Long Island Power Authority

Energy Audit Report

for

Deer Park Schools
John F Kennedy School

October 18, 2007

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1 Executive Summary

This report presents the findings of an energy survey conducted on October 3, 2007 by Bill Conn for:

Deer Park Schools John F Kennedy School
101 Lake Ave
Deer Park, NY 11729
631-274-4080

Facility contact person: Kirk Gostkowski
LIPA account number(s): 724-28-4650-16
Gas 724-28-4651-07

Long Island Power Authority (LIPA) conducts energy surveys at no charge to its customers. The surveys promote LIPA's message of safeguarding the environment, reducing dependence on foreign oil and delaying the need to build costly new power plants. This can be achieved through the wiser and more efficient use of energy.

The annual energy costs at this facility are as follows:

Electricity	$114,328
Natural Gas	$162,988
Total	$277,316

The potential annual energy cost savings are shown below in Table 1-1.

Table 1-1
Energy Cost Reduction Opportunities (ECRO's)

Description	Potential Rebate*	Cost After Rebate	Annual Savings	Payback with Rebate	% of Annual Energy Cost
Upgrade the Lighting	$735	$6,859	$2,695	2.5 years	1.0%
Install Lighting Controls	$1,365	$10,095	$6,901	1.5 years	2.5%
Improve Temperature Control	$200	$6,060	$47,373	0.1 years	17.1%
Totals	**$2,300**	**$23,014**	**$56,969**	**0.4 years**	**20.5%**

1 Executive Summary

* **NOTE**: Rebates are subject to caps, changes and eligibility requirements. In addition, there may be other rebates that apply. Prior to purchasing any equipment you must contact your LIPA representative or the audit program administrator, Stacey Wagner, at (631) 755-5358 for assistance in the pre-approval process and in determining your potential rebate amount.
The estimated demand and energy savings are shown below in Table 1-3. The information in this table corresponds to the recommendations in Table 1-1.

Table 1-3
Estimated Energy Savings

Recommendation	Total kW Reduction	Total Annual kWh Reduction	Total Annual Therms Reduced
Upgrade the Lighting	5.3	13,410	
Install Lighting Controls		46,881	
Improve Temperature Control			37,748
Totals	**5.3**	**60,291**	**37,748**

The remainder of the report is organized as follows: Section 2 explains the details of the Energy Cost Reduction Opportunities, Section 3 shows the historical energy usage and costs for this facility. Section 4 gives an equipment inventory and discusses the building characteristics (architectural, mechanical, electrical, etc.), and Section 5 is the methodology used to survey and analyze your facility.

1 Executive Summary

Auditor's Comments

In most school buildings the most cost effective measure will be temperature control during unoccupied periods. The temperature is currently being setback at night but there may be opportunities to optimize these savings. Each school should have a temperature control schedule and the heat set back 15 minutes before the end on occupancy. Some investment may be needed to assure all pneumatic controls are working properly. Any reported overheating in any areas should be addressed promptly.

Verify time clock settings for perimeter unit fans and exhaust fans. Optimize existing Building Management System. Keep steam traps maintained. Ascertain the system pressure needed to assure distribution and avoid more steam pressure than needed.

The audit analysis indicates long run hours on lights and equipment. The use of lights and motors during unoccupied periods should be reviewed. Where occupancy sensors for lighting is recommended, the assumed operating hours should be reviewed on a case by case basis. Time clock operation should be verified.

1 Executive Summary

Energy Star Rating here

1 Executive Summary

Audit Disclaimer

This audit has been conducted and prepared by LIPA for the sole purpose of presenting energy cost reduction opportunities for you. This report is not intended for any other purpose. The data used in this audit was provided by your organization and was not independently verified by us.

While the recommendations in this report have been reviewed for technical accuracy, LIPA is not liable if projected savings are not actually achieved. The recommendations are based on an analysis of conditions observed at the time of the audit and information provided by your organization. Estimated savings are computed on the basis of research by government agencies and engineering groups. Actual savings will depend on many factors including conservation measures implemented, seasonal variations in fuel price and weather, and specific energy use practices of the building occupants.

Costs are based on average local costs for materials and labor. It is strongly suggested that you contact a qualified contractor prior to implementing any of the recommendations outlined in this report. Many items are not included in our costs, such as removal and disposal of the existing equipment, bringing the new equipment installation up to code, asbestos abatement, lighting ballast PCB and lamp mercury handling, etc.

We hope that this report is helpful and that you will implement the energy savings measures that we recommended. If you have any questions, please contact Stacey Wagner at (631) 755-5358 or your LIPA representative.

2 Energy Cost Reduction Opportunities

Install Lighting Controls

Install Lighting Controls to Reduce the Lighting Use

In some areas the lighting is left on unnecessarily. Many times this is due to the idea 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 found that the best option is to turn the lights off whenever possible. Although this does reduce the lamp life, the energy savings far outweigh the lamp replacement costs. The cutoff for when to turn the lights off is around two minutes. If the lights can be off for only a two minute interval, then it pays to shut them off.

Lighting controls come in many forms. Sometimes an additional switch is all it would take. In some cases a wind-up timer is what is required. Another type is the timeclock which allows the user to set an on/off schedule. Timeclocks can be a dial clock with on/off indicators on it, or a timeclock can be a small box the size of a thermostat where the user programs the on/off schedule in a digital format like setting the alarm on a wristwatch. 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.

Details of the lighting controls recommendation are shown in the following table.

Line # - Area	Exist. Hrs.	New Hrs.	Type of Control to Install	Qty	Mat'l Cost	Labor Cost	Potential Rebate	Cost After Rebate	Annual Savings	Payback (yrs)
7 - New Gym	70	45							$677	
8 - Old Gym	45	30							$163	
10 - Cafeteria A	60	40	Ceiling Occupancy Sensor	3	$450	$450	$105	$795	$375	2.1
11 - Kitchen A	65	40							$421	
12 - Cafeteria C	65	35	Ceiling Occupancy Sensor	1	$100	$80	$35	$145	$97	1.5
13 - Cafeteria B	65	35	Ceiling Occupancy Sensor	2	$300	$300	$70	$530	$388	1.4
17 - CA Board Room	40	20	Ceiling Occupancy Sensor	2	$300	$300	$70	$530	$194	2.7

2 Energy Cost Reduction Opportunities

Line # - Area	Exist. Hrs.	New Hrs.	Type of Control to Install	Qty	Mat'l Cost	Labor Cost	Potential Rebate	Cost After Rebate	Annual Savings	Payback (yrs)
19 - CA Conference Room	40	20	Ceiling Occupancy Sensor	1	$100	$80	$35	$145	$39	3.7
21 - Class Rooms	60	35	Ceiling Occupancy Sensor	30	$4,500	$4,500	$1,050	$7,950	$4,547	1.7
Totals:					**$5,750**	**$5,710**	**$1,365**	**$10,095**	**$6,901**	**1.5**

2 Energy Cost Reduction Opportunities

Improve Temperature Control

It is the intention of almost all facilities to keep the thermostat set at the most economical position while providing an appropriate climate for the occupants. However, due to thermostat problems, too many people with access to the thermostat, or faulty setback equipment, many control systems fall short of the optimum energy cost savings.

Install Digital Thermostats

By installing digital thermostats you eliminate most of the impediments to significant energy cost savings. Digital thermostats can be purchased with password capability, or key capability, or other deterrent. And in addition to the savings found through consistent setpoints, they can be programmed to more extreme unoccupied temperatures with a warm-up schedule that prepares the building for occupancy.

The following tables show the existing setpoints for each area of the facility and also the recommended or "proposed" setpoints (shown in the shaded rows). It should be noted that the temperature setpoints in the facility may have varied greatly over the past twelve months. The information shown below for the "existing conditions" is based on data collected at the site and is adjusted up or down depending upon the amount of energy used over the past twelve months.

Zone 1		Occupied Periods From	Occupied Periods To	Days/ Week	Heating Profile Occupied	Heating Profile Unocc	Cooling Profile Occupied	Cooling Profile Unocc
Air Conditioned Spaces	*existing*	7:30 AM	4:00 PM	5	70	62	73	
	proposed	7:30 AM	4:00 PM	5	70	55	73	
	existing			2		62		
	proposed			2		55		

Zone 1 Summary - Air Conditioned Spaces	
Annual Heating Cost Savings (gas):	$1,275
Number of Thermostats Required:	1
Total Materials:	$65
Total Labor:	$1,500
Total Installation Cost:	$1,565
Payback:	1.2 years

2 Energy Cost Reduction Opportunities

Zone 2		Occupied Periods From	Occupied Periods To	Days/ Week	Heating Profile Occupied	Heating Profile Unocc	Cooling Profile Occupied	Cooling Profile Unocc
Computer Labs	*existing*	7:30 AM	4:00 PM	5	70	62	72	72
	proposed	7:30 AM	4:00 PM	5	70	55	72	72
	existing			2		62		72
	proposed			2		55		72

Zone 2 Summary - Computer Labs	
Annual Heating Cost Savings (gas):	$606
Number of Thermostats Required:	1
Total Materials:	$65
Total Labor:	$1,500
Total Installation Cost:	$1,565
Payback:	2.6 years

Zone 3		Occupied Periods From	Occupied Periods To	Days/ Week	Heating Profile Occupied	Heating Profile Unocc	Cooling Profile Occupied	Cooling Profile Unocc
Non Air Conditioned	*existing*	7:30 AM	4:00 PM	5	70	62		
	proposed	7:30 AM	4:00 PM	5	70	55		
	existing			2		62		
	proposed			2		55		

Zone 3 Summary - Non Air Conditioned	
Annual Heating Cost Savings (gas):	$ 43,373
Number of Thermostats Required:	1
Total Materials:	$65
Total Labor:	$1,500
Total Installation Cost:	$1,565
Payback:	0.0 years

2 Energy Cost Reduction Opportunities

Zone 4		Occupied Periods From	Occupied Periods To	Days/ Week	Heating Profile Occupied	Heating Profile Unocc	Cooling Profile Occupied	Cooling Profile Unocc
Central Admin	*existing*	7:30 AM	5:00 PM	5	70	62	73	
	proposed	7:30 AM	5:00 PM	5	70	55	73	
	existing			2		62		
	proposed			2		55		

Zone 4 Summary - Central Admin	
Annual Heating Cost Savings (gas):	$1,957
Number of Thermostats Required:	1
Total Materials:	$65
Total Labor:	$1,500
Total Installation Cost:	$1,565
Payback:	0.8 years

3 Historical Energy Usage and Costs

Table 3-2 and Figure 3-1 represents the electrical energy usage for the surveyed building from Jul-06 to Jun-07. LIPA provides electricity to the facility under Rate 285. This electric rate has a component for consumption that is measured in kilowatt-hours (kWh). It is measured 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. This rate has another component for Peak Demand that is measured in kilowatts (kW). Following the example above, if your facility had nothing else in it except for the 1,000-Watt lamp, then your monthly Peak Demand would be 1.0 kW. Your meter averages your demand constantly over 15 or 30-minute intervals (depending upon the utility and the specific rate). At the end of the month you are charged for the highest "average" and this is called your Peak Demand. Based on these definitions of consumption and Peak Demand it can be shown that keeping equipment off whenever it is not in use will reduce your consumption, while not operating equipment simultaneously will reduce your Peak Demand.

Rates used in this report reflect the most current rate structure available. Table 3-1 shows the annualized rate structure:

Table 3-1
Rate Structure for Rate 285

Description	Summer	Winter	Average
Demand Charge	$24.33/kW	$4.68/kW	$11.23/kW
Energy Charge	$0.1522/kWh	$0.1447/kWh	$0.1472/kWh

Figure 3-2 is a pie chart reflecting the electrical end-uses and their contribution to the total electricity usage. Table 3-3 is the electrical end-use in data format.

Table 3-4 and Figure 3-3 on the following pages show the natural gas energy usage for the surveyed building from Jul-06 to Jun-07. Gas is supplied by Keyspan. The annual usage and cost are 129,873 CCF and $162,988, respectively. This yields an average cost $1.25500 / CCF.

Figure 3-4 is a pie chart reflecting the gas end-uses and their contribution to the total gas usage. Table 3-5 is the gas end-use in data format.

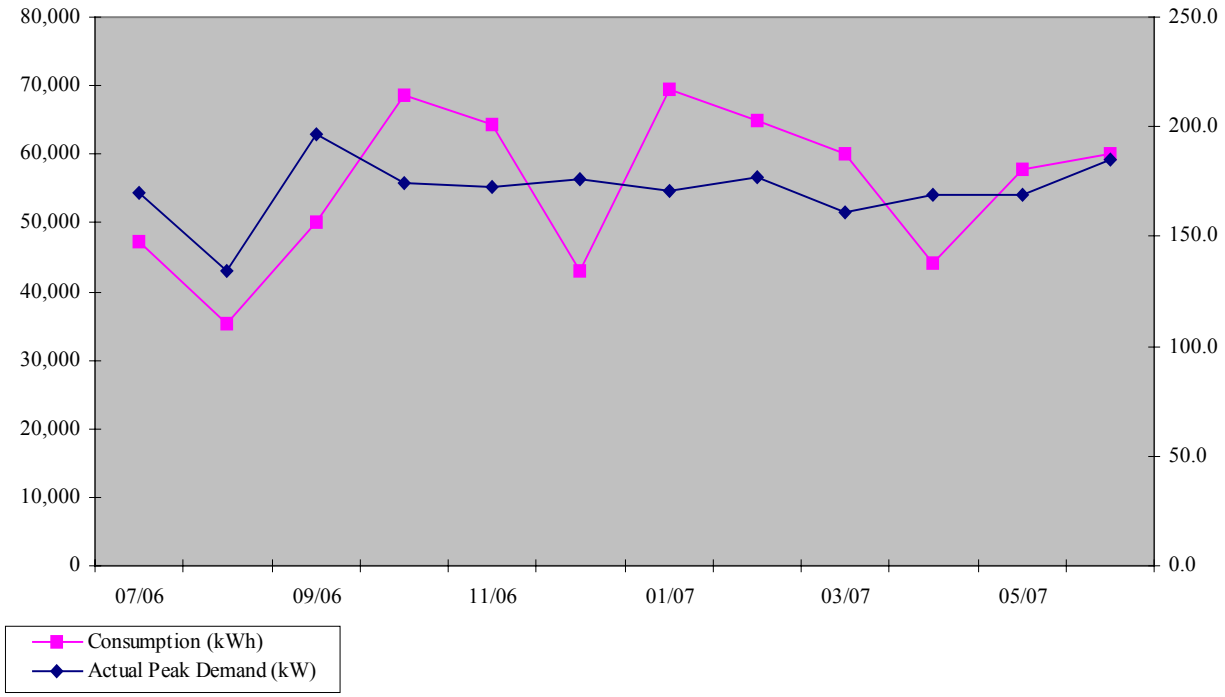
Table 3-2

3 Historical Energy Usage and Costs

Electricity Billing Data

Month of Use	Days in Month	Consumption kWh	Peak Demand		Total Bill
			Actual	Billed	
07/06	31	47,200	170.0	170.0	$11,269
08/06	31	35,360	134.0	134.0	$7,951
09/06	30	50,240	197.0	197.0	$11,835
10/06	31	68,480	174.0	174.0	$11,943
11/06	30	64,480	173.0	173.0	$9,783
12/06	31	43,040	176.0	176.0	$6,500
01/07	31	69,600	171.0	171.0	$10,573
02/07	28	64,960	177.0	177.0	$9,627
03/07	31	60,000	161.0	161.0	$8,754
04/07	30	44,160	169.0	169.0	$6,469
05/07	31	57,760	169.0	169.0	$8,484
06/07	30	60,160	185.0	185.0	$11,140
Totals	***365***	***665,440***			***$114,328***

Figure 3-1
Electricity Usage Profile

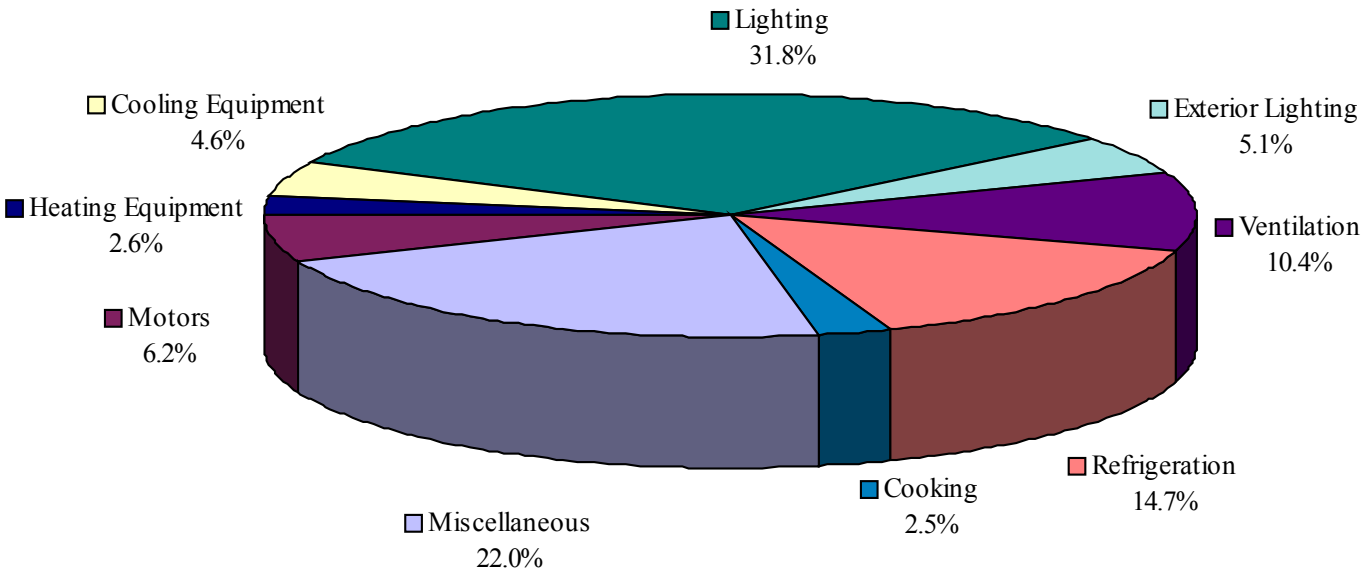


3 Historical Energy Usage and Costs

Table 3-3
Electricity End Use

End Use	Percent of Total
Heating Equipment	2.6%
Cooling Equipment	4.6%
Lighting	31.8%
Exterior Lighting	5.1%
Ventilation	10.5%
Refrigeration	14.7%
Cooking	2.5%
Miscellaneous	22.0%
Motors	6.2%
TOTAL	100.0%

Figure 3-2
Electricity End Use

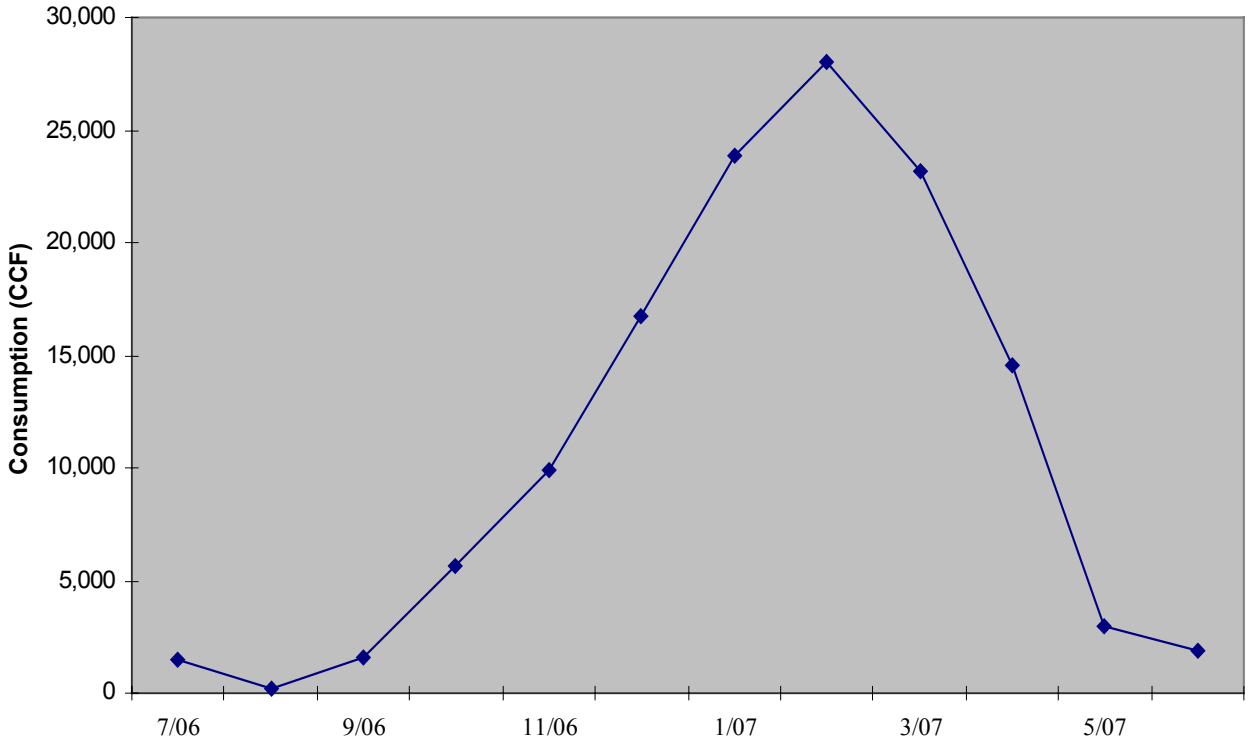


3 Historical Energy Usage and Costs

Table 3-4 Natural Gas Billing Data

Date	Days per Month	Consumption (CCF)	Total Bill
7/06	31	1,514	$1,853
8/06	31	184	$398
9/06	30	1,561	$2,020
10/06	31	5,628	$5,452
11/06	30	9,905	$13,482
12/06	31	16,714	$21,138
1/07	31	23,849	$28,371
2/07	28	28,026	$34,217
3/07	31	23,125	$30,483
4/07	30	14,577	$19,250
5/07	31	2,956	$3,881
6/07	30	1,834	$2,443
Totals	***365***	***129,873***	***$162,988***

Figure 3-3
Natural Gas Usage Profile

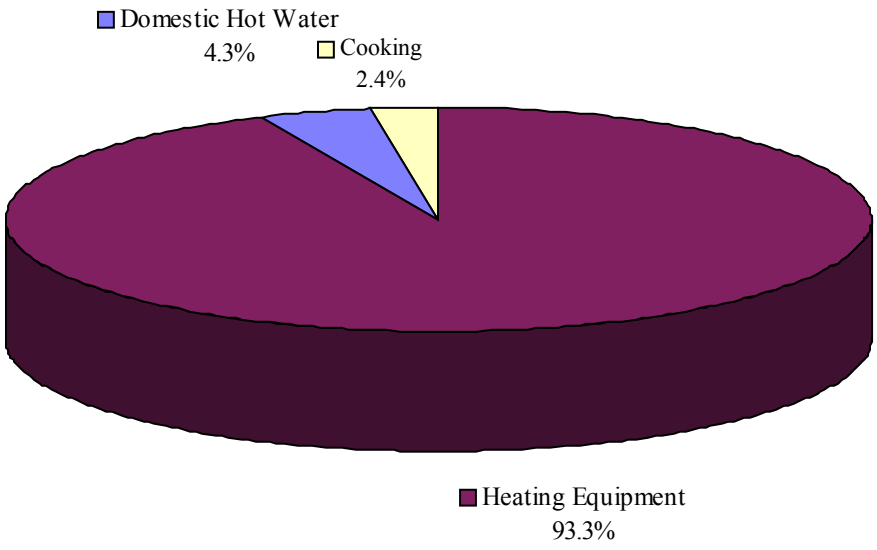


3 Historical Energy Usage and Costs

Table 3-5
Natural Gas End Use

End Use	Percent of Total
Heating Equipment	93.3%
Domestic Hot Water	4.3%
Cooking	2.4%
TOTAL	100%

Figure 3-4
Natural Gas End Use



4 Equipment Inventory

Building Characteristics

Facility Name:	Deer Park Schools John F Kennedy School
Total Square Footage:	150,992
Building Type:	Intermediate School

Building Construction						
Description	**Age (yrs)**	**Wall Type**	**Wall Insulation**	**Roof Type**	**Roof Insulation**	**Window Type**
Single	50	Block & Brick	Minimal	Flat	Minimal	

No Dishwasher - Disposable Plates

Equipment Inventory

Equipment denoted by an asterisk indicates an estimate of the equipment ratings due to equipment inaccessibility, worn nameplates, or a lack of nameplates. The Miscellaneous Equipment table ends with a column that shows that line's contribution to the total respective fuel bill (electricity, gas, oil, etc.)

Heating Equipment				
Description	**Qty**	**Capacity**	**Fuel**	**Age (yrs)**
Steam Boiler circa 1960	1	5,000 MBH	gas	10
Steam Boiler circa 1996	1	5,000 MBH	gas	45

Cooling Equipment			
Description	**Qty**	**Capacity**	**Age (years)**
Multiple Through Wall Units	11	2 Tons	5
Multiple Through Wall Units	3	1 Tons	5
Multiple Through Wall Units	10	2 Tons	5
Offices Non Working Chiller	1	10 Tons	
Central Admin Board Room	1	5 Tons	5
Network Equipment Room	1	2 Tons	5

4 Equipment Inventory

Ventilation Equipment				
Description	**Qty**	**Capacity**	**Hrs/Wk Winter**	**Hrs/Wk Summer**
Perimeter Heating Unit Fans	90	0.15 HP	100	50
Roof Exhaust Fans	32	0.3 HP	60	50
New Gym Air Handlers	2	2 HP	70	20
Old Gym Air Handlers	2	0.75 HP	60	20
Kitchen Air Handler	1	0.5 HP	50	10

Domestic Hot Water Systems			
Description	**Qty**	**Capacity**	**Fuel**
Hot Water off Boiler			gas

Motor Inventory							
Equipment	**Qty**	**HP**	**ODP/ TEFC**	**RPM**	**Usage hrs/day**	**Usage days/wk**	**Estimated Load Factor**
Condensate Vacuum Pumps	1	2			6	7	0.8
Condensate Pumps	2	2			4	7	0.8
Compressor for Controls	1	5			8	7	0.8
Condensate Tank Pump	1	0.33			4	7	0.8
Condensate Pump - Not Used	1	3					0.8
Boiler Power Burner	2	0.33			5	7	0.8
Boiler Power Vent	2	0.33			5	7	0.8
Elevator	1	20			8	5	0.8

Miscellaneous Equipment						
Description	**Qty**	**Capacity**	**Fuel**	**Hrs/Wk Usage**	**% Fuel Usage**	**End-Use**
Miscellaneous Load	1	10 kW	elec	100	7.8%	Miscellaneous
Ice Cream Feezer	2	1 kW	elec	60	0.9%	Refrigeration
2 Door Com Refrigerator	3	3 kW	elec	60	4.2%	Refrigeration
3 Door Com Refrigerator	1	2.5 kW	elec	60	1.2%	Refrigeration

4 Equipment Inventory

Miscellaneous Equipment						
Description	**Qty**	**Capacity**	**Fuel**	**Hrs/Wk Usage**	**% Fuel Usage**	**End-Use**
Refrigerator	2	0.6 kW	elec	60	0.6%	Refrigeration
Walk In Cooler	1	3 kW	elec	60	1.4%	Refrigeration
Walk In Freeze	2	3 kW	elec	60	2.8%	Refrigeration
Milk Cooler	1	0.6 kW	elec	50	0.2%	Refrigeration
Heating Table	2	3 kW	elec	40	1.9%	Cooking
Food Warmer	1	2 kW	elec	40	0.6%	Cooking
Gas Fired Kettle	2	50 mbh	gas	10	0.4%	Cooking
Gas Range	1	50 mbh	gas	15	0.3%	Cooking
Gas Steamer	2	25 MBH	gas	20	0.4%	Cooking
Gas Ovens	4	40 MBH	gas	20	1.3%	Cooking
Washer	1	0.5 kW	elec	10	0.0%	Miscellaneous
Dryer	1	6 kW	elec	15	0.7%	Miscellaneous
Misc Refrigerators	2	0.4 kW	elec	50	0.3%	Refrigeration
Mini Refrigerators	4	0.2 kW	elec	50	0.3%	Refrigeration
Computers	85	0.15 kW	elec	100	10.0%	Miscellaneous
Copiers	4	0.4 kW	elec	40	0.5%	Miscellaneous
Printers	11	0.2 kW	elec	30	0.5%	Miscellaneous
TVs	50	0.2 kW	elec	10	0.8%	Miscellaneous
Soda Machines	6	0.7 kW	elec	50	1.6%	Miscellaneous
Water Cooler	2	0.2 kW	elec	40	0.1%	Refrigeration
Data Servers	5	0.4 kW	elec	168	2.6%	Refrigeration
20 kW Cogeneration Unit - Not in Operation						Miscellaneous

The second to the last column of the Miscellaneous Equipment Table shows the percentage of the total fuel usage (electricity, natural gas, or fuel oil) which corresponds with the pie charts on the previous pages. The "Hrs/Wk Usage" column values include the equipment load factor and duty cycling (i.e. an air compressor running at 80% capacity and cycling on 30% of the time during a 60 hour week would have an "Hrs/Wk Usage" value of 60*0.08*0.30 = 14 Hrs/Wk).

4 Equipment Inventory

Lighting Equipment			
Line #	**Area**	**Description**	**Hrs/Wk Usage**
1	Exit Signs	36 exit sign fixtures, each using LED technology.	168
2	Offices	6 recessed paracube 2X4 fixtures, each using 2, 4' T8 lamps and electronic ballasts.	60
3	Offices	6 surface-mounted wrap 1X4 fixtures, each using 2, 4' T8 lamps and electronic ballasts.	60
4	Halls	200 surface-mounted wrap 1X4 fixtures, each using 2, 4' T8 lamps and electronic ballasts.	100
5	Small Rooms	15 surface-mounted wrap 1X4 fixtures, each using 2, 4' T8 lamps and electronic ballasts.	60
6	Maintenance Office	13 surface-mounted wrap 1X4 fixtures, each using 2, 4' T8 lamps and electronic ballasts.	45
7	New Gym	15 high bay fixtures, each using 400-Watt metal halide lamps.	70
8	Old Gym	6 high bay fixtures, each using 600-Watt high pressure sodium lamps.	45
9	Room A16	19 surface-mounted wrap 1X4 fixtures, each using 2, 4' T8 lamps and electronic ballasts.	40
10	Cafeteria A	29 surface-mounted wrap 1X4 fixtures, each using 3,4' T8 lamps and electronic ballasts.	60
11	Kitchen A	26 surface-mounted wrap 1X4 fixtures, each using 3,4' T8 lamps and electronic ballasts.	65
12	Cafeteria C	5 surface-mounted wrap 1X4 fixtures, each using 3,4' T8 lamps and electronic ballasts.	65
13	Cafeteria B	20 surface-mounted wrap 1X4 fixtures, each using 3,4' T8 lamps and electronic ballasts.	65
14	Stage	3 surface-mounted open industrial 1X8 fixtures, each using 2,8' high-output energy efficient lamps and energy efficient ballasts.	15
15	Stage	40 stage lights fixtures, each using 120-Watt, incandescent "flood" lamps.	
16	Central Administration	15 recessed paracube 2X4 fixtures, each using 2, 4' T8 lamps and electronic ballasts.	60

4 Equipment Inventory

Lighting Equipment			
Line #	**Area**	**Description**	**Hrs/Wk Usage**
17	CA Board Room	15 recessed paracube 2X4 fixtures, each using 3,4' T8 lamps and electronic ballasts.	40
18	CA - Old Foyer	1 round fixture using 3, 60-Watt, incandescent lamps.	25
19	CA Conference Rm	3 recessed paracube 2X4 fixtures, each using 3,4' T8 lamps and electronic ballasts.	40
20	CA Small Rooms	4 surface-mounted wrap 1X4 fixtures, each using 2, 4' T8 lamps and electronic ballasts.	40
21	Class Rooms	410 surface-mounted wrap 1X4 fixtures, each using 2, 4' T8 lamps and electronic ballasts.	60
22	Rest rooms	36 surface-mounted wrap 1X4 fixtures, each using 2, 4' T8 lamps and electronic ballasts.	60
29	Outdoor Wall	35 wall-mounted fixtures, each using 150-Watt high pressure sodium lamps.	90
30	Outdoor Soffits	8 hi-hat fixtures, each using 100-Watt, incandescent lamps.	90
31	Outdoor Deer Park Ave	1 fixture using 150-Watt metal halide lamps.	90
32	Outddor Central Admin Porch	2 wall-mounted fixtures, each using 75-Watt, incandescent lamps.	20

5 Methodology

The first step in the energy analysis is the site survey. The auditor walks your 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 with a software package from The Daylight Savings Company in Goshen, NY (1-800-337-2192) that calculates the anticipated energy usage. The actual energy usage is entered directly from your utility bills. The anticipated energy usage is compared to the actual usage. If necessary, corrections are made to the site-collected data until the anticipated energy usage matches the actual usage. This process develops an end-use baseline for all of the fuels used at the facility. The baseline is used to calculate the energy savings for the measures that are recommended in this report.

The savings 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 using ASHRAE's modified bin method. 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. Also, you may see natural gas savings in this report even if you do not currently have natural gas. This happens when fuel switching was recommended for your heating/cooling equipment and you have temperature reduction recommendations, as well.

Thermal recommendations (insulation, windows, pipe insulation 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 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.

Long Island Power Authority – Summary Energy Audit Report for:

Deer Park Schools John F Kennedy School

Printed: 10/18/07

Audit Date: 10/3/2007

Site:
Deer Park Schools John F Kennedy School
101 Lake Ave
Deer Park, NY 11729

LIPA main account number:
724-28-4650-16

Facility contact person: Kirk Gostkowski
Facility contact phone #: 631-274-4080

Annual Energy Costs:

Electricity	$114,328
Natural Gas	$162,988
Total	$277,316

Description	Potential Rebate*	Cost After Rebate	Annual Savings	Payback with Rebate	% of Annual Energy Cost
Upgrade the Lighting	$735	$6,859	$2,695	2.5 years	1.0%
Install Lighting Controls	$1,365	$10,095	$6,901	1.5 years	2.5%
Improve Temperature Control	$200	$6,060	$47,373	0.1 years	17.1%
Totals	**$2,300**	**$23,014**	**$56,969**	**0.4 years**	**20.5%**

* **NOTE**: Rebates are subject to caps, changes and eligibility requirements. Contact your LIPA representative or the audit program administrator, Stacey Wagner at (631) 755-5358 for assistance in determining your potential rebate amount.

Recommendation Highlights:

- Install new lighting products to increase the efficiency of your lighting fixtures.
- Install lighting controls in certain areas of your facility to reduce lighting use during unoccupied periods.
- Modify your temperature setpoints to reduce the energy use associated with heating and/or cooling your facility.