

**2011 Energy Star Awards
Long Island Power Authority
Application for Partner of the Year**

Executive Summary

Since its inception in 1998, the Long Island Power Authority has provided energy efficiency program options to its customers. Initially, the programs were offered under LIPA's Clean Energy Initiative (CEI) which was structured as a ten year program with a budget of \$355 million. In 2009, LIPA began the implementation of a much larger initiative, Efficiency Long Island (ELI), which was designed as an approximately \$1 billion strategy to be deployed over 10 years. Efficiency Long Island is an integral part of LIPA's resource planning and is targeted to save over 500 MW by 2018. Efficiency Long Island offers a broad range of programs focused on all market sectors.

Early in its efficiency program implementation efforts, LIPA recognized the importance of aligning the business trades with its program offerings. Over the last ten years LIPA has amassed a large, qualified cadre of trade allies who promote, market and sell products and services as a direct result of the programs included in the ELI portfolio. Under a Master Services Agreement between National Grid and LIPA, National Grid staff serves as the project manager for all programs under ELI. Under contract to National Grid and LIPA are a number of implementation contractors who support day to day operations of the ELI programs.

LIPA's program philosophy is structured to capture as much cost effective energy efficiency or renewable energy as practical in any given year. 2011 is no exception. LIPA's portfolio of programs includes five residential, three commercial and four renewable energy initiatives. LIPA's budget for ELI in 2011 is \$118 million which is an increase of 55% over 2010.

LIPA's application is supported by its program delivery in 3 categories:

1. Residential
 - Residential New
 - Residential Existing
 - Energy Efficient Products
2. Commercial
3. Renewable

LIPA's application is supported by a number of attachments which supplement its request for consideration as Partner of the Year.

RESIDENTIAL PROGRAMS

Residential New Construction – ENERGY STAR Labeled Homes

Program Design

The New York ENERGY STAR® Labeled Homes Program (ESLH) is a new construction incentive program that is a component of the Long Island Power Authority's (LIPA) Efficiency Long Island (ELI) initiative. A New York ENERGY STAR® Labeled Home is a performance tested home built to use less energy, provide superior comfort, and be gentler on the environment.

Key Program Design Features

- Use less energy - New York ENERGY STAR® Labeled Homes use approximately 30% less energy than conventionally built homes.
- Lower monthly utility bills - Reduce the overall cost of home ownership.
- Tried and true technologies - Used in tens of thousands of homes.
- Greater comfort - A quieter, healthier home, no matter what the weather.
- Peace of mind - A home that's more durable and more valuable.

Market Effects

The ESLH program has become a very successful component of LIPA's ELI initiative. The work that LIPA has done to build relationships with its market actors (including builders, home energy raters, building code officials, the design community, product suppliers, etc.) has proven to be effective in transforming the market for new home construction on Long Island.

As a result of its program deployment strategies, LIPA has established ongoing meetings with Long Island Townships, the designers, builders, communities and also with Home Energy Rater System (HERS) Representatives. In recent months, LIPA's efforts have focused on educating all market actors about the upcoming changes from ENERGY STAR® version 2.0 to version 3.0. This change poses both challenges and opportunities for the entire new construction community. LIPA is working with program stakeholders to continue its strong performance in the future. LIPA has proactively undertaken a number of steps to ensure program continuity including establishing a committee which includes stakeholders (Townships, Builder communities and HERS Representatives) to identify and address any potential barriers to continued participation in the program. Discussions with stakeholders address best practices with respect to program design, education and support so that modifications and enhancements to ESLH are ensured to be as successful as the current version of the program. LIPA has worked closely with Sam Rashkin of EPA to refine their 2011 program and Mr. Rashkin presented a two hour training for stakeholders on Long Island in the fall of 2010.

The 2010 LIPA ENERGY STAR® Labeled Homes Program has had a total of 419 participating homes through October 31, 2010. This number exceeds 2009's total number of homes (286) by 133. In addition, with the ever growing relationships that have been established, raters and builders have been able to build higher quality and more energy efficient homes. In 2010, 62% of the homes were non-mandated. In addition, LIPA currently has six Tier 4 homes as opposed to four Tier 4 homes in all of 2009.

The following table shows program participation through October 2010.

Homes	Totals Homes	% of Total	% of Non-Mandated
T1 / \$0	158	38%	
T1	38	9%	62%
T2	173	41%	
T3	44	11%	
T4	6	1%	
Total	419		

The ENERGY STAR® labeled Homes Program has been a component of LIPA's efficiency portfolio since 2003. To date, LIPA has provided incentives to 1,449 new homes, recruited 409 builders and 51 rater companies. The 2009 & 2010 goals and actual results achieved are as follows:

	2009 Goals	2009 Results
MW	0.271	.535
MWh	584	754

	2010 Goals	2010 Results (estimated)
MW	.535	.719
MWh	754	1,291

Home Performance with ENERGY STAR

Program Design

LIPA has sponsored and supported EPA's Home Performance with ENERGY STAR® (HPwES) program and promoted its availability to qualifying residential customers in its service territory since 2006. LIPA follows the guidelines for the program that have been promulgated by the EPA and has worked closely with Chandler von Schrader of EPA to ensure program integrity. Mr. Von Schrader addressed over one hundred local contractors and officials in November 2010 about opportunities to enhance their participation in Home Performance with Energy Star, including a Remodeling component which LIPA will roll out in the first quarter of 2011. LIPA's HPwES initiative was designed to transform the way energy efficiency services are delivered to 1-4 family homes. To qualify for incentives through LIPA's HPwES program, the energy efficiency improvements must be evaluated through a comprehensive audit and installed by a participating contractor.

Key Program Design Features

LIPA's HPwES program created a network of independent home improvement contractors that are accredited by BPI. As part of the HPwES program, LIPA's customers receive a Comprehensive Home Assessment ("CHA") from participating Building Performance Institute (BPI) certified contractors. The CHA generally lasts one to three hours. Following the assessment of the home, the contractor also provides a set of recommended improvements and a cost estimate to perform those improvements.

Under the original LIPA program, customer incentives for HPwES were fuel neutral. Under the current program, customer incentives are based on the type of fuel used for space heating. Incentives include both primary and supplemental measures and are capped at \$3,000 for homes with electric heat and homes heated with natural gas, oil or propane with high central air conditioning use. Please see Attachment 1 for a comparison of both programs. LIPA provides incentives for the following measures: insulation, air sealing, duct sealing, installation of a ventilation system and/or repair/upgrade of multiple existing systems if required to facilitate air sealing. In addition, customers participating in LIPA's HPwES program are also eligible for measure specific rebates for the following items: replacement windows; storm doors; storm windows; upgrades of knob and tube wiring; measures to provide sufficient combustion air and prevent Combustion Appliance Zone depressurization; spillage; inadequate draft through the wall air conditioners; and replacement of existing electric hot water heaters.

Market Effects

Table 1 below displays the results of LIPA's HPwES from its inception to date.

Table 1: HPwES Results 2006 through 2010¹

	Participants	KWH Savings	KW Savings
2006	71	109,000	70
2007	43	72,000	41
2008	138	193,000	158

¹Completed by year end.

2009	785	1,090,290	233
2010 (e)	1007	2,095,000	253
Total	2044	3,559,290	755

In its five years of operation, HPwES continued to provide valuable resources focused on the way energy efficiency services are delivered to 1-4 family homes on Long Island. The services offered by the program's BPI certified contractors was instrumental in helping to lower the cost of utility prices for many homeowners within the LIPA service territory. It also helped reduce peak demand loads for electricity, and has contributed toward the reduction of greenhouse gases associated with the combustion of fossil fuels. With the increased cost of energy, as well as increased interest in adopting and promoting green options, the anticipation was that HPwES would continue to grow as energy conservation and "green" living became more prevalent in the daily lives of Long Islanders.

In 2009, LIPA added a new component to its HPwES program – Home Performance Direct (HPD). The resulting program redesign added a feature to the program that would capitalize on the inherent strengths of HPwES and at the same time foster greater follow through to implementing recommendations from the comprehensive home energy audits that were conducted. The basic design of HPD, while similar to HPwES, added two innovative features - a direct install component at the time of the initial audit and the ability for contractors to capture the savings from the recommendations identified in the audit. HPD contractors have become skilled in "upselling" the follow on measures, in fact HPD contractors have been able to encourage 50% of customers to perform the extra work. Customers who participate in HPD average approximately \$250 savings on their energy bills per year. That number reaches \$750 per year for customers who opt to contract for the extra work. The average electric heat customer has a pay back period of just a year and a half.

The objective of HPD, which launched in December 2008, was to maximize the acquisition of cost effective energy savings across a large number of homes. LIPA's target market for HPD was the approximately 40,000 homes that are electrically heated as well as homes with high central air conditioning usage. HPD program design has three primary components:

1. **On-site home evaluation:** Cost effective energy upgrade potential would be assessed and presented to homeowners by reviewing the results of the Comprehensive Home Assessment report. The on-site assessment consists of diagnostic testing and the assessment of existing home conditions, including: health and safety tests; air leakage tests; insulation level assessments; lighting upgrades, heating and domestic hot water improvement opportunities and more.
2. **Direct installation of energy saving measures:** At the time of the on-site evaluation the contractor would install certain measures and/or perform several actions designed to achieve immediate savings. Included are duct sealing, air sealing, domestic hot water demand reduction measures, and CFL replacements.
3. **CHA and Proposal for follow-on work:** At the time a presentation is made to the homeowner of recommended energy upgrades, the contractors also review the associated incentives and services that would be available through LIPA to support the implementation of the recommended actions. In addition, homeowners are provided with a list of qualified contractors, approved by LIPA, to perform the identified work.

HPD Pilot Program. The first year of full operation for HPD, 2009, was considered a pilot effort.

Table 2 illustrates the results of the HPD and HPwES programs for 2009.

Table 2: HPD vs. HPwES Results for 2009

	Participants	KWH Savings	KW Savings
HPD	1403	1,796,660	1350
HPwES	785	1,090,290	233

A major factor contributing to the early success of the HPD pilot program was the established base of contractors already aware of and participating in HPwES. The existing base of contractors was viewed as being an effective, well established cadre of delivery resources.

One of the goals of the HPD pilot program was to identify shortcomings to the program design and potential improvements to further enhance the delivery, participation, penetration of measures, and cost effectiveness of the program. A review of the pilot program indicated that for many of the treated homes there was inadequate or, in some cases non-existing ventilating systems which precluded air and duct sealing maintenance being conducted at the time of the initial HPD visit. In such instances, the HPD program was modified to address “big gap” triage and present the underlying problem to the customer. Where opportunities for air and/or duct sealing were not possible, other remediation work at the premise was undertaken. Examples of such work included repairing duct boot disconnects, installing insulated attic hatch covers, providing attic tents for recessed lighting, adding door sweeps as well as other low costs measures. By switching program delivery tactics in those instances where duct and air sealing was not possible², LIPA was able to augment savings from CFL installations and electric domestic hot water measures. The net result was an increase in savings and an overall improvement in the cost-effectiveness of the HPD program.

The current LIPA Home Performance with ENERGY STAR® program and Home Performance Direct pilot program are designed to provide Comprehensive Home Assessments (CHA) energy efficiency measures and incentives to fuel neutral residential homes in the LIPA service territory in order to produce cost-effective electrical savings and reduce customer bills. LIPA has recognized that opportunities exist to directly engage the home remodeling industry by providing opportunities to leverage remodeling activities with existing home energy efficiency improvements under the Home Performance with ENERGY STAR® program. By participating in this new Home Performance Remodel concept, participating HPwES remodeling contractors can potentially achieve a ‘net zero’ or ‘no new energy’ expense of a new remodeled space or addition. This can be achieved through efficiency improvements to existing home space combined with building the remodeled space/addition to high performance ENERGY STAR® program standards.

In 2011, LIPA will be unrolling a new program pilot offering to promote the ‘net zero’ electricity concept for LIPA customers planning to add additional square footage or remodel unused space in their homes by directly targeting HPwES remodeling contractors and providing incentives that make sense. These incentives can result in potentially reduced project costs, increased comfort and

² Where possible follow-up measure installations, including air and/or duct sealing repairs were successfully covered under the HPwES program.

safety, no new additional and/or reduced electricity consumption, lower monthly bills and increased customer satisfaction.

The Cool Homes Program

Program Design

The Cool Homes Program continues to look to new opportunities to contribute to Efficiency Long Island goals and objectives. The Cool Homes Program provides incentives to residential customers and contractors for the installation of the Heating, Ventilation and Air Conditioning (HVAC) systems. HVAC systems include central air conditioners and air source heat pumps. Central Air Conditioning (CAC) system installations represent the majority of rebates paid to residential customers. Contractors who would like to offer rebates to their customers are required to attend a one day class to train on the proper method for testing systems airflow and determining the correct amount of refrigerant the unit should have. This training is only for central air and air source heat pump systems. Once HVAC contractors have completed the training they are placed on LIPA's Cool Homes Participant list. Initially, the program only offered rebates for central air systems and air source heat pumps. Through the years, heating and cooling components have been added to the program. Qualifying Ground Source Heat Pumps or Geothermal systems are now eligible for rebates as well as Ductless Minisplit systems. In 2010, LIPA added an Early Retirement Option to the Program. When customers are persuaded to replace their old inefficient central air system before it breaks down, they and the contractor receive enhanced incentives.

2010 Program

Central Air Conditioner/Heat Pump

New installations and replacement of failed equipment

Customer rebates are from \$250 to \$400

Contractor incentives starting at \$50

Early Retirement (ER) Program

Customer rebates are from \$500 to \$700

Contractor incentives starting at \$100

ER Criteria: The CAC or Heat Pump equipment being replaced must either be operational or, if non-operational, less than 20 years old and repairable for less than \$1,000.

Geothermal / Geocolumn Systems

Customer rebates are from \$700 to \$1000

There is no participating contractor requirement; any licensed contractor can perform the installation.

Electrically Efficient Furnaces Fan Motors

Customer rebates are \$200

There is no participating contractor requirement; any licensed contractor can perform the installation.

Key Program Design Features

Since the Cool Homes Program inception in 1999, LIPA's educational efforts, financial incentives, program management and market support have been effective in demonstrating to the industry that consumers want energy-efficient features and expect quality installation as well. LIPA's consumer rebates and HVAC contractor incentives helped contribute to the sales of higher energy-efficient units.

Financial incentives were geared to both the customer and the contractor. Rebates to customers were determined based on SEER/EER levels of equipment. Contractors were encouraged to sell and install appropriately sized energy efficient equipment through cash incentives. The program required submittal of a Manual J calculation report that confirmed the correct sizing of the unit to the home, as well as proper system charging and airflow documentation.

To support the HVAC community, the Cool Homes Program conducts training classes on Manual J sizing, Airflow and Charging. Over 600 technicians have been trained in these techniques.

Since 1999, 45,942 customers have participated in the Cool Homes Program.

The following table outlines the program's performance since inception:

Year	Units	Rebates	MWh	MW
1999	2,966	\$807,765	1,101	1.644
2000	8,329	\$2,988,924	3,806	5.701
2001	4,173	\$1,879,716	3,127	4.132
2002	5,504	\$2,631,665	4,626	6.045
2003	5,600	\$2,388,247	4,594	5.935
2004	5,379	\$2,344,830	4,523	5.833
2005	4,865	\$2,247,105	5,082	8.893
2006	3,146	\$1,501,956	3,486	6.275
2007	1,595	\$1,004,160	1071.3	2.008
2008	2,061	\$2,310,003	1,949	3.264
2009	5,625	\$1,474,246	3,565	5.586
YTD 2010	3,928	\$1,867,450	2,863	3.977
Totals	53,171	\$23,446,065	39,793	59.3

Market Effects

Participating contractors benefit from a comprehensive marketing campaign geared towards educating the customer on the benefits of quality installation of central air. The Cool Homes customer brochure promotes energy efficiency, informs customers how to participate in Cool Homes, and gives program information including requirements and rebate amounts. The Cool Homes website promotes the program while including downloadable versions of the brochure, applications forms, and links to its participating contractor list. The media campaign included television, newspaper and magazine ads, yellow page ads, bill inserts and press releases.

Residential Energy Assistance Program (REAP)

Program Design

The LIPA REAP Program is a low income weatherization program aimed at reducing the electrical consumption of account holders in LIPA's territory. LIPA has been offering the REAP program since 1999.

Key Program Design Features

Under the REAP initiative, BPI Building Analysts perform energy assessments of residential customers. REAP offers free, personalized home energy audits for LIPA customers who are income eligible and identifies approaches for residents to use less electricity in order to save them money. Qualified customers may also receive free energy-saving devices, including compact fluorescent lamps and energy efficient refrigerators. In addition, qualified customers can receive blower door guided weatherization measures including CAC duct sealing measures.

A key aspect of the REAP energy conservation program is the education of LIPA's customers. Customers are advised to look for Energy Star® products and compare energy ratings and/or savings with similar appliances and to make educated choices. Although there is no way to put an accurate savings figure on the educational benefits of the program, the savings are substantial.

Market Effects

Since 1999 LIPA's results for its REAP initiative have been impressive. Some key summary program statistics include:

Program participants: 45,073

Energy Savings:

Refrigerators	2.7 MW	17,649 MWh	12,900 Replaced
Lighting	1.998 MW	31,739 MWh	
Weatherization	1.194 MW	1,415 MWh	

In addition to standard marketing to customers via bill inserts and direct mail, the LIPA REAP program also reaches out to non-profit agencies, government agencies and even businesses serving income-eligible LIPA customers. Two marketing coordinators provide workshops to the public and provide in-service trainings for agencies.

The marketing strategy is to encourage "buy in" by other professionals and informal community leaders in order to promote word of mouth referrals. In addition, all marketing venues are treated as opportunities to educate participants about energy efficiency, thus furthering REAP's goal to empower customers to make informed choices about their energy usage.

For example, in 2009, LIPA REAP gave 40 presentations and workshops, staffed exhibit tables at 20 community events, met one-on-one with 68 community outreach workers, and networked at 112 meetings. Energy efficiency was promoted at every one of these 240 events.

LIPA REAP sponsored the 7th Annual Energy Forum for Advocates on October 22, 2010. Over 150 advocates from all across LIPA territory participated. The LIPA REAP Marketing Department also

offers information and referrals to customers in need, directing them to the appropriate community resources. Through years of assertive networking, REAP is now seen by many community agencies as a portal for information about LIPA services in addition to REAP.

Energy Efficient Products (EEP)

Program Design

LIPA has been supporting efforts to increase the stocking, promotion and sale of efficient residential products to more than 900,000 residential customers since 1999. Since the programs inception, LIPA has significantly expanded its program offerings through the Efficient Products Program. This program expansion reflects both new technology development and availability as well as an expanding number of both ENERGY STAR® and CEE specifications that have made it easier to identify and promote efficient models within a given product category.

In 2010 LIPA launched a program to recycle old refrigerators and freezers. The program is geared toward customers who have a secondary unit in their basement or garage. Eligible models must be in working condition, have been manufactured before 2001 and sized between 10 and 30 cubic feet. LIPA customers that participate in the program will receive a \$35 payment for each appliance recycled, up to \$70 or two appliances per year. Year to date a total of 3,957 old appliances have been recycled, saving LIPA customers 3097.6 MWh.

Market Effects

Results for LIPA's EEP Program for 2010 are as follows:

Product	Part.	KWh	Kw	Lifecycle Costs
ENERGY STAR Qualified CFLs - Common	800,000	37,961,692	2,511.7	\$0.003
ENERGY STAR Qualified CFLs - Specialty	450,000	29,918,298	1,979.5	\$0.005
ENERGY STAR Qualified CFL Fixtures	15,000	1,235,188	85.5	\$0.014
ENERGY STAR Qualified SSL Fixtures	10,000	963,923	66.7	\$0.013
ENERGY STAR Qualified Refrigerators	12,000	1,314,382	166.3	\$0.039
ENERGY STAR Qualified Dehumidifiers	1,500	119,200	209.0	\$0.012
ENERGY STAR Qualified Room Air Conditioners	15,000	491,219	855.7	\$0.091
Efficient Swimming Pool Pumps	2,000	1,329,490	902.0	\$0.015

Most of the market barriers facing the Efficient Products program include:

- Higher initial cost
- Uncertainty as to magnitude of savings relative to incremental cost
- The need for more education of other non-energy benefits such as longer lifetimes
- No communication from manufacturers and retailers on energy savings as a product attribute
- Unfamiliarity with the product; reluctance to try something new
- Performance issues: a particular concern for CFLs that includes run-up time to full brightness, cold temperature use and dimming capability
- Concern over mercury content of CFLs

LIPA's Efficient Products Program employs a number of strategies to try to overcome the market barriers. These include:

- **Customer rebates:** instant in-store coupons for lighting products or mail-in coupons for non-lighting products. In 2010 there were a total of 625 enrolled retail partners that participated in the Efficient Products program (115 appliance and 510 lighting stores). The rebate redemption year to date is 27,549 total appliance rebates valued at \$1,770,935. These numbers include refrigerator recycling as well as incentives paid to installers as part of the EEPs Efficient Pool Pump program. For lighting the program has rebated 45,884 lighting coupons at \$50,259 so far in 2010. LIPA also offers an on-line store for customers' convenience, to date a total of 78 lighting (61 CFLs and 17 fixtures) products have been rebated.
- **Upstream incentives:** payments to manufacturers and/or retailers to stock, promote and sell efficient products. Year to date in 2010 LIPA had a total of 17 lighting signed upstream incentives and 11 appliance agreements. These upstream incentive programs resulted in 1,326,116 ENERGY STAR qualified CFLs sold to date (760,873 bare spirals and 565,243 specialty bulbs). In addition 7,968 ENERGY STAR® qualified CFL fixtures and 15,049 ENERGY STAR® qualified room air conditioners were sold through upstream programs.

Retailer and manufacturer reimbursement is based on the submission and verification of sales data. For each upstream promotion a memorandum of understanding (MOU) is established that identifies:

- The model numbers and quantity of products to be promoted
 - The LIPA per unit incentive
 - Total allocated funding for the promotion
 - The retail price of each specific product sold during the promotion
 - The promotion start and end dates
 - The location of each retail store participating in the promotion
 - Sales data to be provided to LIPA's incentive processing contractor
 - Frequency of sales data submissions
 - Any marketing requirements, e.g., placement of LIPA branded point of purchase materials (POP)
- **Marketing:** development and placement of various POP materials. LIPA's Field Implementation Services contractor conducts regular retail store visits to ensure that POP materials are in place and are readily visible. Note that many large retail chains have fairly specific requirements as to the co-branding and placement of POP materials in their stores.

- **Advertising:** LIPA has provided some mass media advertising through print, TV and radio as well as on the LIPA Web site, www.lipower.org/efficiency for all products in the program.
- **Co-op Advertising:** LIPA provides matching advertising funds to retailers and/or manufacturers as an inducement to promote their sale of efficient products. Examples of some LIPA/retailer co-op advertisements are enclosed. In 2010 to date there have been 139 co-op ads that resulted in 5,558,023 impressions and leveraged \$139,480 in industry funds.
- **In-store Promotions:** LIPA's Field Implementation Services contractor routinely staffs in-store displays and tables demonstrating the features and benefits of the efficient products stocked and sold by the retail partner. Year to date LIPA participated in 65 in-promotions, spoke to approximately 4,503 customers and influenced the sale of approximately 10,079 ENERGY STAR qualified CFLs.

LIPA participates in the national Earth Day and Change the World Campaigns through seasonal lighting promotions. For three months each spring and fall, LIPA customers are eligible to receive a per bulb rebate of 50 cents off each ENERGY STAR qualified CFL purchased. These discounts were offered at 173 enrolled lighting dealer locations.

The following table shows savings based on estimated program results through the end of 2010.

Total Lifetime savings (kWh)	784,467,477 kWh
Total Demand savings (kW)	7,974 kW
Total lifetime Carbon savings (CO2 equivalent)	1,208,079,169 lbs

Commercial/Industrial Programs

Program Design

LIPA's Commercial Efficiency Program (CEP) is designed to assist businesses with incorporating cost-effective, energy efficient, energy technologies into the plan when updating equipment, renovating, expanding or building a new facility. Lower operating costs and increased efficiency offer savings, are key components to success on Long Island.

Key Program Design Features

LIPA's Commercial Efficiency Program has different components – each designed to fit the particular needs of non-residential customers.

- *The Prescriptive* component offers incentives from a pre-qualified list of energy efficient measures.
- *The Custom* component provides technical assistance, incentives and the flexibility to choose unique measures that are not included on the Prescriptive list.
- *The Custom Retrofit* component allows customers to receive incentives for replacing equipment prior to the end of its useful life with energy efficient equipment.
- *The Whole Building* component is a comprehensive approach in which the building design team and LIPA supported expert's work together from concept to completion to develop an energy plan specifically for a particular building.

LIPA also offers Commissioning services in which LIPA supported experts documented a confirmation that a building systems' function is in compliance with criteria set forth in the project's documents to satisfy the owners operational needs. The benefits of Commissioning includes optimized efficiency of energy consuming systems, facilities that have better operation and maintenance programs, fewer construction deficiencies, greater occupant comfort, improved project coordination and reduced construction costs.

LIPA also offers developers and building owners the technical and financial assistance necessary to meet Leadership in Energy and Environmental Design (LEED) Green Building goals beyond what is typically offered under the CEP Program: Whole Building energy modeling, building commissioning and financial incentives for energy efficiency are available under this program. LIPA offers these services for the following components of LEED:

- LEED New Construction
- LEED Existing Buildings
- LEED Core & Shell
- LEED Commercial Interiors
- LEED for Schools

LIPA promotes ENERGY STAR® equipment whenever available. LIPA also offers ENERGY STAR® benchmarking for those who are eligible under the Commercial Audit component.

Market Effects

LIPA's Commercial Efficiency Program (CEP) started in 2000 and has been very successful. Reaching and exceeding goals the CEP Program continues to expand. With an increase in goals over the next ten (10) years, in 2010 LIPA contracted a "Solution Provider" contractor that employs experts in energy efficiency who will work with large businesses to establish relationships, attract leads, close projects and reach and exceed 2011 and beyond goals. The Solution Provider is meant to look for comprehensive opportunities and work on solutions for depth of savings of each project. They will be incentivized for KW savings, depth of savings and working within a specific budget. LIPA is the first utility to engage a Solution Provider. By January 2011, the Solution Provider will be working directly with LIPA's large business customers and assigned their own goal. In order to prepare, the Solution Provider will receive training, both classroom and on the job, as well as the building of relationships with LIPA's large business customers. LIPA is confident that this will assist in contributing to the increase in goals with LIPA's Efficiency Long Island Initiative.

Also contributing to the success of the Commercial Efficiency Program in 2011 is LIPA's Small Business Direct Install Program (SBDI). LIPA is currently seeking a contractor to provide turnkey energy efficiency opportunity identification and installation services for small businesses on Long Island. Such services include:

- Marketing to and enrolling Small Business customers
- Performing site visits and collecting all necessary equipment and energy data;
- Comprehensively identifying efficiency opportunities and performing analyses of the costs and savings of each opportunity;
- Providing recommendations and information to customers, and obtaining customer approval for measure installations;
- Prepare and execute cost-sharing contracts with customers, and submit completed customer contracts to LIPA;
- Perform direct installation of eligible energy efficiency unit-priced measures.

Lighting and refrigeration measures shall be included, with LIPA also providing the bidders an opportunity to suggest other measures during the bidding process.

The SBDI Program will pay the contractor on a per-project/job basis.

- The Customer contract will be between the Small Business Direct Install Contractor and the Customer.
- Based upon a 70/30 cost split, with LIPA paying for 70% of the installation costs and the Customer paying the remaining 30%.

While the SBDI Program was intended to roll out in 2010 the Request for Proposal (RFP) was issued on November 12, 2010 and is intended to start in January 2011.

The first year 2011 targeted Program budget is \$13.6 million.

- Included in the approved 2011 budget
- Includes all costs charged by the Small Business Direct Install Contractor as well as all other costs incurred by the Program, such as internal administration, Customer outreach, evaluation, etc.
- Savings target for the first year is 7.2 MW and 30 GWh

In the fall of 2010, LIPA rolled out a pilot program titled the Fall Stimulus Program. This program was available for a limited time only where applications needed to be received from 9/15/10 through 11/15/10. Projects needed to be completed by 12/3/10. The pilot program proved to be

successful and also provided LIPA with lessons learned. The most problematic issues with the pilot were the time constraints and several contractors requested that the pilot be extended. As of 11/30/10, there were approximately 50 projects that participated in the Fall Stimulus. Due to the success of the pilot, LIPA will look to roll out additional short term programs in 2011.

The 2010 goals and participation through 10/30/10 for LIPA's Commercial Efficiency Program are shown below:

	MWh	MW	Budget
Commercial Efficiency Program	45,023	10.13	\$16,410,483
Program Participation through 10/30/10	30,225	5.26	\$7,500,000

The 2011 goals for LIPA's Commercial Efficiency Program are shown below.

	MWh	MW	Budget
Solution Provider	41,795	9.47	\$12,396,000
Small Business Direct Install	30,700	7.20	\$13,589,000
Commercial Efficiency Program	26,655	5.96	\$12,451,821
Total	99,150	22.63	\$38,436,821

Renewable Energy Programs

Program Design

LIPA has been offering renewable energy programs to its customers since 2000. Currently, LIPA holds the position of offering one of the top 10 solar programs in the nation as well as the number two position of Public Power Utilities (PPU). Out of the top 10 programs from PPU's, LIPA's solar program is one of the largest operating on the east coast. Building on this success, LIPA is now offering a portfolio of renewable programs and has become one of the first utilities to offer a performance based incentive for small wind systems which has been met with success in its pilot year. In addition, LIPA has recently launched a solar thermal program (launch date: December 1, 2010). All of LIPA's Renewable Energy Programs are supplemented by LIPA's Energy Efficiency Programs.

LIPA's Renewable Energy Program is comprised of four ground-breaking initiatives: The Solar Pioneer Program, the Solar Entrepreneur Program, the Backyard Wind Initiative and the Solar Hot Water Program. Each of these programs aims to reinforce and encourage New York State's existing energy plan to "increase energy diversity in all sectors of the state's economy through greater use of energy efficiency technologies and alternative energy resources, including renewable based energy."

LIPA's most successful renewable program to date has undoubtedly been the solar programs. The programs began in the year 2000 with only two completed installations. Since 2000, the programs have expanded significantly. As of December 1, 2009, the programs have helped to install more than 3,600 photovoltaic systems on Long Island, and have supported these installations financially with the award of \$92.3 million worth of rebates to date.

Over the years, LIPA has reduced the solar rebate levels to be consistent with decreasing installation costs. This was done with input from stakeholders such as Renewable Energy Long Island (RELI) and Long Island Solar Energy Industry Association (LISEIA) to cooperatively reach desired rebate levels. The current challenge that LIPA faces is how to continue to increase the level of participation with existing budget constraints. The Company has reduced rebate levels to allow a greater number of customers to participate. It has been critical to work closely with stakeholders to promote clear and consistent communications to the market through the LIPA website and other media outlets. It has also been important to LIPA to be transparent to the industry on program processes and to continue to be focused on customer needs.

LIPA's solar program offers rebates to residential, commercial and municipal customers. Since 2000, LIPA has rebated \$92.3 million for the installation of over 3,600 solar systems resulting in annual savings of 32.2 GWh. LIPA's solar programs have assisted in transforming the solar market on Long Island, increasing the amount of solar contractors from two part-time individuals to over 60 companies. In addition, LIPA's solar programs have realized a 30 percent growth rate per year from 2008 through 2009 and nearly 100 percent in 2010 compared to 2009.

In 2009, LIPA introduced the LIPA Backyard Wind Initiative to provide rebates to residential, commercial and municipal customers who install small wind systems (sized 100 kW and under). It is the first performance-based wind program in the country. The first LIPA-rebated wind turbine was installed in June 2009. To date, participation in the program has resulted in 9 installations with 1 additional installation anticipated by year-end. Installations range in size from 1.8 kW up to 100 kW representing \$396,318 in rebates and 180 kW of nameplate capacity. Since its renewable programs began, LIPA has worked closely with the contractor community and has seen the solar contractor base expand from 2 installers to over 60 solar companies on Long

Island. The natural progression of competition coupled with the LIPA rebate has resulted in a decrease in the installed cost of a solar system on Long Island. LIPA's first renewable program – the Solar Pioneer Program still operates today. The successes of the Solar Pioneer Program also led to the creation of the LIPA Backyard Wind Initiative in 2009. Through early R&D efforts by LIPA to gather operational data on several test sites, LIPA designed the Backyard Wind Initiative to have a performance based rebate structure. The lessons learned from the research projects provided the insight necessary to create a rebate program that would best meet the needs of the customer and the utility. In early 2009, there were less than five wind installers on Long Island. LIPA held a wind installer training class which was attended by over 15 contractors. The internal processes for the Solar Pioneer Program have been used as the model to develop the Backyard Wind Initiative.

Market Effects

Rapidly growing interest in “green” technologies and renewable sources of alternative energy has not been missed on Long Island. National policy decisions, the current state of the economy and technological breakthroughs in “green” technology have fueled the renewable movement. With the current state of the economy, customers are increasingly looking to lower their monthly bills. The LIPA Renewable Energy Program rebates, leveraged with State Tax Credits and the lifting of the Federal Tax Incentive cap, have helped to offset a somewhat high initial cost to the customer, and the benefits are long lasting.

In addition, municipal and not-for-profit customers face high cost barriers to participation. These customers are not able to take advantage of tax credits. Therefore, they are offered a larger rebate (an additional \$1/watt) plus an increase. The Backyard Wind Initiative also recognized the need to provide an increased incentive to this in capacity up to 100 kW for customers who meet the guidelines for the Solar Entrepreneur Program segment as well and offers an additional \$1/kWh.

LIPA has also endeavored to build the infrastructure of PV and Wind installers by offering contractor training, conferences and workshops in order to improve the quality of installations and to increase the number of installers. With the formation of the Long Island Solar Energy Industries Association (LISEIA), LIPA has worked together with the industry to further develop and improve the Renewable Energy Programs.

Zoning has continued to be an issue. There are over 12 Townships on Long Island and there continues to be a lack of consistency in codes. At LIPA sponsored seminars and training sessions, information on these codes are presented for the various towns. In addition, the LIPA website lists zoning specifications, by zip code, in order to facilitate the application process for customers.

To elevate customer awareness, especially in the non-residential sector, the Renewable Energy Program has conducted outreach and educational events, consisting of seminars, in each of the Townships throughout the service territory. These seminars not only provide information on photovoltaic and wind technologies along available rebates but they are also a forum for customers to speak to contractors and other customers who have installed the technologies. In addition, the outreach program incorporates an extensive effort to work closely with trade allies by participating in annual events as well as other various public community events.

Customer satisfaction has been a major focus for the renewable programs at LIPA. In addition to implementing a rebate structure suitable to customers and contractors, a strong contractor infrastructure base needed to be developed, commercial net metering needed to be instituted and

LIPA needed to maintain its established and proven track record of continued commitment to its customers and to “green” initiatives.

LIPA collaborates strongly with two influential renewable energy associations on Long Island; LISEIA and RELI. LISEIA is an organization primarily made up of solar contractors and distributors who do business on Long Island and have a vested interest in seeing that the industry thrives on Long Island. Both of these organizations can be described as task forces that seek to ensure the proper growth and longevity of the renewable energy industry on Long Island and beyond. The LIPA Renewable Energy Program works with these organizations to provide reliable information to customers looking to make investments in renewable energy. LIPA works closely with the various Townships and Municipalities as well.

In spite of the barriers that LIPA has faced during the implementation of the Renewable Energy Programs in the last ten years, it is obvious that the market has been transformed through the successful implementation of the program and the lessons learned throughout the years. Through a combination of incentives, improved infrastructure and education of the renewable industry, the Solar Pioneer Program has successfully grown into the Solar Pioneer Program and Solar Entrepreneur Program with over 3,600 solar installations; and has laid the groundwork for LIPA to launch the Backyard Wind Initiative in 2009 and the Solar Hot Water Program in 2010. This commitment to renewable energy has resulted in LIPA emerging as a leader in the industry and has established LIPA as having one of the top 10 solar programs in the nation as recognized by the Solar Electric Power Association (SEPA) with the added distinction of being the only selection from the east coast. In a relatively short period of time, LIPA has been able to realize a large market penetration despite barriers and obstacles. The portfolio approach of encouraging customers to take advantage of energy efficiency in addition to renewable energy has enabled all customer segments the opportunity to participate in the LIPA Programs.

Summary

LIPA’s energy efficiency efforts continues to aid the transformation of specific markets (how professionals make energy related decisions, how manufacturers determine which products to develop, how various market participants involved in energy product distribution and delivery interact with each other) so that investments made now to encourage energy efficiency will continue to reap efficiency returns in the future. LIPA’s programs from 1999 through 2010 have sent a clear signal to equipment manufacturers and building construction professionals that their investments in product development, marketing and skills development on Long Island will have time to pay dividends.

To accomplish its objectives, LIPA continues to collaborate with a number of regional and National groups sharing similar purposes, including NYSERDA (New York State Energy Research and Development Authority), NEEP (Northeast Energy Efficiency Partnerships), the U.S. Department of Energy (DOE), AIA (American Institute of Architects), US Green Building Council (USGBC) and CEE (Consortium for Energy Efficiency). LIPA also works with an ever expanding network of trade, business and consumer groups on Long Island (e.g. International Brotherhood of Electrical Workers (IBEW), Hauppauge Industrial Association (HIA), Associations for a Better Long Island (ABLI), Long Island Builders Institute (LIBI) and the Long Island Solar Energy Industry Association (LISEIA).

The measures installed from LIPA’s energy efficiency programs from inception through 2010, excluding RD&D efforts, has resulted in 269 MW of peak demand savings and 1,044,033 MWh of

energy savings. Since program inception LIPA's efficiency programs, have resulted in the displacement of over 2,190,100 tons of CO₂, over 2,973 tons of NO_x and over 9,097 tons of SO₂.

Based on estimates for the 2010 program year, following are the levelized costs per program:

Program	Levelized Cost per Kwh
Energy Efficient Products	\$0.10
REAP	\$0.045
HPD/HPwES	\$0.127
Cool Homes	\$0.069
Energy Star Labeled Homes	\$0.093
Commercial/Industrial	\$0.020
Renewable	\$0.156