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**Local Government Energy Program
Energy audit report**

For

***Senior Community Center
Holmdel Township
Holmdel, NJ 07733***

Project Number: LGEA03



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INTRODUCTION

On May 13th, 2009, Steven Winter Associates, Inc. (SWA) performed an energy audit and assessment of the various buildings for Holmdel Township located in Holmdel, NJ. Current conditions and energy-related information were collected in order to analyze and facilitate the implementation of energy conservation measures for the building.

Energy data collected in the field was imported into the eQUEST energy conservation software to generate a baseline model of the building. SWA simulated the installation of energy improvement measures on the baseline model of the building. Energy savings calculations and projected economics are automated and served as the basis for our conclusions.

There are five separate buildings that were evaluated for this energy audit; Town Hall, Senior Community Center, Department of Public Works, Swim Club and also the Holland Road pump house.

The present report is for the Senior Community Center only.

The Holmdel Senior Center was built in 1999 and houses an assembly area, a kitchen, an office and a storage area. The building is one story and consists of a total floor area of 7,260 square feet. The typical occupancy varies from day to day according to what activities occur.

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 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.

EXECUTIVE SUMMARY

This document contains the energy audit report for the Holmdel Senior Community Center located at 6 Crawfords Corner Road, Holmdel, NJ 07733. The Senior Community Center is a one story building. Based on the field visit performed by Steven Winter Associates (SWA) staff on May 13th, 2009 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.

SWA collected up to two years worth of utility data for each building at Holmdel Township. The Senior Center analysis is based on a two full years of gas bills but only 11 months worth of electric bills. The utility company could only provide the most recent 11 months worth of electric data. SWA provided all calculations based on 11 months worth of electric data and at least 12 months worth of natural gas data. In the most recent full year of data collected, the Senior Community Center building consumed approximately 43,920 kWh or \$7,187 worth of electricity and 2,900 therms or \$4,365 worth of natural gas. The average aggregated cost of electricity was calculated to be \$0.16/kWh and the average aggregated cost of natural gas was calculated to be \$2.04/therm. With electricity and gas combined, the building consumed 440 MMBtus of energy at a total cost of \$11,552.

SWA benchmarked the Senior Community Center using the U.S. Environmental Protection Agency's (EPA) *Energy Star Portfolio Manager* Energy benchmarking system. The Portfolio Manager generated a benchmark score of 35 for the building, when compared to a national average. The benchmark rating is based on the facility's source energy use, level of business activity, and geographical location. The Portfolio Manager is also capable of generating a site energy use intensity number using 2008 as a baseline year.

In order to compare commercial buildings equitably, the *Portfolio Manager* ratings convey the consumption of each type of energy in a single common unit. The EPA uses source energy to represent the total amount of raw fuel required to operate the building. The site energy use intensity for the Holmdel Senior Center building is 81 kBtu/sq.ft/year. After energy efficiency improvements are made, future utility bills can be added to the Portfolio Manager and the site energy use intensity for a different time period can be compared to the year 2008 baseline to track the changes in energy consumption associated with the energy improvements.

SWA recommends a total of 2 Energy Conservation Measures (ECMs) for Holmdel Senior Center. The total investment cost for these ECMs is **\$11,370**. SWA estimates a first year savings of **\$1,247** with a simple payback of **9.1 years**. SWA also estimates that Holmdel Senior Center will be able to reduce their carbon footprint by **10,830 lbs of CO2 annually**.

There are various incentives that Holmdel Senior Center could apply for that could also help lower the cost of installing the ECMs. SWA recommends that the Holmdel Township applies for the NJ SmartStart program through the New Jersey Office of Clean Energy. This incentive can help provide technical assistance for the building in the implementation phase of any energy conservation project.

When pursuing incentives through the SmartStart program, SWA encourages building managers to contact the program provider to obtain more detailed information on the program guidelines and request pre-approval for all planned upgrades. At the time of this report, Incentives for lighting vary but replacing T12 lighting with T8 lighting would be eligible for an incentive up to \$30 per fixture and LED exit signs would be eligible for up to \$20 per fixture.

For further information on both custom and prescriptive incentives, please visit:

<http://www.njcleanenergy.com/commercial-industrial/programs/nj-smartstart-buildings/tools-and-resources/equipment-incentives/equi>

The New Jersey Clean Energy website also provides information on an upcoming Direct-Install program that would be applicable to this project. The Direct-Install program is aimed at commercial buildings with an average annual demand of less than 200kW. This program is designed to offset up to 80% of the cost of replacing equipment nearing the end of its useful lifecycle with high efficiency alternatives. This program could help offset the cost of replacing the entire heating system. This program has not officially been released but can be followed online a

<http://www.njcleanenergy.com/commercial-industrial/programs/programs>

The following table summarizes the proposed Energy Conservation Measures (ECM) and their economical relevance.

SCOPE OF WORK – SUMMARY TABLE

ECM Table without Incentives															
ECM #	ECM description	Installed Cost		1st year energy and cost savings						Simple Payback (SPP)	Life of Measure (LoM)	Lifetime Cost Savings (\$)	Return on Invest (ROI)	Annual Carbon Reduction (lbs of CO2)	
		Estimated Cost (\$)	Source	Electric Savings		Fuel Savings		Cost Savings (\$)							
				Consumption	Demand	Natural Gas									
1	Retro Commissioning of building systems and controls	\$ 10,890	Similar Project	1,544	kWh	1	kW	265	Therms	\$ 788	13.8	20	\$ 11,504	0.3%	5,686
2	Upgrading of existing lighting	\$ 480	RS Means	2,873	kWh	0	kW	0	Therms	\$ 460	1.0	20	\$ 6,714	64.9%	5,144
Total Scope of Work		\$ 11,370	-	-	-	0.5	-			\$ 1,247	9.1		\$ 18,218		10,830

Definitions:

SPP: Simple Payback (years)
 LoM: Life of Measure (years)
 ROI: Return on Investment (%)

Assumptions:

Discount rate = 3.2% per DOE FEMP guidelines
 Energy price escalation rate = 0% per DOE FEMP guidelines
 Average Electric Rate = 0.16 \$/kWh
 Average Fuel Rate = 2.04 \$/Therm
 Carbon Dioxide per unit Electricity = 1.7905 lbs of CO2/kWh
 Carbon Dioxide per unit of Fuel = 11.023 lbs of CO2/unit fuel

1. HISTORIC ENERGY CONSUMPTION

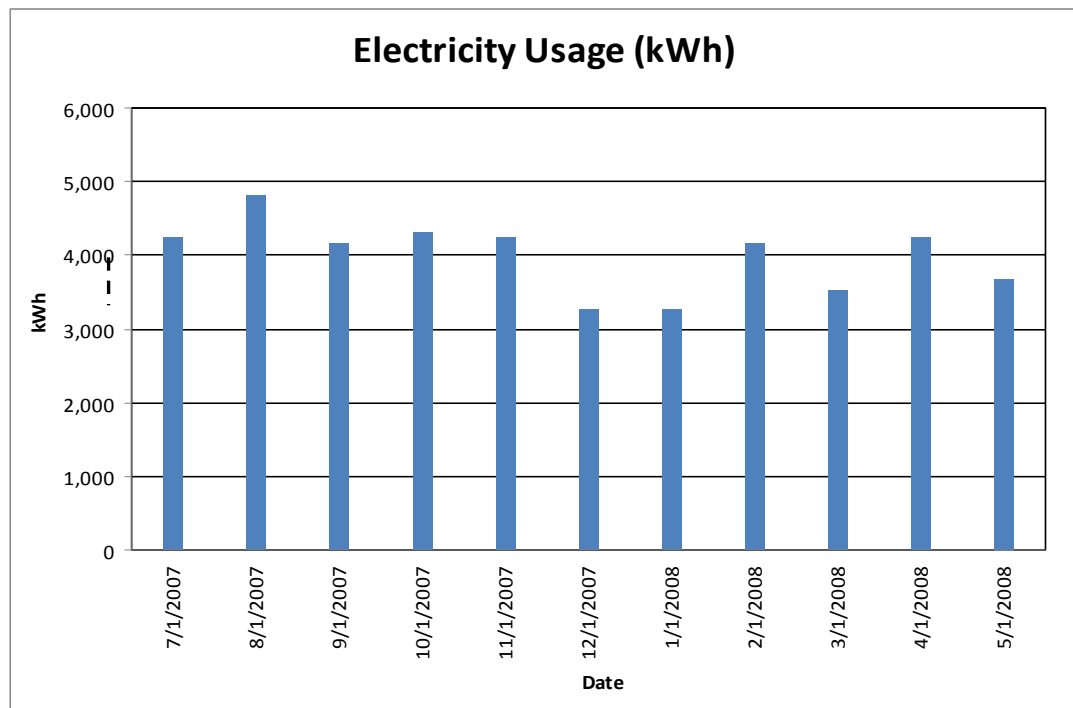
1.1. Energy usage and cost analysis

SWA received and analyzed natural gas bills from August 2006 through May 2009 that were received from NJNG and electric bills from July 2007 through June 2011 that were received from JCP&L.

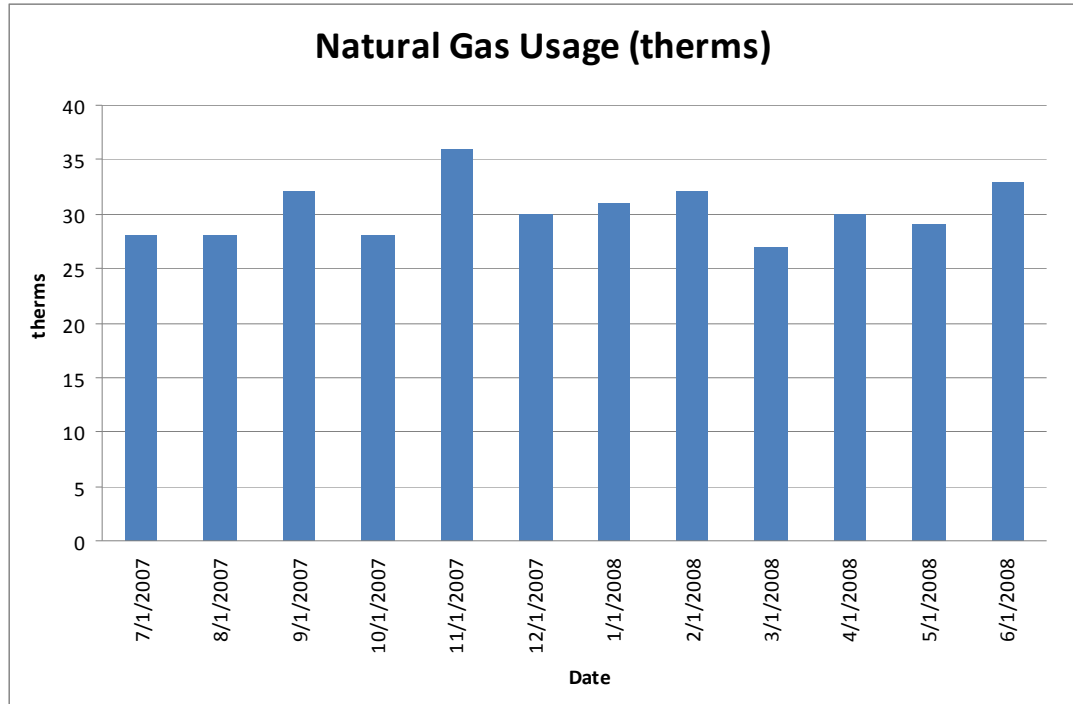
Electricity – The Holmdel Senior Center has one electric meter for incoming electricity supply. The building purchases electricity from JCP&L at **an average aggregated rate of \$0.16/kWh** based on July 2007 through June 2009 electric bills. The building purchased **approximately 43,920 kWh or \$7,187 worth of electricity from July 2007 through June 2008**. Based on the same time period, the building also has **an average monthly demand of 15.4 kW and monthly peak demand of 22.4 kW**.

Natural Gas – The Holmdel Senior Center has one gas meter for incoming natural gas from NJNG. Between July 2007 and July 2008, the building purchased **approximately 2,762 therms or \$4,259 worth of natural gas**. Natural gas was purchased at **an average rate of \$2.04/therm**.

The following chart shows electricity usage for the Senior Center based on utility bills for the 2007-2008 billing period.



The following chart shows the natural gas usage for the Senior Center based on utility bills for the 2007-2008 billing period.



In the above chart, the natural gas usage follows a heating trend as expected. During the summer it is clear that the natural gas usage is very minimal which reflects that heat is not being used and the DHW load is minimal.

1.2. Utility rate

The Senior Center currently buys electricity from JCP&L and gas from NJNG at the BGSS general service rate. The BGSS general service rate is a typical rate where customers pay for natural gas based on usage and electricity based on usage with the addition of an electrical charge demand. The Senior Center uses JCP&L account #100009492719, at the service address of 6 Crawfords Corner Road, Holmdel, NJ and NJNG account #220005647946 at the service address of 4 Crawfords Corner Road, Holmdel, NJ. Electricity for the building was billed at an average rate of **\$0.16/kWh**. Natural Gas for the building was billed at an average rate of **\$2.04/therm**.

1.3. Energy benchmarking

The Holmdel Senior Center Building information and utility data were entered into the U.S. Environmental Protection Agency's (EPA) *Energy Star Portfolio Manager* Energy benchmarking system. A performance score could not be generated for the building since it is a Senior Center building which is not currently defined in the Portfolio Manager. SWA recommends that Holmdel Township maintain the Portfolio Manager account at the link below. As the account is maintained, SWA can share the Holmdel Senior Center building and allow future data to be added and tracked using the benchmarking tool.

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

2. FACILITY AND SYSTEMS DESCRIPTION

2.1. Building Characteristics

The Senior Community Center is a single story building that consists of 7,260 square feet. The building was constructed in 1999 and currently houses an assembly area, a kitchen, an office and storage.

2.2. Building occupancy profiles

During the site visit, there were approximately 15 occupants observed in the building at once. Typical occupancy varies by activity. The maximum occupancy of the building is approximately 200 persons. The building is normally open and available for use from 9am to 5pm on weekdays.

2.3. Building envelope

2.3.1. Exterior walls

The exterior walls of the Senior Center consist of concrete masonry units and are finished on the inside with 4" studs, spaced 16" on center under gypsum wall board. The walls are insulated with 3 1/2" of fiberglass batt insulation in each stud bay.

2.3.2. Roof

The Senior Center consists of 4/12 pitch hip roofs. The trussed middle-brown colored asphalt shingle roof is insulated on the ceiling with 9" R-30 fiberglass batt insulation, making the attic unconditioned space. On the day of the site visit, SWA inspected the roof and observed no major deficiencies.

2.3.3. Base

The building's base is 4" concrete slab-on-grade with 24"x24" insulated perimeter foundation. There were no reported problems with water penetration or moisture.

2.3.4. Windows

The building contained both awning and double-hung style windows. All of the windows consisted of a vinyl clad frame and simulated dividers with double pane, gas filled glass.

2.3.5. Exterior doors

The exterior doors are aluminum-framed units with insulating gas properties. SWA recommends weather-stripping around all of the doors of the building in order to prevent conditioned air from leaking outside of the building. Weather-stripping should be checked at least once a year and replaced as soon as signs of deterioration show.

2.3.6. Building air tightness

The Senior Center was relatively tight with the exception of the exterior doors and some small penetrations inside of the building. Windows and Entranceways such as the front and back vestibule of the building should be maintained so that a tight seal is always formed to keep conditioned air from leaking outside of the building. There were no major deficiencies of air tightness within the building.

2.4. HVAC systems

2.4.1. Heating

The Senior Center currently contains four Lennox forced air furnaces. These furnaces are original to the building and are only 10 years old and have been maintained well. At this time there are no effective measures that could benefit the heating system. Forced air furnaces are generally less efficient than sealed combustion furnaces and SWA recommends that Holmdel Township take this into consideration if the heating system is ever upgraded or replaced.

2.4.2. Cooling

The Senior Center currently uses four Lennox split DX systems to provide needed cooling in the building. Each of the four Condensers is strategically located on a concrete pad outside the building wall and the indoor fan coils cool air to the associated area. Since the building and all mechanical equipment are only 10 years old and have been reasonably well-maintained, there are no cost effective measures for energy savings to be implemented at this time. As with any mechanical equipment, if any equipment is replaced or upgraded, the most energy efficient options should always be evaluated for installation.

2.4.3. Ventilation

The Senior Center building uses fan coil units and the forced air furnaces to supply necessary ventilation throughout the building. There are two toilet exhaust fans that exhaust air through a stack in the roof which helps induce fresh air into the building.

2.4.4. Domestic Hot Water

Domestic Hot Water for the building is provided by an A O Smith hot water heater with a capacity of 200 MBTU/hr. This unit provides domestic hot water for all the occupants. It is not cost-effective to replace the existing water heating equipment with higher efficiency equipment. However, higher efficiency water heating equipment will save energy and should be strongly considered upon replacement of the equipment. Energy saving appliances bearing the ENERGY STAR label should be selected to ensure efficiency performance. Incentives may be available to offset any added costs for the installed equipment.

More efficient water-consuming fixtures and appliances save both energy and money through reduced energy consumption for water heating, as well decreased water and sewer bills. SWA recommends that the aerators in all sinks are retrofitted with low-flow aerators that constrict the volume of water allowed to flow out of the faucets during the time it takes to wash hands, wash dishes, etc. Building staff can also easily install faucet aerators and/or low-flow fixtures to reduce hot water consumption. In addition, routine maintenance practices that identify and quickly address water leaks are a low-cost way to save water and energy.

2.5. Electrical systems

2.5.1. Lighting

Since the Senior Center building is only 10 years old, most of the lighting is already efficient. The fluorescent lighting that is used for general lighting requirements already contains T8 bulbs with electronic ballasts that would not be cost-effective to upgrade at this time. Exit lights in the building are already upgraded with LED lights. There are thirty-two 75 watt flood lights that are

used for supplemental lighting inside and also as general lighting on the exterior of the building. These lights should be replaced with 32 watt CFL replacements that will reduce the electrical load of the building and also provide a better quality light.

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 315kwh/hr. When compared to the average electrical consumption of older equipment, Energy Star equipment results in a large savings. Look for the Energy Star label when replacing appliances and equipment, including: window air conditioners, 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 Holmdel Township Senior Center contains few appliances. It is recommended that if any appliances are purchased for the building such as projectors, microwaves, etc. that the most efficient options are always chosen.

2.5.3. Elevators

The Senior Center is a one story building and therefore contains no elevators.

2.5.4. Other electrical systems

There are no other electrical systems installed at this building.

3. EQUIPMENT LIST

Building System	Description	Make/ Model	Fuel	Space served	Estimated Remaining useful life %
Heating	Four (4) Lennox forced air furnaces	Lennox	Natural Gas	Entire Space	60%
Cooling	Four (4) Lennox split DX systems	Lennox	Electricity	Entire Space	60%
Domestic Hot Water	One (1) gas-fired A O Smith DHW heater with 200 MBTU/hr capacity	A O Smith	Natural Gas	Entire Space	60%
Lighting	See details appendix A	-	-	-	-

Note: The remaining useful life of a system (in %) is an estimate based on the system date of built and existing conditions derived from visual inspection.

4. ENERGY CONSERVATION MEASURES

Based on the assessment of this building, SWA has separated the investment opportunities into two categories of recommendations:

General Recommendations: Operations and Maintenance

- **Weather Stripping/Air Sealing** - SWA observed that exterior door weather-stripping was beginning to deteriorate. Doors and vestibules should be observed annually for deficient weather-stripping and replaced as needed. The perimeter of all window frames should also be regularly inspected and any missing or deteriorated caulking should be re-caulked to provide an unbroken seal around the window frame. Any other accessible gaps or penetrations in the thermal envelope penetrations should also be sealed with caulk or spray foam.
- **Water Efficient Fixtures & Controls** - Adding controlled on/off timers on all lavatory faucets is a cost-effect way to reduce domestic hot water demand and save water. Building staff can also easily install faucet aerators and/or low-flow fixtures to reduce water consumption. There are many retrofit options, which can be installed now or incorporated as equipment is replaced. Routine maintenance practices that identify and quickly address water leaks are a low-cost way to save water and energy. Retrofitting with more efficient water-consuming fixtures and appliances will save both energy and money through reduced energy consumption for water heating, while also decreasing water and sewer bills.

Specified Recommendations: Energy Conservation Measures

Summary table

ECM#	Description
1	Retro commissioning of building systems and controls
2	Lighting Upgrade; See appendix A for entire lighting retrofit schedule.

ECM#1: Retro Commissioning of building systems and controls

Description:

The Senior Center building is only about 10 years old and therefore does not have many chances for energy efficient upgrade. All of the equipment has been reasonably maintained but could benefit for having the mechanical equipment calibrated and tuned up to building operations. Typically mechanical equipment is installed by the installer and never calibrated to exactly how the building functions. Equipment such as timers, temperature resets, etc should be evaluated in depth for any opportunities for improvement.

Installation cost:

Estimated installed cost: \$10,890
 Source of cost estimate: Similar Project

Economics:

1st year energy and cost savings						Simple Payback (SPP)	Life of Meas. (LoM)	Lifetime Cost Savings	Return on Invest (ROI)	
Electricity Savings		Fuel Savings		Cost Savings						
Consumption	Demand	Natural Gas								
1,544	kWh	1	kW	265	Therms	\$788	13.83	20	\$11,504	0.3%

Assumptions: SWA calculated the savings for this measure using information collected during the field visit and analysis of historical utility consumption information. SWA assumes that by undergoing retro-commissioning, the building will be able to save a minimum of 10% on just the heating and cooling usage of the building.

Rebates/financial incentives:

There are currently not incentives available for this measure at this time.

Options for funding ECM:

Additional information may be found on the NJ Clean Energy website.

ECM#1: Upgrading of existing lighting

Description:

The Senior Center building contains mostly energy efficient light for general lighting purposes. 75 Watt incandescent flood lights are used for supplemental lighting as well exterior lighting. There are 32 fixtures that use 75W flood lights which SWA recommends should be replaced with 32 Watt CFL bulbs.

Installation cost:

Estimated installed cost: \$10,890
Source of cost estimate: Similar Project

Economics:

1st year energy and cost savings						Simple Payback (SPP)	Life of Meas. (LoM)	Lifetime Cost Savings	Return on Invest (ROI)	
Electricity Savings			Fuel Savings		Cost Savings					
Consumption		Demand	Natural Gas							
2,873	kWh	0	kW	0	Therms	\$460	1.04	20	\$6,714	64.94%

Assumptions: SWA calculated the savings for this measure using information collected during the field visit and analysis of historical utility consumption information.

Rebates/financial incentives:

There are currently not incentives available for this measure at this time.

Options for funding ECM:

Additional information may be found on the NJ Clean Energy website.

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 would not be cost beneficial to this project since there is such little electric demand. The building also does not have a clear unobstructed Southern exposure.

5.3. Solar Thermal Collectors

Solar thermal collectors are not cost effective for this project and are not recommended due to the low amount of domestic hot water use throughout the building.

5.4. Combined Heat and Power

CHP 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 because it would require modifications to the existing heat distribution system, which would not be cost effective.

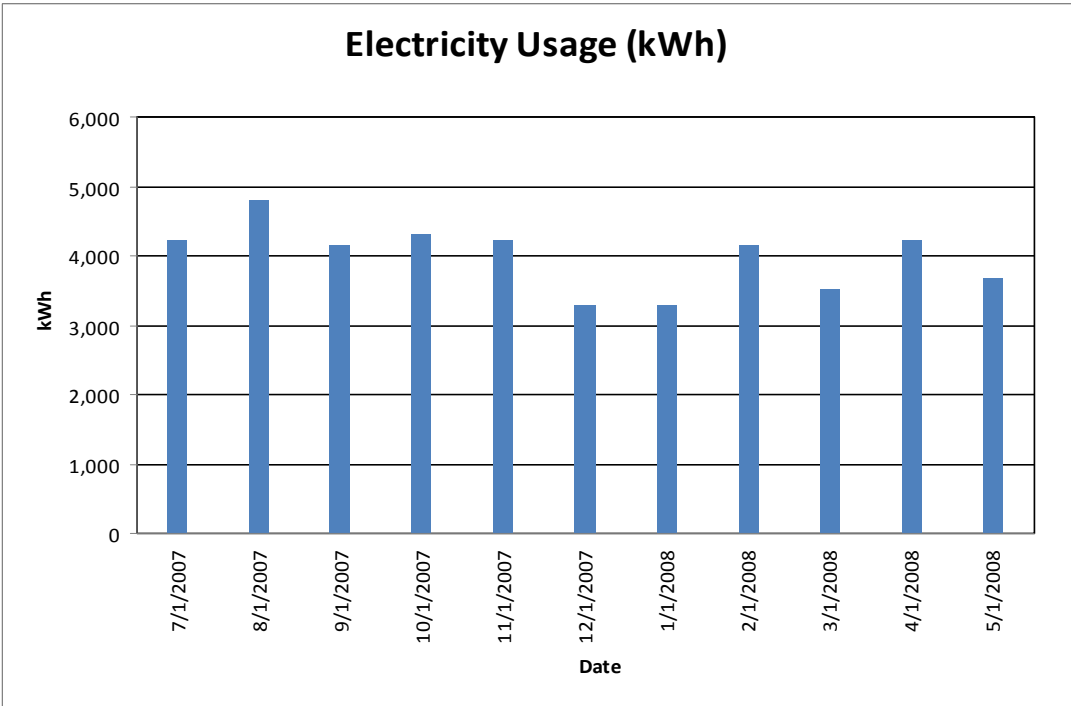
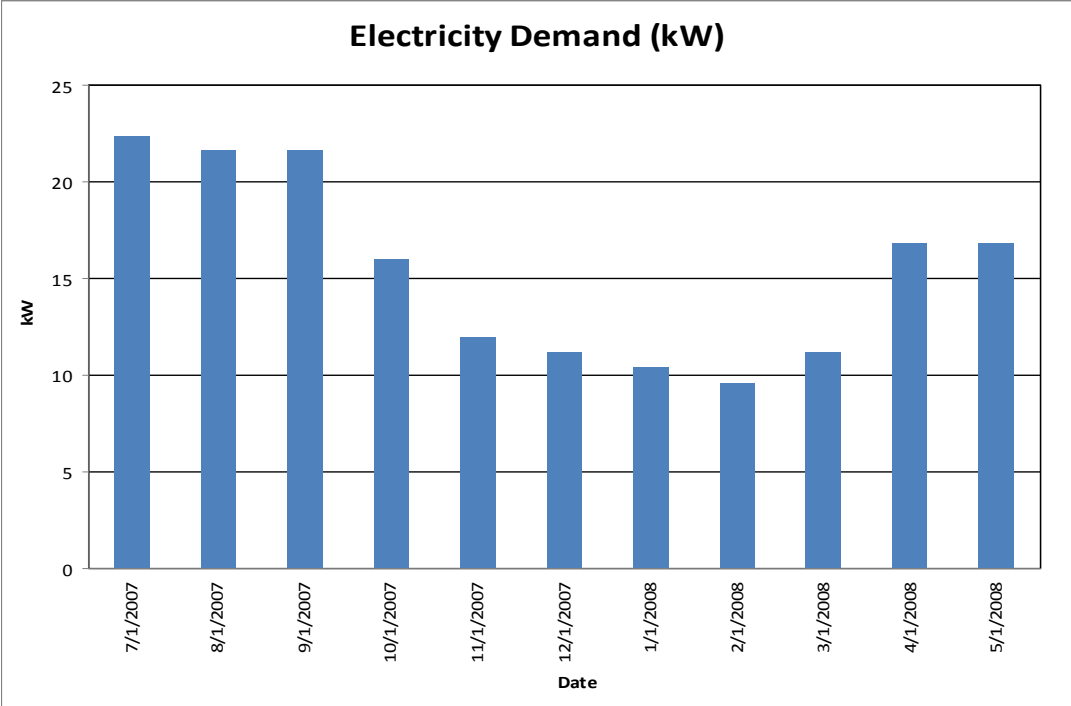
5.6. Wind

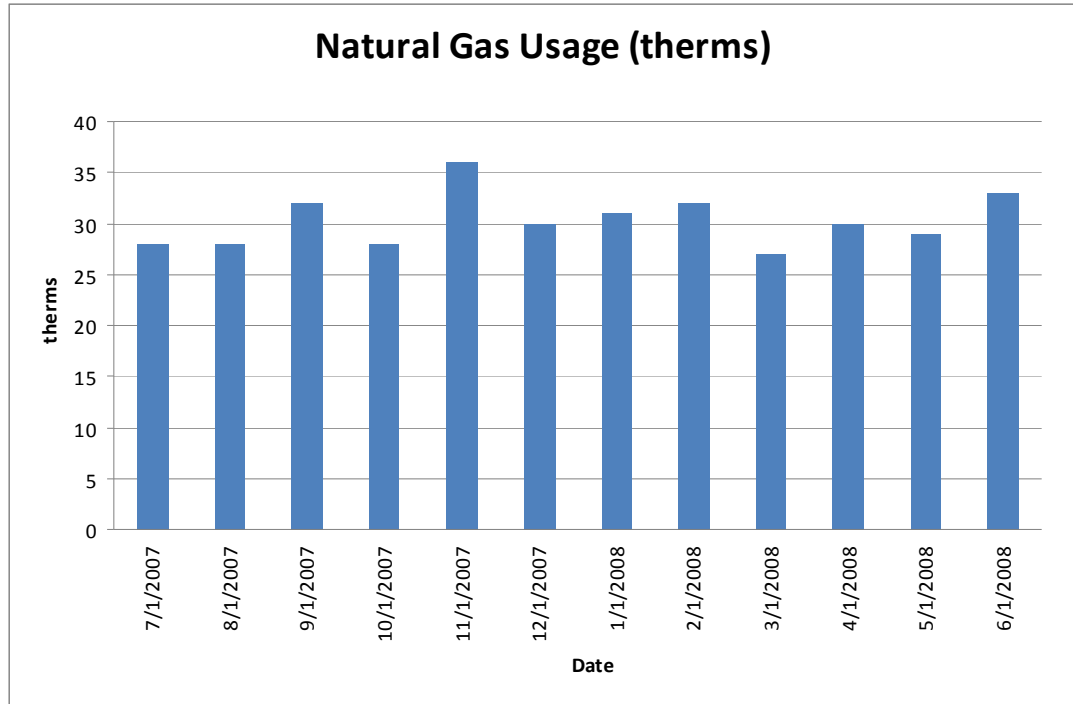
Wind power production is not appropriate for this location because required land is not available for the wind turbine. Also, the available wind energy resource is very low.

6. ENERGY PURCHASING AND PROCUREMENT STRATEGIES

6.1. Load profiles

The average electrical peak demand for the previous year was 15.4 kW and the maximum peak demand was 22.4 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 11 months and the other two charts show electric and gas usage (in kWh), respectively.



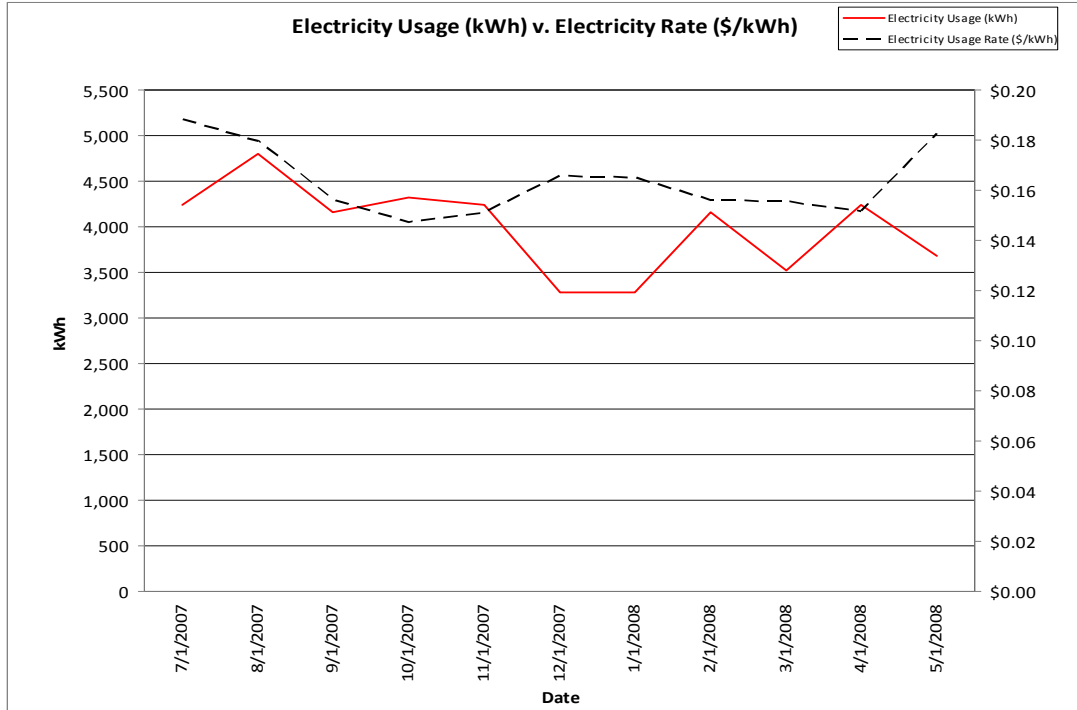


6.2. Tariff analysis

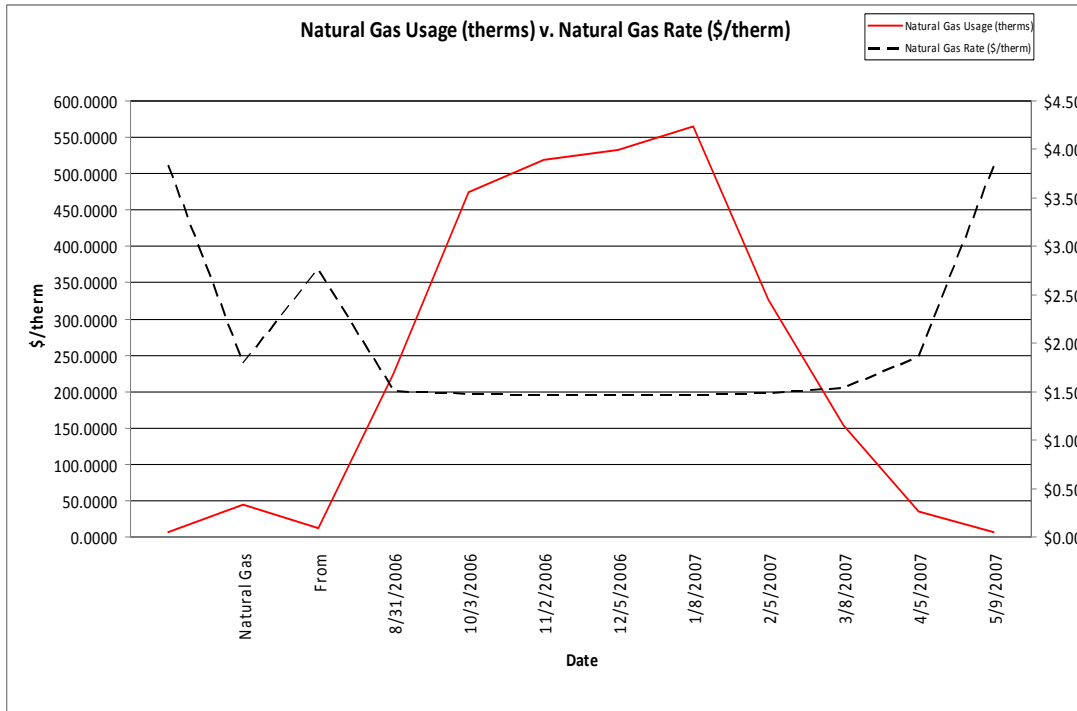
The Holmdel Senior Center currently buys electricity from JCP&L at the general service rate, which charges customers based on the market rate of electricity usage as well as monthly peak demand. Gas is purchased from NJNG at the BGSS service rate which charges customers based on the market rate of natural gas usage. General Service rates are appropriate for this building due to its size.

6.3. Energy Procurement strategies

Billing analysis shows price fluctuations of over 20% over the course of the year for the building electrical and natural gas accounts. 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 electricity from an ESCO can reduce electric rate fluctuation and ultimately reduce the annual cost of energy for the school. Appendix B contains a complete list of third party energy suppliers.



Electricity prices reflect electricity usage



Natural gas prices fluctuate as expected with usage

The building would not be eligible for enrollment in a Demand Response Program because the minimum electric demand each month does not greatly exceed 50 kW, which is the typical threshold for considering this option.

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.

Appendix A: Lighting study

Existing Lighting Conditions														
#	Building	Level/Floor	Location in Building	Fixture Type	Ballast Type	No. of Fixtures	No. of Lamps	Type of Lamp	Watts/Lamp	Hrs/Day	Energy Use (kWh/year)	Controls	Daylighting possible?	Total Power (Watts)
1	Senior Center	Main Floor	Vestibule	4' linear T8	electronic	1	3	Fluorescent	32	8	200	Switch	No	96
2	Senior Center	Main Floor	Women's Room	4' linear T8	electronic	5	2	Fluorescent	32	8	668	Switch	No	320
3	Senior Center	Main Floor	Women's Room	4' linear T8	electronic	2	3	Fluorescent	32	8	401	Switch	No	192
4	Senior Center	Main Floor	First room on right	4' linear T8	electronic	2	3	Fluorescent	32	8	401	Switch	No	192
5	Senior Center	Main Floor	Closet on left	4' linear T8	electronic	2	3	Fluorescent	32	2	100	Switch	No	192
6	Senior Center	Main Floor	Hallway	LED Exit Sign	-	4	3	LED	5	24	376	None	No	60
7	Senior Center	Main Floor	Men's Room	4' linear T8	electronic	2	3	Fluorescent	32	8	401	Switch	No	192
8	Senior Center	Main Floor	Men's Room	4' linear T8	electronic	4	2	Fluorescent	32	8	535	Switch	No	256
9	Senior Center	Main Floor	Men's Closet	4' linear T8	electronic	2	2	Fluorescent	32	2	67	Switch	No	128
10	Senior Center	Main Floor	Kitchen	4' linear T8	electronic	2	3	Fluorescent	32	8	401	Switch	No	192
11	Senior Center	Main Floor	Large Area	4' linear T8	electronic	48	3	Fluorescent	32	8	9622	Switch	No	4608
12	Senior Center	Main Floor	Large Area	LED Exit Sign	-	4	1	LED	5	24	125	None	No	20
13	Senior Center	Main Floor	Side Vestibule	4' linear T8	electronic	1	3	Fluorescent	32	8	200	Switch	No	96
14	Senior Center	Main Floor	Large Area	75W Flood	-	18	1	Flood	75	8	2819	Switch	No	1350
15	Senior Center	Main Floor	Storage Area	4' linear T8	electronic	6	2	Fluorescent	32	2	200	Switch	No	384
16	Senior Center	Exterior	Back	75W Flood	-	6	1	Flood	75	8	940	Switch	No	450
17	Senior Center	Main Floor	Sides	75W Flood	-	6	1	Flood	75	8	940	Switch	No	450
18	Senior Center	Main Floor	Front	75W Flood	-	2	1	Flood	75	8	313	Switch	No	150

Proposed Lighting Conditions														
#	Building	Level/Floor	Location in Building	Fixture Type	Ballast Type	No. of Fixtures	No. of Lamps	Type of Lamp	Watts/Lamp	Hrs/Day	Energy Use (kWh/year)	Controls	Daylighting possible?	Total Power (Watts)
1	Senior Center	Main Floor	Vestibule	4' linear T8	electronic	1	3	Fluorescent	32	8	200	Switch	No	96
2	Senior Center	Main Floor	Women's Room	4' linear T8	electronic	5	2	Fluorescent	32	8	668	Switch	No	320
3	Senior Center	Main Floor	Women's Room	4' linear T8	electronic	2	3	Fluorescent	32	8	401	Switch	No	192
4	Senior Center	Main Floor	First room on right	4' linear T8	electronic	2	3	Fluorescent	32	8	401	Switch	No	192
5	Senior Center	Main Floor	Closet on left	4' linear T8	electronic	2	3	Fluorescent	32	2	100	Switch	No	192
6	Senior Center	Main Floor	Hallway	LED Exit Sign	-	4	3	LED	5	24	376	None	No	60
7	Senior Center	Main Floor	Men's Room	4' linear T8	electronic	2	3	Fluorescent	32	8	401	Switch	No	192
8	Senior Center	Main Floor	Men's Room	4' linear T8	electronic	4	2	Fluorescent	32	8	535	Switch	No	256
9	Senior Center	Main Floor	Men's Closet	4' linear T8	electronic	2	2	Fluorescent	32	2	67	Switch	No	128
10	Senior Center	Main Floor	Kitchen	4' linear T8	electronic	2	3	Fluorescent	32	8	401	Switch	No	192
11	Senior Center	Main Floor	Large Area	4' linear T8	electronic	48	3	Fluorescent	32	8	9622	Switch	No	4608
12	Senior Center	Main Floor	Large Area	LED Exit Sign	-	4	1	LED	5	24	125	None	No	20
13	Senior Center	Main Floor	Side Vestibule	4' linear T8	electronic	1	3	Fluorescent	32	8	200	Switch	No	96
14	Senior Center	Main Floor	Large Area	32W CFL	-	18	1	CFL	32	8	1203	Switch	No	576
15	Senior Center	Main Floor	Storage Area	4' linear T8	electronic	6	2	Fluorescent	32	2	200	Switch	No	384
16	Senior Center	Exterior	Back	32W CFL	-	6	1	Flood	32	8	401	Switch	No	192
17	Senior Center	Main Floor	Sides	32W CFL	-	6	1	Flood	32	8	401	Switch	No	192
18	Senior Center	Main Floor	Front	32W CFL	-	2	1	Flood	32	8	134	Switch	No	64

Existing Lighting Usage (kWh/year)	18,708
Proposed Lighting Usage (kWh/year)	15,835
Existing Lighting Cost (\$/year)	\$2,993
Proposed Lighting Cost (\$/year)	\$2,534
Proposed Savings (kWh/year)	2,873
Proposed Savings (\$/year)	\$460
Existing Lighting Power Density (W/sqft)	1.28
Proposed Lighting Power Density (W/sqft)	1.10

Appendix B: Third Party Energy Suppliers (ESCOs)

Third Party Electric Suppliers for JCPL Service Territory	Telephone & Web Site
Hess Corporation 1 Hess Plaza Woodbridge, NJ 07095	(800) 437-7872 www.hess.com
BOC Energy Services, Inc. 575 Mountain Avenue Murray Hill, NJ 07974	(800) 247-2644 www.boc.com
Commerce Energy, Inc. 4400 Route 9 South, Suite 100 Freehold, NJ 07728	(800) 556-8457 www.commerceenergy.com
Constellation NewEnergy, Inc. 900A Lake Street, Suite 2 Ramsey, NJ 07446	(888) 635-0827 www.newenergy.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 07926	(800) 977-0500 www.fes.com
Glacial Energy of New Jersey, Inc. 207 LaRoche Avenue Harrington Park, NJ 07640	(877) 569-2841 www.glacialenergy.com
Integrus Energy Services, Inc. 99 Wood Ave, South, Suite 802 Iselin, NJ 08830	(877) 763-9977 www.integrusenergy.com
Liberty Power Holdings, LLC Park 80 West Plaza II, Suite 200 Saddle Brook, NJ 07663	(800) 363-7499 www.libertypowercorp.com
Pepco Energy Services, Inc. 112 Main St. Lebanon, NJ 08833	(800) 363-7499 www.pepco-services.com
PPL EnergyPlus, LLC 811 Church Road Cherry Hill, NJ 08002	(800) 281-2000 www.pplenergyplus.com
Sempra Energy Solutions 581 Main Street, 8th Floor Woodbridge, NJ 07095	(877) 273-6772 www.semprasolutions.com
South Jersey Energy Company One South Jersey Plaza, Route 54 Folsom, NJ 08037	(800) 756-3749 www.southjerseyenergy.com
Suez Energy Resources NA, Inc. 333 Thornall Street, 6th Floor Edison, NJ 08837	(888) 644-1014 www.suezenergyresources.com

Third Party Gas Suppliers for NJNG Service Territory	Telephone & Web Site
Cooperative Industries 412-420 Washington Avenue Belleville, NJ 07109	(800) 628-9427 www.cooperativenet.com
Direct Energy Services, LLC 120 Wood Avenue, Suite 611 Iselin, NJ 08830	(866) 547-2722 www.directenergy.com
Gateway Energy Services Corp. 44 Whispering Pines Lane Lakewood, NJ 08701	(800) 805-8586 www.gesc.com
UGI Energy Services, Inc. d/b/a/ GASMAR 704 East Main Street, Suite 1 Moorestown, NJ 08057	(856) 273-9995 www.ugienergyservices.com
Hess Corporation 1 Hess Plaza Woodbridge, NJ 07095	(800) 437-7872 www.hess.com
Intelligent Energy 2050 Center Avenue, Suite 500 Fort Lee, NJ 07024	(800) 724-1880 www.intelligentenergy.org
Metromedia Energy, Inc. 6 Industrial Way Eatontown, NJ 07724	(877) 750-7046 www.metromediaenergy.com
MxEnergy, Inc. 510 Thornall Street, Suite 270 Edison, NJ 08837	(800) 375-1277 www.mxenergy.com
NATGASCO (Mitchell Supreme) 532 Freeman Street Orange, NJ 07050	(800) 840-4427 www.natgasco.com
NJ Gas & Electric 1 Bridge Plaza, Fl. 2 Fort Lee, NJ 07024	(866) 568-0290 www.NewJerseyGasElectric.com
Pepco Energy Services, Inc. 112 Main Street Lebanon, NJ 08833	(800) 363-7499 www.pepco-services.com
PPL EnergyPlus, LLC 811 Church Road Cherry Hill, NJ 08002	(800) 281-2000 www.pplenergyplus.com
South Jersey Energy Company One South Jersey Plaza, Route 54 Folsom, NJ 08037	(800) 756-3749 www.southjerseyenergy.com
Sprague Energy Corp. 12 Ridge Road Chatham Township, NJ 07928	(800) 225-1560 www.spragueenergy.com
Woodruff Energy 73 Water Street Bridgeton, NJ 08302	(800) 557-1121 www.woodruffenergy.com