supply from Pepco Energy Services and delivery from Public Service Electric and Gas at a general service market rate for natural gas (therms). There is one gas meter that provides natural gas service to The Evesham - Marlton Fire Station 221 building currently. The average aggregated rate (supply and transport) for the meter is approximately $1.24/therm based on 12 months of utility bills for March, 2008 to February, 2009.

1.3. Energy benchmarking

SWA/BSG-PMK has entered energy information about The Evesham - Marlton Fire Station 221 in the U.S. Environmental Protection Agency's (EPA) *Energy Star Portfolio Manager* Energy benchmarking

system. The username is *eveshamfire-rescue* and the password is *eveshamfire*. The building performance rating was not able to be determined because the building use "Fire Station/Police Station is classified by *Energy Star Portfolio Manager* as Other in the Portfolio Manager system.

The Site Energy Use Intensity is 195 kBtu/sqft/yr compared to the national average of Fire Station/Police Station consuming 78 kBtu/sqft/ yr. Implementing this report's highly recommended Energy Conservations Measures (ECMs) will reduce use by approximately 29.7 kBtu/sqft/yr.

http://www.energystar.gov/index.cfm?c=evaluate_performance.bus_portfoliomanager

Username: eveshamfire-rescue
Password: eveshamfire

OMB No. 2060-0347

STATEMENT OF ENERGY PERFORMANCE
Main St. Fire Station

Building ID: 2223270
For 12-month Period Ending: December 31, 2009[1]
Date SEP becomes ineligible: N/A

Date SEP Generated: March 12, 2010

Facility
Main St. Fire Station
26 E. Main St.
Marlton, NJ 08053

Facility Owner
Evesham Township Fire District No. 1
984 Tuckerton Rd
Evesham, NJ 08053

Primary Contact for this Facility
Paul E. Thomas, Jr.
984 Tuckerton Rd
Evesham, NJ 08053

Year Built: 1998
Gross Floor Area (ft²): 11,500

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

Site Energy Use Summary[3]	
Electricity - Grid Purchase(kBtu)	984,567
Natural Gas (kBtu)[4]	1,260,102
Total Energy (kBtu)	2,244,669

Energy Intensity[5]	
Site (kBtu/ft²/yr)	195
Source (kBtu/ft²/yr)	401

Emissions (based on site energy use)	
Greenhouse Gas Emissions ($MtCO_2e$/year)	217

Electric Distribution Utility
Public Service Elec & Gas Co

National Average Comparison	
National Average Site EUI	78
National Average Source EUI	157
% Difference from National Average Source EUI	155%
Building Type	Fire Station/Police Station

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.

2. FACILITY AND SYSTEMS DESCRIPTION

2.1. Building Characteristics

The Marlton Fire Station 221 is a three story building with a basement that was built in 1998 and is approximately 11,500 sq. ft. The firehouse contains a large 3rd floor meeting / Training room, conference rooms, fitness room, library, kitchen and eating area. The second or mezzanine level contains : uniform and EMS storage rooms, bunk rooms, the fire chief's office and administrative offices. The majority of the first floor consists of the five bay EMS and fire engine bays. The remaining areas on the east and west side of the garage include;a dispatch area, administrative offices, equipment repair and maintenance shop, SCBA (Self Contained Breathing Apparatus) storage and maintenance areas, along with an EMS equipment room. The building has an east and west basement that contains a mechanical room, building air compressor, laundry area, and supplies.

2.2. Building occupancy profiles

The Fire House is occupied by two shifts of 12 people each for 11 hours seven days a week. Dispatch is occupied 24hrs. per day all year. Every Monday evening there is a department wide meeting that takes place in the 3rd floor meeting room.

2.3. Building envelope

2.3.1. Exterior walls

The exterior walls consist of 6" structural studs @ 24" on center with R-19 bat insulation. The exterior is ½ treated plywood sheathing, vapor barrier and 3.25" Brick Veneer. The interior walls are painted drywall. The total thickness of the outside walls is approximately 10"-12". Exterior and interior finishes of the envelope were found to be in good condition and without cracks or water damage.

2.3.2. Roof

The building has two roofing components. The main roof is a flat built up roof with mechanically adhered ISO board and glued EPDM. The roof has been silver coated. The perimeter mansard and pitched roof sections of the building are constructed of metal studs with ½" sheathing and standing seam room. The roofing systems are original from (1998). The flat roof was resurfaced with an additional silver coat in the last two years and is in good condition.

2.3.3. Base

The base of the building consists of reinforced concrete footings, and poured concrete posts. The basement ceiling in the east and west sections are metal truss with corrugated decking and a 4"poured concrete slab. The engine bay flooring is 6" reinforced concrete on gravel and vapor barrier. There are no signs of water damage or improper drainage.

2.3.4. Windows

There are 40 qty double hung 5/8" double pane thermally broken aluminum clad windows throughout the building. The windows and screens are original and in good condition.

2.3.5. Exterior doors

The engine bays have front and rear full height thermo pane aluminum framed roll up doors. There are seven entry doors to this facility; There are two storefront section to this building. One is the front main entryway and the other is the rear main entrance. Both are double medium style aluminum store front doors. Four of the entry doors are hollow metal with a visual panel. There is one double hollow metal door access to the west basement from the rear parking lot. All doors and hardware were in good condition with the exception of missing or damaged whether stripping.

Category II Repair and Maintenance: It is recommended to replace Damaged or missing weather stripping on all doors.

Photo of side entry with open whether stripping.

2.3.6. Building air tightness

The building's air tightness is good. There are no areas other than the first set of front doors that require weather stripping repairs. There were no complaints from the occupants about drafts or cold spots. The garage bay doors were tight with relation to the door frames.

2.4. HVAC systems

2.4.1. Heating

Heating is provided by four York rooftop gas fired package units. Each unit is controlled by an individual master controller that communicates with individual adjustable zone temperature sensors. The space temperatures are maintained by variable volume control dampers that regulate the flow into each space via a bypass design. The master controllers are programmable for night setback with override capability for special events. The engine bays are heated by four sections of infrared overhead tube heaters. Additional heating for the basement and first floors is provided by four York gas fired forced air furnaces with programmable thermostats.

2.4.2. Cooling

The building is cooled by the same four York rooftop package units. Similarly each unit is controlled by an individual master controller that communicates with individual adjustable zone temperature sensors. The space temperatures are maintained by variable volume control dampers that regulate the flow into each space via a bypass design. The master controllers are programmable for night setback with override capability for special events. The basement and first floors are cooled by four York Dx split systems. The condensers are located at the roof level, with cooling coils at each of the four York furnaces located in the basement and mezzanine level. There is an AG split system that is utilized to cool the server room on the third floor. The engine bays are cooled by six ceiling fans.

Category II Repair and Maintenance: It is recommended to replace the refrigerant line insulation of several of the roof mounted York condensers.

Photo showing broken or missing insulation on Refrigeration lines.

2.4.3. Ventilation

The building receives outside air via the economizer mode on the 4 roof top HVAC units. In addition there are eight roof mounted Penn Ventilator exhaust fans with nine supplemental units

located throughout the buildings restrooms, and work rooms. The work room exhaust fans are equipped with a variable fan speed control and minimum set point. The hose drying room located in the west section of the building contains one exhaust fan and operable louvers activated by a thermostat. The truck bay exhaust is fed from a central fan in the west wing basement underground to the individual recessed floor mounted connections at each bay.

2.4.4. Domestic Hot Water

The building's domestic hot water is supplied by a gas fired 75 gallon Bradford White Corporation Energy Saver water heater That was installed in 2001.

2.5. Electrical systems

2.5.1. Lighting

A complete inventory of all interior, exterior, and exit sign light fixtures was examined and documented in Appendix A of this report including an estimated total lighting power consumption. Our initial findings indicate that performing a detailed lighting upgrade per the recommendations in Appendix A will result in significant annual savings.

Category III Recommendation - ECM #1: Recommend upgrading all T-12 lighting fixtures with magnetic ballasts to T-8 fixtures with electronic ballasts, as well as various other lighting upgrades outlined in Appendix A. Also recommend installing lighting sensors to certain areas where lights typically remain lit when unoccupied for long periods of time.

2.5.2. Appliances and Process

Appliances, such as refrigerators, that are over 10 years of age should be replaced with newer efficient models with the Energy Star label. For example, Energy Star refrigerators use as little as 315 kWh / yr. When compared to the average electrical consumption of older equipment, Energy Star equipment results in a large savings. Building management should select Energy Star label appliances and equipment when replacing: refrigerators, printers, computers, copy machines, etc. More information can be found in the "Products" section of the Energy Star website at: http://www.energystar.gov. The building is currently equipped with energy vending miser devices for conserving energy usage by Drinks and Snacks vending machines. When equipped with the vending miser devices, vending machines use less energy and are comparable in daily energy performance to new ENERGY STAR qualified machines.

The building has a full kitchen including; 2 stoves, 2 microwaves, 1 toaster oven, 1 toaster, 1 coffee machine,1 dishwasher, 1 water cooler, 1 snack vending machine and 1 soda machine, 2 refrigerators, 1 compactor, and an Oasis water cooler. The building also has 2 snack vending machines, and 2 drink vending machines.

The building has total of 12 computers, one copy machine, and exercise room with treadmills, and various weight equipment, and a meeting room with overhead projection and electric screen, air compressor, and an Onan Generator.

The west basement has a washer and dryer, boot dryer, as well as a commercial Milnor washer.

Ice Melt- There is a 30 amp. USA Environmental Tech APS-4C ice melt system that is thermostatically controlled for keeping the standing seam roof gutters and leaders clear.

2.5.3. Elevators

There is one three stop 2500 lbs. hydraulic Dover elevator located in the east wing. The doors, and cab were in good condition. The elevator functioned smoothly and self leveled at each floor.

3. BUILDING SYSTEMS EQUIPMENT LIST

Building System	Description	Locations	Model #	Fuel	Space Served	Estimated. Remaining Useful Life %
Heating/ Cooling	Forced-air furnace, 34.4 MBH, 92% efficient; equipped with cooling coil	Game room	York M# G1FA036S17A, S# (S)XALS009754	Electricity/Natural Gas	East Wing First Floor Dispatch	50%
	3-ton condensing unit	Roof	York M# H40H036506A, S# WFKM040600	Electricity		50%
Heating/ Cooling	Forced-air furnace, 34.4 MBH, 92% efficient; equipped with cooling coil	Game room	York M# G1FA036S17A, S# (S)XALS009757	Electricity/Natural Gas	East Wing Basement Level	50%
	3-ton condensing unit	Roof	York M# H40H036506A, S# WFKM040602	Electricity		50%
Heating/ Cooling	Forced-air furnace, 34.4 MBH, 92% efficient; equipped with cooling coil	Closet	York M# G1FA036S17A, S# (S)XALS009755	Electricity/Natural Gas	1st floor West	50%
	3-ton condensing unit	Roof	York M# H40H036506A, S# WFKM040588	Electricity		50%
Heating/ Cooling	Forced-air furnace, 34.4 MBH, 92% efficient; equipped with cooling coil	Uniform closet	York M# G1FA036S17A, S# (S)XALS009755	Electricity/Natural Gas	West Mezzanine	33%
	3-ton condensing unit	Roof	York M# H40H036506A, S# WFKM040583	Electricity		20%

Heating	(6) radiant heating tubes, 80 MBH each, 100% efficient	Truck bay	Lennox M# G1202-55-7, S# 5891L01789	Natural Gas	Truck bay	52%
Heating/ Cooling	Packaged rooftop unit, 15 tons cooling, 200 MBH heating	Roof	York M# D4CG150N20046EC, S# NHFM097071	Electricity/Natural Gas	Exercise room	20%
Heating/ Cooling	Packaged rooftop unit, 15 tons cooling, 200 MBH heating	Roof	York M# D4CG150N20046EC, S# NHFM097968	Electricity/Natural Gas	Meeting Room	20%
Heating/ Cooling	Packaged rooftop unit, 15 tons cooling, 200 MBH heating	Roof	York M# D4CG150N20046EC, S# NKFM105825	Electricity/Natural Gas	3rd Floor Duty room	20%
Heating/ Cooling	Packaged rooftop unit, 15 tons cooling, 200 MBH heating	Roof	York M# D4CG150N20046EC, S# NKFM105827	Electricity/Natural Gas	East Mezzanine	20%
Domestic Hot Water	Water heater, 75 gallons, 160 MBH	Basement	Bradford White M# T5-I-5035LN-0, S# JB0104618	Natural Gas	Sinks, showers	8%
Ventilation	(6) Circulating fans, 110 W, 265 RPM, 25,500 CFM	Garage	Dayton M# 4C854	Electricity	Garage	50%
Ventilation	(5) 1/8 HP exhaust fan #s 1,3,7,16,17	Roof	Penn Ventilator Dx 11 R	Electricity	General exhaust	50%
Ventilation	(2) 1/6 HP exhaust fan #s 2,5	Roof	Penn Ventilator Dx 13 R	Electricity	General exhaust	50%
Ventilation	1/20 HP exhaust fan # 6	Roof	Penn Ventilator Dx 10 R	Electricity	General exhaust	50%

Ventilation	Exhaust fan	Hose Tower	Greenheck M# SE1-18	Electricity	Hose Tower	50%
Ventilation	135 W exhaust fan	Mezz. Toilet	Greenheck M# SP-228	Electricity	Mezz. Toilet	50%
Ventilation	135 W exhaust fan	Mezz. Conf.	Greenheck M# SP-228	Electricity	Mezz. Conf.	50%
Ventilation	135 W exhaust fan	Grade Toilet	Greenheck M# SP-228	Electricity	Grade Toilet	50%
Ventilation	80 W exhaust fan	Grade Toilet	Greenheck M# SP-7	Electricity	Grade Toilet	50%
Ventilation	129 W exhaust fan	Grade Janitor	Greenheck M# SP-9	Electricity	Grade Janitor	50%
Ventilation	129 W exhaust fan	Grade Decon	Greenheck M# SP-9	Electricity	Grade Decon	50%
Ventilation	7.5 HP exhaust fan	Truck exhaust	Greenheck M# 24-BISW-21	Electricity	Truck exhaust	50%

Note: *****The remaining useful life of a system (in %) is the relationship between the system manufactured and / or installed date and the standard life expectancy of similar equipment based on ASHRAE (2003), ASHRAE Handbook: HVAC Applications, Chapter 36.

4. ENERGY CONSERVATION MEASURES

Based on the assessment of this building, SWA and BSG-PMK have separated the investment opportunities into three categories of recommendations:

1. Capital Improvements – Upgrades not directly associated with energy savings
2. Operations and Maintenance – Low Cost/No Cost Measures
3. Energy Conservation Measures – Higher cost upgrades with associated energy savings

Category I Recommendations: Capital Improvements:

- Based on the results of SWA/BSG-PMK's survey, the water heater at this Station has passed its useful life and it is recommended that it be replaced with new, higher efficient unit.

Category II: Operations & Maintenance:

- It is recommended to replace the refrigerant line insulation of several of the roof mounted York condensers.

- It is recommended to replace Damaged or missing weather stripping on all doors.

Category III Recommendations: Energy Conservation Measures:

Summary table

ECM#	Description
1	Lighting Upgrades & Occupancy Sensors
2	Upgrade Rooftop Units

ECM #1: Lighting Upgrade & Occupancy Sensors

Description:

Lighting at the Evesham Marlton Fire Station 221 primarily consists of standard efficient fixtures with T12 lamps and magnetic ballasts. SWA/BSG-PMK recommends replacing the incandescent lamps with longer lasting, more efficient compact fluorescent lamps. The fixtures with T12 fluorescent lamps and magnetic ballast should be retrofitted with T8 lamps and electronic ballasts. Lighting replacements have short paybacks because of the low cost of the project combined with the high daily use of the lights.

Recommended lighting upgrades are detailed in Appendix A.

Installation cost:

Summary	Lighting (Only)	Sensors (Only)	Complete Lighting Upgrade
Cost	$17,776	$2,960	$20,736
Rebate	$3,660	$1,960	$5,620
Net Cost	$14,116	$1,000	**$15,116**
Savings (kWh)	29,535	2,902	**31,499**
Savings ($)	$4,726	$464	**$5,040**
Payback	3.0	2.2	**3.0**

Source of cost estimate: Empirical Data

Economics (without incentives):

ECM #	ECM description	Source	Est. Installed Cost, $	Est. Incentives, $	Net Est. ECM Cost with Incentives, $	kWh, 1st Yr Savings	kW Demand Reduction/Mo	Therms, 1st Yr Savings	kBtu/sq ft, 1st Yr Savings	Est. Operating Cost, 1st Yr Savings, $	Total 1st Yr Savings, $	Life of Measure, Yrs	Est. Lifetime Energy Cost Savings, $	Simple Payback, Yrs	Lifetime Return on Investment, %	Annual Return on Investment, %	Internal Rate of Return, %	Net Present Value, $	CO_2 Reduced, lbs/yr
1	Lighting Upgrades	Empirical Data	$17,776	$3,660	$14,116	29,535	6.04	0	8.76	$0	$4,726	15	$55,607	2.99	294%	20%	33%	$42,298	40,463
	Occupancy Sensors		$2,960	$1,960	$1,000	2,902	0.00	0	0.86	$0	$464	10	$3,921	2.15	292%	29%	45%	$2,961	3,976

Assumptions:

The electric cost used in this ECM was $0.16/kWh, which was the facilities' average rate for the 12-month period from March 2008 through February 2009. The replacements for each lighting fixture, the costs to replace or retrofit each one, and the rebates and wattages for each fixture are located in Appendix A.

Rebates/financial incentives:

The New Jersey SmartStart offers rebates for upgrading lighting fixtures and installing lighting controls. The total rebate this ECM qualifies for is $5,620.

ECM#2: Upgrade Rooftop Units

Description:

Evesham Main Street Firehouse is heated and cooled by four 15-ton York rooftop units with gas 200 MBH of gas heat. It is recommended that these units be replaced with more efficient units, as they are nearing the end of their useful life. The efficiencies of the proposed rooftop units, along with the efficiencies of the current units at the time of their purchase, was 80%. Rooftop units are now available with Seasonal Energy Efficiency Ratio (SEER) values as high as 15.5. The SEER for the current units could not be found, but 15-ton rooftop units manufactured in the 1990's would have SEERs around 12; due to the age and condition of the units, their SEER was assumed to be 85% of the original value, or 10.

Installation cost:

Estimated installed cost: $22,500 each, $90,000 total
Source of cost estimate: Similar projects

Economics:

ECM #	ECM description	Source	Est. Installed Cost, $	Est. Incentives, $	Net Est. ECM Cost with Incentives, $	kWh, 1st Yr Savings	kW, Demand Reduction/Mo	Therms, 1st Yr Savings	kBtu/sq ft, 1st Yr Savings	Est. Operating Cost, 1st Yr Savings, $	Total 1st Yr Savings, $	Life of Measure, Yrs	Est. Lifetime Energy Cost Savings, $	Simple Payback, Yrs	Lifetime Return on Investment, %	Annual Return on Investment, %	Internal Rate of Return, %	Net Present Value, $	CO_2 Reduced, lbs/yr
2	Upgrade Rooftop Units	Similar Projects	$90,000	$72,000	$18,000	31,976	6.54	1,216	20.06	$0	$6,624	15	$77,949	2.72	333%	22%	36%	$61,081	58,037

Assumptions:

The cost per therm of natural gas that was used, taken from twelve months of Evesham Main Street Firehouse's energy bills, was $1.24. Also taken from the energy bills was the annual heating consumption for all heating units in the building, 12,746 therms. There are twelve gas-consuming units in the building, so the gas consumption must be divided between these units. An accurate way to go about this is to add the heating capacities of all twelve units, and make the percentage of the total gas consumption that each unit consumed would be proportional to the percentage of the cumulative heating capacities that each unit represents:

Unit	Heating Capacity (MBH)	% of Total Capacity	Gas Usage (therms)	Heating Efficiency	
				(original)	(current)
(4) Furnaces	138	11%	1,395	92%	83%
(4) RTUs	800	64%	8,108	80%	68%
(4) Infrared Heaters	320	25%	3,243	100%	100%
Totals	1,258	100%	12,746	-	-

The saving was calculated using the following series of equations:

Current gas input, all 4 units: 8,108 therms

Current/proposed gas output: 8,108 therms×68%=5,514 therms

Proposed gas input: $\frac{5{,}514 \text{ therms}}{80\%}$=6,892 therms

Savings: 8,108 therms-6,892 therms=1,216 therms

Using 12 months of the facility's electricity bills, it was determined that the cost of electricity is currently $0.16/kWh. This ECM was calculated using 65 Deg. F as a change-over temperature from heating to cooling. The American Society of Heating, Refrigeration and Air-Conditioning Engineers (ASHRAE) estimates on average per year, 1,104 cooling degree-days for a region that only exceeds a dry-bulb temperature of 92°F for 0.4% of the year. The desired indoor temperature during the cooling season was assumed to be 72°F.

The following equation, the degree-day equation for cooling systems, was used to calculate the electric consumptions of the current and proposed air-conditioners:

$$\frac{\text{Capacity}\times\text{Degree-Days}\times 24\ \frac{\text{hours}}{\text{day}}}{1{,}000\times\text{EER}\times\left(\text{Temp.}_{0.4\%}-\text{Temp.}_{\text{indoor}}\right)}=\text{Electric Consumption (in kWh)}$$

Rebates/financial incentives:

This ECM is calculated based on a projected eligibility for New Jersey's Direct Install Rebate, which pays up to 80% of the total installation cost, or $72,000 for this measure.

5. RENEWABLE AND DISTRIBUTED ENERGY MEASURES

5.1. Existing systems

There are currently no existing renewable energy systems.

5.2. Solar Photovoltaic

Photovoltaic (PV) technology was considered for installation on the flat roofs of the Evesham Main Street Firehouse. Based on the shading, a rather significant amount of rooftop air conditioning units, exhaust fans, and the OSHA set back requirements, the available roof area for PV Panels will not meet the requirements for REIP (Renewable Energy Incentive Program) making this not cost effective.

PV technology was considered for installation on a canopy over the rear parking lot of the Evesham Main Street Firehouse. Based on the orientation of the building in comparison to the lot, the building would cause a significant amount of shading and inhibit the productivity of a canopy installation, and the installation would not meet the requirements for REIP.

PV technology was considered for installation across the front of the building on the two pitched, standing-seam roof portions. It was determined that the 2 tiers of 68 ft long space could fit up to a total of 20 panels, a 4.2 kW capacity system, but the installation payback would be beyond 10 years. Additionally, due to the orientation of the building and the pitched installation, the efficiency of the overall system will compromise the REIP requirements reducing overall rebates.

5.3. Solar Thermal Collectors

Solar thermal collectors are not recommended due to the low amount of domestic hot water use throughout the building.

5.4. Combined Heat and Power

Combined Heat Power is not applicable to this project because of the HVAC system type and limited domestic hot water usage.

5.5. Geothermal

Geothermal is not applicable to this project. A geothermal system would require the existing HVAC systems to be removed and replaced with a heat pump system. Large underground vertical or horizontal loop systems would need to be installed on the site in some cases beneath the existing concrete aprons and asphalt. The replacement of the existing and in some cases recently replaced air conditioning and heat unitary equipment would make this type of ECM not cost effective.

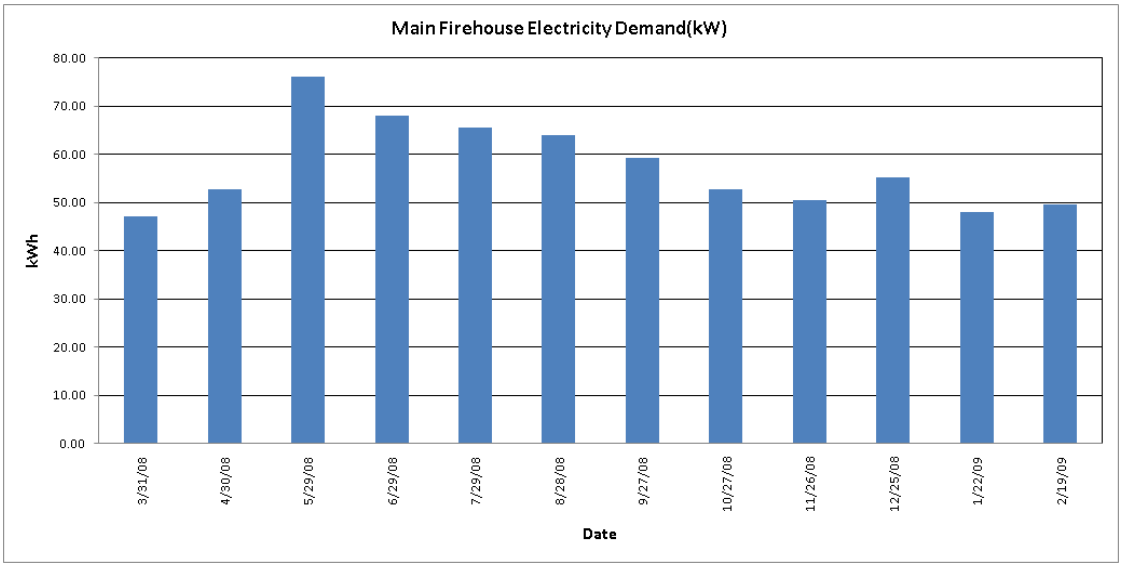
5.6. Wind

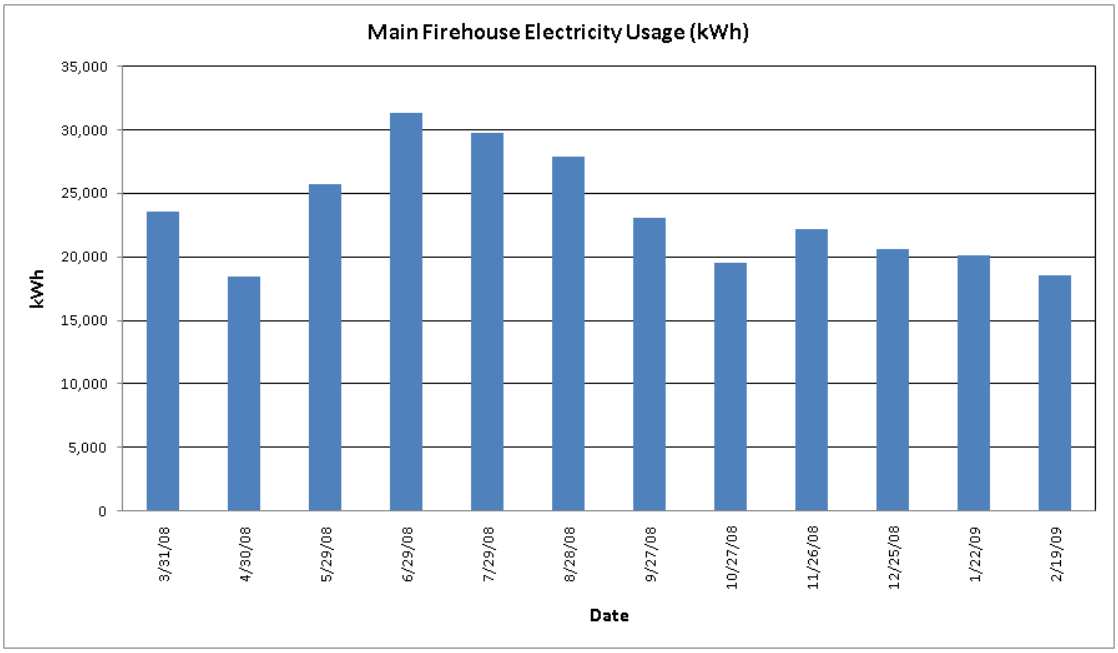
Wind turbine technologies of all shapes and sizes were considered for installation at the Evesham Main Street Firehouse. Wind power production is not appropriate for this location because required land is not available for the wind turbine. The available wind energy resource is very low. A small residential model turbine or a vertical wind turbine could be installed on the roof of the building, but vertical wind turbines are not eligible for Renewable Energy Credits or REIP rebates, grants or incentives, and a small residential model would produce a negligible amount of power over a year and there would be a negative return on investment. Wind power is not recommended for this location along with the consideration of the buildings location in proximity to the surrounding neighborhood.

6. ENERGY PURCHASING AND PROCUREMENT STRATEGIES

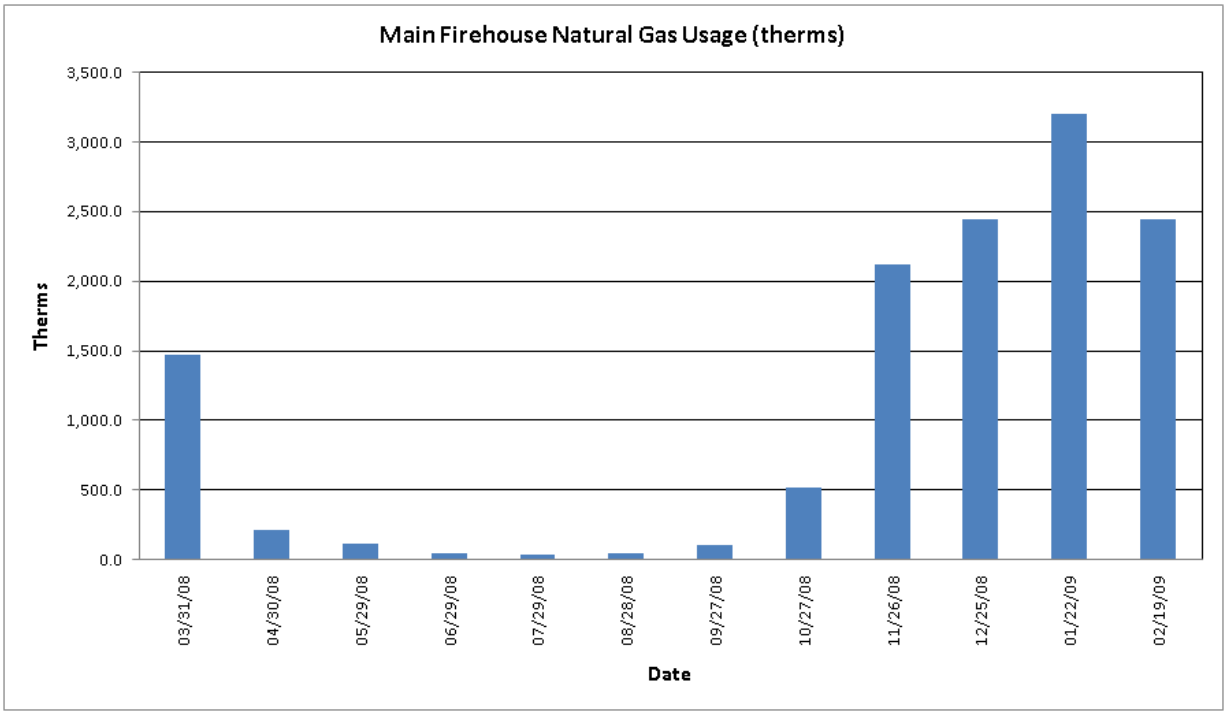
6.1. Energy Purchasing

The average electrical peak demand for the previous year was 57.4 kW and the maximum peak demand was 76.0 kW. The electric and gas load profiles for this project are presented in the following charts. The first chart shows electric demand (in kW) for the previous 12 months and the other two charts show electric and gas usage (in kWh), respectively.





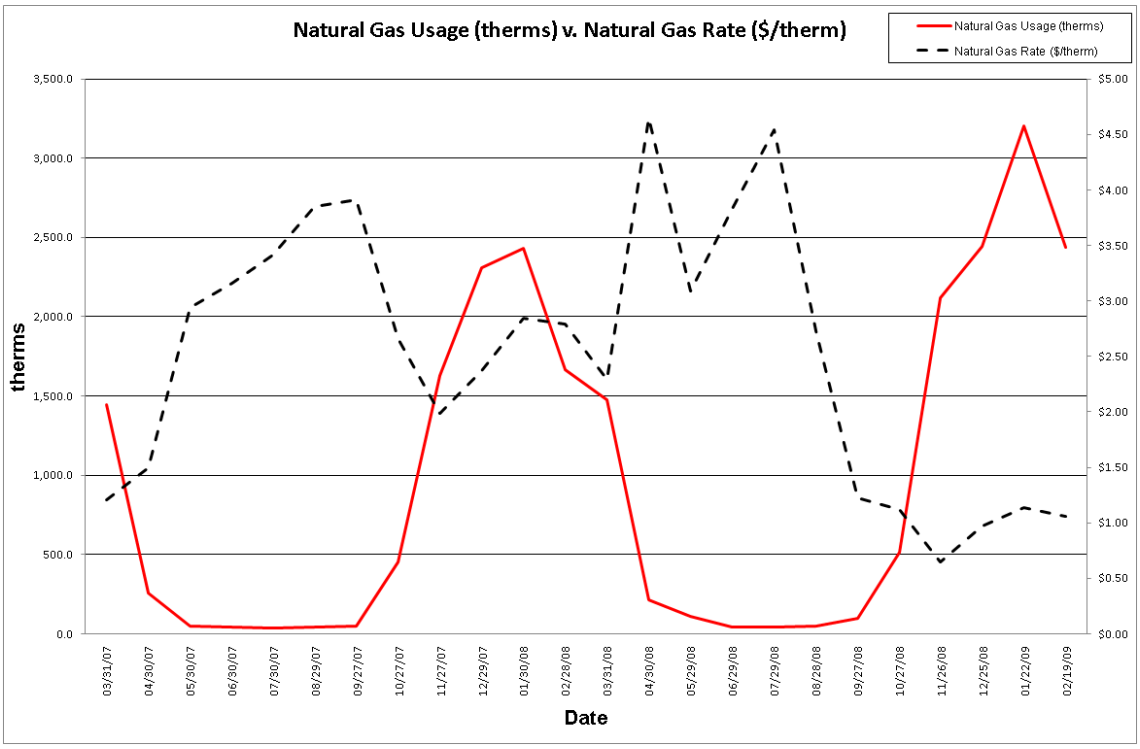
The electrical demand peaks (except for a few fluctuations) follow the electrical consumption peaks.



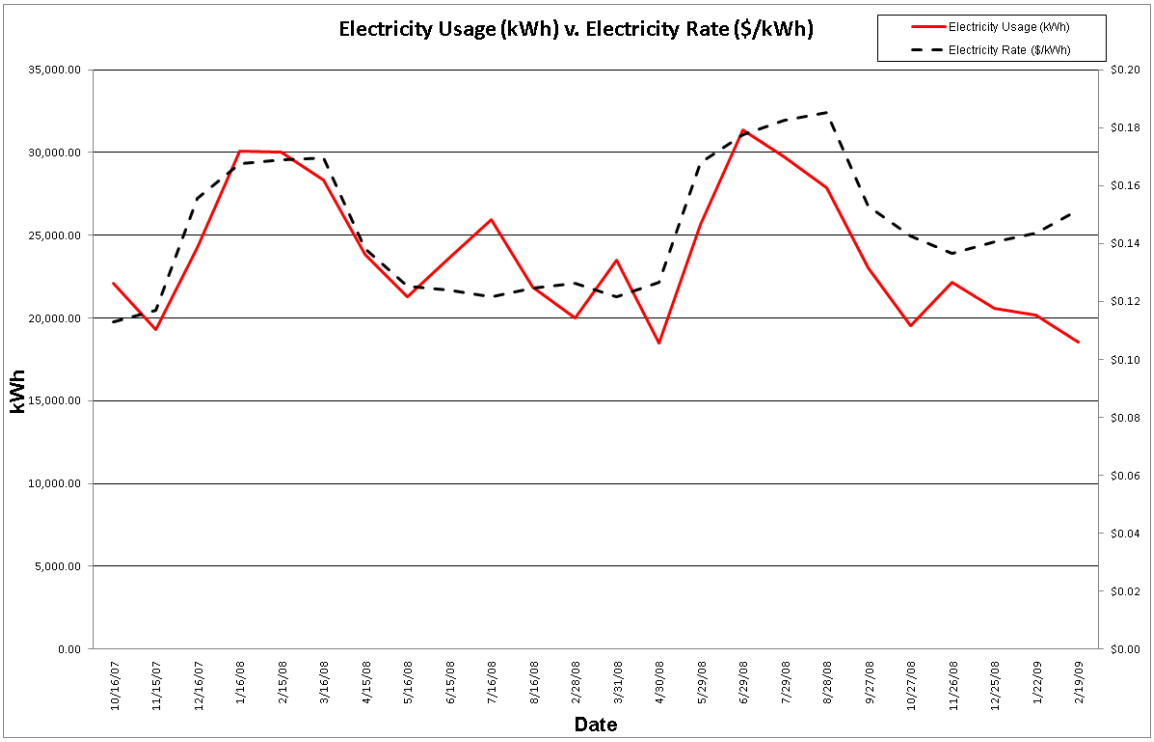
The natural gas usage shows that the most natural gas is consumed in the winter months, meaning the primary use of natural gas in this building is for heating.

6.2. Tariff analysis

Currently, natural gas is provided via one gas meter with PSE&G acting as the distribution service and Pepco Energy Service acting as the supply service. The general service rate for natural gas charges a market-rate price based on use and the Evesham Main Street Firehouse's billing data does not breakdown demand costs for all periods. Demand prices are reflected in the utility bills and can be verified by observing the price fluctuations throughout the year.



The Evesham Main Street Firehouse is direct-metered (via one main meter) and currently purchases electricity from PSE&G at a general service rate. The general service rate for electric charges are market-rate based on use and the Evesham Main Street Firehouse's billing does show a breakdown of demand costs. Demand prices are reflected in the utility bills and can be verified by observing the price fluctuations throughout the year. Typically, the electricity prices increase during the cooling months when electricity is used by the HVAC condensing units and air handlers.



6.3. Energy Procurement strategies

Billing analysis shows large price fluctuations of over the course of the year for the Evesham Main Street Firehouse natural gas account. Changing third party suppliers could reduce the cost associated with energy procurement. Customers that have a large variation in monthly billing rates can often reduce the costs associated with energy procurement by selecting a third party energy supplier. Contact the NJ Energy Choice Program for further information on Energy Services Companies (ESCOs) that can act as third party energy suppliers. Purchasing natural gas from an ESCO can reduce natural gas rate fluctuation and ultimately reduce the annual cost of energy for the school. Appendix B contains a complete list of third party energy suppliers.

Using an average of $0.15/kWh The Marlton Fire Station 221 could save approximately $2,806 on their electric bills. The Fire District already purchases natural gas for $1.41/therm which is lower than the average rate of $1.55/therm. Appendix B contains a complete list of third party energy suppliers.

7. METHOD OF ANALYSIS

7.1. Assumptions and methods

Energy modeling method:	Spreadsheet-based calculation methods
Cost estimates:	RS Means 2009 (Facilities Maintenance & Repair Cost Data) RS Means 2009 (Building Construction Cost Data) RS Means 2009 (Mechanical Cost Data) Note: Cost estimates also based on utility bill analysis and prior experience with similar projects.

7.2. Disclaimer

This engineering audit was prepared using the most current and accurate fuel consumption data available for the site. The estimates that it projects are intended to help guide the owner toward best energy choices. The costs and savings are subject to fluctuations in weather, variations in quality of maintenance, changes in prices of fuel, materials, and labor, and other factors. Although we cannot guarantee savings or costs, we suggest that you use this report for economic analysis of the building and as a means to estimate future cash flow.

THE RECOMMENDATIONS PRESENTED IN THIS REPORT ARE BASED ON THE RESULTS OF ANALYSIS, INSPECTION, AND PERFORMANCE TESTING OF A SAMPLE OF COMPONENTS OF THE BUILDING SITE. ALTHOUGH CODE-RELATED ISSUES MAY BE NOTED, SWA STAFF HAVE NOT COMPLETED A COMPREHENSIVE EVALUATION FOR CODE-COMPLIANCE OR HEALTH AND SAFETY ISSUES. THE OWNER(S) AND MANAGER(S) OF THE BUILDING(S) CONTAINED IN THIS REPORT ARE REMINDED THAT ANY IMPROVEMENTS SUGGESTED IN THIS SCOPE OF WORK MUST BE PERFORMED IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL LAWS AND REGULATIONS THAT APPLY TO SAID WORK. PARTICULAR ATTENTION MUST BE PAID TO ANY WORK WHICH INVOLVES HEATING AND AIR MOVEMENT SYSTEMS, AND ANY WORK WHICH WILL INVOLVE THE DISTURBANCE OF PRODUCTS CONTAINING MOLD, ASBESTOS, OR LEAD.

LIGHTING ANALYSIS

Township of Evesham
Kings Grant Fire Station
150 Merchants Way

BIRDSALL SERVICES GROUP
ENGINEERS & CONSULTANTS

Upgrade Code	Upgrade Description	Existing Fixture	Existing Watts	Proposed Fixture	Proposed Watts	Lighting: Total # of Upgrades	Lighting: Cost per Upgrade ($)	Lighting: SmartStart Rebate per Upgrade
1	(4) 34W T12 Lamps, Magnetic Ballasts / Replace with (4) 28W T8 Lamps, Electronic Ballast	4L4' EE/STD	160	4L4' T8/ELEC LO	99	43	$80.00	$15.00
2	(2) 40W T12 U-Tube Lamps, Magnetic Ballasts / Replace with (2) 32W T8 U-Tube Lamps, Electronic Ballast	2L22" STD/STD	94	2L22"	62	19	$50.00	$15.00
3	150W Incandescent Lamp / Replace with 44W Compact Fluorescent	150W INCANDESCENT	150	44W CF/SI	44	8	$10.00	$0.00
4	100W Incandescent Lamp / Replace with 26W Compact Fluorescent	100W INCANDESCENT	100	26W CF/SI	28	2	$10.00	$0.00
5	60W Incandescent Lamp / Replace with 15W Compact Fluorescent	60W INCANDESCENT	60	15W CF/SI	15	3	$6.00	$0.00
6	52W Incandescent Lamp / Replace with 13W Compact Fluorescent	52W INCANDESCENT	52	13W CF/SI	15	5	$6.00	$0.00
7	130W Incandescent Lamp / Replace with 44W Compact Fluorescent	125W INCANDESCENT	125	44W CF/SI	44	3	$10.00	$0.00
8	400W Metal Halide Lamp / No Upgrade	400W MH/BALLAST	445	No Upgrade	445	25	$0.00	$0.00
9	(1) 8' T2 Lamps, Magnetic Ballast / retrofit with a T8 Lamp, Electronic Ballast	1L8' EE/STD	83	1L8' T8/ELEC	67	0	$40.00	$15.00
10	32W Metal Halide Lamp	32W MH/BALLAST	40	No upgrade	40	8	$0.00	$0.00
11	60W Halogen Lamp	60W HALOGEN	60	No Upgrade	60	2	$0.00	$0.00
12	(1) 8' T2 Lamps, Magnetic Ballast / retrofit with a T8 Lamp, Electronic Ballast	1L8' EE/STD	83	1L8' T8/ELEC	67	2	$80.00	$15.00
13	400W High Pressure Sodium	400W HPS/BALLAST	450	No Upgrade	450	8	$0.00	$0.00
14	26W Compact Fluorescent	26W CF/SI	28	No Upgrade	28	7	$0.00	$0.00
15	200W Metal Halide	200W MH/BALLAST	200	No Upgrade	200	7	$0.00	$0.00

Summary

	Lighting (Only)	Sensors (Only)	Complete Lighting Upgrade
Cost	$4,728.00	$0.00	$4,728.00
Rebate	$960.00	$0.00	$960.00
Net Cost	$3,768.00	$0.00	**$3,768.00**
Savings (kWh)	13,003	0	**13,003**
Savings ($)	$2,210.54	$0.00	**$2,210.54**
Payback	1.7		**1.7**

Variables:

$0.17	Avg. Electric Rate ($/kWh)
	Avg. Demand Rate ($/kW)
2860	Operating Hours/Year
8	Operating Hours/Work Day

Assumptions:

25%	Occupancy Sensor Savings (Avg)
40%	Occupancy Sensor Savings(>Avg)

Notes:

Seq. #	Upgrade Code	Room/Area	Hrs/ Work Day	Hrs/ Year	Existing Fixture	Existing Qty.	Existing Watts	Existing Foot Candles	Proposed Fixture	Proposed Qty.	Proposed Watts	kW Reduction	Lighting: Energy Savings, kWh	Lighting: Cost ($)	Lighting: Savings ($)	Lighting: Payback (yrs)	Controls: Type	Controls: Qty.	Occupancy Sensors (ONLY): Energy Savings, kWh	Occupancy Sensors (ONLY): Cost ($)	Occupancy Sensors (ONLY): Savings ($)	Occupancy Sensors (ONLY): Payback (yrs)	SmartStart Rebate: Lighting	SmartStart Rebate: Sensors	Lighting & Occupancy Sensors: Energy Savings, kWh	Lighting & Occupancy Sensors: Post-Rebate Cost ($)	Lighting & Occupancy Sensors: Savings ($)	Lighting & Occupancy Sensors: Payback (yrs)
		Totals:	27808								22990	4.818	13003	$4,728.00	$2,210.54	2.1			0	$0.00	$0.00		$960.00	$0.00	13003	$3,768.00	$2,210.54	1.7
1	1	Office 1	8	2860	4L4' EE/STD	2	320		4L4' T8/ELEC LO	2	198	0.122	349	$160.00	$59.32	2.7			0	$0.00	$0.00		$30.00	$0.00	349	$130.00	$59.32	2.2
2	1	Office 2	8	2860	4L4' EE/STD	2	320		4L4' T8/ELEC LO	2	198	0.122	349	$160.00	$59.32	2.7			0	$0.00	$0.00		$30.00	$0.00	349	$130.00	$59.32	2.2
3	1	Gym	8	2860	4L4' EE/STD	6	960		4L4' T8/ELEC LO	6	594	0.366	1047	$480.00	$177.95	2.7			0	$0.00	$0.00		$90.00	$0.00	1047	$390.00	$177.95	2.2
4	1	Lobby	14	5005	4L4' EE/STD	8	1280		4L4' T8/ELEC LO	8	792	0.488	2442	$640.00	$415.21	1.5			0	$0.00	$0.00		$120.00	$0.00	2442	$520.00	$415.21	1.3
5	1	Training Room	8	2860	4L4' EE/STD	12	1920		4L4' T8/ELEC LO	12	1188	0.732	2094	$960.00	$355.90	2.7			0	$0.00	$0.00		$180.00	$0.00	2094	$780.00	$355.90	2.2
6	2	Storage Room	1	357.5	2L22" STD/STD	1	94		2L22"	1	62	0.032	11	$50.00	$1.94	25.7			0	$0.00	$0.00		$15.00	$0.00	11	$35.00	$1.94	18.0
7	3		1	357.5	150W INCANDES	8	1200		44W CF/SI	8	352	0.848	303	$80.00	$51.54	1.6			0	$0.00	$0.00		$0.00	$0.00	303	$80.00	$51.54	1.6
8	4		1	357.5	100W INCANDES	2	200		26W CF/SI	2	56	0.144	51	$20.00	$8.75	2.3			0	$0.00	$0.00		$0.00	$0.00	51	$20.00	$8.75	2.3
9	2	Womens Room	8	2860	2L22" STD/STD	1	94		2L22"	1	62	0.032	92	$50.00	$15.56	3.2			0	$0.00	$0.00		$15.00	$0.00	92	$35.00	$15.56	2.2
10	5		8	2860	60W INCANDES	1	60		15W CF/SI	1	15	0.045	129	$6.00	$21.88	0.3			0	$0.00	$0.00		$0.00	$0.00	129	$6.00	$21.88	0.3
11	6		8	2860	52W INCANDES	1	52		13W CF/SI	1	15	0.037	106	$6.00	$17.99	0.3			0	$0.00	$0.00		$0.00	$0.00	106	$6.00	$17.99	0.3
12	1	Mens Room	10	3575	4L4' EE/STD	1	160		4L4' T8/ELEC LO	1	99	0.061	218	$80.00	$37.07	2.2			0	$0.00	$0.00		$15.00	$0.00	218	$65.00	$37.07	1.8
13	5		10	3575	60W INCANDES	2	120		15W CF/SI	2	30	0.09	322	$12.00	$54.70	0.2			0	$0.00	$0.00		$0.00	$0.00	322	$12.00	$54.70	0.2
14	6		10	3575	52W INCANDES	4	208		13W CF/SI	4	60	0.148	529	$24.00	$89.95	0.3			0	$0.00	$0.00		$0.00	$0.00	529	$24.00	$89.95	0.3
15	1	Utility	0.5	178.75	4L4' EE/STD	2	320		4L4' T8/ELEC LO	2	198	0.122	22	$160.00	$3.71	43.2			0	$0.00	$0.00		$30.00	$0.00	22	$130.00	$3.71	35.1
16	1	Shop Lower	8	2860	4L4' EE/STD	4	640		4L4' T8/ELEC LO	4	396	0.244	698	$320.00	$118.63	2.7			0	$0.00	$0.00		$60.00	$0.00	698	$260.00	$118.63	2.2
17	1	Shop Upper	6	2145	4L4' EE/STD	2	320		4L4' T8/ELEC LO	2	198	0.122	262	$160.00	$44.49	3.6			0	$0.00	$0.00		$30.00	$0.00	262	$130.00	$44.49	2.9
18	1	Locker Room	12	4290	4L4' EE/STD	2	320		4L4' T8/ELEC LO	2	198	0.122	523	$160.00	$88.97	1.8			0	$0.00	$0.00		$30.00	$0.00	523	$130.00	$88.97	1.5
19	7	Attic	0.5	178.75	125W INCANDES	3	375		44W CF/SI	3	132	0.243	43	$30.00	$7.38	4.1			0	$0.00	$0.00		$0.00	$0.00	43	$30.00	$7.38	4.1
20	8	Garage	14	5005	400W MH/BALLA	21	9345		No Upgrade	21	9345	0	0	$0.00	$0.00				0	$0.00	$0.00		$0.00	$0.00	0	$0.00	$0.00	
21	8		14	5005	400W MH/BALLA	4	1780		No Upgrade	4	1780	0	0	$0.00	$0.00				0	$0.00	$0.00		$0.00	$0.00	0	$0.00	$0.00	
22	1	Dispatch	14	5005	4L4' EE/STD	1	160		4L4' T8/ELEC LO	1	99	0.061	305	$80.00	$51.90	1.5			0	$0.00	$0.00		$15.00	$0.00	305	$65.00	$51.90	1.3
23	1		14	5005	4L4' EE/STD	1	160		4L4' T8/ELEC LO	1	99	0.061	305	$80.00	$51.90	1.5			0	$0.00	$0.00		$15.00	$0.00	305	$65.00	$51.90	1.3
24	2	Hallway	14	5005	2L22" STD/STD	17	1598		2L22"	17	1054	0.544	2723	$850.00	$462.86	1.8			0	$0.00	$0.00		$255.00	$0.00	2723	$595.00	$462.86	1.3
25	10	Exterior: Ballards	7	2502.5	32W MH/BALLAS	8	320		No upgrade	8	320	0	0	$0.00	$0.00				0	$0.00	$0.00		$0.00	$0.00	0	$0.00	$0.00	
26	11	Exterior: Flag pole Lights	7	2502.5	60W HALOGEN	2	120		No Upgrade	2	120	0	0	$0.00	$0.00				0	$0.00	$0.00		$0.00	$0.00	0	$0.00	$0.00	
27	12	Exterior: Sign	7	2502.5	1L8' EE/STD	2	166		1L8' T8/ELEC	2	134	0.032	80	$160.00	$13.61	11.8			0	$0.00	$0.00		$30.00	$0.00	80	$130.00	$13.61	9.5
28	13	Exterior: Pole Lights	7	2502.5	400W HPS/BALL	8	3600		No Upgrade	8	3600	0	0	$0.00	$0.00				0	$0.00	$0.00		$0.00	$0.00	0	$0.00	$0.00	
29	15	Exterior: Bay	7	2502.5	200W MH/BALLA	5	1000		No Upgrade	5	1000	0	0	$0.00	$0.00				0	$0.00	$0.00		$0.00	$0.00	0	$0.00	$0.00	
30	15	Exterior: Back Bay Doors	7	2502.5	200W MH/BALLA	2	400		No Upgrade	2	400	0	0	$0.00	$0.00				0	$0.00	$0.00		$0.00	$0.00	0	$0.00	$0.00	
31	14	Exterior: Front	7	2502.5	26W CF/SI	7	196		No Upgrade	7	196	0	0	$0.00	$0.00				0	$0.00	$0.00		$0.00	$0.00	0	$0.00	$0.00	

Appendix B: Third Party Energy Suppliers (ESCOs)

Supplier	Telephone & Web Site
American Powernet Management, LP 437 North Grove St. Berlin, NJ 08009 Attn: Brian Vayda	877-977-2636 bvayda@americanpowernet.com www.americanpowernet.com
Commerce Energy, Inc. 4400 Route 9 South, Suite 100 Freehold, NJ 07728	(800) 556-8457 www.commerceenergy.com
ConEdison Solutions Cherry Tree Corporate Center 535 State Highway 38 Cherry Hill, NJ 08002	(888) 665-0955 www.conedsolutions.com
Constellation NewEnergy, Inc. 900A Lake Street, Suite 2 Ramsey, NJ 07446	(888) 635-0827 www.newenergy.com
Credit Suisse, (USA) Inc. 700 College Road East Princeton, NJ 08450	212-538-3124 www.creditsuisse.com
Direct Energy Services, LLC 120 Wood Avenue, Suite 611 Iselin, NJ 08830	(866) 547-2722 www.directenergy.com
FirstEnergy Solutions 300 Madison Avenue Morristown, NJ 07962	(800) 977-0500 Supply chain website www.firstenergycorp.com/supplierregistration www.fes.com
Glacial Energy of New Jersey, Inc. 207 LaRoche Avenue Harrington Park, NJ 07640	1-877-569-2841 www.glacialenergy.com
Hess Corporation 1 Hess Plaza Woodbridge, NJ 070956	(800) 437-7872 Tom Miller www.hess.com
Integrys Energy Services, Inc. 99 Wood Ave, South, Suite 802 Iselin, NJ 08830	1-877-763-9977 Dole Janssen: 920-617-6029 Charles Kuntz: 614-844-4324 www.integrysenergy.com
Liberty Power Delaware, LLC Park 80 West Plaza II, Suite 200 Saddle Brook, NJ 07663	(866)769-3799 www.libertypowercorp.com
Liberty Power Holdings, LLC Park 80 West Plaza II, Suite 200 Saddle Brook, NJ 07663	(866) 769-3799 www.libertypowercorp.com

Palmco Power NJ, LLC One Greentree Centre 10000 Lincoln Drive East, Suite 201 Marlton, NJ 08053	(877) 726-5862 www.PalmcoEnergy.com
Pepco Energy Services, Inc. 112 Main Street Lebanon, NJ 08833	(800) ENERGY-9 (363-7499) www.pepco-services.com
PPL Energy Plan, LLC 811 Church Road Cherry Hill, NJ 08002	800-281-2000 www.pplenergyplus.com
Sempra Energy Solutions The Mac-Cali Building 581 Main Street, 8th Floor Woodbridge, NJ 07095	(877) 273-6772 732-596-6400-Tony Buck www.semprasolutions.com
South Jersey Energy Company One South Jersey Plaza, Route 54 Folsom, NJ 08037	(800) 756-3749 Gary Bean gbean@sjindustries.com www.southjerseyenergy.com