

**ROXBURY TOWNSHIP BOARD OF EDUCATION
TRANSPORTATION BUILDING
ENERGY ASSESSMENT**

for

**NEW JERSEY
BOARD OF PUBLIC UTILITIES**

CHA PROJECT NO. 24454

November 2012

Prepared by:



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A comprehensive fixture survey was conducted of the entire building. Each switch and circuit was identified, and the number of fixtures, locations, and existing wattage established (Appendix C). There is an opportunity to reduce consumption by upgrading the existing 400 watt Metal Halide fixtures in the garage bays to T-5 high bay fixtures. Supporting calculations, including assumptions for lighting hours and annual energy usage for each fixture, are provided in Appendix C. 6

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REPORT DISCLAIMER

This audit was conducted in accordance with the standards developed by the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) for a Level II audit. Cost and savings calculations for a given measure were estimated to within $\pm 20\%$, and are based on data obtained from the owner, data obtained during site observations, professional experience, historical data, and standard engineering practice. Cost data does not include soft costs such as engineering fees, legal fees, project management fees, financing, etc.

A thorough walkthrough of the facility was performed, which included gathering nameplate information and operating parameters for all accessible equipment and lighting systems. Unless otherwise stated, model, efficiency, and capacity information included in this report were collected directly from equipment nameplates and /or from documentation provided by the owner during the site visit. Typical operation and scheduling information was obtained from interviewing facility staff and spot measurements taken in the field.

1.0 EXECUTIVE SUMMARY

The Roxbury Board of Education recently engaged CHA to perform an energy audit in connection with the New Jersey Board of Public Utilities' Local Government Energy Audit Program. This report details the results of the energy audit conducted for:

Building Name	Address	Square Feet	Construction Date
Transportation Building	3 Bryant Drive, Succasunna, NJ	923	Original: 1980

The Energy Conservation Measures (ECMs) identified in this report will allow for a more efficient use of energy and if pursued have the opportunity to qualify for the New Jersey SmartStart Buildings Program. Potential annual savings of \$1,200 for the recommended ECMs may be realized with a combined payback of 7.5 years. A summary of the costs, savings, and paybacks for the recommended ECMs follows:

Summary of Energy Conservation Measures						
Energy Conservation Measure	Approx. Costs (\$)	Approx. Savings (\$/year)	Payback (Years) w/o Incentive	Potential Incentive (\$)*	Payback (Years) w/ Incentive	Recommended For Implementation
ECM-1 Replace Electric DHW Tank With Natural Gas DHW	9,000	800	11	50	11	X
ECM-2 Lighting Replacement / Upgrades	1,000	300	3	200	3	
ECM-3 Install Lighting Controls (Occupancy Sensors)	1,000	300	3	200	3	
ECM-4 Lighting Replacements with Lighting Controls (Occupancy Sensors)	2,000	400	5	400	4	X

2.0 INTRODUCTION AND BACKGROUND

New Jersey's Clean Energy Program, funded by the New Jersey Board of Public Utilities, supports energy efficiency and sustainability for Municipal and Local Government Energy Audits. Through the support of a utility trust fund, New Jersey is able to assist state and local authorities in reducing energy consumption while increasing comfort.

The Transportation Building is the school districts bus repair shop located in Succasunna, NJ. It is a 923 square foot, single story block structure with exterior brick facing. The building was constructed in 1980. The office is served by an NG/DX Goodman hot air furnace with a Goodman condensing unit for the A/C. The two bay garage area is heated by two Reznor natural gas fired unit heaters. A 40 gallon electric hot water heater is located in a closet. Occupancy includes approximately 4 people between the hours of 8:00 am and 5:00 pm, with maintenance and cleaning personnel operating after hours.



EXISTING CONDITIONS

2.1 Building - General

Built in the 1980, the Roxbury Township Transportation building is a 923 square foot facility with office space and two high bay areas for bus maintenance equipment.

The Transportation Building has approximately 4 staff members, and appeared fully utilized during the field survey. The building can be assumed to be fully occupied until 5:00 pm during the week. The hours of operation are:

- Monday through Friday 8:00 am to 5:00 pm

The building is constructed of block walls, with wood siding below the pitched architectural asphalt shingle roof section. The interior walls are a mixture of painted block walls and framed walls filled with fiberglass insulation and finished with gypsum board. The bus maintenance area has two large garage doors typically open during the hours of operation. The two bay sections have a two story opening for bus traffic. The office in the southeast corner of the building has vinyl frame double pane windows on both the south and east sides of the building. A generator was recently installed on the north end of the building. The

2.2 Utility Usage

Utilities include electricity, natural gas, and potable water. Electricity is delivered by JCP&L and supplied by Direct Energy. Natural gas supplied by Hess and delivered by NJNG.

The building has one electric meter serving the site. From June 2011 through June 2012, the electric usage for the facility was approximately 7,999 kWh at a cost of about \$1,226. Electrical usage was generally higher in the summer months when air conditioning equipment was operational. From June 2011 through June 2012, gas-fired equipment consumed about 1,553 therms of natural gas. Based on the annual cost of about \$1,911, the blended price for natural gas was \$1.23 per therm. Natural gas consumption was highest in winter months for heating. See Appendix A for a detailed utility analysis.

Actual Cost & Site Usage by Utility

Electric		
Annual Usage	7,999	kWh/yr
Annual Cost	1,226	\$
Blended Rate	0..153	\$/kWh
Demand Rate	10	\$/kW
Natural Gas		
Annual Usage	1,553	therms/yr
Annual Cost	1,911	\$
Rate	1.23	\$/Therm

Annual Cost & Site Energy Usage

Electrical usage was generally higher in the summer months when air conditioning equipment was operational. Natural gas consumption was highest in winter months for heating.

The delivery component of the electric and natural gas bills will always be the responsibility of the utility that connects the facility to the power grid or gas line; however, the supply can be purchased from a third party; as is currently the case with electricity. The electricity or natural gas commodity supply entity will require submission of one to three years of past energy bills. Contract terms can vary among suppliers. According to the U.S. Energy Information Administration, the average commercial unit costs of electricity and natural gas in New Jersey during the same periods as those noted above was \$0.141 per kWh and \$0.959 per therm.

2.3 HVAC Systems

The systems and equipment described below serve the school building. Specifics on the mechanical equipment can be found within the equipment inventory located in Appendix B.

3.3.1 Heating System

The heat for the office area of the bus garage is provided by a Goodman high efficiency condensing natural gas fired forced air furnace.

2.4 Lighting/Electrical Systems

A mixture of T8 bulbs, compact fluorescent bulbs, and older style incandescent bulbs is also used in select areas, while metal halides are used in the high bay areas. The primary source of control for the lights is switches manually turned off at the end of the school day.

Exterior lights consist of two 70 watt metal halide Wallpak fixtures.

The original fixtures are still being used in the bus bay section of the building. There are three rows of T5 tube lighting that span the length of the building. The office sections have been updated in more recent years, and are lit by [T8 bulbs].

2.5 Plumbing Systems

3.6.1 Domestic Hot Water System

The building is served by one 40 gallon A.O. Smith model EES—40-M20217200 natural gas-fired hot water heater. This was installed in 1993.

3.6.2 Plumbing Fixtures

The building contains one bathroom. The fixtures in the bathroom have been replaced with low flow plumbing fixtures.

3.0 ENERGY CONSERVATION MEASURES

3.1 ECM-1 Replace the Electric DHW Tank With A high Efficiency Natural Gas Unit

The garage utilizes a 40 gallon electric water heater to produce domestic hot water. These water heaters use a substantial amount of electricity to heat water that is not used. Based on actual usage of the areas served these units could be replaced with high efficiency natural gas fired unit. Converting to lower cost natural gas will result in fuel savings. This ECM assesses replacing the electric powered DHW heater with high efficiency condensing gas water heaters. To implement this ECM, piping and electrical wiring will need to be modified as well as new venting installed. The electrical power currently supplied to these units could be used to power other equipment.

The implementation cost and savings related to this ECM are presented in Appendix C and summarized below:

ECM-1 Replace Electric DHW Tank With Natural Gas DHW

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
\$	kWh	kW	Therms	\$	\$	\$	\$	Years	Years	
9,000	2,100	0	-100	800	0	800	(1.1)	50	11.3	11.2

This measure is recommended.

3.2 ECM-2 Lighting Upgrades

A comprehensive fixture survey was conducted of the entire building. Each switch and circuit was identified, and the number of fixtures, locations, and existing wattage established (Appendix C). There is an opportunity to reduce consumption by upgrading the existing 400 watt Metal Halide fixtures in the garage bays to T-5 high bay fixtures. Supporting calculations, including assumptions for lighting hours and annual energy usage for each fixture, are provided in Appendix C.

The implementation cost and savings related to this ECM are presented in Appendix C and summarized below:

ECM-2 Lighting Replacement / Upgrades

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric	Electric	Nat Gas	Total						
\$	kWh	kW	Therms	\$	\$	\$	\$	Years	Years	
1,000	2,100	0	0	300	0	300	1.6	200	3.3	2.7

Expected Life: 15 years

Lifetime Savings: 31,500 kWh 0 therms \$ 4,500

This measure is not recommended in lieu of ECM-4.

3.3 ECM-3 Install Occupancy Sensors

The current bus garage lighting is controlled by manual switches. Lights are generally turned on in the morning and shut off at night. During occupied times, there are rooms that are not occupied; however, the lights remain on. Adding occupancy controls to the individual rooms will automatically control the lights based on occupancy. The occupancy sensor can be wall mounted near the switch or placed at the ceiling for larger room coverage. All occupancy sensors are equipped with a manual override feature. These sensors are generally not recommended in public toilet rooms.

The implementation cost and savings related to this ECM are presented in Appendix C and summarized below:

ECM-3 Install Lighting Controls (Occupancy Sensors)										
Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric kWh	Electric kW	Nat Gas Therms	Total \$						
\$	kWh	kW	Therms	\$	\$	\$	\$	Years	Years	
1,000	3,700	0	0	300	0	300	5.0	200	3.3	2.7

Expected Life: 15 years

Lifetime Savings: 55,500 kWh 0 therms \$ 4,500

This measure is not recommended in lieu of ECM-4.

3.4 ECM-4 Lighting Replacements with Occupancy Sensors

Due to interactive effects, the energy and cost savings for occupancy sensors and lighting upgrades are not cumulative. This measure is a combination of ECM-2 and ECM-3 to reflect actual expected energy and demand reduction.

The implementation cost and savings related to this ECM are presented in Appendix C and summarized as follows:

ECM-4 Lighting Replacements with Lighting Controls (Occupancy Sensors)										
Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric kWh	Electric kW	Nat Gas Therms	Total \$						
\$	kWh	kW	Therms	\$	\$	\$	\$	Years	Years	
2,000	4,800	0	0	400	0	400	(0.2)	400	5.0	4.0

Expected Life: 15 years

Lifetime Savings: 72,000 kWh 0 therms \$ 6,000

This measure is recommended.

4.0 PROJECT INCENTIVES

4.1 Incentives Overview

4.1.1 New Jersey Pay For Performance Program

The facility will be eligible for incentives from the New Jersey Office of Clean Energy. The most significant incentives are available from the New Jersey Pay for Performance (P4P) Program. The P4P program is designed for qualified energy conservation projects applied to facilities whose demand in any of the preceding 12 months exceeds 100 kW. This average minimum has been waived for buildings owned by local governments or municipalities and non-profit organizations, however. Facilities that meet this criterion must also achieve a minimum performance target of 15% energy reduction by using the EPA Portfolio Manager benchmarking tool before and after implementation of the measure(s). If the participant is a municipal electric company customer, and a customer of a regulated gas New Jersey Utility, only gas measures will be eligible under the Program. Available incentives are as follows:

Incentive #1: Energy Reduction Plan – This incentive is designed to offset the cost of services associated with the development of the Energy Reduction Plan (ERP).

- Incentive Amount: \$0.10/SF
- Minimum incentive: \$5,000
- Maximum Incentive: \$50,000 or 50% of Facility annual energy cost

The standard incentive pays \$0.10 per square foot, up to a maximum of \$50,000, not to exceed 50% of facility annual energy cost, paid after approval of application. For building audits funded by the New Jersey Board of Public Utilities, which receive an initial 75% incentive toward performance of the energy audit, facilities are only eligible for an additional \$0.05 per square foot, up to a maximum of \$25,000, rather than the standard incentive noted above.

Incentive #2: Installation of Recommended Measures – This incentive is based on projected energy savings as determined in Incentive #1 (Minimum 15% savings must be achieved), and is paid upon successful installation of recommended measures.

Electric

- Base incentive based on 15% savings: \$0.09/ per projected kWh saved.
- For each % over 15% add: \$0.005 per projected kWh saved.
- Maximum incentive: \$0.11/ kWh per projected kWh saved

Gas

- Base incentive based on 15% savings: \$0.90/ per projected Therm saved.
- For each % over 15% add: \$0.05 per projected Therm saved.
- Maximum incentive: \$1.25 per projected Therm saved

Incentive cap: 25% of total project cost

Incentive #3: Post-Construction Benchmarking Report – This incentive is paid after acceptance of a report proving energy savings over one year utilizing the Environmental Protection Agency (EPA) Portfolio Manager benchmarking tool.

Electric

- Base incentive based on 15% savings: \$0.09/ per projected kWh saved.
- For each % over 15% add: \$0.005 per projected kWh saved.
- Maximum incentive: \$0.11/ kWh per projected kWh saved

Gas

- Base incentive based on 15% savings: \$0.90/ per projected Therm saved.
- For each % over 15% add: \$0.05 per projected Therm saved.
- Maximum incentive: \$1.25 per projected Therm saved

Incentives #2 and #3 can be combined to yield additive savings.

Under incentive #1 of the New Jersey Pay for Performance Program, the 923 square foot bus garage is eligible for about \$1,567 toward development of an Energy Reduction Plan. The current ECM's do not meet the minimum savings of 15% and therefore the building would not be eligible for incentives #2 and #3.

4.1.2 New Jersey Smart Start Program

For this program, specific incentives for energy conservation measures are calculated on an individual basis utilizing the 2011 New Jersey Smart Start incentive program. This program provides incentives dependent upon mechanical and electrical equipment. If applicable, incentives from this program are reflected in the ECM summaries and attached appendices.

If the complex qualifies and enters into the New Jersey Pay for Performance Program, all energy savings will be included in the total site energy reduction, and savings will be applied towards the Pay for Performance incentive. A project is not applicable for both New Jersey incentive programs.

4.1.3 Direct Install Program

The Direct Install Program targets small and medium sized facilities where the peak electrical demand does not exceed 150 kW in any of the previous 12 months. Buildings must be located in New Jersey and served by one of the state's public, regulated electric or natural gas utility companies.

Direct Install is funded through New Jersey's Clean Energy Program and is designed to provide capital for building energy upgrade projects to fast track implementation. The program will pay up to 70% of the costs for lighting, HVAC, motors, natural gas, refrigeration, and other equipment upgrades with higher efficiency alternatives. If a building is eligible for this funding, the Direct Install Program can significantly reduce the implementation cost of energy conservation projects.

The program pays 70% of each project cost up to \$75,000 per electrical utility account; total funding for each year is capped at \$250,000 per customer. Installations must be completed by a Direct Install participating contractor, a list of which can be found on the New Jersey Clean Energy Website at <http://www.njcleanenergy.com>. Contractors will coordinate with the applicant to arrange installation of recommended measures identified in a previous energy assessment, such as this document.

5.0 ALTERNATIVE ENERGY SCREENING EVALUATION

5.1 Solar

5.1.1 Photovoltaic Rooftop Solar Power Generation

The facility was evaluated for the potential to install rooftop photovoltaic (PV) solar panels for power generation. Present technology incorporates the use of solar cell arrays that produce direct current (DC) electricity. This DC current is converted to alternating current (AC) with the use of an electrical device known as an inverter. The building's roof has sufficient room to install a large solar cell array. All rooftop areas have been replaced, and are in good condition. It is recommended to install a permanent PV array at this time.

The PVWATTS solar power generation model was utilized to calculate PV power generation. The closest city available in the model is Newark, New Jersey and a fixed tilt array type was utilized to calculate energy production. The PVWATT solar power generation model is provided in Appendix P.

Note: The PV Watts method of calculating a potential supplemental photovoltaic system for the bus garage indicated there is not adequate roof area to support the installation of a system.

6.0 EPA PORTFOLIO MANAGER

The EPA Portfolio Manager benchmarking tool was used to assess the building’s energy performance. Portfolio Manager provides a Site and Source Energy Use Intensity (EUI), as well as an Energy Star performance rating for qualifying building types. The EUIs are provided in kBtu/ft²/year, and the performance rating represents how energy efficient a building is on a scale of 1 to 100, with 100 being the most efficient. In order for a building to receive an Energy Star label, the energy benchmark rating must be at least 75. As energy use decreases from implementation of the proposed ECMs, the Energy Star rating will increase.

The Site EUI is the amount of heat and electricity consumed by a building as reflected in utility bills. Site energy may be delivered to a facility in the form of primary energy, which is raw fuel burned to create heat or electricity (such as natural gas or oil), or as secondary energy, which is the product created from a raw fuel (such as electricity or district steam). Site EUI is a measure of a building’s annual energy utilization per square foot. Site EUI is a good measure of a building’s energy use and is utilized regularly for comparison of energy performance for similar building types.

$$\text{Site Energy Intensity} = \frac{\text{Electric Usage in kBtu} + \text{Natural Gas in kBtu}}{\text{Building Square Footage}}$$

To provide an equitable comparison for different buildings with varying proportions of primary and secondary energy consumption, the Portfolio Manager uses the convention of Source EUIs. The source energy also accounts for all losses incurred in production, storage, transmission, and delivery of energy to the site; which provides an equivalent measure for various types of buildings with different energy sources.

$$\text{Source Energy Intensity} = \frac{\text{Electric Usage in kBtu} \times \text{Site/Source Ratio} + \text{Natural Gas in kBtu} \times \text{Site/Source Ratio}}{\text{Building Square Footage}}$$

The EPA Score, Site EUI, and Source EUI for Roxbury Transportation Garage are as follows:

Energy Intensity	Roxbury Transportation Building	National Average
EPA Score	NA	NA
Site (kBtu/sf/year)	168	10
Source (kBtu/sf/year)	176	28

To be eligible to receive a national Energy Star score, a building must meet all three of these requirements:

1. Building designation – More than 50 percent of the building’s gross floor area must be one of the spaces eligible to receive an Energy Star score. The remainder of the building must abide by specific rules for each space type.
2. Operating characteristics – To ensure the building is consistent with the peer group used for comparison, each space in your building must meet certain minimum and maximum thresholds for key operating characteristics.
3. Energy data – At least 12 full consecutive calendar months for all active meters, accounting for all energy use (regardless of fuel type) in the building.

In addition, a Licensed Professional (meaning a Professional Engineer or Registered Architect) must verify that all energy use is accounted for accurately, that the building characteristics have been properly reported (including the square footage of the building), that the building is fully functional in accordance with industry standards, and that each of the indoor environment criteria has been met.

The Roxbury Bus Garage is considered lower than average energy consumer by the EPA Portfolio Manager which gives it a lower than average EPA score. For the School to qualify for the Energy Star label the EPA score is required to be above 75. There are several energy conservation measures recommended in this report, that if implemented will further reduce the energy use intensity and increase the EPA score of the Elementary School. This building does not appear to be eligible for Energy Star certification at this time.

The Portfolio Manager account can be accessed by entering the username and password shown below at the login screen of the Portfolio Manager website (<https://www.energystar.gov/istar/pmpam/>).

A full EPA Energy Star Portfolio Manager Report is located in Appendix F.

The user name (“*Roxburyboe*”) and password (“*energystar*”) for the building’s EPA Portfolio Manager Account has been provided to the Roxbury Board of Education.

7.0 CONCLUSIONS & RECOMMENDATIONS

The energy audit conducted by CHA at the Roxbury Transportation Building identified potential ECMs for lighting and DHW. Potential annual savings of \$1,200 may be realized for the recommended ECMs, with a summary of the costs, savings, and paybacks as follows:

ECM-1 Replace Electric DHW Tank With Natural Gas DHW

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric kWh	Electric kW	Nat Gas Therms	Total \$						
\$	kWh	kW	Therms	\$	\$	\$		\$	Years	Years
9,000	2,100	0	-100	800	0	800	(1.1)	50	11.3	11.2

ECM-4 Lighting Replacements with Lighting Controls (Occupancy Sensors)

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric kWh	Electric kW	Nat Gas Therms	Total \$						
\$	kWh	kW	Therms	\$	\$	\$		\$	Years	Years
2,000	4,800	0	0	400	0	400	(0.2)	400	5.0	4.0

Expected Life: 15 years

Lifetime Savings: 72,000 kWh 0 therms \$ 6,000

APPENDIX A

Utility Usage Analysis

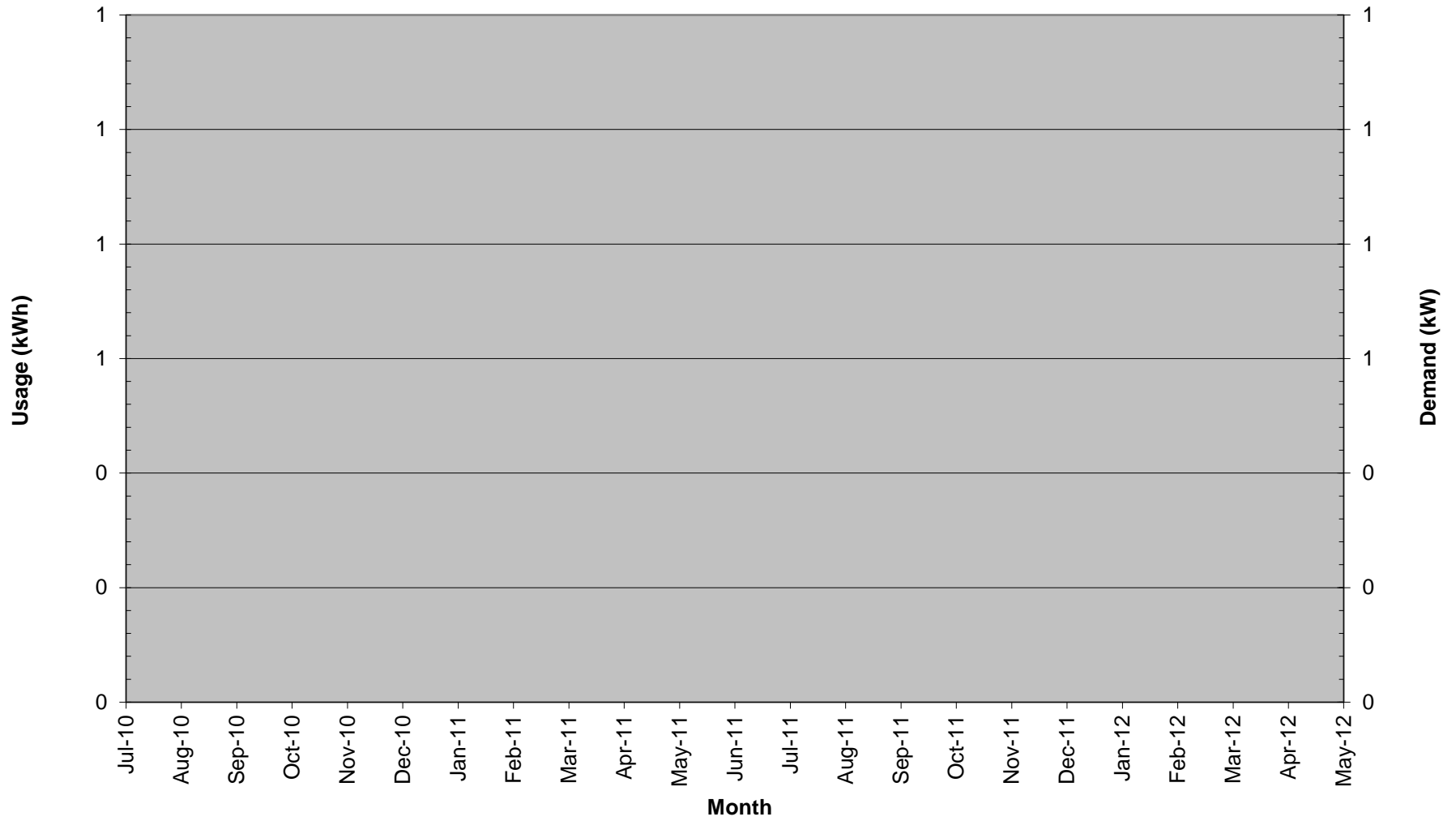
Roxbury Township BOE
 42 Hillside Ave.
 Succasunna, NJ 07876

Electric Service
 Delivery - JCP&L
 Supplier -

For Service at: Transportation Building
 Account No.:
 Meter No.:

Month	Consumption (kWh)	Demand (kW)	Charges			Unit Costs		
			Total (\$)	Delivery (\$)	Supply (\$)	Blended Rate (\$/kWh)	Consumption (\$/kWh)	Demand (\$/kW)
July-10			\$ -			#DIV/0!	#DIV/0!	#DIV/0!
August-10			\$ -			#DIV/0!	#DIV/0!	#DIV/0!
September-10			\$ -			#DIV/0!	#DIV/0!	#DIV/0!
October-10			\$ -			#DIV/0!	#DIV/0!	#DIV/0!
November-10			\$ -			#DIV/0!	#DIV/0!	#DIV/0!
December-10			\$ -			#DIV/0!	#DIV/0!	#DIV/0!
January-11			\$ -			#DIV/0!	#DIV/0!	#DIV/0!
February-11			\$ -			#DIV/0!	#DIV/0!	#DIV/0!
March-11			\$ -			#DIV/0!	#DIV/0!	#DIV/0!
April-11			\$ -			#DIV/0!	#DIV/0!	#DIV/0!
May-11			\$ -			#DIV/0!	#DIV/0!	#DIV/0!
June-11			\$ -			#DIV/0!	#DIV/0!	#DIV/0!
July-11			\$ -			#DIV/0!	#DIV/0!	#DIV/0!
August-11			\$ -			#DIV/0!	#DIV/0!	#DIV/0!
September-11			\$ -			#DIV/0!	#DIV/0!	#DIV/0!
October-11			\$ -			#DIV/0!	#DIV/0!	#DIV/0!
November-11			\$ -			#DIV/0!	#DIV/0!	#DIV/0!
December-11			\$ -			#DIV/0!	#DIV/0!	#DIV/0!
January-12			\$ -			#DIV/0!	#DIV/0!	#DIV/0!
February-12			\$ -			#DIV/0!	#DIV/0!	#DIV/0!
March-12			\$ -			#DIV/0!	#DIV/0!	#DIV/0!
April-12			\$ -			#DIV/0!	#DIV/0!	#DIV/0!
May-12			\$ -			#DIV/0!	#DIV/0!	#DIV/0!
Total (12-months)	0	0.00	\$0.00	\$0.00	\$0.00	#DIV/0!	#DIV/0!	#DIV/0!

Electric Usage - Transportation Building



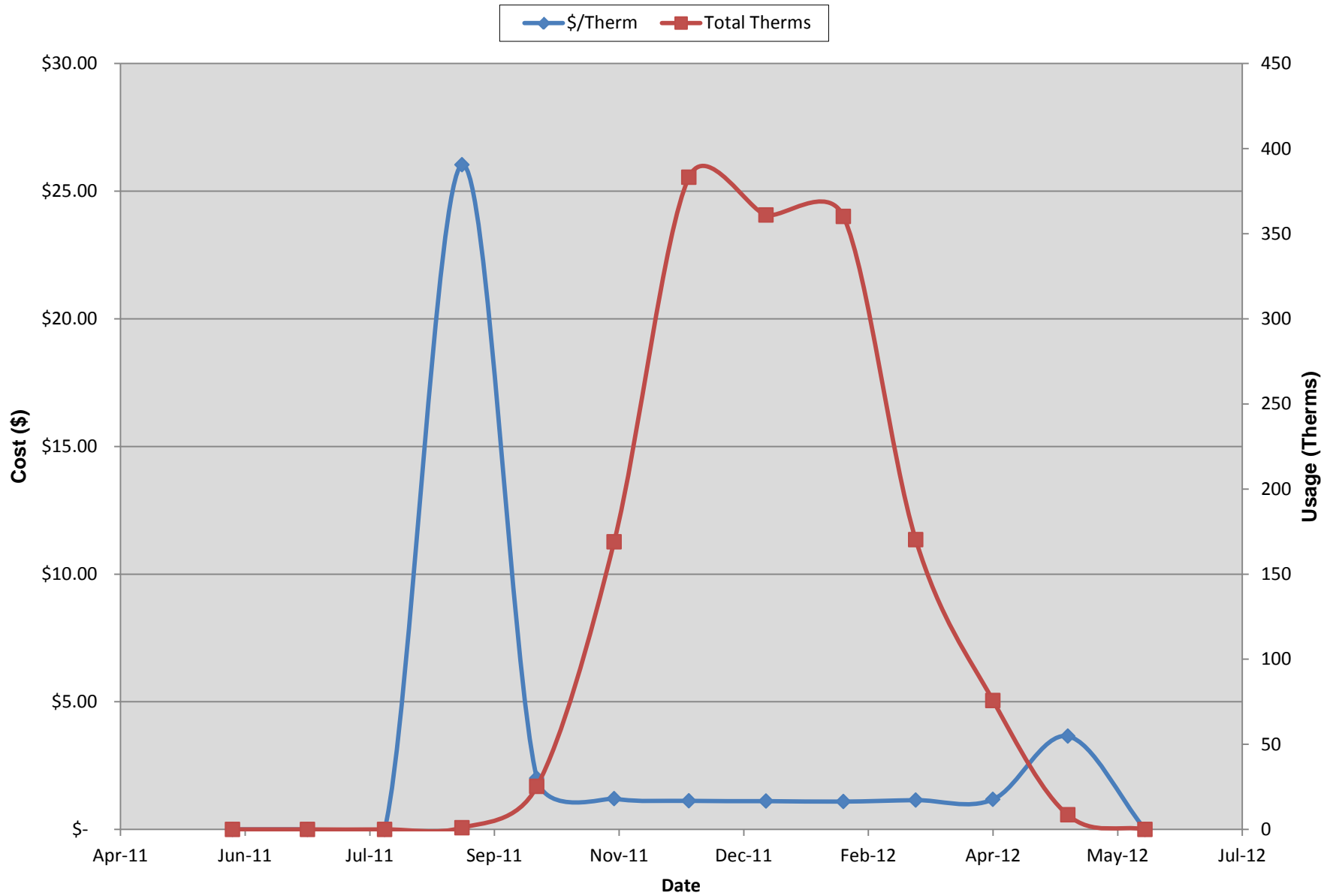
Roxbury Township BOE
 42 Hillside Ave.
 Succasunna, NJ 07876

Gas Service
 Delivery - NJNG
 Supplier -

For Service at: Transportation Building
 Account No.:
 Meter No.:

Month	Total (\$)	Delivery (\$)	Supply (\$)	Total Therms	\$/Therm
Sep-10	\$ 25.00			0	#DIV/0!
Oct-10	\$ 76.91			48	\$ 1.60
Nov-10	\$ 289.16			244.9	\$ 1.18
Dec-10	\$ 587.91			510.4	\$ 1.15
Jan-11	\$ 488.96			427.3	\$ 1.14
Feb-11	\$ 550.93			474.6	\$ 1.16
Mar-11	\$ 471.38			406.8	\$ 1.16
Apr-11	\$ 187.30			148.3	\$ 1.26
May-11	\$ 58.23			31.2	\$ 1.87
Jun-11	\$ 25.00			0	#DIV/0!
Jul-11	\$ 25.00			0	#DIV/0!
Aug-11	\$ 25.00			0	#DIV/0!
Sep-11	\$ 26.03			1	\$ 26.03
Oct-11	\$ 50.58			25.2	\$ 2.01
Nov-11	\$ 203.50			168.9	\$ 1.20
Dec-11	\$ 428.64			383.1	\$ 1.12
Jan-12	\$ 399.87			361	\$ 1.11
Feb-12	\$ 392.65			360.1	\$ 1.09
Mar-12	\$ 195.35			170.2	\$ 1.15
Apr-12	\$ 88.92			75.7	\$ 1.17
May-12	\$ 31.02			8.5	\$ 3.65
Jun-12	\$ 20.00			0	#DIV/0!
Total (12-months)	\$ 1,911.56	\$ -	\$ -	1553.70	\$ 1.23

Natural Gas Usage - Transportation Building (12 Months)



APPENDIX B

Equipment Inventory

New Jersey BPU Energy Audit Program
 CHA #24454
 Roxbury BOE
 Transportation Building
 Original Construction Date:
 Renovation/Addtion Date:

Description	QTY	Manufacturer Name	Model No.	Serial No.	Equipment Type / Utility	Capacity/Size/Efficiency	Location	Areas/Equipment Served	Date Installed	Remaining Useful Life (years)	Other Info.
Furnace	1	Goodman	CAPF1824B6CA – GMH 95/GCH9		Hot Air Furnace / NG / DX		Building	Building	1990	10	
RCU	1	Goodman	DSC130181AD	0609028842	Remote Condenser	95oz	Building	Building	1995	10	
DHW	1	AO Smith	EES 40 917	ME01-0040576-917	DHW Electric	4.5 kW 40 Gal.	Building	Building	1993	12	
FCU	2	Reznor			FCU / NG		Garage	Garage	1995	5	
AC	1	Friedrich			Window AC		Building	Building	1992	5	

Energy Audit of Roxbury BOE Transportation Building
 CHA Project No.24454
 Existing Lighting

Cost of Electricity: \$0.107 \$/kWh
\$6.74 \$/kW

EXISTING CONDITIONS											
	Area Description	Usage	No. of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Exist Control	Annual Hours	Retrofit Control	Annual kWh
15	Lounge	Offices	4	S 32 C F 2 (ELE)	F42LL	60	0.24	SW	2400	C-OCC	576
5	Lounge	Offices	1	2T 32 R F 2 (u) (ELE)	FU2LL	60	0.06	SW	2400	C-OCC	144
15	Lounge Bathroom	Bath Room	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	2000	SW	120
20	Lounge Closet 1	Storage Areas	1	S 32 C F 1 (ELE)	F41LL	32	0.03	SW	1000	SW	32
20	Lounge Closet 2	Storage Areas	1	S 32 C F 1 (ELE)	F41LL	32	0.03	SW	1000	SW	32
15	Hallway	Hallways	4	S 32 C F 2 (ELE)	F42LL	60	0.24	SW	2280	SW	547
15	Hallway Bathroom	Bath Room	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	2000	SW	120
220	Hallway Bathroom	Bath Room	1	S 17 C F 1 (ELE)	F21ILL	20	0.02	SW	2000	SW	40
15	Office	Offices	4	S 32 C F 2 (ELE)	F42LL	60	0.24	SW	2400	C-OCC	576
15	Garage	Offices	26	S 32 C F 2 (ELE)	F42LL	60	1.56	SW	2400	C-OCC	3,744
15	Garage	Offices	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	2400	C-OCC	144
20	Garage	Offices	1	S 32 C F 1 (ELE)	F41LL	32	0.03	SW	2400	C-OCC	77
146	Garage	Offices	2	High Bay MH 400	MH400/1	458	0.92	SW	2400	C-OCC	2,198
254	Upstairs Storage	Storage Areas	6	T 32 R F 4 (ELE)	F44LL	118	0.71	SW	1000	SW	708
	Total		54				4				9,058

APPENDIX C

ECM Calculations

Summary of Energy Conservation Measures

Energy Conservation Measure		Approx. Costs (\$)	Approx. Savings (\$/year)	Payback (Years) w/o Incentive	Potential Incentive (\$)*	Payback (Years) w/ Incentive	Recommended For Implementation
ECM-1	Replace Electric DHW Tank With Natural Gas DHW	9,000	800	11	50	11	X
ECM-2	Lighting Replacement / Upgrades	1,000	300	3	200	3	
ECM-3	Install Lighting Controls (Occupancy Sensors)	1,000	300	3	200	3	
ECM-4	Lighting Replacements with Lighting Controls (Occupancy Sensors)	2,000	400	5	400	4	X

Site Name - NJBPU Roxbury BOE- Transportation Building

CHA Project #24454

Facility Name

ECM Summary Sheet

ECM-1 Replace Electric DHW Tank With Natural Gas DHW

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric kWh	Electric kW	Nat Gas Therms	Total \$						
\$					\$	\$		\$	Years	Years
9,000	2,100	0	-100	800	0	800	(1.1)	50	11.3	11.2

ECM-2 Lighting Replacement / Upgrades

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric kWh	Electric kW	Nat Gas Therms	Total \$						
\$					\$	\$		\$	Years	Years
1,000	2,100	0	0	300	0	300	1.6	200	3.3	2.7

Expected Life: 15 years

Lifetime Savings: 31,500 kWh 0 therms \$ 4,500

ECM-3 Install Lighting Controls (Occupancy Sensors)

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric kWh	Electric kW	Nat Gas Therms	Total \$						
\$					\$	\$		\$	Years	Years
1,000	3,700	0	0	300	0	300	5.0	200	3.3	2.7

Expected Life: 15 years

Lifetime Savings: 55,500 kWh 0 therms \$ 4,500

ECM-4 Lighting Replacements with Lighting Controls (Occupancy Sensors)

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	ROI	Incentive *	Payback (without incentive)	Payback (with incentive)
	Electric kWh	Electric kW	Nat Gas Therms	Total \$						
\$					\$	\$		\$	Years	Years
2,000	4,800	0	0	400	0	400	(0.2)	400	5.0	4.0

Expected Life: 15 years

Lifetime Savings: 72,000 kWh 0 therms \$ 6,000

Site Name - NJBPU Roxbury BOE- Transportation Building
 CHA Project #24454

Utility Costs		Yearly Usage	MTCDE	Building Area	Annual Utility Cost	
\$ 0.153	\$/kWh blended		0.00042021	923	Electric	Natural Gas
\$ -	\$/kWh supply	7,999	0.00042021		1226.02	1907.00
\$ 10.00	\$/kW	251	0			
\$ 1.23	\$/Therm	1,553	0.00533471			
\$ -	\$/kgals	-	0			

Item		Savings					Cost	Simple Payback	MTCDE	Life Expectancy	NJ Smart Start Incentives	Direct Install Eligible (Y/N)*	Direct Install Incentives**	Max Incentives	Payback w/ Incentives***	Simple Projected Lifetime Savings					ROI		
		kW	kWh	therms	cooling kWh	kgal/yr										\$	kW	kWh	therms	cooling		kgal/yr	\$
ECM-1	Replace Electric DHW Tank With Natural Gas DHW	0.2	2,124	-81	0	0	\$ 767	\$ 8,934	11.7	0.5	15	\$ 50	\$ -	\$ 50	11.6	3.6	31,866	(1,208)	0	0	0	\$ (1,050)	(1.1)
ECM-2	Lighting Replacement / Upgrades	0.9	2,102	0	0	0	\$ 296	\$ 600	2.0	0.9	15	\$ 200	\$ -	\$ 200	1.4	13.1	31,536	0	0	0	0	\$ 1,577	1.6
ECM-3	Install Lighting Controls (Occupancy Sensors)	0.0	3,730	0	0	0	\$ 296	\$ 1,418	4.8	1.6	15	\$ 245	\$ -	\$ 245	4.0	0.0	55,944	0	0	0	0	\$ 8,575	5.0
ECM-4	Lighting Replacements with Lighting Controls (Occupancy Sensors)	0.9	4,781	0	0	0	\$ 399	\$ 2,018	5.1	2.0	15	\$ 445	\$ -	\$ 445	3.9	13.1	71,712	0	0	0	0	\$ 1,577	(0.2)
Total (Does Not Include ECM-2 & ECM-3)		1.1	6,905	(81)	0	0	\$ 1,166	\$ 10,951	9.4		15.0	\$ 495	\$ -	\$ 495	9.0	16.8	103,578	(1,208)	0	0	0	\$ 527	(1.0)
Total Measures with Payback <10		0.9	4,781	0	0	0	\$ 399	\$ 2,018	5.1		15.0	\$ 445	\$ -	\$ 445	3.9	13.1	71,712	0	0	0	0	\$ 1,577	(0.2)
% of Existing		0%	86%	-5%	0%	0%																	#DIV/0!

ECM-M14B: Replace Electric DHW Heater w/ Tankless Condensing Gas-Fired DHW Heater

Summary

* Replace Electric DHW Heater w/ Instantaneous, Condensing, Gas-Fired DHW Heater

Item	Value	Units	Formula/Comments
Occupied days per week	5	days/wk	
Water supply Temperature	50	°F	Temperature of water coming into building
Hot Water Temperature	120	°F	
Hot Water Usage per day	24	gal/day	Calculated from usage below
Annual Hot Water Energy Demand	3,601	MBTU/yr	Energy required to heat annual quantity of hot water to setpoint
Existing Tank Size	40	Gallons	Per manufacturer nameplate
Hot Water Temperature	120	°F	Per building personnel
Average Room Temperature	70	°F	
Standby Losses (% by Volume)	2.5%		(2.5% of stored capacity per hour, per U.S. Department of Energy)
Standby Losses (Heat Loss)	0.4	MBH	
Annual Standby Hot Water Load	3,650	MBTU/yr	
Total Annual Hot Water Demand (w/ standby losses)	7,251	Mbtu/yr	Building demand plus standby losses
Existing Water Heater Efficiency	100%		Per Manufacturer
Total Annual Energy Required	7,251	Mbtu/yr	
Total Annual Electric Required	2,124	kWh/yr	Electrical Savings
Average Annual Electric Demand	0.24	kW	
Peak Electric Demand	4.50	kW	Per Manufacturer's Nameplate (Demand Savings)
New Tank Size	40	Gallons	
Hot Water Temperature	120	°F	
Average Room Temperature	70	°F	
Standby Losses (% by Volume)	2.5%		(2.5% of stored capacity per hour, per U.S. Department of Energy)
Standby Losses (Heat Loss)	0.4	MBH	
Annual Standby Hot Water Load	3,650	MBTU/yr	
Prop Annual Hot Water Demand (w/ standby losses)	7,251	MBTU/yr	
Proposed Avg. Hot water heater efficiency	90%		
Proposed Total Annual Energy Required	8,056	MBTU/yr	
Proposed Fuel Use	81	Therms/yr	Standby Losses and inefficient DHW heater eliminated
Elec Utility Demand Unit Cost	\$10.00	\$/kW	
Elec Utility Supply Unit Cost	\$0.15	\$/kWh	
NG Utility Unit Cost	\$1.23	\$/Therm	
Existing Operating Cost of DHW	\$866	\$/yr	
Proposed Operating Cost of DHW	\$99	\$/yr	
Annual Utility Cost Savings	\$767	\$/yr	

Daily Hot Water Demand

FIXTURE	*BASE WATER USE GPM	DURATION OF USE (MIN)	#USES PER DAY		FULL TIME OCCUPANTS**		TOTAL GAL/DAY	% HOT WATER	TOTAL HW GAL/DAY
			MALE	FEMALE	MALE	FEMALE			
LAVATORY (Low-Flow Lavs use 0.5 GPM)	2.5	0.25	3	1	3	1	6	50%	3
SHOWER	2.5	5	0	0	3	1	0	75%	0
KITCHEN SINK	2.5	0.5	3	1	3	1	13	75%	9
MOP SINK	2.5	2	1	0	3	1	15	75%	11
Dishwasher (gal per u	10	1	0	0	3	1	0	100%	0
TOTAL							34		24

Multipliers	
Material:	1.10
Labor:	1.35
Equipment:	1.10

Description	QTY	UNIT	UNIT COSTS			SUBTOTAL COSTS			TOTAL COST	REMARKS
			MAT.	LABOR	EQUIP.	MAT.	LABOR	EQUIP.		
Electric DHW Heater Removal	1	LS		\$ 50		\$ -	\$ 68	\$ -	\$ 68	
High Efficiency Gas-Fired DHW Heater	1	LS	\$ 4,000	\$ 280		\$ 4,400	\$ 378	\$ -	\$ 4,778	
Miscellaneous Electrical	1	LS	\$ 300			\$ 330	\$ -	\$ -	\$ 330	
Venting Kit	1	EA	\$ 450	\$ 650		\$ 495	\$ 878	\$ -	\$ 1,373	
Miscellaneous Piping and Valves	1	LS	\$ 200			\$ 220	\$ -	\$ -	\$ 220	

\$ 6,768	Subtotal
\$ 677	10% Contingency
\$ 1,489	20% Contractor O&P
\$ -	
\$ 8,934	Total

Energy Audit of Roxbury BOE Transportation Building
CHA Project No.24454

ECM-1 Lighting Replacements

Budgetary	Annual Utility Savings				Estimated	Total	New Jersey	Payback	Payback
Cost					Maintenance	Savings	Incentive	(without incentive)	(with incentive)
					Savings				
\$	kW	kWh	therms	\$	\$	\$	\$	Years	Years
\$600	0.9	2,102	0	\$296	0	\$296	\$200	2.0	1.4

*Incentive based on New Jersey Smart Start Prescriptive Lighting Measures

ECM-2 Install Occupancy Sensors

Budgetary	Annual Utility Savings				Estimated	Total	New Jersey	Payback	Payback
Cost					Maintenance	Savings	Incentive	(without incentive)	(with incentive)
					Savings				
\$	kW	kWh	therms	\$	\$	\$	\$	Years	Years
\$1,418	0.0	3,730	0	\$399	0	\$399	\$245	3.6	2.9

*Incentive based on New Jersey Smart Start Prescriptive Lighting Measures

ECM-3 Lighting Replacements with Occupancy Sensors

Budgetary	Annual Utility Savings				Estimated	Total	New Jersey	Payback	Payback
Cost					Maintenance	Savings	Incentive	(without incentive)	(with incentive)
					Savings				
\$	kW	kWh	therms	\$	\$	\$	\$	Years	Years
\$2,018	0.9	4,781	0	\$582	0	\$582	\$445	3.5	2.7

*Incentive based on New Jersey Smart Start Prescriptive Lighting Measures

Cost of Electricity: \$0.107 \$/kWh
 \$6.74 \$/kW

EXISTING CONDITIONS									RETROFIT CONDITIONS							COST & SAVINGS ANALYSIS							
Area Description	No. of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Exist Control	Annual Hours	Annual kWh	Number of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Retrofit Control	Annual Hours	Annual kWh	Annual kWh Saved	Annual kW Saved	Annual \$ Saved	Retrofit Cost	NJ Smart Start Lighting Incentive	Simple Payback With Out Incentive	Simple Payback
15 Lounge	4	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	2400	576	4	S 32 C F 2 (ELE)	F42LL	60	0.24	SW	2400	576	0.00	0.00	\$ -	\$ -	\$ -		
5 Lounge	1	2T 32 R F 2 (u) (ELE)	FU2LL	60	0.1	SW	2400	144	1	2T 32 R F 2 (u) (ELE)	FU2LL	60	0.06	SW	2400	144	0.00	0.00	\$ -	\$ -	\$ -		
15 Lounge Bathroom	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	2000	120	0.00	0.00	\$ -	\$ -	\$ -		
20 Lounge Closet 1	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32	1	S 32 C F 1 (ELE)	F41LL	32	0.032	SW	1000	32	0.00	0.00	\$ -	\$ -	\$ -		
20 Lounge Closet 2	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32	1	S 32 C F 1 (ELE)	F41LL	32	0.032	SW	1000	32	0.00	0.00	\$ -	\$ -	\$ -		
15 Hallway	4	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	2280	547	4	S 32 C F 2 (ELE)	F42LL	60	0.24	SW	2280	547.2	0.00	0.00	\$ -	\$ -	\$ -		
15 Hallway Bathroom	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	2000	120	0.00	0.00	\$ -	\$ -	\$ -		
220 Hallway Bathroom	1	S 17 C F 1 (ELE)	F21LL	20	0.0	SW	2000	40	1	S 17 C F 1 (ELE)	F21LL	20	0.02	SW	2000	40	0.00	0.00	\$ -	\$ -	\$ -		
15 Office	4	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	2400	576	4	S 32 C F 2 (ELE)	F42LL	60	0.24	SW	2400	576	0.00	0.00	\$ -	\$ -	\$ -		
15 Garage	26	S 32 C F 2 (ELE)	F42LL	60	1.6	SW	2400	3,744	26	S 32 C F 2 (ELE)	F42LL	60	1.56	SW	2400	3,744	0.00	0.00	\$ -	\$ -	\$ -		
15 Garage	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	144	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	2400	144	0.00	0.00	\$ -	\$ -	\$ -		
20 Garage	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	2400	77	1	S 32 C F 1 (ELE)	F41LL	32	0.032	SW	2400	76.8	0.00	0.00	\$ -	\$ -	\$ -		
146 Garage	2	High Bay MH 400	MH400/1	458	0.9	SW	2400	2,198	2	P 54 C F 4	FC20	20	0.04	SW	2400	96	2102.40	0.88	\$ 295.81	\$ 600.00	\$ 200.00	2.0	0.2
254 Upstairs Storage	6	T 32 R F 4 (ELE)	F44LL	118	0.7	SW	1000	708	6	T 32 R F 4 (ELE)	F44LL	118	0.708	SW	1000	708	0.00	0.00	\$ -	\$ -	\$ -		
Total	54				4			9,058	54			734	3			6956	2,102	1	\$ 295.81	\$ 600.00	\$ 200.00		
																	Demand Savings		0.9	\$ 70.85			
																	kWh Savings		2,102	\$ 224.96			
																	Total savings			\$ 295.81		2.0	1.4

Cost of Electricity: \$0.107 \$/kWh
ECM-2 Install Occupancy Sensors \$6.74 \$/kW

EXISTING CONDITIONS									RETROFIT CONDITIONS							COST & SAVINGS ANALYSIS							
Area Description	No. of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Exist Control	Annual Hours	Annual kWh	Number of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Retrofit Control	Annual Hours	Annual kWh	Annual kWh Saved	Annual kW Saved	Annual \$ Saved	Retrofit Cost	NJ Smart Start Lighting Incentive	Simple Payback With Out Incentive	Simple Payback
15 Lounge	4	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	2400	576.0	4	S 32 C F 2 (ELE)	F42LL	60	0.2	C-OCC	1200	288	288.00	0.00	\$ 30.82	\$ 202.50	\$ 35.00	6.6	5.4
5 Lounge	1	2T 32 R F 2 (u) (ELE)	FU2LL	60	0.1	SW	2400	144.0	1	2T 32 R F 2 (u) (ELE)	FU2LL	60	0.1	C-OCC	1200	72	72.00	0.00	\$ 7.70	\$ 202.50	\$ 35.00	26.3	21.7
15 Lounge Bathroom	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2000	120.0	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2000	120	0.00	0.00	\$ -	\$ -	\$ -	-	-
20 Lounge Closet 1	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32.0	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32	0.00	0.00	\$ -	\$ -	\$ -	-	-
20 Lounge Closet 2	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32.0	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32	0.00	0.00	\$ -	\$ -	\$ -	-	-
15 Hallway	4	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	2280	547.2	4	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	2280	547.2	0.00	0.00	\$ -	\$ -	\$ -	-	-
15 Hallway Bathroom	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2000	120.0	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2000	120	0.00	0.00	\$ -	\$ -	\$ -	-	-
220 Hallway Bathroom	1	S 17 C F 1 (ELE)	F21LL	20	0.0	SW	2000	40.0	1	S 17 C F 1 (ELE)	F21LL	20	0.0	SW	2000	40	0.00	0.00	\$ -	\$ -	\$ -	-	-
15 Office	4	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	2400	576.0	4	S 32 C F 2 (ELE)	F42LL	60	0.2	C-OCC	1200	288	288.00	0.00	\$ 30.82	\$ 202.50	\$ 35.00	6.6	5.4
15 Garage	26	S 32 C F 2 (ELE)	F42LL	60	1.6	SW	2400	3,744.0	26	S 32 C F 2 (ELE)	F42LL	60	1.6	C-OCC	1200	1872	1872.00	0.00	\$ 200.30	\$ 202.50	\$ 35.00	1.0	0.8
15 Garage	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	144.0	1	S 32 C F 2 (ELE)	F42LL	60	0.1	C-OCC	1200	72	72.00	0.00	\$ 7.70	\$ 202.50	\$ 35.00	26.3	21.7
20 Garage	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	2400	76.8	1	S 32 C F 1 (ELE)	F41LL	32	0.0	C-OCC	1200	38.4	38.40	0.00	\$ 4.11	\$ 202.50	\$ 35.00	49.3	40.8
146 Garage	2	High Bay MH 400	MH400/1	458	0.9	SW	2400	2,198.4	2	High Bay MH 400	MH400/1	458	0.9	C-OCC	1200	1099.2	1099.20	0.00	\$ 117.61	\$ 202.50	\$ 35.00	1.7	1.4
254 Upstairs Storage	6	T 32 R F 4 (ELE)	F44LL	118	0.7	SW	1000	708.0	6	T 32 R F 4 (ELE)	F44LL	118	0.7	SW	1000	708	0.00	0.00	\$ -	\$ -	\$ -	-	-
Total	54				4			9,058	54				4				5,329	3,730	\$ 399.07	\$ 1,417.50	\$ 245.00		
																	Demand Savings		0.0	\$ -			
																	kWh Savings		3,730	\$ 399.07			
																	Total Savings			\$ 399.07		3.6	2.9

Area Description	EXISTING CONDITIONS								RETROFIT CONDITIONS								COST & SAVINGS ANALYSIS						
	No. of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Exist Control	Annual Hours	Annual kWh	Number of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Retrofit Control	Annual Hours	Annual kWh	Annual kWh Saved	Annual kW Saved	Annual \$ Saved	Retrofit Cost	NJ Smart Start Lighting Incentive	Simple Payback With Out Incentive	Simple Payback
15 Lounge	4	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	2400	576	4	S 32 C F 2 (ELE)	F42LL	60	0.24	C-OCC	1,200	288	288.00	0.00	\$ 30.82	\$ 202.50	\$ 35.00	6.6	5.4
5 Lounge	1	2T 32 R F 2 (u) (ELE)	FU2LL	60	0.1	SW	2400	144	1	2T 32 R F 2 (u) (ELE)	FU2LL	60	0.06	C-OCC	1,200	72	72.00	0.00	\$ 7.70	\$ 202.50	\$ 35.00	26.3	21.7
15 Lounge Bathroom	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	2,000	120	0.00	0.00	\$ -	\$ -	\$ -	-	-
20 Lounge Closet 1	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	1000	32	1	S 32 C F 1 (ELE)	F41LL	32	0.032	SW	1,000	32	0.00	0.00	\$ -	\$ -	\$ -	-	-
20 Lounge Closet 2	1	S 32 C F 2 (ELE)	F41LL	32	0.0	SW	1000	32	1	S 32 C F 1 (ELE)	F41LL	32	0.032	SW	1,000	32	0.00	0.00	\$ -	\$ -	\$ -	-	-
15 Hallway	4	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	2280	547	4	S 32 C F 2 (ELE)	F42LL	60	0.24	SW	2,280	547.2	0.00	0.00	\$ -	\$ -	\$ -	-	-
15 Hallway Bathroom	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	2,000	120	0.00	0.00	\$ -	\$ -	\$ -	-	-
220 Hallway Bathroom	1	S 17 C F 1 (ELE)	F21LL	20	0.0	SW	2000	40	1	S 17 C F 1 (ELE)	F21LL	20	0.02	SW	2,000	40	0.00	0.00	\$ -	\$ -	\$ -	-	-
15 Office	4	S 32 C F 2 (ELE)	F42LL	60	0.2	SW	2400	576	4	S 32 C F 2 (ELE)	F42LL	60	0.24	C-OCC	1,200	288	288.00	0.00	\$ 30.82	\$ 202.50	\$ 35.00	6.6	5.4
15 Garage	26	S 32 C F 2 (ELE)	F42LL	60	1.6	SW	2400	3,744	26	S 32 C F 2 (ELE)	F42LL	60	1.56	C-OCC	1,200	1872	1872.00	0.00	\$ 200.30	\$ 202.50	\$ 35.00	1.0	0.8
15 Garage	1	S 32 C F 2 (ELE)	F42LL	60	0.1	SW	2400	144	1	S 32 C F 2 (ELE)	F42LL	60	0.06	C-OCC	1,200	72	72.00	0.00	\$ 7.70	\$ 202.50	\$ 35.00	26.3	21.7
20 Garage	1	S 32 C F 1 (ELE)	F41LL	32	0.0	SW	2400	77	1	S 32 C F 1 (ELE)	F41LL	32	0.032	C-OCC	1,200	38.4	38.40	0.00	\$ 4.11	\$ 202.50	\$ 35.00	49.3	40.8
146 Garage	2	High Bay MH 400	MH400/1	458	0.9	SW	2400	2,198	2	P 54 C F 4	FC20	20	0.04	C-OCC	1,200	48	2150.40	0.88	\$ 300.94	\$ 802.50	\$ 235.00	2.7	1.9
254 Upstairs Storage	6	T 32 R F 4 (ELE)	F44LL	118	0.7	SW	1000	708	6	T 32 R F 4 (ELE)	F44LL	118	0.708	SW	1,000	708	0.00	0.00	\$ -	\$ -	\$ -	-	-
Total	54				4.3			9,058	54				3.4			4,278		0.9	\$ 582.40	\$ 2,017.50	\$ 445.00		
																	Demand Savings		0.9	\$ 70.85			
																	kWh Savings		4781	\$ 511.55			
																	Total Savings			\$ 582.40		3.5	2.7

APPENDIX D

**New Jersey Pay For Performance
Incentive Program**

HOME RESIDENTIAL **COMMERCIAL, INDUSTRIAL AND LOCAL GOVERNMENT** RENEWABLES



COMMERCIAL, INDUSTRIAL AND LOCAL GOVERNMENT

PROGRAMS

NJ SMARTSTART BUILDINGS

PAY FOR PERFORMANCE

EXISTING BUILDINGS

PARTICIPATION STEPS

APPLICATIONS AND FORMS

APPROVED PARTNERS

NEW CONSTRUCTION

FAQS

BECOME A PARTNER

COMBINED HEAT & POWER AND FUEL CELLS

LOCAL GOVERNMENT ENERGY AUDIT

LARGE ENERGY USERS PILOT

ENERGY SAVINGS IMPROVEMENT PLAN

DIRECT INSTALL

ARRA

ENERGY BENCHMARKING

OIL, PROPANE & MUNICIPAL ELECTRIC CUSTOMERS

TEACH

EDA PROGRAMS

TECHNOLOGIES

TOOLS AND RESOURCES

PROGRAM UPDATES

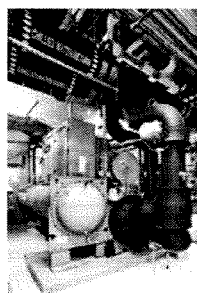
Home » Commercial & Industrial » Programs » Pay for Performance

Pay for Performance - Existing Buildings

Download program applications and incentive forms.

The Greater the Savings, the Greater Your Incentives

Take a comprehensive, whole-building approach to saving energy in your existing facilities and earn incentives that are directly linked to your savings. Pay for Performance relies on a network of program partners who provide technical services under direct contract to you. Acting as your energy expert, your partner will develop an energy reduction plan for each project with a whole-building technical component of a traditional energy audit, a financial plan for funding the energy efficient measures and a construction schedule for installation.



Eligibility

Existing commercial, industrial and institutional buildings with a peak demand over 100 kW for any of the preceding twelve months are eligible to participate including hotels and casinos, large office buildings, multi-family buildings, supermarkets, manufacturing facilities, schools, shopping malls and restaurants. Buildings that fall into the following five customer classes are not required to meet the 100 kW demand in order

to participate in the program: hospitals, public colleges and universities, 501(c)(3) non-profits, affordable multifamily housing, and local governmental entities. Your energy reduction plan must define a comprehensive package of measures capable of reducing the existing energy consumption of your building by 15% or more.

Exceptions to the 15% threshold requirement may be made for certain industrial, manufacturing, water treatment and datacenter building types whose annual energy consumption is heavily weighted on process loads. Details are available in the high energy intensity section of the FAQ page.

ENERGY STAR Portfolio Manager

Pay for Performance takes advantage of the ENERGY STAR Program with Portfolio Manager, EPA's interactive tool that allows facility managers to track and evaluate energy and water consumption across all of their buildings. The tool provides the opportunity to load in the characteristics and energy usage of your buildings and determine an energy performance benchmark score. You can then assess energy management goals over time, identify strategic opportunities for savings, and receive EPA recognition for superior energy performance.



This rating system assesses building performance by tracking and scoring energy use in your facilities and comparing it to similar buildings. That can be a big help in locating opportunities for cost-justified energy efficiency upgrades. And, based on our findings, you may be invited to participate in the Building Performance with ENERGY STAR initiative and receive special recognition as an industry leader in energy efficiency.

Incentives

Pay for Performance incentives are awarded upon the satisfactory completion of three program milestones:

Incentive #1 - Submittal of complete energy reduction plan prepared by an approved program partner - Contingent on moving forward, incentives will be between \$5,000 and \$50,000 based on approximately \$.10 per square foot, not to exceed 50% of the facility's annual energy expense.

Incentive #2 - Installation of recommended measures - Incentives are based on the projected level of electricity and natural gas savings resulting from the installation of comprehensive energy-efficiency measures.

Incentive #3 - Completion of Post-Construction Benchmarking Report - A completed report verifying energy reductions based on one year of post-implementation results. Incentives for electricity and natural gas savings will be paid based on actual savings, provided that the minimum performance threshold of 15% savings has been achieved.



Program

Large Scale CHI Program Annour

2012 Large Ene Announcement

Economic Devel Introduces Revc Pay for Perform:

Incentives Now . Screw-in Lamps

Other updates pos

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A detailed Incentive Structure document is available on the applications and forms page.

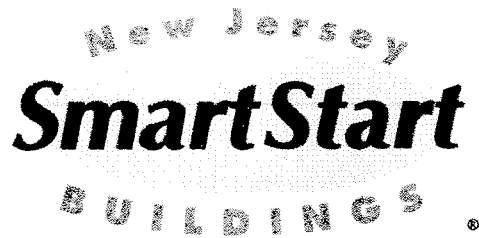
Energy Efficiency Revolving Loan Fund (EE RLF)

New Jersey-based commercial, institutional or industrial entities (including 501(c)(3) organizations) that have received an approved energy reduction plan under Pay for Performance may be eligible for supplemental financing through the EE RLF. The financing, in the form of low-interest loans, can be used to support up to 80% of total eligible project costs, not to exceed \$2.5 million or 100% of total eligible project costs from all public state funding sources. Visit the NJ EDA website for details.

Steps to Participation

[Click here](#) for a step-by-step description of the program.

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2012 PAY FOR PERFORMANCE PROGRAM Existing Buildings Incentive Structure

Incentive #1: Energy Reduction Plan

Incentive Amount:..... \$0.10 per sq ft
Minimum Incentive:..... \$5,000
Maximum Incentive:..... \$50,000 or 50% of facility annual energy cost (whichever is less)

This incentive is designed to offset the cost of services associated with the development of the Energy Reduction Plan (ERP) and is paid upon ERP approval. Incentive is contingent on implementation of recommended measures outlined in the ERP.

Incentive #2: Installation of Recommended Measures

Minimum Performance Target:..... 15%

Electric Incentives

Base Incentive based on 15% savings:.....\$0.09 per projected kWh saved
For each % over 15% add:.....\$0.005 per projected kWh saved
Maximum Incentive:.....\$0.11 per projected kWh saved

Gas Incentives

Base Incentive based on 15% savings:.....\$0.90 per projected Therm saved
For each % over 15% add:.....\$0.05 per projected Therm saved
Maximum Incentive:.....\$1.25 per projected Therm saved

Incentive Cap: 25% of total project cost

This incentive is based on projected energy savings outlined in the ERP. Incentive is paid upon successful installation of recommended measures.

Incentive #3: Post-Construction Benchmarking Report

Minimum Performance Target:..... 15%

Electric Incentives

Base Incentive based on 15% savings:.....\$0.09 per actual kWh saved
For each % over 15% add:.....\$0.005 per actual kWh saved
Maximum Incentive:.....\$0.11 per actual kWh saved

Gas Incentives

Base Incentive based on 15% savings:.....\$0.90 per actual Therm saved
For each % over 15% add:.....\$0.05 per actual Therm saved
Maximum Incentive:.....\$1.25 per actual Therm saved

Incentive Cap: 25% of total project cost

This incentive will be released upon submittal of a Post-Construction Benchmarking Report that verifies that the level of savings actually achieved by the installed measures meets or exceeds the minimum performance threshold. To validate the savings and achievement of the Energy Target, the EPA Portfolio Manager shall be used. Savings should be rounded to the nearest percent. Total value of Incentive #2 and Incentive #3 may not exceed 50% of the total project cost. Incentives will be limited to \$1 million per gas and electric account per building; maximum of \$2 million per project. See Participation Agreement for details.

New Jersey Pay For Performance Incentive Program

Note: The following calculation is based on the New Jersey Pay For Performance Incentive Program per April, 2012. Building must have a minimum average electric demand of 100 kW. This minimum is waived for buildings owned by local governments or non-profit organizations. Values used in this calculation are for measures with a positive return on investment (ROI) only.

Total Building Area (Square Feet)	923
Is this audit funded by NJ BPU (Y/N)	Yes

Board of Public Utilities (BPU)

Incentive #1		
Audit is funded by NJ BPU	\$0.10	\$/sqft

	Annual Utilities	
	kWh	Therms
Existing Cost (from utility)	\$1,226	\$1,907
Existing Usage (from utility)	7,999	1,553
Proposed Savings	4,781	0
Existing Total MMBtus	183	
Proposed Savings MMBtus	16	
% Energy Reduction	8.9%	
Proposed Annual Savings	\$399	

	Min (Savings = 15%)		Increase (Savings > 15%)		Max Incentive		Achieved Incentive	
	\$/kWh	\$/therm	\$/kWh	\$/therm	\$/kWh	\$/therm	\$/kWh	\$/therm
Incentive #2	\$0.09	\$0.90	\$0.005	\$0.05	\$0.11	\$1.25	\$0.00	\$0.00
Incentive #3	\$0.09	\$0.90	\$0.005	\$0.05	\$0.11	\$1.25	\$0.00	\$0.00

	Incentives \$		
	Elec	Gas	Total
Incentive #1	\$0	\$0	\$5,000
Incentive #2	\$0	\$0	\$0
Incentive #3	\$0	\$0	\$0
Total All Incentives	\$0	\$0	\$5,000

Total Project Cost	\$2,018
---------------------------	---------

		Allowable Incentive
% Incentives #1 of Utility Cost*	159.6%	\$1,567
% Incentives #2 of Project Cost**	0.0%	\$0
% Incentives #3 of Project Cost**	0.0%	\$0
Total Eligible Incentives***		\$1,567
Project Cost w/ Incentives		\$451

Project Payback (years)	
w/o Incentives	w/ Incentives
5.1	1.1

* Maximum allowable incentive is 50% of annual utility cost if not funded by NJ BPU, and %25 if it is.

** Maximum allowable amount of Incentive #2 is 25% of total project cost.

Maximum allowable amount of Incentive #3 is 25% of total project cost.

*** Maximum allowable amount of Incentive #1 is \$50,000 if not funded by NJ BPU, and \$25,000 if it is.

Maximum allowable amount of Incentive #2 & #3 is \$1 million per gas account and \$1 million per electric account; maximum 2 million per project



Your Power to Save
At Home, for Business, and for the Future

HOME

RESIDENTIAL

COMMERCIAL, INDUSTRIAL
AND LOCAL GOVERNMENT

RENEWABLE ENERGY



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Energy Savings Improvement Plan

A new State law allows government agencies to make energy related improvements to their facilities and pay for the costs using the value of energy savings that result from the improvements. Under the recently enacted Chapter 4 of the Laws of 2009 (the law), the "Energy Savings Improvement Program" (ESIP), provides all government agencies in New Jersey with a flexible tool to improve and reduce energy usage with minimal expenditure of new financial resources.

This [Local Finance Notice](#) outlines how local governments can develop and implement an ESIP for their facilities. Below are two sample RFPs:

- [Local Government](#)
- [School Districts \(K-12\)](#)

The Board also adopted [protocols](#) to measure energy savings.

The ESIP approach may not be appropriate for all energy conservation and energy efficiency improvements. Local units should carefully consider all alternatives to develop an approach that best meets their needs. Local units considering an ESIP should carefully review the Local Finance Notice, the law, and consult with qualified professionals to determine how they should approach the task.

FIRST STEP – ENERGY AUDIT

For local governments interested in pursuing an ESIP, the first step is to perform an energy audit. As explained in the Local Finance Notice, this may be done internally if an agency has qualified staff to conduct the audit. If not, the audit must be implemented by an independent contractor and not by the energy savings company producing the Energy Reduction Plan.

Pursuing a [Local Government Energy Audit](#) through New Jersey's Clean Energy Program is a valuable first step to the ESIP approach - and it's free. **Incentives provide 100% of the cost of the audit.**

ENERGY REDUCTION PLANS

If you have an ESIP plan you would like to submit to the Board of Public Utilities, please email it to ESIP@bpu.state.nj.us. Please limit the file size to 3MB (or break it into smaller files).

- [Frankford Township School District](#)
- [Northern Hunterdon-Voorhees Regional High School](#)
- [Manalapan Township \(180 MB - Right Click, Save As\)](#)

Program Updates

- [Board Order - Standby Charges for Distributed Generation Customers](#)
 - [T-12 Schools Lighting Replacement Initiative - Funding Allocation Reached](#)
- [Other updates posted.](#)

Featured Success Story

Rutgers University:
Continued Commitment to Saving Energy



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- ▶ [LOCAL GOVERNMENT ENERGY AUDIT](#)
- ▶ [LARGE ENERGY USERS PILOT](#)
- ▶ [ENERGY SAVINGS IMPROVEMENT PLAN](#)
- ▶ [DIRECT INSTALL](#)
- ▶ [ENERGY BENCHMARKING](#)
- ▶ [T-12 SCHOOLS LIGHTING INITIATIVE](#)
- ▶ [OIL, PROPANE & MUNICIPAL ELECTRIC CUSTOMERS](#)
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APPENDIX E

Photovoltaic (PV) Rooftop Solar Power Generation

Photovoltaic (PV) Solar Power Generation - Screening Assessment

**Roxbury Township Board of Education
Transportation Building.**

Cost of Electricity	\$0.153	/kWh
Electricity Usage	7,999	kWh/yr
System Unit Cost	\$4,000	/kW

Photovoltaic (PV) Solar Power Generation - Screening Assessment

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	Federal Tax Credit	New Jersey Renewable ** SREC	Payback (without incentive)	Payback (with incentive)
	\$	kW	kWh	therms	\$	\$	\$	\$	Years	Years
\$0	0.0	0	0	0	\$0	\$0	\$0	\$0	#DIV/0!	#DIV/0!

** Estimated Solar Renewable Energy Certificate Program (SREC) SREC for 15 Years= \$77 /1000kwh

Area Output*

144 m2
1,554 ft2

Perimeter Output*

46 m
150 ft

Available Roof Space for PV:

(Area Output - 10 ft x Perimeter) x 85%
48 ft2

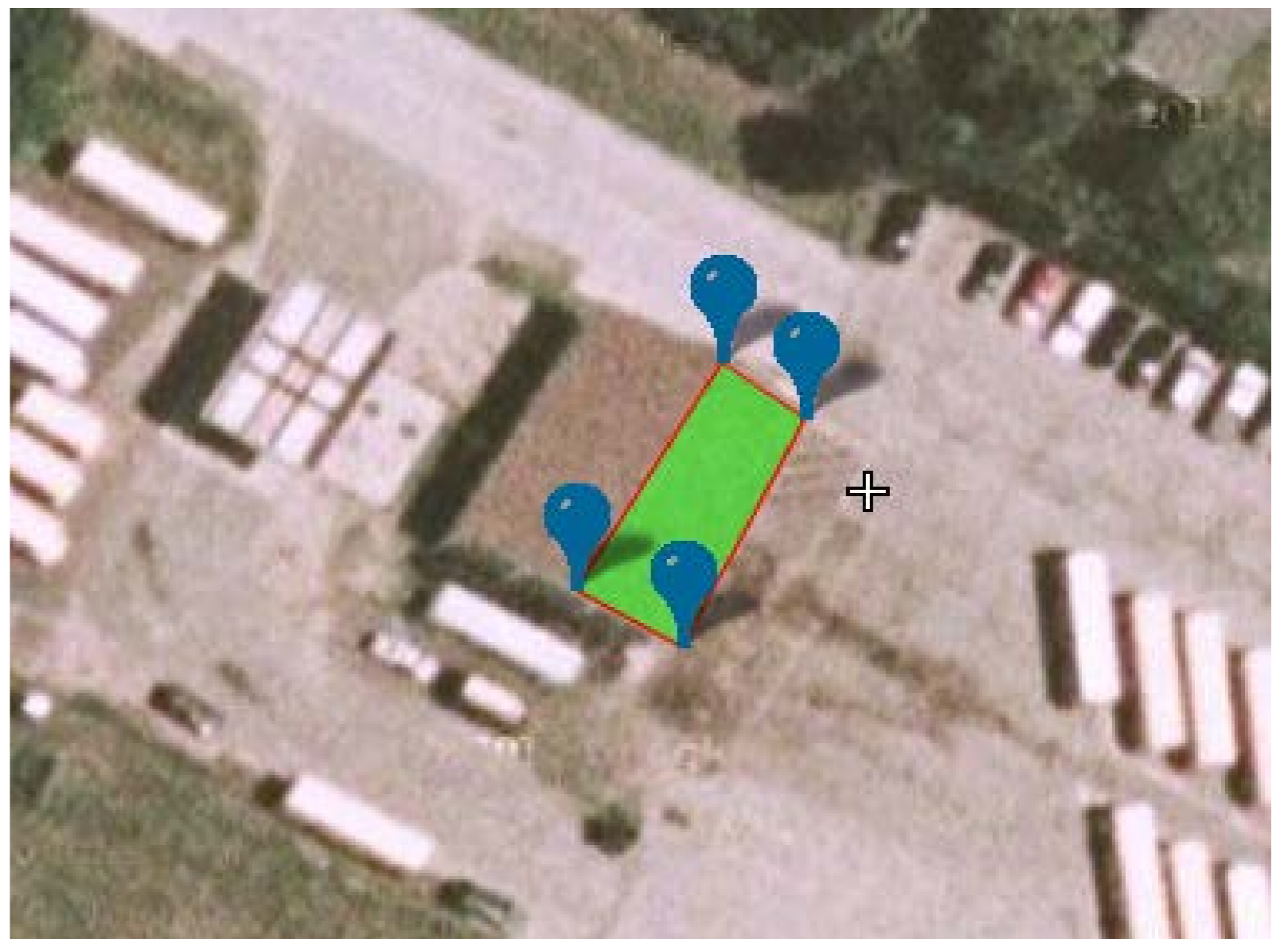
Approximate System Size:

Is the roof flat? (Yes/No) **Yes**

8 watt/ft2
386 DC watts
0.0 kW
Enter into PV Watts

PV Watts Inputs***

Array Tilt Angle **20** Enter into PV Watts (always 20 if flat, if pitched - enter estimated roof angle)
 Array Azimuth **180** Enter into PV Watts (default)
 Zip Code **07876** Enter into PV Watts
 DC/AC Derate Factor **0.83** Enter into PV Watts



PV Watts Output

0 annual kWh calculated in PV Watts program

% Offset Calc

Usage 7,999 (from utilities)
 PV Generation 0 (generated using PV Watts)
 % offset 0%

* <http://www.freemaptools.com/area-calculator.htm>
 ** <http://www.fletexchange.com>
 *** http://gisatnrel.nrel.gov/PVWatts_Viewer/index.html

APPENDIX F

EPA Portfolio Manager



STATEMENT OF ENERGY PERFORMANCE

Roxbury Board of Education Transportation Building

Building ID: 3209995
For 12-month Period Ending: June 30, 2012¹
Date SEP becomes ineligible: N/A

Date SEP Generated: August 17, 2012

Facility
 Roxbury Board of Education
 Transportation Building
 3 Bryant Dr
 Succasunna, NJ 07876

Facility Owner
 N/A

Primary Contact for this Facility
 N/A

Year Built: 1980
Gross Floor Area (ft²): 923

Energy Performance Rating² (1-100) N/A

Site Energy Use Summary³

Natural Gas (kBtu) ⁴	155,370
Electricity - (kBtu)	0
Total Energy (kBtu)	155,370

Energy Intensity⁴

Site (kBtu/ft ² /yr)	168
Source (kBtu/ft ² /yr)	176

Emissions (based on site energy use)

Greenhouse Gas Emissions (MtCO ₂ e/year)	8
---	---

Electric Distribution Utility

Jersey Central Power & Light Co [FirstEnergy Corp]

National Median Comparison

National Median Site EUI	10
National Median Source EUI	28
% Difference from National Median Source EUI	529%
Building Type	Storage/Shipping/Non-Refrigerated Warehouse

Stamp of Certifying Professional

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

Meets Industry Standards⁵ for Indoor Environmental Conditions:

Ventilation for Acceptable Indoor Air Quality	N/A
Acceptable Thermal Environmental Conditions	N/A
Adequate Illumination	N/A

Certifying Professional

N/A

Notes:

1. Application for the ENERGY STAR must be submitted to EPA within 4 months of the Period Ending date. Award of the ENERGY STAR is not final until approval is received from EPA.
2. The EPA Energy Performance Rating is based on total source energy. A rating of 75 is the minimum to be eligible for the ENERGY STAR.
3. Values represent energy consumption, annualized to a 12-month period.
4. Values represent energy intensity, annualized to a 12-month period.
5. Based on Meeting ASHRAE Standard 62 for ventilation for acceptable indoor air quality, ASHRAE Standard 55 for thermal comfort, and IESNA Lighting Handbook for lighting quality.

ENERGY STAR® Data Checklist for Commercial Buildings

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

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

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

CRITERION	VALUE AS ENTERED IN PORTFOLIO MANAGER	VERIFICATION QUESTIONS	NOTES	<input checked="" type="checkbox"/>
Building Name	Roxbury Board of Education Transportation Building	Is this the official building name to be displayed in the ENERGY STAR Registry of Labeled Buildings?		<input type="checkbox"/>
Type	Storage/Shipping/Non-Refrigerated Warehouse	Is this an accurate description of the space in question?		<input type="checkbox"/>
Location	3 Bryant Dr, Succasunna, NJ 07876	Is this address accurate and complete? Correct weather normalization requires an accurate zip code.		<input type="checkbox"/>
Single Structure	Single Facility	Does this SEP represent a single structure? SEPs cannot be submitted for multiple-building campuses (with the exception of a hospital, k-12 school, hotel and senior care facility) nor can they be submitted as representing only a portion of a building.		<input type="checkbox"/>
Building (Other)				
CRITERION	VALUE AS ENTERED IN PORTFOLIO MANAGER	VERIFICATION QUESTIONS	NOTES	<input checked="" type="checkbox"/>
Gross Floor Area	923 Sq. Ft.	Does this square footage include all supporting functions such as kitchens and break rooms used by staff, storage areas, administrative areas, elevators, stairwells, atria, vent shafts, etc. Also note that existing atriums should only include the base floor area that it occupies. Interstitial (plenum) space between floors should not be included in the total. Finally gross floor area is not the same as leasable space. Leasable space is a subset of gross floor area.		<input type="checkbox"/>
Number of PCs	N/A(Optional)	Is this the number of personal computers in the space?		<input type="checkbox"/>
Weekly operating hours	N/A(Optional)	Is this the total number of hours per week that the space is 75% occupied? This number should exclude hours when the facility is occupied only by maintenance, security, or other support personnel. For facilities with a schedule that varies during the year, "operating hours/week" refers to the total weekly hours for the schedule most often followed.		<input type="checkbox"/>
Workers on Main Shift	N/A(Optional)	Is this the number of employees present during the main shift? Note this is not the total number of employees or visitors who are in a building during an entire 24 hour period. For example, if there are two daily 8 hour shifts of 100 workers each, the Workers on Main Shift value is 100.		<input type="checkbox"/>

ENERGY STAR® Data Checklist for Commercial Buildings

Energy Consumption

Power Generation Plant or Distribution Utility: Jersey Central Power & Light Co [FirstEnergy Corp]

Fuel Type: Natural Gas		
Meter: Natural Gas (therms) Space(s): Entire Facility		
Start Date	End Date	Energy Use (therms)
06/01/2012	06/30/2012	0.00
05/01/2012	05/31/2012	8.50
04/01/2012	04/30/2012	75.70
03/01/2012	03/31/2012	170.20
02/01/2012	02/29/2012	360.10
01/01/2012	01/31/2012	361.00
12/01/2011	12/31/2011	383.10
11/01/2011	11/30/2011	168.90
10/01/2011	10/31/2011	25.20
09/01/2011	09/30/2011	1.00
08/01/2011	08/31/2011	0.00
07/01/2011	07/31/2011	0.00
Natural Gas Consumption (therms)		1,553.70
Natural Gas Consumption (kBtu (thousand Btu))		155,370.00
Total Natural Gas Consumption (kBtu (thousand Btu))		155,370.00
Is this the total Natural Gas consumption at this building including all Natural Gas meters?		<input type="checkbox"/>

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

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

Certifying Professional

(When applying for the ENERGY STAR, the Certifying Professional must be the same PE or RA that signed and stamped the SEP.)

Name: _____ Date: _____

Signature: _____

Signature is required when applying for the ENERGY STAR.

FOR YOUR RECORDS ONLY. DO NOT SUBMIT TO EPA.

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

Facility
Roxbury Board of Education
Transportation Building
3 Bryant Dr
Succasunna, NJ 07876

Facility Owner
N/A

Primary Contact for this Facility
N/A

General Information

Roxbury Board of Education Transportation Building	
Gross Floor Area Excluding Parking: (ft ²)	923
Year Built	1980
For 12-month Evaluation Period Ending Date:	June 30, 2012

Facility Space Use Summary

Building	
Space Type	Other - Storage/Shipping/Non-Refrigerated Warehouse
Gross Floor Area (ft ²)	923
Number of PCs °	N/A
Weekly operating hours °	N/A
Workers on Main Shift °	N/A

Energy Performance Comparison

Performance Metrics	Evaluation Periods		Comparisons		
	Current (Ending Date 06/30/2012)	Baseline (Ending Date 08/31/2011)	Rating of 75	Target	National Median
Energy Performance Rating	N/A	N/A	75	N/A	N/A
Energy Intensity					
Site (kBtu/ft ²)	168	248	0	N/A	10
Source (kBtu/ft ²)	176	260	0	N/A	28
Energy Cost					
\$/year	\$ 1,886.56	\$ 2,810.78	N/A	N/A	\$ 112.08
\$/ft ² /year	\$ 2.04	\$ 3.05	N/A	N/A	\$ 0.12
Greenhouse Gas Emissions					
MtCO ₂ e/year	8	12	0	N/A	0
kgCO ₂ e/ft ² /year	9	13	0	N/A	1

More than 50% of your building is defined as Storage/Shipping/Non-Refrigerated Warehouse. This building is currently ineligible for a rating. Please note the National Median column represents the CBECS national median data for Storage/Shipping/Non-Refrigerated Warehouse. This building uses 529% more energy per square foot than the CBECS national median for Storage/Shipping/Non-Refrigerated Warehouse.

Notes:

o - This attribute is optional.

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