



2017 Energy Efficiency and Renewable Plan

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Electric Portfolio Budget and Target Summary

PSEG Long Island (PSEGLI) is a subsidiary of Public Service Enterprise Group Incorporated (PEG), a publicly traded diversified energy company with annual revenues of \$11 billion and operates the Long Island Power Authority's transmission and distribution system under a 12-year contract.

PSEG Long Island's Efficiency Long Island Energy Efficiency programs make a wide array of incentives, rebates and programs available to PSEG Long Island residential and commercial customers to assist them in reducing their energy usage and thereby lowering their bills. PSEG Long Island has partnered with industry leader Lockheed Martin to deliver the energy efficiency programs to the public. Our proposed 2017 Energy Efficiency initiative consists of four programs for our residential customers, a multi-faceted program for our commercial customers and our legacy demand response program Edge. In 2017 in support of broader New York State policy objectives and in accordance with objectives from grant funding provided by the New York State Energy Research and Development Authority (NYSERDA) we will expand our offerings to include rebates and incentives for installation of energy efficiency measures which save Oil and Propane in residential homes. Additionally, such grant funding will also support efforts geared towards developing broader and more comprehensive longer term savings by targeting reductions to soft costs through efforts aimed at developing behavioral and marketplace changes. These new initiatives, for which quantitative energy savings goals have not been established, are expected to support the policy goals of moving from transactional to broader embedded behavioral savings trends in the future.

Early in our efficiency program implementation efforts we recognized the importance of aligning the business trades with its program offerings.

Our nationally-recognized residential portfolio promotes the ENERGY STAR® message through its media campaigns, Web site, marketing materials and outreach. In addition, collaboration with trade allies, state agencies, local utilities and municipalities. These stakeholder partnerships facilitate attractive incentives and services to be offered through the Residential Programs which make participant's homes energy efficient, safe and comfortable.

PSEGLI's program philosophy and delivery is structured to be able to respond to market changes and to be able to respond to available cost effective energy efficiency opportunities throughout any given year. The 2016 PSEGLI goals are 55 MW of energy efficiency savings and 22 MW of renewable energy savings with a total budget of \$85 Million dollars (budget dollars include demand response program). For 2017 PSEGLI will continue to offer residential and commercial customers established programs as well as incorporating additional innovative programs and measures to add to their energy savings opportunities. In 2017, our savings emphasis is planned to shift from capacity to energy with our 2017 goals at 40.17 MW and 236,819 MWh. The budget for 2017 is 87 million dollars (budget dollars includes legacy demand response program).

In addition to the Energy Efficiency Programs, for 2017 PSEG Long Island also offers a Renewable Solar Program for commercial customers and Green Jobs/Green NY financing through local implementation of

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the New York Sun Initiative. PSEGLI's Renewable Energy Program is supplemented by PSEGLI's energy efficiency programs.

Programmatic Changes

PSEG Long Island monitors program performance and consumer uptake on a continual basis. By doing this we are able to respond to changes in market conditions in a timely and efficient manner which allows us to revise offerings throughout the year to respond to changes in market conditions and new opportunities which may present themselves during the year. Depending upon the program we do an annual and/or monthly review to help us to respond to market conditions.

Portfolio Summary

2017 EERE Budget & Goals					
2017 Lockheed Martin Goals			2017 Lockheed Martin Electric Budget		
Program	MW	MWh	Total LM Electric Budget		
Efficient Products	14.62	106,418	\$	16,107,967	
Cool Homes	1.65	2,693	\$	4,774,325	
Cool Homes-new initiative			\$	830,708	
REAP (Low-income)	0.34	905	\$	2,818,733	
Home Performance	0.54	1,618	\$	1,570,024	
Home Performance-new initiative			\$	9,332,641	
Commercial Efficiency	23.02	95,005	\$	29,754,096	
Commercial Efficiency-new initiative			\$	7,608,052	
EE_Total	40.17	206,639	\$	72,796,545	
Edge	29.00	-	\$	1,403,456	
EE & Edge_Total	69.17	206,639	\$	74,200,001	
2017 PSEG Long Island Spending					
Program	MW	MWh	PSEG LI Budget		Total PSEG LI
HEM (Behavioral)	-	30,179	\$	2,183,097	
Communities Grant	-	-	\$	300,000	
PSEG LI Labor/Outside Services*/Advertising			\$	10,403,513	
LM and PSEGLI EE Total	69.17	236,819			
Solar	8.56	21,467	\$	50,000	
EE & RE Total	77.73	258,286			
*Includes Evaluation, QA/QC/Business Analyzer, etc					
2017 Energy Efficiency and Renewable Portfolio					\$87,136,611

Benefit Cost Analysis (BCA)

PSEG Long Island used two separate tests to establish a benefit/cost (B/C) ratio for each energy efficiency program and for the overall portfolio: the Program Administrator Cost (PAC) test and the Societal Cost Test (SCT). The tests are similar in most respects, but consider slightly different benefits and costs in determining the B/C ratios. The PAC test measures the net costs of an energy efficiency program as a resource option based on the costs incurred by the program administrator (PA), including all program costs and any rebate and incentive costs, but excludes costs incurred by the participant. The SCT test considers costs to the participant, but excludes rebate and incentive costs, as these are viewed as transfer payments at the societal level. The SCT test also includes the benefits of non-electric (i.e. gas and fuel oil) energy savings where applicable, resulting in different benefit totals than the PAC test.

The BCA Order also suggests to include the Rate Impact Measure (RIM) test and in order to be consistent with this framework, PSEG Long Island has established the RIM test ratios for each energy efficiency program and the overall portfolio. The RIM test provides an assessment of the preliminary impact on ratepayer bills and compares utility costs and utility bill reductions with avoided costs and other supply-side resource costs.

In order to allow for direct comparison with all supply-side options, the PAC test was considered a primary method of determining cost effectiveness. However, in light of the recent Benefit-Cost Assessment (BCA) Handbook, PSEG Long Island applied the SCT test as the primary method and used the new avoided capacity and energy costs including the carbon costs to screen its 2017 Energy Efficiency programs and portfolio. The PAC and RIM tests are used as a secondary reference point to assess the impact on utility costs and ratepayer bills from the benefits and costs that pass the SCT.

The table below presents the benefit/cost ratios for the SCT, PAC, and RIM tests for each program and for the overall Energy Efficiency portfolio. Note that the below benefit/cost ratios reflect the savings and budget that are relevant to electric measures only. The total electric budget of \$72,164,747 was included in the cost effectiveness screening. The remaining \$14,971,864 are allocated to oil/propane and other non-electric measures.

Program/Sector	SCT Benefit/Cost Ratios	PAC Benefit/Cost Ratios	RIM Benefit/Cost Ratios
Commercial	1.8	2.5	0.9
Residential			
<i>Efficient Products</i>	1.4	2.6	0.6
Cool Homes	0.2	0.7	0.5
REAP	0.2	0.2	0.2
HP	0.1	0.2	0.2
HEM	0.3	0.3	0.2
Residential	0.8	1.5	0.5
Energy Efficiency Portfolio	1.2	2.0	0.7

Lockheed Martin Implementation

PSEG Long Island has partnered with industry leader Lockheed Martin to deliver the PSEG Long Island energy efficiency programs. This partnership is governed by a Master Services Agreement (MSA) that was effective in 2015. The scope of the MSA includes design and implementation of Energy Efficiency, Demand Response and Utility 2.0 initiatives. Lockheed Martin implements and manages the majority of energy efficiency programs offered under the PSEG Long Island brand. PSEG Long Island retained overall planning and budgeting functions, advertising, direct customer contact efforts and renewable offerings.

Program implementation includes ongoing analysis of implementation methods, and also includes such activities as qualifying products, qualifying projects, validating project scopes, conducting pre and post inspections, processing rebates, issuing payments, engaging Contractors, and training stakeholders. In addition, Lockheed Martin provides customer service and technical assistance, including customer consultations, design collaboration and customer support in developing energy plans and customized engineering studies. In addition, Lockheed Martin is responsible for program analytics, including pipeline, product, and results reporting. Lockheed Martin works in collaboration with the PSEG Long Island program planning and evaluation team, participating in annual program Evaluation and ensuring best practices are established and followed throughout the programs.

Electric Energy Savings Portfolio of Programs

Programs administered through Lockheed Martin

- Energy Efficient Products Program
- Cool Homes Program
- Residential Energy Affordability Program
- Home Performance with Energy Star
- Commercial Efficiency Programs
- Thermostat Program

Programs administered through PSEG Long Island

- Behavioral Initiative (Home Energy Management Program)
- Clean Energy Community Program
- Solar Program

Energy Efficiency Products

The objective of the Energy Efficient Products (EEP) program is to increase the purchase and use of energy efficient appliances and lighting among PSEG Long Island residential customers. The program provides rebates or incentives on ENERGY STAR® certified products for lighting, and appliances through upstream and downstream promotions. These products meet the energy efficiency standards set by the Environmental Protection Agency (EPA) and Department of Energy (DOE). Also, in the product mix are advanced power strips sold through the online catalog only. ENERGY STAR specifications are an important external factor to the EEP Program offerings. As the ENERGY STAR specifications have changed, PSEG Long Island has adjusted its program offerings accordingly. These adjustments ensure that the program offers incentives for products that meet the latest standards and highest quality of efficiency.

In addition to financial incentives, the program educates customers about the benefits of using energy efficient products in their homes through a variety of marketing channels. The PSEG Long Island Efficient Products Program supports the stocking, sale, and promotion of efficient residential products at retail locations. The program uses a variety of mechanisms, most prominently financial incentives, to increase the market saturation of these efficient products. These incentives typically come in the form of either direct consumer rebates or upstream incentives paid directly to manufacturers or retailers.

Since program inception, PSEG Long Island 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 ENERGY STAR products that have made it easier to identify and promote efficient models within a given product category.

Program Delivery

The EEP Program is delivered through partnerships between Lockheed Martin, retailers and product manufacturers. Customers who purchase qualifying equipment are eligible to receive mail-in rebates on appliances and or point-of-sale incentives on lighting products. The EEP provides training to retailer staff on efficient products, and supports the stocking, sale and promotion of efficient products at retail locations within the service territory. The overall goal of the EEP program is market transformation.

UPSTREAM INCENTIVES

Upstream incentives are payments to manufacturers and/or retailers to stock, promote and sell ENERGY STAR certified lighting products. By directing the incentive to the retailer or manufacturer, rather than the consumer, PSEG Long Island is able to ‘buy-down’ the wholesale price, rather than the retail product price. This typically results in a greater reduction of the retail price compared to a similarly sized consumer rebate. Retailer and manufacturer reimbursement is based on the submission and verification of sales data.

‘Mark-downs’ focus on working directly with manufacturers and retailers to reduce the end retail price of specified products. A ‘Mark-down’ is structured to provide a participating retailer a per unit incentive for all sales of a particular product sold during a specified time.

The Implementation Contractor negotiates a Memorandum of Understanding (MOU) with retailers and manufacturers and reimbursement is based on the submission and verification of sales data. There are a number of negotiated lighting MOUs with manufacturers and retailers that provide a budget cap and number of products to be sold during a specified time. For each upstream promotion an MOU is established that identifies:

- The model numbers and quantity of products to be promoted
- The PSEG Long Island per unit incentive
- Total allocated funding for the promotion.
- The retail price for each specific product model during the promotional period.
- Promotion duration including start and end dates.
- The location of each retail store participating in the promotion.
- What sales data must be provided to PSEG Long Island’s incentive processing contractor
- Frequency of sales data submissions.
- Any marketing requirements, e.g., placement of PSEG Long Island branded point of purchase materials (POP).

The Fulfillment Contractor is responsible for the following rebate processing procedures:

- Gather credible point of sale (POS) data from retailers to confirm that the ‘bought down’ or ‘marked down’ product is selling through the stores to consumers
- Maintain a database that can track sales data on a product basis, date/time basis, store basis, by promotional MOUs’ number, by manufacturer, and by retailer.
- Ensure that incentives are paid only for eligible products sold through participating stores during an active promotional period, and that any sales double-reported are caught so that incentives are not double paid.
- Inputting various sales reports supplied by different industry partners into a central program database and, after reviewing and subjecting inputted data to various quality assurance checks, pay industry partners in a timely fashion for incentives they are owed.

DOWNSTREAM INCENTIVES

Processing Mail-In Rebates

Incentive payments to manufacturers and retailers are currently being issued twice per month. The Fulfillment contractor is responsible for processing all mail-in and online submitted rebates as follows:

- Customer submits a rebate application with a copy of the receipt/invoice and a recent utility bill.
- The applicant must be verified as a customer of a PSEG Long Island;

- Products purchased must meet the eligibility requirements set forth by program guidelines.
- If customers and products are confirmed as eligible after various quality assurance routines have been followed the payment of rebates will be authorized and checks will be printed and mailed at the close of the next reporting period.

The Bulk Purchase Rebate Program is offered to home owners, builders and contractors that install ENERGY STAR® certified LEDs in residential applications within the PSEG Long Island service territory when more than the allowed 20 bulbs are needed. Rebates are processed by the Fulfillment Contractor.

Rebate processing cycle for rebates involve reviewing and inputting 'clean' applications within 7 business days of receipt, and batching rebates for payment after they have all been through manual and electronic quality control checks, twice per month. This processing cycle results in almost all rebate checks mailing to applicants within four weeks from when the application was received.

The program is effectively delivered by utilizing an implementation contractor and a fulfillment contractor with Lockheed Martin, on behalf of PSEG Long Island, managing the program and subcontractors. Roles for the sub-contractors are outlined below:

Implementation Contractor

- Day to day program implementation and oversight
- Recruit and train EE products retailers and distributors
- Design and manage product promotions
- Design marketing and program promotional materials
- Manage Pool Pump program dealers and installers
- Recruiting retailers and distributors to participate in the Efficient Products program
- Field Reps provide training to retailer and distributor sales staff on Program participation and product eligibility requirements during regular retailer visits.
- Providing staffing for in-store promotions to promote the PSEG Long Island Program, efficient products, and current incentive offerings.
- Developing and managing relations with lighting and appliance manufacturers.
- Working with both retailers and manufacturers to develop and implement upstream product promotions.

Fulfillment Contractor

- Retain a broad based utilities division support staff including program management, data processing and customer service for retail and customer rebate processing.
- Services include but not limit to the following:
 - Processing of upstream lighting incentives utilizing retailer Point of Sale (POS) reports.
 - Processing of mail-in and all electronic rebate forms.

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Target Market

All residential customers with a PSEG Long Island account.

Measures and Incentives:

2017 Efficient Products Program

	Estimated 2017 Units	Incentive Per Unit	Rebate Per Unit
SSL - common (A19)	1,000,000	\$ 2	N/A
SSL - specialty	2,100,000	\$3.25	N/A
Most Efficient Clothes Washers	2,500	\$ -	\$65
Most Efficient Refrigerators	1,000	\$ -	\$75
Refrigerator Recycle Pre 2001	1,000	\$ -	\$50
Refrigerator Recycle Post 2001 & Pre 2009	1,500	\$ -	\$50
RAC Recycle	400	\$ -	\$35
Dehumidifier Recycle	175	\$ -	\$35
Room A/C ≤6k Btuh	2,500	\$ -	\$25
Room A/C >6000 & ≤7999 Btuh	4,500	\$ -	\$30
Room A/C ≥ 8000 ≤ 13999 Btuh	3,000	\$ -	\$50
Energy Star 2-Speed Pool Pump	400	\$75	\$150
Energy Star Variable Speed Pool Pump	2,000	\$100	\$350
Advanced Power Strips	150	\$10	\$
Super-Efficient Dryer - Heat Pumps	200	\$ -	\$300
ES Dryer - Electric Resistance	2,500	\$ -	\$125
ES Room Air Purifiers	500	\$ -	\$50
Heat Pump Water Heater - 50 to 60 gallons	35	\$ -	\$800
Heat Pump Water Heater - 80 gallons	15	\$ -	\$800
ES Dehumidifiers	5,000	\$ -	\$25
Total	3,132,175		

Quality Assurance/Quality Control Procedure

The EEP Program QA/QC procedures and participating sub-contractors are documented below:

Appliance & Pool Pump QA/QC:

1. Appliance Rebate Processing and Pool Pumps:

Review for Completeness of Materials. Upon receipt of applications, the fulfillment contractor staff members check that all materials (applications and receipts) have been received. If these materials are incomplete, the team contacts the customer and requests the missing materials.

Verification of Participant Eligibility. Before entering applications into the third party implementation contractor's program tracking database, the team ensures that the applicants have valid PSEG Long Island account numbers (either with the PSEG Long Island's data files to which they have access or with the provided customer utility bill). If the account number information is missing or invalid, the Program Manager, using the customer database, is contacted to provide or validate the information. If the customer is not a PSEG LI customer, the application is rejected. In the case of pool pumps, the team must also ensure that the installer is a certified program installer. This is done manually with third party implementation contractor cross checking a qualified contractor list provided by the third party implementation contractor, including those contractors that have completed certification.

Verification of Product Eligibility. The third party Fulfillment contractor's database has built-in logic to ensure that applications that are entered do not exceed the number of allowed units per customer, are qualifying models, were installed in the PSEG Long Island service territory, and were purchased during eligible dates. If any applications include appliances purchased outside of the eligible dates, third party Fulfillment contractor contacts PSEG Long Island to determine if the exception can be allowed; if the exception is not permitted, the application will be denied.

2. Incentive Check Review. Once incentive checks are printed, the third party Fulfillment contractor Chief Operating Officer reviews these for accuracy while signing them.
3. Rebate Report Review. When third party Fulfillment contractor "closes-out" the program either monthly or more frequently, they generate a report of all approved applications. The electronic file is reviewed by a third party Fulfillment contractor manager to verify the applications' eligibility.
4. Participation Report Review. After checks have been sent, third party implementation contractor generates an invoice that is reviewed by a manager before it is mailed to Lockheed Martin. With approval, the processed-rebate dataset is also loaded onto the FTP site.
5. Program Manager Review (Lockheed Martin). The Lockheed Martin Program Manager (PM) downloads the data from the FTP site upon receiving the invoice. The PM transfers the dataset from third party Fulfillment contractor's text file format into an Excel worksheet. The PM then compares the invoice quantities to those in the dataset. Any discrepancies are resolved via email with third party Fulfillment contractor. Product totals are then entered into the EEP Goals Tracker.
6. Invoice Approval (Lockheed Martin). Once the PM approves the invoice it is entered into a database for payment processing by CLEAResult. After the Manager of Residential Programs reviews and

approves the invoice, third party implementation contractor is sent the reimbursement check and the invoice is cataloged and filed.

In summary, during the processing of participant data, there are between eight and nine different QA/QC checks. The participant data are transferred at three different points before they are entered onto the FTP site:

- From paper applications/POS data to third party Fulfillment contractor's database
- From third party Fulfillment contractor's database to a report loaded onto the FTP site
- From the FTP site file to an Excel file

Lighting Markdown QA/QC:

1. Agreement with MOU Review and Duplicative Data Review. Upon receipt of invoices and/or point of sales (POS) data submitted by retailers or manufacturers (participants) in native format, third party implementation & fulfillment contractor staff ensure that the quantities, models and incentives match those specified in the participants' memoranda of understanding (MOUs) with CLEAResult. If incentive levels do not match the MOUs, third party implementation contractor contacts the participating retailer or manufacturer to confirm that the products were discounted by the correct incentive levels. The third party fulfillment contractor also checks that invoices do not include sales for which they have already issued incentives. If the third party fulfillment contractor finds any duplicate data, they return the invoice to the retailer or manufacturer and require a revised invoice, or depending on the time of month, will compensate for the difference by underpaying the upcoming reimbursement.
2. Incentive Check Review. Once incentive checks are printed, the third party fulfillment contractor Chief Operating Officer reviews these for accuracy while signing them.
3. Rebate Report Review. When third party fulfillment contractor "closes-out" the program either monthly or more frequently, they generate a report of all approved applications. The electronic file is reviewed by a third party fulfillment contractor manager to verify the applications' eligibility.
4. Participation Report Review. After checks have been sent, third party fulfillment contractor generates an invoice that is reviewed by a manager before it is mailed to Lockheed Martin. With approval, the processed-rebate dataset is also loaded onto the FTP site.
5. Program Manager Review (Lockheed Martin). The Lockheed Martin Program Manager (PM) downloads the data from the FTP site upon receiving the invoice. The PM transfers the dataset from third party fulfillment contractor's text file format into an Excel worksheet. The PM then compares the invoice quantities to those in the dataset. Any discrepancies are resolved via email with third party implementation contractor. Product totals are then entered into the EEP Goals Tracker
6. Invoice Approval (Lockheed Martin). Once the PM approves the invoice it is entered into the database for payment processing. After the Manager of Residential Programs reviews and approves the invoice, implementation contractor is sent the reimbursement check and the invoice is catalogued and filed.

In summary, during the processing of participant data, there are between eight and nine different QA/QC checks. The participant data are transferred at three different points before they are entered onto FTP site:

- From paper applications/POS data to third party fulfillment contractor's database
- From third party fulfillment contractor's database to a report loaded onto the FTP site
- From the FTP site file to an Excel file

Residential Appliance Recycling:

The Appliance Recycling Program will continue in 2017. The goal of the program is to promote the removal and retirement of working older inefficient appliances. The program rewards residential and commercial customers when they remove inefficient refrigerators, freezers, room air conditioners, and dehumidifiers from the electric system and dispose of them in an environmentally safe and responsible manner.

Program Delivery

Lockheed Martin on behalf of PSEG Long Island uses an implementation contractor that demonstrates a record of providing the services offered and responsibly disposing of the appliances. The contractor will be engaged to perform, or subcontract for, all the services.

The implementation contractor for recycling is responsible for:

- Scheduling pickups from customer homes and/or businesses, verification of appliance qualification, and appliance removal from customer homes and/or businesses.
- Rebate processing.
- Program tracking.
- Provides voucher to customer via email/mail.
- Periodically report progress towards program goals and opportunities for improvement.

The implementation contractor works with the program manager to develop innovative and creative marketing strategies and materials. Marketing may include, but not be limited to, bill inserts, direct mail, eblasts, flyers, web site, print ads, and giveaway promotions.

Target Market:

All residential and small/mid-sized commercial customers.

Measures and Incentives:

Rewards per Unit

Measure	
Refrigerator/Freezer Recycle	\$50
Room Air Conditioner	\$35 voucher
Dehumidifier	\$35 voucher

Program requirements to recycle a refrigerator or freezer:

- Must be a PSEG Long Island customer and own the appliance.
- Appliance must be picked up at the service location associated with customer account #.
- Refrigerator must be between 10 and 30 cubic feet in size, plugged in, and operating (cooling) at the time of the scheduled pick-up.
- Appliance must have been manufactured prior to 2009
- Limit of two (2) refrigerators/freezers per calendar year, per account #/service location.

Customers receive a \$50 incentive for each refrigerator or freezer recycled. Plus, recycle up to three (3) working room air conditioners or dehumidifiers in conjunction with a qualifying refrigerator or freezer pickup and the customer will earn a \$35 voucher for each unit for use at the PSEG Long Island Online Energy Efficient Products Catalog.

Quality Assurance/Quality Control Procedure

1. Verification of Participant Eligibility. To enroll in the Appliance Recycling Program, customers must verify their PSEG Long Island account number either online or verbally on the telephone. If the customer cannot provide the account number or it is invalid, third party contractor contacts Lockheed Martin to provide or validate the information. If the customer is not confirmed as a PSEG Long Island customer, the application is rejected.
2. Preliminary Verification of Appliance Eligibility. Third party contractor’s internal database logic flags ineligible units that do not meet the age, size, usage, and quantity qualifications. However, to ensure that their call center representatives are correctly entering the information, third party contractor Managers occasional monitor calls.
3. Reconciliation of Appliance Characteristics. Upon arrival at the de-manufacturing facility, a third party contractor representative photographs the units to document their receipt of the unit and that its characteristics match those recorded. The team also documents any additional information unique to the unit.
4. Data Review. After third party contractor has received data, it is reviewed and orders are either audited further and corrected or closed.
5. Incentive Check Report Review. After this stage, third party contractor generates an incentive check file. The report and incentive check file are both reviewed before the check file is sent to the subcontractor, for printing and mailing.
6. Incentive Deposit Reconciliation. The third party contractor makes two efforts to ensure that participants have deposited their incentive checks. If a check has not been deposited, third party contractor contacts the customer. After failing at a second attempt to contact the customer, the

third party contractor will transfer funds to the state as unclaimed property. (Their compliance with this ensures they are adhering to state law around unclaimed property.)

7. Participation Data Review. Before sending the participant data and invoice to Lockheed Martin, the third party contractor reviews the materials.
8. Program Manager Review (Lockheed Martin). After checks have been sent, Lockheed Martin Program Manager (PM) receives the participant data and invoice from third party contractor on the FTP site, and additionally a compact disc of the photographs taken of the units at the facility through the mail. The participant data arrives in Excel format. The PM then compares the invoice quantities to those in the dataset. Any discrepancies are managed with third party contractor. Product totals are then entered into the EEP Goals Tracker.
9. Invoice Approval (Lockheed Martin). Once the PM approves the invoice it is entered into the third party subcontractor's tracking system for payment processing. After the Manager of Residential Programs reviews and approves the invoice, third party contractor is sent the reimbursement check and the invoice is catalogued and filed.

Residential Cool Homes Program

The goal of the Residential "Cool Homes" HVAC program is to reduce the peak electric demand of residential customers with central air conditioning systems. Air conditioning load is highly coincident with peak demand and has a significant impact on the electric system. The primary objective of the program is to make high efficiency choices part of the decision making process for PSEG Long Island customers when purchasing and installing ENERGY STAR® central air conditioners (CAC) and heat pumps. This is achieved by building strong working business partnerships with CAC contractors, manufacturers and program support contractors in order to educate the customer and influence the purchase decision. Newly installed systems will operate in a customer's home for the next 10 to 25 years. Affecting the decision making process upfront is critical in achieving PSEG Long Island's efficiency goals, as the next opportunity to affect this load could be years into the future.

Program Delivery

The Cool Homes program seeks to improve the energy efficiency of residential HVAC systems throughout Long Island. Through the assistance of a program-approved contractor, residential account holders can apply for rebates for the quality installation (QI) of higher-efficiency HVAC equipment. QI means that the contractor performs Manual J calculations to install an energy-efficient unit that is appropriately sized for the space and to ensure that the refrigerant charge and airflow are checked using prescribed tests. Participating CoolHome contractors receive incentives for each rebated QI. In the 2015 program, PSEG Long Island also introduced an equipment-only rebate option that allows the customer to choose any licensed air conditioning (A/C) contractor to install qualifying split CACs, geothermal and air-source heat pumps, and ductless mini-splits rather than having the work performed only by Cool

Home program contractors. With the equipment-only rebate, customers receive lower rebate amounts for qualifying equipment and contractors are not eligible for QI incentives.

PSEG Long Island’s Cool Homes Central Air Rebate Program portfolio offers customer rebates and contractor incentives on the following equipment; Central Air Conditioners (CAC), Air Source Heat Pumps (ASHP), Ductless Mini Split and Geothermal (GSHP) systems. Each system type has distinct rebate schedules and requirements for eligibility. Rebates and incentives are available for installations performed by a Cool Homes Participating Contractor (QI) and for qualifying systems installed in the service territory regardless of installation contractor (non-QI). The rebates and incentives offered are based on system efficiency and potential energy savings.

A significant number of sales and installations are occurring each year outside of the Cool Homes Central Air Rebate Program standards. Due to this, in 2017 Quality Installation (QI) will continue to be the cornerstone of the program; however qualifying systems installed in the service territory regardless of installation contractor (non-QI) rebates are available to achieve a wider market influence. In 2017 and beyond, the PSEG Long Island Cool Homes Central Air Rebate Program rebate schedule will continue to encourage the installation of highly efficient equipment, ideally to replace older operational HVAC systems.

Target Market:

The program is offered to all residential customers in our service territory.

Measures and Incentives:

Eligible Equipment	Tier	Efficiency Requirements
Central Air Conditioners	1	SEER >= 16 and EER >=13
	2	SEER >= 17and EER >=13.5
Air Source Heat Pumps	1	SEER >= 16 and EER >=13 and HSPF >= 8.5
	2	SEER >= 17 and EER >=13.5 and HSPF >= 8.5
Ductless Mini Split Systems	3	SEER >= 18 and EER >=12.5
Geothermal	1	EER >=19 and <=24.9
	2	EER >=25

Geothermal rebates were significantly increased in 2016 due to funding from NYSERDA. Rebates for geothermal systems were set at \$1,000 and \$1,200 per system for new systems, and \$200 and \$300 per system for retrofit systems prior to the change in mid-2016. In 2016, rebates were adjusted and currently range from \$1,000 to \$2,000 per ton for new systems, and \$500 - \$700 per ton for existing systems that require retrofit. The CH program is monitored throughout the year to ensure that program objectives are met, and the program will adjust to market conditions as needed.

Quality Assurance/Quality Control procedures:

PSEG Long Island's current Quality Assurance/Quality Control (QA/QC) policy includes internal and external processes which are designed to ensure system interconnection compliance and minimize financial risk of fraud and processing errors during the Customer Application Rebate Process.

The Cool Homes Quality Installation procedure is based on the ACCA HVAC Quality Installation Specification - Standard Number: ANSI / ACCA Standard 5 – HVAC Quality Installation Specification 2015. This specification involves utilizing a Manual J for proper sizing and testing the newly installed system for proper air flow and refrigerant charge. The installation may then also be selected for a post commission inspection to verify contractor results and system integrity. For retrofit projects a pre-inspection of the existing system may also be required to verify existing system operability. As part of its documentation process to ensure compliance with PSEG Long Island QA/QC requirements, then Lockheed Martin submits a breakdown of customer pre and post inspections performed which represent 10% of all current total applications paid.

To operate well, a cooling system needs to have the proper volume of air flow. If air flow is too high or too low, it may make the home less comfortable and increase utility bills. With the QI requirement, contractors measure air flow and make any adjustments necessary for optimal performance. It is important for an air conditioner or heat pump to have the correct amount of refrigerant. An improperly charged system may consume more energy and provide less dehumidification. Contractors will test refrigerant charge and adjust if necessary to make the home comfortable and avoid waste on the customer's utility bills.

The following sampling protocols are evaluated to ensure the installation elements are met based on ACCA Guidelines:

- Manual J (Operating conditions inside and outside),
- AHRI Certificate (Equipment capacity at those conditions),
- Refrigerant charge, and
- Airflow across the heat exchanger.

In addition to the procedure above, PSEG Long Island conducts additional internal staff QA/QC procedures. A random selection of rebated installations and all paid invoices are reviewed to ensure

program compliance and proper market segment allocation. The DPI Contractor also conducts sample post inspections as needed to support annual Evaluation studies and process upon completion of the program year. Other QA/QC activities may include monitoring of installed systems, postcard mailings, customer/ contractor surveys and interviews.

Residential Energy Affordability Partnership (REAP) Program

The Residential Energy Affordability Partnership (REAP) Program is for income-eligible customers designated to save energy and reduce electric bills. Participation in REAP can make the customers home healthier and safer. This program will encourage whole-house improvements to existing homes by promoting home energy surveys and comprehensive home assessment services. The customer receives a no-cost in-home energy survey. The survey will identify potential efficiency improvements. The Program goals include:

- Demonstrate persistent energy savings.
- Encourage energy saving behavior and whole house improvements.
- Help residential customers reduce their electricity bills.
- Develop partnerships with contractors to bring efficient systems to market.
- Market and cross-promote other PSEG Long Island program offerings.

Program Delivery

PSEG Long Island and Lockheed Martin will engage a third-party implementation contractor to efficiently obtain the savings goals while adhering to the budget and goal of the program. The program begins with targeted marketing towards specific homes: high usage intensity, underserved regions or populations and specific needs profiles such as low income. These homes will be offered a free comprehensive home assessment, enticing the customer to take action after the assessment. While in the home, other products and services that PSEG Long Island has to offer will be explained to the customer. These additional resources will provide the customer with increased education and awareness on how to better manage their energy usage.

The program will utilize a proprietary technology platform to identify the most inefficient homes in the residential area with a high probability of program qualification. Scheduling with customers is made through a designated Call Center. Prior to the appointment customers receive a notification and pre-assessment communications to highlight the key characteristics of the home.

The implementation contractor will:

- Hire a local staff to perform home surveys and direct measure installation.
- Engage customers and schedule home energy survey appointments.
- Provide customer service support.
- Track program performance, including customer participation as well as quality assurance/quality control (QA/QC).
- Monthly report progress towards program goals. PSEGLI will work with the implementation contractor to market the program to residential customers utilizing the following approaches:

- Marketing will include traditional direct mail, outbound and inbound call center services, and online acquisitions via email marketing.
- Utilizing bill inserts to raise awareness of our energy efficiency program to all PSEGLI customers
- Delivering targeted direct mail piece to further inform the customer of program benefits and scheduling information
- Outbound calling and door to door canvassing with the option to schedule an assessment over the phone or on the doorstep

To increase referrals and productivity, the Community Outreach Specialist targets different populations:

- Non-profit, Non-governmental Organizations
- Government
- Senior Citizens
- Financial/Debt Counseling Organizations
- Faith-based institutions
- Apartment and Multi-Family dwellings
- Public Libraries

Energy Education

A fundamental precept of the REAP Program design is that extensive customer energy education, counseling and involvement are critical to securing the savings of installed measures. The REAP Program works with “Partners” to identify potential actions they would be willing to take to lower their bills, and then secures customer “Action Commitments” to implement these behavioral measures. Examples of these actions include lowering water heater temperature, regularly checking furnace filters, turning off lamps when not in use, and energy saving settings on clothes washers and other appliances.

The “Partnership” concept guides the approach to customer involvement. If customers want to participate in the REAP Program, and receive its considerable benefits, they need to agree to become “Partners”, accepting certain responsibilities and doing their part by making and keeping action commitments. This is formalized in a written participation agreement and personal action plan, signed by each participant and a REAP Program representative.

The customer education component of the REAP Program will help Partners better understand their energy use, identify end uses where there is potential to reduce energy use, and develop household energy savings. The energy education component also will seek to maximize the benefits of installed energy efficiency measures by helping Partners understand the measures and how to use them to obtain high levels of energy efficiency. In particular, education will focus on:

- Use and value of installed high efficiency lighting retrofits;
- Set-back thermostat operation and management;
- Appliance use and management;
- Water conservation measures; and,
- Water heater temperature setting

Referrals

Referrals are defined as information (written and/or verbal) provided to the PSEGLI customer by the field technicians during the course of the home energy survey that is relative to other appropriate energy efficiency programs approved by PSEGLI. These referrals will benefit the customer by providing additional energy efficient measures. Below is the Energy Saving Program Guide that is given to the customer:

- Being knowledgeable and cognizant of appropriate programs for follow up energy efficiency measures, including, but not limited to:
 - PSEG Long Island Home Performance Program;
 - NYS Home Energy Assistance Program;
 - NYS Weatherization Assistance Program; and,
- Other relevant programs including Town and/or County specific programs , educating PSEGLI customers of appropriate social support programs to meet special needs and working with the PSEGLI Program Manager or designee to make referrals.
- Lead Generation

PSEGLI participates in Residential Events throughout the year to distribute brochures that promote and provide information to help customers become aware of the benefits of the REAP Program. Other Marketing channels are REAP postcard mailings and advertisement in the local town papers; along with brochures placed in Customer Offices and “open houses” at the Town Supervisor offices providing information on all residential programs.

Energy Forum for Advocates:

There is an annual Energy Forum for Advocates held which is hosted by PSEG Long Island and headed up by the REAP Program Manager. This forum enables advocates to get connected to services that can make a real difference in low income family lives. Energy Assistance Programs for the clients include:

- PSEG Long Island’s Household Assistance Rate
- Consumer Advocates from PSEG Long Island
- PSEG Long Island’s On Track Program
- CDC’s Weatherization Assistance Program
- Home Energy Assistance Program (HEAP)
- United Way of Long Island’s Project Warmth
- DSS Emergency Energy Assistance

The Energy Forum is typically held in the fall prior to the heating season commencing. In this way, the latest information on programs that provide assistance for heating can be obtained and passed onto the clients. A team is formed to discuss ideas and establish assigned tasks for the Forum.

Target Market

The program will be offered to all residential customers who:

- Have a PSEGLI Account

- Own or Rent
- Comply with income guidelines and size of household and meet the qualifying criteria below. Income guidelines are updated in the March-April timeframe

2016 REAP INCOME GUIDELINES

Family Size	Annual Income	Monthly Income
1	\$52,038	\$4,337
2	\$59,472	\$4,956
3	\$66,906	\$5,576
4	\$74,340	\$6,195
5	\$80,287	\$6,691
6	\$86,234	\$7,186
7	\$92,182	\$7,682
8	\$98,129	\$8,177
Per each additional person	\$5,947	\$496

Customer Qualification:

Verification of REAP Program income eligibility for each PSEG Long Island customer is initially performed by the Lockheed Martin’s call center during the initial intake call. The customer must provide proof of income documentation prior to the start of the home energy survey. This eligibility shall be based on number of persons living in home, total household income, and the inclusion of income from alternate sources.

The Field Implementation contractor’s field technician is responsible for the review of customer documentation to ensure eligibility for participation. In addition, the field technician is responsible for the recording of household member’s name, annual income, source(s) of income and Verification Code of Documents (VCD) code on the Participation Agreement form.

Verification Codes for Documents

- CSO – Child Support/Court Order
- DPW – Department of Public Welfare
- EVL – Employer Verification Letter
- PS2 – Pay Stubs, previous two months
- SSD – Social Security Disability
- SSI – Supplemental Security Income Award Letter
- SSR – Social Security Retirement
- SSS – Social Security Survivor’s Benefit
- UAL – Unemployment Award Letter

- VBA – Veteran’s Benefits Award Letter
- W-2 – Previous Year W-2 or 1040 SSE Form
- WCA – Workman’s Compensation Award Letter
- Other _____

Measures and Incentives

Current PSEG Long Island Residential Energy Affordability Partnership (REAP) Program measures and Energy Education are as indicated below:

Core Measures: Measures which are typically directly installed regardless of the heating fuel used by the PSEG Long Island residential customer.

Major Efficiency Measures: Those measures which will cost-effectively reduce the energy consumption of high-use or seasonal appliances but typically require more extensive treatment. All energy-efficient measures are installed at no cost to the customer or building owner, if cost-effective, given site specifics. In the case of Partners who occupy rental property, "Core Efficiency Measures" involving building owner property, such as non-tenant-owned appliances, may not be installed without the prior written approval of the building owner.

Typical Core Measures:

- Installation of high-efficiency lighting
- Pipe insulation
- High efficiency showerheads
- Faucet aerators
- Reducing water Heater temperature settings

Major Efficiency Measures:

- Replacement of inefficient room air conditioners (RACs) and dehumidifiers
- Replacement of inefficient refrigerators

For customers with central air conditioning, customers will be referred to the PSEG Long Island Home Performance Program. Measures may include:

- Air leakage sealing based on blower door test results
- Duct leakage sealing based on approved diagnostic methods
- Ducted distribution system modifications
- Other custom measures which may be determined to be cost-effective on a site-specific basis

At the completion of a REAP vision Follow on work may be identified which the customer can utilize new 2017 income eligible enhanced incentives through the Home Performance with Energy Star program to undertake.

Quality Assurance/Quality Control Procedure

The goal of this Quality Assurance process is to verify that projects in the Program are meeting all program requirements while maintaining healthy, safe living conditions. Overall, each REAP project undergoes a thorough administrative review process that includes a job scope review and approval, as well as review of project documents. In addition, a target of 10% of completed projects will be field inspected through a comprehensive QA/QC field inspection process.

The QA/QC administrative reviews and detail field inspections will document the following objectives are being met:

- Projects are completed in accordance with Program Requirements
- Projects are completed in accordance with BPI Standards
- All projects are completed in accordance with all Health and Life Safety Requirements
- 10% of all completed projects will be field inspected through a comprehensive QA/QC Field Inspection Process
- Customers are reasonably satisfied with all aspects of the program and completed work
- Home energy surveys are completed comprehensively and accurately
- Contractors are following proper program procedures as part of the QA/QC process
- Projects not meeting all program requirements will be corrected as soon as possible
- All QA/QC procedures will be recorded by the third party contractor and tracked in a database
- QA/QC reporting will be completed monthly

The quality assurance procedures include a review of the administrative approvals, detailed field inspections, feedback to Lockheed Martin, documentation of all QA inspections and reporting of all QA information. The goal is to verify all REAP projects meet the requirements of the program.

To document compliance with all program requirements, Lockheed Martin will have a dedicated Quality Assurance staff consisting of the Program Manager, Account Manager, a QA Field Technician(s), and a Program Administrator.

Projects in the REAP Program go through a detailed administrative review process that includes:

- Post completion review and approval of the modeling and Performance Assessment.
- Post completion review and approval of the Job Scope
- Post completion review and approval of program documents including the Participation Agreement and Follow On Completion Notice.

The following sections provide an overview of the administrative review process. This review process is a critical part of the Quality Assurance provided by the program on an ongoing basis.

Home Performance Assessment Review & Approval process is required on all REAP Direct Install projects.

Included as part of the home assessment will be an evaluation of:

- Building Model
- Heating and Cooling Systems
- Domestic Hot Water Systems
- Health & Safety Testing
 - Worst Case CAZ Depressurization
 - Spillage Test
 - Draft Measurements Under Worst Case
 - Carbon Monoxide Measurements for Each Combustion Appliance

Home Performance with Energy Star

The primary objective of the program is to make high efficiency choices part of the decision making process for PSEG Long Island customers when upgrading their home. The goal of the Home Performance with ENERGY STAR® Program (HPwES) is to reduce the carbon foot print of customers with electric, oil or propane as a primary heat source.

The U.S. Department of Energy (DOE) administers the Home Performance with ENERGY STAR® (HPwES) Program and works in conjunction with the U.S. Environmental Protection Agency (EPA) to support local program sponsors. PSEG Long Island (PSEGLI) administers the HPwES Program on behalf of the sponsor, the Long Island Power Authority (LIPA). Lockheed Martin provides support to PSEGLI, program contractors, and customers. Lockheed Martin's program administration includes program design and management, quality assurance and quality control, technical training and providing contractor support to promote the quality installation of energy efficient measures which are relevant to produce savings.

The HPwES Program is intended to help homeowners improve the efficiency, safety and comfort of their homes using a comprehensive, whole-house approach, while helping to protect the environment. Homeowners are encouraged to make high efficiency choices as a part of the decision making process for when upgrading their home. This is achieved by building strong working business partnerships with our existing PSEG Long Island HPwES contractor base, as well as various trade allies and constituent based organizations which currently include NYSERDA, Long Island Green Homes, and BPI. Newly installed systems will operate in a customer's home for the next 10 to 25 years.

Proposed PSEG Long Island 2017 Home Performance with ENERGY STAR®(HPwES) Programs		
Program	Customer Eligibility	2017 PSEG LI Offering
Free PSEG Long Island Home Performance Energy Audit	Single family homes In PSEG LI territory	\$200 contractor incentive, Comprehensive Home Assessment, Thank You! kit from PSEG LI
PSEG Long Island HPwES Incentives	Single family homes in PSEG LI territory: 1) primary heating fuel of oil, propane, or electric. 2) homes with natural gas as a primary heating source and central AC	15% customer rebate capped at \$3,000. On-Bill Financing.
PSEG Long Island Assisted HPwES Incentives	Single family homes in PSEG LI territory at 80% or less of Area Medium Income: 1) primary heating fuel of oil, propane, or electric. 2) homes with natural gas as a primary heating source and central AC* (electric energy savings measures only)	50% customer rebate capped at \$4,000. On-Bill Financing
PSEG Long Island Low Income HPwES Incentives	Single family homes in PSEG LI territory at 60% or less of Statewide Medium Income: 1) primary heating fuel of oil, propane, or electric. 2) homes with natural gas as a primary heating source and central AC* (electric energy savings measures only)	100% capped at \$4,000 for attic and wall insulation

*Natural gas measures are not eligible for the 50% customer rebate from PSEGLI

Program Delivery

Prospective HPwES contractors must submit a signed PSEG Long Island HPwES Contractor Participation Agreement as well as documentation showing proof of business identification, financial condition, insurance, licensing, satisfactory customer relationships, and Building Performance Institute (BPI) accreditation. Upon acceptance, the contractor is deemed a Provisional Participating Contractor satisfactorily completing five HPwES projects. There are currently 24 full participating contractors enrolled in the program.

PSEG Long Island’s HPwES Program portfolio offers customer rebates and contractor incentives on electric, oil, and propane HVAC and DHW equipment, as well as accompanying weatherization and building shell upgrades like insulation and air sealing. Certain minimum efficiency requirements must be met to receive the HPwES incentives and all projects must be pre-approved by the implementation contractor.

Target Market

The PSEG Long Island Home Performance Energy Audit is offered to all single family homes in PSEG Long Island territory.

The PSEG Long Island incentives are available to single family homes in PSEG LI territory with a primary heating fuel of oil, propane, or electric, as well as homes with natural gas as a primary heating source AND central AC.

The approved measures eligible for incentives are listed below.

Measures and Incentives

PSEG Long Island Home Performance with ENERGY STAR Eligible Measures List		
All Eligible Measures apply only to homes with Oil, Propane, or Electric as a Primary Heat Source		
	Eligible Measure	Minimum Efficiency Requirements
Primary Heating and Cooling Systems	Furnace - Fuel Oil / Propane	AFUE 85%
	Boiler - Oil / Propane Condensing	AFUE 87%
	Boiler - Oil / Propane Non-Condensing	AFUE 85% (must include boiler reset control)
	Boiler - Oil / Propane Steam	AFUE 82% (size must be matched to cumulative capacity of connected radiators, per Institute of Boilers & Radiators Mfrs Standards)
	Central Air Conditioner	Eligible for Cool Homes Incentives Only
	Air Source Heat Pump	Eligible for Cool Homes Incentives Only
	Ground Source Heat Pump	Eligible for Cool Homes Incentives Only
	Boiler Reset Controls	Programmed properly per manufacturer's specifications and site conditions. Maximum price of \$500.
	Distribution Improvements	Installed in accordance with all applicable state and local codes
	Duct Sealing	UL 181B mastic or tape; use of "duct tape" is disallowed
	Duct Insulation	Installed in accordance with all applicable state and local codes
	Pipe Insulation	R-3
	Programmable Thermostat	5+2 day programmable thermostats. Smart thermostats. 1 T-stat per zone.
Building Shell	Insulation (attic, wall, floor, band joist, basement, crawl space)	Must be accompanied by blower door assisted air sealing per BPI standards
	Air Sealing	Blower door assisted per BPI standards
& Co	Electric	EF .93

Propane	Tank: 20-100 gallons, EF \geq 0.67, FHR \geq 67 gallons per hour, < 75,000 BTU. ENERGY STAR Qualified.
	On Demand: EF \geq 0.82, GPM \geq 2.5 over a 77F rise, < 2 gallon storage, < 200,000 BTU. ENERGY STAR Qualified
Oil	Tank: 20-100 gallons, EF \geq .067
Indirect Fired	UL Approved
Pipe Insulation	R-3
Faucet Aerator	
Low Flow Shower Head	Maximum flow rate of 1.5 GPM

Quality Assurance/Quality Control Procedures

PSEG Long Island implements a robust Quality Assurance and Quality Control function relative to the HPwES Program on Long Island. Since the HPwES Program originates from the U.S. EPA the Manager of Field Services is required to report QA/QC activity to the EPA on a quarterly basis.

A target of 10% of completed projects will be field inspected through a comprehensive QA/QC field inspection process. The QA/QC inspection process, administrative reviews and detail field inspections are designed to ensure, at a minimum, that the following requirements are being met:

1. Projects are completed in accordance with Program Requirements.
2. Projects are completed in accordance with BPI Standards.
3. All projects are completed in accordance with all Health and Life Safety Requirements.

Each inspection report specifically outlines the problems that were found on the inspection, what follow-up tasks are necessary, and at what degree of urgency they need to be remediated.

Commercial Efficiency Program

PSEG Long Island's Commercial Efficiency Program (CEP) is intended to assist non-residential customers to save energy by offering a number of rebates and incentives for installation of energy reducing products. The CEP component targets commercial electric customers with program offerings designed to maximize demand reduction through rebates and incentives for energy efficiency projects. Technical assistance rebates are available under the CEP to offset the cost of engineering and design services for qualifying projects. A

In 2017, PSEG Long Island Commercial Efficiency Program proposes providing customer rebates for the following:

- Lighting
- HVAC
 - Including Geothermal
- Chillers
- Cool Roofs
- Refrigeration
- Thermal Energy Storage
- Variable Frequency Drives
- Custom
 - Combined Heat and Power
 - NY Energy Manager
- Custom Retrofit
- Sub Metering
- Technical Assistance (TA) Program:
 - LEED Certification and Points
 - ENERGY STAR® Labeled Buildings
 - Energy Engineering Study
 - C-Pace Audits
 - Targeted Performance Program

- Funding from a Memorandum of Understanding (MOU) between LIPA and NYSERDA will supplement the following new/enhanced offerings. Current robust rebates for geothermal systems are expected to remain at \$750 to \$1,000 per ton for new systems, and \$1,500 per ton for retrofit systems, due to additional funding from NYSERDA.
- Targeted Performance Program (\$500,000)
- C-Pace (\$500,000 from MOU)
- Thermal Energy Storage (\$1,500,000)
- "Other" Undefined Oil/Propane Saving Projects (\$1,000,000)- this funding is being targeted for opportunities which may present themselves as part of a more comprehensive approach to energy savings in a building already participating in CEP offering. An example might be a multi-family

building or hospital which identifies controls or retrofits which can significantly reduce overall oil consumption within the building – this funding would not support fuel switching to natural gas.

Program Delivery

The CEP is delivered through partnerships with installation contractors or Lead Partners, though customers may apply directly without an installation contractor. Engaging the implementation contractors to deliver the program has improved program performance and market impacts. As such, Lead Partner relationship management is an integral part of the program. To ensure open communication, Lockheed Martin holds weekly Contractor Meetings to ensure that contractors have the assistance they need when participating in the program. The Contractor Meetings were featured in AESP's national Conference in 2016, where speakers from Lockheed Martin were scored among the best at the conference.

In addition to the weekly contractor meetings, Lockheed Martin hosts several contractor breakfasts, trainings, and updates throughout the year. On an annual basis, Lockheed Martin coordinates an Energy Efficiency conference. The objectives of the conference are to provide networking opportunities and seminars with industry leaders and customers on topics such as project successes, market trends, and emerging technologies. In 2016, attendance reached over 600, with nearly half attendees being customers. The event is well regarded throughout Long island as the energy efficiency event of the year. It is an excellent forum for building camaraderie with the lead partners that helped PSEG Long Island and Lockheed Martin achieve our goals, for networking with customers and lead partners, and for staying abreast of trends in the industry.

Measures and Incentives

Prescriptive rebate values and savings are deemed. All measures are screened according to generally accepted cost/benefit tests such as, but not limited to, Program Administrator and Societal Cost Test. Retrofit rebates consist of deemed rebates, subject to caps, and savings is calculated based upon actual before and after conditions and some standard assumptions for hours of use and building type.

Custom and Custom Retrofit project rebates are calculated by the PSEG Long Island CEP Project Screening Tool. Rebates are calculated based upon 4 inputs: \$/kW, \$/kWh, Simple Payback and Incremental cost, with overall \$/kWh and percentage of cost caps. Savings is determined through custom analyses.

Quality Assurance/ Quality Control Procedures

All projects go through several layers of approval, built into the program database, to ensure that the program is implemented in accordance with its rules. In addition, all prescriptive projects over \$10,000

require Pre-inspections (except for new construction projects where construction has not started) and Post inspections. All Retrofit and Custom projects require pre-inspections and post inspections.

Annually, the program is evaluated by an independent third party contractor who provides results of their evaluation to LIPA. In addition, program design and delivery is coordinated in conjunction with an independent third party partner in an effort to ensure best practices are captured. The Quality Control analyst reviews projects at random to ensure that projects meet eligibility criteria and program rules.

The CEP Program Implementation Guide provides guidance around program rules to ensure proper implementation. This guide is reviewed with the team on an annual basis, and any changes throughout the year are captured in the guide and provided to the team. Ongoing development of implementation guides helps the team to interpret how to process unique, special or unconventional projects.

Thermostat Program

The Thermostat program is a pager based system which cycles the air conditioning compressor upon initiation of a curtailment signal.

The goal of the program is to run a curtailment on the peak demand day of the summer for both the entire state of New York (referred to as NYCA or the New York Control Area) and Long Island (The New York State Independent System Operator (NYISO) refers to Long Island as “Zone K”). There are about 30,000 customers enrolled in the Thermostat program.

No incentive is provided other than the pager system compatible thermostats which were provided to the enrollees.

Calling a curtailment coincident with the 2016 NYCA peak LIPA customers will receive a load reduction credit against the LI portion of the NYCA load in 2017. Similarly if we call a curtailment coincident with the 2016 Zone K peak LIPA customers will receive a load reduction credit against the Zone K load in 2017. As a result of successful curtailments in 2016 LIPA accrued load reduction credits of \$1.6 M. This breaks out as approximately \$400K for NYCA and \$1.2M for Zone K. Both the overall and relative level of savings can fluctuate yearly based on forecasted changes in load, supply, locational requirements and pool reserve margin requirements. The credit calculations are performed by Electric System Operations (ESO).

Behavioral Initiative (HEM)

This Behavioral RFP will support statewide goals under Reforming the Energy Vision (REV) plan to create a cleaner, more resilient, and affordable energy system for all New Yorkers. Through regulatory overhaul, REV encourages the cleanest, most advanced and efficient power system operation. State programs supporting clean energy are being redesigned to accelerate market growth and unlock private investment. This RFP will advance progress towards New York State’s goals of achieving a 40% reduction in greenhouse gas levels and a 600 TBTU increase in statewide energy efficiency by 2030.

PSEG LI's overarching objective of this RFP is to motivate and inspire PSEG Long Island customers to increase their understanding of all aspects of their energy needs and take active control of their energy usage. This program should result in increased customer satisfaction, increased customer capability to understand and manage their energy usage, increased customer uptake of existing energy efficiency offerings, improved customer access to energy efficient products and clean energy service providers (i.e. energy efficiency, residential solar, community solar, demand response and related services), and foster the development of marketplace solutions which will induce deeper clean energy penetration and leverage greater private investments in such efforts. Expected outcomes include:

- Customer bill savings
- Reduction in greenhouse gases
- Clean energy penetration including increased use of renewable and low carbon sources,
- Demand and capacity reductions
- Greater private sector investment in clean energy solutions,
- Increased customer satisfaction, as reflected by J.D. Power Electric Utility Residential Customer Satisfaction Study scores and program specific surveys.

This Behavioral RFP has solicited bids from Proposers to design and implement a behavior based Home Energy Management Program (HEM) that primarily enables residential customers to realize cost effective verifiable energy efficiency savings, while also increasing awareness and adoption of applicable programs, products and services, and increases customer satisfaction. PSEG LI seeks to begin implementation of a HEM in Q1 2017 for a two year term, with the potential to extend beyond. In addition to the HEM, PSEG LI is requesting that Proposer also provides an online Home Energy Assessment (HEA) "audit" tool and additional value added solutions where a Proposer can demonstrate value.

The HEM will use a variety of behavior based strategies to provide reports, feedback (direct and indirect), digital applications, and energy bill insights to residential consumers resulting in improved understanding of energy consumption and billing, comparative peer analysis, help them to understand how to better manage energy usage, the ability to provide clear linkage to PSEG LI and third-party programs, products and services. Additionally, the RFP requests other value added services may further assist customers in pursuing the expected outcomes listed above.

The HEM will leverage best practices and build upon proven successes to provide an integrated behavior-based program designed to increase customers understanding of energy consumption and provide opportunities to actively engage in the clean energy marketplace which at a minimum should include:

Engagement and education will capture residential electric usage and energy management solutions as well as other fuel sources (such as oil, gas, propane, etc.) impacting a customer's total energy consumption.

Clean Energy Community Program

Clean Energy Community Program is an opportunity to work jointly with the NYSERDA Communities & Local Government team to recognize and reward Long Island municipalities (cities, towns, villages, and counties) for their clean energy leadership through the NYSERDA Model Communities Program. Funding

would be used for flexible project grants from PSEGLI to municipalities that complete four out of ten "high-impact" actions which include policies and projects that save money, create jobs, and improve the environment.

To participate in this program an applicant must demonstrate completion of four of the ten high-impact actions by submitting the requested documentation on-line.

The High Impact Actions:

- Benchmarking
- Clean Energy Upgrades
- LED Street Lights
- Clean Fleets
- Solarize
- Unified Solar Permit
- Energy Code Enforcement Training
- Climate Smart Communities Certification
- Community Choice Aggregation
- Property Assessed Clean Energy (PACE) Financing

Renewables

For 2017, PSEG Long Island will continue to serve as the local administrator of the Green Jobs-Green New York (GJGNY) and the NY-Sun Initiative, two NYSERDA programs that incentivize the installation of new solar electric systems in our territory. Residential customers are eligible for GJGNY loans (both On-Bill Recovery and Smart Energy Loans) and the NY-Sun Affordable Solar Incentives, which offers a \$0.20 per Watt incentive for up to 6kW of capacity for income-eligible customers. Non-residential customers are eligible for incentives for up to 200 kW system sizes. Non-residential incentives are based on the NY-Sun MW Block in effect at the time of application. In addition to approving new incentive and financing applications, PSEG Long Island will continue to process incentive requests and release of loan requests for existing residential and non-residential projects in the pipeline. Additionally, PSEG Long Island will locally implement NYSERDA's quality assurance program via photo inspections to ensure compliance with Code and NY-Sun Program standards.

Evaluation Measurement and Verification (EM&V)

Opinion Dynamics Corporation (ODC), a consulting firm hired by PSEG Long Island, typically conducts annual program evaluations and portfolio evaluation of the Energy Efficiency and Renewable Energy program as well as any ad-hoc evaluation studies that are deemed necessary.

Annual Evaluation of 2016 Energy Efficiency Programs:

As part of the annual evaluation cycle, ODC will produce two volumes, Volume I and II, which together comprise the entire Annual Evaluation report. The Volume I will provide an overview of evaluation findings, including impact and process results for 2016. Volume II of the 2016 Annual Evaluation Report – the Program Guidance Document - will provide detailed program-by-program review of gross and net impacts of the Energy Efficiency and Renewable Energy Portfolios along with process evaluation findings, and a discussion of data collection and analytic methods. The program guidance document is developed to provide PSEG Long Island and its implementation contractor, Lockheed Martin, with data-driven planning actions moving forward and full transparency for the methods employed to calculate energy and demand savings. Annual evaluation reports will be comprised of the following three overarching categories:

1. Impact Evaluation
 - a. Determine energy, demand, and environmental impacts achieved from each energy efficiency program as well as for the overall portfolio;
 - b. Conduct cost effectiveness analysis for each energy efficiency program as well as for the entire portfolio.
2. Process Evaluation
 - a. Assess how efficiently a program is being implemented, by evaluating the operational efficiency of program administrators and contractors;
 - b. Gap analysis to be conducted to identify strengths, opportunities, and improvement in program tracking data collections necessary for savings calculations and other evaluation processes and studies.
3. Economic Impact Analysis – As part of the annual evaluation, ODC team will assess the economic impacts of the Energy Efficiency Portfolio investments on the economy of Long Island. ODC will provide 1-year and 10-year economic impacts estimates associated with the 2016 Energy Efficiency portfolio investments where the 10-year economic impacts accrue from measures installed in 2016 over their remaining measure life. ODC will develop an input-output (I-O) model of the Long Island regional economy using IMPLAN modeling software to estimate these impacts.

2017 Ad-hoc Evaluation Studies:

Based on the discussions with PSEG Long Island, Opinion Dynamics Corporation has proposed several research efforts for 2017 in addition to the ongoing impact and process evaluation activities. These

studies of residential and commercial customers are designed to update PSEG Long Island's understanding of markets for energy –efficient products on Long Island. The results of these studies will be utilized as a baseline to assist in measuring program market effects and to plan for energy-efficient product offerings in the future. The below explains each research effort in details:

1. Residential In-Home Study of Lighting, Dehumidifiers, and Pool Pumps

The purpose of this study is to gain information about residential lighting focusing on LEDs, dehumidifiers, and pool pumps installed in Long Island residences. Additional details are provided below for each end use:

➤ On-site lighting Metering & Inventory

- Catalog the types of lighting products installed in PSEG Long Island customers' homes;
- Determine penetration and saturation of LED lighting;
- Determine Hours of Use and Coincidence Factor for higher- vs. lower-use sockets;
- Characterize higher- and lower-use sockets (e.g., types of LED bulbs installed in these sockets, and the location in the home);
- Characterize penetration and saturation of LEDs in higher- vs. lower-use sockets; and
- Develop process recommendations for future upstream lighting programs by characterizing participants' lighting preferences, recent purchases, and intentions about future purchases.

➤ Dehumidifier Metering & Inventory

- Estimate Hours of Use and Coincidence Factor for residential dehumidifiers.

➤ Pool Pump & Hot Tub Inventory

- Develop a better understanding of the current baseline of residential pool pump technology and operating characteristics.

ODC kicked off this study in June 2016 by sending out a mailer to residential customers for conducting the screening survey and to determine if they are willing to participate. Once confirmed, ODC conducted a survey of customers during phone interviews and subsequently, recruited them for the on-site component. During the on-site visits, ODC collected the required information about the customer's lighting and if any, about their dehumidifiers, pool pumps, and/or hot tubs. The field representatives also installed loggers on various light fixtures and if available, on dehumidifiers to measure energy use. Loggers will be left in the customer's home for a period of approximately six months. ODC will collect these loggers during the Q4 of 2016 and will analyze the data in Q1 of 2017.

2. Residential Lighting NTG Study

Opinion Dynamics Corporation plans to assess Net-to-Gross ratios for residential LED measures through interviews with customers purchasing lighting in stores selling discounted products. Customers will be asked to take a discrete choice survey electronically on a tablet. They will be asked to choose from a set of possible lighting product options while the survey automatically varies price and non-price attributes such as light intensity, light color, and bulb life. The survey results will

estimate the type of bulb that customers would purchase when efficient lighting is discounted and when it is full-price, holding all other products at current market prices. The final results will provide market shares for efficient bulb purchases with and without discounts.

3. Commercial Customer Study - On-Site Lighting Inventory

The focus of this study is to understand the commercial lighting market especially for LED products since the commercial lighting market is changing quickly in response to federal efficiency standards, technology advances, and price reductions. The research will help develop the following parameters that are used to estimate savings associated with commercial lighting and inform program planning:

- Assess opportunities for retrofitting T8/T12 fixtures with LED tubes
- Determine penetration and saturation of lighting types for common space types
- Estimate hours of use for common space types

4. Commercial Lighting NTG Study

This research will include telephone interviews with commercial program participants. The surveys will include a battery of questions to determine both free-ridership and spillover factors.

5. Custom project M&V Study

Opinion Dynamics Corporation continues to base energy and demand impacts for the Custom program on the evaluation of 29 projects via onsite measurement & verification (M&V) conducted in 2012. Additionally, ODC had performed engineering desk reviews on a sample of the 2014 custom projects to determine if the program collects the appropriate documentation and accurately estimates savings.

Based on the changes to the measure mix within custom projects since 2012, and the potential inaccuracy with performing desk reviews of custom projects, ODC will undertake another M&V effort on 40 or so sites to determine updated energy and demand realization rates.

6. Energy Efficiency Potential Study

PSEG Long Island (PSEG LI) contracted with Applied Energy Group (AEG) to conduct a Long Island specific Energy Efficiency Potential Study to assess the future potential for savings through its programs and to identify opportunities that will increase savings. Key objectives of this study included:

- Provide credible and transparent estimation of the technical, economic, and achievable energy efficiency potential within the PSEG LI service territory;
- Conduct a residential appliance saturation survey with a statistically-representative sample of PSEG Long Island residential customers to collect information about appliance saturations, dwelling characteristics, customer demographics and customer interest on a few specific program offers; and
- Utilized audit data for a large group of commercial customers available from PSEG LI.

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The study was completed in 2016 and AEG had submitted the final report with PSEG LI which includes summary data tables and graphs reporting incremental and cumulative potential by year from 2016 through 2035. The focus of the study at the time was on summer peak-demand impacts; but the study also presents annual energy savings. In 2017, AEG will be running its Load Management Analysis and Planning Tool (LoadMAP) to develop additional potential estimates using the new avoided costs which were used for screening the 2017 Energy Efficiency programs. Since these new costs reflect substantial reductions in the avoided capacity costs and increase in the avoided energy costs due to the incremental carbon component, there may be additional efforts required for AEG to develop updated potential changes.