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Utility 2.0 Long Range Plan

2016 Annual Update

Prepared for Long Island Power Authority

December 29, 2016

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Executive Summary

This document provides PSEG Long Island's 2016 annual update to the Utility 2.0 Plan ("Utility 2.0 Plan" or "Plan") related programs.

PSEG Long Island prepared its first Utility 2.0 Plan in July 2014, which set forth plans for integrating Distributed Energy Resources ("DER") in the Long Island Power Authority ("LIPA") electric grid and identified load management projects and tools to defer infrastructure projects. This plan was updated in December 2014 in conjunction with the feedback received from LIPA and the New York State Department of Public Service ("DPS") as well as public comments.

Throughout 2015, PSEG Long Island continued working with LIPA and the DPS concerning its role and the ultimate implementation of New York Reforming the Energy Vision ("REV") on Long Island. PSEG Long Island provided an annual update of its Utility 2.0 plan in December 2015, summarizing four projects that were approved for further analysis and implementation by LIPA. These included Advanced Metering Infrastructure ("AMI") solution, two load pocket RFP's, and a renewable RFP.

Working at LIPA's direction, in 2016, PSEG Long Island expanded our efforts to identify projects that are consistent with and complementary to the goals of REV, including through increasing energy efficiency, promoting the use of distributed energy resources, identifying opportunities to defer traditional capital investments and seeking to improve overall system efficiency. A new Dynamic Load Management ("DLM") tariff was offered, incentives were offered for combined heat and power ("CHP"), selections were made in response to the South Fork RFP, and further analysis was done to determine the feasibility of offering on-bill financing for solar PV.

PSEG Long Island recognizes the transformative changes taking place in our industry. The projects described in the foregoing 2017 update to the Utility 2.0 Plan, which describes both the status of items initiated in 2016 and new projects proposed for 2017, represent our efforts to assist LIPA in supporting the policy goals of REV through integrating distributed resources into long term system and capital planning for transmission, distribution and supply, empowering customers with energy choices, enhancing system efficiency and supporting a sustainable market for clean energy developments.

Promotion of Distributed Resources, Improving System Efficiency and Identifying Opportunities for the Deferral of Capital Investment

PSEG Long Island is working to ensure that reliability is preserved or enhanced with the addition of large amounts of distributed energy resources. PSEG Long Island leads the state in the number of solar PV installations which now exceed 35,000 (3.2% of customers). Long Island is the first area in the state to transform the market for residential solar PV so that it no longer requires a financial incentive from NY Sun. In addition, Long Island is the only area in the state with a feed-in tariff for solar PV and fuel cells, allowing larger utility-scale systems to

come on line over the past three years, furthering the State Energy Plan goals of increasing renewables and reducing greenhouse gasses. The programs described in this Utility 2.0 annual plan outline efforts to encourage greater reliance on third party distributed resources, where cost effective.

In addition, we have successfully completed the review of bids received in response to the South Fork load pocket and are now in the final phases of negotiations for 90 MW of offshore wind, 10 MW of battery storage, and 8.3 MW of load reduction resources. These resources will help to defer some transmission upgrades while helping PSEG Long Island meet the renewable goals set forth by the LIPA board of trustees. We plan to follow-up with another Non-Wires solicitation in the Yaphank area with the goal of deferring additional transmission and distribution ("T&D") upgrades.

PSEG Long Island supports the long-term objective of improving system efficiency. Reducing summer peaks and building off-peak load such as electric vehicles and geothermal heat pumps should lead to more efficient utilization of assets and ultimately cause rates to be lower than they otherwise would have been. DLM tariffs, Time-of-Use ("TOU") rates, and incentives for cool storage also have the effect of improving system efficiency. Moreover, we are working closely with NYPA to implement their NY Energy Manager program on Long Island which would provide large commercial and industrial customers with the sub-meters for large pieces of equipment, showing hourly usage profiles, and assisting facility managers to reduce energy consumption and peak demand. The theme of improving system efficiency will be the cornerstone of our strategic efforts to encourage customer adoption of new technologies and wider deployment of DER.

Our planning process includes consideration of alternatives to traditional T&D investment. Engineers in T&D planning meet periodically with engineers from Energy Efficiency and Renewables ("EERE") to determine which geographic regions are growing and where we may be able to defer T&D investment. EERE also provides a 20-year forecast of energy efficiency and behind-the-meter renewables each year as part of the load forecasting process.

Bids have been received for the purchase of software to automate the receipt and approval of interconnection requests for solar PV and other distributed resources. We are in the process of selecting the winner and awarding a contract.

Enhancing Customer Choice and Supporting a Market for Clean Energy Investments

Our early identification of the need for AMI in 2014 has led to the completion of a communication network on Long Island that now has the capability to allow any customer, regardless of size or geographic location, to avail themselves of the benefits that AMI provides. These meters will allow customers to view their usage profile and become more responsive to price signals such as TOU and demand response tariffs. Moreover, we are in the process of implementing a Home Energy Management program which would provide residential

customers with online and paper reports comparing their energy usage to other similarly situated customers, and encourage behavioral changes to reduce energy consumption.

As noted above, in April 2016, LIPA modified its tariffs to include Dynamic Load Management. These tariffs allow residential and commercial customers, who want to actively manage their load, to participate in energy markets and be compensated accordingly. Over 1000 customers have signed up for these tariffs, thus far. Longer term, PSEG Long Island may be able to differentiate the pricing paid based on the value of capacity in specific geographic regions.

Overall, our expectation is that more and more customers will want to install distributed resources such as solar PV, fuel cells, batteries, or combined heat and power. We are putting procedures and software in place to accommodate the needs of these customers while preserving the reliability of the electric system. It is our belief that we can effectively operate the electric grid with increasing levels of solar PV and other DER's, such that Long Island remains on track to help the state achieve its goals of 50% renewables and 40% reduction in greenhouse gas emissions by 2030. A modest budget amendment will be requested in 2017 to accommodate ongoing investments in software and technology, such as electric vehicles and charging stations, and expert consultants to assist in the development of these new markets.

The combination of actions being taken in this Utility 2.0 Plan, along with our energy efficiency and renewable programs has led to declining overall sales volume for the past two years, and this trend is expected to continue into the future. While this is good for customers and the environment, continuation of this trend will put upward pressure on electric rates. One way to mitigate the rate impact, while further decreasing greenhouse gas emissions is to increase beneficial sales of electricity such as electric vehicles and geothermal heat pumps. This Utility 2.0 Plan suggests an initial investment of $1,250,000 per year in workplace charging stations and PSEG Long Island fleet procurement. We have also increased rebates on geothermal heat pumps in an effort to encourage greater off peak sales, often replacing fuel oil for space heating, which in turn reduces greenhouse gas emissions.

A more detailed discussion of the specific projects and initiatives in this Utility 2.0 Plan is set forth below.

Section 1 – Utility 2.0 Plan Filings

In accordance with Public Authorities Law Section 1020 - f(e)(e) and the Amended and Restated Operations Services Agreement ("OSA") dated December 31, 2013, PSEG Long Island submitted a Utility 2.0 Long Range Plan on July 1, 2014 for consideration by LIPA and DPS. This inaugural Plan provided a foundation for further modernizing PSEG Long Island's service territory, saving energy, and improving the environment.

As required by the OSA and the Public Authorities Law, each year PSEG Long Island will update the Utility 2.0 Plan and, as needed, refine the approach based on our experience, developing state and regulatory policies, input from a broad set of stakeholders, and ongoing development of new technologies.

1.1. 2014 Filings

1.1.1. Utility 2.0 Plan – submitted in July 2014

The July 1, 2014 PSEG Long Island Plan[1] contained a proposal to invest over $200 million spread over a 4-year period (from 2015-2018). This Plan included specific programs designed to result in an estimated 185 MW of peak demand savings to benefit LIPA and all its customers, as well as energy savings and incentives that directly benefit participants. This proposed Plan included a number of investments in direct load control ("DLC"), demand response, energy efficiency, distributed generation, advanced metering infrastructure, and other initiatives to enhance the customer experience, contribute to clean energy policy goals, and cost-effectively defer the need for power resources and, in some cases, transmission and distribution infrastructure.

The following guiding principles were applied in the development of this Plan:

- Integrate Utility 2.0 solutions into PSEG Long Island's long-term system planning and capital planning for transmission, distribution, and supply;
- Empower customers with energy choices tailored to their needs and preferences;
- Enhance system efficiency and resiliency to maintain a reliable system at an affordable cost; and
- Support development of sustainable market for clean energy investments.

The Plan focused on improving energy efficiency and reducing peak load to address emerging resource and system needs across Long Island and in targeted load pockets. The programs were designed to encourage participation from customer segments that face barriers to existing clean energy programs, such as low income customers, public agencies, and hospitals.

1.1.2. October 6, 2014 Update

On October 6, 2014, PSEG Long Island submitted an update to the original Plan filed on July 1, 2014[2]. This update took into consideration stakeholder feedback solicited through a technical conference, a number of public hearings, and public comments submitted to DPS. It also

[1] The July 1, 2014 filing can be accessed here: https://www.psegliny.com/files.cfm/2014-07-01 PSEG LI Utility 2 0 LongRangePlan.pdf
[2] The October 6, 2014 filing can be accessed here: http://www.dps.ny.gov/longisland/PSEG-LI Utility Plan October Update.html

reflected collaborative discussions held with LIPA and DPS to refine analysis and enhance the Plan.

This update included:

- Portfolio revisions for better alignment with the goals of LIPA and the state. The overall Plan investment expanded from $215 million over four years and 185 MWs of peak demand savings proposed in the July 1 Plan, to $345 million over four years and 250 MWs of peak demand savings.
- A revised compensation plan, optimized the value of the program for customers by utilizing LIPA's low-cost capital and established performance-based incentives.
- Updated cost effectiveness tests avoided costs of capacity, energy, and, where applicable, avoided or postponed transmission and distribution infrastructure.

1.2. 2015 Annual Update

PSEG Long Island continued working on its Utility 2.0 programs in 2015. It incorporated certain DPS recommendations issued by Ms. Audrey Zibelman, Chief Executive Officer of NY DPS in a letter dated April 15, 2015[3]. Some of the specific recommendations included:

- The expansion or modification of the DLC program, beyond what was budgeted for in 2015, should be considered as part of the ongoing rate proceeding.
- The LIPA Board should approve PSEG Long Island proceeding with its 2015 AMI capital plan to deploy an Island-wide communications network that would act as a backbone for and facilitate the future deployment of AMI functionalities.
- Since the T&D deferrals contemplated for the South Fork, Glenwood, and other similar areas are consistent with many of the REV objectives, PSEG Long Island should begin developing and issuing solicitations to solve these grid challenges immediately.
- PSEG Long Island should continue to participate in the activities of those groups and the REV proceeding in general. DPS also recommended that PSEG Long Island initiate or continue the specific REV and market animation related activities such as demonstration projects that use advanced distribution systems and improve system efficiency.

Throughout 2015 and 2016, PSEG Long Island also remained well-informed regarding NY State initiatives, and applicable initiatives undertaken by other utilities in the State and continued working with LIPA and the DPS concerning its role and the ultimate implementation of REV on Long Island.

[3] The April 15, 2015 letter can be accessed here:

http://www.dps.ny.gov/longisland/DPS Recommendations of PSEG first annual long range plan.pdf

1.3. 2016 Annual Update

In 2016, PSEG Long Island secured further progress in analyzing and implementing projects identified in its 2015 plans. It continued working with LIPA and the DPS in the implementation of REV on Long Island. We are currently working on eight (8) projects which are closely aligned with our original Utility 2.0 plans and are consistent with our aforementioned guiding principles.

In 2016, PSEG Long Island worked or initiated the following projects:

- South Fork RFP and Awards
- Dynamic Load Management Tariff
- Yaphank RFP
- Innovative Load Reduction Program (Super Saver)
- 2015 Renewable Energy RFP and 2016 Feed-In Tariffs
- On-Bill Financing
- Electric Vehicles Program
- Advanced Metering Infrastructure Program

The following table provides the total capital, O&M expenses and fuel and purchase power costs for 2017. The details for each of the projects are furnished in Section 2.

		Included in 2017 Budgets	2017 Incremental Request
Total of Utility 2.0 projects	Capital	$0	$5,250,000
	O&M Expenses	$1,864,000	$3,870,388
	Fuel + Purchase Power	$4,054,470	$0

Section 2 – PSEG Long Island 2016 Update

PSEG Long Island continued working on its Utility 2.0 programs in 2016, building upon the foundation laid out in 2014 and 2015. It continued its strong coordination and ongoing communications with LIPA and the DPS in its Utility 2.0 and NY REV Implementation efforts, and we have adopted our programs to focus on meeting state energy plan goals. Specific projects, with scope of work, present status and 2017 budgets for eight (8) projects are provided in this Section.

In addition to the detailed eight (8) projects, PSEG Long Island worked on other initiatives such as (a) Glenwood and Rockaway load pockets and (b) cost-benefit analysis handbook similar to the work done by other NY utilities, in accordance with NY PSC guidelines

In January 2016, PSEG Long Island issued the Western Nassau RFP for the Glenwood and Rockaways load areas. Similar to South Fork, the eligible resources for RFP included: demand reduction, energy efficiency, battery storage, CHP, fuel cells, renewable generation, peaking generation, cycling generation, and base load generation. Responses received included simple cycle combustion turbines, combined cycle units and cables connected to the PJM system with solar and land-based renewable projects providing energy. PSEG Long Island's reviewed the costs and reliability impact of the alternative energy resources offered in the RFP with the conventional T&D infrastructure option. The evaluation concluded that it was more cost effective to build the conventional transmission infrastructure than to build the combustion turbine generation or the combined cycle generation.

PSEG Long Island also developed initial framework for the Benefit Cost Analysis (BCA) handbook for considering and evaluating proposals. This framework will be applied to PSEG Long Island utility procurement of DER through competitive selection; DER procurement through tariffs; and energy efficiency programs.

2.1. South Fork RFP and Awards

The South Fork RFP was issued on June 24, 2015, consistent with the objectives and timeline included in PSEG Long Island's 2015 annual update. It focused on deploying Load Reduction resources to help defer the need for building new transmission infrastructure on the east end of the South Fork. The 2015 South Fork RFP had the following major objectives:

1. Achieve the NY REV objective of "infrastructure deferment"
2. Acquire additional local Power Production and/or Load Reduction resources in the South Fork to meet projected load growth and thereby defer the need for new transmission.
3. Support load growth to avoid overload of the existing transmission assets during transmission outages.
4. Support system voltage to avoid voltage collapse during a transmission outage.

2.1.1. Scope of the RFP

The South Fork RFP was intended to enable PSEG Long Island to acquire a minimum of 63 MW of local resources to defer the need for new transmission until at least 2022 in the South Fork and until 2030 in the area east of Amagansett. The addition of sufficient resources acquired through the South Fork RFP will help defer ten transmission projects. Proposals can include load reduction and/or power production resources connected to substations or distribution feeders.

Resources will be secured in 10, 15, or 20 year contract terms, depending on technology and resource composition.

2.1.2. Current Status

The South Fork RFP generated significant interests from vendor/suppliers. The submitted proposals included behind the meter as well as in front of the meter (T&D system connected resources). Technologies submitted in the bid proposals varied, and included: power generation, battery storage, direct load control, wind energy, and thermal storage.

The bid evaluation process, completed in July 2016, selected a portfolio of proposals for contract negotiations. In the evaluation process credit was given to renewable resources for reducing the amount of resources that would be needed to meet the LIPA Board of Trustees 400 MW renewable energy target. The selected portfolio includes the following technologies: wind energy, direct load control, and battery storage. The direct load control technology of the selected portfolio will be placed in service over three years between May 2017 and May 2019. Battery storage is expected to be in service by 2018, and the wind energy proposal by December 31, 2022.

The portfolio of proposals was not sufficient to meet all of the transmission deferral objectives. As a result, temporary generators are being installed to preserve the reliability of the South Fork system until the selected resources and certain deferred transmission lines go into service.

Contract negotiations are now in process with the companies representing the winning bids, and contracts for the direct load control and wind are expected to be approved late 2016 or early 2017. Since the contract for battery storage cannot be approved until the State Environmental Quality Review Act ("SEQRA") process is completed by the Town of East Hampton, approval is not expected until after the middle of 2017.

2.1.3. South Fork RFP 2017 Budgets

	Included in 2017 Budgets	2017 Incremental Request
Capital	$0	$0
O&M Expenses	$360,000	$0
Fuel + Purchase Power	$2,632,470	$0

2.2. Dynamic Load Management Tariff

LIPA introduced DLM programs to the electric tariff, effective April 1, 2016. This DLM is designed in alignment with NY REV Objectives of providing price signals to encourage innovative market-based solutions to support T&D infrastructure needs and load relief. This DLM tariff program will be typically in place during the summer months May 1 – September 30, also known as "capability period".

Direct Load Control Program

The Direct Load Control Program will pay customers $85 towards the purchase and installation of "smart" thermostats which will allow PSEG Long Island to curtail usage of central air conditioning systems in the home or small business. In addition, the customer will receive a $25 payment for each subsequent year they remain in the program and curtail during a designated event. The customer must utilize an approved thermostat provider and install the device in home or business. Approved thermostat providers market and promote the program to potential customers. The approved smart thermostat devices are wireless and will be registered with the program enrollment administrator. The smart thermostats will be linked to PSEG Long Island through an enrollment portal. PSEG Long Island will initiate a load reduction curtailment day when appropriate, during the program capability period. As we gain more experience with the new tariff, and prove its effectiveness at reducing peak demand, it is our intention to encourage the 28,000 existing customers with LIPA Edge thermostats to upgrade to newer Wi-Fi devices and enroll in the new tariff.

Commercial System Relief Program

The Commercial System Relief Program ("CSRP") creates the opportunity for market forces to identify and implement load relief measures that would allow PSEG Long Island to avoid building new distribution capacity at specific locations along the transmission and distribution system. The goal of the program is to have the market provide such solutions and for PSEG Long Island to spend less on transmission and distribution upgrades and projects.

The CSRP offers a number of features to both individual customers and aggregators of customers in the program. The program scope consists of:

- Monthly reservation payments per kW for commitments to reduce load on 21 hours' notice. The current reservation payment is $5/kW/month for five summer months.
- Performance payments for each kWh of energy curtailed during a called event, lasting up to 4 hours. The current performance payment is $0.25 per kWh reduced during a curtailment event.
- Bonus payments for each kWh of energy curtailed beyond the 4-hour limit of the performance payment.
- Penalties for non-performance, to ensure that participants are motivated to achieve the load reduction that they committed to.

Distribution Load Relief Program

The Distribution Load Relief Program ("DLRP") creates the opportunity to reduce electric load in certain designated zones or "load pockets" on the PSEG Long Island System. These load pockets will be identified, when necessary, by PSEG Long Island and posted to the PSEG Long Island website. The DLRP offers:

- Monthly reservation payments per kW for commitments to reduce load on two (2) hours' notice. The current reservation payment is $3/kW/month of enrolled load reduction, for the five summer months.
- Performance payments for each kWh of energy curtailed during a called event lasting up to 4 hours. The current performance payment for load reduced during a called event is $0.25 per kWh.
- Bonus payments for each kWh of energy curtailed beyond the 4-hour limit of the performance payment.
- Locational premiums for load pocket areas or areas that PSEG Long Island designates as an area requiring distribution relief.

For the CSRP and the DLRP, customers and aggregators may participate by reducing or deferring load, or utilizing dispatchable on-site generation options, to meet the commitment to reduce their load on the system. Generation options must meet strict emissions criteria in order to be eligible for the program. AMI metering is also required of all customers enrolled in the program. All load reduction provided during a called curtailment event will be quantified using a Customer Base Load (CBL) methodology, which requires detailed usage information made available on a timely basis.

2.2.1. Commercial and Distribution Load Relief Programs 2017 Budgets

	Included in 2017 Budgets	2017 Incremental Request
Capital	$0	$0
O&M Expenses	$400,000	$0
Fuel + Purchase Power	$ 1,422,000	$0

2.2.2. Implementation Status – as of the beginning of 4th 2016

PSEG Long Island has activated these DLM tariff programs and customers have begun to utilize these programs. The following table provides the current enrollment and MW reductions:

Program	2016 Customers	2016 MW Reduction	Curtailment Events
Direct Load Control	600	1.2	3
CSRP	24*	7	3
DLRP	24*	7	3

*Customers currently enrolled in the CSRP and DLRP programs are duplicative, having enrolled in both programs.

2.3. Yaphank RFP Objectives and Status

PSEG Long Island's Yaphank Load area consists of 5 substations: Yaphank, West Yaphank, North Bellport, Holtsville and William Floyd. It is projected that the Yaphank Load Area will need 8.5 MW of load support by year 2020 and 38 MW of load support by 2026. It experienced 135 MW peak load in the summer of 2016. Consistent with the NY REV objectives of deferring infrastructure related capital construction activities, PSEG Long Island has determined that load relief and/or load support projects will help to defer the capital construction activities for a few years, if suitable cost-beneficial alternatives can be secured.

Consistent with its recent procurement activities at South Fork, PSEG Long Island intends to issue an RFP in early 2017 for Yaphank load area. The specific load reduction and load support needs are in a final review with PSEG Long Island planning staff and will be firmed up in advance of the RFP issuance. This RFP will invite bids for behind-the-meter (BTM) and in-front of-the-meter (IFM) projects and programs for load relief and load support.

2.3.1. Yaphank RFP 2017 Budgets

	Included in 2017 Budgets	2017 Incremental Request
Capital	$0	$0
O&M Expenses	$600,000	$0
Fuel + Purchase Power	$0	$0

2.4 Innovative Load Reduction Program (Super Saver Program)

PSEG Long Island has obtained significant experience and knowledge in managing energy efficiency and renewable energy programs over the last few years. Using that expertise and also the learnings from Utility 2.0 programs being implemented since 2014, PSEG Long Island will develop a demand reduction program for a targeted substation or substations. This innovative program will deploy multiple tools and technologies such as DLM, smart thermostats, AMI, TOU rates and energy audits which will deliver the targeted load reduction along with enhanced customer empowerment.

The program objectives are:

- enhance customer knowledge and provide them with the tools that will support effective management of their total energy bills
- empower customers with additional energy management choices leading to enhanced market animation and improvement in system-wide efficiency
- defer conventional T&D related capital expenditures, by deploying demand reduction techniques and customer engagement

PSEG Long Island will select a substation or a substation group, based upon specific criteria such as (a) projected load growth and need for new capital investment, (b) infrastructure

readiness for AMI, (c) concentration of residential customers and their loads, (d) concentration of commercial and industrial customers and their loads, and (e) feeder profiles which may offer highest load reduction potentials.

PSEG Long Island will incorporate the following items in this proposed program:

- Enhance customer knowledge and offer tools that will support effective management of the total energy bill
    - Offer to Install AMI (Smart Meters) for all customers fed by the selected substation(s)
    - Perform Energy Audit at no-cost for the residential customers requesting energy audit
        - Offer up to 12 LED bulbs at no cost, as part of performing the energy audit.
    - Offer Smart thermostat to the customers having Central A/C ("CAC") and who will enroll in the DLM tariff
    - Establish analytical capabilities to utilize the smart meters' data and develop programs/methods to deliver cost-beneficial load reductions
        - Provide access to view and analyze the usage data to the customers with AMI for them to manage their energy usage and choices
        - Provide Home Energy Report, a behavioral energy efficiency tool, to influence customer energy usage and support with customer education program
- Offer TOU pricing to empower customer decision making regarding energy usage and timing of the use (targeted for 2018 implementation)
    - Establish customer education and empowerment process for them to benefit from AMI data and TOU rates
- Review the suitability of load reduction technologies such as thermal storage and CHP, and develop a target offering to the customers within the selected substation load areas, if found cost-beneficial. Deployment of these tools will improve the system-wide efficiency
- Monitor and analyze the overall benefit of this innovative program.
    - This will include analysis of feeder level and customer level loads before and after the implementation of this innovative program
    - Develop and establish processes to improve customer participation in this program, leading to reduction energy bills for the customers and achieving the targeted load reductions for PSEG Long Island

Our target schedule for this program is:

- 1Q 2017:
    - Review and analyze T&D Planning Capital plans and to determine suitable substation(s) to design and implement this demonstration project
    - Develop specific criteria, including cost-benefit analysis to develop the scope of projects to be included in this demonstration project – 1 Q 2017
- 2Q 2017:
    - Develop scope of work, including cost-benefit analysis and targeted load reductions with timeline
    - Obtain approvals to implement the program – 2Q/3Q 2017
- 3Q and 4Q 2017:

    - Begin AMI implementation – 3Q 2017
    - Complete AMI installations - 4 Q 2017
    - Home Energy Management rollout - 4 Q 2017
- 2018:
    - Implement the remaining items from the program scope
    - TOU rollout
    - Monitor the load reductions
    - Monitor the customer empowerment targets

2.4.1. Super Saver Program 2017 Budgets

	Included in 2017 Budgets	2017 Incremental Request
Capital	$0	$2,500,000
O&M Expenses	$0	$2,500,000
Fuel + Purchase Power	$0	$0

2.5. 2015 Renewable Energy RFP and 2016 Feed-In Tariffs

The 2015 Renewable Energy RFP was issued on December 22, 2015, consistent with the objectives included in PSEG Long Island's 2015 annual update. The Commercial Solar Feed-In Tariff ("FIT III") and the Fuel Cell Feed-In Tariff ("FIT IV") were adopted by the LIPA Board of Trustees on September 21, 2016. These procurement initiatives have the following major objectives:

1. Help meet the 400 MW renewable goal set by the LIPA Board of Trustees on October 25, 2012.
2. Help LIPA contribute toward meeting the State's Clean Energy Standard targets.
3. In the case of Fuel Cells, defer the need for transmission and distribution investment by strategically placing distributed generation in areas targeted to avoid overload of the existing transmission and distribution assets caused by projected load growth.

2.5.1. Scope of the RFP

The 2015 Renewable RFP and Feed-In Tariffs were targeted to add about 210 MW of additional renewable energy resources to help achieve the 400 MW renewable energy target. The Commercial Solar Photovoltaic Renewable Resources Feed-in Tariff is for Interconnection of Solar Photovoltaic Systems Mounted on Commercial Customer Rooftops or Carports from 200kW up to less than 1000kW. A maximum of 20 MW can be procured through this tariff. Each contract will be for a term of 20 years with a fixed price over the term of the contract.

The Fuel Cell Resources Feed-in Tariff is limited to fuel cell generation projects attached to the system at or within a beneficial area. Projects must be between 1 MW and 20 MW in size and may be attached at either the distribution level or transmission level in targeted areas. A maximum of 40 MW can be procured through this tariff. Each contract will be for a term of 20

years and will have three pricing components, a fixed charge, a bid heat rate and price indexed to Long Island natural gas commodity prices.

The 2015 Renewable RFP is looking for renewable energy that would begin commercial operation before May 1, 2022. Eligible resources include any renewable resource 1 MW or larger using one point of interconnection and offering a fixed price. Projects offering fixed-price energy from fuel cells using renewable fuel are eligible for this RFP. Resources must inject power directly to the Zone K (Long Island) system or be connected by a new transmission line dedicated to the delivery of power to Zone K. Project developers will be required to obtain community support for their proposed projects. The amount of capacity procured through this RFP is flexible. While a total of 210 MW was targeted between the Feed-In tariffs and this RFP, the number can decrease depend on the results of previous Feed-In tariffs, the 280 MW RFP and the South Fork RFP. Upward adjustments can be made for economic purposes and the need to procure additional resources to accommodate potential failures of renewable energy projects.

2.5.2. Current Status

The Commercial Solar Photovoltaic Renewable Resources Feed-in Tariff and Fuel Cell Resources Feed-in Tariff was adopted by the LIPA Board of Trustees on September 21, 2016. The initial enrollment period Opened on October 1, 2016 and will remain open until January 31, 2017. Evaluation of the proposals will take place in the 1st quarter of 2017 with selection targeted in the second quarter of 2017. Projects not selected in the initial evaluation and projects submitted after January 31, 2017 will go on a waiting list that can be used to replace any selected projects that fail to develop.

The 2015 Renewable RFP was issued on December 22, 2015 and 12 proposals were received on June 22, 2016. Evaluation of the RFP is underway with an expected selection for negotiation occurring in the 2nd quarter of 2017. If a contract is successfully negotiated, the capacity of offshore wind from the South Fork RFP can be used to reduce the amount of resources procured in the 2015 Renewable RFP.

2.5.3. 2015 Renewable Energy RFP and 2016 Feed-In Tariffs 2017 Budgets

	Included in 2017 Budgets	2017 Increase Requested
Capital	$0	$0
O&M Expenses	$504,000	$0
Fuel + Purchase Power	$0	$0

2.6. On-Bill Financing

As part of a potential REV Demonstration Project, PSEG Long Island proposed to design and implement a new *Energy Loan Program* to provide private sector loans for eligible residential customers to purchase solar PV systems. Customers would remit loan payments utilizing PSEG Long Island's On-Bill Recovery ("OBR") mechanism.

Currently all PSEG Long Island residential customers have access to financing through Green Jobs - Green New York ("GJGNY"). Effective September 1, 2016, NYSERDA increased the GJGNY PV loan program interest rate to 7.99% for residential customers earning more than 120% of the area median income. Subsidized GJGNY rates as low as 3.49% remain available

for low- to moderate-income residential customers. PSEG Long Island's goal is to provide a cost-effective alternative loan product with interest rates less than the unsubsidized GJGNY PV loan rate.

Objectives

- Customers will benefit from access to cost effective loans with payments that will be structured not to exceed the estimated energy cost savings from the PV system.
- The burden of the utility's annual program funding will shift from all ratepayers to only the participants in the loan program.
- This approach will open up capital markets and promote the long-term growth of the solar industry on Long Island.

Scope of Work

On August 1, 2016, PSEG Long Island responded to NY Green Bank's Open Solicitation for Clean Energy Financing Arrangements and submitted a proposal to implement a new *Energy Loan Program*. In the proposal, PSEG Long Island outlined an on-bill financing pilot program consisting of 1,250 projects or 12 months, whichever comes first. Using an average system size of 10,000 Watts with 11,100 kWh savings per year, the proposed portfolio includes approximately $22 million in loans with 15 year fixed payment terms for the pilot.

PSEG Long Island requested that NY Green Bank provide both senior debt and subordinated capital for the *Energy Loan Program*. PSEG Long Island is in discussions with the NY Green Bank regarding program development and customer and project underwriting criteria. When the *Energy Loan Program* portfolio reaches critical mass, NY Green Bank will work to structure third party securitization via asset backed securities. Ultimately, the goal is to attract private capital and create a sustainable PSEG Long Island *Energy Loan Program*.

Current Status

Program development work continues, and various mechanisms have been evaluated in an effort to develop the optimal structure to meet the needs of a residential solar customers, LIPA, the NY Green Bank, and private sector lenders. , LIPA has been engaged in these discussions, and during the course of discussions proposed the use of a *Two Meter Approach* which would utilize the monetized PV production generated by the customer to repay its loan. This *Two Meter Approach* would build on existing AMI net meter rollouts as part of other Utility 2.0 efforts.

In the *Two Meter Approach,* customers with an energy loan would be equipped with both an AMI net meter and an AMI inverter meter. Every month, the customer would be billed for their total usage, which would be the sum of the kWh on both AMI meters. On the same bill, the customer would receive a credit for their solar generation, which would be applied to the non-utility (loan) charge first. The credits would flow directly from LIPA to the lender.

Next Steps

PSEG Long Island is conducting a feasibility assessment of the *Two Meter Approach* to better define the impacts on energy efficiency and renewable energy, revenue operations, finance, meter services, planning resources & engineering, information technology, and legal issues. PSEG Long Island will continue to work through structuring the project with the aim of providing

an innovative means to further promote residential solar PV market while ultimately utilizing third party financial support.

2.6.1. On-Bill Financing 2017 Budgets

	Included in 2017 Budgets	2017 Incremental Request
Capital	$0	$2,000,000
O&M Expenses	$0	$870,388
Fuel + Purchase Power	$0	$0

2.7. Electric Vehicles Program

PSEG Long Island has chartered a team to develop an internal strategy for enhancing the penetration of electrical vehicles and aligning it with NY REV Objectives of reducing GHG emissions, customer empowerment, and market-animation and load factor improvement

The internal strategy will focus on:

- Developing educational and marketing material on PSEG Long Island website such as cost per mile, time to charge, etc. This website will be in place by the end of 2016.
- Striving to meet the requirement of EEI's "Fleet Electrification Initiative" in 2017-2018 time period.
- Investing in workplace charging systems for any business which commits to having at least five (5) of its employees driving plug-in electric vehicles with the goal being 100 new charging stations by end of 2018.
- Purchasing 20 plug-in electric vehicles for company use to showcase the technology
- Performing a more detailed analysis regarding the potential for electric vehicles on Long Island, including grid integration needs and infrastructure investments.
- Designing a TOU rate that would be more advantageous for customers who own or will buy plug-in electric vehicles and optimize the impact on grid infrastructure.
- Other recommendations include:
    - Installation of charging stations at select PSEG Long Island facilities to encourage employee adoption of electric vehicles.
    - Deployment of AMI metering for electric vehicle customers to analyze charging habits and changes in the load profile impacting the grid operations.

2.7.1. Electric Vehicles Program 2017 Budgets

	Included in 2017 Budgets	2017 Incremental Request
Capital	$0	$750,000
O&M Expenses	$0	$500,000
Fuel + Purchase Power	$0	$0

2.8. Advanced Metering Infrastructure Program Status

The AMI program objective is to leverage the experience and success of PSEG Long Island's demonstration projects for AMI meter installations during the 2010-2014 time period. Consistent with the DPS recommendations, in 2016 PSEG Long Island completed a targeted AMI deployment as follows:

- The expansion of the AMI communications network to allow two-way communications across the PSEG Long Island service territory. This work established the critical communication backbone to further expand AMI, capable to support future business needs, consistent with the guidance from LIPA and DPS
- In 2016, PSEG Long Island deployed AMI meters at targeted customers, as follows:
    - 5,139 AMI meters targeting the largest commercial time of use accounts
    - All new meter installations requiring net metering, starting September 2016

With the progress achieved in 2016, PSEG Long Island has smart metering infrastructure and systems in place to access the interval energy data available from the smart meters. It has also established capabilities to support future initiatives that benefit from the increased availability of AMI.

The work activities planned for 2017 will be implemented as part of PSEG Long Island Capital budgets.

Based on the success of the 2016 AMI network and meter deployment projects, the 2017 plan is to transition from conventional metering to AMI for all normally scheduled meter installations including new services, service upgrades, retirements and damaged meter replacements. Additional accounts will be targeted for AMI installations to support business and customer satisfaction objectives. These targets include large commercial time of use accounts, long-term estimates and other difficult to access meters. Implementing this strategy will add over 50,000 AMI meters to the LIPA system in 2017.