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August 3, 2020

Thomas Falcone
Chief Executive Officer
Long Island Power Authority
333 Earle Ovington Blvd
Uniondale, NY 11553

Hon. Michelle L. Phillips
Secretary to the Commission
New York State Public Service Commission
Empire State Plaza
Agency Building 3
Albany, NY 12223-1350

Re: **Matter Number 14-01299 - PSEG Long Island Utility 2.0 Long Range Plan Supplement**

Dear Mr. Falcone and Honorable Phillips:

On June 30, 2020, PSEG Long Island submitted its Utility 2.0 Long Range Plan ("Utility 2.0 Plan" or "Plan") seeking a positive recommendation on the Plan from the New York State Department of Public Service ("DPS") and incremental funding approval from the Long Island Power Authority (the "Authority"). Since the time of this filing, PSEG Long Island has received feedback from DPS Staff around two new proposed initiatives for 2021: the FlexPay Pilot, and the On-Bill Financing Pilot. Specifically, DPS Staff requested that PSEG Long Island submit a supplement to the Utility 2.0 Plan that includes a benefit-cost analysis (BCA) for the two proposed pilots, similar to what was submitted for other initiatives that were proposed to be implemented at scale in the 2020 Utility 2.0 Plan. Accordingly, PSEG Long Island encloses for filing with the Commission in the above-referenced matter a supplement to the Utility 2.0 Plan.

In the enclosed supplement, PSEG Long Island is restating the business case for the two proposed initiatives mentioned above to include:

- The drivers and the overall business case for the offering, articulating the value proposition for customers, the utility, and New York State;
- The experimental design for the two pilots, highlighting the hypotheses that will be tested, the pilot duration, and the targeted customer participation;
- The BCA for the pilots, illustrating the cost-effectiveness of the pilots at limited scale and duration, based on preliminary assumptions that PSEG Long Island made that will be tested and refined as needed over the course of the pilot; and
- The cost-effectiveness for the offering "at scale", outlining how the benefits from these new offerings can ultimately exceed the initial pilot costs, should the pilots be successful in proving the hypotheses that PSEG Long Island has made for the two offerings.

You can contact me at 516-222-3545 if you need any additional information.

Very truly yours,

Jeffrey R. Greenblatt

cc:
Mr. Daniel Eichhorn
President & COO, PSEG Long Island &
CCO PSE&G & PSEG Long Island

Mr. Rick Walden
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PSEG LONG ISLAND
We make things work for you.

Utility 2.0 Long Range Plan & Energy Efficiency and Demand Response Plan

2020 Annual Update – Supplement 1

Prepared for Long Island Power Authority

August 3, 2020

Table of Contents

1. Introduction

Following the submission of the 2020 Utility 2.0 Plan Update, PSEG Long Island received feedback from the New York Department of Public Service Staff ("Staff") around two new proposed initiatives for 2021: the FlexPay Pilot, and the On-Bill Financing Pilot.

Specifically, Staff requested that PSEG Long Island submit a supplement to the 2020 Utility 2.0 Plan that includes a benefit-cost analysis (BCA) for the two proposed pilots, similar to what was submitted for other initiatives that were proposed to be implemented at scale in the 2020 Utility 2.0 Plan.

In the following subsections, PSEG Long Island is restating the business case for the two proposed initiatives to include:

- The drivers and the overall **business case** for the offering, articulating the value proposition for customers, the utility, and New York State.
- The **experimental design** for the two pilots, highlighting the hypotheses that will be tested, the pilot duration, and the targeted customer participation.
- The **benefit-cost analysis (BCA) for the pilots**, illustrating the cost-effectiveness of the pilots at limited scale and duration, based on preliminary assumptions that PSEG Long Island made that will be tested and refined as needed over the course of the pilot.
- The **cost-effectiveness for the offering "at scale"**, outlining how the benefits from these new offerings can ultimately exceed the initial pilot costs, should the pilots be successful in proving the hypotheses that PSEG Long Island has made for the two offerings.

2. New Initiative Proposed for 2021: FlexPay Pilot [Supplement]

PSEG Long Island believes its customers should have an option that enables greater billing flexibility, including flexibility around their payment schedule, thus providing greater control over their energy use and spend. To enable this, the Utility is seeking to implement a FlexPay pilot, which is based on a prepay concept with adapted requirements that would ensure HEFPA compliance in New York.

FlexPay will allow customers to make payments in amounts and on schedules that best align to their cash flow. The proposed offering will enable customers with low-to-moderate outstanding balances to participate by splitting their payments between new usage and current arrears.

The FlexPay solution will be able to track, monitor, and communicate balance and usage changes at a much greater frequency because of the AMI network. With greater granularity and frequency of information available to customers via FlexPay, they can be in greater control of how much money they spend on electricity and when, because increments are in days instead of months. Customers that make an advanced payment on the standard post-pay account would not be moved to FlexPay (there is no defaulting customers to FlexPay under any circumstance). FlexPay will be a voluntary pilot—customers will have to opt in and will maintain the ability to opt out and revert back to post-pay at any time. The FlexPay pilot's design has taken into consideration existing customer protections provided under HEFPA.

2.1 Business Case

PSEG Long Island believes that the overall business case for FlexPay is strong, both for customers and the business. FlexPay was part of PSEG Long Island's overarching rate modernization roadmap that was included in the 2018 Utility 2.0 Plan, and which is part of the wider business case for the AMI rollout on Long Island.

Studies have shown that participation in prepay programs leads to energy conservation. FlexPay customers will be able to monitor their energy use online and will receive regular usage alerts, thus becoming more aware of how the decisions they make affect their electric usage, and how they can make their payment last longer. For example, when usage is unusually high, such as in the summer months, the balance may need to be replenished sooner. This education of the customer along with regular usage alerts will lead to greater energy consciousness, tying together how their actions affect their usage (and associated costs). Specific examples of utilities observing this effect include Salt River Project identifying a 12% average decrease in energy use, while Duke Energy identified an 8.58% average decrease in energy use.

Energy savings can be furthered by a psychological gaming effect, where a customer tries to stretch out their remaining funds to not hit a zero balance. This is similar to the experience customers get from prepay cell phone plans—users are aware of the remaining balance in dollars until their cycle renews, which empowers them to control their usage and spend.

In addition to energy savings for the customer, prepay programs have resulted in beneficial outcomes for utilities too. Specifically, utilities that have implemented prepay programs have seen reduced net bad debt. According to a study conducted by a prepay provider servicing 66 utilities, similar programs have seen an average of 72% in bad debt reduction for 12% prepay penetration, with $191, on average, arrearage recovered. Other benefits include improved bill rendering and delivery, with FlexPay customers all opted-in to electronic billing, and a reduction in field operation because the number of disconnects due to non-payment is expected to decrease.

2.2 Pilot Experimental Design

PSEG Long Island is proposing a five-year pilot program that will have the characteristics that are outlined in the subsections below.

Hypotheses

PSEG Long Island believes that the way the FlexPay offering has been designed, with New York-specific design specifications, will enable participating customers and the Utility to realize similar levels of energy savings as those reported elsewhere (see section 2.1 above). However, this is something that will need to be tested and substantiated as part of the FlexPay pilot. If this hypothesis is proven true, the Pilot will pave the way for a prepay offering to be made available more broadly on Long Island and across the entire State.

PSEG Long Island also hypothesizes that FlexPay can deliver additional benefits, such as:

- Increase in customer satisfaction by increased flexibility and more options.
- Increased customer engagement, leading to reduction in arrears, complaints, bad debt, and turnoffs, as well as increases in Days Sales Outstanding (DSO) savings.
- FlexPay is targeting a part of PSEG Long Island's customer base that has traditionally been underserved – including customers that like to pay in advance, similar to pay-as-you go mobile phone plans.

Table 2-1 summarizes the hypotheses and the metrics PSEG Long Island will use to evaluate the success of the pilot, and to determine whether FlexPay can be offered to a larger number of customers and for a longer duration.

Table 2-1. Hypotheses – FlexPay Pilot

Hypothesis	Metric	Measure of Success
Providing customers with flexibility in the scheduling of bill payments will increase customer satisfaction.	Customer satisfaction among participants in the pilot.	Pending pilot evaluation survey design—for example, top two box results on a 1-5 satisfaction scale.
Providing customers with education and visibility around their energy bill as part of a HEFPA-compliant prepay program will reduce the average energy usage for participating customers.	Energy savings and bill savings realized by participating customers.	Percentage reduction in energy usage or bill totals for participating customers as compared to baseline usage, and also to savings reported by peer utilities.
By enrolling customers with arrears, FlexPay will enable past-due dollars to be collected more effectively.	Arrears (past-due dollars) collected from participating customers.	Percentage of participating customers in arrears at the time of their enrollment.
		Annual number of customers who enroll to the pilot in arrears and continue participating in the pilot until they are no longer in arrears (i.e., past-due dollars paid off).

Pilot Participation

Assuming adherence to the timeline and schedule described above, PSEG Long Island will target 1,000 customers for participation in the FlexPay Pilot by the end of 2022, and 5,000 customers annually after that. Roughly 70%-80% of the total customer population is estimated to be eligible for FlexPay based on the business criteria for eligibility, however based on these conservative assumptions, participation will reach approximately 8% of the total customer base by 2040. This is in on the lower side of the spectrum of what is being reported as the level of participation in national prepay programs – participation ranges from 5% to 20% according to the Prepay Energy Working Group.

Measurement and Reporting

Data will be collected on internal and external factors that may be influencing the process of delivering the FlexPay Pilot. The pilot program will be exposed to as broad of a range of inputs and process conditions as possible, with a summary of findings included in PSEG Long Island's annual Utility 2.0 Plan.

Pilot results will be compiled and evaluated, and continuous improvements will be implemented:

- Analyze performance.
- Analyze the pilot plan. What worked? What didn't? What had to be added or changed?
- Conduct customer satisfaction and process improvement research.
- Communicate pilot results—create a summary of the strategy used to pilot the solution and communicate the results achieved.
- Change management is a key part of project success. Soliciting feedback during stakeholder interviews gives access to thoughts from those impacted by the project.
- Review the original stakeholder analysis to determine how/if anything has changed, and what PSEG Long Island may want to do to address those results.
- Prepare a recommendation brief whether to scale the prepay program and what is the recommended implementation plan for the full scale prepay program—a summary of the strategy to be used for implementation of the piloted solution.

Customer Engagement and Communications Plan

As part of the 2018 Utility 2.0 Plan, PSEG Long Island developed a customer engagement plan that is specifically tailored to rate modernization initiatives (section A.7.6 of 2018 Utility 2.0 Plan). The goal was to achieve consistency in the way customer engagement is executed as specific rates and new billing solutions are developed, approved, and activated.

The rate modernization customer engagement plan spans across six key areas, which will also be applied in the engagement with potential participants to FlexPay:

- **Customer Research:** Prior to the launch of FlexPay, PSEG Long Island will conduct customer research to validate the program design and optimize the customer communication and engagement experience. After launch the customer experience will be assessed through surveys and a variety of internal feedback channels.
- **Customer Education and Awareness:** A variety of channels are planned to educate and inform customers about FlexPay. A diverse multichannel education and awareness campaign, including but not limited to website pages, educational videos, social media, customer service representative referrals and direct customer marketing engagement, will encourage customer interest in learning about the best fit for their lifestyle.

- **Customer Adoption:** Personal history, home facts, and lifestyles will be used to help customers know if opting into FlexPay is right for them. Therefore, PSEG Long Island will develop personalized-messaging, and welcome kits to provide customers with a seamless adoption experience.
- **Customer Optimization:** Customer optimization will begin once a customer chooses to opt-in to FlexPay. PSEG Long Island will issue proactive, personalized information, tools and communications to assist each customer in achieving their desired results from participating in the program (avoiding costs, reducing overall usage and/or monthly bills) and feel good about the choice they made.
- **Stakeholder and Community Group Involvement:** Long Island residents and businesses have many interests that are served by local governments, special interest groups, and other community-based organizations. These groups provide an important source of feedback as well as engage their membership base in new programs and services PSEG Long Island delivers. For each new rate option being delivered (including FlexPay), the Utility includes outreach and coordination with the relevant stakeholders and community groups.
- **Internal Training and Change Management:** Internal training and change management programs will be utilized to effectively share the objectives, features, processes and procedures necessary to implement FlexPay, and to have meaningful personalized conversations with customers as an energy advisor.

Principles for REV Demo Projects

The proposed pilot aligns with several principles of REV demos, as described in Table 2-2.

Table 2-2. Principles of REV Demos – FlexPay Pilot

Principle	Description
Includes partnership between utility and third-party service providers	Enables collaboration between prepayment engine operator and a third-party prepay vendor with PSEG Long Island.
Demonstrations should delineate how the generated economic value is divided between the customer, utility, and third-party service provider(s)	Identifies and quantifies associated costs and benefits, supporting subsequent development of more scalable business models for residential customers that effectively allocate costs and benefits between stakeholders.
Offers competitive markets for grid services	Informs opportunities to increase energy conservation, energy efficiency and customer satisfaction.
Informs rules that will help create competitive markets	Pilot will provide insights that inform future prepay rules, and rules regarding grid disconnection, which would support the market for companies in this space.
Identifies questions it hopes to answer or problems or situations on the grid and the market should respond with solutions	Hypotheses listed above.

Principle	Description
Informs pricing and rate design modifications	May inform rates based upon flexible timing of bill payments.
Includes various customer participants	Potential participating customers include seasonal customers, customers that are budget conscious and would like to have the power to choose when and where they pay, low-income customers, seasonal as well as rental property customers.

2.3 Pilot Benefit-Cost Analysis (BCA)

The primary benefit streams considered for the BCA's Societal Cost Test (SCT) include net avoided carbon emissions from reduced energy consumption, reduced truck rolls for disconnects, and reduced paper billing. The benefits are driven by both net avoided CO_2 emission and avoided energy, which accounts for reduced energy consumption from customers participating in FlexPay.

PSEG Long Island assumed a value of 8.58% for behavioral energy consumption reduction in the BCA, which is drawn from prior studies of prepay programs at other utilities, though this assumption is on the lower side of the spectrum of savings observed and reported by the utilities.

The bulk of the program's costs are attributed to IT integration and upgrades. These costs include integration, licensing, transaction fees, communication fees, overhead, and risk and contingency. Other program costs include costs associated with customer research and engagement.

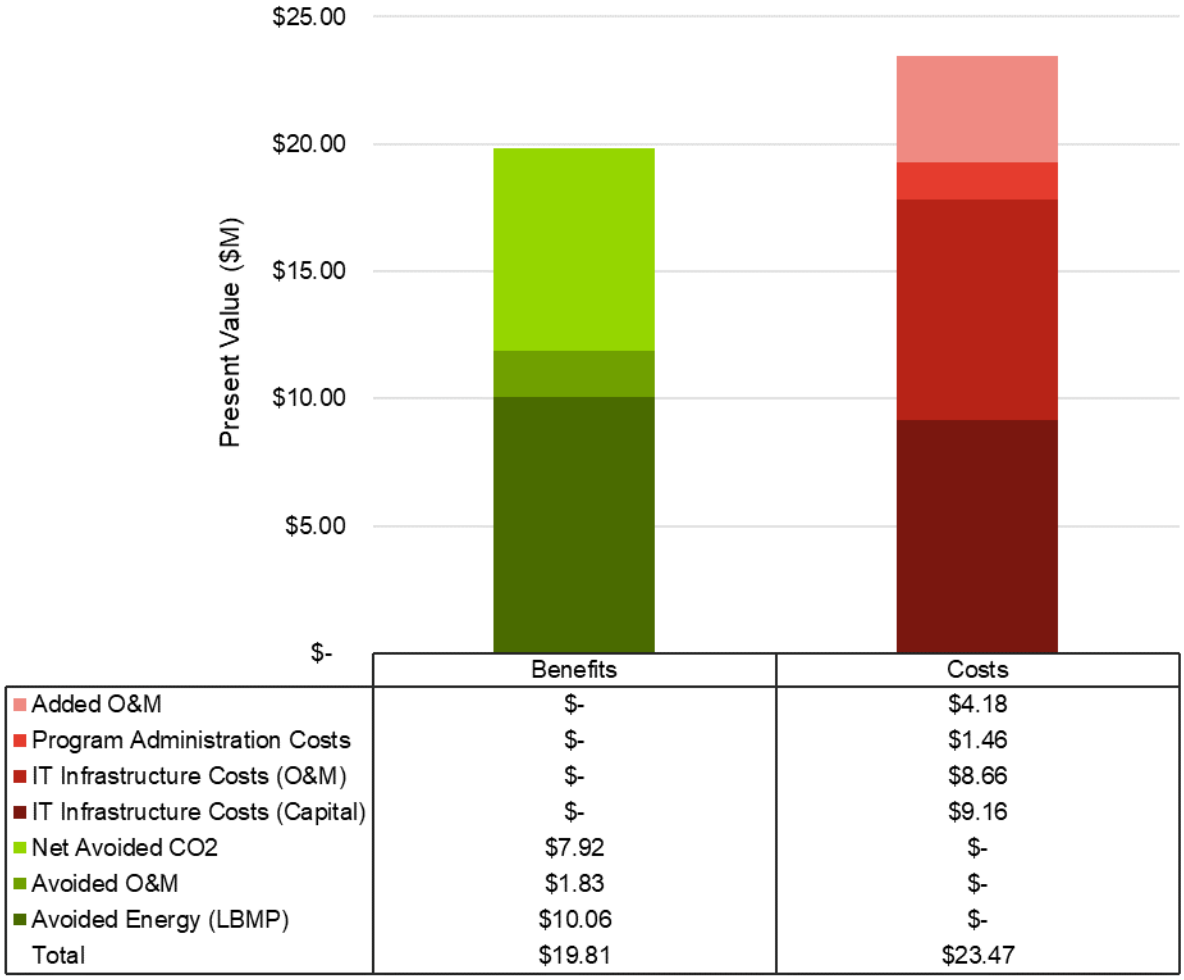
Based on the above, the implementation of FlexPay has a benefit-to-cost ratio of 0.84. Figure 2-1 details the pilot's expected benefits and costs.

Even though the benefit-to-cost ratio is below 1.0, PSEG Long Island still believes that the overall *business case* is strong, both for customers and the business. FlexPay was part of our overarching rate modernization roadmap that was included in the 2018 Utility 2.0 Plan, and which is part of the wider business case for the AMI rollout in Long Island. When considering FlexPay under the umbrella of the wider AMI rollout and its capabilities (including the rate modernization initiatives), the overall BCA still remains well above 1.0.

Additional benefits that are not captured in the BCA include:

- Increase in customer satisfaction by increased flexibility and more options.
- Increased customer engagement, leading to reduction in arrears, complaints, bad debt, and turnoffs, as well as increases in Days Sales Outstanding (DSO) savings.
- FlexPay is targeting a part of our customer base that has traditionally been underserved – including customers that like to pay in advance, similar to pay-as-you go mobile phone plans.

Figure 2-1. Present Value Benefits and Costs of SCT – FlexPay



	Benefits	Costs
Added O&M	$-	$4.18
Program Administration Costs	$-	$1.46
IT Infrastructure Costs (O&M)	$-	$8.66
IT Infrastructure Costs (Capital)	$-	$9.16
Net Avoided CO2	$7.92	$-
Avoided O&M	$1.83	$-
Avoided Energy (LBMP)	$10.06	$-
Total	$19.81	$23.47

#	Value Stream	Calculation Methodology	Benefits (NPV, $M)	Costs (NPV, $M)
1	**Net Avoided CO_2**	Includes reduction in carbon emissions from reduced customer energy consumption and reduced number of truck rolls required for disconnects. Calculated using avoided carbon cost adder and social cost of carbon.	$7.92	
2	**Avoided O&M**	Includes reduced paper billing and reduced number of truck rolls required for disconnects. Calculated using cost of paper bills and cost per truck roll for disconnect.	$1.83	
3	**Avoided Energy (LBMP)**	Includes reduction in customer energy consumption. Calculated using marginal energy cost and energy line loss factor.	$10.06	
4	**Added O&M**	Includes customer engagement costs (e.g., customer intelligence, planning, acquisition, and expanding participation).		$4.18

#	Value Stream	Calculation Methodology	Benefits (NPV, $M)	Costs (NPV, $M)
5	**Program Administration Costs**	Includes cost for incremental labor.		$1.46
6	**IT Infrastructure Costs (O&M)**	Includes transaction fees, communication fees, and risk and contingency.		$8.66
7	**IT Infrastructure Costs (Capital)**	Includes IT integration, licensing fees, additional overhead, and risk and contingency.		$9.16
	Total Benefits		**$19.81**	
	Total Costs			**$23.47**
	SCT Ratio		**0.84**	

NPV = Net present value
LBMP = Location-based marginal pricing

2.4 Cost-Effectiveness at Scale

As stated above, PSEG Long Island will evaluate as part of the FlexPay Pilot a set of hypotheses and assumptions that relate to customer satisfaction, energy conservation, and bill arrears. If the hypotheses are proven, PSEG Long Island intends to offer FlexPay for a longer duration than the five years the pilot will be offered, and to a wider customer population.

Even though the SCT benefit-to-cost ratio for the FlexPay Pilot is below 1.0, PSEG Long Island believes that when offered at scale, FlexPay can be cost-effective for its customers and society at large. Two important parameters that impact the BCA for the program are the level of behavioral energy savings that are achieved by participating customers, and the number of customers that participate in the program after the pilot is completed in 2025 (see Table 2-3, and following subsections).

Table 2-3 SCT Benefit-to-Cost Ratio for Different BCA Assumptions

		Annual Customer Enrollment After 2025			
		3,000	**5,000**	**7,000**	**9,000**
Behavioral Energy Savings %	**8.00%**	0.63	0.79	0.92	**1.03**
	8.58%	0.67	**0.84**	0.98	**1.10**
	9.00%	0.70	0.88	**1.02**	**1.14**
	10.00%	0.77	0.97	**1.13**	**1.26**
	11.00%	0.84	**1.06**	**1.23**	**1.38**
	12.00%	0.92	**1.15**	**1.34**	**1.49**

Behavioral Energy Savings

In developing the BCA for the FlexPay Pilot, PSEG Long Island assumed that participating customers will achieve a reduction of 8.58% in their energy use. This assumption is on the low end of the spectrum of what has been observed and reported by peer utilities, which are offering prepay programs in other jurisdictions. Based on research conducted by PSEG Long Island, the savings that have been observed range between 8% and 12%. PSEG Long Island will evaluate whether this level of savings can be achieved in New York with FlexPay, however based on what has been reported by other utilities, there is significant potential for higher savings than what was conservatively assumed in the BCA for the pilot.

PSEG Long Island estimates that achieving behavioral energy savings of at least 10% among participating customers will result in an SCT benefit-to-cost ratio of over 1.0.

Customer Participation

The FlexPay Pilot will target 1,000 customers for participation by the end of 2022, and 5,000 customers annually after that. Based on this level of annual participation, approximately 8% of PSEG Long Island's customer base will be enrolled in FlexPay by 2040 (if the program continues being offered after successful pilot completion), even though 70%-80% of PSEG Long Island's total customer population is eligible for FlexPay based on the business criteria for eligibility.

The overall net benefits of the offering will increase if the resulting annual participation in FlexPay after the pilot completion in 2025 is higher than what has been assumed in the BCA. This is because the costs that have been incurred as part of the pilot to set up the IT infrastructure for FlexPay are one-off costs that will not scale with customer participation.

PSEG Long Island conservatively estimated that total customer participation as part of this Pilot could reach approximately 8% based on a review prepay electric utility program enrollments, however some successful programs have enrolled as many 20% of their customers.

PSEG Long Island estimates that annual addition of 7,000 participating customers after 2025 (leading to total participation of approximately 11% of PSEG Long Island's overall customer base by 2040) will result in an SCT benefit-to-cost ratio of over 1.0.

3. New Initiative Proposed for 2021: On-Bill Financing Pilot [Supplement]

PSEG Long Island believes that enabling the adoption of energy efficiency (EE) products and clean energy technologies can be further enhanced if customers are given more options in the way they can leverage utility incentives. To achieve this, PSEG Long Island is proposing the implementation of the On-Bill Financing Pilot that will provide residential customers with the option of paying for the purchase of clean energy products through charges on their monthly electricity bills.

For this pilot program, PSEG Long Island has opted to focus on heat pumps, since the electrification of heating is an area that will require aggressive levels of customer uptake by 2025 if New York State is to meet its target of 5 TBtu of energy savings. PSEG Long Island specifically has set a target of 30,000 new heat pumps installations by 2025.

The option of zero interest financing is an important tool needed for the achievement of these goals. This is something that PSEG Long Island sees a key tool to boost customer participation in clean energy programs, especially given the challenges that customers face due to the COVID-19 pandemic – PSEG Long Island has previously discussed this with Staff and NYSERDA in the process of developing the 2020 Utility 2.0 Plan. NYSERDA was able to offer zero interest financing for a short period of time during June 2020 and it this offering proved to be a great success; however, funding ran out and NYSERDA reverted back to charging the prevailing interest rates.

3.1 Business Case

By providing customers with the option of financing (potentially at a bought down interest rate) or receiving a rebate, or both, PSEG Long Island believes that the overall customer uptake of heat pumps through the existing Home Comfort program will be greater compared to only offering rebates. Increased participation to the Home Comfort program will bring Long Island closer to its target of deploying 30,000 heat pumps by 2025, in alignment with the overall New York State heating electrification goals.

PSEG Long Island will test this hypothesis over the course of this pilot and evaluate whether On-Bill Financing should be offered beyond the initial two-year duration.

3.2 Pilot Experimental Design

PSEG Long Island is proposing a two-year pilot program that will have the characteristics that are outlined in the subsections below.

Hypotheses

Table 3-1 summarizes the hypotheses and the metrics PSEG Long Island will use to evaluate the success of the pilot, and to determine whether On-Bill Financing can be offered to a wider selection of products and for a longer duration.

Table 3-1. Hypotheses – On-Bill Financing Pilot

Hypothesis	Metric	Measure of Success
Providing customers with a financing option that can supplement the existing rebates for heat pumps will increase customer uptake of heat pumps.	Participation in Home Comfort program beyond existing baseline forecast.	The target is to have 1,000 customers participate in On-Bill Financing over the course of the two-year pilot, which is equal to an increase of approximately 13% over the expected participation in the Home Comfort program if only rebates were offered.[1]
Providing customers with a financing option that can supplement the existing rebates for heat pumps will increase customer satisfaction.	Customer satisfaction among participants in the pilot.	Pending pilot evaluation survey design—for example, top two box results on a 1-5 satisfaction scale.

Pilot Participation

PSEG Long Island will not limit the participation in the pilot to a specific number of customers, however a limiting factor will be the loan capital that is available ($5 million each year for a total of $10 million for the duration of the pilot). It is assumed that approximately 1,000 loans will be accommodated based on the available loan capital.

Measurement and Reporting

Over the course of the pilot, PSEG Long Island will measure and report the following metric:

- **Customer participation:** PSEG Long Island will measure the number of customers that participate in the Home Comfort program by signing up for On-Bill Financing, as well as total participation in the program (i.e., including customers that use just the traditional rebate option).

Communications Plan

At the outset of the pilot, PSEG Long Island will specify a customer engagement approach for rolling out the pilot to residential customers. The Utility will work with its internal communications team to define the messaging, branding, format, and other content that will be shared with customers, emphasizing expected benefits, the loan application process, and eligibility.

Principles for REV Demo Projects

The proposed pilot aligns with several principles of REV demos, as described in Table 3-2.

Table 3-2. Principles of REV Demos – On-Bill Financing Pilot

Principle	Description
Includes partnership between utility and third-party service providers	PSEG Long Island will partner with third-party trade allies to promote the offering to its customers. A loan originator and servicer will be hired to provide On-Bill Financing to customers.

[1] This estimation assumes that all of the capital that is available for the financing in the initial two years of the pilot is used for heat pumps. PSEG Long Island will evaluate the use of On-Bill Financing for other products depending on customer feedback.

Principle	Description
Demonstrations should delineate how the generated economic value is divided between the customer, utility, and third-party service provider(s)	Customers will have increased options for accessing EE products. The Utility has an added tool for increasing participation to EE programs in support to State goals. Third-party solution providers see an uptake in the adoption of clean energy products and increased engagement from customers.
Identifies questions it hopes to answer or problems or situations on the grid and the market should respond with solutions	Through the pilot, PSEG Long Island will test the hypothesis that providing an on-bill financing option will increase participation in the heat pump (Home Comfort) program.
Informs rules that will help create competitive markets	If the pilot is successful, PSEG Long Island would have proven the value of on-bill financing to support competitive sales of heat pumps, as well as other EE products.
Informs pricing and rate design modifications	Informs the ability to reduce future reliance on incentives and opportunities to offer financing for other EE measures and DER.
Includes various customer participants	The pilot will actively engage residential customers. PSEG Long Island may also consider applications for commercial customers, where practical.

3.3 Pilot Benefit-Cost Analysis (BCA)

The intended goal of the On-Bill Financing pilot is to increase heat pump uptake, thereby increasing the societal benefits that are attributed to the electrification of heating. As a result, the benefits of the pilot are benefits attributed to increased participation in PSEG Long Island's Home Comfort program. A detailed BCA for the program is offered in the 2021 PSEG Long Island EEDR Plan (Appendix A of the 2020 Utility 2.0 Plan).

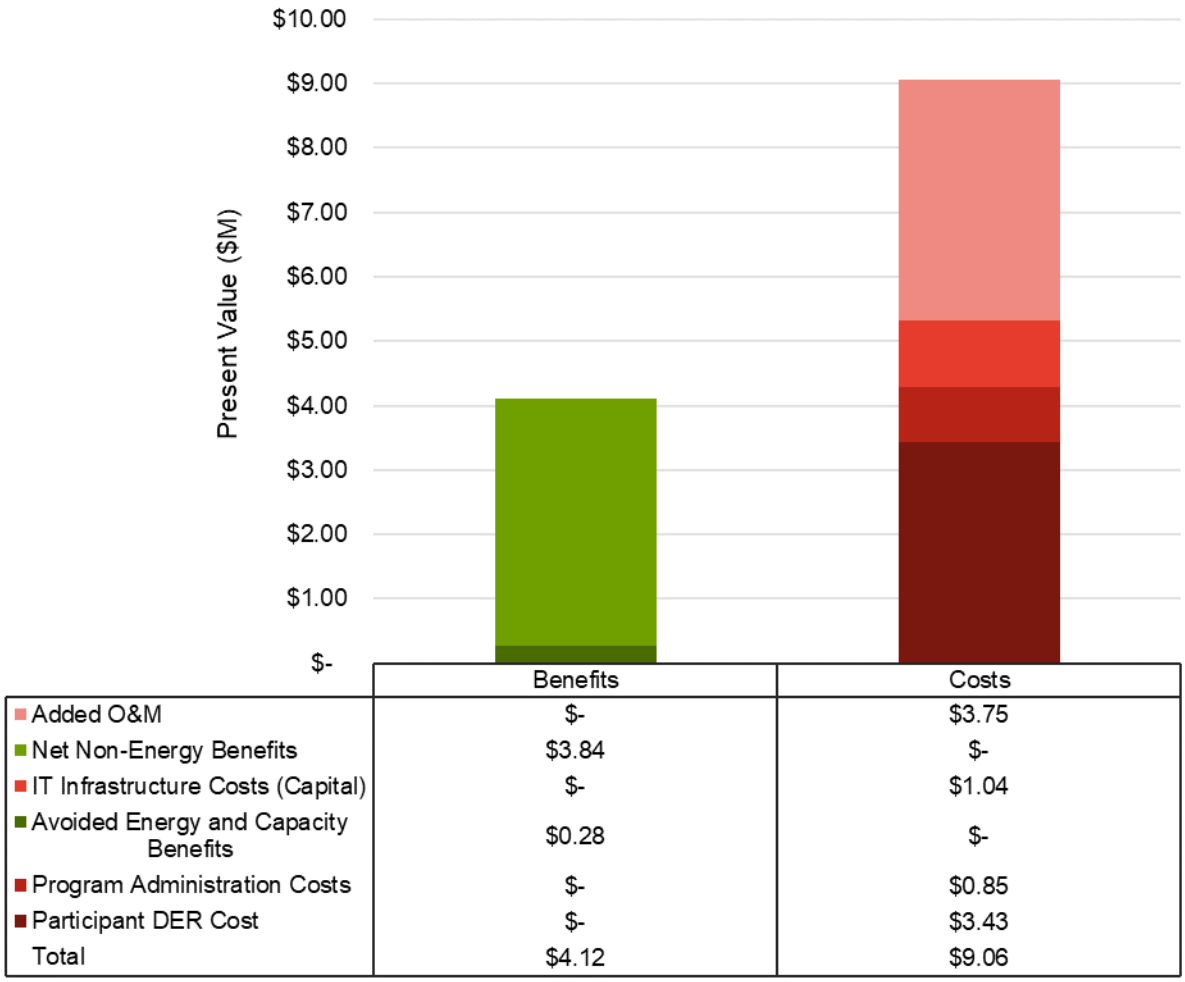
The costs for the On-Bill Financing two-year pilot include IT upgrades, program management, marketing and outreach, third-party support for loan origination and servicing, and post-installation QA/QC inspections. PSEG Long Island also expects incremental costs in managing the Home Comfort program as a result of increased participation because of the On-Bill Financing pilot.

Figure 3-1 details the pilot's expected benefits and costs. With an assumed participation of 1,000 customers, the proposed two-year pilot has a benefit-to-cost ratio of 0.45 (SCT).

The low cost-effectiveness can be explained in part by the overall economics of heat pumps (as illustrated in the Home Comfort Program BCA), but also by the short duration of the pilot and the need to make initial investments to set up technology infrastructure. PSEG Long Island continues to examine its assumptions of the incremental cost of installing a heat pump compared to alternatives, such as fossil fuel heating plus central air conditioning (CAC). In new construction, for example, the cost of installing a heat pump is actually less than the comparable cost of a traditional fossil system plus CAC. While every situation is different, the vast majority of heat pump installations will be done when either the fossil heating system and/or the CAC is at the end of its useful life, thus requiring a major investment, with or without the heat pump.

Even though the benefit-to-cost ratio is below 1.0, PSEG Long Island still believes that the overall *business case* is strong, both for customers and New York State, given the ambitious state goals in the area of heating electrification, and the potential to increase cost-effectiveness in future years (see following sub-section).

Figure 3-1. Present Value Benefits and Costs of SCT – On-Bill Financing Pilot



	Benefits	Costs
Added O&M	$-	$3.75
Net Non-Energy Benefits	$3.84	$-
IT Infrastructure Costs (Capital)	$-	$1.04
Avoided Energy and Capacity Benefits	$0.28	$-
Program Administration Costs	$-	$0.85
Participant DER Cost	$-	$3.43
Total	$4.12	$9.06

#	Value Stream	Calculation Methodology	Benefits (NPV, $M)	Costs (NPV, $M)
1	**Net Non-Energy Benefits**	Based on societal benefits associated with Home Comfort program and 13% increase in Home Comfort program participation.	$3.84	
2	**Avoided Energy and Capacity Benefits**	Based on utility benefits associated with Home Comfort program. Calculation of utility benefits based on 13% increase in Home Comfort program.	$0.28	
3	**Added O&M**	Includes other utility costs associated with Home Comfort program, loan originator costs, and inspection costs.		$3.75

#	Value Stream	Calculation Methodology	Benefits (NPV, $M)	Costs (NPV, $M)
4	**IT Infrastructure Costs (Capital)**	Includes IT integration, overhead, and 25% risk and contingency.		$1.04
5	**Program Administration Costs**	Includes advertising and marketing costs associated with On-Bill Financing. Includes contractor costs for third-party support services and cost for incremental labor.		$0.85
6	**Participant DER Cost**	Accounts for cost incurred by participant for increased participation in Home Comfort program. Calculation based on 13% increase in participation.		$3.43
	Total Benefits		**$4.12**	
	Total Costs			**$9.06**
	SCT Ratio		**0.45**	

3.4 Cost-Effectiveness at Scale

As stated above, PSEG Long Island will evaluate as part of the On-Bill Financing Pilot the hypothesis that added flexibility between up-front rebates and financing can increase customer participation in utility clean energy programs. For the On-Bill Financing Pilot, this will be tested specifically with the Home Comfort Program in focus. If the hypothesis is proven, PSEG Long Island intends to roll out the On-Bill Financing offering for a longer duration than the two years the pilot will be offered, and to a wider customer population.

Even though the SCT benefit-to-cost ratio for the On-Bill Financing Pilot is below 1.0, PSEG Long Island believes that when extended beyond its initial two-year duration and offered at scale, On-Bill Financing can be cost-effective for its customers and society at large. Two important parameters that impact the BCA for offering are the number of loans that are given (customer participation), and the underlying economics of the programs that On-Bill Financing is supporting (see Table 3-3, and following subsections).

Table 3-3 SCT Benefit-to-Cost Ratio for Different BCA Assumptions

Category	Scenario 1 (Proposed 2-year pilot)	Scenario 2 (Extend to 2025)	Scenario 3 (Extend to 2025, improved program economics)[2]
Loan Capital Available	$10 million	$25 million	$25 million
Duration	2 years	5 years	5 years
Estimated Number of Loans (total)	1,000	2,500	2,500

[2] The improvement in the SCT B/C ratio of the supported programs in Scenario 3 could be the result of improved economics for Heat Pumps in the near-term, or the addition of other products and services that have a combined B/C ratio of 1.75. In Scenarios 2 and 3, it is also assumed that the loan origination costs reduce by 50% due to the maturity of the offering.

Category	Scenario 1 (Proposed 2-year pilot)	Scenario 2 (Extend to 2025)	Scenario 3 (Extend to 2025, improved program economics)[2]
SCT Benefit-to-Cost Ratio of Supported Programs	0.75	0.75	1.75
On-Bill Financing SCT Benefit-to-Cost Ratio	0.45	0.53	1.04

Number of Loans and Customer Participation

The On-Bill Financing Pilot will make available $10 million in loan capital, which are expected to fund approximately 1,000 customer loans between 2021 and 2022. These were the assumptions that were used in the BCA for the pilot (see section 3.3). PSEG Long Island expects that the overall net benefits of the offering will increase if On-Bill Financing is extended after the pilot is completed in 2022, since the costs that have been incurred as part of the pilot to set up the IT infrastructure are one-off and will not scale with customer participation.

To illustrate this point, PSEG Long Island estimated the benefits and the costs for On-Bill Financing if it is assumed that the offering is extended to 2025, with $25 million available in loan capital – thus financing up to 2,500 heat pump loans. The results of the analysis are shown in Table 3-3 above.

Economics of Utility Programs Supported by On-Bill Financing

The BCA for the On-Bill Financing Pilot is based on the expected costs and benefits of customer participation in the Home Comfort program (i.e., adoption of heat pumps), as well as incremental costs associated with the setup of the On-Bill Financing IT platform and the costs of loan origination and servicing.

With the economics for heat pumps in New York currently not favorable under all customer adoption scenarios, it is not surprising that the BCA for On-Bill Financing is also not as favorable. However, it is realistic to expect that the cost effectiveness of heat pumps and programs supporting heat pump adoption will improve over time as the share of clean energy on the electric grid increases. This is also true for other clean energy products and services that may be added to On-Bill Financing in the future, after the completion of the initial two-year pilot.

As illustrated in Table 3-3 above, supporting programs with an average B/C ratio of 1.75 with a possible extension to 2025 will result in a benefit-to-cost ratio of over 1.0 for On-Bill Financing. It should be noted that the benefit-to-cost ratio for the SCT of the overall portfolio of EEDR programs offered by PSEG Long Island in 2021 is 1.80 (see section A.1.4 of the 2020 Utility 2.0 Plan), therefore PSEG Long Island considers that a ratio of 1.75 for the supported programs in the future is realistic.