2020 Budget

December 18, 2019

LIPA
Long Island Power Authority

2020 BUDGET BY THE NUMBERS

2020 Operating Budget ($ thousands)

Operating Revenues	3,676,860
Grant & Other Income	77,091
Total Revenues and Income	**3,753,951**
Power Supply Costs	1,624,678
Delivery Costs	752,520
PILOTs, Taxes & Fees	554,716
Interest Payments	377,089
Debt Reduction & OPEB	444,948
Operating Budget	**3,753,951**
Fixed Obligation Coverage	
LIPA Debt Plus Leases	1.35x
LIPA & UDSA Debt Plus Leases	1.24x

Note: Operating Budget shown based on revenue requirements. Taxes on power supply have been reclassified to PILOTs, Taxes and Fees

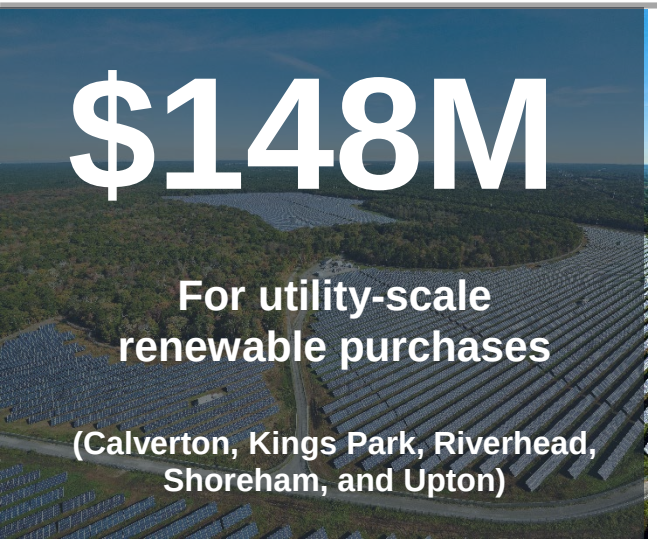
2020 Capital Budget ($ thousands)

Capital Projects	724,698
FEMA & PSEG Long Island Storm Hardening	95,665
Capital Budget	**820,363**
Funding from Operating Budget	205,928
FEMA Grant	52,799
Debt Issued to Fund Projects	561,636
Funding Sources	**820,363**
Percent of Capital Projects Funded from Debt	
Including FEMA Projects	68%
Excluding FEMA Projects	73%

Long Island Power Authority

**The final 2020 Budget includes one change from the proposed 2020 Budget presented in November. There was a correction to the calculation of 2020 debt service costs resulting in a decrease in debt service and coverage of $6.3 million. This change resulted in a reduction to the projected average residential customer bill from $155.37 to $155.07 for 2020.*

RECORD FUNDING FOR CLEAN ENERGY



$148M

For utility-scale renewable purchases

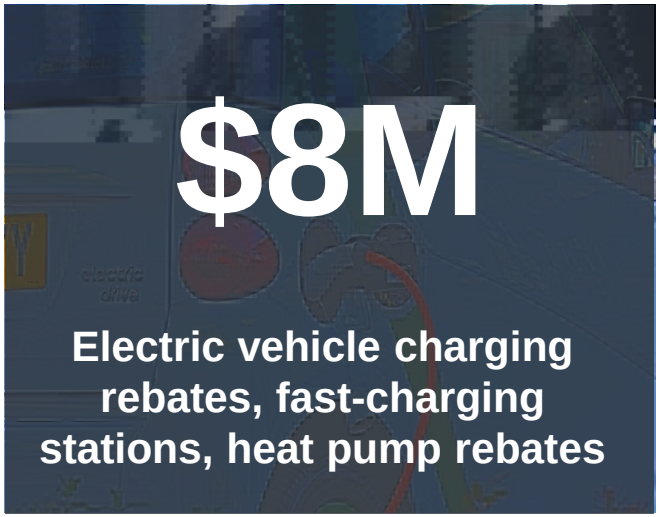
(Calverton, Kings Park, Riverhead, Shoreham, and Upton)

$89M

For energy efficiency and distributed energy programs

$41M

Rooftop Solar and Distributed Energy



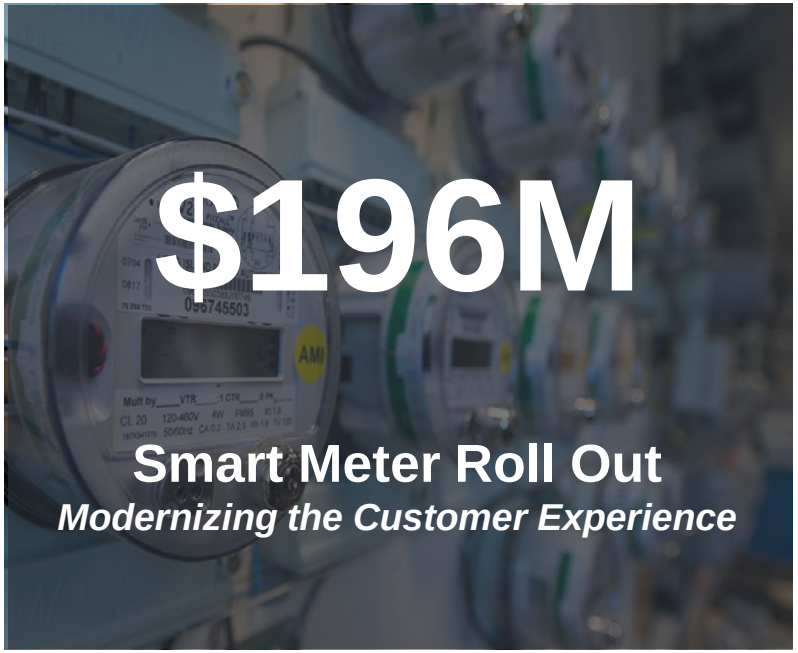
$8M

Electric vehicle charging rebates, fast-charging stations, heat pump rebates

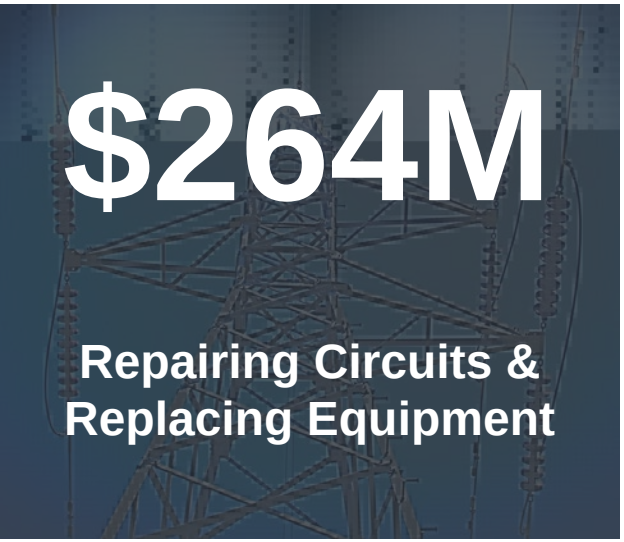
$5M

New LED Lighting

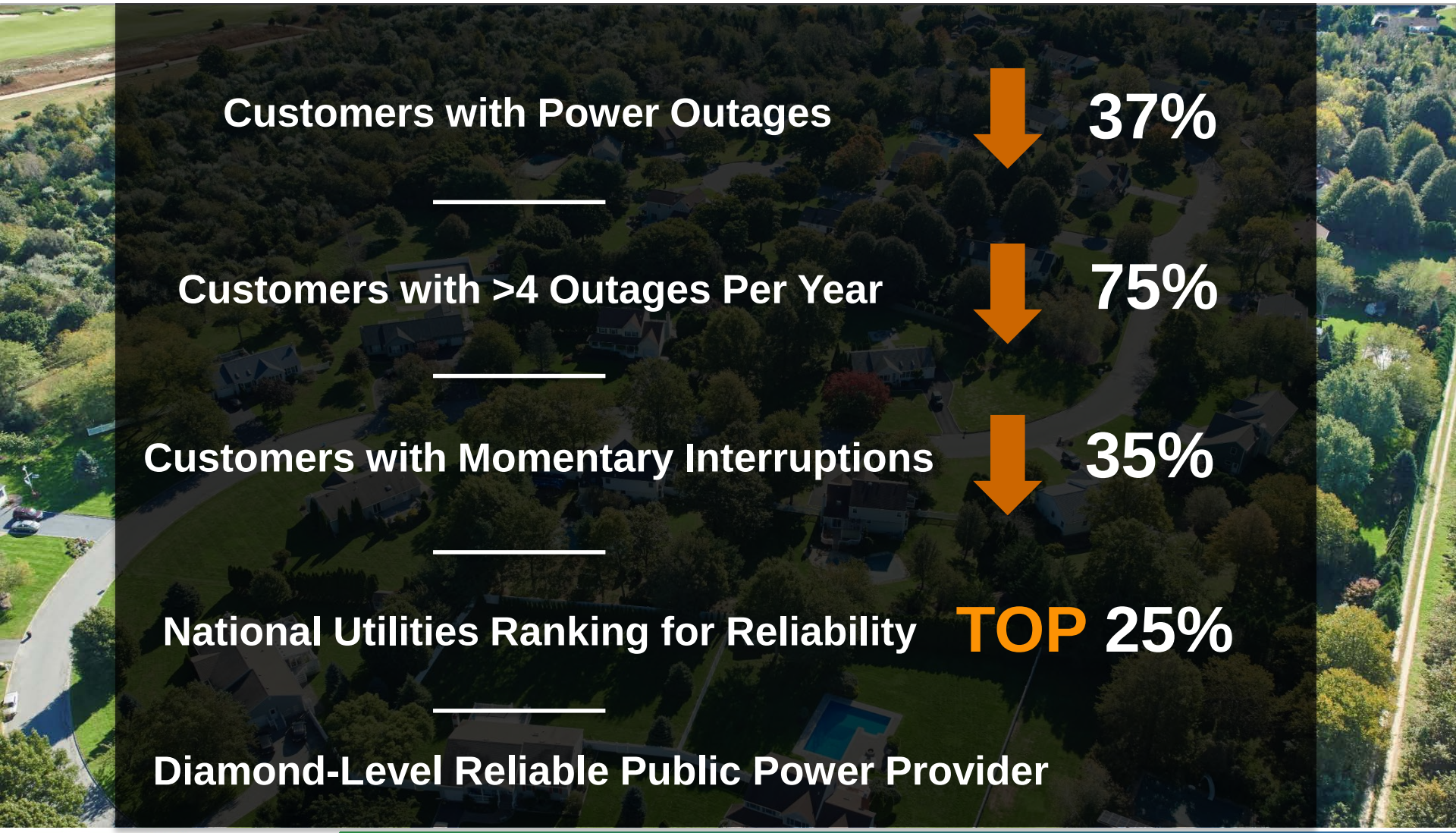
2020 BUDGET ENHANCES CUSTOMER SERVICE



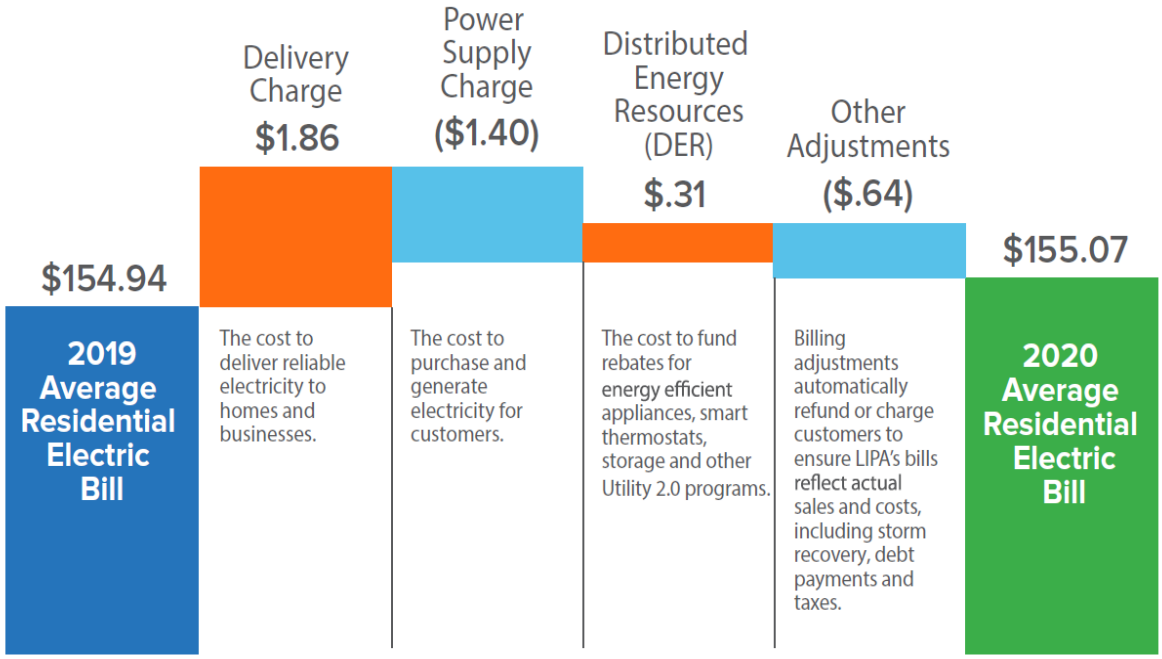
2020 BUDGET BOOSTS RELIABILITY

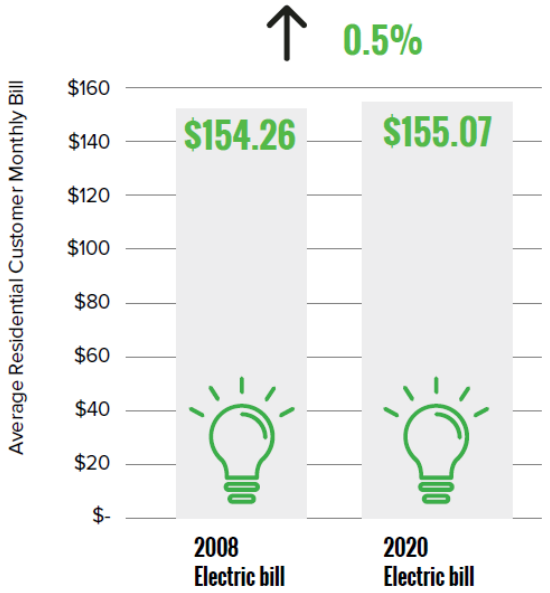


CUSTOMERS SEE THE BENEFITS OF $3.4 BILLION RELIABILITY INVESTMENT SINCE 2016



2020 BILLS TO REMAIN FLAT





2020 BUDGET MAINTAINS FISCAL SUSTAINABILITY

	2013 Ratings (Outlook)	2019 Ratings (Outlook)
Moody's Investors Service	**Baa1 (Negative)**	**A2 (Stable)**
Standard and Poor's	**A- (Negative)**	**A (Stable)**
Fitch Ratings	**A- (Negative)**	**A (Stable)**

- LIPA has achieved four credit rating upgrades since 2013
- Operating Budget targets 1.35x fixed obligation coverage*
- Capital Budget temporarily exceeds Board's 64% borrowing target due to two sizable projects: Western Nassau Transmission ($175 million) and Smart Meters ($242 million)

Long Island Power Authority

** 1.35x coverage provides the same cash flow as prior year's 1.45x coverage – reflects new GASB Statement No. 87 – lease accounting; see budget pages 34-37 for more detail*

PUBLIC COMMENTS

- ✓ Public comment sessions held on 11/12 in Suffolk County and 11/13 in Nassau County.
- ✓ Written comments were also accepted.
- ✓ Comments were generally supportive (budget memo has comments and staff replies).

Questions?

BOARD AGENDA SUMMARY SHEET

Committee or Board:	**Date:**	**Board Meeting Date:**
Finance and Audit	December 13, 2019	December 18, 2019

***For All Committee Voting Items*:**

Title of Agenda Item: Recommendation to Approve the Authority's 2020 Budget and Amendment to the 2019 Budget

Consent Agenda: ☐Yes ☒No **Accompanying Presentation:** ☒Yes ☐No

LIPA Presenter: Kenneth Kane **PSEG Long Island Presenter:** N/A

***For Finance Approval Items Only*:**

Budget ☒; **Plan of Finance** ☐; **Tariff Changes** ☐; **Other** ☐ (describe below)

Requested Action:	The Committee is requested to adopt a Resolution recommending: (i) approval the proposed 2020 Operating and Capital Budgets which sets forth the revenue, grant, other income, and expenditure forecasts for the year ending December 31, 2020, and (ii) amendment to the 2019 Operating and Capital Budget.
Summary: **(include proposed amendments to Board Policies, if applicable)**	The proposed 2020 Budget totals $4.574 billion, including an Operating Budget of $3.754 billion and a Capital Budget of $820.0 million. The proposed 2020 Operating Budget funds delivery and power supply costs, taxes and debt service. The Capital Budget funds long-life infrastructure investments such as transmission, distribution, substations, poles and wires. In addition, the Operating and Capital Budgets fund investments in various information technology projects, services and commodities needed to support system operations. PSEG Long Island's 2019 approved Operating Budget is being reduced by $12.6 million to account for the carryover of unused funds related to Utility 2.0 Plan initiatives from 2019 to 2020. PSEG Long Island is reducing its approved 2019 Capital Budget by $56.9 million. This reflects the carryover of $52.3 million in Capital projects from 2019 to 2020.

FOR CONSIDERATION
December 18, 2019

TO: The Finance and Audit Committee of the Board of Trustees

FROM: Thomas Falcone

SUBJECT: Recommendation for Approval of the Authority's 2020 Budget and Amendment of the 2019 Budget

Requested Action

The Finance and Audit Committee (the "Committee") of the Board of Trustees of the Long Island Power Authority (the "Board") is requested to adopt a Resolution recommending: (i) approval of the proposed 2020 Operating and Capital Budgets (the "Budget") which sets forth the revenue, grant, other income, and expenditure forecasts for the year ending December 31, 2020, and (ii) amendment of the 2019 Operating and Capital Budget, as described below and specified in **Exhibit "A**".

Background on 2020 Operating and Capital Budgets

The proposed 2020 Budget totals $4.574 billion, including an Operating Budget of $3.754 billion and a Capital Budget of $820.0 million. The proposed 2020 Operating Budget funds delivery and power supply costs, taxes and debt service. The Capital Budget funds long-life infrastructure investments such as transmission, distribution, substations, poles and wires. In addition, the Operating and Capital Budgets fund investments in various information technology projects, services and commodities needed to support system operations.

The proposed 2020 Budget is consistent with the Board's Policy on Debt and Access to the Credit Markets (the "Financial Policy"), as amended, which seeks to reduce the Authority's borrowing and interest costs and maintain the Authority's credit ratings at a minimum of A2/A/A. The 2020 Budget achieves a fixed obligation coverage ratio of 1.35x, after reflecting the new definition of leases implemented by the Governmental Accounting Standard Board ("GASB") in Statement No. 87 — Leases.

For 2020, staff projects LIPA will fund 68% of the $820.0 million Capital Budget from debt issues, inclusive of FEMA projects. The Board's Financial Policy, as amended, calls for generating sufficient cash flow from revenues to maintain the issuance of new debt below 64% of capital spending, as measured over a rolling three-year average. Due to two large projects scheduled in 2020, the percent of capital funded from debt will be above LIPA's target for the year. Staff will monitor this ratio and recommend appropriate adjustments to either increase cash flow or reduce capital spending if LIPA remains above the target with future Budgets. No change is recommended at this time.

The monthly electric bill for the average residential customer is projected to be $155.07 in 2020, which is $0.13 per month or 0.08% above the 2019 budgeted level of $154.94. The primary drivers

of the increase include higher infrastructure investments, storm restoration costs, operating expenses due to inflation, and energy efficiency investments, partially offset by lower Power Supply costs and credits resulting from the Revenue Decoupling Mechanism. The higher investments are described in greater detail in the Budget.

Changes from the Proposed Budget

The 2020 Budget presented herein includes a correction to the Proposed Budget presented to the Trustees on November 13, 2019. A correction to the calculation of the 2020 debt service costs resulted in a decrease in the 2020 budget for LIPA Debt Service and Coverage of $6.3 million from $509.3 million to $503.0 million. This change resulted in a reduction to the projected average residential customer bill from $155.37 to $155.07 for 2020.

Annual Budget and Rate Updates

Under the New York Public Authorities Law as amended by the LIPA Reform Act (P.A.L. § 1020 et seq.), the Authority and PSEG Long Island are required to submit a proposed rate increase to the New York Department of Public Service (the "DPS") for review if it would increase the rates and charges by an amount that would increase the Authority's annual revenues by more than 2.5% of total annual revenues. The proposed budget and associated rate adjustments would increase the Authority's 2020 revenues by less than this threshold. The delivery rate adjustments will be effectuated through a pro rata increase to all Service Classifications and rate components.

Allocation of Intra-Year Power Supply Capacity Costs

In December 2015, the Trustees approved a regulatory asset to allow a greater share of fixed generation capacity costs to be recovered through the Power Supply Charge ("PSC") during the summer months, consistent with when the generation capacity is needed. Staff believes this accurately reflects cost causation in electric rates. The regulatory asset specified that the schedule of deferrals and amortization in future years would be presented in future budgets. There is no net impact on an annual basis from the reallocation of these costs within the year, with allocations by month ranging from plus $30.25 million to minus $27.0 million, as shown in the table below.

	Reallocation of the Proposed Fixed Capacity Costs in the Power Supply Charge
January	($19,000,000)
February	($27,000,000)
March	($13,500,000)
April	($12,500,000)
May	$2,000,000
June	$9,750,000
July	$28,000,000
August	$30,250,000
September	$17,000,000
October	($3,000,000)

November	($500,000)
December	($11,500,000)
Annual	$0 Million

Clean Energy Compliance Fund

The Board's Policy on Resource Planning, Energy Efficiency and Renewable Energy, directs LIPA to comply with the renewable energy targets established by New York's Clean Energy Standard ("CES"), including acquisition of Renewable Energy Credits ("RECs"), based on LIPA's share of the State's electrical load. Through 2019, renewable energy projects under contract to LIPA supplied sufficient RECs to meet LIPA's share of state-wide targets.

PSEG Long Island projects that self-supplied RECs from projects directly under contract to LIPA are likely to be insufficient to meet LIPA's share of state-wide targets in 2020 due to delays or cancellations of certain clean energy projects previously awarded by the Authority, as well as uncertainty as to whether certain technologies (e.g. fuel cells) can comply with the requirements of the State's newly adopted Climate Leadership and Community Protection Act.

New York's investor-owned utilities and load-serving entities ("LSEs") primarily purchase RECs from the New York State Energy Research and Development Authority ("NYSERDA"). To the extent that NYSERDA has insufficient RECs available to meet LSE demand, LSEs make an "Alternative Compliance Payment" as prescribed in the CES Order.

LIPA staff proposes to purchase NYSERDA-procured RECs and Offshore Wind RECs ("O-RECs") as an additional means to meet state-wide CES targets. Additionally, in any given year, to the extent that LIPA has insufficient self-supplied RECs and NYSERDA also has insufficient RECs available to meet LSE demand, LIPA staff proposes to establish a dedicated account (the "Clean Energy Compliance Fund") to fund renewable energy projects or future REC purchases through LIPA procurements or NYSERDA, in a manner consistent with the NYSERDA Alternative Compliance Payment process prescribed in the CES Order. Such deposits into the Clean Energy Compliance Fund will be collected in rates through the Power Supply Charge and deferred based on actual renewable production and customer load. The amount deposited to the Clean Energy Compliance Fund will be sufficient to cover actual and projected shortfalls in RECs in any given year.

The proposed 2020 Budget includes an estimate of $5.0 million to be deposited to the Clean Energy Compliance Fund, in accordance with regulatory accounting, for future purchases of RECs from LIPA procurements or NYSERDA, if available[1] or to fund other projects to facilitate the State's climate goals. The amount collected and recorded will vary according to the process prescribed in the CES Order.

2020 Utility 2.0 Plan

[1] Such funds may also be used for purchase of similar renewable attributes, such as offshore wind-RECs from offshore wind generation.

The 2020 Proposed Budget includes $67.2 million in Capital funding and $27.2 million in Operating funding for initiatives proposed in the 2020 update to PSEG Long Island's Utility 2.0 Plan (including the carryover as discussed below). The proposed funding of the Utility 2.0 Plan is consistent with the DPS recommendation (attached as **Exhibit "C"**). The Utility 2.0 Plan provides for continuation of the previously approved full deployment of Smart Meters, expanded customer outreach and information initiatives to increase customer satisfaction and awareness of programs to reduce energy usage, an Electric School Bus program with vehicle-to-grid capabilities, an on-bill financing pilot, a flexible payment program pilot, a heat pump controls pilot, and a hosting capacity mapping program.

Pursuant to a DPS recommendation, PSEG Long Island tracks all Utility 2.0 project cost and reconciles these the costs to funding levels on an annual basis. Further, DPS recommends that budget variances be addressed exclusively as part of future Utility 2.0 Plan filings. LIPA will follow regulatory accounting treatment to implement the DPS tracking recommendation and to properly align revenue recognition with the timing of expenses.

2020 Energy Efficiency Plan

The 2020 Proposed Budget includes $88.8 million in Operating funding for initiatives proposed in PSEG Long Island's 2020 Energy Efficiency and Renewable Plan. The proposed funding of the Energy Efficiency and Renewable Plan is consistent with the DPS recommendation (attached as **Exhibit "D"**).

Information Technology

LIPA's proposed Operating and Capital Budgets include $11.9 million for Information Technology ("IT") professional services and commodities that are expected to be procured using contracts negotiated by the New York State Office of the General Services ("NYS-OGS") and Federal Supply Schedules (General Service Administration or "GSA").

IT professional services include management support and expert assistance outside the scope of service for LIPA's current IT consulting services contracts. These services would be billed on a fixed hourly labor rate or at a fixed-cost, at or below the rates negotiated by the NYS-OGS or the GSA, as applicable, on an as-needed basis to support various IT system implementation initiatives as well as operational and oversight support functions. Over the next three years, such anticipated professional services include system design, architecture and integration in order to support LIPA IT infrastructure upgrade, data analytics, data warehouse, enterprise document and record management, intranet, website, time and attendance, IT helpdesk, inventory management, enterprise resource planning system and cybersecurity initiatives, IT strategic planning, business process improvement initiatives related to various IT systems implementations, quality assurance of various IT initiatives within LIPA and independent verification and validation of IT system implementations managed by PSEG Long Island.

Commodities to be procured include hardware, software and software licenses, application and cloud subscription, cybersecurity and systems monitoring and management services, systems and data center hosting, telephony, telecom, audiovisual support and services on an as-needed basis in the ordinary course of business and continued maintenance of the existing hardware and software.

Amendment of the 2019 Operating and Capital Budgets

PSEG Long Island's 2019 approved Operating Budget is being reduced by $12.6 million to account for the carryover of unused funds related to Utility 2.0 Plan initiatives from 2019 to 2020. The carryover aligns funding with the timing of when costs will be incurred for Smart Meter support initiatives, Electric Vehicle incentives and the Grid Storage Program.

PSEG Long Island is reducing its approved 2019 Capital Budget by $56.9 million. This reflects the carryover of $52.3 million in Capital projects from 2019 to 2020, including $37.6 million in Load Growth projects such as the Ruland Road New 69 kV Circuit and various substation upgrade projects. In addition, 2019 Utility 2.0 Plan capital funding is reduced by $4.6 million to reflect carryover projects of $9.1 million from 2019 to 2020 offset by accelerated spending of $4.5 million as a result of the accelerated Smart Meter deployment.

Public Comment on the 2020 Operating and Capital Budgets

The Authority held two public comment sessions on the 2020 Budget, one in Suffolk County, held on November 12, 2019, and one in Nassau County held on November 13, 2019. One public comment was received in Suffolk objecting to the Authority's community solar program. One public comment was received at the Nassau public hearing objecting to the construction of the Jones Beach educational center. The Authority also accepted written and emailed comments. No comments were received from individual customers.

The DPS received the Authority's Annual Budget and Rate Update filing and Utility 2.0 filing as described above.

Public Comment on the Utility 2.0 Plan

Ten organizations submitted comments on the Utility 2.0 Plan to the DPS. The comments are summarized in the DPS Utility 2.0 Recommendation (Exhibit C) and are available in full on the Department's Document Matter Management (DMM) website under Matter No. 14-01299. In general, the comments were supportive of the initiatives proposed in the Utility 2.0 Plan. Several specific recommendations are addressed below:

- **Comment**: New York City supports the EV Bus V2G pilot and commented that PSEG Long Island should explore whether the project would be more cost-effective if located outside of Suffolk County, such as in the Rockaways. New York City also states that at any site the project is undertaken, PSEG Long Island must ensure that the equipment is made resilient to potential flood risks. The City urges PSEG Long Island to share insights gained form the bus project with other stakeholders.
- **Response**: PSEG Long Island will take these considerations into account as it undergoes site identification for the summer V2G use of the buses. Reporting on insights, experiences, and costs is encapsulated within PSEG Long Island's Utility 2.0 reporting process.

- **Comment**: New York City commented that PSEG Long Island and LIPA undertake and perform a comprehensive Climate Change Vulnerability Study.
- **Response**: PSEG Long Island and LIPA periodically undergo storm vulnerability

assessments, review the results of climate change vulnerability assessments conducted by regional and local planning councils, and will continue to do so on a regular basis. We will review a similar Con Edison study and consider proposing a study in next year's Utility 2.0 Plan or a separate venue.

- **Comment**: The New York Power Authority ("NYPA") supported the proposal to develop DER hosting capacity maps and commented that PSEG Long Island should consider developing more advanced hosting capacity maps, in particular maps that provide information to potential developers of electric vehicle fast charging stations. NYPA further commented that PSEG Long Island should prioritize the deployment of AMI meters to public entities and streamline the availability of AMI data to such customers.
- **Response**: As proposed in the Utility 2.0 Plan, PSEG Long Island's hosting capacity maps will have capabilities that are consistent with the hosting capacity maps being developed by the rest of the State's utilities. In next year's Utility 2.0 Plan, PSEG Long Island will propose further advancements to its hosting capacity maps as needed, including capabilities specific to electric vehicle fast charging. Regarding AMI, PSEG Long Island has worked with various public entities to prioritize deployment of AMI meters and improve customers' ease of access to data generated by AMI meters and will welcome the opportunity to work with NYPA to do the same.

- **Comment**: New York Best commended PSEG Long Island for its work to deploy the first in the State behind-the-meter battery storage program for residential and commercial customers. NY Best commented that the Utility 2.0 Plan should include more energy storage programs targeted at other market segments, such as bulk energy storage and peaker replacements.
- **Response**: LIPA and PSEG Long Island support New York's Energy Storage Roadmap. PSEG Long Island is already conducting additional studies needed to target future energy storage programs including those targeting the bulk storage market and T&D deferral opportunities. Those programs will be proposed either in future Utility 2.0 Plans or via separate solicitations.

Public Comment on the 2020 Energy Efficiency Plan

Thirteen public comments were received by the DPS on the 2020 Energy Efficiency and Renewables Plan. The comments are summarized in the DPS Energy Efficiency Recommendation (Exhibit D) and are available in full on the Department's Document Matter Management (DMM) website under Matter No. 19-01859. The comments are presented by theme below together with staff's responses.

- **Comment**: Several commenters support allocating more funding to low and moderate-income customers in light of the Climate Leadership and Community Protection Act's ("CLCPA") mandate that 40% of the benefits of the State's clean energy transition should be dedicated to disadvantaged populations.
- **Response**: LIPA and PSEG Long Island agree that the benefits of Long Island's clean energy programs must be shared by all. To that end, LIPA and PSEG Long Island have implemented low and moderate-income bill discounts designed with the goal that no household be compelled to spend more than 6% of its household income on energy bills. In addition, the

2020 Energy Efficiency Plan proposed that low and moderate-income customers who install heat pumps be eligible to receive rebates that are 50% higher than the standard rebates available. The 2020 Budget further announced a new Solar Communities program, a 20-megawatt shared solar development that will be dedicated exclusively to benefiting low and moderate-income customers. LIPA and PSEG Long Island will continue to explore new ways to ensure that low and moderate-income customers share in the benefits of its energy efficiency and renewable energy.

- **Comment**: Several commenters urged LIPA and PSEG Long Island to meet or exceed Long Island's share of the statewide energy efficiency targets announced in the CLCPA. Some commenters questioned whether PSEG Long Island would be able to achieve annual energy efficiency savings of 2% per year (measured in megawatt-hour savings as a percentage of load), as targeted by the rest of the State's utilities.
- **Response**: The LIPA Board of Trustees has directed LIPA to meet Long Island's share of statewide clean energy goals, including those of the CLCPA. LIPA and PSEG Long Island have aggressively pursued energy efficiency for many years. In fact, Long Island has *exceeded* the annual energy efficiency savings of the rest of the State's utilities in every year since the current Clean Energy Standard targets were developed. Because Long Island is further along than the rest of the State in reducing its electric load through energy efficiency, the opportunities for further cost-effective energy efficiency savings may differ from those available in other areas of the State. Nevertheless, LIPA and PSEG Long Island remain committed to aggressively pursuing all cost-effective opportunities for energy efficiency savings. LIPA and PSEG Long Island will work together with NYSERDA and the DPS to ensure that we are meeting or exceeding our share of the policy goals set forth in New Efficiency: New York. In addition, we will advocate for a measurement methodology that emphasizes overall carbon reduction through energy efficiency and beneficial electrification, as we believe that overall progress toward the goal of carbon reduction is the most important success metric for a utility's energy efficiency and beneficial electrification initiatives.

- **Comment**: Several commenters requested that more funding be allocated toward incentivizing distributed energy resources and asserted that current programs and incentives are insufficient to meet Long Island's share of New York's 6 gigawatt distributed solar goal.
- **Response**: LIPA and PSEG Long Island are committed to meeting Long Island's share of the State's 6 gigawatt distributed solar goal by 2025. Allocated by load share, this equates to a goal of 750 megawatts of distributed solar on Long Island. Notably, LIPA and PSEG Long Island have made more progress toward this goal than the rest of the State and are on track to exceed the goal by 2025. Long Island currently has 563 megawatts of installed distributed solar, putting it 75% of the way to achieving its share of the 2025 goal. By comparison, the rest of the state is 25% of the way to achieving its share. As noted in the proposed 2020 Budget (page 18), LIPA currently projects to spend $41 million in 2020 alone on distributed solar incentives through its Net Energy Metering and Value of Distributed Energy Resources programs, an amount which is forecasted to increase significantly in future years. This investment is separate from and in addition to the $88.8 million 2020 Energy Efficiency Plan and the $147.6 million investment in utility scale renewable power. LIPA and PSEG Long Island routinely monitor the growth of distributed solar in the service territory and are actively studying what if any additional incentives may be needed to meet or exceed Long Island's share of the State's distributed solar goals. We will work with interested stakeholders to

ensure ample opportunities exist to provide input throughout the process.

Recommendation

Based upon the foregoing, I recommend approval of the above requested action by adoption of a resolution in the form of the draft resolution attached hereto.

Attachments

Exhibit "A" Resolution
Exhibit "B" Proposed 2020 Operating and Capital Budgets
Exhibit "C" DPS Utility 2.0 Recommendation
Exhibit "D" DPS Energy Efficiency Plan Recommendation
Exhibit "E" Tariff redline reflecting rate adjustments

Exhibit "A"

RECOMMENDATION FOR APPROVAL OF THE 2020 OPERATING AND CAPITAL BUDGETS AND AMENDMENT OF THE 2019 BUDGETS

WHEREAS, the Long Island Power Authority ("Authority"), through its wholly owned subsidiary, LIPA, owns the electric transmission and distribution system serving the counties of Nassau and Suffolk and a small portion of the County of Queens known as the Rockaways; and

WHEREAS, the Board of Trustees (the "Board") is required to approve annual budgets for the operations of the Authority and for capital improvements; and

WHEREAS, the proposed 2020 budget incorporates Operating and Capital budgets for the operation and maintenance of the transmission and distribution system, customer services, business services and energy efficiency and renewable energy programs which are predicated on improving storm response and restoration, customer satisfaction, reliability and storm hardening; and

WHEREAS, under the New York Public Authorities Law as amended by the LIPA Reform Act (P.A.L. § 1020 et seq.), the Authority and PSEG Long Island are required to submit a proposed rate increase to the New York State Department of Public Service for review if it would increase the rates and charges by an amount that would increase the Authority's annual revenues by more than 2.5% of total annual revenues. The proposed budget and associated rate adjustments would increase the Authority's 2020 revenues by less than this threshold. Therefore, the proposed budget contains rate updates consistent with the Authority's Mission, Board Policies, and the LIPA Reform Act; and

WHEREAS, the Authority presented its proposed 2020 Operating and Capital Budgets to the Board of Trustees on November 13, 2019 and held two public comment sessions one on November 12, 2019 and one on November 13, 2019; and

WHEREAS, the memorandum accompanying this resolution includes a schedule of deferrals and amortization of certain generation capacity costs within the months of the year to affect the more accurate reflection of cost causation in electric rates within each month of the year; and

NOW, THEREFORE, BE IT RESOLVED, that consistent with the accompanying memorandum, the Finance and Audit Committee (the "Committee") of the Board of Trustees hereby recommends approval of the 2020 Operating and Capital Budgets and associated rate adjustments, which are attached hereto; and

BE IT FURTHER RESOLVED, that the Committee hereby recommends amendment to the Authority's 2019 Capital Budget to reduce expenditures by $56.9 million and defer these expenditures to 2020 and adjust the Utility 2.0 Plan funding in 2019 to reflect accelerated Smart Meter deployment; and

BE IT FURTHER RESOLVED, that the Committee hereby recommends amendment to the Authority's approved 2019 Operating Budget to reduce by $12.6 million to defer these expenditures associated with Utility 2.0 Plan initiatives to 2020; and

BE IT FURTHER RESOLVED, that the Committee hereby recommends the approval of the establishment of a regulatory accounting treatment to ensure a proper alignment of revenue and costs associated with the Utility 2.0 Plan initiatives; and

BE IT FURTHER RESOLVED, that the Committee hereby recommends the authorization of the Chief Executive Officer or his designee to purchase Renewable Energy Credits ("RECs") or Offshore Wind Renewable Energy Credits ("O-RECs") from the New York State Energy Research and Development Authority in amounts necessary to meet the Authority's share of New York's Clean Energy Standard, or any successor standard enacted pursuant to the Climate Leadership and Community Protection Act; and

BE IT FURTHER RESOLVED, that the Committee hereby recommends the collection in the Power Supply Charge amounts consistent with the NYSERDA Alternative Compliance Payment process for Renewable Energy Credits to be used to fund renewable energy projects or purchases of Renewable Energy Credits in future periods and account for such funds in the Clean Energy Compliance Fund; and

BE IT FURTHER RESOLVED, that the Committee hereby recommends that the Authority finance the requirements of the 2020 and 2021 Capital Budgets, as adjusted from time to time, through a combination of internally-generated funds and the issuance of tax-exempt or taxable debt of the Authority and authorizes the Chief Executive Officer or his designers to evidence such intent by appropriate certifications; and

BE IT FURTHER RESOLVED, that the Committee hereby recommends that the Chief Executive Officer and his designees be authorized to carry out all actions deemed necessary or convenient to implement this resolution.

Dated: December 18, 2019

Long Island Power Authority

Powering Long Island: Clean, Lean, and Customer First

LIPA
Long Island Power Authority

2020
BUDGET

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Chair, Oversight & REV

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Vice President of Policy,
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Administration

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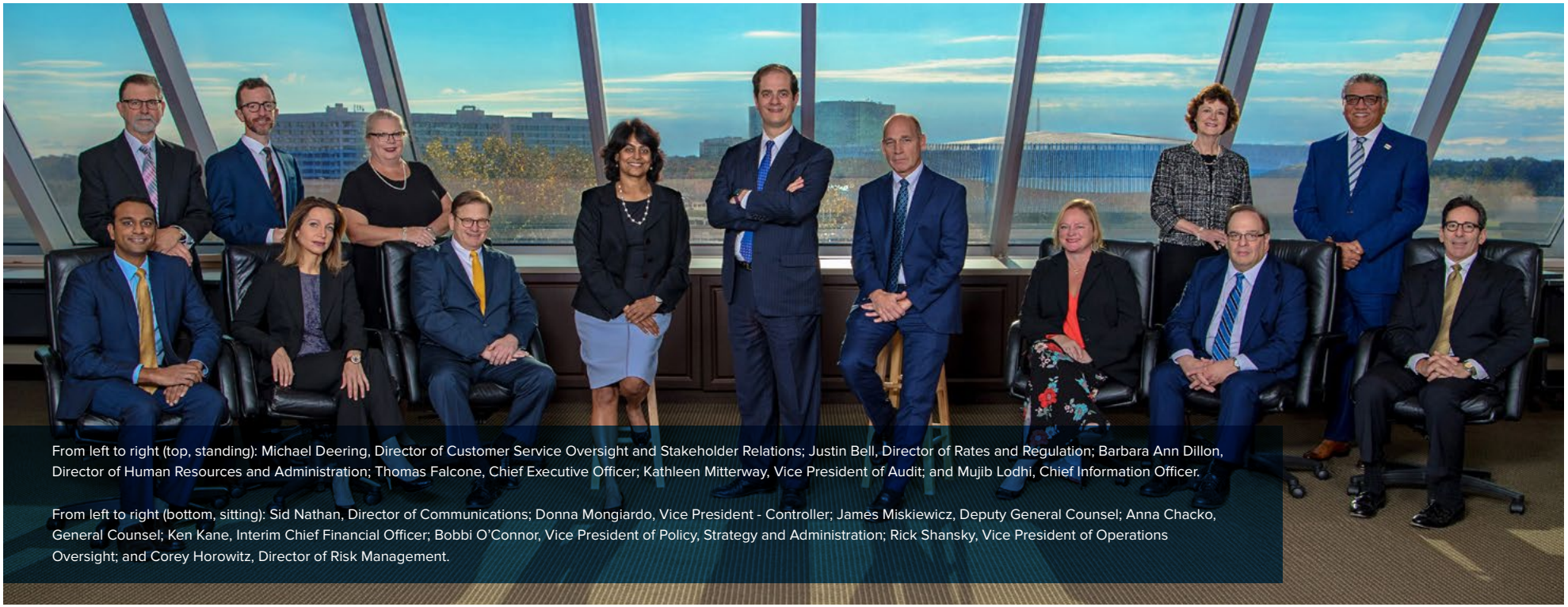
Kathleen Mitterway
Vice President of Audit

Mujib Lodhi
Chief Information Officer



From left to right (top, standing): Michael Deering, Director of Customer Service Oversight and Stakeholder Relations; Justin Bell, Director of Rates and Regulation; Barbara Ann Dillon, Director of Human Resources and Administration; Thomas Falcone, Chief Executive Officer; Kathleen Mitterway, Vice President of Audit; and Mujib Lodhi, Chief Information Officer.

From left to right (bottom, sitting): Sid Nathan, Director of Communications; Donna Mongiardo, Vice President - Controller; James Miskiewicz, Deputy General Counsel; Anna Chacko, General Counsel; Ken Kane, Interim Chief Financial Officer; Bobbi O'Connor, Vice President of Policy, Strategy and Administration; Rick Shansky, Vice President of Operations Oversight; and Corey Horowitz, Director of Risk Management.

Customers

Residential: 1,033,760
Commercial: 148,703

2019 Peak Demand

5,474 MW

Generating Capacity

5,762 MW

Energy Requirements

20,773,082 MWh

Transmission System

1,400 miles

Distribution System

9,000 miles overhead
5,000 miles underground
189,000 transformers

Substations

30 Transmission
152 Distribution

2020 Budget

Operating: $3,753,951,000
Capital: $820,363,000

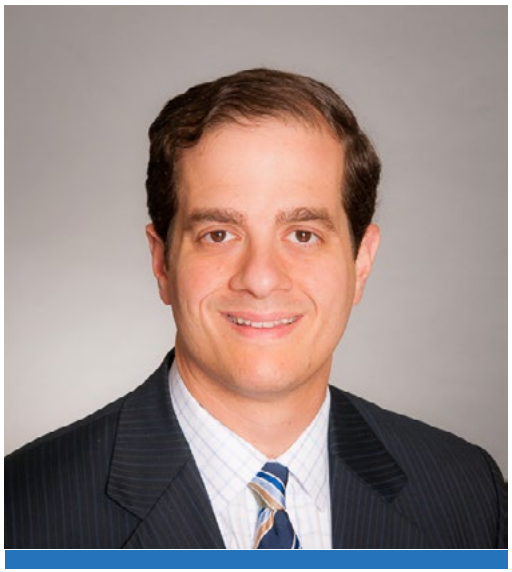
Table of Contents

Mission Statement

LIPA is a not-for-profit public utility with a mission to enable clean, reliable, and affordable electric service for our customers on Long Island and the Rockaways.

LIPA
Long Island Power Authority

Budget Message



THOMAS FALCONE
Chief Executive Officer

Dear Customer-Owners and Stakeholders,

Each year, LIPA and PSEG Long Island prepare an annual budget for the review and approval of the LIPA Board of Trustees. The Board sets high expectations for our performance, and those expectations guide our decisions during the budget process.

OUR VISION

An electric utility for Long Island that is focused on our customers' needs, providing clean, reliable energy, at the least possible cost...

Clean, Lean, and Customer First

The Board's priorities are contained in a set of policies available on LIPA's website.[1] They include:

- To achieve **outstanding customer satisfaction**, measured by a third party, that is among the top 25 percent of electric utilities in the country by 2022;
- To maintain a **highly reliable electric grid** – within the top 25 percent of peer electric utilities – equivalent to fewer than one power outage a year per customer or 99.99 percent reliability;
- To meet Long Island's share of **New York's aggressive climate goals**, including 70 percent renewable energy by 2030 and a carbon-free electric grid by 2040; and
- To **provide electric service at the lowest possible cost**, consistent with sound fiscal and operating practices, including rates that are comparable to or below our neighboring utilities in the New York metropolitan area.

These policies add up to an electric utility for Long Island that is focused on our customers' needs, providing clean, reliable energy at the least possible cost. **You could call the LIPA Board's vision for our organization "Clean, Lean, and Customer First."** We still have work to do to achieve that vision, but I would like to describe our progress to you and how this budget moves us toward our goal.

[1] *For the Board's policies, see www.lipower.org/mission.*

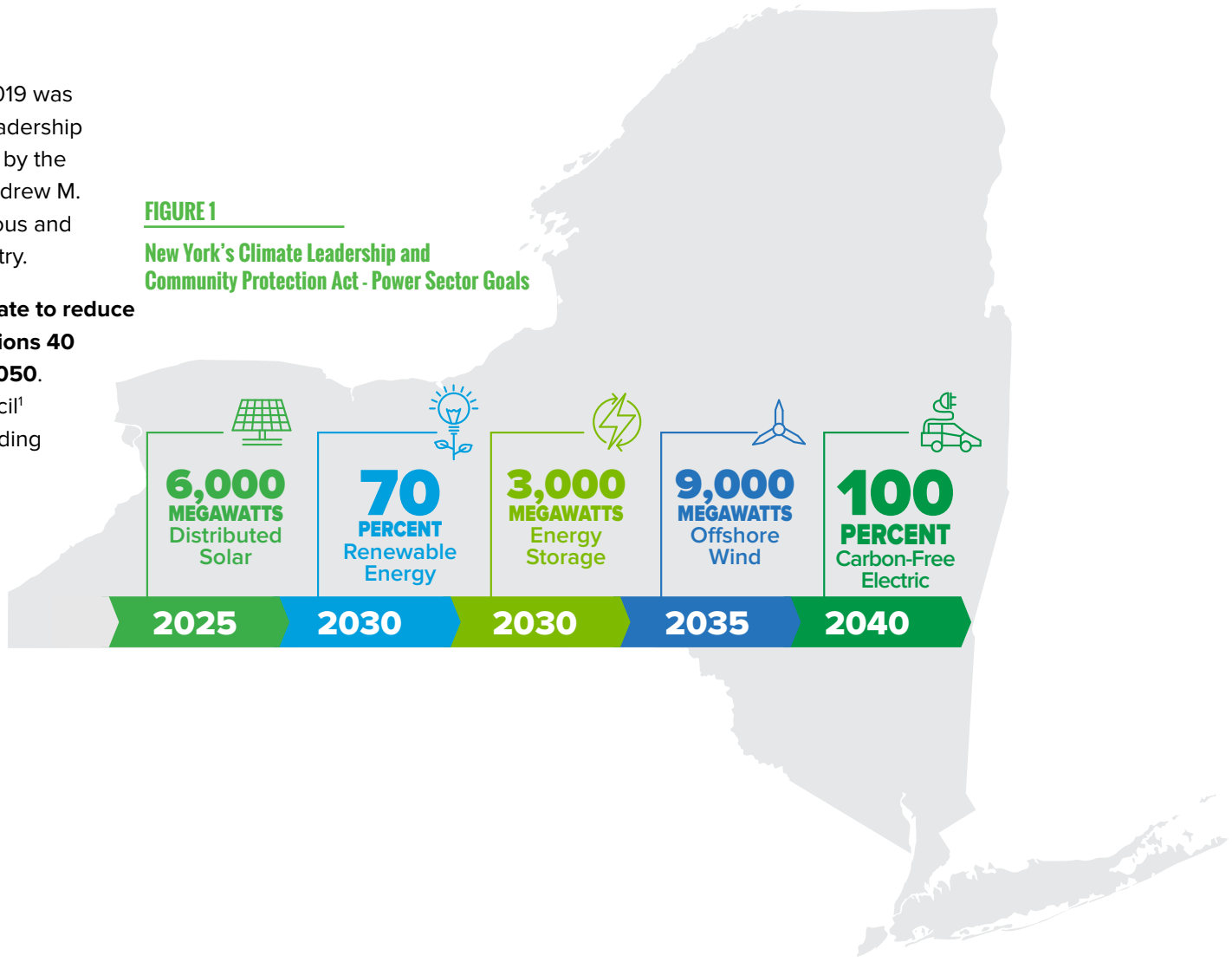
New York's Landmark Climate Act

The most important event for LIPA in 2019 was New York's climate act. The Climate Leadership and Community Protection Act, passed by the Legislature and signed by Governor Andrew M. Cuomo in July 2019, is the most ambitious and comprehensive climate law in the country.

New York's climate act requires the state to reduce economy-wide greenhouse gas emissions 40 percent by 2030 and 85 percent by 2050. The law creates a Climate Action Council[1] to craft a roadmap to these goals, including certain minimum targets for the electric power sector, as shown in Figure 1.

FIGURE 1

New York's Climate Leadership and Community Protection Act - Power Sector Goals



[1] *LIPA is represented on the Climate Action Council by its Chief Executive Officer.*

What New York's Climate Act Means for Long Island's Electric Grid

There are many possible paths to a decarbonized New York economy. Here are four data-driven trends on what it means for New York's electric grid:

- Trend #1: **Electricity Is the Clean Fuel** to Decarbonize New York's Economy
- Trend #2: **Electric Load Will Grow** Substantially Over Time
- Trend #3: **Beneficial Electrification Will Likely Pay for Itself** Through a Higher Load Factor
- Trend #4: **Offshore Wind Is an Abundant New Source of Clean Energy** for Long Island

We will discuss each of these trends in turn and what we are doing to plan for these scenarios.

TREND #1:

Electricity Is The Clean Fuel To Decarbonize New York's Economy

New York's Carbon Emissions by Sector

Let's start by looking at the sources of New York's carbon emissions. Figure 2 shows that **48 percent of New York's carbon emissions are from transportation, 34 percent from residential and commercial buildings, and 14 percent from the electric sector.**

Recent trends in each sector, shown in Figure 3, are informative. **Overall, the state's carbon emissions have declined by eight percent over the last ten years, which is twice the national rate – a real accomplishment. The electric sector has declined the most – down 36 percent**. The challenge will be in addressing the two largest sectors – transportation, up five percent, and residential buildings, down four percent.

FIGURE 2

New York's Carbon Emissions
Source: U.S. Energy Information Agency

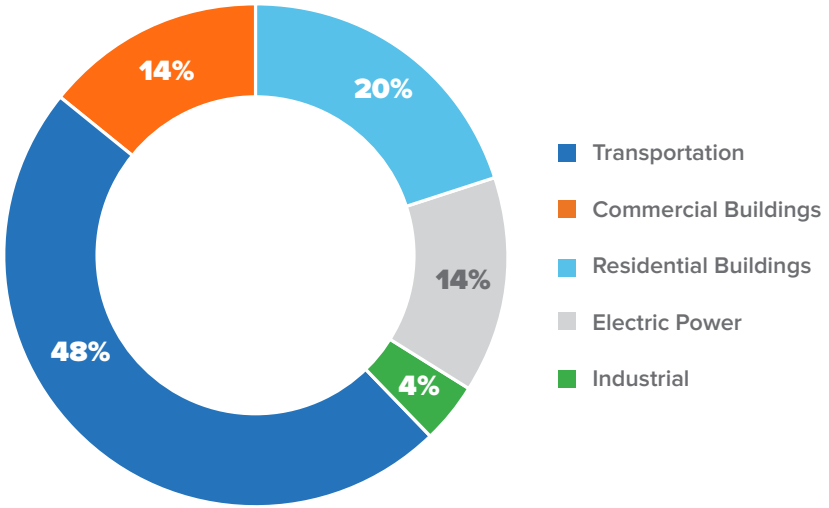


FIGURE 3

New York's Carbon Emissions Since 2009
U.S. Energy Information Agency, 2017 data, released October 23, 2019

	2017 C02 emissions Million metric tons	Change Since 2009
Transportation	74.7	+5%
Residential Buildings	31.3	-4%
Commercial Buildings	22.1	-12%
Electric Power	22.0	-36%
Industrial	7.6	-3%
Total New York Emissions	**156.7**	**-8%**

From these statistics we can state something – **decarbonizing New York's economy by 85 percent over the next 30 years will require new, carbon-friendly approaches to transporting people and goods, and to meeting the cooking and heating needs of homes and buildings**.

Decarbonization Will Require Electrification of Transportation and Buildings

Interestingly, the future carbon-free electric grid will play a large role in reducing carbon emissions in other sectors – by providing those new, attractive opportunities to decarbonize transportation and buildings. Not only is it possible to decarbonize transportation and buildings using electricity, studies show that the rapid pace of improvement in electric vehicle (EV) batteries and heat pumps make it desirable and cost-effective.

Electric Vehicles Are Right Around the Corner

EVs, including plug-in hybrids, are already the environmentally friendly choice for transporting people from place to place.[2] A joint study by the Electric Power Research Institute and the Natural Resources Defense Council found that using an EV in New York emits the same carbon as a car with fuel economy of 125 miles per gallon, roughly five times the average new car.[3] That's with today's grid and not the zero-carbon electric grid of 2040. Similarly, **a PSEG Long Island study found that every electrically fueled-mile on Long Island is 82 percent lower in carbon emissions than a gasoline-fueled mile, using today's grid.**[4]

Autmobile manufactures are rolling out dozens of new plug-in hybrid and EV models over the next several years, and with improving battery technology, **EVs are expected to reach parity prices with gasoline-powered cars by 2024.**[5] Forecasting consumer trends is a perilous task, but for all these reasons, Dr. Dieter Zetsche, the recently retired CEO of Mercedes-Benz, compared electric mobility to an upside-down ketchup bottle... when consumers decide to switch, a lot may come all at once.

> "Electric mobility is like with an upside-down ketchup bottle. You know that at some point something will come out. You don't know when, but once it comes, it really does. Then it's bad if you're not prepared.
>
> **— Dr. Dieter Zetsche,**
> recently retired
> CEO of Mercedes-Benz

[2] *Electrified mass transit, like the subway or Long Island Railroad, is even better.*
[3] *Environmental Assessment of a Full Electric Transportation Portfolio, September 2015.*
[4] *Electric Vehicles on Long Island, Costs and Benefits, Gabel Associates, July 2018.*
[5] *Outlook, Bloomberg New Energy Finance, 2018.*

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Heat Pumps Are Attractive for Long Island Consumers Today

Consumer awareness of EVs is high (think Tesla). By contrast, cold climate air-source heat pumps are a phenomenal technology that nobody in the northeast knows about (an opportunity for Elon Musk!). Over 12 million American households, about ten percent, use electric heat pumps, with most of those homes in the South.[6] **Increasingly efficient heat pump technology now makes air-source heat pumps attractive for Long Island's climate**, as shown in Figure 4. First, the most common question – what is a heat pump? Think of it as an air conditioner operating in reverse. A heat pump uses electricity to extract heat from the outside air, even at low temperatures. **There is no need to drill a well** (that's a geothermal heat pump), and **PSEG Long Island offers attractive rebates, with the upfront cost similar to air conditioning.**

Many New Yorkers could reduce their carbon footprint and save a lot of money heating their home with a modern air-source heat pump — especially those with oil or electric resistance heat, new construction, or consumers desiring to retrofit a home for air conditioning. Figure 4 shows the economics and carbon impact for a typical Long Island single-family home with oil heat and the need to replace an aging central air conditioning unit.

An electric heat pump could reduce heating costs for a typical Long Island home with oil heat by $1,000 per year and reduce carbon emissions by 42 percent. The additional cost of the heat pump would pay for itself in a little over a year. As the carbon intensity of the electric grid declines over the next twenty years, the carbon reduction from using a heat pump could approach 100 percent.

FIGURE 4

Long Island Households Could Save Money and Reduce Their Carbon Footprint with Heat Pumps

Example is for typical Long Island home with oil heat and a need to replace their central air conditioning with a new unit

Source: PSEG Long Island estimate for a three ton unit

	Buying NEW Central Air Conditioner	Buying NEW Air-Source Heat Pump
Upfront Cost	$6,700	$9,700
PSEG Long Island Rebate		$1,800
Net Cost	**$6,700**	**$7,900**
Annual Home Heat Bill	$1,800	$800
Annual Savings		**$1,000**
Payback period		1.2 years
Carbon Footprint from heating (2020)		**-42%**
Carbon Footprint from heating (2040)		-100%

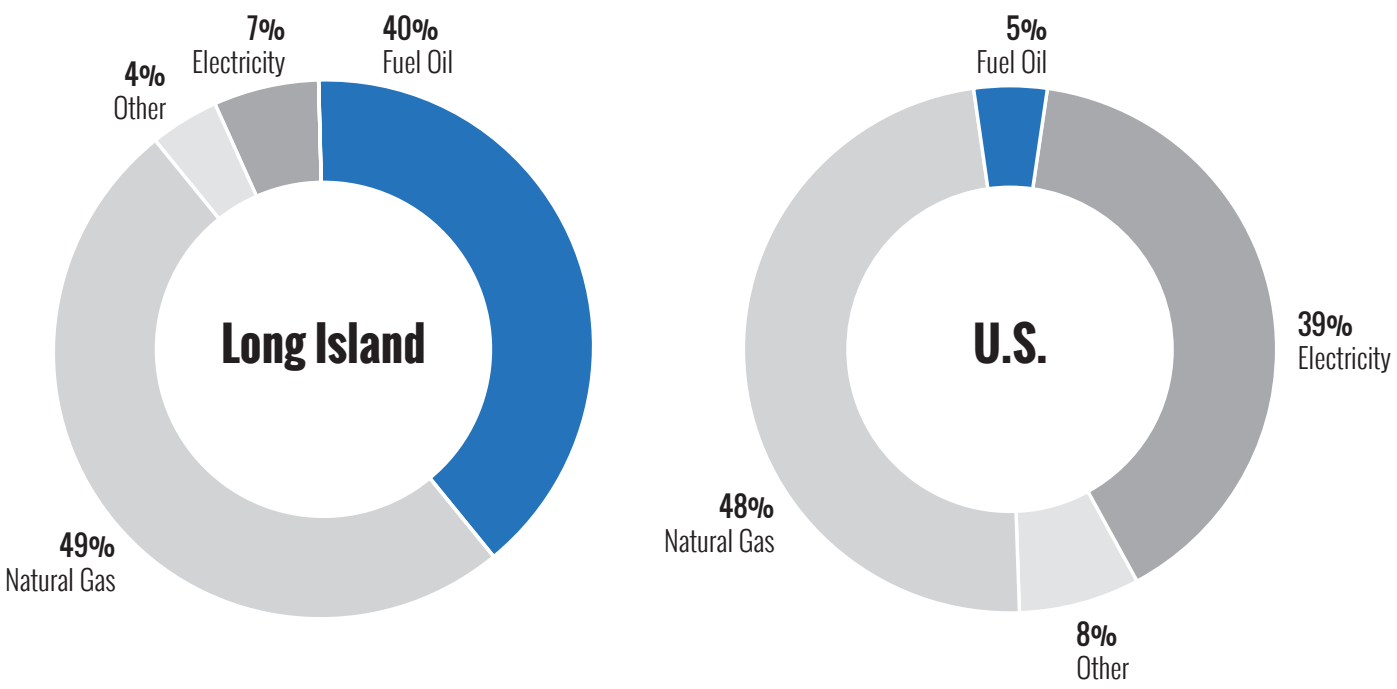
[6] *Residential Energy Consumption Survey, U.S. Energy Information Agency.*

LIPA and PSEG Long Island are focused on heat pumps because **Long Island is an ideal market for the technology – 40 percent of homes heat with oil,** as shown in Figure 5. These homes could immediately save money by switching to an air-source heat pump. In fact, the biggest challenge with heat pumps is that so few consumers and contractors know about them. More on that later.

FIGURE 5

Long Island Homes Heat with Oil at Eight Times the National Average

Source: 2018 American Community Survey, U.S. Census Bureau



TREND #2:

Electric Load Will Grow Substantially Over Time

The trend over the last decade, both nationally and locally, has been for electric load to decline each year. On Long Island, we have New York's leading energy efficiency programs and largest distributed solar market, accounting for 40 percent of all rooftop solar installations in New York. Together with improving building codes, these programs help customers reduce their electric bills and carbon footprints and decrease LIPA's electric sales by about two percent per year[7]. **The question is – will the trend of declining sales continue? Probably not**, because electricity will provide a larger share of U.S. energy needs in the future, both to meet aggressive climate goals and because of the comfort, convenience, and savings that electrification offers consumers.[8]

32 Megawatt Long Island Solar Farm, Upton, New York

[7] Absent these programs, electric sales would grow at roughly one percent per year. With these programs, electric sales decline by about one percent per year, or a two percent per year annual reduction in sales.

[8] For example, an EV is quicker, quieter, and has 30 percent fewer parts to maintain than a car with an internal combustion engine. It costs less to fuel with electricity than gasoline, and when EVs and plug-in hybrids hit parity prices with conventional cars, many consumers will decide to make the switch.

With this shift towards electricity as an energy source, electric load will grow even after aggressive economy-wide energy efficiency initiatives, as shown in Figure 6. For example:

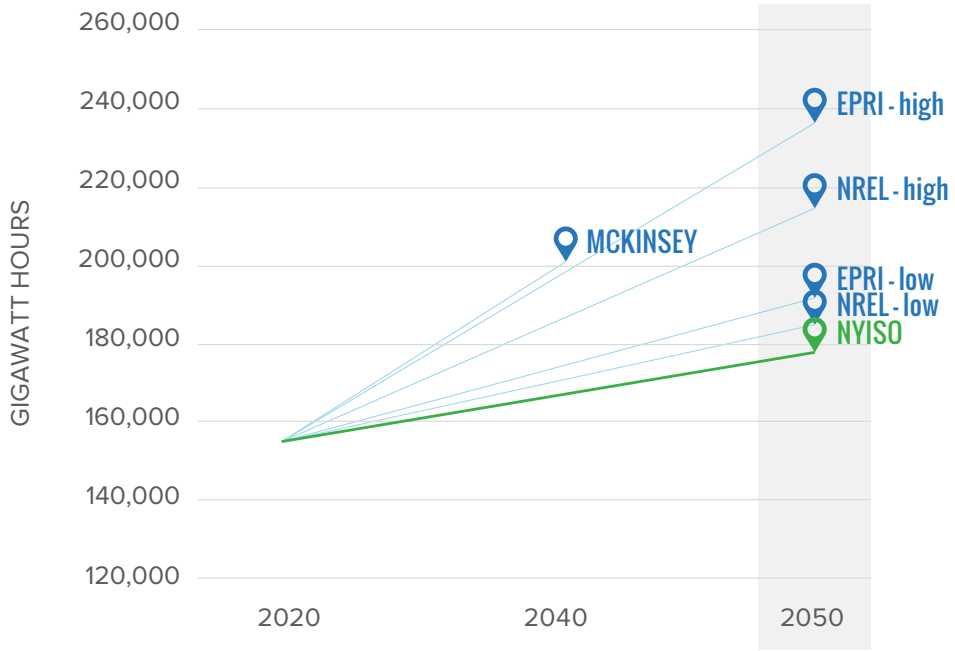
- The National Renewable Energy Lab (NREL) forecasts that **transportation and building electrification could increase electric demand by 20 to 38 percent over their "baseline" forecast by 2050**, with electricity fueling up to 76 percent of vehicle miles traveled, 61 percent of space heating, 52 percent of water heating and 94 percent of cooking;[9]
- The Electric Power Research Institute (EPRI) forecasts that with efficient electrification, **national load growth could range from 24 to 52 percent by 2050**;[10] and
- An analysis by McKinsey & Company forecasts that **New York's electric load will grow one-third by 2040 due to cars and buildings going electric** even with aggressive energy efficiency measures,[11]

In fact, **EPRI forecasts that electricity could provide up to 47 percent of total U.S. energy needs by 2050, up from 21 percent today and three percent in 1950**, while NREL's analysis shows electricity's share of energy consumption could be as high as 41 percent.

FIGURE 6

Forecasts of Growing New York Electric Loads Due to Electrification

Source: 2019 Load and Capacity Data, New York Independent System Operator; EPRI and NREL assumptions applied to New York load



[9] *Electrification Futures Study, National Renewable Energy Laboratory, July 2018.*
[10] *U.S. National Electrification Assessment, Electric Power Research Institute, April 2018.*
[11] *The Global Relevance of New York State's Clean-Power Targets, McKinsey & Company, July 2019.*

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TREND #3:

Beneficial Electrification Will Likely Pay For Itself Through A Higher Load Factor

The pace of beneficial electrification[12] will be driven by the choices of Long Island's one million households and 150,000 businesses. But it is manageable.

One-third load growth by 2040, for example, sounds like a lot but is only about 1.4 percent per year. Compare that to Figure 7, which shows the annual change in electric sales across the U.S. for the last several decades. In the 1960s, electric load was growing by six to eight percent per year, roughly doubling every decade. That pace slowed to two to three percent per year by the 1980s and to roughly zero today. The forecast pace of electrification is modest relative to these historic numbers.

Meeting the growing energy needs of consumers over the next 30 years will require grid modernization and investment, including innovative rate designs, new customer programs, and smarter grid technologies.

Minimizing the cost of beneficial electrification will require finding new ways to actively and conveniently manage demand for customers to minimize coincident peak on the electric grid.

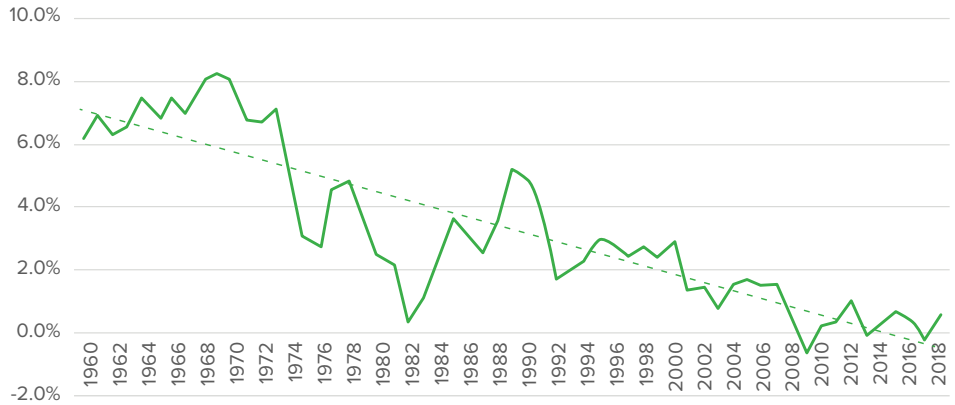
A PSEG Long Island study[13], for example, found that electric vehicle charging could contribute 142 megawatts (+2.8%) to Long Island's peak by 2025 if customers charge their cars as they currently do, but that programs offered by the utility to better coordinate charging, such as off-peak charging discounts and managed charging, could reduce that to 41 megawatts (+0.8%).[14]

Even better, that same PSEG Long Island study found that, **despite the need to invest in the electric grid to meet new EV load, the investments pay for themselves,** as many of the fixed costs of operating and maintaining the electric grid are spread over more kilowatt-hour sales.

FIGURE 7

U.S. Electricity Growth Since 1960

(Percentage Growth, Three-Year Rolling Average)
Source: Monthly Energy Review, U.S. Energy Information Agency, October 2019



[12] *Beneficial electrification is a term for replacing fossil-fuels with electricity in a way that reduces overall emissions and energy costs.*

[13] *Electric Vehicles on Long Island, Costs and Benefits, Gabel Associates, July 2018.*

[14] *Overall system peak is still forecast to fall by 2025; this is solely the effect of EV adoption on coincident peak. The effect of electrification on system peak will grow substantially over time as the market share of EVs increases.*

TREND #4:

Offshore Wind Is An Abundent New Source Of Energy For Long Island

Long Island's electric grid is built around a handful of large power plants and transmission ties. Electricity flows primarily from those few large sources to more than 1.1 million homes and businesses. Those large power plants were sited in locations that made sense for the technologies of the day – access to natural gas pipelines or barges for oil deliveries and the need to be close to a body of water for cooling.

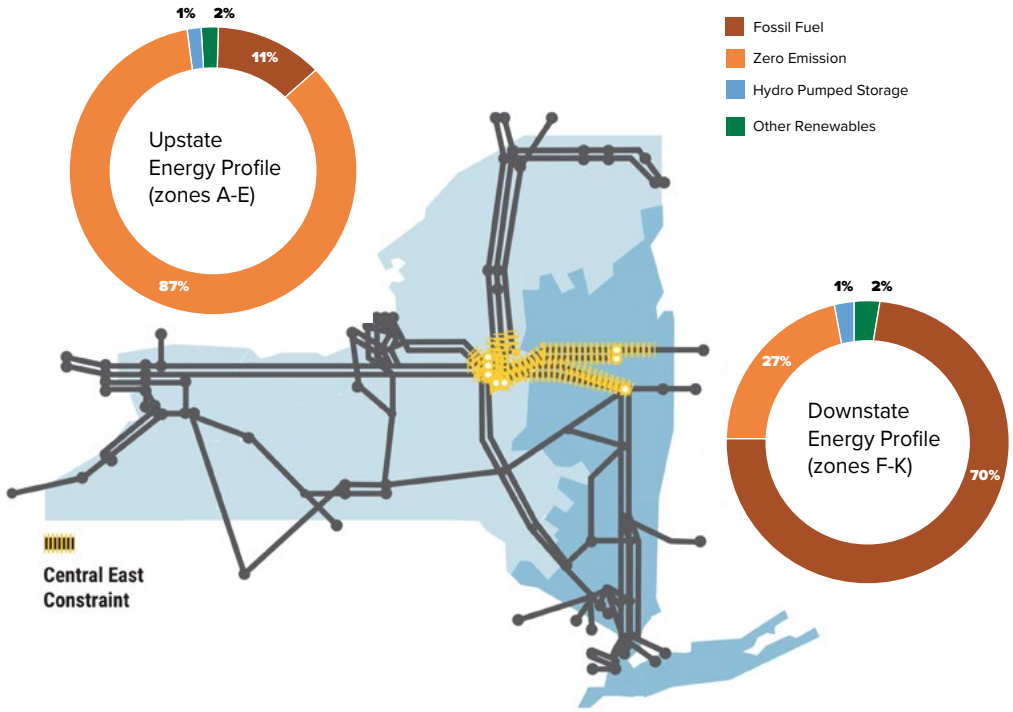
As we transition to a 100 percent carbon-free electric grid by 2040, the task becomes different – to move clean energy from where it is to where it's needed.

New York's electric system is a "tale of two grids," with an upstate and downstate region, as shown in Figure 8. **The upstate region is predominantly rural and 87 percent of its energy is already zero-carbon**, including the state's large hydro-electric projects and nuclear power plants. The downstate region, including Long Island, is densely populated and primarily supplied by fossil-fuel units. **Transmission constraints limit the ability to deliver power from upstate to downstate, or between local load pockets downstate, particularly in New York City and on Long Island**.

FIGURE 8

New York's Electric Grid by Fuel Mix

Source: New York Independent System Operator, 2019 Power Trends

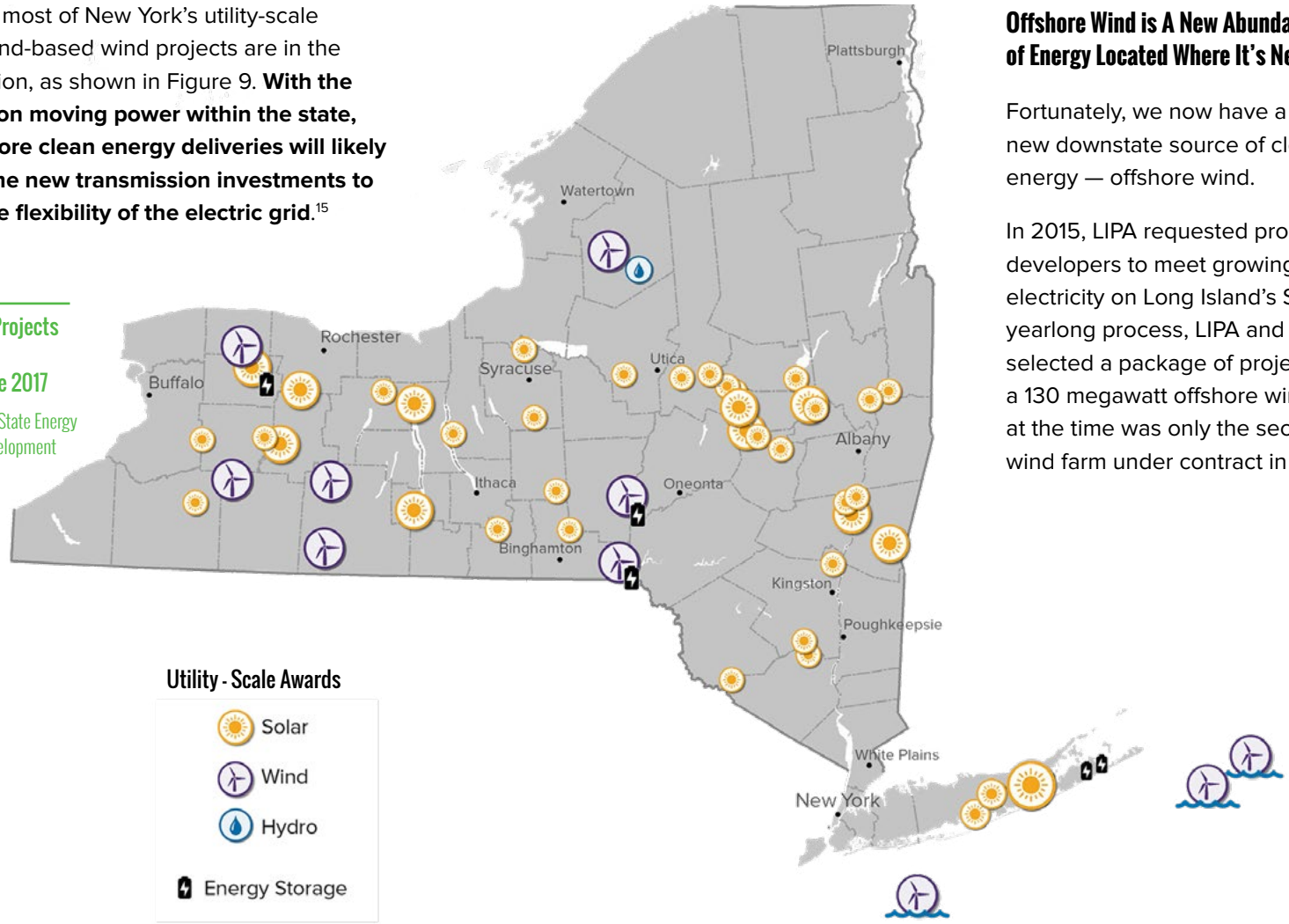


Meanwhile, most of New York's utility-scale solar and land-based wind projects are in the upstate region, as shown in Figure 9. **With the limitations on moving power within the state, enabling more clean energy deliveries will likely require some new transmission investments to increase the flexibility of the electric grid.**[15]

FIGURE 9

Clean Energy Projects Awarded in New York Since 2017

Source: New York State Energy Research and Development Authority and LIPA



Offshore Wind is A New Abundant Source of Energy Located Where It's Needed

Fortunately, we now have a large new downstate source of clean energy — offshore wind.

In 2015, LIPA requested proposals from developers to meet growing demand for electricity on Long Island's South Fork. After a yearlong process, LIPA and PSEG Long Island selected a package of projects that included a 130 megawatt offshore wind farm, which at the time was only the second offshore wind farm under contract in the country.[16]

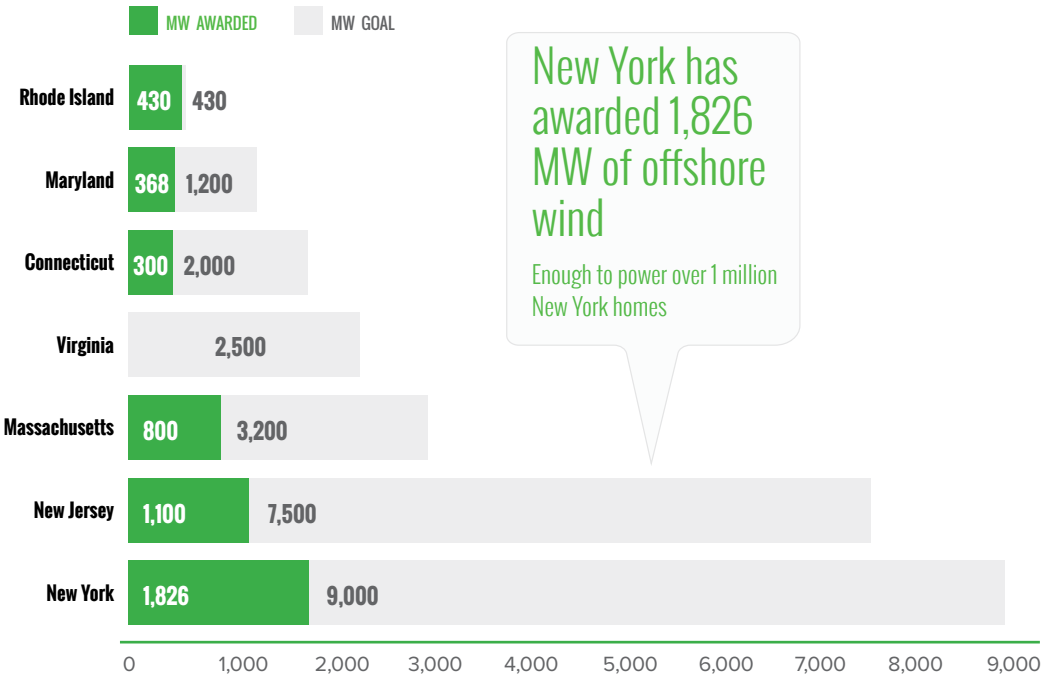
[15] A portion of clean energy deliveries can take the place of existing fossil-fuel plant electric flows too.

[16] The South Fork Offshore Wind Farm was originally 90 megawatts, but was later upsized to 130 megawatts using new turbine technology.

Since that time, **coastal states like New York, Connecticut, Maryland, Massachusetts, New Jersey, Virginia, and Rhode Island have contracted for nearly 5,000 megawatts of offshore wind and set procurement targets for nearly 30,000 megawatts**, including New York's goal of 9,000 megawatts by 2035, as shown in Figure 10.

FIGURE 10

U.S. Offshore Wind Industry Awards and Policy Commitments



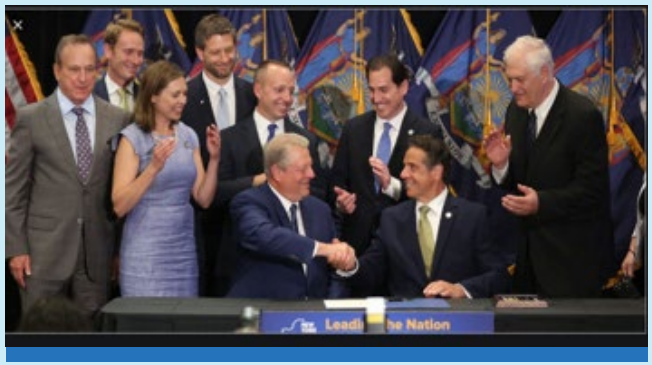
This is great news for Long Island for three reasons:

- A new, rapidly growing industry off our coast is good for Long Island residents and businesses;
- Scale greatly reduces the cost to develop offshore wind projects – a large scale industry, building large scale projects, with a developed supply chain and workforce, will do so at much lower prices; and
- **Offshore wind is a new, abundant, affordable source of clean energy located downstate, near population centers, and near Long Island – where it's needed.**

How much offshore wind might we need? **LIPA's share of New York's 9,000 megawatt offshore wind goal, based on our portion of statewide energy load, would be about 1,125 megawatts.**[17]

However, offshore wind is likely the least cost resource to meet a substantially larger share of New York's carbon-free electric needs than 9,000 megawatts. **One recent study projected New York will need 17,000 megawatts of offshore wind by 2040 to meet its carbon reduction goals.**[18] That would be an aggressive deployment, but it's not unprecedented – Europe has deployed 17,000 megawatts of offshore wind over the last 12 years. **So while Long Island electric customers may only need 1,125 megawatts of offshore wind to meet our share of the state's goal, it's possible that the New York electric grid may need many times that, and that a significant portion of that new energy might come through Long Island on its way to other places**.

[17] *LIPA is approximately 12.5 percent of statewide electric demand.*
[18] *The Global Relevance of New York State's Clean-Power Targets, McKinsey & Company, July 2019.*



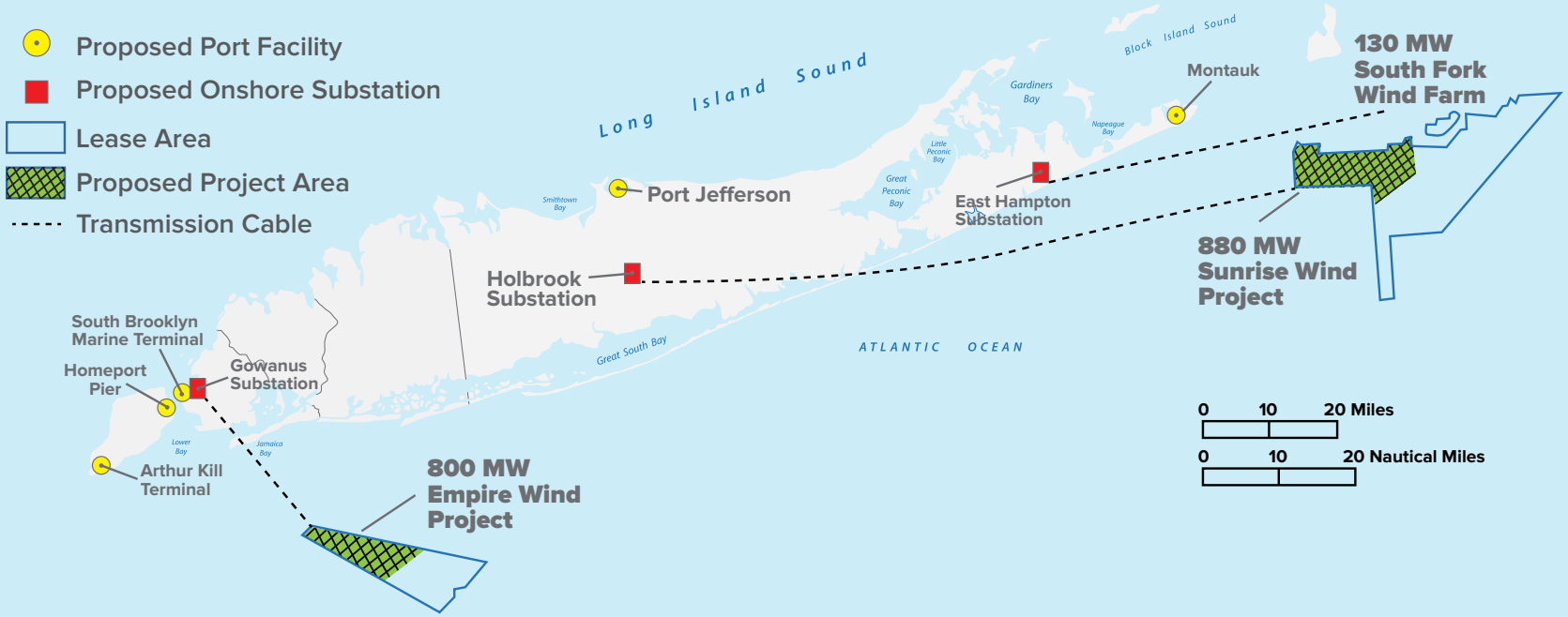
New York now has over 1,826 megawatts of offshore wind under contract, on the way to 9,000 megawatts by 2035. Two of the three New York projects connect to the Long Island electric grid - the 130 megawatt South Fork Wind Farm and the 880 megawatt Sunrise Wind Farm.

Governor Cuomo Announces Largest Offshore Wind Commitment in the Country

Governor Andrew M. Cuomo and former Vice President Al Gore announced the nation's largest offshore wind agreement – and the single largest renewable energy procurement by any state in U.S. history – in July 2019.

The 1,680 megawatts of offshore wind power from Empire Wind and Sunrise Wind will produce enough energy to power over 1 million homes and will create more than 1,600 jobs and $3.2 billion in economic activity.

Governor Cuomo also signed the Climate Leadership and Community Protection Act, which adopts the most ambitious and comprehensive climate and clean energy legislation in the U.S.



LIPA Long Island Power Authority

Our Strategy for a Changing Electric Grid

Most people think the utility business is boring (according to my wife). But, the next twenty years are going to be exciting! On Long Island, the electric grid will:

- transition to be entirely carbon-free;
- become the clean fuel that transports people and things and heats homes and buildings; and
- accommodate connecting an enormous, new offshore wind industry.

How are we planning to manage all that change? By sticking with the LIPA Board's vision for our organization… Clean, Lean, and Customer First. Let me talk briefly about what each of these means and provide examples of how we are advancing the Board's vision in 2020.

Our Focus on…Clean

First, what does it mean for us to run our business Clean? **Clean means providing Long Island with carbon-free energy by 2040 and meeting the state's interim milestones for energy efficiency, solar, storage, and offshore wind. And it means enabling other sectors of the economy, like transportation and buildings, to decarbonize using zero-carbon electricity.**

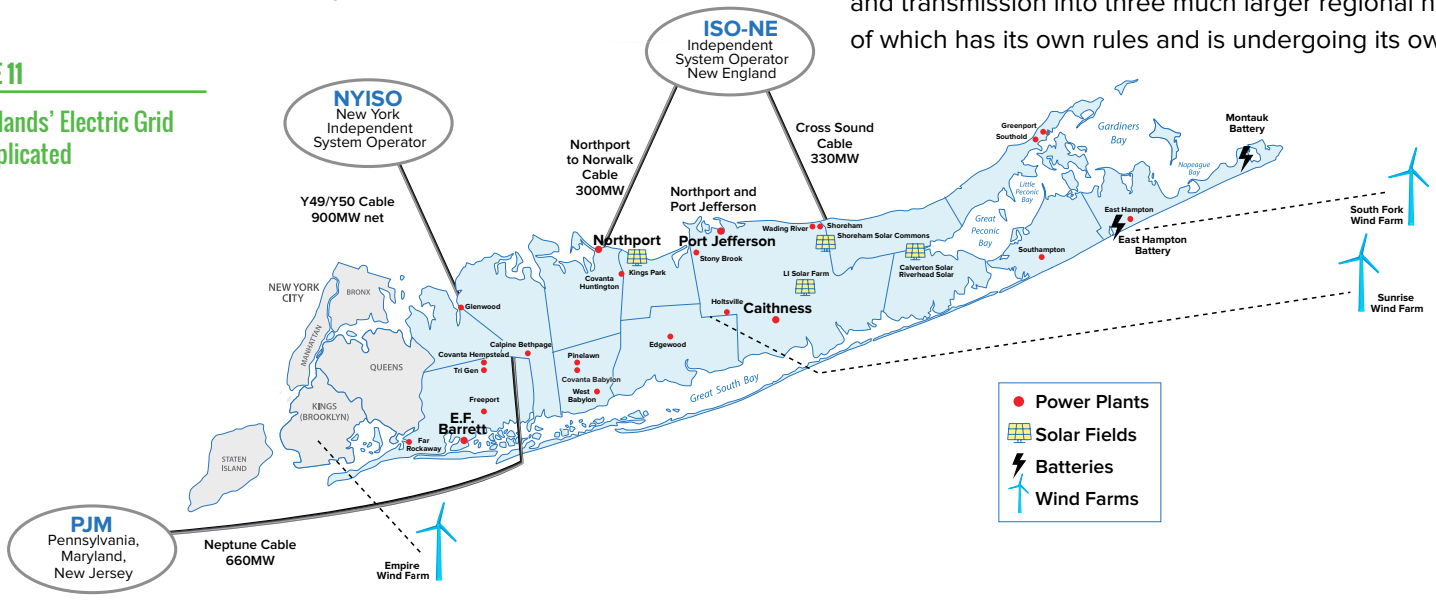
The Long Island electric grid is complicated, as shown in Figure 11, with:

- 15,000 miles of lines
- 32 power plants
- 5,800 megawatts of generation
- 189,000 transformers
- 585,000 poles

The Long Island grid is also interconnected by undersea cables and transmission into three much larger regional networks, each of which has its own rules and is undergoing its own changes.

FIGURE 11

Long Islands' Electric Grid is Complicated



LIPA Long Island Power Authority

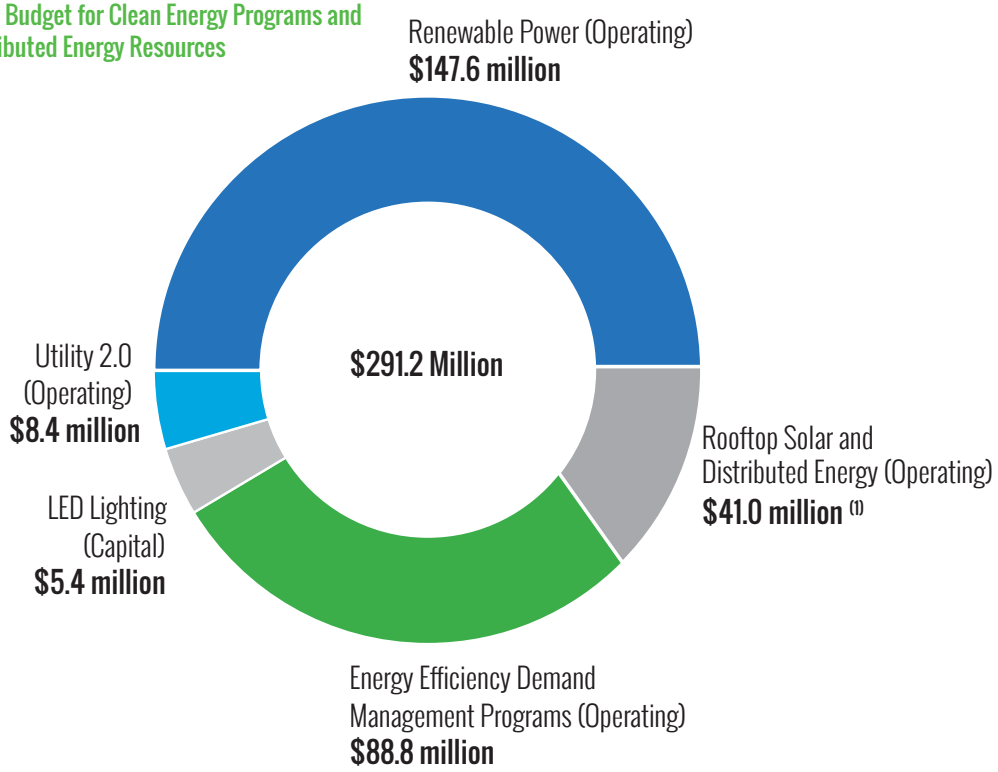
Meeting the state's climate goals means changes to this complex, interconnected network. How will we do that?

- **By studying** future configurations of the electric grid, such as offshore wind interconnected at various locations, and the investments required to enable a reliable, flexible, grid that can respond to fluctuations in load and generation;
- **By piloting technologies and customer programs** to encourage grid efficiency and modernization like innovative electric rate designs, managed EV charging programs, and modern customer platforms that help customers make informed energy choices;
- **By procuring clean energy and investing in energy efficiency and beneficial electrification** to meet Long Island's share of statewide goals;
- **By planning for the future of Long Island's power plants** to ensure an orderly transition to a zero-carbon electric grid by 2040; and
- **By partnering with and educating local communities,** including the communities hosting existing power plants.

The 2020 Budget continues our investment in clean and distributed energy programs with record funding, as shown in Figure 12.

FIGURE 12

2020 Budget for Clean Energy Programs and Distributed Energy Resources



(1) Estimated cost in excess of benefits to non-participating customers.

Long Island's Clean Energy Goals

- 100 percent **carbon free electric grid** by 2040
- 750 megawatts of **distributed solar** by 2025
- 30,000 **heat pumps** by 2025
- 375 megawatts of **storage** by 2030
- 1,125 megawatts of **offshore wind** by 2035

Our Clean Energy Accomplishments

- New York's three largest **utility-scale solar** farms, with total utility-scale clean project commitments of 400 megawatts
- New York's first **offshore wind** farm – 130 megawatts
- New York's most vibrant **distributed solar market**, with 563 megawatts installed, 50,000 customers, and 40 percent of all solar systems in New York – on track to exceed our goal of 750 megawatts of distributed solar by 2025 (see Figure 13 and 14)
- New! PSEG Long Island **Solar Communities** Program for low-and moderate-income customers (see page 31)
- New York's most aggressive **energy efficiency programs** measured by load reduction (approx. 1.5-2.0 percent per year)
- Ranked #6 nationwide among 211 utilities for **storage deployment**

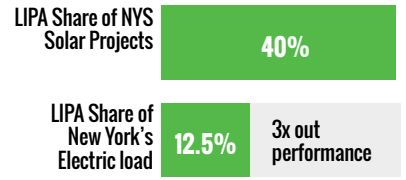
Our Budget for Clean Energy Includes:

- **$89 million for energy efficiency and distributed energy programs**, providing 1.1 million British Thermal Units of energy savings in 2020 (the equivalent of 33,000 Long Island homes);[19]
- **$148 million for utility-scale renewable purchases,** including energy from solar farms in Calverton, Kings Park, Riverhead, Shoreham, and Upton;
- **$41 million for residential and commercial solar and distributed energy systems**, with over 563 megawatts installed or 40 percent of all distributed systems in New York State, as shown in Figure 13.[20] **Long Island is on track to exceed its 750 megawatt distributed solar goal for 2025**, as shown in Figure 14;
- **$8 million for Utility 2.0 programs**, including residential EV charging rebates, EV fast charging stations, an electric school bus pilot program, solar hosting capacity maps, funding to develop an on-bill financing program for heat pumps, and a new energy concierge program to assist customers in making better energy choices;
- **$5 million for new LED Lighting, as part of an $18 million Dusk-to-Dawn program** to replace conventional light fixtures for our commercial customers.

FIGURE 13

Long Island Leads NYS in Distributed Solar Energy

While Long Island accounts for only 12.5 percent of all electric energy produced in New York State, we are the state's top producer of clean, distributed solar energy.



[19] *PSEG Long Island 2020 Energy Efficiency Plan.*

[20] *Behind-the-meter rooftop solar and distributed energy are incentivized by mass-market electric rates like net metering and the Value of Distributed Energy Resources tariff; these have an estimated net cost in excess of benefits to non-participating customers of $41 million in 2020. The benefits measured include Long Island energy, capacity and distribution system savings and the value of clean energy.*

LIPA Long Island Power Authority

PSEG Long Island's Electrification Program Highlights

Electric Vehicles

- 25 Percent **EV Overnight Charging Discount**[1] (Coming 2020)
- New! $500 **EV Residential Charger Rebates**
- New! **Fast Charging Station** Incentives
- Up to $2,000 New York State **Drive Clean Rebate**

Modern Electric Heating

- 15 Percent **Electric Discount** for Winter Heating[2]
- New! **Heat Pump Rebates**[3]
  - > $3,000 for New Construction
  - > $3,000 for Electric Resistance Conversions
  - > $1,800 to $2,400 for Oil Heat Conversions
  - > $750 for Hot Water
  - > $750 for Pool Heaters
- $8,000 Rebate for **Geothermal Systems**[3]

[1] *5 cents per kilowatt hour.*
[2] *3 cents per kilowatt hour.*
[3] *Average rebate, varies with size, equipment efficiency and current heating fuel. This applies to both heat pumps and geothermal.*

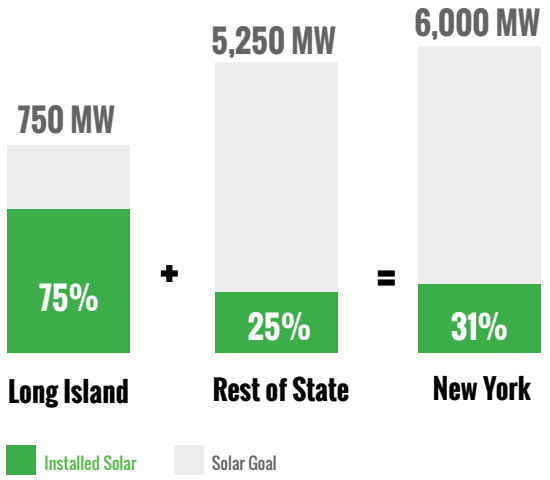
The chart to the left highlights PSEG Long Island's electrification programs including our aggressive plans to encourage beneficial electrification of transportation and heating. Reducing the carbon intensity in these sectors is key to realizing the state's climate goals.

In particular, PSEG Long Island will target greater contractor and consumer awareness of air-source heat pumps in 2020, including new rebate programs unveiled in November 2019. **PSEG Long Island's new air-source heat pump programs are part of a goal to reach 30,000 heat pump installations on Long Island by 2025.**

FIGURE 14

Long Island is on Track to Exceed Its Share of New York's 6GW 2025 Distributed Solar Goal

Source: New York State Energy Research and Development Authority and PSEG Long Island



Our Focus on...Lean

What does it mean to operate Lean? **Being Lean means achieving a balance between cost and service quality to get the most out of every dollar.** It means reducing cost in areas that provide less value to customers while investing in customer-facing initiatives.

Figure 15 shows the savings from operating lean. **The $631 million in cost savings in 2020 equals 17 percent of electric bills or about $27 per month for a typical residential customer**. Without operating Lean, LIPA and PSEG Long Island would be unable to fund the investments in clean energy, customer satisfaction, and reliability needed to operate Clean and to put the Customer First.

FIGURE 15

$631 Million Customer Savings in 2020 from Being Lean

	Millions
Discontinuing investment in combined cycle plants	$348
LIPA Reform Act 2% Tax Cap	$141
Refinancing existing debt	$60
Renegotiating expiring power purchase agreements	$36
Investing in cost-effective energy efficiency	$19
PSA pension and retirement savings	$8
Smart Meter savings	$7
Reduction to gas transportation costs	$6
Power plant property tax savings	$6
Total	**$631**

How will we continue to operate Lean?

- **By continuing to operate our business in a fiscally sustainable manner,** with sound credit ratings and reduced borrowing that provides the lowest electric rates to our customer-owners over the long term;
- **By using technology to reduce cost and improve service**, such as the deployment of Smart Meters, customer engagement tools, and grid modernization initiatives, which save money while offering customers new electric rate options, better service, and improved power quality;
- **By encouraging cost-effective electrification of vehicles and heating**, thereby reducing Long Island's carbon footprint, while getting more out of the fixed costs of maintaining the electric grid;
- **By seeking efficiencies** in our costs and business practices, like opportunities to refinance debt, reduce contractual costs, and "pre-pay" for electric, thereby securing a discount on our fuel and power costs; and
- **By negotiating reductions to unreasonably high tax assessments**, as any responsible taxpayer would do (see page 22).

Advocating for Leaner Property Taxes on Older Long Island Power Plants

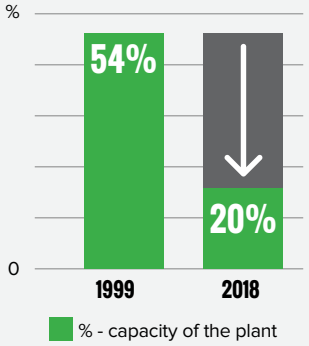
New York's Climate Leadership and Community Protection Act sets aggressive targets to rapidly add new, cleaner sources of energy to Long Island's electric grid. Long Island's older, fossil-fueled power plants run less each year as we transition to a more sustainable electric grid.

Recognizing this reality, **LIPA worked with the Town of Brookhaven and the Village of Port Jefferson to reach a compromise on the tax bills for the Port Jefferson power plant in December 2018. In November 2019, LIPA also reached an agreement with Nassau County for the E.F. Barrett and Glenwood Landing power plants**. The agreements maintain significant tax benefits for the host communities while gradually reducing the cost LIPA's 1.1 million customers pay for the plants property taxes.

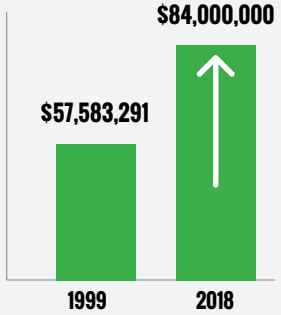
LIPA has attempted to obtain a fair assessment on the Northport power plant from the Town of Huntington for nearly a decade. Now, LIPA and the Town are in court — where an independent third-party will soon determine the value of the plant.

Northport is America's highest taxed property.

Northport Plant Energy Production Down 63%



Northport Plant Taxes are up 43%



Our Focus on... Customer First

What does it mean to put Customers First? **Being Customer First means exceeding our customers' expectations – reliably and responsively**.

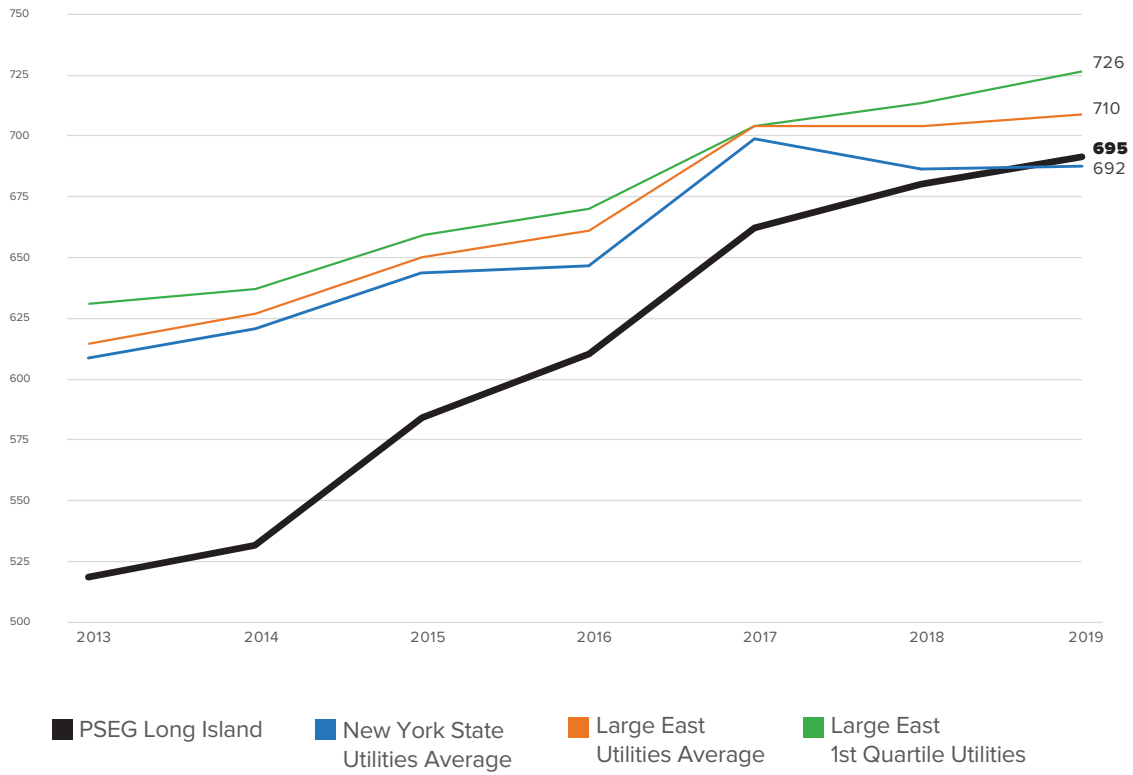
Our business is to provide clean, carbon-free energy for New York's economy. Our competition is gasoline, diesel-fuel, oil, and natural gas. **Electric utilities meet only 21 percent of the country's energy needs. There are many opportunities for our customers to choose to do more business with us, saving them money and reducing their carbon footprint**. And with the declining cost of EVs and the development of cold-climate heat pumps, electricity is the clean and cost-effective choice for Long Island. But our customers are only going to choose to do more business with us if they trust that we'll meet their needs.

Over the last several years, we have invested in customer satisfaction and electric grid reliability. Those efforts are being noticed by our customers. Prior to making those investments, LIPA was consistently ranked among the lowest electric utilities in the country for customer satisfaction, as shown in Figure 16. Since 2013, customer satisfaction has increased by more than 176 points or 34 percent.[21] In fact, **PSEG Long Island is the most improved utility in the country over the past five years, and the LIPA Board has set a goal to be among the top 25 percent of utilities in the country by 2022.**

FIGURE 16

J.D. Power Residential Customer Satisfaction for New York State and Large East Utilities

PSEG Long Island has improved customer satisfaction by 176 points or 34 percent since 2013.

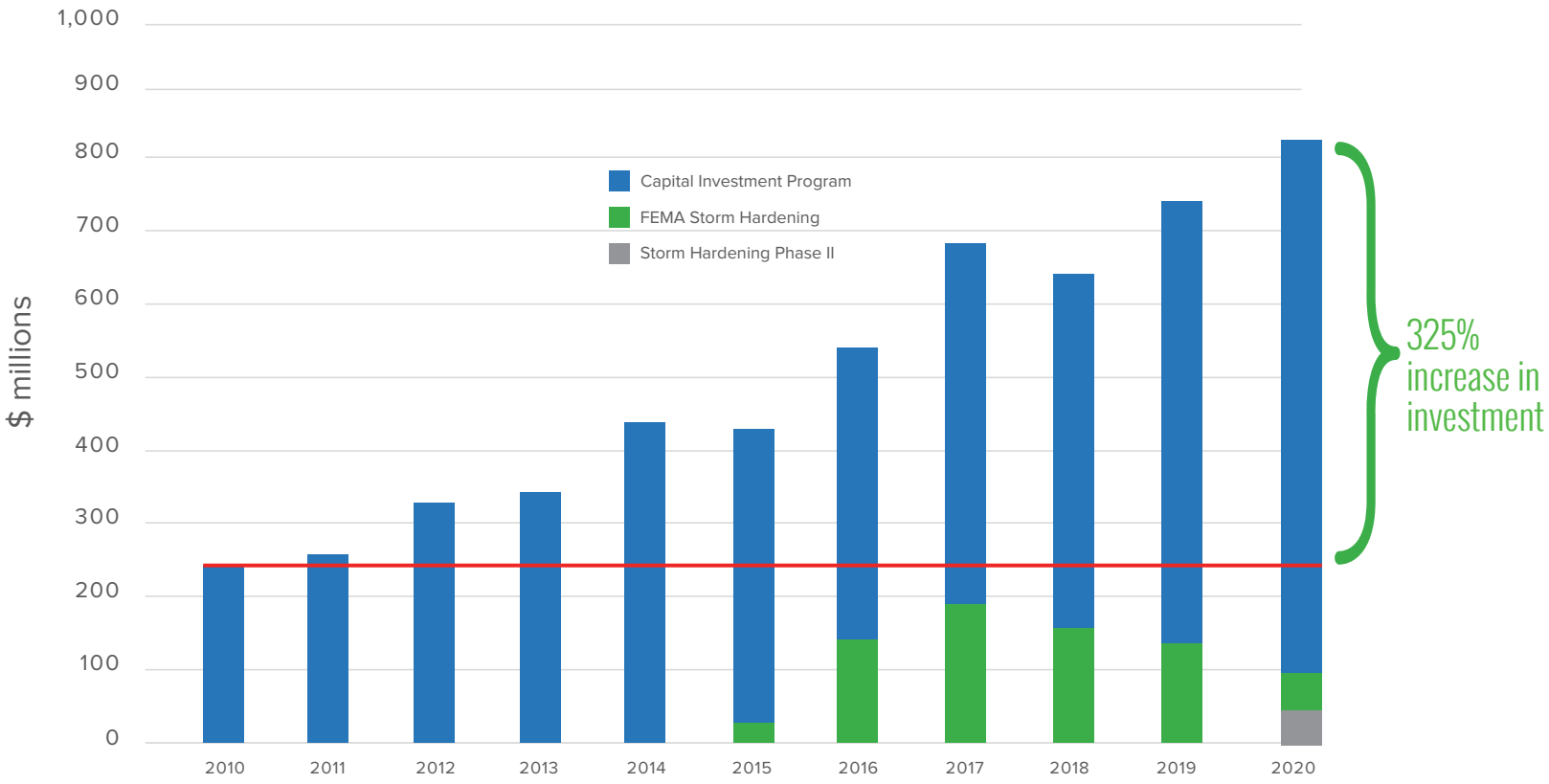


[21] *J.D. Power Residential Customer Satisfaction Study for 2013 and 2019.*

The LIPA Board has also committed to making the investments necessary to provide reliable service to customers – with a goal to be consistently among the top 25 percent of utilities in the northeast. Starting in 2016, LIPA began a record investment into Long Island's electric infrastructure – over $3.4 billion. In fact, LIPA's annual spending on infrastructure – the capital budget – has more than tripled, reaching $820 million for 2020, up from $249 million a decade ago, as shown in Figure 17.

FIGURE 17

LIPA is Investing Record Levels in Electric Grid Reliability and Resiliency



How will we continue to put the Customer First?

- **By continuing to invest in Long Island's electric grid** to maintain high standards for system reliability and resiliency for every customer;
- **By modernizing the customer experience** using technology to pro-actively communicate with customers, provide better service, and offer new tools to manage the energy use of every home and business;
- **By offering customers new electric rate pricing plans** that better meet their lifestyles and needs; and
- **By being a steward of Long Island** that helps attract businesses and supports the vitality of our neighborhoods.

The 2020 Budget continues our investments in customer satisfaction and reliability, as shown in Figure 19.

Long Island's Customer First Goals

Top 25 percent electric utility for customer satisfaction by 2022

Top 25 percent electric utility for reliability

Electric service at the lowest possible cost, including electric rates comparable to or below neighboring New York metropolitan area utilities (see Figure 18)

FIGURE 18

Long Island Electric Rates are Competitive in New York Metro Area

Source: 2018 Average Residential Electric Rates, U.S. Energy Information Agency Form 861-M

* New Jersey utilites are not required to pay T&D taxes

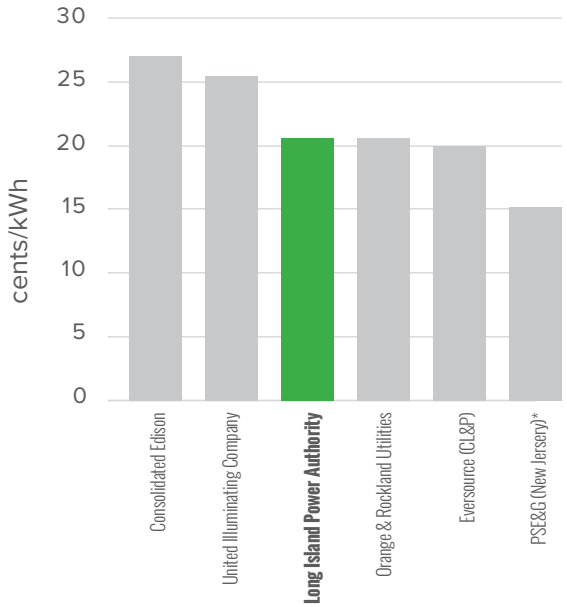


FIGURE 19

Customer Satisfaction

Our Results

- PSEG Long Island has **improved customer satisfaction** in the J.D. Power Residential Survey by 176 points or 34 percent
- **Most improved utility in the United States** over the past five years

2020 Budget

- **$196 million to Deploy 1.1 million Smart Meters** across Long Island by 2022, transforming the customer experience with **new electric rate pricing plans, improved power quality, new online tools**, **better outage tracking**, and new opportunities to **manage energy use and save money**
- **$43 million of technology improvements**, including a new **mobile app**, new software to deliver a more **personalized customer experience**, new **virtual web chat**, and a new online tool for large businesses

Reliability

Our Results

$3.4 billion Investment in Long Island's Electric Grid is Showing Results for Customers

2016 to 2019 Year-to-Date	
Customers with Power Outages:	↓ 37%
Customers with >4 Outages Per Year:	↓ 75%
Customers with Momentary Interruptions:	↓ 35%
National Utilities Ranking for Reliability:	Top 25%
Diamond-level Reliable Public Power Provider	

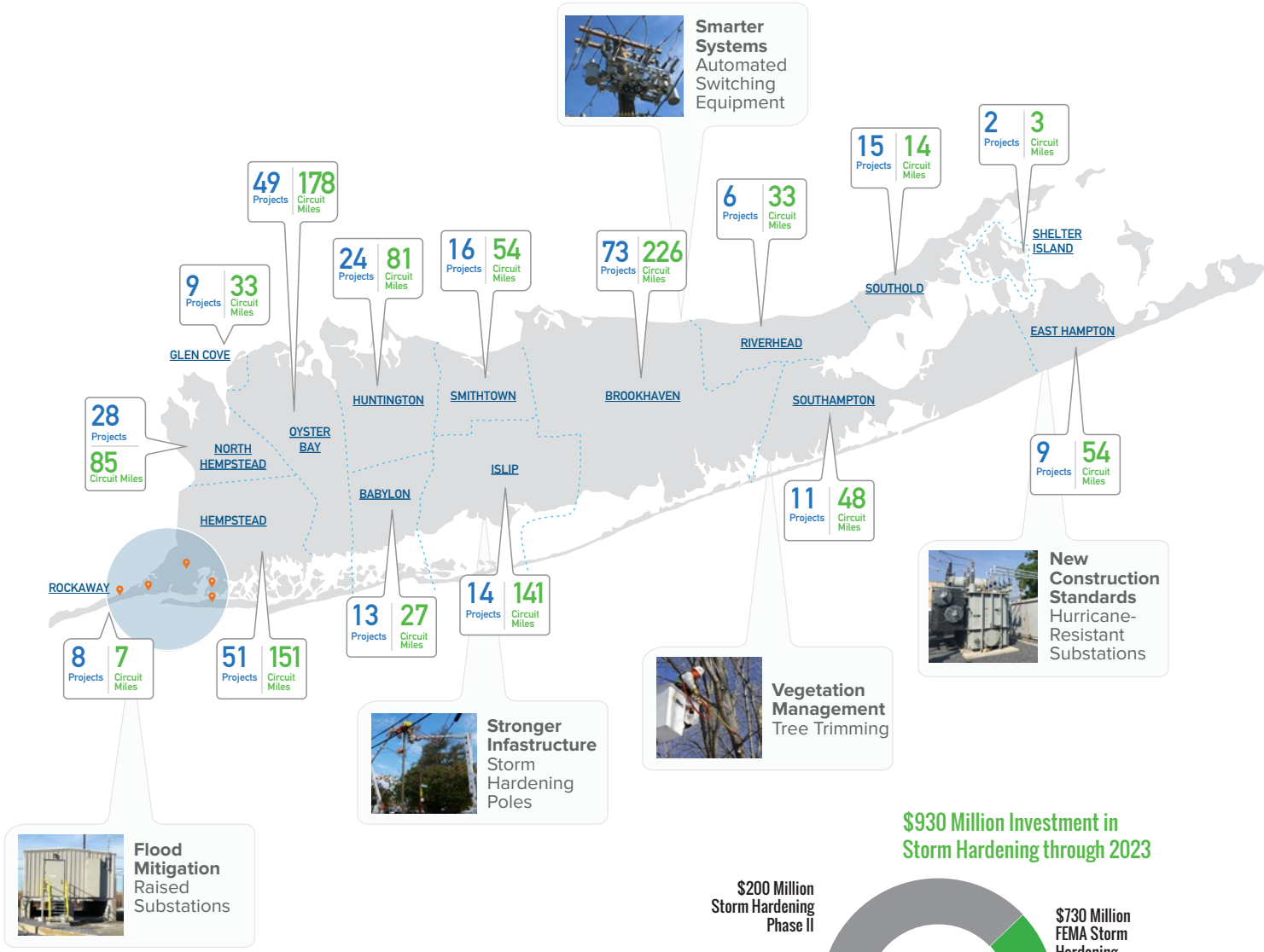
2020 Budget

- **$264 million to Enhance Reliability Across Long Island**, including repairing circuits that provide poor reliably and replacing poles and transformers
- **$200 million for Storm Hardening – Phase II**, with the completion of the $730 million FEMA storm hardening program (see page 27) in 2020, the 2020 Budget funds a new initiative to storm harden an additional 240 circuit miles over four years. The hardened circuits are expected to show a 75 percent reduction in the number of outages during storm events
- **$225 million to Power Up New Projects**, including Nassau Hub, Belmont Racetrack, and projects in Hempstead, Smithtown, Massapequa, and on the South Fork

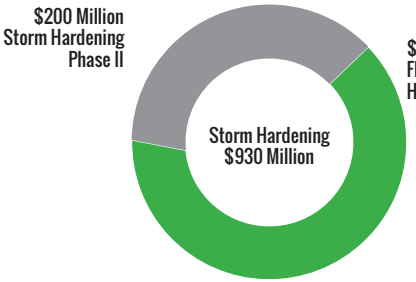
2020 Marks Completion of the $730 Million FEMA Storm Hardening Program after Hurricane Sandy

Funding Secured via Agreement Between Governor Andrew M. Cuomo and the Federal Emergency Management Agency

Keeping the power on in the face of Mother Nature has been the focus of the $730 million FEMA Storm Hardening Program. From storm resistant substations to stronger poles and smarter systems, the FEMA Storm Hardening Program has created a Long Island electric grid better equipped to handle major weather events. **With the completion of the FEMA Storm Hardening Program in 2020, LIPA and PSEG Long Island will begin a new $200 million Storm Hardening Program – Phase II** that will target mainline infrastructure and branch out into neighborhood circuits to further enhance reliability.



$930 Million Investment in Storm Hardening through 2023



LIPA Long Island Power Authority

2020 Budget By the Numbers

The 2020 Budget consists of an Operating Budget of $3.75 billion and a Capital Budget of $820 million. The Operating Budget, shown in Figure 20a, funds delivery and power supply costs, energy efficiency and distributed energy programs, taxes, and debt service. The Capital Budget, summarized in Figure 20b, funds long-life infrastructure investments such as transmission, substations, poles and wires, as well as information technology, vehicle fleet, and other assets.

Figure 20a

2020 Operating Budget ($ thousands)

Operating Revenues	3,676,860
Grant & Other Income	77,091
Total Revenues and Income	**3,753,951**
Power Supply Costs	1,624,678
Delivery Costs	752,520
PILOTs, Taxes & Fees	554,716
Interest Payments	377,089
Debt Reduction & OPEB	444,948
Operating Budget	**3,753,951**
Fixed Obligation Coverage	
LIPA Debt Plus Leases	1.35x
LIPA & UDSA Debt Plus Leases	1.24x

Note: Operating Budget shown based on revenue requirements. Taxes on power supply have been reclassified to PILOTs, Taxes and Fees

Figure 20b

2020 Capital Budget ($ thousands)

Capital Projects	724,698
FEMA & PSEG Long Island Storm Hardening	95,665
Capital Budget	**820,363**
Funding from Operating Budget	205,928
FEMA Grant	52,799
Debt Issued to Fund Projects	561,636
Funding Sources	**820,363**
Percent of Capital Projects Funded from Debt	
Including FEMA Projects	68%
Excluding FEMA Projects	73%

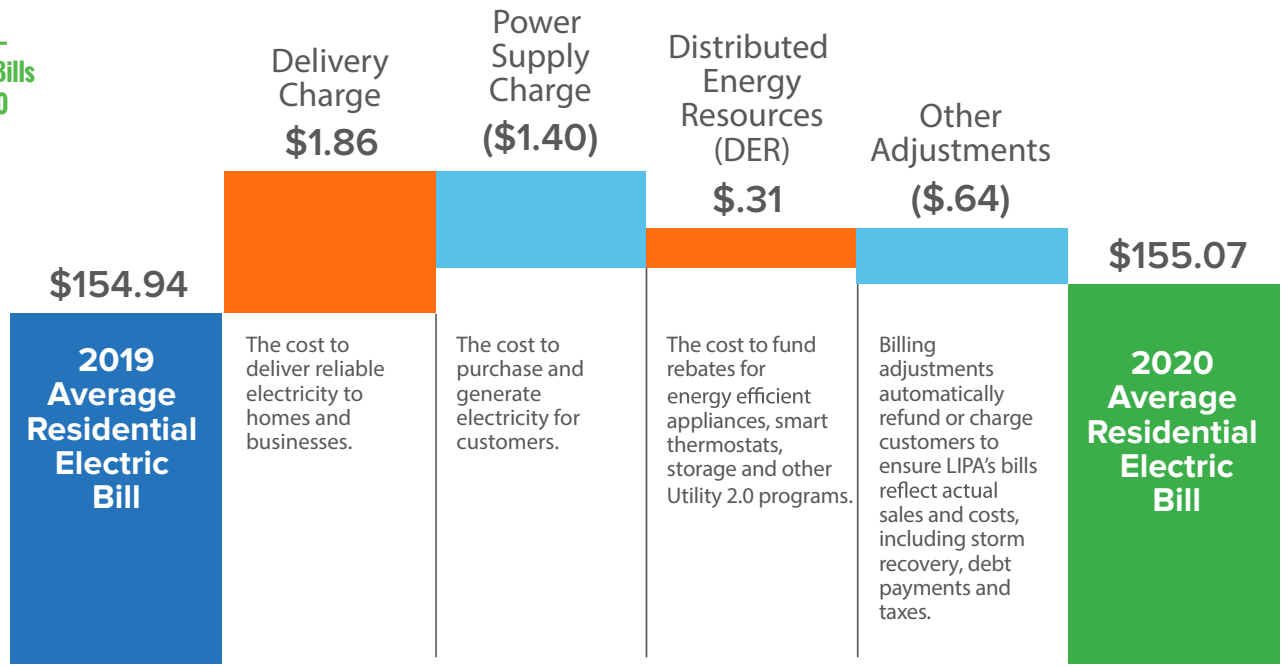
Electric Bills for 2020

The impact of the 2020 Operating and Capital Budget is shown in terms of an average residential customer bill in Figure 21. **Electric bills are forecast to increase by $0.13 per month in 2020 or 0.08 percent from their 2019 budgeted level**.

The electric bill is made up of several components, including Delivery Charges, Power Supply Charges, and the Distributed Energy Resources (DER) Charge. These charges are adjusted each year to reconcile certain costs and sales assumptions from the prior year for variations in sales, storm restoration costs, taxes, debt payments, and interest rates. Figure 21 shows that for the average residential customer, the Delivery Charge will increase by $1.86 per month, while the Power Supply Charge will decline by $1.40 and the DER Charge will increase by $0.31. Reconciliations for sales, storms and other items will decline by $0.64.

FIGURE 21

Residential Customers' Electric Bills to Remain Flat from 2019 to 2020



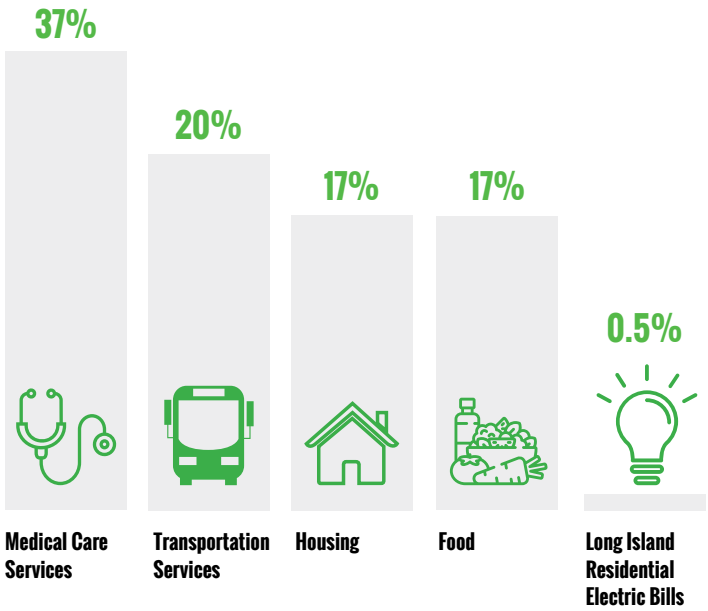
Electric bills for an average residential customer have remained roughly flat for over a decade, increasing a cumulative 0.5 percent since 2008. Electric bill increases remain below the rate of inflation, while other goods and services steadily increase, as shown in Figure 22.

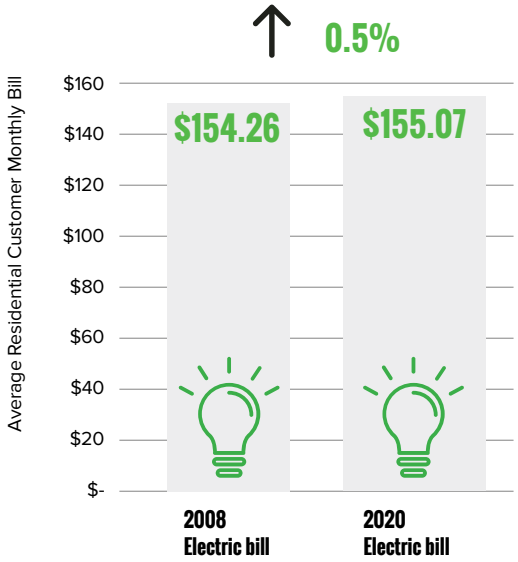
Part of that result is due to moderate fuel and power costs, but it is also a direct result of the $631 million of savings initiatives in Figure 15 (page 21), which have reduced 2020 customer bills by nearly 17 percent or $27 per month.

FIGURE 22

Since 2008, Costs of Goods and Services Rise while Long Island Residential Electric Bills Remain Flat

Source: U.S. Bureau of Labor Statistics





Assisting Our Low-and Moderate-Income Customers

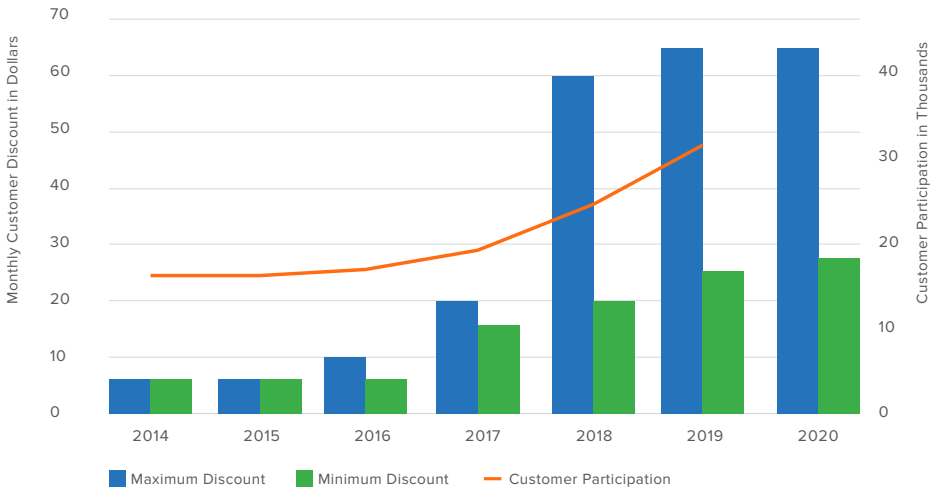
In addition to maintaining overall rate affordability, LIPA and PSEG Long Island are providing more financial assistance to eligible customers. Over the past five years, **discounts for low-and moderate-income customers have increased from $5 to between $25 and $65 per month**, as shown in Figure 23. **Customer participation has also more than doubled from 14,500 customers in 2014 to nearly 33,000 today**.

To spur clean energy investment and help customers save money, starting in 2020, **low-and moderate-income customers who install heat pumps will now also be eligible for 50 percent higher rebates**.

Finally, **LIPA and PSEG Long Island are launching the PSEG Long Island Solar Communities program for income-eligible customers** – providing access to affordable clean energy to those in need.

FIGURE 23

LIPA and PSEG Long Island have Increased Low-and Moderate-Income Customer Discounts and Doubled Program Participation



New! PSEG Long Island Solar Communities Nearly Doubles Long Island's Community Solar Market

LIPA and PSEG Long Island are launching Solar Communities in 2020 — a new program to deliver affordable, clean energy to income-eligible households, who have traditionally been underserved in the solar market.

The new 20 megawatt Solar Communities program will continue LIPA's long-standing support for a cleaner Long Island, while assisting those in need. **The program will nearly double the community solar market on Long Island.**

New PSEG Long Island Solar Communities Program Benefits Low and Moderate Income Customers

26 megawatts	20 megawatts
Community solar applications	Solar Communities (new)

Changes in the 2020 Operating Budget

The 2020 Operating Budget includes Operating Revenues from customers of $3.66 billion, an increase of $138.6 million from 2019.[22] Changes shown in Figure 24 include:

Debt Payments: Debt payments fund borrowings for critical infrastructure projects to keep the electric grid safe and reliable for customers. Debt payments will increase by $27.5 million from 2019 to 2020.

Cash Contribution to Capital Projects (aka Coverage): Maintaining proper coverage levels allows LIPA to fund critical infrastructure projects with cash, instead of relying upon debt. This reduces cost to customers over time. Cash contributions to capital projects will increase by $18.9 million in 2020.

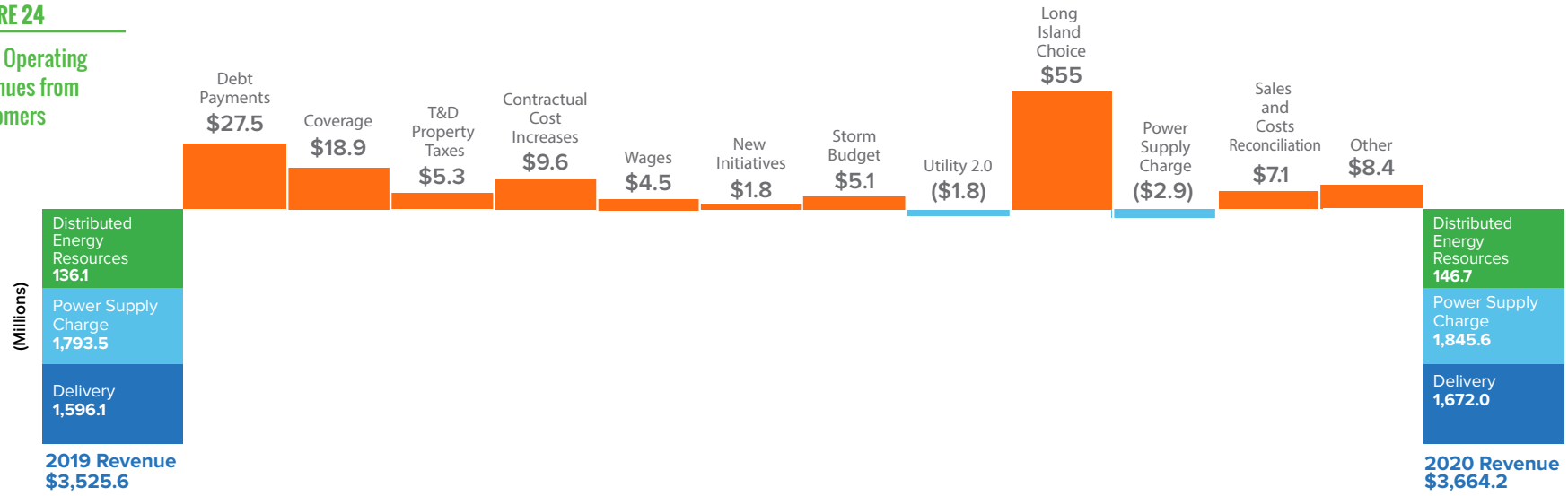
Transmission and Distribution System Property Taxes: LIPA's transmission and distribution system is subject to property taxes from local municipalities. LIPA customers pay the costs of those property taxes. The LIPA Reform Act capped property tax increases on LIPA's transmission and distribution system to two percent per year to reduce the burden on customers of past runaway increases. 2020 T&D system property taxes will increase by $5.3 million or 1.9 percent.

Contractual Cost Increases: PSEG Long Island's budget funds the cost to maintain and operate LIPA's transmission and distribution system. The budget increases by $9.6 million or 2.4 percent to reflect increases in non-wage costs, including fringe and non-labor contractual obligations.

Wages: PSEG Long Island's contractual wage increases are forecast to cost $4.5 million more in 2020.

FIGURE 24

2020 Operating Revenues from Customers



[22] *2020 Operating Revenues of $3.68 billion include a carryover amount of $12.6 million for Utility 2.0 initiatives from the 2019 Budget. This adjustment was already collected from customers in 2019 and will be not reflected in 2020 rates. The figure excludes the carryover amount.*

New Initiatives: New efforts to improve the safety and reliability of the electric grid, such as reducing stray voltage, and implementing New York's climate solutions, amount to a $1.8 million increase.

Storm Budget: Long Island continues to experience more destructive and severe storms. LIPA's storm budget funds the preparation, response, and repairs necessary to keep the lights on after storms. Storm costs are set to increase by $5.1 million.

Utility 2.0: Utility 2.0 program funding will decrease by $1.8 million from 2019 levels due to a $4 million savings in rolling out Smart Meters to homes and businesses.

Power Supply Charge – Long Island Choice: There is an increase of $55 million in the Power Supply budget for the cost to purchase or generate electricity for 3,300 former Long Island Choice customers. In July 2019, New York State ended a county sales tax exemption for such customers, causing the customers to return to LIPA for their power supply.

Power Supply Charge: The Power Supply Charge is the cost to purchase or generate electricity for customers. There is a net reduction of power supply costs of $2.9 million, driven by lower fuel prices off-set by higher taxes and an increase in renewable power costs.

Sales and Cost Reconciliations: The 2020 Budget reflects a reconciliation between certain budget assumptions and actual amounts for the prior year. These adjustments are for items largely outside of the control of LIPA and PSEG Long Island, such as sales, storm costs, interest rates, and taxes. The 2020 adjustment will be $7.1 million above the 2019 level due to a lower sales-related refund to customers.

The LIPA Board's Financial Policy - A Credit Rating Hat Trick

In 2015, LIPA's Board of Trustees established fiscal targets for the prudence and sustainability of our financial performance. These include:

- Minimum credit ratings in the "mid-A" category;
- Fixed-obligation coverage on LIPA debt and capital leases of 1.45x;[23]
- Long-term borrowing of no more than 64 percent of capital spending; and
- Pre-funding pension and post-retirement benefits at the levels required to achieve full funding, as measured by an actuary.

In 2019, we achieved all the Board's goals, including, notably, credit rating upgrades from each of the three major rating agencies, attaining "mid-A" ratings for the first time in LIPA's history. Five years ago, each of the same agencies had both lower ratings and a negative outlook on our credit, indicating that they thought our next rating change was a downgrade. **The LIPA Board's fiscal policy, together with record investments in customer satisfaction and clean energy, have chartered a different course, with four bond rating upgrades since 2013**, as shown in Figure 25.

The importance of these credit upgrades is that they reduce the cost of providing electric service to LIPA's customer-owners over the long-term. Prudent fiscal management reduces the cost our customers' pay when borrowing to invest in the Long Island electric grid, reduces future debt levels, and enables the lowest sustainable electric rates.

FIGURE 25

LIPA Has Received Four Credit Rating Upgrades Since 2013

These upgrades reflect rating agencies' expectations of continued investment in customer satisfaction and clean energy, while maintaining fiscal prudence

	2013 Ratings (Outlook)	2019 Ratings (Outlook)
Moody's Investors Service	**Baa1 (Negative)**	**A2 (Stable)**
Standard and Poor's	**A- (Negative)**	**A (Stable)**
Fitch Ratings	**A- (Negative)**	**A (Stable)**

The Same But Different -- Changes to LIPA's Financial Policy Due to New Lease Accounting Rules

Accounting is referred to as the "language of business." Like most languages, it can be difficult to master for those who don't speak it regularly (i.e. non-accountants). To those without a need to plumb the depths of the lease accounting rules, feel free to skip this section. For those who remain, there are some changes coming that affect the reported figures in the 2020 Budget.

[23] *LIPA's financial policy targeted fixed obligation coverage of 1.20x, 1.30x, 1.40x and 1.45x for 2016, 2017, 2018 and 2019, respectively. The Board also targeted a minimum fixed obligation coverage of 1.25x on the combination of LIPA debt, Utility Debt Securitization Authority debt, and capitalized leases.*

First, some background. LIPA owns the transmission and distribution (T&D) system on Long Island and the Rockaways. The $7 billion to buy the electric grid in 1998, as well as the annual capital investments required to maintain it, come largely from two sources – electric rates and debt.[24] Those T&D assets and that debt appear in LIPA's financial statements as assets and liabilities.

To supply electricity to customers, with a few exceptions, LIPA enters into long-term contracts for power plants and regional transmission cables. Each day, LIPA either purchases electricity in the regional electric markets and transports it to the Long Island electric grid or, if less expensive, generates electric in the power plants it has under contract. These power plants and transmission cables are not owned by LIPA, but certain accounting rules determine whether contracts should be recorded in LIPA's financial statements as assets and liabilities, similar to the electric grid assets and debt that belong to LIPA. The accountants' rules determine whether these contracts are a "lease," like the lease a customer might have for a car – the right to use another entity's asset for a period in exchange for pre-determined payments.

At the beginning of 2019, LIPA had 5,800 megawatts of power plants and 2,200 megawatts of transmission cables under contract, with $1.7 billion of associated assets and liabilities recorded in its financial statements. **Let us start our discussion with an economic reality – the new accounting rules do not change anything. LIPA has the same contracts for power plants and transmission cables; however, some of the accounting classifications of these contracts are changing, affecting figures in the 2020 Budget.**

The Old and the New for Lease Accounting

Today, LIPA's financial statements show two types of leases –

- Capital leases – whereby the value of the asset and the minimum lease payment liability are both placed on the balance sheet; and
- Operating leases – which are disclosed but not placed on the balance sheet.

This current classification system depends on whether the contract meets specific tests.

The Governmental Accounting Standards Board or GASB has issued new rules for leases effective for 2020.[25] This new standard no longer differentiates between "capital" and "operating" leases and now considers all leases with a term greater than one year to be a financing arrangement, with a corresponding asset and liability on the balance sheet.

There is no change to the actual contracts or the amounts of the payments. The changes under the new accounting rule are only to the way we account for the payments. The net effect of the new rule is to:

- Increase assets and liabilities on LIPA's balance sheet by $1.2 billion, from $1.7 billion in 2019 to $2.8 billion in 2020[26]; and
- Increase reported annual lease payments in 2020 by $160 million (these payments were previously reported as operating costs rather than lease payments).

[24] As a public power utility, LIPA is also sometimes eligible for federal grants; however, these are limited to specific purposes like storm hardening.

[25] GASB Statement No. 87 - Leases.

[26] The primary change is LIPA's Power Supply Agreement with National Grid, which is now capitalized on the balance sheet.

Impact of New Lease Rules on the LIPA Board's Financial Policy

LIPA's Board targets 1.45x coverage of fixed-obligation coverage on debt and *capital* lease payments. Under the new accounting rules, there are no longer *capital* leases.

In 2015, LIPA's 1.45x coverage target was sized to provide adequate cash flow to keep borrowing below the target of 64 percent of capital spending.

To maintain the same level of cash flow, LIPA will modify its financial target from 1.45x coverage of debt and *capital* lease payments to 1.35x coverage of debt and *lease* payments, using the new definition of leases. As shown in Figure 26, this new target produces an identical amount of dollars to cover fixed obligations as the prior lease accounting rules. **The economic reality is that nothing has changed – LIPA has the same power plants and transmission cables under contract and the 1.35x coverage target produces the same cash flow**.

FIGURE 26

LIPA Coverage Under New Lease Accounting Rules (in thousands)

	2020	
	Pre-GASB 87	Post-GASB 87
LIPA Debt Service	$265,763	$265,763
Lease Obligations	261,446	421,481
Total	527,209	687,244
Coverage Target	45%	35%
Cash Generated from Coverage	**$237,244**	**$237,244**

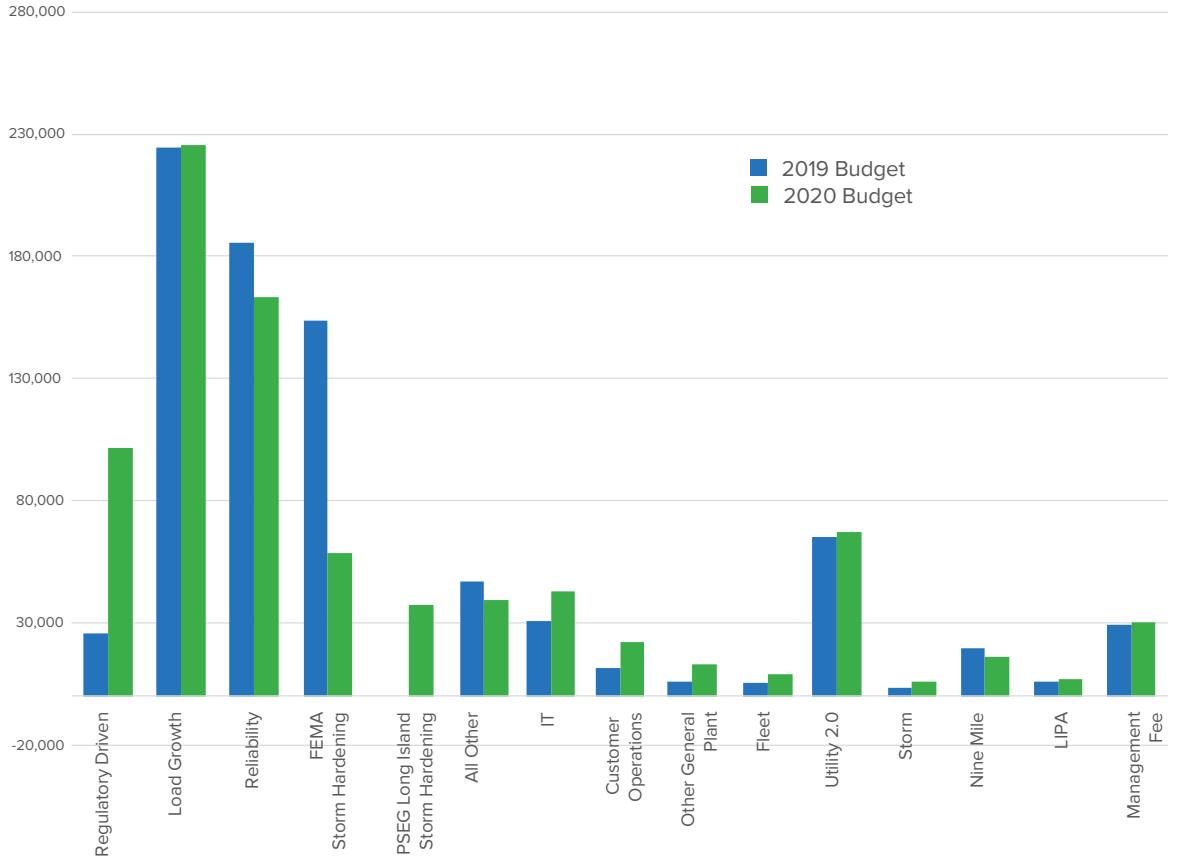
Changes in the 2020 Capital Budget

Figure 27 shows the $820.4 million 2020 Capital Budget as compared to the $811.9 million 2019 budget. **The Capital Budget is increasing by $8.5 million from the prior year.** The most significant change is a **$76 million increase for regulatory driven projects**, primarily the Western Nassau Transmission Project, which is a new 138kV underground cable from East Garden City to Valley Stream. The project is required to meet new national reliability standards.

Additionally, the 2020 Capital Budget includes $58.7 million towards the $730 million FEMA-funded storm hardening program. That program, which began in 2015, will be completed in 2020 with the rebuild of 1,025 miles of distribution circuits, the installation of 894 smart switches to minimize outages on the electric grid, and the elevation of eight substations to prevent flooding under storm conditions. However, the work of building a more resilient grid is not complete and that is why **the 2020 Budget also marks the start of a second phase of storm hardening investment, with $200 million of funding through 2023, including $37 million in 2020**.

FIGURE 27

$820 million 2020 Capital Budget as compared to the 2019 Budget



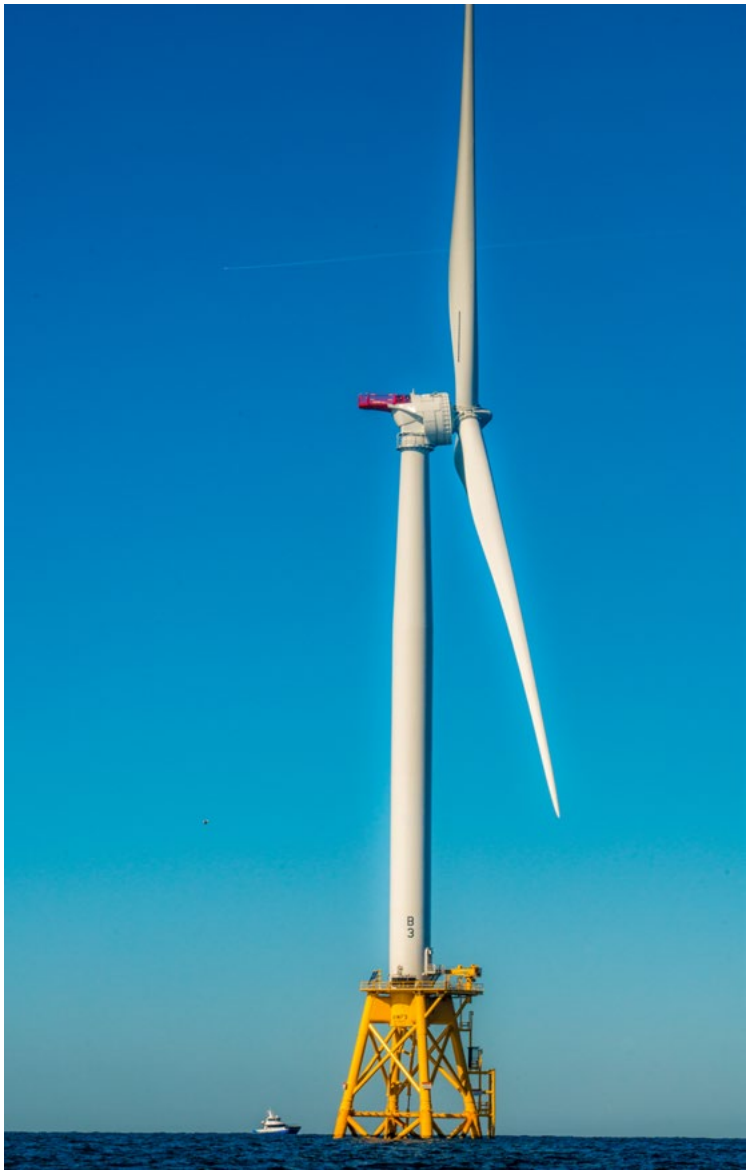
Conclusion

I would like to thank the employees of LIPA and PSEG Long Island for their hard work and dedication over the past 12 months. Every year, we come closer to the Board's vision for a **Clean, Lean, and Customer First** utility for our customer-owners on Long Island and the Rockaways.

The 2020 Budget funds our customers' priorities while holding the line on electric bills. While we still have much to do, our results show that we are on the right track.

Thomas Falcone
Chief Executive Officer

December 18, 2019



Long Island Power Authority 2020 Budget

SECTION II

Long Island Power Authority
2020 Proposed and 2021 Projected Operating and Capital Budgets

Revenue Requirements

LIPA's annual revenue requirements are budgeted to increase from $3.5 billion in 2019 to $3.7 billion in 2020. Increases in debt service (including fixed obligation coverage), power supply charges, operating costs (due to inflation), and property tax assessments are the primary drivers of the increase. These costs are further detailed on the following pages.

LIPA's revenue requirements are calculated in accordance with the practices of large public power utilities in the United States (the Public Power Model) and reflect the recovery of operating expenses in the current year plus debt and other fixed obligations, including fiscally sound levels of fixed obligation coverage.

LIPA's methodology for calculating revenue requirements and fixed obligation coverage excludes certain non-cash expenses such as depreciation and amortization (the costs of which are generally recovered in revenues through debt service payments) and the voluntary contributions to the Other Post Employment Benefits (OPEBs) Account, which are available to make debt payments, if needed. LIPA's financial policies are further detailed in the description of debt service and fixed obligation coverage requirements.

Long Island Power Authority
2020 Proposed and 2021 Projected Budgets

Revenue Requirements

Description		2018 Actual	2019 Approved	2019 Projected	2020 Proposed	2020 Change from Prior Year	2021 Projected	2021 Change from Prior Year
Operating and Managed Expenses								
PSEG Long Island Operating and Managed Expenses	(a)	$ 684,115	$ 668,975	$ 687,038	$ 715,523	$ 46,548	$ 715,042	$ (481)
PILOTs - Property-Based Taxes		287,262	292,861	292,666	298,472	5,611	304,442	5,971
PILOTs - Revenue-Based Taxes		35,568	34,321	34,332	35,351	1,030	36,820	1,468
LIPA Operating Expenses		75,203	83,619	82,354	87,956	4,337	89,603	1,647
Total Operating and Managed Expenses		**1,082,149**	**1,079,776**	**1,096,391**	**1,137,302**	**57,526**	**1,145,907**	**8,605**
Cash Adjustments								
Other Interest Costs		24,239	19,022	22,348	26,658	7,636	26,687	29
Suffolk Property Tax Settlement (Principal)		(24,713)	(24,041)	(22,391)	(26,630)	(2,589)	(29,100)	(2,470)
Visual Benefits Assessment (Principal)		(497)	(414)	(478)	(568)	(154)	(594)	(26)
PSEG Long Island OPEB Expenses		(48,100)	(43,955)	(43,943)	(50,421)	(6,466)	(50,667)	(246)
Total Cash Adjustments		**(49,070)**	**(49,388)**	**(44,465)**	**(50,961)**	**(1,573)**	**(53,674)**	**(2,714)**
Other Income								
Other Income and Deductions		56,839	44,242	69,777	48,386	4,145	46,471	(1,916)
Grant Income		41,542	28,850	28,866	28,704	(146)	28,447	(257)
Total Other Income		**98,381**	**73,092**	**98,644**	**77,091**	**3,999**	**74,918**	**(2,173)**
Debt Service								
UDSA Debt Service		324,728	327,140	327,140	319,030	(8,110)	367,388	48,358
LIPA Debt Service		197,678	216,803	210,265	265,763	48,960	280,086	14,323
Coverage		233,570	218,305	229,877	237,244	18,939	238,493	1,249
Total Debt Service		**755,976**	**762,248**	**767,282**	**822,038**	**59,789**	**885,967**	**63,930**
Power Supply Charge		1,885,600	1,793,456	1,807,566	1,845,571	52,115	1,815,711	(29,861)
Total Revenue Requirements	(a)	**$ 3,576,274**	**$ 3,513,001**	**$ 3,528,130**	**$ 3,676,860**	**$ 163,859**	**$ 3,718,993**	**$ 42,133**

Note: (a) PSEG Long Island 2019 Approved Operating Expenses have been reduced by $12.6 million due to the carry over of Operations & Maintenance (O&M) funding for the Utility 2.0 program to 2020. Corresponding revenue was reduced in 2019 by recording a Regulatory Liability.

Long Island Power Authority
2020 Proposed and 2021 Projected Operating and Capital Budgets

Statement of Revenues and Expenses

LIPA's projection of Revenues and Expenses uses the accrual basis of accounting, which results in net income of $3.5 million in 2020 and $33.6 million in 2021. Further information on the components of Revenues and Expenses are included on supplemental pages herein.

The factors contributing to the projection of modest net income in 2020 include certain non-cash items, such as: amortization of certain non-cash regulatory assets to expense; non-cash OPEBs for PSEG Long Island (Section II Page 29); other deferred expenses (Section II Page 13); a change in depreciation rates (Section II Page 13), and an increase in depreciation associated with the early retirement of conventional meters by Smart Meters.

Long Island Power Authority
2020 Proposed and 2021 Projected Budgets

Statements of Revenues and Expenses
(Thousands of Dollars)

Description		2018 Actual	2019 Approved	2019 Projected	2020 Proposed	2020 Change from Prior Year	2021 Projected	2021 Change from Prior Year
Revenues	(a)	**$ 3,576,274**	**$ 3,513,000**	**$ 3,528,130**	**$ 3,676,860**	**$ 163,860**	**$ 3,718,993**	**$ 42,133**
Power Supply Charge		1,885,600	1,793,456	1,807,566	1,845,571	52,115	1,815,711	(29,861)
Revenue Net of Power Supply Charge		**1,690,674**	**1,719,544**	**1,720,564**	**1,831,289**	**111,745**	**1,903,283**	**71,994**
PSEG Long Island Operating and Managed Expenses								
PSEG Long Island Operating Expenses	(a)	524,571	537,934	536,510	570,830	32,896	567,153	(3,677)
PSEG Long Island OPEB Expense		48,100	43,955	43,943	50,421	6,466	50,667	246
PSEG Long Island Managed Expenses		111,445	87,086	106,585	94,272	7,186	97,222	2,950
Utility Depreciation		188,879	201,340	200,568	260,288	58,949	284,976	24,688
Accelerated Depreciation of Conventional Meters		-	24,778	24,779	24,778	-	24,778	-
PILOTs - Revenue-Based Taxes		35,568	34,321	34,332	35,351	1,030	36,820	1,468
PILOTs - Property-Based Taxes		287,262	292,861	292,666	298,472	5,611	304,442	5,971
LIPA Operating Expenses		75,203	83,619	82,354	87,956	4,337	89,603	1,647
LIPA Depreciation and Amortization		142,981	137,701	137,702	137,701	-	138,708	1,007
Interest Expense		352,383	358,693	364,636	364,461	5,767	374,152	9,691
Total Expenses		**1,766,392**	**1,802,288**	**1,824,075**	**1,924,531**	**122,243**	**1,968,522**	**43,991**
Other Income and Deductions		**56,839**	**44,242**	**69,777**	**57,617**	**13,376**	**55,769**	**(1,848)**
Grant Income		**41,542**	**34,078**	**34,770**	**39,156**	**5,078**	**43,112**	**3,956**
Excess of Revenues Over Expenses	(a)	**$ 22,663**	**$ (4,424)**	**$ 1,036**	**$ 3,531**	**$ 7,956**	**$ 33,642**	**$ 30,111**

Note: (a) PSEG Long Island 2019 Approved Operating Expenses have been reduced by $12.6 million due to the carry over of O&M funding for the Utility 2.0 program to 2020. Corresponding revenue was reduced in 2019 by recording a Regulatory Liability.

Long Island Power Authority
2020 Proposed and 2021 Projected Operating and Capital Budgets

Sales and Revenues

Revenues are derived primarily from retail sales of electricity to residential and commercial customers. Also included are revenues from electric sales to public authorities and street lighting. In accordance with LIPA's Tariff for Electric Service (the Tariff), LIPA's Delivery Charge recovers the costs associated with maintaining and improving the transmission and distribution system and serving customers. LIPA recovers costs associated with purchasing and producing electric energy (fuel and purchased power) through the Power Supply Charge. LIPA also has various surcharges and non-electric service charges, such as those to recover costs associated with its distributed energy programs, assessments, revenue-related PILOTs, fees for pole attachments, late payment charges to customers whose bills are in arrears, and other miscellaneous service fees.

PSEG Long Island's sales forecast projects an 0.8% decline in sales through 2021, reflecting less favorable economic conditions, as well as, the impact of PSEG Long Island's energy efficiency programs, voluntary efficiency measures taken by customers, rooftop solar, and improvements to standards and codes. Any surplus/shortfall in delivery revenue due to sales being higher/lower than budgeted will be returned/recovered through the Revenue Decoupling Mechanism (RDM). The sales forecast assumes normal weather conditions over the period.

Long Island Power Authority
2020 Proposed and 2021 Projected Budgets

Sales and Revenues

Description		2018 Actual	2019 Approved	2019 Projected	2020 Proposed	2020 Change from Prior Year	2021 Projected	2021 Change from Prior Year
Sales of Electricity (MWh)								
Residential Sales		9,538,865	8,888,795	9,042,505	8,664,796	(223,999)	8,438,797	(225,999)
Commercial Sales		9,515,232	9,463,652	9,249,112	9,491,211	27,559	9,610,575	119,364
Other Sales to Public Authorities/Street Lighting		556,139	537,992	475,730	533,826	(4,165)	533,502	(324)
Total Sales of Electricity (MWh)		**19,610,235**	**18,890,438**	**18,767,347**	**18,689,834**	**(200,605)**	**18,582,874**	**(106,959)**
Revenues by Sector (Thousands of Dollars)								
Residential		$ 2,000,116	$ 1,863,586	$ 1,880,013	$ 1,870,202	$ 6,616	$ 1,889,275	$ 19,073
Commercial	(a)	1,487,582	1,517,399	1,529,012	1,738,345	220,947	1,780,841	42,495
Other Public Authorities/Street Lighting		68,342	65,881	55,764	66,024	143	66,010	(14)
ESCO Revenue	(a)	95,881	95,691	62,228	12,345	(83,346)	11,600	(745)
Other Regulatory Amortizations and Deferrals	(b)	(101,384)	(58,280)	(26,525)	(39,167)	19,113	(59,266)	(20,099)
Miscellaneous Revenues		25,737	28,724	27,637	29,111	387	30,534	1,423
Total Revenues		**$ 3,576,274**	**$ 3,513,000**	**$ 3,528,130**	**$ 3,676,860**	**$ 163,860**	**$ 3,718,993**	**$ 42,133**
Revenues by Component (Thousands of Dollars)								
Delivery Charge (RDM Target)		$ 1,206,294	$ 1,305,096	$ 1,308,625	$ 1,375,686	$ 70,590	$ 1,453,100	$ 77,414
Power Supply Charge		1,891,653	1,793,456	1,776,188	1,845,571	52,115	1,815,711	(29,861)
T&D Property Tax	(c)	287,262	292,861	292,666	298,472	5,611	304,442	5,971
Energy Efficiency and Distributed Energy (DER)		58,517	63,617	63,060	69,720	6,103	67,758	(1,962)
New York State Assessment		9,860	9,453	9,820	10,318	865	10,628	310
Suffolk Property Tax Settlement		48,273	46,233	44,583	47,336	1,103	48,197	861
Visual Benefits Assessment (VBA)		1,015	909	968	1,029	121	1,023	(6)
Revenue Related PILOTS		35,568	34,321	34,332	35,351	1,030	36,820	1,468
RDM Collection/(Refund)		84,612	(32,873)	(33,063)	(17,829)	15,044	-	17,829
DSA Collection/(Refund)		28,867	31,380	31,737	23,426	(7,954)	10,046	(13,380)
T&D Property Tax Collection/(Refund)	(c)	-	(1,897)	(1,897)	(2,166)	(269)	-	2,166
Other Regulatory Amortizations and Deferrals	(b)	(101,384)	(58,280)	(26,525)	(39,167)	19,113	(59,266)	(20,099)
Miscellaneous Revenues		25,737	28,724	27,637	29,111	387	30,534	1,423
Total Revenues		**$ 3,576,274**	**$ 3,513,000**	**$ 3,528,130**	**$ 3,676,860**	**$ 163,860**	**$ 3,718,993**	**$ 42,133**

Note: (a) The $83.2 million decrease in ESCO revenue and a corresponding increase in Commercial revenue is related to the elimination of the New York state sales tax exemption that occurred in July 2019. As a result, many ESCOs left the market transferring these accounts back to LIPA as commercial retail customers.

(b) The 2019 Approved Operating Expenses have been reduced by $12.6 million due to a carry over of funding for the Utility 2.0 program to 2020.

(c) T&D Property Tax is a component of Delivery Charge.

Long Island Power Authority
2020 Proposed and 2021 Projected Operating and Capital Budgets

Power Supply Cost

Power Supply Costs are budgeted at $1.85 billion for 2020, an increase of $52.1 million as compared to the approved Budget for 2019. The main driver of the increase is (i) the shift of Long Island Choice (LIC) customers back to LIPA as their energy supplier, totaling approximately $55.0 million[1], and (ii) property taxes. The increase is also driven by the addition of new renewable projects and projected purchases of Renewable Energy Credits (RECs).

Power supply cost projections are prepared utilizing a generation economic dispatch model that considers, among other variables, the availability and efficiency of generating resources, delivered fuel prices, and environmental regulatory requirements.

In addition to the costs for gas and oil consumed in the generation of electricity, power supply costs include the cost of emission allowances, generating unit and transmission cable capacity, costs charged by the New York, New England and PJM independent system operators (ISO), electric power wheeling, Zero Emission Credits, services received under the power supply and fuel management agreements, fuel hedging program costs, economy energy purchases, energy and RECs from renewable resource as well as LIPA's 18% share of the Nine Mile Point 2 nuclear generating station, the National Grid Power Supply Agreement (PSA), and certain PILOTs.

Table 1: 2020 vs. 2019 Change in Costs

Description	Net Change	Cause
Capacity	($2.0M)	Lower capacity market purchases and variable O&M payments, as well as projected reductions in South Fork demand response costs; partially offset by Power Supply Agreement projected 401K match contribution.
Purchased Power	$24.1M	Lower purchase power prices offset by higher NYISO ancillary and transmission charges as well as increase in total energy produced by Resource Recovery units. Increase in costs due to shift of majority of LIC customers to LIPA.
Commodity (gas & oil)	$1.9M	Lower projected gas and oil prices net of financial settlements from hedging. Increase in costs due to shift of LIC customers to LIPA.
Renewables	$9.1M	Expected installation of additional renewable projects and projected REC purchases.
Other	$7.5M	Higher RGGI allowance prices and increase in Y-49 cable charges.
Pass Through Property Taxes	$11.5M	Projected increase in PSA taxes.
Total	**$52.1M**	

[1] Note, a change in the state law eliminated the exemption from local sales taxes for commercial LIC customers in July 2019. This increase in total Power Supply Costs has a negligible impact on the Power Supply Charge since LIPA's overall retail energy sales also increase.

Long Island Power Authority
2020 Proposed and 2021 Projected Budgets

Power Supply Charge
(Thousands of Dollars)

Description	2018 Actual	2019 Approved	2019 Projected	2020 Proposed	2020 Change from Prior Year	2021 Projected	2021 Change from Prior Year
Capacity							
Capacity Charges	$ 391,261	$ 395,312	$ 393,426	$ 390,271	$ (5,041)	$ 391,688	$ 1,417
National Grid (PSA)	240,569	253,561	254,802	256,604	3,042	260,663	4,060
Total Capacity	**631,830**	**648,873**	**648,227**	**646,875**	**(1,998)**	**652,351**	**5,476**
Purchased Power							
Purchased Power	385,335	361,293	348,697	385,368	24,075	403,369	18,001
Total Purchased Power	**385,335**	**361,293**	**348,697**	**385,368**	**24,075**	**403,369**	**18,001**
Commodity							
Natural Gas	291,620	211,166	248,859	226,645	15,479	206,129	(20,516)
Fuel Oil	68,212	39,572	41,753	25,990	(13,582)	26,334	344
Total Commodity	**359,832**	**250,738**	**290,612**	**252,635**	**1,897**	**232,463**	**(20,172)**
Renewables							
Renewable Power	119,479	138,453	137,058	147,598	9,144	112,521	(35,077)
Total Renewables	**119,479**	**138,453**	**137,058**	**147,598**	**9,144**	**112,521**	**(35,077)**
Other							
Transmission	39,457	37,245	40,122	40,491	3,246	40,535	44
Nine Mile Nuclear Fuel	41,911	45,006	42,607	45,619	613	45,823	204
Regional Greenhouse Gas Initiative (RGGI)	20,869	18,348	20,149	21,401	3,053	20,926	(475)
Zero Emissions Credits	42,827	50,014	41,240	51,398	1,384	54,921	3,522
Fuel and Power Supply Management Services	19,421	19,724	20,262	20,085	361	20,453	369
Other	14,677	14,393	1,045	13,210	(1,183)	7,217	(5,993)
Total Other	**179,163**	**184,729**	**165,426**	**192,203**	**7,474**	**189,875**	**(2,329)**
Pass Through Property Taxes							
National Grid (PSA)	196,218	198,653	204,208	210,032	11,379	214,055	4,024
Fast Track Units	9,394	6,725	9,303	6,843	117	6,938	95
Nine Mile	4,347	3,992	4,035	4,018	26	4,139	121
Total Pass Through Property Taxes	**209,960**	**209,370**	**217,546**	**220,893**	**11,523**	**225,132**	**4,240**
Total Power Supply Charge	**$ 1,885,600**	**$ 1,793,456**	**$ 1,807,566**	**$ 1,845,571**	**$ 52,115**	**$ 1,815,711**	**$ (29,861)**

Long Island Power Authority
2020 Proposed and 2021 Projected Operating and Capital Budgets

Operating Expenses

Total Operating Expenses are budgeted at $803.5 million in 2020 and projected at $804.6 million in 2021.

Operating Expenses are comprised of costs associated with operating and maintaining LIPA's Transmission and Distribution system and consists of three major expense categories:

(i) PSEG Long Island Operating Expenses (expenses which PSEG Long Island must remain within 102% of budget to earn incentive compensation);

(ii) PSEG Long Island Managed Expenses (expenses which PSEG Long Island manages but are substantially outside of its control); and

(iii) LIPA's Operating Expenses.

PSEG Long Island Operating Expenses include costs related to the following major areas: Transmission and Distribution, Customer Services, Business Services, Power Markets and Energy Efficiency Programs. The budget for the Energy Efficiency Programs incentivizes energy efficiency as well as beneficial electrification (e.g. electric vehicles and heat pumps), among other things. PSEG Long Island Operating Expenses for 2020 and 2021 include additional costs related to the Utility 2.0 Plan. These costs are associated with projects aimed at integrating Smart Meters and Distributed Energy Resources (DER) into LIPA's electric grid.

PSEG Long Island Managed Expenses include costs related to New York State assessments, uncollectible accounts, and storm preparation and restoration. The budget for storm preparation and restoration costs is increasing to $60.0 million for 2020 and $62.1 million for 2021. The budget phases in a historical five-year average level of spending on storm restoration.

LIPA Operating Expenses includes the PSEG Long Island management fee and costs related to LIPA staff and outside professional services, as detailed on Section II Page 31.

Long Island Power Authority
2020 Proposed and 2021 Projected Budgets

Operating Expenses
(Thousands of Dollars)

Description		2018 Actual	2019 Approved	2019 Projected	2020 Proposed	2020 Change from Prior Year	2021 Projected	2021 Change from Prior Year
PSEG Long Island Operating Expenses	(a)	**$ 572,671**	**$ 581,889**	**$ 580,453**	**$ 621,251**	**$ 39,362**	**$ 617,820**	**$ (3,431)**
PSEG Long Island Managed Expenses								
Uncollectible Accounts		16,206	19,867	18,047	20,835	968	21,104	269
Storm Restoration		90,463	54,854	76,380	60,000	5,146	62,143	2,143
NYS Assessment		9,860	9,453	9,820	10,318	865	10,628	310
Accretion of Asset Retirement Obligation		134	2,750	2,130	2,927	177	3,155	228
Miscellaneous		(5,219)	162	208	192	30	192	-
Total PSEG Long Island Managed Expenses		**111,445**	**87,086**	**106,585**	**94,272**	**7,186**	**97,222**	**2,950**
Total PSEG Long Island Operating and Managed Expenses		**684,115**	**668,975**	**687,038**	**715,523**	**46,548**	**715,042**	**(481)**
LIPA Operating Expenses								
Management Fee (including incentive)		74,102	75,584	75,276	76,781	1,198	78,317	1,536
Capitalized Management Fee		(25,806)	(28,926)	(29,696)	(30,290)	(1,364)	(30,895)	(606)
LIPA Operating Costs		26,908	36,961	36,774	41,464	4,503	42,182	717
LIPA Operating Expenses		**75,203**	**83,619**	**82,354**	**87,956**	**4,337**	**89,603**	**1,647**
Total PSEG Long Island & LIPA Operating Expenses		**$ 759,319**	**$ 752,594**	**$ 769,393**	**$ 803,479**	**$ 50,886**	**$ 804,645**	**$ 1,166**

Note: (a) PSEG Long Island 2019 Approved Operating Expenses have been reduced by $12.6 million due to a carry over of O&M funding for the Utility 2.0 program.

Long Island Power Authority
2020 Proposed and 2021 Projected Operating and Capital Budgets

Depreciation and Amortization Expenses

Depreciation and Amortization Expenses are budgeted at $422.8 million in 2020 and projected at $448.5 million in 2021.

PSEG Long Island Managed Utility Depreciation consists of depreciation of transmission and distribution plant, information technology, and FEMA storm hardening assets.

The budgeted depreciation for 2020 and projected for 2021 reflects increases of approximately $58.9 million and $24.7 million, respectively, resulting from an updated depreciation analysis and a higher depreciable asset base. An additional annual depreciation expense of approximately $24.8 million will continue through 2022 due to the replacement of conventional meters with Smart Meters.

LIPA Depreciation and Amortization consists primarily of the amortization of the Acquisition Adjustment at $111.4 million annually. The Acquisition Adjustment is an intangible asset resulting from the merger with the Long Island Lighting Company in 1998. Also included is the amortization of certain regulatory assets related to pension and OPEB expenses for the former National Grid and current PSEG Long Island employees that directly serve LIPA's customers. These retirement benefit expenses are a contractual obligation of LIPA and are being amortized to align the expenses to coincide with the term of employment of the workforce contracted by LIPA under the Amended and Restated Operations Services Agreement. See LIPA's audited financial statements for more information.

Long Island Power Authority
2020 Proposed and 2021 Projected Budgets

Depreciation and Amortization Expenses
(Thousands of Dollars)

Description	2018 Actual	2019 Approved	2019 Projected	2020 Proposed	2020 Change from Prior Year	2021 Projected	2021 Change from Prior Year
PSEG Long Island Managed Utility Depreciation	$ 185,455	$ 195,531	$ 194,008	$ 248,675	$ 53,144	$ 268,681	$ 20,006
Accelerated Depreciation of Conventional Meters	-	24,778	24,779	24,778	-	24,778	-
Depreciation Expense Related to FEMA Capital Projects	3,424	5,809	6,560	11,613	5,804	16,295	4,682
Total PSEG Long Island Managed Utility Depreciation	**188,879**	**226,118**	**225,346**	**285,066**	**58,949**	**309,754**	**24,688**
LIPA Depreciation and Amortization							
Amortization of Acquisition Adjustment	111,374	111,375	111,375	111,375	-	111,375	-
Amortization of OPEB & Pension Deferrals	31,014	25,015	25,015	25,015	-	25,015	-
Depreciation - LIPA	593	1,312	1,312	1,312	-	2,318	1,007
Total LIPA Depreciation and Amortization	**142,981**	**137,701**	**137,702**	**137,701**	**-**	**138,708**	**1,007**
Total Depreciation and Amortization Expenses	**$ 331,860**	**$ 363,819**	**$ 363,048**	**$ 422,768**	**$ 58,949**	**$ 448,462**	**$ 25,695**

Long Island Power Authority
2020 Proposed and 2021 Projected Operating and Capital Budgets

Taxes, Payments-in-Lieu of Taxes and Assessments

Payments-In-Lieu of Taxes (PILOTs) and Assessments are budgeted at $677.9 million in 2020 and projected at $691.8 million in 2021.

Revenue-based PILOTs are calculated using gross revenues received from the sale of electricity and other sources of revenue and are subject to true up to actual cost through a PILOT payments recovery rider.

Additionally, LIPA incurs property-based taxes and PILOTs associated with generating assets. These costs, as with all power supply costs, are reconciled to actual costs. National Grid Power Supply Agreement (PSA) related taxes are budgeted at $210.0 million in 2020 and projected at $214.1 million in 2021. In 2018, LIPA concluded a property tax settlement with the Village of Port Jefferson and the Town of Brookhaven. In November 2019, LIPA reached a tentative property tax settlement with Nassau County for two additional power plants. LIPA continues to challenge other property tax assessments on the PSA generation assets, which are significantly over-assessed.

The property-based PILOTs related to the Fast Track Units are budgeted at $6.8 million in 2020.

As LIPA owns 18% of the Nine Mile Point 2 nuclear power plant, it is also responsible for paying a share of the property taxes. LIPA's share of these taxes are budgeted at approximately $4.0 million in 2020 and 2021.

The New York State Department of Public Service (DPS) Administrative Assessment recovers costs related to DPS' oversight of LIPA and PSEG Long Island's operations. This cost is $10.3 million in 2020.

LIPA collects sales taxes on behalf of local municipalities. Those taxes are estimated at $112.7 million in 2020 and $114.6 million in 2021.

Long Island Power Authority
2020 Proposed and 2021 Projected Budgets

Taxes, Payments-in-Lieu of Taxes and Assessments
(Thousands of Dollars)

Description	2018 Actual	2019 Approved	2019 Projected	2020 Proposed	2020 Change from Prior Year	2021 Projected	2021 Change from Prior Year
PILOTs - Revenue-Based Taxes	**$ 35,568**	**$ 34,321**	**$ 34,332**	**$ 35,351**	**$ 1,030**	**$ 36,820**	**$ 1,468**
PILOTs - Property-Based Taxes	**287,262**	**292,861**	**292,666**	**298,472**	**5,611**	**304,442**	**5,971**
Property Taxes in Power Supply Charge							
National Grid (PSA) Property Taxes	196,218	198,653	204,208	210,032	11,379	214,055	4,024
Fast Track Units	9,394	6,725	9,303	6,843	117	6,938	95
Nine Mile PILOTs	4,347	3,992	4,035	4,018	26	4,139	121
Total Property Taxes in Power Supply Charge	**209,960**	**209,370**	**217,546**	**220,893**	**11,523**	**225,132**	**4,240**
Other Taxes and Assessments							
NYS Department of Public Service	9,860	9,453	9,820	10,318	865	10,628	310
NYS Office of Real Property Services	167	162	192	192	30	192	-
Total Other Taxes and Assessments	**10,028**	**9,615**	**10,012**	**10,510**	**895**	**10,820**	**310**
Total Taxes and Assessments Before Sales Taxes	**542,818**	**546,167**	**554,556**	**565,226**	**19,059**	**577,214**	**11,988**
Sales Taxes (a)	**102,315**	**104,946**	**104,817**	**112,725**	**7,779**	**114,614**	**1,888**
Total PILOTs, Sales, State and Local Taxes and Assessments	**$ 645,133**	**$ 651,113**	**$ 659,373**	**$ 677,951**	**$ 26,838**	**$ 691,828**	**$ 13,877**

Note: (a) Sales tax revenue is collected by LIPA in accordance with local municipal law. Sales taxes are recorded as liabilities by LIPA as they are collected on behalf of and transferred to local government jurisdictions.

Long Island Power Authority
2020 Proposed and 2021 Projected Operating and Capital Budgets

Other Income and Deductions

Other Income and Deductions are budgeted at $57.6 million for 2020 and projected at $55.8 million for 2021. The increased budget is based on higher forecasted account balances and slightly higher interest rates.

Other Income and Deductions consists of income and interest generated from LIPA's short-term investments, including the Rate Stabilization Fund and the Construction Fund, earnings on the Nine Mile Point 2 nuclear decommissioning trust fund, earnings on the OPEB Account, carrying charges accrued on deferred balances related to the Suffolk Property Tax Settlement, and miscellaneous sources of revenues and expenses, such as income from certain customer-requested work not included in electric rates.

Projected interest rates on short-term investments are updated to prevailing interest rates annually as part of the budget process and differences between projected and actual interest rates are reconciled annually through the Delivery Service Adjustment.

Long Island Power Authority
2020 Proposed and 2021 Projected Budgets

Other Income and Deductions
(Thousands of Dollars)

Description	2018 Actual	2019 Approved	2019 Projected	2020 Proposed	2020 Change from Prior Year	2021 Projected	2021 Change from Prior Year
Short-Term Investment Income	$ 10,973	$ 5,970	$ 19,689	$ 16,636	$ 10,666	$ 16,358	$ (278)
Interest Income from:							
Suffolk Property Tax Settlement	23,560	22,192	22,192	20,706	(1,486)	19,097	(1,609)
Visual Benefits Assessment	518	495	490	462	(33)	429	(32)
OPEB Account	6,520	4,182	6,346	5,847	1,665	5,940	93
PSEG Long Island Funding Accounts	1,537	1,461	2,672	2,664	1,203	2,691	27
Miscellaneous Income and Deductions - LIPA	2,988	2,843	219	201	(2,643)	201	-
Miscellaneous Income and Deductions - PSEG Long Island	2,673	2,099	3,319	1,872	(227)	1,755	(116)
Subtotal Other Income and Deductions	**$ 48,770**	**$ 39,242**	**$ 54,927**	**$ 48,386**	**$ 9,145**	**$ 46,471**	**$ (1,916)**
Nuclear Decommissioning Trust Fund	8,069	5,000	14,850	9,231	4,231	9,298	67
Total Other Income and Deductions	**$ 56,839**	**$ 44,242**	**$ 69,777**	**$ 57,617**	**$ 13,376**	**$ 55,769**	**$ (1,848)**

Long Island Power Authority
2020 Proposed and 2021 Projected Operating and Capital Budgets

Grant Income

In 2020, Grant Income consists primarily of (i) a grant of $25.0 million from NYSERDA from Regional Greenhouse Gas Initiative (RGGI) funds to support PSEG Long Island's energy efficiency programs and (ii) subsidy payments totaling $3.7 million from the United States Treasury equal to approximately 33% of the interest on LIPA's debt issued as Build America Bonds.

LIPA pays for RGGI allowances as part of its Power Supply Charge. This RGGI grant represents the return of a portion of those funds to support energy efficiency programs on Long Island.

In February 2014, LIPA signed a Letter of Undertaking with FEMA that provides for $730.0 million of grant funding for storm hardening measures. To better reflect the nature of this grant it will be amortized to Grant Income in an amount equal to the incremental depreciation expense incurred as a result of the storm hardening program. This amortization is estimated at $10.5 million in 2020 and $14.7 million in 2021.

Long Island Power Authority
2020 Proposed and 2021 Projected Budgets

Grant Income
(Thousands of Dollars)

Description	2018 Actual	2019 Approved	2019 Projected	2020 Proposed	2020 Change from Prior Year	2021 Projected	2021 Change from Prior Year
Build America Bonds Subsidy - U.S. Treasury	$ 3,861	$ 3,850	$ 3,866	$ 3,704	$ (146)	$ 3,447	$ (257)
Efficiency & DER - RGGI Funding	34,600	25,000	25,000	25,000	-	25,000	-
Subtotal Grant Income	**38,461**	**28,850**	**28,866**	**28,704**	**(146)**	**28,447**	**(257)**
Amortization of Deferred FEMA Grant	**3,081**	**5,228**	**5,904**	**10,452**	**5,224**	**14,665**	**4,214**
Total Grant Income	**$ 41,542**	**$ 34,078**	**$ 34,770**	**$ 39,156**	**$ 5,078**	**$ 43,112**	**$ 3,956**

Long Island Power Authority
2020 Proposed and 2021 Projected Operating and Capital Budgets

Interest Expense

Interest expense is budgeted at $364.5 million in 2020 and projected at $374.2 million in 2021. The budget is based on forecasted levels of outstanding debt, associated fees, and the amortization of previously deferred debt-related charges and credits. Actual interest rates on variable debt are updated to prevailing interest rates each year as part of the annual budget process and differences between projected and actual interest rates are reconciled annually through the Delivery Service Adjustment ensuring customers pay only actual costs.

Interest expense reflects the accrual of interest on outstanding debt in the calendar year. It can differ from interest payments made to bondholders with respect to timing, but the actual amounts will be the same over the life of the bonds.

Amortization of premiums are budgeted to increase by $3.7 million in 2020 as compared to 2019 due to new debt issuance.

LIPA no longer capitalizes interest expense due to a change in accounting requirements related to GASB Statement No. 89.

Long Island Power Authority
2020 Proposed and 2021 Projected Budgets

Interest Expense
(Thousands of Dollars)

Description	2018 Actual	2019 Approved	2019 Projected	2020 Proposed	2020 Change from Prior Year	2021 Projected	2021 Change from Prior Year
Accrued Interest Expense on Debt Securities	$ 361,283	$ 372,666	$ 376,038	$ 377,089	$ 4,424	$ 388,409	$ 11,320
Amortization of Premium	(58,970)	(60,857)	(61,189)	(64,590)	(3,733)	(64,302)	288
Interest Expense on Debt Securities (Accrued)	**302,312**	**311,809**	**314,849**	**312,499**	**690**	**324,107**	**11,607**
Other Interest Expense							
Amortization of Deferred Debt Issue Costs	3,319	5,291	5,301	6,967	1,675	6,288	(679)
Amortization of Deferred Defeasance Costs	32,285	29,304	28,872	25,194	(4,110)	22,572	(2,622)
Other Interest Amortizations	(6,612)	(6,733)	(6,733)	(6,857)	(124)	(5,501)	1,356
Capital Lease Interest	845	-	-	-	-	-	-
Other Interest Amortizations (Accrued)	**29,838**	**27,862**	**27,439**	**25,304**	**(2,559)**	**23,359**	**(1,945)**
Interest Rate Swap Payments	14,270	10,388	14,077	18,143	7,754	18,227	84
Letter of Credit and Remarketing Fees	6,452	6,827	6,421	6,793	(34)	6,739	(54)
Interest on Customer Security Deposits	409	392	540	488	96	487	(1)
Bond Administration Costs and Bank Fees	4,977	1,415	1,309	1,235	(181)	1,235	-
Other Interest Costs (Cash)	**26,107**	**19,022**	**22,348**	**26,658**	**7,636**	**26,687**	**29**
Subtotal - Interest Expense	**358,257**	**358,693**	**364,636**	**364,461**	**5,767**	**374,152**	**9,691**
Less: Capitalized Interest (a)	**5,874**	-	-	-	-	-	-
Total Interest Expense	**$ 352,383**	**$ 358,693**	**$ 364,636**	**$ 364,461**	**$ 5,767**	**$ 374,152**	**$ 9,691**

Note: (a) Due to a new accounting standard Capitalized Interest was eliminated in 2019.

Long Island Power Authority
2020 Proposed and 2021 Projected Operating and Capital Budgets

Debt Service Requirements

Debt service consists of principal and interest payments due to bondholders. Debt service payments are reported separately for LIPA debt and UDSA debt. LIPA refinanced debt through the UDSA, resulting in a net present value savings of $492.0 million to customers.

Consistent with the Public Power Model, LIPA also recovers "fixed obligation coverage." Fixed obligation coverage is the portion of LIPA's capital program funded by cash flow in each year rather than by new borrowings. Fixed obligation coverage is a ratio based on the LIPA's annual debt service payments and the imputed payments associated with long-term obligations such as power supply contracts and office and vehicle leases.

The LIPA's Board financial policy includes several components:

(i) **Mid-A Ratings Target:** LIPA's bond rating is A2 (stable), A (stable) and A (stable) (Moody's, S&P, and Fitch, respectively). LIPA's target is to maintain or improve these ratings.

(ii) **Borrow Less than 64% of Capital Spending:** LIPA targets to borrow less than 64% of capital spending, with the balance funded by cash flow. This level is typical for large public power utilities and an industry best practice.

(iii) **Fixed Obligation Coverage Target:** LIPA's Fixed Obligation Coverage Ratio has been revised in 2020 to reflect the impact of a new Governmental Accounting Standards Board (GASB) rule called Statement No. 87 Leases. This new standard revised the definition of a long-term lease. As a result, the value of long-term lease payments increased by $160 million, from $261 million in 2019 to $421 million in 2020. Since long-term leases are a component in the Fixed Obligation Coverage Ratio, to ensure that the updated value of long-term leases results in the same level of cash flow as the prior lease standard, the coverage ratio will be reduced from 1.45x to 1.35x starting in 2020.

Long Island Power Authority
2020 Proposed and 2021 Projected Budgets

Debt Service Requirements
(Thousands of Dollars)

Description		2018 Actual	2019 Approved	2019 Projected	2020 Proposed	2020 Change from Prior Year	2021 Projected	2021 Change from Prior Year
UDSA Debt Service								
UDSA Debt Service		$ 324,728	$ 327,140	$ 327,140	$ 319,030	$ (8,110)	$ 367,388	$ 48,358
Board Policy Target Coverage Ratio on UDSA Debt Service		1.00 x	1.00 x	1.00 x	1.00 x		1.00 x	
UDSA Debt Service Plus Coverage		324,728	327,140	327,140	319,030	(8,110)	367,388	48,358
LIPA Debt Service								
LIPA Debt Service on Fixed Rate Debt		169,036	182,793	182,793	234,558	51,765	240,715	6,157
LIPA Debt Service on Variable Rate Debt		28,642	34,010	27,472	31,205	(2,805)	39,371	8,166
Total LIPA Debt Service		197,678	216,803	210,265	265,763	48,960	280,086	14,323
Board Policy Target Coverage Ratio on LIPA Debt Service	(a)	1.40 x	1.45 x	1.45 x	1.35 x		1.35 x	
LIPA Debt Service Plus Coverage		276,749	314,616	305,128	357,508	42,892	378,116	20,608
Long-term Obligations								
LIPA Long Term Obligations	(a)	281,081	267,076	267,076	421,481	154,405	401,324	(20,157)
Board Policy Target Coverage Ratio on Long-term Obligations	(a)	0.40 x	0.45 x	0.45 x	0.35 x		0.35 x	
LIPA Long-term Obligations Coverage		112,432	120,494	120,493	145,500	25,006	140,463	(5,036)
Revenue Net of Requirements								
Adjustment to Coverage Due to Revenue Net of Requirements			-	14,521	-	-	-	-
Total Debt Service and Coverage		$ 713,910	$ 762,250	$ 767,282	$ 822,038	$ 59,788	$ 885,967	$ 63,930
Total Projected Debt Service and Coverage								
Total Projected Debt Service		522,406	543,943	537,405	584,793	40,850	647,474	62,681
Total Coverage		233,570	218,305	229,877	237,244	18,939	238,493	1,249
Projected Coverage Ratio on LIPA Obligations	(a)	1.49 x	1.45 x	1.48 x	1.35 x		1.35 x	
Projected Coverage on LIPA & UDSA Obligations		1.29 x	1.27 x	1.29 x	1.24 x		1.23 x	

Note: (a) Coverage ratio for 2020 reflects implementation of GASB Statement No. 87 for leases. A 1.35x coverage ratio in 2020 provides the same cash flow as 1.45x coverage ratio would have generated had GASB No. 87 not been adopted. A higher stated level of Long-Term Obligations requires a lower coverage ratio to generate the same cash flow.

Long Island Power Authority
2020 Proposed and 2021 Projected Operating and Capital Budgets

Capital Expenditures

Capital Expenditures are budgeted at $820.4 million in 2020 and are projected at $705.1 million in 2021. The 2020 Capital Budget includes a deferral of certain 2019 Capital projects into 2020 and beyond, as shown in Section II Page 44.

Transmission and Distribution projects are evaluated using a Value and Risk Evaluation protocol to determine the prioritization of projects that have the highest value for system and company performance. The projects pursued will improve system reliability and resiliency and include a new Storm Hardening Distribution Circuit Program and the continuation of the Multiple Customer Outage Program to address customers with poor reliability.

In February 2014, LIPA signed a Letter of Undertaking with FEMA that provides for a $730.0 million storm hardening initiative. As part of this program, FEMA will contribute 90% of the cost to this project. Construction is scheduled to complete at the end of the first quarter of 2020.

Information Technology projects include improvements and upgrades to systems that support Transmission and Distribution, Customer Services and IT infrastructure. Capital expenditures for Customer Services are primarily comprised of costs associated with residential and commercial meter replacement.

Capital expenditures for 2020 and 2021 include additional costs related to the Utility 2.0 Plan. These costs are associated with projects aimed at smart meters and integrating Distributed Energy Resources (DER) into LIPA's electric grid.

The percent of Capital funded from debt will be above LIPA's target of 64% in 2020 and 2021. This is due to the timing of two unusually large projects: Western Nassau Transmission $174.5 million and Smart Meters $242.4 million. Excluding these projects, the percentage would be 60% in 2020 and 65% in 2021.

Nine Mile Point 2 Capital Expenditures relates to LIPA's share of capital expenses for the NMP2 nuclear generating station of which LIPA owns an undivided 18% interest.

Long Island Power Authority
2020 Proposed and 2021 Projected Budgets

Capital Expenditures
(Thousands of Dollars)

Description		2018 Actual	2019 Approved	2019 Projected	2020 Proposed	2020 Change from Prior Year	2021 Projected	2021 Change from Prior Year
Transmission and Distribution								
Regulatory Driven		$ 7,421	$ 25,489	$ 34,850	$ 101,435	$ 75,946	$ 32,998	$ (68,437)
Load Growth		131,330	262,030	192,327	225,520	(36,510)	210,505	(15,015)
Reliability		184,418	190,518	184,515	163,186	(27,332)	212,563	49,377
Storm Hardening		-	-	1,599	37,000	37,000	50,000	13,000
Economic, Salvage, Tools, Equipment & Other		33,358	48,866	51,591	39,464	(9,402)	23,522	(15,942)
Total Transmission and Distribution Projects		**356,526**	**526,902**	**464,883**	**566,605**	**39,703**	**529,588**	**(37,018)**
Other PSEG Long Island Capital Expenditures								
Information Technology		40,439	35,236	37,848	42,883	7,647	36,073	(6,810)
Customer Operations		29,299	11,394	19,054	22,181	10,787	20,282	(1,899)
Other General Plant		2,811	8,944	6,639	13,027	4,083	5,773	(7,254)
Fleet		10,098	5,495	7,445	8,875	3,380	9,719	844
Utility 2.0 (Includes carry over)	(a)	-	65,085	63,484	67,208	2,123	55,722	(11,486)
Budget Amendment to carry over projects		-	(52,307)	-	-	52,307	-	-
Total PSEG Long Island Excluding FEMA		**439,174**	**600,749**	**599,353**	**720,779**	**120,030**	**657,156**	**(63,623)**
FEMA Storm Hardening		151,384	153,609	117,077	58,665	(94,944)	6,308	(52,357)
Storm Capitalization		-	3,501	4,952	5,934	2,433	6,146	212
Total PSEG Long Island Capital		**590,558**	**757,859**	**721,382**	**785,378**	**27,518**	**669,609**	**(115,768)**
Nine Mile Point 2		17,956	19,461	23,025	15,760	(3,700)	20,012	4,251
LIPA - Other		344	5,700	2,000	6,650	950	2,500	(4,150)
Capital OPEB Adjustment	(b)	-	-	-	(17,715)	(17,715)	(17,869)	(154)
Allowance For Funds Used During Construction		5,874	-	-	-	-	-	-
Capitalized Management Fee		25,806	28,926	29,696	30,290	1,364	30,895	606
Total Capital Expenditures	(c)	**$ 640,538**	**$ 811,946**	**$ 776,103**	**$ 820,363**	**$ 8,417**	**$ 705,147**	**$ (115,215)**
Funding for Capital Expenditures								
FEMA Contribution (90% of Project Costs)	(d)		$ 138,248	$ 105,369	$ 52,798	$ (85,450)	$ 5,677	$ (47,122)
Coverage from Operating Revenue								
Total Coverage			$ 218,305	$ 229,877	$ 237,244	$ 18,939	$ 238,493	$ 1,249
Less Amount Projected for O&M OPEB Funding	(e)		(27,509)	(29,336)	(31,316)	(3,808)	(33,716)	(2,400)
Funding Required from New Debt			482,901	470,193	561,636	78,735	494,693	(66,943)
Total Funding for Capital Expenditures			**$ 811,946**	**$ 776,103**	**$ 820,363**	**$ 8,417**	**$ 705,147**	**$ (115,215)**

Note: (a) The Approved 2019 U2.0 budget of $69.7 million has been reduced to reflect the (1) $9.1 million U2.0 budget amendment carry over to 2020 partially offset by (2) $4.5 million acceleration of Utility 2.0 Smart Meters. See reconciliation table on the next page.
(b) Non Cash cost of Other Post Employment Benefits (OPEB) included in capital expenses above.
(c) The Approved 2019 Capital budget of $868.8 million has been reduced to reflect (1) $52.3 million budget amendment carry over to 2020 and (2) $9.1 million U2.0 budget amendment carry over to 2020 partially offset by (3) $4.5 million accelerated implementation of the Smart Meters.
(d) Amounts not yet reimbursed by FEMA; pending completion of individual projects.
(e) Projected 2020 OPEB funding is $45.2 million, of which $13.9 million is capital and $31.3 million is O&M.

Long Island Power Authority
2020 Proposed and 2021 Projected Budgets

Capital Expenditures
(Thousands of Dollars)

Description	2018 Actual	2019 Approved	2019 Projected	2020 Proposed	2020 Change from Prior Year	2021 Projected	2021 Change from Prior Year
Percent of Capital Funded from Debt:							
LIPA Target		**64%**	**64%**	**64%**		**64%**	
Projected Including FEMA spending and reimbursement		**59%**	**61%**	**68%**		**70%**	
Projected Excluding FEMA spending and reimbursement		**71%**	**70%**	**73%**		**71%**	
Reconciliation of Utility 2.0							
Utility 2.0 Approved 2018 Filing		$ 71,961		$ 54,158			
Utility 2.0 Smart Meters Acceleration 2019 to 2018		(2,300)		-			
Utility 2.0 Smart Meters Acceleration 2022 to 2019		4,539		-			
Utility 2.0 Smart Meters Carry over 2019 to 2020		(9,115)		9,115			
Utility 2.0 2018 Filing		65,085		63,273			
Utility 2.0 2019 Filing		-		3,936			
Total Utility 2.0		**$ 65,085**		**$ 67,208**			

Major Projects

(Projects with a total cost greater than $25 million)

Description	Justification	In Service Date	Cash Flow ($millions)				
			Project To Date Expenditures through 12/31/19	2020	2021	2022 and Beyond	Total Project Cost
Western Nassau Transmission (EGC- Valley Stream (N-1-1): Install new 138kV underground cable	New NERC reliability standard	2020	$ 42.5	$ 101.1	$ 30.9	$ -	$ 174.5
Belmont Substation: Construct new 33/13kV substation & distribution circuits	Load growth in Belmont Park	2020	$ 20.0	$ 12.8	$ 5.7	$ -	$ 38.5
Two Way Radio System Replacement: Replace existing conventional radio system with new territory-wide radio system	Current system is a mix of legacy radio console, mobiles and portable radios with age of equipment ranging from 10 to 35 years old; vendors no longer support	2020	$ 36.0	$ 8.8	$ -	$ -	$ 44.8
Hempstead: Upgrade Existing Substation from 23/4 kV to 69/13 kV	Load growth in the Town of Hempstead	2020	$ 32.7	$ 4.0	$ -	$ -	$ 36.7
Kings Highway: Construct new substation with 3 transformers and 8 new distribution feeders	Load growth in the towns of Smithtown, Hauppauge and Islip	2020	$ 44.0	$ 11.1	$ -	$ -	$ 55.1
Riverhead - Canal: Install new 138 kV underground cable	Load growth in the South Fork	2021	$ 4.5	$ 58.6	$ 31.6	$ -	$ 94.7
Navy Rd: Construct new 23/13 kV substation	Load growth in Montauk	2022	$ 9.5	$ 13.0	$ 5.1	$ -	$ 33.4
Ruland Rd - Plainview: Install new Underground 69kV transmission line	Load growth to support the Country Pointe Development and the new Round Swamp Substation	2022	$ 5.1	$ 0.5	$ 39.2	$ 13.7	$ 58.4
Utility 2.0 Smart Meters: Replace existing meters with Smart Meters.	Improve operations, especially with regard to minimizing the impact of outages, and to gain valuable insight into system conditions and customer needs.	2022	$ 59.2	$ 47.8	$ 48.7	$ 40.5	$ 196.3
Lindbergh (formerly Nassau Hub): Construct new substation with 2 transformers and 6 new distribution feeders.	Load growth for the Nassau Coliseum re-development which includes new: retail stores, restaurants, movie theaters and Police Academy	2022	$ 40.7	$ 9.5	$ 0.6	$ 12.5	$ 63.3
Fire Island Pines: Install new 23 kV circuit to Ocean Beach	Increase reliability to Fire Island	2023	$ 1.5	$ 0.5	$ 9.4	$ 39.8	$ 51.1
Bridgehampton - Buell: Install a new 69kV underground cable	Load growth in the South Fork	2023	$ 0.9	$ 2.9	$ 0.2	$ 42.9	$ 46.9
Massapequa: Establish new 69/13kV substation	Load growth in the town of Massapequa	2023	$ 2.6	$ 1.4	$ 3.7	$ 22.1	$ 29.8
Transmission Operations Control Room Facility Replacement: Replace the existing Transmission Operations control room	Construct a new Transmission Control room to meet future expansion of the LIPA T&D system as well as continue to maintain a high level of system reliability	2024	$ 0.2	$ 0.5	$ 3.2	$ 74.3	$ 78.2
Syosett to Shore Road: Install new 138 kV transmission circuit	Support the deliverability of future supply resources interconnected to the LIPA system	2026	$ -	$ 0.3	$ 2.1	$ 265.6	$ 268.0

Long Island Power Authority
2020 Proposed and 2021 Projected Operating and Capital Budgets

PSEG Long Island Operating Expenses

PSEG Long Island Operating Expenses are related to five major areas: Transmission and Distribution, Customer Services, Business Services, Power Markets and Energy Efficiency and Distributed Energy Programs. Total operating expenses are budgeted at $621.3 million for 2020 and projected at $617.8 million for 2021.

The PSEG Long Island 2020 operating budget, excluding the Utility 2.0 Program, is increasing by $15.9 million driven by an expected inflationary increase of $18.4 million which was offset by productivity savings of ($4.3 million) resulting in a net increase of $14.1 million. In conjunction with this, there is an increase of $1.8 million related to new initiatives for a Stray Voltage Testing Pilot Program ($0.5 million), Work Management Consultant Review associated with the NorthStar Management Audit recommendations ($1.0 million), and the Interconnection Working Group to facilitate implementation of New York's Clean Energy Standard ($0.3 million).

The approved operating expenses for 2019 have been decreased by $12.6 million for 2020 carryover projects related to Utility 2.0.

Operating expenses for 2020 of $621.3 million may shift between various lines of business during the year.

Long Island Power Authority
2020 Proposed and 2021 Projected Budgets

PSEG Long Island Operating Expenses
(Thousands of Dollars)

Description		2018 Actual	2019 Approved	2019 Projected	2020 Proposed	2020 Change from Prior Year	2021 Projected	2021 Change from Prior Year
PSEG Long Island Operating Expenses (including Pension & OPEB)								
Transmission & Distribution		$ 192,522	$ 177,615	$ 188,681	$ 188,280	$ 10,665	$ 196,611	$ 8,331
Customer Services		127,921	126,620	126,659	130,497	3,878	128,983	(1,514)
Business Services		158,696	170,975	164,864	172,317	1,342	178,996	6,679
Power Markets		10,422	14,156	12,741	14,156	-	14,752	595
Energy Efficiency & DER		79,986	88,794	84,091	88,800	6	91,020	2,220
Utility 2.0 Costs		3,123	19,237	6,296	21,427	2,190	18,910	(2,517)
Utility 2.0 Savings		-	(2,878)	(2,878)	(6,858)	(3,980)	(11,452)	(4,595)
Budget Amendment to carry over projects (Utility 2.0)	(a)	-	(12,630)	-	12,630	25,260	-	(12,630)
Total PSEG Long Island Operating Expenses		**572,671**	**581,889**	**580,453**	**621,251**	**39,362**	**617,820**	**(3,431)**
Total Non Cash OPEB Expense	(b)	48,100	43,955	43,943	50,421	6,466	50,667	246

Note: (a) The Utility 2.0 carry over amount is $12.6 million.
(b) Non Cash cost of Other Post Employment Benefits (OPEB) included in operating expenses above.

Long Island Power Authority
2020 Proposed and 2021 Projected Operating and Capital Budgets

LIPA Operating Expenses

LIPA Operating Expenses are budgeted at $88.0 million in 2020 and projected at $89.6 million in 2021. The 2020 plan represents an increase of $4.3 million as compared with the Approved Budget for 2019. The increase is largely driven by higher pension contributions, additional IT related costs in support of a new Enterprise Resource Planning system and cybersecurity initiatives.

LIPA Operating Expenses include the PSEG Long Island management fee and costs related to LIPA staff and outside professional services.

Long Island Power Authority
2020 Proposed and 2021 Projected Budgets

LIPA Operating Expenses
(Thousands of Dollars)

Description		2018 Actual	2019 Approved	2019 Projected	2020 Proposed	2020 Change from Prior Year	2021 Projected	2021 Change from Prior Year
LIPA Operating Expenses								
PSEG Long Island Management Fee		$ 74,102	$ 75,584	$ 75,276	$ 76,781	$ 1,198	$ 78,317	$ 1,536
Capitalized Management Fee		(25,806)	(28,926)	(29,696)	(30,290)	(1,364)	(30,895)	(606)
Total Operating Management Fee		**48,295**	**46,658**	**45,580**	**46,492**	**(166)**	**47,422**	**930**
LIPA Operating Expenses								
Employee Salaries & Benefits Expenses	(a)	8,979	11,125	10,574	12,804	1,679	12,862	57
Insurance		1,694	2,904	2,824	2,990	86	3,090	100
Office Rent		1,800	1,886	1,837	1,937	51	1,985	48
Other		974	1,243	1,118	1,519	276	1,557	38
Total Labor, General and Administrative		**13,446**	**17,158**	**16,352**	**19,251**	**2,093**	**19,494**	**243**
Engineering		348	1,000	763	1,000	-	950	(50)
Legal		6,492	7,845	8,216	8,140	295	8,344	204
Financial Services and Cash Management		1,786	3,565	2,886	3,565	-	3,654	89
Accounting Services		1,853	2,815	2,783	2,785	(30)	2,853	68
Information Technology		1,306	2,759	2,936	4,460	1,700	4,571	111
Risk Management		363	335	312	340	5	348	9
Grant Administration		188	200	230	200	-	200	-
Outside Services		1,124	1,284	2,293	1,724	440	1,767	43
Total Professional Services		**13,462**	**19,803**	**20,422**	**22,213**	**2,410**	**22,688**	**474**
Total LIPA Operating Expenses		**$ 75,203**	**$ 83,619**	**$ 82,354**	**$ 87,956**	**$ 4,337**	**$ 89,603**	**$ 1,647**

Note: (a) Salary and benefit increase of $2.1 million in the 2019 budget as compared to the 2018 actual is due to unfilled positions in 2018 as well as an adjustment to a credit LIPA receives from the New York State Retirement Systems. Approximately $1.2 million of the increase in Salary and Benefits Expenses from 2019 to 2020 is attributable to a lower New York State Retirement System credit and OPEB Adjustment.

Utility Debt Securitization Authority
(A Component Unit of the Long Island Power Authority)
2020 Proposed and 2021 Projected Operating Budget

Utility Debt Securitization Authority

The LIPA Reform Act created the Utility Debt Securitization Authority (UDSA) to issue restructuring bonds in an aggregate amount not to exceed $4.5 billion to refinance a portion of LIPA's debt at a lower cost. The issuance of Restructuring Bonds allowed LIPA to retire a portion of its outstanding indebtedness and provide savings to the Authority's utility customers on a net present value basis.

LIPA's Board adopted Financing Order No. 1 on October 3, 2013, Financing Orders No. 2, No. 3 and No. 4 on June 26, 2015 and Financing Order No. 5 on September 29, 2017, each authorizing the UDSA to issue Restructuring Bonds. Each financing order authorized Restructuring Bonds secured by a separate restructuring charge created pursuant to that financing order. A total of $4.5 billion of UDSA Restructuring Bonds have been issued, with no statutory capacity remaining.

The operations of the UDSA are presented as a proprietary fund following the accrual basis of accounting in order to recognize the flow of economic resources. Revenue which is based on the UDSA's Restructuring Charge is set at an amount sufficient to recover the debt service payments and other cash operating expenses that the UDSA incurs in any given year.

The UDSA is considered a blended component unit of the Authority. The results of operations are consolidated with the Authority for financial reporting purposes.

Long Island Power Authority
2020 Proposed and 2021 Projected Budgets

Utility Debt Securitization Authority
(Thousands of Dollars)

Description	2018 Actual	2019 Approved	2019 Projected	2020 Proposed	2020 Change from Prior Year	2021 Projected	2021 Change from Prior Year
Revenues	$ 339,072	$ 332,694	$ 331,848	$ 320,482	$ (12,213)	$ 369,132	$ 48,650
Operating Expenses							
Uncollectible Accounts	2,722	2,029	1,419	1,850	(180)	2,127	277
General and Administrative Expense							
Ongoing Servicer Fee	2,250	2,250	2,250	2,250	-	2,250	-
Administration Fees	500	500	500	500	-	500	-
Bond Administration Fees	285	300	367	360	60	360	-
Directors and Officers Insurance	267	325	245	339	14	353	14
Accounting, Legal & Misc. Fees	192	150	154	205	55	205	-
Total General and Administrative Expense	3,495	3,525	3,516	3,654	129	3,668	14
Amortization of Restructuring Property	173,696	174,401	173,574	170,316	(4,085)	221,742	51,426
Interest Expense	200,495	196,248	196,248	192,041	(4,207)	187,643	(4,398)
Amortization of Premium	(46,136)	(44,779)	(44,779)	(45,706)	(927)	(45,119)	587
Amortization of Deferred Debt Issue Costs	2,518	2,361	2,274	2,175	(187)	2,035	(140)
Total Interest Expense	156,876	153,831	153,744	148,510	(5,321)	144,558	(3,951)
Reserve Fund Earnings	2,952	1,164	3,884	4,011	2,846	4,011	-
Excess of Revenues Over Expenses	$ 5,235	$ 73	$ 3,480	$ 164	$ 91	$ 1,047	$ 883

Long Island Power Authority
2020 Proposed and 2021 Projected Operating and Capital Budgets

Projected Borrowing Requirements and Bank Facilities

LIPA expects to generate funds from operations of $205.9 million and $204.8 million in 2020 and 2021, respectively. The balance of capital expenditures are funded from the issuance of debt. In total, LIPA will fund $820.4 million of infrastructure investments in 2020 with new debt issuances of $564.4 million or approximately 68% debt financing and 32% grant and pay-as-you-go funding.

The percent of capital funded from debt will be above LIPA's target of 64% in 2020 and in 2021. This is due to the timing of two large projects: Western Nassau Transmission $174.5 million and Smart Meters $242.4 million. Excluding these projects, the percentage would be 60% in 2020 and 65% in 2021.

LIPA will continue to monitor its debt financing as a share of capital expenditures and adjust its financial policy, if warranted.

Long Island Power Authority
2020 Proposed and 2021 Projected Budgets

Projected Borrowing Requirements and Bank Facilities
(Thousands of Dollars)

Description		2018 Actual	2019 Approved	2019 Projected	2020 Proposed	2020 Change from Prior Year	2021 Projected	2021 Change from Prior Year
Total Capital Expenditures	(a)	**$ 640,538**	**$ 811,946**	**$ 776,103**	**$ 820,363**	**$ 8,417**	**$ 705,147**	**$ (115,215)**
FEMA Contribution		(136,246)	(138,248)	(105,369)	(52,798)	85,450	(5,677)	47,122
Deduct Allowance for AFUDC	(b)	(5,874)	-	-	-	-	-	-
Net Capital Expenditures		**498,418**	**673,698**	**670,734**	**767,564**	**93,866**	**699,470**	**(68,094)**
Net Coverage Funding of Capital Expenditures		(233,570)	(190,797)	(200,541)	(205,928)	(15,131)	(204,777)	1,151
Projected Borrowing Requirements		**265,055**	**482,901**	**470,193**	**561,636**	**78,735**	**494,693**	**(66,943)**
Projected Cost of Issuance on Borrowing Requirements		**1,532**	**2,415**	**2,351**	**2,808**	**394**	**2,473**	**(335)**
Projected Borrowing Requirements with Cost of Issuance	(c)	**266,587**	**485,316**	**472,544**	**564,444**	**79,129**	**497,167**	**(67,278)**
Series 2014C - Floating Rate Notes		150,000	-	-	-	-	-	-
Series 2015C - Floating Rate Notes		149,000	-	-	-	-	-	-
Series 2015A&B - Floating Rate Notes		-	-	-	200,000	200,000	-	(200,000)
Series 2016A - Floating Rate Notes		-	-	-	-	-	175,000	175,000
General Revenue Notes, Series 2015		-	100,000	-	100,000	-	300,000	200,000
Revolving Credit Agreement		-	350,000	200,000	-	(350,000)	-	-
Bonds Subject to Mandatory Refinancing & Bank Facilities		**$ 299,000**	**$ 450,000**	**$ 200,000**	**$ 300,000**	**$ (150,000)**	**$ 475,000**	**$ 175,000**

Note: (a) This reflects a Budget Amendment to carry over specific projects in the amount of $52.3 million from 2019 to 2020.
(b) Due to a new accounting standard Allowance For Funds Used During Construction (AFUDC) was eliminated effective 2019.
(c) Excludes premium, if generated would reduce borrowing.

Long Island Power Authority
2020 Proposed and 2021 Projected Operating and Capital Budgets

Capital Structure

The Capital Structure shows the ratio of debt and net position. LIPA expects to fund its capital investments utilizing a combination of grants, short and long-term debt financing and pay-as-you-go funding from revenue through 2021.

After funding $2.9 billion in infrastructure investments from 2018 through 2021, total projected debt outstanding for LIPA and UDSA will rise approximately $997 million.

Lease Obligations will increase by $778 million, from $1.7 billion in 2018 to $2.5 billion in 2021. Lease Obligations reflect the net present value of lease contracts that are considered financing under the Governmental Accounting Standards Board (GASB). The Lease Obligation in 2020 has been revised to reflect a new GASB rule effective January 2020 called Statement No. 87 Leases, which revised the definition of a lease obligation. As a result, lease contracts that had previously not been capitalized will be reclassified as Long-term Lease Obligations starting 2020. For example, under the prior GASB rule, the contract with National Grid for the operation of on-island power generation did not meet the lease capitalization criteria. Net of the effect of GASB 87, Lease Obligations declined by $376 million over the period.

Combined debt and lease balances will increase by $1.8 billion, from $9.7 billion at the end of 2018 to $11.4 billion at the end of 2021. This is primarily due to GASB 87, as described above. Net of GASB 87, combined debt and lease balances increase by $620 million, as compared to $2.9 billion of capital expenditures by the end of 2021.

LIPA's Debt to Capital Ratio remains essentially flat at 90.7% in 2018 to 90.9% in 2021. The Debt to Asset Ratio declines from 101.4% in 2018 to 95.9% in 2021. Both ratios are expected to continue to decline over time.

Long Island Power Authority
2020 Proposed and 2021 Projected Budgets

Capital Structure
(Thousands of Dollars)

Description		2018 Actual	2019 Approved	2019 Projected	2020 Proposed	2020 Change from Prior Year	2021 Projected	2021 Change from Prior Year	
UDSA Current Debt									
UDSA Long Term Debt Outstanding		$ 4,139,593	$ 4,008,832	$ 4,008,832	$ 3,882,775	$ (126,057)	$ 3,703,356	$ (179,419)	
LIPA Current Debt									
LIPA Long Term Debt Outstanding		3,167,465	3,557,872	3,573,159	3,979,143	421,271	4,446,224	467,081	
LIPA Short Term Debt Outstanding	(a)	234,500	334,500	334,500	305,900	(28,600)	321,600	15,700	
Total LIPA Debt Outstanding		**3,401,965**	**3,892,372**	**3,907,659**	**4,285,043**	**392,671**	**4,767,824**	**482,781**	
LIPA Long Term Debt To Be Issued	(b)	430,000	485,316	472,544	564,444	79,129	497,167	(67,278)	
Projected UDSA Debt		4,139,593	4,008,832	4,008,832	3,882,775	(126,057)	3,703,356	(179,419)	
Projected LIPA Debt		3,831,965	4,377,688	4,380,203	4,849,487	471,799	5,264,991	415,504	
Total Projected Debt		**7,971,558**	**8,386,520**	**8,389,035**	**8,732,262**	**345,742**	**8,968,347**	**236,085**	
Lease Obligations	(c)	1,702,801	1,660,829	1,660,829	2,815,001	1,154,172	2,480,397	(334,604)	
Total Debt and Lease Obligations		**9,674,359**	**10,047,348**	**10,049,864**	**11,547,263**	**1,499,915**	**11,448,744**	**(98,519)**	A
Excess of Revenues Over Expenses		**22,663**	**(4,424)**	**1,036**	**3,531**	**7,956**	**33,642**	**30,111**	
Net Position Before Deferred Grants		494,850	469,885	495,886	499,417	29,532	533,059	33,642	
Deferred Grants	(d)	498,322	648,095	491,958	634,999	(13,097)	618,783	(16,216)	
Net Position		**$ 993,172**	**$ 1,117,980**	**$ 987,844**	**$ 1,134,416**	**$ 16,436**	**$ 1,151,842**	**$ 17,426**	B
Debt to Capital Ratio	(e)	**90.7%**	**90.0%**	**91.1%**	**91.1%**	**1.1%**	**90.9%**	**-0.2%**	C=A/(A+B)
Debt to Asset Ratio	(e)	**101.4%**	**98.2%**	**98.7%**	**97.2%**	**-1.0%**	**95.9%**	**-1.3%**	

Note: (a) LIPA may need to use additional short-term debt in 2020 in anticipation of FEMA reimbursement for Storm Hardening projects.
(b) Long-term debt to be issued reflects projected borrowing requirements to fund Capital Expenditures excluding carry over proceeds from the prior year and bond premium.
(c) The 2020 Long-term Lease Obligation amounts and the associated Coverage calculation reflect GASB No. 87 (Leases) implementation effective Jan 2020. GASB 87 revised the definition of a lease obligation. As a result, lease contracts that had previously not been capitalized will be reclassified as Long-term Lease Obligations starting 2020.
(d) Deferred Grants are funds received from FEMA for a $730.0 million storm hardening program. LIPA has deferred recognition of the grant income to align the grant receipts with the associated depreciation expense of the asset funded through this grant.
(e) Note: 2019 Debt to Asset Ratio has been restated. Debt to Capital Ratio is calculated by taking (i) debt and capitalized leases and dividing by (ii) debt, capitalized leases, and Net Position. Debt to Asset Ratio is calculated by taking (i) total debt and capitalized leases and dividing by (ii) fixed assets and working capital.

2020 Proposed and 2021 Projected Capital Expenditures
(Thousands of Dollars)

	Location	Investment Description	In Service Date	Total Project Cost (a)	Project To Date Expenditures through 12/31/19 (b)	Proposed 2020	Projected 2021
Transmission & Distribution							
Regulatory Driven Projects							
	East Garden City	Install new circuit to Valley Stream (N-1-1)	Dec-20	174,536	42,458	101,135	30,943
	Syosset	Install new circuit to Shore road to support future supply resources	May-26	268,000	-	300	2,055
Total Regulatory Driven Projects				**$ 442,536**	**$ 42,458**	**$ 101,435**	**$ 32,998**
Load Growth Projects							
	Sterling	Install new distribution circuit	Dec-19	5,069	3,756	1,313	-
	Riverhead	Install new 13kV circuit	Dec-19	970	799	172	-
	Malverne	Reconfigure distribution circuits to Valley Stream	Dec-19	2,856	2,142	714	-
	MacArthur	Install 27 MVAR capacitor bank	Dec-19	2,884	2,406	478	-
	Flowerfield	Upgrade 69/13 kV substation & distribution circuit	Jun-20	19,205	4,893	14,311 *	-
	Ronkonkoma	Replace Bank #1 switchgear	Jun-20	3,104	1,037	2,067	-
	Massapequa	Reconductor 13kV circuit	Jun-20	3,585	2,675	910	-
	Belmont	Construct new 33/13kV substation	Oct-20	38,534	19,996	12,817	5,721
	Hempstead	Convert substation to 69/13 kV	Oct-20	36,680	32,680	4,000 *	-
	Rockaway Beach	Convert substation from 4kV to 13kV	Dec-20	4,205	-	2,617	1,588
	Kings Highway	Construct new 138/13 kV substation	Dec-20	55,116	43,992	11,124	-
	Far Rockaway	Upgrade 14 MVA transformers to 33 MVA transformers	Dec-20	7,632	511	2,669	4,452
	North Hills	Reconductor of 13kV distribution circuit	Jun-21	1,818	123	650	1,045
	Roslyn	Install new 138/13 kV transformer and switchgear	Jun-21	19,699	4,138	6,390	9,171
	Ronkonkoma	Install new 138/69 kV transformer and switchgear	Jun-21	17,764	203	6,928	10,633
	Wildwood	Upgrade 69 kV circuit to Riverhead to 138 kV	Jun-21	11,180	955	3,212	7,014
	Riverhead	Install new 138 kV circuit to Canal	Jun-21	94,727	4,485	58,633 *	31,609
	South Fork	Upgrade transmission lines from 23 kV to 33 kV	Jun-21	1,119	66	175	540
	Southampton	Install new 13kV distribution circuit	Jun-21	5,708	-	2,045	3,663
	Far Rockaway	Install two new distribution circuits	Dec-21	7,736	-	4,116	3,620
	Ocean Beach	Install new 4kV circuit	Jun-22	7,420	200	400	2,000
	Sayville	Replace 2 existing 14MVA transformers with 33 MVA transformers	Jun-22	12,850	-	500	1,075
	Round Swamp	Construct new 69/13kV substation	Jun-22	20,486	4,236	445 *	7,018
	Brightwaters	Install new transformer and switchgear	Jun-22	30,000	-	-	1,366
	Ruland Road	Install new 69 kV circuit to Plainview	Jun-22	58,420	5,055	500 *	39,169
	Culloden Point	Upgrade substation from 23 kV to 33 kV	Jun-22	6,941	224	1,675 *	2,141
	Lindbergh	Construct new 69/13kV substation	Jun-22	63,273	40,679	9,540	600
	East Hampton	Upgrade substation from 23 kV to 33 kV	Jun-22	5,074	144	1,490 *	476
	Buell	Upgrade substation from 23 kV to 33 kV	Jun-22	11,625	147	1,710 *	1,630
	Amagansett	Upgrade substation from 23 kV to 33 kV	Jun-22	17,090	1,608	8,915 *	2,110
	New South Road	Expand 69/13kV substation & distribution circuits	Jun-22	17,903	4,128	2,701 *	5,873
	Navy Road	Construct new 23/13 kV substation (Montauk substation replacement)	Dec-22	33,377	9,538	13,042	5,112
	Bridgehampton	Install new 69kv circuit to Buell	Jun-23	46,863	899	2,876 *	222
	Peconic	Upgrade existing distribution transformers	Jun-23	7,500	-	350	3,275
	Hero	Upgrade substation from 23 kV to 33 kV	Jun-23	694	46	90	77
	Massapequa	Construct new 69/13kV substation	Jun-23	29,786	2,564	1,435	3,651
	Hither Hills	Upgrade substation from 23 kV to 33 kV	Jun-23	15,279	120	500 *	2,500
	Berry Street	Reconductor 69kV line	Jun-24	12,930	-	250	678
	Various	Distribution facilities to serve new business		-	34,308	33,762	40,476
	Various	Residential underground development to serve new business		-	11,000	10,000	12,000
Total Load Growth Projects				**$ 737,101**	**$ 239,752**	**$ 225,520**	**$ 210,505**

*Includes carry over from 2019. See Carry Over table for details
(a) Project to date expenditures includes projects that began prior to 2019
(b) Expenditures to date are based on actual spend as of Aug 2019 plus forecasted spend from Sep to Dec 2019

2020 Proposed and 2021 Projected Capital Expenditures
(Thousands of Dollars)

	Location	Investment Description	In Service Date	Total Project Cost (a)	Project To Date Expenditures through 12/31/19 (b)	Proposed 2020	Projected 2021
Reliability Projects							
	Various	Radio remote monitoring & configuration	Mar-20	455	145	310	-
	Fire Island Pines	Replace metal clad switchgear	Jun-20	1,716	245	1,471	-
	Various	Telecom alarm monitoring system	Dec-20	310	-	310 *	-
	Hicksville	Purchase two mobile units	Dec-20	3,250	147	150 *	2,953
	Various	Telecom communication cabinets upgrade	Dec-20	465	-	465 *	-
	Fire Island Pines	Install new 13 kV circuit to Davis Park	Dec-20	6,968	2,355	4,613	-
	Fire Island	New circuit	Jun-21	8,642	250	250	8,142
	Various	Vacuum truck digging and excavation	Dec-21	2,068	1,848	220	-
	West Hempstead	Replace two 56 MVA banks and 4 line ups of switchgear	Dec-22	11,550	-	-	329
	East Garden City	Switchgear replacement	Dec-22	14,200	-	250	5,600
	Northport	Replace radiators for banks 1 to 4	Dec-22	4,143	851	851	851
	Fire Island Pines	Install new 23 kV circuit to Ocean Beach	Jun-23	51,135	1,500	500 *	9,350
	Various	Substation rack replacements		-	-	100	1,500
	Various	Distribution circuit improvement program (CIP)		-	18,400	10,400	19,000
	Various	Distribution breaker replacements		-	1,245	748	748
	Various	Underground distribution cable upgrades		-	13,000	12,200	15,000
	Various	Distribution protection and controls upgrades		-	486	706	-
	Various	Mechanical relay replacements		-	1,171	1,245	-
	Various	Pipe type cable low pressure trip		-	1,519	1,366	1,366
	Various	Pipe type cable terminal pressure monitoring upgrade program		-	1,446	460	520
	Various	Protection lease line upgrade		-	1,400	1,541	1,600
	Various	Replacement of aging and non-functional Joslyn type ASUs		-	4,242	1,675	-
	Various	Remote terminal unit replacement/upgrades		-	1,434	1,760	2,260
	Various	Substation battery replacements		-	532	482	482
	Various	Transmission protection and controls upgrades		-	1,045	1,100	2,340
	Various	Substation control power transformer replacements		-	178	224	262
	Various	Transfer trip/SCADA communication network upgrades		-	-	200	-
	Various	Transformer major component replacements		-	504	720	1,750
	Various	Transformer monitoring		-	959	-	950
	Various	Transmission breaker replacements		-	4,207	1,100	2,500
	Various	Transmission cables cathodic replacements		-	281	374	374
	Various	Update substation distribution breaker racking system		-	1,000	1,050	870
	Various	Substation lightning & grounding upgrades		-	298	350	790
	Various	Upgrade supervisory controllers for Capacitor Banks		-	491	1,213	3,300
	Various	Transformer load tap changer replacements		-	486	410	-
	Various	Cap and pin insulator replacements		-	283	500	500
	Various	Transmission pipe type cable pump house upgrade/replacement		-	860	860	860
	Various	Upgrade corrosion protection system for pipe type cable		-	2,000	2,166	2,734
	Various	Telecom distribution automation repeater upgrades		-	-	325	325
	Various	Accidents		-	11,692	9,696	10,317
	Various	Distribution system improvements - services, branch lines & customer requests		-	30,712	24,454	29,566
	Various	Distribution pole reinforcement		-	4,125	4,000	4,125
	Various	Distribution pole replacements		-	12,867	13,194	14,903
	Various	Substation equipment failures		-	8,800	7,425	10,000
	Various	Distribution transformers - add/replace		-	18,941	17,128	18,911
	Various	Distribution multiple customer outages (MCO)		-	8,419	6,795	8,463
	Various	Public works		-	7,622	7,992	9,293
	Various	Transmission pole replacements		-	1,058	1,866	1,960
	Various	Residential underground cables		-	7,747	6,400	10,904
	Various	System spares		-	8,030	9,769	4,053
	Various	Transmission system failures		-	1,396	1,702	2,310
	Various	Two Way Radio new fleet equipment		-	-	100	150
	Various	Two Way Radio communications equipment infrastructure		-	-	-	200
	Various	Repeater infrastructure replacement/upgrades		-	-	-	150
Total Reliability Projects				**$ 104,901**	**$ 186,219**	**$ 163,186**	**$ 212,563**

*Includes carry over from 2019. See Carry Over table for details

(a) Project to date expenditures includes projects that began prior to 2019

(b) Expenditures to date are based on actual spend as of Aug 2019 plus forecasted spend from Sep to Dec 2019

2020 Proposed and 2021 Projected Capital Expenditures
(Thousands of Dollars)

	Location	Investment Description	In Service Date	Total Project Cost (a)	Project To Date Expenditures through 12/31/19 (b)	Proposed 2020	Projected 2021
Storm Hardening Projects							
	Various	Storm hardening distribution circuits		-	1,599	37,000	50,000
Total Storm Hardening Projects				**$ -**	**$ 1,599**	**$ 37,000**	**$ 50,000**
Tools, Equipment, Other, Economic, Salvage							
	Various	Two way radio system upgrade	Mar-20	44,849	36,047	8,802 *	-
	Hicksville	Electrical shop building - door replacement	Jun-20	813	63	750	-
	East Hampton	Underground transmission in Village	Jun-20	6,734	1,003	5,731	-
	Eastport	Overhead to underground conversion to Sunrise Highway	Jun-20	16,500	3,110	13,390	-
	Hicksville	Transmission operations control room facility replacement	Dec-24	78,175	150	500	3,200
	TBD	Training center		-	-	100	1,500
	Various	LIRR program upgrade		-	1,633	1,000	1,000
	Various	Substation distribution circuit relay upgrade		-	542	500	425
	Various	Substation security upgrade		-	2,790	500	9,950
	Various	Long Island Railroad right of way transmission pole replacement program (Phase IV)		-	-	2,409	-
	Various	Eye wash station additions		-	-	100	-
	Various	Capital tools		-	2,999	1,200	3,200
	Various	Transfer distribution facilities to new telephone poles		-	5,913	5,142	4,947
	Various	Salvage		-	(537)	(835)	(700)
	Hicksville	Transmission control room - map board MUX		-	175	175	-
Total Tools, Equipment, Other, Economic, Salvage				**$ 147,071**	**$ 53,889**	**$ 39,464**	**$ 23,522**
Grand Total Transmission & Distribution				**$ 1,431,609**	**$ 523,917**	**$ 566,605**	**$ 529,588**

*Includes carry over from 2019. See Carry Over table for details
(a) Project to date expenditures includes projects that began prior to 2019
(b) Expenditures to date are based on actual spend as of Aug 2019 plus forecasted spend from Sep to Dec 2019

2020 Proposed and 2021 Projected Capital Expenditures
(Thousands of Dollars)

Information Technology Projects by Business Unit	Investment Description	In Service Date	Total Project Cost (a)	Project To Date Expenditures through 12/31/19 (b)	Proposed 2020	Projected 2021
Transmission & Distribution						
	DSCADA	2019	7,483	7,333	150 *	-
	EMS upgrade	2019	6,373	6,023	350 *	-
	CGI CAD upgrade	2020	20,324	17,332	2,992	-
	Control room recorder upgrade	2021	1,600	-	600	1,000
	ADMS continous improvement (OMS-DMS)	2023	18,400	-	1,000	1,300
	DRSS	2020	200	-	200 *	-
	CYME interfaces and connectivity	2020	700	350	350	-
	Projects & Construction capital management tool	2021	3,500	-	-	500
	Transformer monitoring and data collection in T&D - transformers	2020	3,120	2,638	482	-
	Asset health system enhacements (IBM Platform)	Program	-	-	549	500
	Materials & Logistics SAP enhancements	2020	557	327	230	-
	Mobile timesheets	2021	5,300	-	3,300	2,000
	GIS field smart designer	2021	7,800	-	-	3,000
	GIS upgrade	2023	6,350	-	3,000	2,500
	Work management continuous improvement (SAP, CAD, SF)	Program	-	-	2,600	2,000
	Geospatial system improvements	Program	-	-	-	500
	Storm damage assessment & repair mobile app	2019	2,108	1,858	250 *	-
	T&D mobile app continuous improvement	Program	-	-	800	1,000
	Drone vegetation management and LIRR inspections	Program	-	-	-	500
	T&D virtual/augmented reality robotic process automation	Program	-	-	-	500
	Robotics	Program	-	-	250	1,700
Total Transmission & Distribution			**$ 83,815**	**$ 35,861**	**$ 17,103**	**$ 17,000**
Customer Service						
	CRM modernization - Salesforce product backlog	Program	-	-	5,350 *	2,000
	Call Center as a Solution (CaaS) product backlog	Program	-	-	3,750	1,000
	Robotic Process Automation product backlog	Program	-	-	250	250
	CAS product backlog	Program	-	-	650	1,000
	AMI system product backlog	Program	-	-	1,500	2,000
	Rate change product backlog	Program	-	-	750	1,000
	Payment processing backlog	Program	-	-	1,900	2,000
	Mobile app product backlog	Program	-	-	500	500
	Voice Assistant product backlog	Program	-	-	500	500
	myAccount product backlog	Program	-	-	1,400	1,498
	Kubra enhancement product backlog	Program	-	-	750	600
Total Customer Service			**$ -**	**$ -**	**$ 17,300**	**$ 12,348**
Information Technology						
	Network F5 load balancers life cycle program	Program	-	-	1,000	-
	Network (LAN/WAN) infrastructure life cycle program updates	Program	-	-	580	2,225
	Active Directory Windows 2008 upgrade	2020	600		600 *	-
	AWS Storage	2020	800	-	800 *	-
	Network access control security	2020	-		500	-
	Cybersecurity continous improvement	Program	-	-	500	1,000
	Middleware upgrade/replacement	2020	3,500	781	2,000	-
	Mulesoft platform continuous improvement	Program	-	-	-	1,000
	Energy Efficiency program analytics	Program	-	-	750	500
	Customer usage patterns analytics	Program	-	-	500	500
	Grid optimization analytics	Program	-	-	1,250	1,500
Total Information Technology			**$ 4,900**	**$ 781**	**$ 8,480**	**$ 6,725**
Grand Total Information Technology Projects			**$ 88,715**	**$ 36,642**	**$ 42,883**	**$ 36,073**

*Includes carry over from 2019. See Carry Over table for details
(a) Project to date expenditures includes projects that began prior to 2019
(b) Expenditures to date are based on actual spend as of Aug 2019 plus forecasted spend from Sep to Dec 2019

2020 Approved and 2021 Projected Capital Expenditures
(Thousands of Dollars)

Utility 2.0	Investment Description	Total Project Cost (a)	Project To Date Expenditures through 12/31/19 (b)	Proposed 2020	Projected 2021
2018 Utility 2.0 Filing					
Empowering Customers					
	Core AMI: Operational	196,286	50,061	47,788	48,735
	Core AMI: PMO + Change Management	8,000	2,000	2,000	2,000
	Enabled AMI Smart Meters: Revenue Protection	1,050	1,050	-	-
	Enabled AMI Smart Meters: Customer Experience	9,300	3,300	3,000 *	1,500
	Enabled AMI Smart Meters: Outage Management	1,015	950	65 *	-
	Enabled AMI Smart Meters: Rate Modernization	16,000	9,500	6,500 *	-
	Enabled AMI Smart Meters: Analytics	7,600	4,100	1,500 *	1,000
	Accelerated Meters to 2018	-	4,619	-	-
	Accelerated Meters to 2019	-	4,539	-	-
	Carryover	(9,115)	(9,115)	-	-
Total Empowering Customers		**$ 230,136**	**$ 71,004**	**$ 60,853**	**$ 53,235**
Evolving to the DSP					
	SGIP Interconnection	2,270	-	2,270	-
	Locational Value Study	1,150	1,000	150 *	-
	Grid Storage	4,914	-	-	2,457
Total Evolving to the DSP		8,334	**$ 1,000**	**$ 2,420**	**$ 2,457**
Total 2018 Utility 2.0 Filing Projects	**$ -**	**$ 238,469**	**$ 72,004**	**$ 63,273**	**$ 55,692**
2019 Utility 2.0 Filing					
New Initatives					
	Next Gen Insights Pilot	706	-	706	-
	Energy Concierge Pilot	1,589	-	1,559	30
	Electric School Bus V2G Pilot	84	-	84	-
	Hosting Capacity Maps	1,587	-	1,587	-
Total New Initiatives		**$ 3,966**	**$ -**	**$ 3,936**	**$ 30**
Total 2019 Utility 2.0 Filing Projects	**$ -**	**$ 3,966**	**$ -**	**$ 3,936**	**$ 30**
Total Utility 2.0 Projects		**$ 242,435**	**$ 72,004**	**$ 67,208**	**$ 55,722**

*Includes carry over from 2019. See Carry Over table for details
(a) Project to date expenditures includes projects that began prior to 2019
(b) Expenditures to date are based on actual spend as of Aug 2019 plus forecasted spend from Sep to Dec 2019

2020 Approved and 2021 Projected Capital Expenditures
(Thousands of Dollars)

Business Units	Investment Description	In Service Date	Total Project Cost (a)	Project To Date Expenditures through 12/31/19 (b)	Proposed 2020	Projected 2021
Customer Service						
	Purchase Electric Meters	Blanket	-	4,665	6,966	7,027
	Install/Remove Meters	Blanket	-	6,643	3,793	3,933
	Tools/Equipment	Program	-	397	500	500
	Dusk to Dawn		18,100	3,855	5,422	5,822
	Jones Beach Nature Center		9,000	3,494	5,500	3,000
Total Customer Service Projects			**$ 27,100**	**$ 19,054**	**$ 22,181**	**$ 20,282**
Facilities						
	Facilities Services	Program	-	4,570	7,837 *	4,228
	Hicksville Vehicle Canopy		5,000	-	5,000	-
	Shoreham Facility Upgrades			2,467	190	1,545
Total Facilities Projects			**$ 5,000**	**$ 7,037**	**$ 13,027**	**$ 5,773**
Fleet						
	Fleet	Program	-	7,445	8,875	9,719
Total Fleet Projects	**Total Fleet Projects**		**$ -**	**$ 7,445**	**$ 8,875**	**$ 9,719**
Grand Total PSEG Long Island Projects with Carryover					**$ 720,779**	**$ 657,156**
FEMA Storm Hardening					**$ 58,665**	**$ 6,308**
Storm Capitalization					**$ 5,934**	**$ 6,146**
PSEG Long Island and FEMA Related					**$ 785,378**	**$ 669,609**

*Includes carry over from 2019. See Carry Over table for details
(a) Project to date expenditures includes projects that began prior to 2019
(b) Expenditures to date are based on actual spend as of Aug 2019 plus forecasted spend from Sep to Dec 2019

2019 Carry Over Costs into 2020
(Thousands of Dollars)

	Location	Investment Description	2020 Carry Over Amounts
Transmission & Distribution			
Load Growth Projects			
	Amagansett	Upgrade substation from 23 kV to 33 kV	4,279
	Buell	Upgrade substation from 23 kV to 33 kV	1,414
	Culloden Point	Upgrade substation from 23 kV to 33 kV	1,233
	East Hampton	Upgrade substation from 23 kV to 33 kV	950
	Hither Hills	Upgrade substation from 23 kV to 33 kV	1,771
	Ruland Road	Install new 69 kV circuit to Plainview	14,128
	Round Swamp	Establish new 69/13kV substation	4,667
	Riverhead	Install new 138 kV circuit to Canal	1,007
	Bridgehampton	Install new 69kv circuit to Buell	2,304
	New South Road	Expand 69/13kV substation & distribution cables	895
	Flowerfield	Upgrade 69/13 kV substation & distribution feeder	3,095
	Hempstead	Convert station to 69/13 kV	1,835
Total Load Growth Projects			**$ 37,578**
Reliability Projects			
	Hicksville	Purchase two mobile units	2,231
	Fire Island Pines	Install new 23 kV circuit to Ocean Beach	1,908
	Various	Telecom communication cabinets upgrade	465
	Various	Telecom alarm monitoring system	200
Total Reliability Projects			**$ 4,804**
Other Projects			
	Various	Two way radio system upgrade	1,921
Total Other Projects			**$ 1,921**
Total Transmission & Distribution			**$ 44,303**
Information Technology			
IT-Transmission & Distribution			
		DSCADA	150
		EMS upgrade	350
		DRSS	200
		Storm damage assessment & repair mobile app	250
Total IT-Transmission & Distribution			**$ 950**
IT-Customer Service			
		CRM modernization - Salesforce product backlog	2,350
Total IT-Customer Service			**$ 2,350**
IT-Information Technology			
		Active Directory Windows 2008 upgrade	600
		AWS Storage	800
Total IT-Information Technology			**$ 1,400**
Total Information Technology			**$ 4,700**

2019 Carry Over Costs into 2020
(Thousands of Dollars)

	Location	Investment Description	2020 Carry Over Amounts
Business Services			
Facilities			
	Hicksville	Space Renovation	2,215
	Brentwood	Customer Office Relocation and Development	480
	Riverhead	Customer Office Relocation and Development	430
	Roslyn	Customer Office Redevelopment	179
Total Business Services			**$ 3,304**
Subtotal before Utility 2.0			**$ 52,307**
Utility 2.0			
Empowering Customers			
		Enabled AMI: Customer Experience	1,500
		Enabled AMI: Outage Management	65
		Enabled AMI: Rate Modernization	6,500
		Enabled AMI: Analytics	900
Total Empowering Customers			**$ 8,965**
Evolving to the DSP			
		Locational Value Study	150
Total Evolving the DSP			**$ 150**
Total Utility 2.0			**$ 9,115**
Total Project Carry Over			**$ 61,422**

Long Island Power Authority
2020 Proposed and 2021 Projected Operating and Capital Budgets

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Long Island Power Authority
2020 Proposed and 2021 Projected Operating and Capital Budgets

LIPA's Relationship with New York State Government

LIPA is a component unit of New York State. LIPA became the retail supplier of electric service in the Counties of Nassau and Suffolk (with certain limited exceptions) and a portion of Queens County known as the Rockaways (Service Area), on May 28, 1998 by acquiring the transmission and distribution system of the Long Island Lighting Company as a wholly owned subsidiary of the Authority. LIPA provides electric delivery service in the Service Area, which includes approximately 1.1 million customers. The population of the Service Area is approximately 2.9 million. In order to assist LIPA in providing electric service to its customers, LIPA entered into operating agreements to provide operating personnel and a significant portion of the power supply resources necessary to provide electric service.

Under LIPA's business model, essentially all costs of operating and maintaining the Authority's T&D system incurred by PSEG Long Island, the LIPA's Service Provider, are passed through to and paid for by LIPA.

Long Island Power Authority
2020 Proposed and 2021 Projected Operating and Capital Budgets

Budget Process

Under the terms of the LIPA Reform Act and the Amended and Restated Operations Services Agreement, the LIPA Consolidated Budget and Financial Plan are jointly developed by LIPA and its Service Provider, PSEG Long Island.

The LIPA Consolidated Budget outlines projected spending by major expense and revenue category. The budget reflects the operating and capital costs required to provide electric service in the Service Area.

Budget Development Schedule:

- April through October: LIPA and PSEG Long Island develop projections of current year spending and preliminary budget forecasts for the upcoming year and financial plan.
- June through October: PSEG Long Island provides LIPA with preliminary Capital project projections.
- October:
    - PSEG Long Island provides LIPA with a preliminary budget. This includes projections for current year spending as well as a preliminary budget for the years covered by the financial plan. The preliminary budget submission is reviewed by LIPA.
    - LIPA provides PSEG Long Island its portion of the Consolidated Budget by mid-October.
    - PSEG Long Island produces a LIPA Consolidated Budget by the end of October.
    - The LIPA Consolidated Budget is reviewed by senior level staff from both LIPA and PSEG Long Island.
- November:
    - Public Hearings are held in November to solicit comments from the public.
    - The Board of Trustees is briefed on the budget during Budget Workshops.
- December: The Board of Trustees votes on the adoption of the LIPA Consolidated Budget.

Certification

I hereby certify that, to the best of my knowledge and belief after reasonable inquiry, the budget information and financial projections contained herein for the years ending December 31, 2019 through December 31, 2021 have been developed based on reasonable assumptions and methods of estimation and that the requirements of 2 NYCRR Part 203 have been satisfied.

/s/
Thomas Falcone
Chief Executive Officer
Long Island Power Authority

Dated: December 18, 2019

www.lipower.org

Exhibit "C"

NEW YORK STATE OF OPPORTUNITY. Department of Public Service

Three Empire State Plaza, Albany, NY 12223-1350
www.dps.ny.gov

November 12, 2019

Via Email and U.S. Mail

Honorable Ralph V. Suozzi, Chairman
Board of Trustees
Long Island Power Authority
333 Earle Ovington Blvd., Suite 403
Uniondale, New York 11553
boardoftrustees@lipower.org

Re: Matter No. 14-01299: In the Matter of PSEG LI Utility 2.0 Long Range Plan; Recommendations Regarding PSEG LI Annual 2019 Update

Dear Chairman Suozzi:

I am pleased to provide the recommendations of the New York State Department of Public Service (DPS or Department) regarding PSEG Long Island's (PSEG LI, or the Company) annual update to the Utility 2.0 Long Range Plan (the 2019 Plan).

Pursuant to Public Authorities Law (PAL) §1020-f(ee); the Long Island Power Authority (LIPA) and its service provider PSEG LI submit to DPS on an annual basis any proposed plan related to implementation of distributed generation, energy efficiency measures, or advanced grid technology programs having the purpose of providing customers with tools to more efficiently and effectively manage their energy usage and utility bills, and improving system reliability and power quality. In accordance with Public Service Law §§3-b(3)(a) and (g), DPS reviews and makes recommendations to LIPA with respect to the plans and rates and charges, including those related to energy efficiency and renewable energy programs.

PSEG LI 2019 Utility 2.0 Annual Update Proposal Overview

On June 28, 2019, PSEG LI submitted to DPS, its 2019 Annual Update to the Utility 2.0 Long Range Plan.[1] In the 2019 Plan, PSEG LI proposes seven new programs comprising of a Next Generation Insights Pilot, Energy Concierge Pilot, FlexPay Pilot program, On-Bill Financing Pilot program, Electric School Bus V2G Pilot, Heat Pump Controls Pilot, and Hosting Capacity Mapping program. PSEG LI proposed a Utility Scale Storage project located at the Brightwaters substation, but later withdrew the proposal due to the unexpected increase in additional load at the substation. In its 2019 Plan, PSEG LI also reported the progress of its 2018 Utility 2.0 proposals.

The total cost of PSEG LI 's 2019 Plan as proposed was originally $23.6M. The total cost of PSEG LI 's 2019 Plan, reflecting withdrawal of the Brightwaters storage project, is approximately $10.69M through 2022. PSEG LI proposes to recover gross capital costs of Utility 2.0 programs in the amount of $3.94M for 2020, and $0.03M for 2021 for a total of $3.97M. PSEG LI proposes to recover gross O&M costs of Utility 2.0 programs in the amount of $2.92M for 2020, $2.21M for 2021 and $1.58M for 2022 for a total of $6.71M.

The Department recommends adoption of all of the proposals and corresponding budget, excluding the withdrawn Brightwaters project, in accordance with the Department's recommendations contained herein. As in prior Utility 2.0 recommendations, DPS recommends that PSEG LI report to DPS on the status of the 2019 Plan projects in its quarterly reports in conjunction with the reports concerning 2018 proposals.

Staff Review of New Proposals and Public Comments

DPS staff (Staff) conducted an extensive review of the seven new proposals submitted by PSEG LI in its 2019 Plan. Staff issued numerous document and information requests to gain further detail in its evaluation of PSEG LI 's 2019 Plan and engaged in several technical meetings with LIPA, PSEG LI, and PSEG LI's consultant, Navigant. Staff reviewed the Benefits Cost Analysis (BCA) provided by PSEG LI, as well as the substantive aspects of the proposals for consistency with State policies and goals. These policies and goals include those related to energy efficiency and greenhouse gas emissions reductions, as well as customer empowerment, and third party market participation. PSEG LI presented certain proposals in the 2019 Plan as pilot programs, to test particular hypotheses, without a traditional BCA, to enable the further development of a BCA. Staff considered REV Demonstration principles[2] in its review of these proposals and will monitor the programs in accordance with corresponding metrics.

[1] Matter 14-01299, In the Matter of PSEG-LI Utility 2.0 Long Range Plan, PSEG-LI Utility 2.0 2019 Annual Update (filed June 28, 2019).

[2] Case 14-M-0101, Reforming the Energy Vision, Order Adopting Regulatory Policy Framework and Implementation Plan (February 26, 2015).

On July 15, 2019, the Department issued a Notice Requesting Comments on PSEG LI 's 2019 Annual Update.[3] The Department received comments from ten organizations including the New York Power Authority (NYPA), Suffolk County Executive Steven Bellone, the City of New York, several advocacy organizations including the US Green Building Council and Long Island Progressive Coalition, and an industry association, NY BEST. All public comments are available on the Department's Document Matter Management (DMM) website under Matter No. 14-01299.[4] The comments recognized many of the benefits of PSEG LI 's proposals and offered feedback summarized in the public comments section below. It is recommended that PSEG LI consider the public comments concerning each of the proposals.

2018 Progress Update

Included in the 2019 Plan, PSEG LI reported its continued progress in its implementation of its 2018 Utility 2.0 projects and their benefits to customers.[5] PSEG LI reports its 2018 Utility 2.0 programs are progressing well, some of which are still in the procurement phase. AMI meter installation is on track and, as of July 2019, meter installations year-to-date were approximately 159,000. PSEG LI has successfully launched the mobile "My Smart Energy Lab" and continues customer engagement with the AMI rollout via pre- and post-smart meter installation educational outreach.

PSEG LI is continuing the design and development of AMI-enabled capabilities including the Remote Connect Switch (RCS) integration and AMI integration with its Outage Management System (OMS). PSEG LI is in the vendor engagement process for the Commercial and Industrial (C&I) portal, Advanced Billing Engine, and Green Button Connect initiatives. In its implementation of the various data sharing platforms the Department recommends that PSEG LI; 1) actively seek and incorporate input from anticipated users of the data platforms and 2) provide real-time access to customers' load data enabled by AMI; with that information available contemporaneously to customers, the utility, and third-party market participants, with customer consent or the appropriate masking of customer identity. Real time and contemporaneous access by all parties are essential to enabling customers, the utility, and third-party market participants to effectively utilize such data on an equal basis. It is recommended that PSEG LI take the appropriate steps needed to achieve real time contemporaneous access to customer load data and update the Department on the process and implementation plan it intends to follow in its initial 2019 Utility 2.0 quarterly update.

Other initiatives include the Super Savers program, which PSEG LI has pursued through focused public outreach concerning efficiency measures, coupled with its rollout of AMI meters. PSEG LI is also pursuing a Smart Thermostat Direct Install initiative via the Super Savers program to increase enrollment in the Dynamic Load Management (DLM) program.

PSEG LI continues to pursue its Electric Vehicle initiatives including the Residential Smart Charger incentive program, to assist with installation costs of residential chargers. Outreach by the Company continues to drive interest in the Workplace Charging incentive which

[3] Matter 14-01299, supra, Notice Requesting Comments (issued July 15, 2019).
[4] Id., Public Comments.
[5] Matter 14-01299, supra, PSEG-LI Utility 2.0 2019 Annual Update (issued June 28, 2019) Appendix C.

expires at end of 2019. The Direct Current Fast Charger (DCFC) program proposed last year is a per-plug incentive to commercial hosts to encourage the installation of DCFC infrastructure. PSEG LI began accepting applications in the 3rd quarter of 2019.

As part of PSEG LI's programs to advance battery storage technology, LIPA amended its Dynamic Load Management (DLM) Tariff as approved by LIPA Board of Trustees in May 2019, allowing solar-paired storage systems to participate in the commercial system relief program (CSRP) and distribution load relief program (DLRP) as of June 1, 2019. As recommended by DPS, the revised tariff expands eligibility beyond load pockets to all customer classes throughout LIPA and PSEG LI's service territory. [6] The eligibility of PSEG LI customers to participate in the revised DLM tariff as part of the Behind the Meter (BTM) Storage Program coincided with the launch of additional New York State Energy Research and Development Agency (NYSERDA) incentives. These NYSERDA incentives provide a one-time per kilowatt-hour of storage capability incentive for eligible residential and commercial storage projects, including those in the LIPA and PSEG LI service territory.

In addition, under the Distributed System Platform (DSP) program, the Utility of the Future staff team (UoF) was established. Foundational studies such as the Phase 1 Volt/VAR optimization studies have begun. PSEG LI is also pursuing the purchase of advanced distribution software and commenced the locational value study.

The Department continues to review the quarterly reports submitted by PSEG LI in accordance with DPS recommendations. The 2018 update status information provided in the 2019 Plan will be expanded upon in PSEG LI's 3rd quarter of 2019 report. It is expected that these proposals will continue to deliver the quantifiable benefits described in the 2018 plan and DPS recommends that PSEG LI consider the data sharing enhancement set forth above.

2019 Plan Proposals

Next Generation Insights Pilot

PSEG LI proposes a pilot project to provide customers with enhanced customized data, breaking out the energy being used, time of usage and costs being generated by individual appliance categories in their home. The usage and cost information would be provided via mail, text alerts and/or email at several intervals throughout a month. A Next Generation Call Center will be able to use this "disaggregated" data to help resolve bill or other inquiries, reduce problem escalations, and to make recommendations toward applicable rebate or rate options. The data made available via this program will be used in concert with the proposed Energy Concierge program, discussed below. The amount of funding being sought for the Next Generation Insights program is approximately $3.27M spanning three years through 2022, including $0.71M for Capital funding and $2.56M for O&M. funding. DPS recommends that the Next Generation Insight program be adopted as proposed.

[6] Matter 19-01145, Tariff Filing of Long Island Power Authority to Modify its Tariff for Electric Service, BTM Storage Incentives Recommendation Letter (issued May 20, 2019).

The Next Generation Insights Pilot will provide customer usage and cost information monthly and at mid-billing cycle intervals, while also enabling customers to establish notifications to be triggered if a customer's bill exceeds a certain level or if usage is significantly higher usage than average. The information a customer would receive includes a similar-home-comparison and suggested best actions toward energy use reductions.

PSEG LI states that the purpose of the pilot program is to 1) test data disaggregation software capabilities that, for example, show appliance wave patterns as "fingerprints" of energy usage, 2) test customer engagement via text messaging, 3) provide personalized, granular bill analysis so customers can take energy saving actions to reduce bills, and 4) improve customer satisfaction. The Pilot may also allow PSEG LI to further explore the effectiveness of time of use (TOU) rates on customer behavior and can help identify the charging patterns of customers that own electric vehicles as those rates are developed.

In 2018, PSEG LI conducted customer research through focus groups held by PSEG LI's consultant, Illume Advising, to inquire about new rates and pricing plan options, but also more generally, the information types and methods of communication customers prefer. The Next Generation Insights program proposal was created in response to direct customer feedback gained through this effort. Current methods of communication, or "touch points" as PSEG LI refers to them, do not currently provide detailed disaggregated data per appliance category, and customer feedback showed that customers find it difficult to interpret usage information presented only in kilowatt-hour (kWh) units.[7]

The Next Generation Insights Pilot program takes a proactive approach to increase customer awareness of how energy usage affects their bills. PSEG LI completed a Proof of Concept with Bidgely Consulting involving approximately 1,400 customers, the results of which demonstrated a successful uptake of engagement.[8] PSEG LI currently partners with a third-party software provider to conduct a further proof of concept using AMI data from approximately 30,000 PSEG LI residential customers.

The pilot would enroll customers with installed AMI meters. The Next Generation Insights Pilot continues to leverage the use of data collected by AMI meters which accentuates the importance of PSEG LI's progress in its on-going meter deployment. PSEG LI indicated that it may consider enhancing the pilot to target specific customer subsets such as low to moderate income customers. PSEG LI stated "[s]election criteria will be defined through discussions with internal SMEs (subject matter experts) (energy efficiency, customer experience, customer technology, and IT) as well as the selected vendor post-RFP (Request for Proposals)."[9]

Customer communications will include program-introduction direct mail and email communications, monthly print and digital disaggregated usage energy reports, major appliance usage information, and proactive energy alerts and recommendations. Customers will be able to set their preferences for the channel and frequency of communications. Using energy disaggregation insights, the Company has proposed customer service metrics which will capture

[7] Matter 14-01299, supra, PSEG-LI Utility 2.0 2019 Annual Update (issued June 28, 2019), p. 25.
[8] Response to Staff Discovery Request DPS-19039.
[9] Response to Staff Discovery Request DPS-19041.

customer engagement and satisfaction, and high bill calls received, length of time to resolve concerns and resolution outcomes. PSEG LI states that it will measure the success of this program by tracking of the number of emails opened, web engagement, and survey engagement. PSEG LI intends to partner with a 3rd party vendor on messaging, branding, format and other content with respect to outbound customer communications.

The Department recommends that PSEG LI include this program in its quarterly updates to the Department, to report on the program's progress and clearly identify how the program is delivering the benefits to energy efficiency and customer satisfaction it is meant to achieve. Beyond the proposed online engagement and a reduction in high bills complaints as measures of progress achievement, DPS recommends that energy savings metrics for this program should also be established to assess project success. The quarterly updates should include reporting on each metric defined to measure and track the success of the pilot hypotheses. In addition, the updates should include actions to be taken by PSEG LI in response to those metrics that are outside of the expected target range. DPS recommends the PSEG LI pursue the Next Generation Insight program as proposed.

Energy Concierge Pilot

PSEG LI proposes to initiate an Energy Concierge Pilot program which consists of training six existing PSEG LI employees to serve as full time energy "concierges." The Concierges will make in-person visits to 2,000 Long Island residential customer homes to evaluate the home's potential for various efficiency and distributed energy resources such as heat pumps, battery storage or solar, and to educate customers on online resources and advantageous rate options such as time of use rates. The total amount of funding requested is approximately $4.08M spanning three years, including $1.59M for Capital funding, and $2.49M for O&M funding. DPS recommends that the Energy Concierge Pilot program be adopted as proposed.

PSEG LI states the purpose of the Energy Concierge program is to provide individualized advisory services to increase customer satisfaction and awareness through engagement in existing rates and programs that are intended to reduce customer energy usage and bills. The pilot includes funding for Energy Concierges to be equipped with tablet computers to log customer feedback which can be followed up on where appropriate.

The Energy Concierge program synergizes with PSEG LI's Next Generation Insights program which would provide the Concierges with preliminary data on features of the customer's home and energy usage that may benefit from certain rates or programs. The proposal includes several hypotheses it seeks to test, which will be measured by various metrics to gauge the pilot program's success. PSEG LI estimates the Concierges will complete 2,000 home visits (two visits per day for each concierge), from August 2020 through July 2021. PSEG LI anticipates a minimum of 100 post-visit purchases or installations of EE and DER respectively. PSEG LI also intends to assess success in adoption of new payment options by customers, although no specific target was set. Customers initially targeted for this service

include those with high bill complaints, seniors, customers located in load pockets and low to moderate income customers.[10]

DPS Staff notes that while this program may appear to overlap with existing Home Performance with Energy Star (HPwES) program offerings, the Energy Concierge program is a vehicle by which customers can learn about the benefits of the HPwES program (which provides an in-depth home energy audit by a third party contractor), along with the other resources PSEG LI offers to encourage efficiency, distributed energy resources, and innovative rates. The two-way communication with customers about their perceptions and suggestions for program improvements is an additional benefit of the program.

DPS supports PSEG LI's efforts to offer more in-depth assistance to help its customers overcome barriers towards adopting EE and DER offerings. The Department recommends that PSEG LI include this program in its quarterly updates to the Department and report on the program's progress. The reports should clearly identify how the program is delivering the benefits to energy efficiency and customer satisfaction it is meant to achieve. The quarterly updates should include reporting on each metric defined to measure and track the success of the pilot hypotheses. In addition, the updates should include actions to be taken by PSEG LI in response to those metrics that are outside of the expected target range. DPS recommends that PSEG LI pursue this pilot program as proposed.

FlexPay Program Implementation Plan

PSEG LI proposes to develop a Flex Pay Pilot. FlexPay is a prepayment program which will offer customers enhanced usage information, improved customer communications, phased reduction of arrears, and traditional and pre-payment options with the associated Home Energy Fair Practices Act (HEFPA) compliance. PSEG LI is seeking $0.25M funding to develop an implementation plan. The O&M request will fund third party support to design the program in 2020. This support would include development of specific business requirements, Home Energy Fair Practice Act (HEFPA) compliance due diligence, and an RFQ (Request for Qualification) with best-in-class prepay Software as a Service (SaaS) providers. DPS recommends that PSEG LI pursue development of the FlexPay program consistent with the recommendations contained herein.

PSEG LI's FlexPay proposal would develop a program to enable customers to take advantage of a prepay option that enables greater billing and payment schedule flexibility, and potentially more awareness of energy usage. PSEG LI expects that the development of a FlexPay program will effectuate reductions in customer energy usage through energy conservation which translates into customer bill savings.

On February 13, 2009, the Commission adopted an Order which established criteria to evaluate utility AMI plans against the minimum functional requirements for AMI systems and

[10] Response to Staff Discovery Request DPS-19040.

examined issues associated with benefit-cost analysis methodology.[11] The PSC discussed pre-payment plans that were proposed by certain utilities and concluded that the use of prepayment meters conflicted with HEFPA. The PSC emphasized that under the Public Service law (PSL), customers have the right to a reasonable billing interval, and written notice, among other things, before service can be terminated for nonpayment.[12] PSEG LI 's FlexPay proposal intends to address the Commission's concerns with respect to termination by affording participating customers an opportunity to transition to a traditional account if they cannot meet payment obligations under the FlexPay program.

DPS recommends that PSEG LI coordinate development of a HEFPA compliant program, with Department Staff, to further address the legal, regulatory, operational, and technical considerations of an enhanced prepay program that incorporates best practices and lessons learned by other utilities. Staff recommends that development of the FlexPay Pilot program include an achievable implementation timeline and cost estimates for the program to be provided to DPS Staff. The program should also include a customer engagement plan to conduct comprehensive outreach to educate customers on how the program functions and associated customer benefits. DPS recommends that PSEG LI pursue development of the FlexPay program consistent with the recommendations discussed above.

On-Bill Financing Implementation Plan

PSEG LI proposes to develop an implementation plan to create an On-Bill Financing program similar to the Green Jobs Green New York Program offered by NYSERDA. PSEG LI is seeking $0.25M funding to develop an implementation plan. The O&M request is for funding in 2020 for third party support to design the program. The requested funding would not establish a loan fund. DPS recommends that PSEG LI pursue development of the implementation plan consistent with the recommendations contained herein.

DPS recommends that PSEG LI and LIPA coordinate with Staff to further address several components in development of the On-Bill Financing implementation plan. These components include the total cost to develop and offer the program; the level of funding that will be available and for what technologies the funding will be available; how LIPA will obtain capital financing for the program; the interest rate(s) LIPA could offer to program participants; the projected energy savings generated by the program; the costs to LIPA and/or PSEG LI to administer and market the program; and whether the program offers quantifiable advantages and is distinct from the existing Green Jobs Green New York Program. Customers making use of this program's financing should be afforded the similar protections as described in the Green Jobs Green New York financing program and in the applicable PSC Orders concerning this type of initiative.

Staff also recommends that when the On-Bill Financing program is further developed, an achievable implementation timeline and cost estimates for this program be provided to DPS staff.

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[11] Case 09-M-0074, In the Matter of Advanced Metering Infrastructure, Order Adopting Minimum Functional Requirements for Advanced Metering Infrastructure Systems and Initiating an Inquiry into Benefit-Cost Methodologies (issued February 13, 2009).

[12] Id., p. 19.

The program should also include a customer engagement plan to conduct comprehensive outreach to educate customers on how the program functions and about customer benefits. DPS recommends that PSEG LI pursue development of the implementation plan for the On-Bill Financing program consistent with the recommendations contained herein.

Electric School Bus Vehicle to Grid Pilot

PSEG LI proposes an Electric School Bus Vehicle-to-Grid (V2G) Pilot program which consists of the deployment of three electric buses with V2G capabilities. Each bus will be capable of providing 148 kWh of usable energy and capable of 50 kW of output with a range of approximately 100 miles. The buses will primarily be used as transportation during the school year by school bus operator Suffolk Transportation Services (STS), and be used by PSEG LI during the summer to address specific locational needs on the distribution network, including wholesale, distribution, and resiliency services. The proposed project has a term of three years, with $80,000 in capital costs to be incurred in 2020 and an additional $0.64M in O&M costs over the period 2020-2022, for a total of $0.72M for the project. DPS recommends that the project be adopted as proposed.

The electrification of transportation is a critical component of the State's plan to meet its aggressive carbon-reduction targets. While the operation and maintenance costs of EV buses tend to be lower than those of internal combustion based buses, EV buses are significantly more expensive. The estimated incremental cost of purchasing V2G-capable buses is approximately $275,000 more than a traditional internal combustion school bus. For school districts that replace buses often, the lower operating and maintenance costs are often not large enough to offset the higher purchase price of EV buses, so alternative funding sources are required. In the PSEG LI proposal, STS will own the buses, purchased from bus manufacturer Blue Bird, and be responsible for their operation and upkeep. STS will cover costs associated with any required infrastructure upgrades to support the installation and operation of chargers in the school bus lot. For the ability to dispatch the energy provided by the school bus batteries through the summer months, PSEG LI will contribute $100,000 per bus, and cover costs associated with the operation and necessary infrastructure investments during the summer and the cost of resilient load sites.

By integrating V2G capabilities into the buses themselves, PSEG LI will gain the ability to use the buses as mobile batteries, moving them into pre-selected and areas prepared for power injection when needed. This integration will allow the buses to provide mobile wholesale, distribution, and resiliency services to a much greater extent than would otherwise have been possible if the V2G functionality was dependent upon a fixed location charger. This V2G capability distinguishes this program from other electric school bus pilot programs conducted by other Investor Owned Utilities (IOUs).

The pilot seeks to test several key aspects of the program, which include the injection of power from the buses, identification of the net present value of V2G services, and development of standard V2G processes as a means of measuring the success of the program. PSEG LI anticipates that this pilot will generate useful information on the value streams for mobile storage equipped with V2G capabilities for PSEG LI, STS, and the third-party Electric Vehicle Supply Equipment (EVSE) provider. PSEG LI identified other benefits of the program, including

customer bill savings, distribution investment deferral, system peak reduction, backup power and ancillary services, each potentially making the economic case for EV buses more attractive.[13] Further, STS will be able to select the tariff pursuant to which it will receive compensation for energy deployed. The ability for STS to select a rate, provides an opportunity to test rate assumptions, provides potential cost savings benefits to STS and gains information for future projects.

The Company anticipates that this project will assist PSEG LI in developing its Distributed System Platform capabilities, and help the Company achieve its goals of greater demand management, higher DER utilization, and reduced vehicle emissions. The project aligns with overall REV objectives, and New York State's broader goals of the advancement of clean transportation methods as expressed in its electric vehicle charging proceeding and its commitments as a Zero Emission Vehicle (ZEV) state participant. [14, 15]

PSEG LI provided a BCA consistent with the requirements of the Commission's Order concerning BCA frameworks, and BCA handbook.[16] The BCA resulted in a ratio of 0.33. PSEG LI notes that while this ratio is low, the V2G pilot's administrative costs per bus are currently much higher than those projected if the project were to be expanded. PSEG LI anticipates that the cost of individual buses would decrease over time. PSEG LI projects that at scale of 6 to 12 buses, and assuming PSEG LI's obligation to only pay for grid services while no longer subsidizing the buses' purchase cost, the benefits would exceed program costs. Including additional savings from reduced administrative costs, PSEG LI projects that the full scale program would result in a BCA ratio of 1.09. DPS also notes that the current BCA incorporates the project benefits over a three year span, however, the wholesale and distribution benefits PSEG LI would gain are expected to continue for the useful life of the buses and are expected to exceed project cost. Funding sources provided by other government agencies for clean transportation may provide additional economic benefit to LIPA's customers.

To test the outcome of this program, PSEG LI has identified metrics to assess its success in achieving the program's purpose. The measures of success for these metrics include (1) the successful injection of power (2) the reduction in distribution circuit peak load, (3) reduction in system peak load, (4) the identification of the net present value of V2G services, and (5) the development of a standardized process for site selection, interconnection, commissioning, and operation of the program. The use of these success metrics will enable PSEG LI to quantify potential benefits to the customer and the grid as the program is appropriately scaled.

PSEG LI has selected STS, a well-established and experienced partner for this project. STS owns four electric buses that were funded by an EPA grant, and therefore has experience

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[13] Matter 14-01299, In the Matter of PSEG-LI Utility 2.0 Long Range Plan, PSEG-LI Utility 2.0 2019 Annual Update (filed June 28, 2019), p. 54

[14] Case 18-E-0138, Proceeding Regarding Electric Vehicle Supply Equipment and Infrastructure.

[15] New York State Zero-Emission Vehicle Programs Memorandum of Understanding, 2013 https://www.dec.ny.gov/docs/air_pdf/zevmou.pdf

[16] Case 14-M-0101, Reforming the Energy Vision, New York State Public Service Commission (PSC) Order Establishing the Benefit-Cost Analysis Framework (issued January 21, 2016). See also, Case 16-M-0412, Benefit-Cost Analysis Handbooks, Notice of New Case Number and Soliciting Comments on the Benefit-Cost Analysis Handbooks (issued July 27, 2016).

with the applicable electric vehicle technology. Previous experience is important because it is less likely that STS will encounter unmanageable technical issues that could impair the injection of power to be provided by the buses. Staff has received several comments from organizations in support of this project. The City of New York notes that while the BCA for the project is low, the qualitative benefits of the project may make it worthwhile even if the program is still in the pilot stages and the financial model is still being explored. The City supports the project but comments that PSEG LI should also consider alternative locations for power injection, such as the Rockaways, and ensure the charging equipment and grid connections are protected from potential flood risks so buses can reliably provide backup service when needed.

DPS supports the Electric School Bus V2G Pilot, as it lays a foundation for schools and school bus operators to use EV buses as assets, which would reduce the total cost of ownership. Although the BCA ratio of the project is below what would be considered acceptable for a Non-Wire Solution (NWS), as a demonstration pilot which seeks to establish a pathway towards full scale implementation, the project is an appropriate test for V2G technologies. The results of this project can further identify the benefits and costs of purchasing and operating electric buses for fleet purposes while augmenting grid services. The Department recommends that PSEG LI include this program in its quarterly updates to the Department and report on the program's progress. The quarterly updates should include reporting on each metric defined to measure and track the success of the pilot hypotheses. In addition, the updates should include actions to be taken by PSEG LI in response to those metrics that are outside of the expected target range. DPS recommends the Electric School Bus V2G Pilot be adopted as proposed.

Heat Pumps Control Pilot

PSEG LI proposes a pilot project to support the displacement of oil heating equipment through increased use of ductless mini-split heat pumps in winter months. The pilot project will specifically focus on the deployment of smart thermostats and heat pump controls. These controls will initiate oil heating equipment only when the heat pump is unable to supply enough heat to maintain the thermostat set point. The Company is requesting a total O&M budget of $0.3M for three years through 2022. In 2020, $0.2M is budgeted for customer incentives, project management, labor, and training. A further evaluation of the program will take place in 2021 to assess the savings during the 2020-2021 winter heating season with $0.1M budgeted for this 2021 evaluation. The target population for this pilot is approximately 70 customers. DPS recommends that the Heat Pump Control Pilot Program be adopted as proposed.

Approximately one third of New York's greenhouse gas emissions originate from heating and cooling activities. In Case 18-M-0084, the Commission adopted an Order accelerating energy efficiency targets for the New York Investor Owned Utilities. The Order included specific targets for heat pumps. Similarly, PSEG LI targets 30,000 heat pumps by 2025. PSEG LI anticipates that heat pumps can be an efficient and cost-effective alternative to fossil fuel heating equipment. PSEG LI estimates that three percent of its customers have ductless mini-split heat pumps, which are predominantly used for summer cooling. Even when used for winter heating, the lack of communication between the mini-split heat pump and central heating system may lead to underutilization of the heat pump. The objective of deploying better controls is to support beneficial electrification that will reduce carbon emissions associated with winter

heating, while providing customers with energy bill savings. The pilot will aid in identifying how costs and benefits can be effectively allocated between participating customers and PSEG LI, potentially resulting in reduced reliance on the rebates currently used to promote mini-split heat pumps. The pilot project also aligns with several other REV objectives including enhancing customer knowledge, ensuring fuel and resource diversity, promoting third party partnerships, and improving system-wide efficiency.

PSEG LI expects to gain insight into whether currently installed heat pump systems are being operated optimally. The proposed pilot program will provide data to enable PSEG LI to test whether using heat pumps in winter can increase displacement of oil heating and ultimately cost savings for customers. PSEG LI stated that results from a study performed by Opinion Dynamics identified energy efficiency savings from heat pumps used for cooling.[17] PSEG LI intends to test these hypotheses using smart thermostats and controls that connect to the heat pump as well as the traditional oil heating system. This will also allow the customer to control the systems remotely. PSEG LI has stated that a third-party provider, Resideo, is currently developing controls to integrate heat pumps with central heating systems to enable the heat pumps and heating systems to communicate. PSEG LI expects these controls to be available by the end of 2019.

To test the outcome of this program, PSEG LI has identified metrics to assess its success in achieving the program's purpose. The measures of success for these metrics include (1) a percentage of existing ductless mini-split heat pumps over the baseline used in the winter, (2) the percent reduction in fuel use for winter heating with a target of 25 percent reduction, and (3) a reduction in energy costs with a target of approximately $780 per customer, per winter heating season. The use of these success metrics will enable PSEG LI to quantify potential benefits to the customer and the grid when the system is optimally used.

Data acquisition and analysis are critical for this pilot project to be successful. PSEG LI must be able to compare baseline historic data to the pilot project results. This will require obtaining information on current heat pump usage, fuel usage, and heating costs for each customer prior to implementing this pilot and establishing baseline data to will help ensure the data, analysis, and conclusions of the pilot are relevant and accurate.

The goals of this program, to encourage use of heat pumps through PSEG LI's energy efficiency portfolio, align with many of the core objectives of REV, and complement the existing program offerings. These existing programs include PSEG LI's Home Comfort program which provides rebates for the purchase of heat pumps to spur beneficial electrification of heating equipment. Through this pilot the Company will gain experience with the full capabilities of mini-split heat pumps and their use to replace traditional heating systems. Combining the cooling and heating data are expected to enable LIPA and PSEG LI to develop overall targets for heat pump installations within the LIPA service territory. Developing these targets would be consistent with the recent Commission Order and New York's Investor Owned Utilities[18] and is recommended.

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[17] Response to Staff Discovery Request DPS-19015.

[18] Case 18-M-0084, In the Matter of a Comprehensive Energy Efficiency Initiative, Order Adopting Accelerated Energy Efficiency Targets (issued December 13, 2018).

Based upon the results of the pilot program, PSEG LI should also consider additional ways to maximize potential efficiencies associated with heat pumps including potential tariff changes to offer incentives to customers for beneficial electrification and efficiency. Information gained from this pilot can be effectively leveraged in future applications to increase overall system efficiency, reduce carbon emissions, and concurrently provide cost savings to customers. The Department recommends that PSEG LI include this program in its quarterly updates to the Department and report on the program's progress. The quarterly updates should include reporting on each metric defined to measure and track the success of the pilot hypotheses. In addition, the updates should include actions to be taken by PSEG LI in response to those metrics that are outside of the expected target range. DPS recommends that the Heat Pump Controls Pilot be adopted as proposed.

Hosting Capacity Maps

PSEG LI is proposing to develop hosting capacity maps that will support Distributed Energy Resources (DER) integration and DER market growth by guiding customers and developers to favorable locations. The development process will be aligned with the Joint Utilities' Hosting Capacity Roadmap. A third-party developer will be contracted to produce maps for all 13 kV distribution circuits throughout 2020. Updates to the maps will subsequently be managed by PSEG LI. The Company is requesting approximately $1.82M over three years, which includes $1.59M in capital costs and $0.23M in O&M costs, to complete Stage 1 and Stage 2 of its implementation plan. The first stage consists of assessing indicators to identify locations on the distribution system with available DER hosting capacity and a high-level understanding of the system constraints. The second stage consists of identifying system criteria for determining hosting capacity, developing an analytical framework, conducting analysis, and illustrating results through maps which will indicate feeder-level hosting capacity. DPS recommends that the program be adopted as proposed.

Hosting capacity maps are interactive heat maps that display locations on the distribution grid with DER interconnection limitations. Map colors indicate different levels of available capacity, making it easier to identify favorable locations on the grid for DER interconnection. The maps will help achieve more expedient and cost-effective interconnection of DER such as solar photovoltaics and electric vehicle chargers, contributing to the achievement of statewide clean energy goals. In addition, PSEG LI anticipates using the hosting capacity maps to identify locations on the grid that are near or at capacity, enabling proactive system planning in advance of potential overloads.

In the DSIP Implementation Order, the Commission recognized that the availability of hosting capacity data was one of the most fundamental elements needed for enabling DER development.[19] The Commission required that the IOUs complete a hosting capacity analysis for all circuits at and above 12 kV. PSEG LI 's locational value study is the first step toward satisfying this requirement. The study will be utilized in the development of hosting capacity maps and is expected to be complete by December 2019. Lastly, the Commission called for the

[19] Case 16-M-0411, In the Matter of Distributed System Implementation Plans, Order on Distributed System Implementation Plan Filings (issued March 9, 2017), pp. 10-15.

creation of interactive maps that provide basic information about the feeders and allow developers to download the underlying data for each location in a usable format. To guide the development of hosting capacity maps, New York's Joint Utilities adopted and implemented a hosting capacity roadmap, which consists of four stages to address four specific aspects of capacity mapping: 1) distribution indicators, 2) hosting capacity evaluations, 3) advanced hosting capacity evaluations; and 4) integrated DER value assessments. The hosting capacity project also aligns with several REV objectives including: enabling new energy markets, ensuring fuel and resource diversity, improving system-wide efficiency, and enhancing system reliability, and system resilience.

Staff's review found that PSEG LI's request of $1.82M for Stages 1 and 2 of the hosting capacity maps to be consistent with the vendor's estimate and the costs incurred by the Joint Utilities, and reasonable considering the size of the utility and the scope of work. Staff also finds that PSEG LI 's plans to implement Stage 2 of the hosting capacity maps by the end of 2020 with commencement of Stage 3 maps in 2021 to be consistent with the roadmap and schedule that was implemented by the Joint Utilities. In the third stage, the maps are upgraded to include operational flexibility through additional modeling and analysis. The maps developed at this stage will indicate node/section-level hosting capacity. PSEG LI also clarified that hosting capacity maps will be updated on a quarterly basis. In addition, PSEG LI will have the ability to increase the frequency of the updates without any major system level modifications. Staff finds the frequency of updates to be consistent with the update implementation by the Joint Utilities.

In its public comments, the New York Power Authority (NYPA) asserted the necessity for direct current fast charger (DCFC) infrastructure. NYPA recommends that to facilitate deployment, PSEG LI should create a DCFC specific hosting capacity map because it is a unique use as compared with other DER and make the map publicly available on the Company's website. NYPA indicated that such a capacity map should show granularity to the feeder level, showing the circuit's voltage, peak summer average, and actual summer amperage over the past five years. NYPA also suggests dedicating employees as single points of contact for charging station developers, and rather than the traditional load letter process, the Company should conduct a desktop review to determine the relative ease of interconnection.

Hosting capacity maps are critical to project developers, and PSEG LI made positive strides in aligning with the Joint Utilities regarding hosting capacity map development. PSEG LI is currently in the process of participating in the Market Design and Integration working group and sits in on other Joint Utility working groups, to keep apprised of IOU best practices.[20] PSEG LI 's efforts have resulted in a proposal that has leveraged lessons-learned and best practices of other IOUs. PSEG LI will also leverage and build upon the analysis being conducted as part of its ongoing locational value study, proposed as part of its 2018 Utility 2.0 Plan Update.[21] DPS finds the costs and timeline of PSEG LI 's hosting capacity map proposal are reasonable and recommends that the program be adopted as proposed. PSEG LI should appropriately consider whether NYPA's recommendations to create DCFC hosting capacity maps can be included as part of this program.

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[20] Matter 14-01299, supra, PSEG-LI Utility 2.0 2019 Annual Update (issued June 28, 2019), p. 72.
[21] Matter 14-01299, supra, Recommendations Regarding PSEG Long Island's Annual Update to the Utility 2.0 Long Range Plan (issued November 1, 2018), p. 20.

Utility Scale Storage

As part of its 2019 Plan, PSEG LI initially proposed construction of a 3MW/18MWh battery-energy-storage (BES) system connected to the Brightwaters distribution substation. The project was intended to defer traditional infrastructure investments for approximately five years. The Company intended to use the BES project for peak-shaving as well as to integrate clean intermittent energy sources into the grid, thereby, increasing the overall efficiency of the distribution system. PSEG LI sought total funding in the amount of approximately $12.93M over three years, including $12.32M in capital costs and $0.61M in O&M costs. However, PSEG LI subsequently withdrew the proposal.

PSEG LI states that the withdrawal of the proposal is based on 7MW of unexpected additional load which is expected to occur prior to completion of the battery's construction. PSEG LI also states that critical customers served by the Brightwaters substation require additional redundancy and reliability which could not be accommodated by the energy storage project. DPS recognizes the various factors which contributed to the withdrawal of the project and encourages PSEG LI to pursue energy storage projects where appropriate in future Utility 2.0 filings.

To that end, DPS recommends, generally, that PSEG LI continue its practice of considering Non-Wires Alternatives (NWAs) which expand project Request for Proposals (RFPs) to consider a portfolio of technologies (including storage), as was successfully implemented on the South Fork. These portfolio solicitations should be competitive and should consider any and all methods or technologies to defer traditional infrastructure investments and address efficiency and peak shaving goals. These portfolio projects should collectively achieve a portfolio BCA of 1.0 or higher. The Brightwaters project sought additional funding sources such as supplemental funding provided by NYSERDA. DPS recommends that PSEG LI's and LIPA's pursuit of additional funding should not diminish the importance of strong economics for the project itself.

DPS also recommends further consideration of bulk procurement and bulk storage solutions. As stated in the Department's recommendations concerning the 2018 Plan Update:

> DPS recommends that in the next Utility 2.0 filing, PSEG LI and LIPA report on their consideration of pairing energy storage solutions with peak generation resources at specific peaking units to meet evolving New York State energy and environmental goals and regulations. For example, energy storage may reduce the environmental impact of aging generation resources in furtherance of the Department of Environmental Conservation's proposed NOX regulations and a study may be performed in conjunction with that process. PSEG LI should also continue to consider the potential impact of T&D infrastructure deferral or avoidance by pairing energy storage with existing peak generation resources and at the receiving sites for offshore wind as well as new system needs that begin to arise such as ramping resources to firm solar energy which energy storage could provide. To the extent a study can be expanded, it should also evaluate

various scenarios that reflect increasing the MWs of storage installed on the system and analyzing storage goals exceeding 300MW.

The Department reiterates the importance of these recommendations. DPS recommends that PSEG LI and LIPA continue discussions with the Department and NYSERDA to address incentive needs and availability of energy storage solutions. DPS recommends that PSEG LI continue to pursue energy storage solutions, as appropriate, consistent with the recommendations contained herein.

Public Comments

The Department received comments from ten organizations including the New York Power Authority (NYPA), Suffolk County Executive Steven Bellone, the City of New York, several advocacy organizations including the US Green Building Council and Long Island Progressive Coalition, and an industry association, NY BEST. All public comments are available on the Department's Document Matter Management (DMM) website under Matter No. 14-01299.[22]

Commenters provided input on the Plan's proposed programs as well as related topics. Comments pertaining to a parallel matter on energy efficiency, will be considered under that matter.[23] Support for the EV Bus project to move V2G efforts forward was expressed by Suffolk County Executive Steve Bellone, Suffolk Transportation Service, Edgewise Energy, the Drive Electric Long Island Coalition, as well as by the U.S. Green Building Council Long Island Chapter, and Long Island Mothers Out Front. New York City supports the EV Bus V2G project but urges PSEG LI to explore whether the project would be more cost-effective if located outside of Suffolk County, such as in the Rockaways. New York City also states that at any site the project is undertaken, PSEG LI must ensure that the equipment is made resilient to potential flood risks. The City urges PSEG LI to share insights gained form the bus project with other stakeholders.

In addition to its DCFC comments described above, NYPA suggests that the Company prioritize installing AMI at all public customers throughout Long Island in the early stages of AMI rollout, because the AMI meters play an important role in helping the State achieve its greenhouse gas reduction goals, and that PSEG LI should work with NYPA to coordinate its AMI data system with NYPA's New York Energy Manager (NYEM) digital energy platform, to facilitate providing customer insights into potential efficiency measures. Regarding the Value of Distributed Energy Resources (VDER), NYPA states that "In order to better align VDER compensation with the value provided to the grid during the summer capability period, PSEG LI should utilize the winter and summer strip ICAP prices as opposed to an annual ICAP price."

New York City also submitted comments stressing the need for resiliency and storm hardening, especially around the Rockaways. The City encourages LIPA and PSEG LI to incorporate the most current climate projections for our region in their capital planning and

[22] Matter 14-01299, supra, Public Comments.
[23] Matter 19-01859, In the Matter of PSEG Long Island 2020 Energy Efficiency and Renewable Plan Review.

system design and urges PSEG LI to consider the City's Climate Resiliency Design Guidelines. The City further recommends that PSEG LI and LIPA perform a comprehensive Climate Change Vulnerability Study similar in scope to one currently being conducted by Consolidated Edison. The City expresses support for the Flexpay program as long as shut-off protections are in place to protect low income customers. The City states that PSEG LI should "implement a mechanism that would reconcile, and possibly refund to participants, the difference in costs between participating in the FlexPay Pilot and the costs that such customers otherwise would have paid if they were taking standard electric service."

NY Best commends PSEG LI for its first Behind-the-Meter storage program for commercial and residential customers. However, the group is disappointed that the 2019 Plan does not include a bulk energy storage incentive program, nor does it mention PSEG LI 's plans for replacing peaking generation units on Long Island, despite pending DEC NOx regulations. PSEG LI's compliance plan for the pending DEC NOx regulations is due in 2020. NY Best references a new State study released in July 2019 entitled "The Potential for Energy Storage to Repower or Replace Peaking Units in New York State" which found that between 275 MW – 2,453 MW could be replaced with storage and/or hybridized solar plus storage. NY Best also points out that with the numerous benefits that storage can provide to the grid, the 2019 plan is not aggressive enough on promoting NWAs and utility scale projects. NY Best suggests that non-wires solutions be pursued and competitively bid, and that other models besides utility ownership for storage be considered. NY Best indicates that the BCA model may not adequately recognize the value of storage optionality/arbitrage in its benefits calculations.

The Long Island Progressive Coalition points out that the Climate Leadership and Community Protection Act mandate that at least 35% of clean energy benefits go to disadvantaged communities, while codifying a more aspirational goal of 40% of benefits. For a just transition to a clean energy economy, the Long Island Progressive Coalition would like to see the 2019 PSEG Long Island Utility 2.0 Plan align with this and direct a minimum of 40% of funds to benefit low-to-moderate-income households and disadvantaged communities.

It is recommended that PSEG LI consider the public comments concerning each of the proposals.

Budgeting and Funding

PSEG LI proposes to recover gross capital costs of Utility 2.0 programs in the amount of $3.94M for 2020, $0.03M for 2021 and $0.0M for 2022 for a total of $3.97M. PSEG LI proposes to recover gross O&M costs of Utility 2.0 programs in the amount of $2.92M for 2020, $2.21M for 2021 and $1.58M for 2022 for a total of $6.71M. The total cost of the 2019 Plan as recommended by DPS is approximately $10.69M through 2022.

DPS encourages PSEG LI to continue to ensure that costs are reasonable in order to protect ratepayers, especially where the Company is employing third party outside services. DPS recommends that PSEG LI track project costs and benefits and reconcile these figures on an annual basis as part of the annual Utility 2.0 filing. DPS recommends that all program costs be updated with actual cost as appropriate. Ratepayers should receive the benefits obtained by

PSEG LI as a result of its filing, and to effectuate this, DPS recommends that any overfunding or underspending be applied exclusively to future Utility 2.0 funding requests. The need for additional funding due to underbudgeting should be evaluated as part of the Department's review of future Utility 2.0 filings. DPS, therefore, recommends that PSEG LI and LIPA appropriately justify the need for additional funding beyond the levels projected in the 2019 Utility 2.0 filing if such additional funding is needed to complete projects contained herein.

DPS also recommends that LIPA and PSEG LI work with Department Staff to verify the amount of funding corresponding to the recommended 2019 Utility 2.0 plan and to develop a financial schedule with DPS review to ensure timely and accurate tracking of costs and savings. The financial schedule should form the basis for project cost tracking and should be created for use as well in future Utility 2.0 filings. DPS recommends that amendment of the model or functions contained in the schedule be implemented upon agreement by LIPA, PSEG LI, and DPS.

Conclusion

The Department recommends that PSEG LI and LIPA proceed with the proposed 2019 Utility 2.0 Plan as discussed above. DPS stresses the need for ensuring that project costs are reasonable and establishing clear goals for proposals and utilizing metrics with which to assess progress towards those goals. This should be reflected in PSEG LI's periodic reporting to DPS.

As the programs proceed, and other programs are improved or developed in future Utility 2.0 proposals, the Department expects that LIPA and PSEG LI will continue to make progress, in accordance with New York State and Commission policy, with respect to energy efficiency, distributed generation and advanced grid technology programs. DPS looks forward to continuing to work with PSEG LI and LIPA to achieve the goals.

Sincerely,

John B. Rhodes,
Chair

cc: Thomas Falcone, LIPA Chief Executive Officer
Anna Chacko, LIPA General Counsel
Bobbi O'Connor, LIPA Secretary to the Board of Trustees
Dan Eichorn, PSEG LI President and Chief Operating Officer
Guy Mazza, DPS LI Director

Exhibit "D"

NEW YORK STATE OF OPPORTUNITY. Department of Public Service

125 East Bethpage Road, Plainview, NY 11803
www.dps.ny.gov/longisland

December 13, 2019

Via Email and U.S. Mail

Honorable Ralph V. Suozzi, Chairman
Board of Trustees
Long Island Power Authority
333 Earle Ovington Blvd.
Uniondale, New York 11553
boardoftrustees@lipower.org

Re: Matter No. 19-01859: In the Matter of PSEG LI 2020 Energy Efficiency and Renewable Plan Review; Recommendations Regarding PSEG LI 2020 Plan

Dear Chairman Suozzi:

I am pleased to provide the recommendations of the New York State Department of Public Service (DPS or Department) regarding PSEG Long Island's (PSEG LI or the Company) 2020 Energy Efficiency and Renewable Plan (2020 Plan).[1]

Pursuant to Public Authorities Law (PAL) §1020-f(ee), the Long Island Power Authority (LIPA) and its service provider, PSEG LI, submit to the DPS for review, any proposed plan related to implementation of energy efficiency measures, distributed generation or advanced grid technology programs, having the purpose of providing customers with tools to more efficiently and effectively manage their energy usage and utility bills and improving system reliability and power quality. In accordance with Public Service Law (PSL) §§3-b(3)(a) and (g), the Department reviews and makes recommendations to the LIPA Board of Trustees with respect to rates and charges, including those related to energy efficiency and renewable energy programs. The Department recommends that the 2020 Plan be adopted consistent with the recommendations discussed herein.

PSEG LI 2020 Energy Efficiency and Renewable Plan Background

On August 6, 2019, PSEG LI submitted to the Department its 2020 Plan. The 2020 Plan sets forth the budgets and targets for PSEG LI's suite of current residential and commercial energy

[1] Matter 19-01859, In the Matter of PSEG Long Island 2020 Energy Efficiency and Renewable Plan Review, PSEG Long Island 2020 Energy Efficiency and Renewable Plan (filed August 6, 2019).

efficiency programs, and describes the results of each program, noting any significant changes from prior years. The 2020 Plan encompasses five main incentive program categories: Efficient Products, Home Comfort, Residential Energy Affordability Partnership (REAP), Home Performance with Energy Star (Home Performance), and Commercial Efficiency Program (CEP). The 2020 Plan also incorporates the Home Energy Management Program and three demand response programs: The Direct Load Management (DLM) program, Commercial System Relief program, and the Distribution Load Relief Program. PSEG LI's 2020 Plan also includes two new programs, a Pay for Performance program and an Alternative Financing program. PSEG LI will also continue administering the NY-Sun program. The total cost of PSEG LI's proposal is approximately $89M for 2020, an amount consistent with the Company's expenditures over the last five years.

PSEG LI relies upon an independent evaluator, Opinion Dynamics Corporation (ODC), for evaluation, measurement and verification (EM&V), and for technical recommendations to improve program performance. The 2020 Plan is similar to the System Energy Efficiency Plans (SEEPs) that New York State Investor-Owned Utilities (IOUs) are required to file with the Public Service Commission (Commission).[2]

On August 15, 2019, the Department issued a Notice Requesting Comment on the 2020 Plan.[3] The Department received thirteen stakeholder comments, which included comments from advocacy organizations such as the Sierra Club, solar professionals, the City of New York, and individuals.

Existing Programs

PSEG LI's 2020 Plan describes PSEG LI's current program offerings, which include the Energy Efficient Products program, Home Comfort program, Residential Energy Affordability Partnership (REAP) program, Home Performance with Energy Star program, Commercial Efficiency Program (CEP), the Home Energy Management Program, and Direct Load Management (DLM) programs.

The Energy Efficient Products program provides rebates and incentives for Energy Star® certified lighting and appliances and provides incentives for appliance recycling. The Company is adding additional product incentives this year, to include electric lawn mowers and blowers. The Home Comfort program has provided incentives to encourage efficient central air conditioning systems and heat pumps.[4]

Home Performance with Energy Star is a U.S. Department of Energy program administered by local utilities that provides energy audits to any single-family homeowner at no cost to the customer. PSEG LI's program is administered by a third-party contractor, Lockheed Martin, whereby a qualified contractor conducts a Home Energy Audit to assess opportunities for

[2] Case 15-M-0252, In the Matter of Utility Energy Efficiency Programs, Order Authorizing Utility Energy Efficiency Portfolio Budgets and Targets for 2019-2020 (issued March 15, 2018) (ETIPs Order).

[3] Matter 19-01859, supra, Notice Requesting Comments (filed August 6, 2019).

[4] Subsequent to filing its 2020 Plan, PSEG LI announced that it will no longer be incentivizing central air conditioning units as of November 15, 2019. See, https://www.psegliny.com/saveenergyandmoney/homeefficiency/homecomfort

homeowners to take advantage of energy saving measures. This program identifies efficiency measures which, if needed, can be financed through Green Jobs - Green New York, a financing program offered by the New York State Energy Research and Development Authority (NYSERDA). The REAP Program provides comprehensive home assessment services for income-eligible customers and is intended to assist participants in the reduction of their electric bills, provide energy efficiency education, and includes a check for carbon monoxide leaks.

The CEP is intended to assist commercial customers in saving energy through rebates and incentives applied towards the installation of conservation measures such as efficient lighting, variable frequency drives, cool roofs, and also provides technical assistance on appropriate measures.

The Home Energy Management Program provides customized home energy reports to a growing number of customers to increase awareness of their energy use and energy efficiency offerings. PSEG LI also offers three demand response programs. The Direct Load Control program allows PSEG LI to control a customer's individual thermostat and cycle its usage at peak times of the year. Through the Commercial System Relief Program, medium to large size commercial customers can reduce their load by a specified amount when called upon. The Distribution Load Relief Program creates the opportunity to reduce electric load in certain constrained areas on the system.

PSEG LI will continue to locally administer the NY-Sun Incentive Program for projects that are in the queue for new solar electric systems up to 750 kilowatt (kW) installed at multifamily, educational, not-for-profit, and government buildings. For residential customers, PSEG LI will continue to administer Green Jobs - Green New York financing and the NYSERDA NY-Sun Affordable Solar Program, which offers incentives for income-eligible households in the LIPA and PSEG LI service area.

New Programs

PSEG LI proposes to initiate a Pay for Performance program intended to compensate implementation contractors for measured energy efficiency savings achieved by advanced metered infrastructure (AMI) customers. PSEG LI's proposal targets a total reduction of 1,100 MMBtus of annual energy use over a three-year period.[5] PSEG LI's program model shifts focus away from estimates of energy savings for individual measures and towards whole building metered savings. DPS supports this program as, by design, it emphasizes the importance of realized savings and notes similar programs are being piloted by NYSERDA and some IOUs. Lessons learned from this program should be provided and incorporated into future energy efficiency plans.

In addition, PSEG LI also proposes a new Alternative Financing Program which intends to establish partnerships with financing companies that would allow single-family residential customers to pay for energy-saving home improvements with the value of their expected energy savings. PSEG LI expects that the partner financing entity would provide the initial funding. Therefore, funding for this program is not reflected in the 2020 Plan's budget. DPS supports this

[5] Matter 19-01859, supra, PSEG Long Island 2020 Energy Efficiency and Renewable Plan (filed August 6, 2019) p. 36.

concept, in accordance with applicable customer protections, as an approach to assist customers in implementing energy efficiency.

Budget and Financial Analysis

The 2020 Plan budget is funded at a level consistent with PSEG LI's past Energy Efficiency and Renewable program budgets. DPS notes that the Home Comfort Program budget was significantly increased from the 2019 budget to further incentivize the installation of heat pumps.

PSEG LI performed two Benefit-Cost Analyses (BCA) regarding its 2020 Plan, the Societal Cost Test (SCT) and the Rate Impact Measure (RIM) test. The SCT measures the net benefit/cost to society of a portfolio of programs with the cost and benefits to society included. The RIM test assesses the impact energy efficiency programs will have on utility rates. While the RIM test shows a 0.6 ratio for the 2020 Plan, the SCT results in a 1.96 ratio. The Commission's BCA Framework Order issued in 2016 established the SCT as the determinative BCA test.[6]

DPS notes that the overall program cost per unit of saved energy proposed in the 2020 Plan is higher than the rate being achieved by each IOU in New York State. Recognizing there may be regional differences, the Department recommends that PSEG LI endeavor to increase the amount of energy efficiency savings it achieves relative to the level of program funding, to be consistent with energy efficiency savings achieved per ratepayer dollar at comparable IOUs. DPS also recommends that LIPA and PSEG LI consider how best to account for performance in the most recent years when establishing PSEG LI's future performance metrics.

Consistency with State Goals

New York State has a target of achieving 185 trillion British thermal units (TBtu) of energy efficiency savings by 2025.[7] In the Commission's 2018 Order Adopting Accelerated Energy Efficiency Targets (Accelerated Efficiency Order), the Commission assigned 31 TBtus of additional savings to the IOUs, with a corresponding expectation that LIPA and PSEG LI will contribute a proportional incremental share of no less than three TBtus over the 2019-2025 period.[8] The Accelerated Efficiency Order required IOUs to file a proposal that would effectuate the achievement of the 31 incremental TBtu goal as well as supporting a subsidiary jurisdictional target of three percent of electric sales reduction by 2025, including the savings achieved as a result of NYSERDA's programs. Of the three percent, IOU's are responsible for approximately two percent with the remaining one percent attributable to NYSERDA's programs.[9] This level of ambition roughly equates to a doubling of the IOUs' electric efficiency efforts over the period. The Accelerated Efficiency Order also called on the IOUs to support a subsidiary target of five TBtu associated with heat pump deployment, and a minimum of twenty percent of funding directed to

[6] Case 14-M-0101, Reforming the Energy Vision, Order Establishing the Benefit Cost Analysis Framework (issued January 21, 2016).

[7] Matter 18-00381, In the Matter of Comprehensive Energy Efficiency Initiative, New Efficiency New York, (issued April 26, 2018) p. 2.

[8] Case 18-M-0084, supra, Order Adopting Accelerated Energy Efficiency Targets (issued December 13, 2018) (Accelerated Efficiency Order) p. 30, fn. 46.

[9] NYSERDA's CEF programs are paid for through surcharges on the electric IOUs delivery bills. Long Island customers do not contribute to these programs and are therefore ineligible.

programs dedicated to Low-to Moderate Income (LMI) customers. The Commission is currently deliberating the IOUs' proposal submitted April 1, 2019 and modified May 21, 2019. The Department recommends PSEG LI develop a plan that achieves savings levels consistent with State goals by 2025.

The 2020 Plan includes increased funding allocated to heat pump installation, by approximately five times compared to the 2019 Plan with a corresponding target of 0.111 TBtu.[10] Increasing the deployment of heat pumps for heating applications is a critical aspect of the State's energy policy.[11] While heat pumps have been an effective electric efficiency measure to reduce energy consumption for space cooling, the importance of encouraging use of heat pumps to address winter heating needs cannot be understated. Heat pumps offer an important opportunity to off-set future gas usage by diverting heating oil customers that may seek natural gas service. They therefore may help to mitigate gas supply constraints in LIPA and PSEG LI's service area. The Department supports PSEG LI's establishment of a specific sub-target within its overall energy efficiency goals for heat pump savings as it is consistent with the approach the Commission has taken with the IOUs. The Accelerated Efficiency Order anticipates the filing of a separate heat pump implementation plan for the IOUs' programs.[12] DPS recommends that LIPA and PSEG LI coordinate with DPS, NYSERDA and the IOUs to develop a comparable heat pump implementation plan. The heat pump implementation plan should be developed and submitted in conjunction with, or before, PSEG LI's filing of the 2021 Energy Efficiency and Renewables Plan and take into consideration coordination that PSEG LI should undertake with National Grid to address interaction with the gas system in areas where the two utilities service territories overlap.

To achieve greater energy affordability for all, Commission policy seeks to increase access and reduce the energy burden on LMI customers. PSEG LI's 2020 Plan dedicates approximately 15 percent of its residential efficiency program spending to programs benefitting LMI customers. DPS recommends that PSEG LI, in its 2021 Plan, consider further enhancing its proportional spending on LMI and its efforts targeted at affordable multifamily buildings in coordination with DPS and NYSERDA to align with the Statewide LMI portfolio as appropriate.

In addition, concerning both heat pumps and LMI targets, DPS encourages LIPA and PSEG LI to participate in the ongoing meetings and working groups held by the IOUs and NYSERDA on the future development of heat pump and LMI frameworks. DPS recommends that LIPA and PSEG LI adopt the relevant aspects of the frameworks and initiatives developed as part of these processes as appropriate to benefit Long Island customers.

On July 18, 2019, Governor Cuomo signed into law the Climate Leadership and Community Protection Act (CLCPA). The CLCPA establishes numerous additional statewide efficiency and renewable targets, including a 40 percent reduction in greenhouse gas emissions below 1990 levels by 2030 and 100 percent zero emissions electricity by 2040. The CLCPA also establishes a focus on providing benefits to disadvantaged communities. It is expected that future

[10] PSEG LI will no longer incentivize central air conditioning units as of November 15, 2019; emphasis is instead being placed on heat pumps that can be utilized for both cooling and heating purposes.
[11] Case 18-M-0084, supra, Order Adopting Accelerated Energy Efficiency Targets (issued December 13, 2018) p.59.
[12] Id., p. 56.

PSEG LI Energy Efficiency and Renewable Plans will reflect the increased goals and additional initiatives set forth by the CLCPA.

Further Process Alignment

To build further consistency with New York State's IOUs, there are several ways in which PSEG LI should consider aligning its practices with the requirements of the Accelerated Efficiency Order. PSEG LI has provided an annual Energy Efficiency & Renewable Plan for several years, consistent with the requirements of the LIPA Reform Act. To be more consistent with IOUs and to reflect State policy, DPS recommends that PSEG LI incorporate a longer time horizon, or target trajectory, in its annual filing. DPS recommends that PSEG LI expand its 2021 Plan to include goals set through 2025, and that future Plans also reflect a multiyear consideration.[13]

The Commission established a Technical Resource Manual (TRM) Management Committee (TRM MC) in the Reforming the Energy Vision (REV) Track One Order.[14] PSEG LI staff have participated with the TRM MC. In the same Order, the IOUs were directed, in coordination with NYSERDA, to file a publicly available TRM Management Plan, and to update the TRM annually.[15] Further, the Commission required utilities to file a TRM and EM&V Coordination Report which includes a review of all measures contained in the TRM.[16] The IOUs are required to identify the EM&V activities that will be conducted to verify or update the TRM assumptions to improve accuracy of the savings estimations. The Department recommends that PSEG LI continue to participate in the TRM MC and file its annual TRM with the DPS. PSEG LI's contractor ODC, has conducted EM&V reviews for the PSEG LI energy efficiency portfolio for the past several years. The Department recommends that PSEG LI identify specific suggestions made by the independent evaluator and identify in future Energy Efficiency and Renewable Plans how PSEG LI has incorporated revisions based on those suggestions.

In the ETIP Order, the Commission stated that Earning Adjustment Mechanisms (EAMs) based on programmatic performance should be calculated and awarded based on verified gross savings.[17] To ensure accuracy, LIPA and PSEG LI should base savings calculations upon data verified by an independent EM&V contractor. NYS IOUs are required to file publicly accessible workpapers detailing BCAs for their energy efficiency portfolios.[18] DPS recommends that PSEG LI file such workpapers annually along with their future Plans.

Data and Reporting

DPS also recommends further alignment of clean energy savings calculations, where practicable, with the reporting required of NYS IOUs and NYSERDA, including consistency with

[13] Case 15-M-0252, supra, In the Matter of Utility Energy Efficiency Programs, Order Authorizing Utility Energy Efficiency Portfolio Budgets and Target for 2016-2018 (issued January 22, 2016).
[14] Case 14-M-0101, supra, Order Adopting Regulatory Policy Framework and Implementation Plan. See also Matter 15-01319, In the Matter of the Technical Resource Manual.
[15] Case 15-M-0252, supra, Order Authorizing Utility Energy Efficiency Portfolio Budgets and Targets for 2019-2020 (issued March 15, 2018).
[16] Id., p. 41.
[17] Id., pp. 24-28.
[18] Id., p. 52.

the minimum components set out in the Clean Energy Guidance Documents, specifically the CE-02: ETIP/SEEP Guidance. DPS also recommends that PSEG LI coordinate with DPS and NYSERDA to migrate data into the NYSERDA Clean Energy Dashboard, as recommended in the Department's 2018 Utility 2.0 recommendations.[19]

In the Accelerated Efficiency Order, the Commission described the importance of ready access to information regarding customer energy usage in enabling the success for distributed energy resource (DER) markets noting the need to balance privacy concerns with the rapidly changing energy marketplace. The Order further directed utilities to make full use of available data to optimize program operations. Consistent with the requirements placed upon IOUs in the Order, the Department recommends PSEG LI (1) report in future years on its progress in expediting the implementation of Green Button Connect as also recommended DPS' 2018 Utility 2.0 recommendations; (2) participate in any associated working groups; (3) report on its readiness in providing benchmarking data via automatic uploads to Energy Star Portfolio Manager; and (4) consider a benchmarking-type programmatic offering to facilitate action.[20]

The Accelerated Efficiency Order directed DPS Staff to undertake a Performance Management and Improvement process regarding the IOU's and NYSERDA program portfolios. DPS recommends PSEG LI participate in this process to share lessons learned on Long Island, as well as to benefit from the lessons learned throughout the State.

Coordination with NYSERDA

NYSERDA provides funding to LIPA from the Regional Greenhouse Gas Initiative (RGGI), to augment PSEG LI's overall clean energy and efficiency budgets, to achieve additional carbon reduction benefits that it would be difficult for LIPA and PSEG LI to achieve absent such funding. The Authority buys RGGI allowances and, therefore, this funding represents funds from Long Island electric ratepayers dedicated to Long Island clean energy goals.

LIPA has a separate dedicated Distributed Energy Resource charge and does not pay into the Systems Benefit Charge (SBC) paid by IOUs, so it is not otherwise eligible for CEF programming funded by the SBC. NYSERDA, LIPA, and PSEG LI have partnered to make certain CEF programs available on Long Island, including the Clean Energy Communities Program and the REV Campus Challenge. These programs have been successful in engaging local governments and educational institutions in clean energy through funding and investing in clean energy projects. DPS encourages LIPA and PSEG LI to continue their coordination with NYSERDA to sustain the availability of these programs to customers on Long Island.

DPS also encourages LIPA to continue to work with NYSERDA to achieve its program proposals, via its Memorandum of Understanding, to further State energy policy goals. Additional CEF programs administered by NYSERDA include a P-12 Schools Program for benchmarking of schools and a Building Operations and Maintenance (O&M) Workforce Training Program. DPS

[19] Matter 14-01299, In the Matter of PSEG LI Utility 2.0 Long Range Plan, Recommendations Regarding PSEG LI Annual 2018 Update (issued November 1, 2018).

[20] Id., p. 6. See also, Case 18-M-0084, supra, Order Adopting Accelerated Energy Efficiency Targets (issued December 13, 2018).

encourages LIPA and PSEG LI to coordinate with NYSERDA as appropriate, to make these programs available on Long Island.

Public Comments

Thirteen public comments were received in response to the Notice Requesting Comments, which included comments from advocacy organizations, solar professionals, the City of New York, and several individuals. DPS recommends that PSEG LI consider these comments in accordance with furthering State goals.

Support is expressed for allocating more funding to LMI customers because many such customers cannot afford the upfront expense of installing efficiency measures and cannot afford the financing available for these projects. As such, several commenters stated that PSEG LI should allocate 40 percent of clean energy benefits to disadvantaged communities to achieve the goals stated in the CLCPA.

Several commenters urge PSEG LI to meet and exceed its share of statewide goals, and to work with developers to move new construction to incorporate efficient electric rather than gas heating. Some commenters also claim that PSEG LI will not meet a two percent annual incremental energy sales savings in 2025, despite an assertion in the 2020 Plan that it will do so. These commenters question basing savings on figures reported in the 2019 NYISO Load and Capacity Gold Book.[21]

One commenter encouraged deep building retrofits over "low hanging fruit" solutions that only scratch the surface of energy efficiency potential. The commenter urged PSEG LI to consider offering comprehensive packages of energy efficiency measures together, and an increased incentive for new heating and cooling equipment tied to air sealing and insulation. The commenter stated that PSEG LI should tailor its energy efficiency program offerings to accommodate comprehensive upgrades that occur in stages, or over a longer time period.

Comments also suggest that PSEG LI incentivize installation of internet-controlled smart thermostats for all customers with heating and air conditioning in the LIPA service territory. DPS notes that this endeavor is an objective of the heat pumps pilot being pursued as part of PSEG LI Utility 2.0 2019 Annual Plan Update.[22]

One commenter suggests that PSEG LI develop a program to help municipalities and large commercial customers learn how to use the Environmental Protection Agency's (EPA) Portfolio Manager to develop energy performance benchmarking at the building level. They suggest that PSEG LI offer a discounted tariff for customers that benchmark and make their energy performance public.

Several solar companies state that existing plans and programs are not sufficient to support the deployment of six Gigawatts (GW) of distributed solar by 2025. The solar companies state that

[21] New York State Independent System Operator Load and Capacity Gold Book, May 2019. https://www.nyiso.com/documents/20142/2226333/2019-Gold-Book-Final-Public.pdf.

[22] Matter 14-01299, supra, PSEG LI Utility 2.0 2019 Annual Update (filed June 28, 2019).

LIPA's share of renewable energy targets should be clear and made public. The companies express concern that the 2020 Plan has no budget for solar programs. They note that while the rest of the State moves forward with community solar, Long Island has fewer than twelve projects. In addition, the companies request a more detailed breakdown of the spending categories in the Plan.

Stakeholders request increased opportunity for information and participation in the public comment process. DPS will endeavor to increase such opportunities through its outreach and use of social media, and urges interested parties to contact consumer outreach via consumer.outreach-LI@dps.ny.gov.

Conclusion

The Department supports PSEG LI's overall 2020 Plan and believes the described portfolio is appropriate to achieve the 2020 targets and is reflective of the direction indicated by current State policies. DPS encourages LIPA and PSEG LI to coordinate, with the IOUs and NYSERDA, as discussed above, on all relevant initiatives to ensure program alignment and continue to improve longer term energy efficiency planning going forward.

As these programs progress, and other programs are developed in future Plans, the Department expects that PSEG LI will further align with State policies with respect to energy efficiency, electrification, distributed generation and the goals of REV. DPS looks forward to continuing to work with PSEG LI and LIPA to achieve these goals.

Sincerely,

John B. Rhodes,
Chief Executive Officer

CC: Thomas Falcone, LIPA Chief Executive Officer
Anna Chacko, LIPA General Counsel
Bobbi O'Connor, LIPA Board of Trustees Secretary
Dan Eichhorn, PSEG LI President and Chief Operating Officer
Guy Mazza, DPS LI Director

I. General Information (continued):

C. General Terms and Conditions (continued):

21. Low Income Program Discount

a) Customer Requirements and Eligibility

(1) Customers served under Service Classifications No. 1 and Service Classification No.1 VMRP who provide documentation of enrollment in a qualifying program as listed in Section I.B (Qualifying Low Income Customer) and are eligible for a fixed discount on their bill.

(2) Eligibility and enrollment must be renewed each year. To the extent that the Authority can automatically determine a Qualifying Low Income Customer's continued eligibility, the customer will not need to re-apply.

(3) Qualifying Low Income Customers whose continued eligibility cannot be automatically determined will be notified by the Authority as their enrollments expire. The Authority will allow such customers four (4) months from the expiration of their enrollments (the "Grace Period") to complete the renewal process. During the Grace Period, Qualifying Low Income Customers will continue to receive discounted charges. Qualifying Low Income Customers who do not complete the renewal process within the Grace Period and whose continued eligibility cannot be automatically determined by the Authority will become ineligible for the discounted charges until the renewal process is successfully completed.

(4) The Authority may in its sole discretion limit participation in Long Island Choice by Qualifying Low Income Customers (defined in Section I.B above) as needed for consistency with New York State policy as set forth in Orders of the Public Service Commission.

b) Discounts

(1) The Tier 1 discount is available to all Qualifying Low Income Customers. Customers that have received a HEAP benefit plus one (1) add-on shall receive the Tier 2 discount. Customers that have received a HEAP benefit plus two (2) add-ons shall receive the Tier 3 discount. The Tier 4 discount is reserved for customers with Direct Voucher/Guaranteed Payment. HEAP recipients receive add-ons for households with a vulnerable individual (household member who is age 60 or older, under age 6 or permanently disabled) and/or if the household's gross income meets HEAP Tier 1 income guideline.

Tier	Electric Heat (Rates 580 ~~and 880~~)	Electric Non-Heat (Rates 180, ~~380,~~ 188 and M188)
1	$.~~83~~93 per day	$.~~83~~93 per day
2	$1.53 per day	$.~~83~~93 per day
3	$2.17 per day	$.~~83~~93 per day
4	$1.60 per day	$1.60 per day

VIII.SERVICE CLASSIFICATIONS: (continued):

A. SERVICE CLASSIFICATION NO. 1 - Residential Service (continued):
(Rate Codes: 180, ~~380,~~ 480, 481, 580~~, 880~~)

1. Rates and Charges per Meter:

a) Schedule of Rates

The rates for this service code are set forth below.

Rate Code 180	June to September Inclusive	October to May Inclusive
Service Charge per Day	$.~~40004~~200	$.~~40004~~200
Energy Charge per kWh per month		
First 250 kWh @	$.~~0786~~0827	$.~~0786~~0827
Over 250 kWh @	$.~~0993~~1045	$.~~0786~~0827

~~Rate Code 380 (Water Heating) June to September October to May Inclusive~~

~~Inclusive~~

~~Service Charge per Day $.4000 $.4000~~

~~June to September October to May Inclusive~~

~~Inclusive~~

~~Energy Charge per kWh per month~~

~~First 250 kWh @ $.0786 $.0786~~
~~Next 150 kWh @ $.0993 $.0786~~
~~Next 400 kWh @ $.0839 $.0679~~
~~Over 800 kWh @ $.0993 $.0786~~

VIII.SERVICE CLASSIFICATIONS: (continued):

A. SERVICE CLASSIFICATION NO. 1 - Residential Service (continued):
(Rate Codes: 180, ~~380,~~ 480, 481, 580~~, 880~~)
Rates and Charges per Meter (continued):

Rate Code 580 (Space Heating)	June to September Inclusive	October to May Inclusive
Service Charge per Day	$.4200~~4000~~	$.4200~~4000~~
Energy Charge per kWh per month		
First 250 kWh @	$.~~0786~~0827	$.~~0786~~0827
Next 150 kWh @	$.~~0993~~1045	$.~~0786~~0827
Over 400 kWh @	$.~~0993~~1045	$.~~0443~~0467

~~Rate Code 880 (Space and Water Heating) Inclusive~~ ~~June to September~~ ~~October to May Inclusive~~

~~Service Charge per Day~~	~~$.4000~~	~~$.4000~~	
~~Energy Charge per kWh per month~~			
~~First~~	~~250 kWh @~~	~~$.0786~~	~~$.0786~~
~~Next~~	~~150 kWh @~~	~~$.0993~~	~~$.0786~~
~~Next~~	~~400 kWh @~~	~~$.0839~~	~~$.0443~~
~~Over 800 kWh @~~	~~$.0993~~	~~$.0443~~	

Rate Code 480, 481	June to September Inclusive	October to May Inclusive
Service Charge per day	$.~~3600~~3800	$.~~3600~~3800
Energy Charge per kWh per month		
12:00 midnight to 7:00 a.m. (Standard Time) or	$.~~0137~~0144	$.~~0137~~0144
10:00 p.m. to 10:00 a.m. (Standard Time)	$.~~0153~~0161	$.~~0153~~0161

VIII.SERVICE CLASSIFICATIONS (continued):

B. SERVICE CLASSIFICATION NO. 1-VMRP (L)
Voluntary Large Residential Service with Multiple Rate Periods (continued):
(Rate Codes: 181, 182, 184)

3. Rates and Charges per Meter:

a) Schedule of Rates

The rates for this service code are found below.

All Rate Codes	June to September Inclusive	October to May Inclusive
Service Charge per Day	$~~1.820~~1.9100	$~~1.820~~1.9100

Rate Codes 184 – Rate 1 Energy Charge per kWh	June to September Inclusive	October to May Inclusive
Daylight Savings Time 8 p.m. to 10 a.m., and Saturday and Sunday	Period 1	Period 2
First 125 kWh @	$.~~0243~~0256	$.~~0243~~0256
Over 125 kWh @	$.~~0243~~0256	$.~~0243~~0256
Daylight Savings Time 10 a.m. to 8 p.m. Weekdays	Period 3	Period 4
First 125 kWh @	$.~~0746~~0785	$.~~0746~~0785
Over 125 kWh @	$.~~2712~~2853	$.~~0761~~0801

VIII.SERVICE CLASSIFICATIONS (continued):

B. SERVICE CLASSIFICATION NO. 1-VMRP (L)
Voluntary Large Residential Service with Multiple Rate Periods (continued):
(Rate Codes: 181, 182, 184)
Rates and Charges per Meter (continued):

	June to September Inclusive	October to May Inclusive
Rate Codes 181 - Rate 2		
Energy Charge per kWh		
Daylight Savings Time*		
8 p.m. to 10 a.m., and		
Saturday and Sunday		
	Period 1	Period 2
First 125 kWh @	$.~~0533~~0561	$.~~0533~~0561
Over 125 kWh @	$.~~0533~~0561	$.~~0533~~0561
Daylight Savings Time*		
10 a.m. to 8 p.m.		
Weekdays	Period 3	Period 4
First 125 kWh @	$.~~0533~~0561	$.~~0533~~0561
Over 125 kWh @	$.~~1328~~1397	$.~~0959~~1009

	June to September Inclusive	October to May Inclusive
Rate Codes 182 - Rate 3		
Energy Charge per kWh		
Daylight Savings Time*		
8 p.m. to 10 a.m., and		
Saturday and Sunday	Period 1	Period 2
First 125 kWh @	$.~~0536~~0564	$.~~0536~~0564
Over 125 kWh @	$.~~0536~~0564	$.~~0347~~0365
Daylight Savings Time*		
10 a.m. to 8 p.m.		
Weekdays	Period 3	Period 4
First 125 kWh @	$.~~0536~~0564	$.~~0536~~0564
Over 125 kWh @	$.~~1338~~1408	$.~~0349~~0367

* See paragraph IV.A.10 “Daylight Savings Time” Leaf No. 99.

VIII.SERVICE CLASSIFICATIONS (continued):

C. SERVICE CLASSIFICATION NO. 1-VMRP(S)
Voluntary Small Residential Service With Multiple Rate Periods (continued):
(Rate Code: 188)

3. Rates and Charges per Meter:

a) Schedule of Rates

The rates for this service code are found below.

All Rate Codes	June to September Inclusive	October to May Inclusive
Service Charge per day	$.~~40004~~200	$.~~40004~~200
Meter Charge per day	$.~~1100~~1200	$.~~1100~~1200

Rate Codes 188 Energy Charge per kWh	June to September Inclusive	October to May Inclusive
Daylight Savings Time* 8 p.m. to 10 a.m., and Saturday and Sunday	Period 1 $.~~0503~~0529	Period 2 $.~~0327~~0344
Daylight Savings Time* 10 a.m. to 8 p.m. Weekdays	Period 3 $.~~3185~~3351	Period 4 $.~~0886~~0932

* See Paragraph IV. A. 10. “Daylight Savings Time” on leaf No. 99.

b) Adjustments to Rates and Charges
Each Customer’s bill will be adjusted for the Power Supply Charge, Increases in Rates and Charges to Recover PILOT Payments, the Shoreham Property Tax Settlement Rider, the Distributed Energy Resources Cost Recovery Rate, the New York State Assessment Factor, Revenue Decoupling Mechanism, the Securitization Offset Charge, and the Delivery Service Adjustment.

4. Minimum Charge

The Minimum Charge is the Service and Meter Charges, plus Adjustments to Rates and Charges.

VIII.SERVICE CLASSIFICATIONS (continued):

D. SERVICE CLASSIFICATION NO. 2 - General Service - Small:
(Rate Code: 280)

1. Who Is Eligible

   a) Customers who will use the service for purposes other than Residential, when the Authority estimates that the Applicant's demand will be less than 7 kW, subject to Special Provision 8.c) below. The Authority may bill the Customer on a metered or unmetered basis.

   b) A Customer, as described in a. above, that has the option under Service Classification Nos. 12 – Backup and Supplemental Service, of choosing to pay the rates and charges associated with a different Service Classification.

2. Who Is Not Eligible

   Traffic Signals, caution signals and operating control equipment for all such signals are no eligible for service under this Service Classification.

3. Character of Service

   a) Continuous, 60 hertz, alternating current.

   b) Radial secondary service at approximately 120/208, 120/240, or 277/480 volts, single or three phase; network system 120/208 or 277/480 volts, single or three phase; depending on the size and characteristics of the load and the circuit supplying the service.

4. Rates and Charges per Meter:

   a) Schedule of Rates

   The rates for this service are set forth below.

Rate Code 280	June to September Inclusive	October to May Inclusive
Service Charge per day	$.~~4000~~4200	$.~~4000~~4200
Energy Charge per kWh	$.~~1078~~1135	$.~~0869~~0915

VIII.SERVICE CLASSIFICATIONS (continued):

E. SERVICE CLASSIFICATION NO. 2-VMRP
Voluntary Small General Service With Multiple Rate Periods: (continued)
(Rate Code: 288)

3. Rates and Charges per Meter:

a) Schedule of Rates

The rates for this service code are found below

Rate Code 288	June to September Inclusive	October to May Inclusive
Meter Charge per day	$.~~1100~~1200	$.~~1100~~1200
Service Charge per day	$.~~4000~~4200	$.~~4000~~4200
Energy Charge per kWh		
Daylight Savings Time 8 p.m. to 10 a.m., and Saturday and Sunday	Period 1 $.~~0503~~0529	Period 2 $.~~0327~~0344
Daylight Savings Time 10 a.m. to 8 p.m. Weekdays	Period 3 $.~~3185~~3351	Period 4 $.~~0886~~0932

b) Adjustments to Rates and Charges

Each Customer's bill will be adjusted for the Power Supply Charge, Increases in Rates and Charges to Recover PILOT Payments, the Shoreham Property Tax Settlement Rider, the Distributed Energy Resources Cost Recovery Rate, the New York State Assessment Factor, Revenue Decoupling Mechanism, the Securitization Offset Charge, and the Delivery Service Adjustment.

4. Minimum Charge

The Minimum Charge is the Service and Meter Charge, plus Adjustments to Rates and Charges.

5. Terms of Payment

The Customer shall pay the balance due in cash, including checks and money orders, on receiving the bill. Late payments shall be subject to Late Payment Charges.

VIII.SERVICE CLASSIFICATIONS (continued):

F. SERVICE CLASSIFICATION NO. 2-L - General Service – Large (continued): (Rate Codes: 281, 283, 291)

3. Rates and Charges per Meter:

a) Schedule of Rates

The rates for this service code are set forth below.

	Secondary Service	
Rate Code 281	June to September Inclusive	October to May Inclusive
Service Charge per day	$~~2.11~~2.22	$~~2.11~~2.22
Demand Charge per kW of demand	$~~16.08~~16.92	$~~14.74~~15.51
Energy Charge per kWh	$.~~0276~~0290	$.~~0111~~0117

	Primary Service	
Rate Code 281	June to September Inclusive	October to May Inclusive
Service Charge per day	$~~2.11~~2.22	$~~2.11~~2.22
Demand Charge per kW of demand	$~~15.01~~15.80	$~~13.70~~14.42
Energy Charge per kWh	$.~~0270~~0284	$.~~0105~~0111
Demand Charge per kvar of Reactive Demand	$.27	$.27

b) Rate Code 283 - Seasonal

The following changes to 3.a) above apply to Customers who terminate service for at least four (4) continuous months from October through May and submit a signed Application:

VIII.SERVICE CLASSIFICATIONS (continued):

G. SERVICE CLASSIFICATION NO. 2L - VMRP
Voluntary Large Demand Metered Service With Multiple Rate Periods (continued):
(Rate Codes: 282 and M282)

3. Rates and Charges per Meter per Month:

a) Schedule of Rates

The rates for this service code are set forth below.

Rate Code 282-(Secondary)*

Service Charge per day	$~~1.74~~1.83
Meter Charge per day	$.~~2800~~2900

	Rate Periods**		
	1	2	3
	Off-Peak all year 11 p.m. to 7 a.m.	On-Peak* June - Sept. weekdays 12 noon to 8 p.m.	Intermediate all other hours
Demand Charge per kW Total of 3 Rate Periods	none	$~~54.66~~57.51	$~~4.69~~4.93
Energy Charge per kWh Total of 3 Rate Periods	$.~~0033~~0035	$.~~0239~~0251	$.~~0200~~0210
Minimum Demand Charge per Meter per kW per Rate Period	none	$55.58	$6.74

*For Rate Code M282 (Secondary), the modified peak period is from 3 p.m. to 8 p.m.

** See Paragraph IV.A.10, “Daylight Savings Time”, on Leaf No. 99.

VIII.SERVICE CLASSIFICATIONS (continued):

G. SERVICE CLASSIFICATION NO. 2L - VMRP
Voluntary Large Demand Metered Service With Multiple Rate Periods (continued):
(Rate Codes: 282 and M282)
Rates and Charges per Meter per Month (continued):

Rate Code 282-(Primary)

Service Charge per day	$~~1.74~~1.83
Meter Charge per day	$.~~8400~~8700

Rate Periods**

	1 Off-Peak all year 11 p.m. to 7 a.m.	2 On-Peak* June - Sept. weekdays 12 noon to 8 p.m.	3 Intermediate all other hours
Demand Charge per kW Total of 3 Rate Periods	none	$~~51.95~~54.66	$~~4.49~~4.72
Energy Charge per kWh Total of 3 Rate Periods	$.~~00300~~0032	$.~~02150~~0226	$.~~01810~~0190
Demand Charge per kvar of Reactive Demand Total of 3 Rate Periods	none	$.27	$.27
Minimum Demand Charge per Meter per kW per Rate Period	none	$52.91	$6.44

* For Rate Code M282 (Primary), the modified peak period is from 3 p.m. to 8 p.m.

**See Paragraph IV.A.10, “Daylight Savings Time”, on Leaf No. 99.

b) Adjustments to Rates and Charges

Each Customer’s bill will be adjusted for the Power Supply Charge, Increases in Rates and Charges to Recover PILOT Payments, the Shoreham Property Tax Settlement Rider, the Distributed Energy Resources Cost Recovery Rate, the New York State Assessment Factor, Revenue Decoupling Mechanism, the Securitization Offset Charge, and the Delivery Service Adjustment.

4. Minimum Charge - All Rate Codes

The monthly Minimum Charge is the sum of the Service and Meter Charges, and may include an annual Demand Charge (See 6.below), plus Adjustments to Rates and Charges.

VIII.SERVICE CLASSIFICATIONS (continued):

I. SERVICE CLASSIFICATION NO. 2 - MRP
Large General and Industrial Service With Multiple Rate Periods (continued):
(Rate Codes: 284, 285, M284, M285)
Character of Service (continued):

d) The Authority may consider loads with a minimum estimated demand of 10,000 kW for service at 69,000 volts or higher.

e) The Primary Rate will also apply to Customers served at 23,000 or 33,000 volts.

f) The Transmission Rate will apply to Customers served at 69,000 volts or higher.

3. Rates and Charges per Meter per Month:

d) Schedule of Rates

The rates for the service code are set forth below.

Rate Code 285	Secondary	Primary	Transmission
Service Charge per day $~~9.91~~10.43	$~~9.44~~9.93	$~~9.91~~10.43	
Meter Charge per day $~~7.19~~7.56	$~~2.76~~2.90	$~~7.19~~7.56	
		Rate Periods**	
	1 Off-Peak all year midnight to 7 a.m.	2 On-Peak * June-Sept. except Sundays 10 a.m. 10 a.m. to 10 p.m.	3 Intermediate all other hours
Demand Charge per kW			
Secondary	none	$~~26.97~~28.38	$~~6.43~~6.75
Primary	none	$~~23.15~~24.36	$~~5.67~~5.97
Transmission	none	$~~19.13~~20.14	$~~4.65~~4.90
Energy Charge per kWh			
Secondary $.~~0228~~0240	$.~~0055~~0058	$.~~0357~~0376	
Primary $.~~0200~~0210	$.~~0032~~0034	$.~~0311~~0327	
Transmission $.~~0188~~0197	$.~~0032~~0034	$.~~0291~~0306	
Minimum Demand Charge per Meter per kW per Rate Period			
Secondary	none	$33.50	$9.21
Primary	none	$28.76	$8.13
Transmission	none	$23.79	$6.68

*For Rate M285, the modified peak period is from 3 p.m. to 10 p.m. on weekdays (Monday – Friday)
** See Paragraph IV.A.10, “Daylight Savings Time”, on Leaf No.99.

VIII.SERVICE CLASSIFICATIONS (continued):

I. SERVICE CLASSIFICATION NO. 2 - MRP
Large General and Industrial Service With Multiple Rate Periods (continued):
(Rate Codes: 284, 285, M284, M285)
Rates and Charges per Meter per Month (continued):

Rate Code 284	Secondary	Primary	Transmission
Service Charge per day $~~9.91~~10.43	$~~9.44~~9.93	$~~9.91~~10.43	
Meter Charge per day $~~7.19~~7.56	$~~2.76~~2.90	$~~7.19~~7.56	

	Rate Periods**		
	1	2	3
	Off-Peak all year 11 p.m. to 7 a.m.	On-Peak * June - Sept weekdays 12 noon to 8 p.m.	Intermediate all other hours
Demand Charge per kW			
Secondary	none	$~~52.27~~54.99	$~~5.23~~5.50
Primary	none	$~~46.93~~49.38	$~~4.69~~4.93
Transmission	none	$~~35.08~~36.91	$~~3.50~~3.68
Energy Charge per kWh			
Secondary	$.0001	$.~~0305~~0321	$.~~0197~~0207
Primary	$.0001	$.~~0219~~0230	$.~~0040~~0042
Transmission	$.0001	$.~~0207~~0217	$.~~0038~~0040
Minimum Demand Charge per Meter per kW per Rate Period			
Secondary	none	$54.99	$7.25
Primary	none	$49.57	$6.68
Transmission	none	$36.88	$5.06

* For Rate Code M284, the modified peak period is from 3 p.m. to 8 p.m.

** See Paragraph IV.A.10, “Daylight Savings Time”, on Leaf No. 99.

b) Adjustments to Rates and Charges

Each Customer’s bill will be adjusted for the Power Supply Charge, Increases in Rates and Charges to Recover PILOT Payments, the Shoreham Property Tax Settlement Rider, the Distributed Energy Resources Cost Recovery Rate, the New York State Assessment Factor, Revenue Decoupling Mechanism, the Securitization Offset Charge, and the Delivery Service Adjustment.

VIII.SERVICE CLASSIFICATIONS (continued):

K. SERVICE CLASSIFICATION NO. 5
Traffic Signal Lighting (continued):
(Rate Code: 980)

4. Definition of Control Mechanism for Billing Purposes:

   A control mechanism is a device that controls the signal lights and other traffic/pedestrian equipment at an intersection.

5. Rates and Charges

   a) Rates per Signal Face of Light per Month

   $~~7.70~~8.10 per control mechanism per month.
   $~~2.28~~2.40 per incandescent signal face per month.
   $~~3.14~~3.30 per LED signal face per month

   b) Adjustment to Rates and Charges

   Each Customer's bill will be adjusted for the Power Supply Charge, Increases in Rates and Charges to Recover PILOT Payments, the Shoreham Property Tax Settlement Rider, the Distributed Energy Resources Cost Recovery Rate, the New York State Assessment Factor, the Securitization Offset Charge, and the Delivery Service Adjustment.

6. Terms of Payment

   The Customer shall pay the balance due in cash, including checks and money orders, on receiving the bill. Late payments shall be subject to Late Payment Charges.

7. Term of Service

   a) The Authority will provide service to the Customer until service is terminated either by the Customer or the Authority.

   b) The Customer shall give the Authority thirty (30) days written notice when requesting termination of service.

   c) The Authority may terminate service to the Customer in accordance with the provisions of this Tariff, after giving the Customer thirty (30) days written notice.

VIII.SERVICE CLASSIFICATIONS (continued):

L. SERVICE CLASSIFICATION NO. 7
Outdoor Area Lighting:
(Rate Code: 780)

1. Who Is Eligible

Customers who used this service for outdoor lighting before December 5, 1986, provided:

a) Suitable overhead distribution facilities exist, except,

b) When only one (1) span of overhead secondary cable per lighting fixture is needed. In such cases, the Authority will provide the cable on existing poles.

2. Character of Service

a) Unmetered, single-phase, 60 hertz, alternating current supplied to Authority-owned, operated, and maintained lighting facilities, and

b) Provided for approximately 4,210 hours per year (4,222 for a leap year), at suitable voltages chosen by the Authority, and

c) Provided to mercury vapor and incandescent lighting facilities.

3. Rates and Charges

a) Rates per Mercury Vapor Facility per Month

Type Luminaire	Approximate Lumens	Total Watts	Monthly Rates
Area Light*	7,000	200	$~~14.22~~14.96
Area Light*	21,000	455	$~~20.17~~21.22
Flood Light*	21,000	455	$~~22.01~~23.16
Flood Light*	52,000	1,100	$~~46.18~~48.59

b) Rates per Incandescent Facility per Month

Type Luminaire	Approximate Lumens	Total Watts	Monthly Rates
Flood Light*	100 c.p.	92	$~~5.82~~6.12
Flood Light*	250 c.p.	189	$~~9.92~~10.44

* These luminaires are no longer available for new installations or unit replacements.

c) Adjustments to Rates and Charges

Each Customer's bill will be adjusted for the Power Supply Charge, Increases in Rates and Charges to Recover PILOT Payments, the Shoreham Property Tax Settlement Rider, the Distributed Energy Resources Cost Recovery Rate, the New York State Assessment Factor, the Securitization Offset Charge, and the Delivery Service Adjustment.

VIII.SERVICE CLASSIFICATIONS (continued):

M. SERVICE CLASSIFICATION NO. 7A
Outdoor Area Lighting - HPS (High Pressure Sodium), MH (Metal Halide), and LED (Light Emitting Diode):
(Rate Codes: 781, 782)

1. Who Is Eligible

   Customers who will use this service for outdoor lighting, provided:

   a) Suitable overhead distribution facilities exist, except

   b) When only one (1) span of overhead secondary cable per lighting fixture is needed. In such cases, the Authority will provide the cable on existing poles. Charges for additional cable and poles are given below.

2. Character of Service

   d) Unmetered, single-phase, 60 hertz, alternating current supplied to Authority-owned, operated, and maintained lighting facilities, and

   e) Provided for approximately 4,090 hours per year (4,102 for a leap year), at suitable voltages chosen by the Authority, and

   f) Provided to high pressure sodium (HPS), metal halide (MH) and light emitting diode (LED) facilities.

3. Rates and Charges

   a) Rates per Lighting Facility per Month

Lamp Type	Type Luminaire	Approximate Lumens	Total Watts	Monthly Rates
HPS*	Area Light	6,400	108	$~~20.68~~21.76
HPS*	Flood Light	27,500	309	$~~25.37~~26.69
HPS*	Flood Light	50,000	476	$~~33.71~~35.47
MH*	Flood Light	36,000	453	$~~34.29~~36.08
MH*	Flood Light	110,000	1093	$~~37.36~~39.31
HPS**	Full Cut-off	4,000	63	$~~28.11~~29.57
HPS**	Full Cut-off	6,300	91	$~~28.19~~29.66
HPS	Full Cut-off	9,500	128	$~~28.59~~30.08

VIII.SERVICE CLASSIFICATIONS (continued):

M. SERVICE CLASSIFICATION NO. 7A
Outdoor Area Lighting - HPS (High Pressure Sodium), MH (Metal Halide), and LED (Lighting Emitting Diode) (continued):
(Rate Codes: 781, 782)
Rates and Charges (continued):

Lamp Type	Type Luminaire	Approximate Lumens	Total Watts	Monthly Rates
HPS**	Full Cut-off	28,500	305	$~~32.04~~33.71
HPS**	Full Cut-off	50,000	455	$~~41.27~~43.42
MH**	Full Cut-off	20,500	288	$~~32.20~~33.88
MH**	Full Cut-off	36,000	455	$~~41.27~~43.42
LED	Full Cut-off	19,270	168	$~~32.04~~33.71
LED	Full Cut-off	29,100	255	$~~41.27~~43.42

*Commencing October 1, 2003, not available for new installations or replacements.

** Effective January 1, 2019 these luminaires are no longer available for new installations or unit replacements. Effective January 1, 2022, bulbs and photocells replacements for these luminaires will also no longer be available.

b) The charge for Additional Overhead Secondary Cable and Poles dedicated to the Customer is $~~16.11~~16.95 ~~-~~per span per month.

c) Adjustments to Rates and Charges

Each Customer's bill will be adjusted for the Power Supply Charge, Increases in Rates and Charges to Recover PILOT Payments, the Shoreham Property Tax Settlement Rider, the Distributed Energy Resources Cost Recovery Rate, the New York State Assessment Factor, the Securitization Offset Charge, and the Delivery Service Adjustment.

4. Minimum Charge

The monthly Minimum Charge is the facilities charge computed under the rates in 3 a), b) and c) above for the number of lighting facilities in place on the billing date.

5. Terms of Payment

The Customer shall pay the balance due in cash, including checks and money orders, on receiving the bill. Late payments shall be subject to Late Payment Charges.

VIII.SERVICE CLASSIFICATIONS (continued):

N. SERVICE CLASSIFICATION NO. 10
Public Street and Highway Lighting Energy and Connections:
(Rate Codes: 1580, 1581)

1. Who Is Eligible

   a) Customers who will use this service for lighting of public streets, highways, parks, parking fields, and similar areas where facilities are owned and maintained by governmental agencies or their agents, and

   b) The Authority will furnish service only after suitable agreements are signed that cover energy requirements and service connections.

2. Character of Service

   a) Unmetered, single-phase, 60 hertz, alternating current supplied to Customer-owned, operated, and maintained lighting facilities (a lighting facility includes luminaries, posts, supply circuits, and all associated equipment needed), and

   b) Provided at suitable voltages chosen by the Authority.

3. Rates and Charges

   a) The Energy Charge per Lighting Facility per Month is $.~~0461~~0485 per kWh, for the monthly kWhs of unmetered lighting service specified in this Tariff.

   b) The Underground Connection Charge per Month is $~~3.46~~3.64 per Energy Delivery Point serving one or more underground-supplied lighting facility as described in Special Provision 7.*a.* below.

   c) Adjustments to Rates and Charges

      Each Customer's bill will be adjusted for the Power Supply Charge, Increases in Rates and Charges to Recover PILOT Payments, the Shoreham Property Tax Settlement Rider, the Distributed Energy Resources Cost Recovery Rate, the New York State Assessment Factor, Delivery Service Adjustment, and the Securitization Offset Charge.

4. Minimum Charge

   The monthly Minimum Charge is the total Underground Connection Charge, plus Adjustments to Rates and Charges.

5. Terms of Payment

   The Customer shall pay the balance due in cash, including checks and money orders, on receiving the bill. Late payments shall be subject to Late Payment Charges.

VIII.SERVICE CLASSIFICATIONS (continued):

P. SERVICE CLASSIFICATION NO. 12
Back-Up and Supplemental Service (continued):
(Rate Codes: 680, 681)

4. Character of Service

a) 60 hertz, single or three-phase alternating current.

b) Service is metered at one standard delivery voltage, and the Authority will determine the site-specific characteristics and make the necessary adjustments to maintain that delivery voltage.

5. Rates and Charges for Backup and Supplemental Service

a) Customers requiring Supplemental Service will pay the rates and charges under another suitable Service Classification. In this case, the Customer will comply with the terms of this Service Classification including the interconnection provision, that are in addition to, and do not conflict with the requirements of the suitable Service Classification.

(1) Customers that receive their non-Authority supply from the New York Power Authority (NYPA) under the Recharge NY program will be designated as Rate Code 680.

(2) Customers that are a Qualifying Facility under Part 292 of Title 18 of the Code of Federal Regulations, and choose to pay the rates under this Service Classification will be designated as Rate Code 681.

(3) Customers that are eligible for net metering pursuant to § 66 – j or § 66 – l of the Public Service Law will be designated with the rate code associated with that suitable Service Classification.

(4) Any Back-up Service provided in conjunction with Supplemental Service will be included with the usage and demand billed at the specified rates for Supplemental Service.

b) Service Charge per Installation per Month (Rate Code 681)

(1) The Service Charge applies to all Back-Up Service except when this service is combined with Supplemental Service.

	Back-Up and Supplemental Service
Secondary Voltage (7 KW and less):	$~~40.29~~42.39
Secondary Voltage (Above 7 KW):	$~~73.24~~77.06
Primary Voltage:	$~~120.86~~127.16

VIII.SERVICE CLASSIFICATIONS (continued):

P. SERVICE CLASSIFICATION NO. 12
Back-Up and Supplemental Service (continued):
(Rate Codes: 680, 681)
Rates and Charges for Backup and Supplemental Service (continued):

(2) Customers taking service at the transmission voltage level shall pay the full cost of metering devices and any other Local Facilities as part of the Interconnection Charge (see 6. and 7. below) and will not pay a monthly Service Charge.

c) Demand Charges for Distribution recover the costs of distribution facilities not paid for by the Customer as a lump sum payment or in the Service Charge.

Contract Demand Charge per KW per Month (Rate Code 681)

The Contract Demand Charge is paid monthly for capacity contracted for by Back-Up and Supplemental Service Customers taking service at the primary and secondary distribution levels, as described in Special Provision 11.*e.* below.

	Back-Up and Supplemental Service
Secondary:	$~~3.05~~3.21
Primary:	$~~2.55~~2.68

As-Used Demand Charge per KW per Month (Rate Code 681)

The As-Used Demand Charge is paid in addition to the Contract Demand Charge by Back-Up and Supplemental Service Customers taking service at the primary and secondary distribution levels for demand used during an interruption of the non-Authority supply. The demand billed shall be the highest demand during the month, but not less than one hundred percent (100%) of the highest demand in the last eleven (11) months.

	Back-Up and Supplemental Service
Secondary:	$~~3.05~~3.21
Primary:	$~~2.55~~2.68

VIII.SERVICE CLASSIFICATIONS (continued):

P. SERVICE CLASSIFICATION NO. 12
Back-Up and Supplemental Service (continued):
(Rate Codes: 680, 681)
Rates and Charges for Backup and Supplemental Service (continued):

d) Energy Charges per kWh (Rate Code 681)

Energy Charges per kWh for both Back-Up and Supplemental Service

	Rate Periods*		
	1	2	3
	Midnight to 7 a.m. all year	June - Sept., except Sunday, 10 a.m. to 10 p.m.	All remaining hours
Secondary	$.~~0022~~0023	$.~~2236~~2352	$.~~0324~~0341
Primary:	$.~~0011~~0012	$.~~2160~~2273	$.~~0301~~0317
Transmission	$.0001	$.~~2066~~2174	$.~~0267~~0281

* See Paragraph IV.A.10, “Daylight Savings Time”, on Leaf No. 99.

e) Reactive Power Charge

Net Reactive Demand Charge per kvar = $.27 for primary and transmission voltage services only, and applies from 7 a.m. through 11 p.m.

VIII.SERVICE CLASSIFICATIONS (continued):

S. SERVICE CLASSIFICATION NO. 16- AMI
Advanced Metering Initiative Pilot Service (continued):
(Rate Codes: M188, M288)

4. Residential and Small General Service Time–Differentiated Pricing

Residential and Small General Service (rate codes 280 and 288) Customers participating in the Pilot Service will be charged the rates as stated below.

a) Schedule of Rates (Rate Code M188 and M288)

	June to September Inclusive	October to May Inclusive
Service Charge per day	$.~~40004~~200	$.~~40004~~200

	June to September Inclusive	October to May Inclusive
Energy Charge per kWh		
	Period 1	Period 2
7 p.m. to 2 p.m. weekdays and all day Saturday and Sunday	$.~~0519~~0546	$.~~0519~~0546
	Period 3	Period 4
2 p.m. to 7 p.m. Weekdays	$.~~3696~~3889	$.~~1314~~1382

All the terms and conditions will apply as described in the Customer's previous rate and Service Classification.

b) Adjustments to Rates and Charges

Each Customer's bill will be adjusted for the Power Supply Charge, Increases in Rates and Charges to Recover PILOT Payments, the Shoreham Property Tax Settlement Rider, the Distributed Energy Resources Cost Recovery Rate, the New York State Assessment Factor, Revenue Decoupling Mechanism, the Securitization Offset Charge and the Delivery Service Adjustment.

c) Minimum Charge

The Minimum Charge is the Service charge plus Adjustments to Rates and Charges.

I. General Information (continued):

C. General Terms and Conditions (continued):

21. Low Income Program Discount

a) Customer Requirements and Eligibility

(1) Customers served under Service Classifications No. 1 and Service Classification No.1 VMRP who provide documentation of enrollment in a qualifying program as listed in Section I.B (Qualifying Low Income Customer) and are eligible for a fixed discount on their bill.

(2) Eligibility and enrollment must be renewed each year. To the extent that the Authority can automatically determine a Qualifying Low Income Customer's continued eligibility, the customer will not need to re-apply.

(3) Qualifying Low Income Customers whose continued eligibility cannot be automatically determined will be notified by the Authority as their enrollments expire. The Authority will allow such customers four (4) months from the expiration of their enrollments (the "Grace Period") to complete the renewal process. During the Grace Period, Qualifying Low Income Customers will continue to receive discounted charges. Qualifying Low Income Customers who do not complete the renewal process within the Grace Period and whose continued eligibility cannot be automatically determined by the Authority will become ineligible for the discounted charges until the renewal process is successfully completed.

(4) The Authority may in its sole discretion limit participation in Long Island Choice by Qualifying Low Income Customers (defined in Section I.B above) as needed for consistency with New York State policy as set forth in Orders of the Public Service Commission.

b) Discounts

(1) The Tier 1 discount is available to all Qualifying Low Income Customers. Customers that have received a HEAP benefit plus one (1) add-on shall receive the Tier 2 discount. Customers that have received a HEAP benefit plus two (2) add-ons shall receive the Tier 3 discount. The Tier 4 discount is reserved for customers with Direct Voucher/Guaranteed Payment. HEAP recipients receive add-ons for households with a vulnerable individual (household member who is age 60 or older, under age 6 or permanently disabled) and/or if the household's gross income meets HEAP Tier 1 income guideline.

Tier	Electric Heat (Rates 580)	Electric Non-Heat (Rates 180, 188 and M188)
1	$.93 per day	$.93 per day
2	$1.53 per day	$.93 per day
3	$2.17 per day	$.93 per day
4	$1.60 per day	$1.60 per day

VIII.SERVICE CLASSIFICATIONS: (continued):

A. SERVICE CLASSIFICATION NO. 1 - Residential Service (continued):
(Rate Codes: 180, 480, 481, 580)

1. Rates and Charges per Meter:

a) Schedule of Rates

The rates for this service code are set forth below.

Rate Code 180	June to September Inclusive	October to May Inclusive
Service Charge per Day	$.4200	$.4200
Energy Charge per kWh per month		
First 250 kWh @	$.0827	$.0827
Over 250 kWh @	$.1045	$.0827

VIII.SERVICE CLASSIFICATIONS: (continued):

A. SERVICE CLASSIFICATION NO. 1 - Residential Service (continued):
(Rate Codes: 180, 480, 481, 580)
Rates and Charges per Meter (continued):

Rate Code 580 (Space Heating)	June to September Inclusive	October to May Inclusive
Service Charge per Day	$.4200	$.4200
Energy Charge per kWh per month		
First 250 kWh @	$.0827	$.0827
Next 150 kWh @	$.1045	$.0827
Over 400 kWh @	$.1045	$.0467

Rate Code 480, 481	June to September Inclusive	October to May Inclusive
Service Charge per day	$.3800	$.3800
Energy Charge per kWh per month		
12:00 midnight to 7:00 a.m. (Standard Time) or	$.0144	$.0144
10:00 p.m. to 10:00 a.m. (Standard Time)	$.0161	$.0161

VIII.SERVICE CLASSIFICATIONS (continued):

B. SERVICE CLASSIFICATION NO. 1-VMRP (L)
Voluntary Large Residential Service with Multiple Rate Periods (continued):
(Rate Codes: 181, 182, 184)

3. Rates and Charges per Meter:

a) Schedule of Rates

The rates for this service code are found below.

All Rate Codes	June to September Inclusive	October to May Inclusive
Service Charge per Day	$1.9100	$1.9100

Rate Codes 184 – Rate 1 Energy Charge per kWh	June to September Inclusive	October to May Inclusive
Daylight Savings Time 8 p.m. to 10 a.m., and Saturday and Sunday	Period 1	Period 2
First 125 kWh @	$.0256	$.0256
Over 125 kWh @	$.0256	$.0256
Daylight Savings Time 10 a.m. to 8 p.m. Weekdays	Period 3	Period 4
First 125 kWh @	$.0785	$.0785
Over 125 kWh @	$.2853	$.0801

VIII.SERVICE CLASSIFICATIONS (continued):

B. SERVICE CLASSIFICATION NO. 1-VMRP (L)
Voluntary Large Residential Service with Multiple Rate Periods (continued):
(Rate Codes: 181, 182, 184)
Rates and Charges per Meter (continued):

	June to September Inclusive	October to May Inclusive
Rate Codes 181 - Rate 2		
Energy Charge per kWh		
Daylight Savings Time*		
8 p.m. to 10 a.m., and		
Saturday and Sunday		
	Period 1	Period 2
First 125 kWh @	$.0561	$.0561
Over 125 kWh @	$.0561	$.0561
Daylight Savings Time*		
10 a.m. to 8 p.m.		
Weekdays	Period 3	Period 4
First 125 kWh @	$.0561	$.0561
Over 125 kWh @	$.1397	$.1009

	June to September Inclusive	October to May Inclusive
Rate Codes 182 - Rate 3		
Energy Charge per kWh		
Daylight Savings Time*		
8 p.m. to 10 a.m., and		
Saturday and Sunday	Period 1	Period 2
First 125 kWh @	$.0564	$.0564
Over 125 kWh @	$.0564	$.0365
Daylight Savings Time*		
10 a.m. to 8 p.m.		
Weekdays	Period 3	Period 4
First 125 kWh @	$.0564	$.0564
Over 125 kWh @	$.1408	$.0367

* See paragraph IV.A.10 “Daylight Savings Time” Leaf No. 99.

VIII. SERVICE CLASSIFICATIONS (continued):

C. SERVICE CLASSIFICATION NO. 1-VMRP(S)
Voluntary Small Residential Service With Multiple Rate Periods (continued):
(Rate Code: 188)

3. Rates and Charges per Meter:

a) Schedule of Rates

The rates for this service code are found below.

All Rate Codes	June to September Inclusive	October to May Inclusive
Service Charge per day	$.4200	$.4200
Meter Charge per day	$.1200	$.1200

Rate Codes 188 Energy Charge per kWh	June to September Inclusive	October to May Inclusive
Daylight Savings Time* 8 p.m. to 10 a.m., and Saturday and Sunday	Period 1 $.0529	Period 2 $.0344
Daylight Savings Time* 10 a.m. to 8 p.m. Weekdays	Period 3 $.3351	Period 4 $.0932

* See Paragraph IV. A. 10. “Daylight Savings Time” on leaf No. 99.

b) Adjustments to Rates and Charges
Each Customer’s bill will be adjusted for the Power Supply Charge, Increases in Rates and Charges to Recover PILOT Payments, the Shoreham Property Tax Settlement Rider, the Distributed Energy Resources Cost Recovery Rate, the New York State Assessment Factor, Revenue Decoupling Mechanism, the Securitization Offset Charge, and the Delivery Service Adjustment.

4. Minimum Charge

The Minimum Charge is the Service and Meter Charges, plus Adjustments to Rates and Charges.

VIII.SERVICE CLASSIFICATIONS (continued):

D. SERVICE CLASSIFICATION NO. 2 - General Service - Small:
(Rate Code: 280)

1. Who Is Eligible

   a) Customers who will use the service for purposes other than Residential, when the Authority estimates that the Applicant's demand will be less than 7 kW, subject to Special Provision 8.c) below. The Authority may bill the Customer on a metered or unmetered basis.

   b) A Customer, as described in a. above, that has the option under Service Classification Nos. 12 – Backup and Supplemental Service, of choosing to pay the rates and charges associated with a different Service Classification.

2. Who Is Not Eligible

   Traffic Signals, caution signals and operating control equipment for all such signals are no eligible for service under this Service Classification.

3. Character of Service

   a) Continuous, 60 hertz, alternating current.

   b) Radial secondary service at approximately 120/208, 120/240, or 277/480 volts, single or three phase; network system 120/208 or 277/480 volts, single or three phase; depending on the size and characteristics of the load and the circuit supplying the service.

4. Rates and Charges per Meter:

   a) Schedule of Rates

   The rates for this service are set forth below.

Rate Code 280	June to September Inclusive	October to May Inclusive
Service Charge per day	$.4200	$.4200
Energy Charge per kWh	$.1135	$.0915

VIII.SERVICE CLASSIFICATIONS (continued):

E. SERVICE CLASSIFICATION NO. 2-VMRP
Voluntary Small General Service With Multiple Rate Periods: (continued)
(Rate Code: 288)

3. Rates and Charges per Meter:

a) Schedule of Rates

The rates for this service code are found below

Rate Code 288	June to September Inclusive	October to May Inclusive
Meter Charge per day	$.1200	$.1200
Service Charge per day	$.4200	$.4200
Energy Charge per kWh		
Daylight Savings Time 8 p.m. to 10 a.m., and Saturday and Sunday	Period 1 $.0529	Period 2 $.0344
Daylight Savings Time 10 a.m. to 8 p.m. Weekdays	Period 3 $.3351	Period 4 $.0932

b) Adjustments to Rates and Charges

Each Customer's bill will be adjusted for the Power Supply Charge, Increases in Rates and Charges to Recover PILOT Payments, the Shoreham Property Tax Settlement Rider, the Distributed Energy Resources Cost Recovery Rate, the New York State Assessment Factor, Revenue Decoupling Mechanism, the Securitization Offset Charge, and the Delivery Service Adjustment.

4. Minimum Charge

The Minimum Charge is the Service and Meter Charge, plus Adjustments to Rates and Charges.

5. Terms of Payment

The Customer shall pay the balance due in cash, including checks and money orders, on receiving the bill. Late payments shall be subject to Late Payment Charges.

VIII.SERVICE CLASSIFICATIONS (continued):

F. SERVICE CLASSIFICATION NO. 2-L - General Service – Large (continued): (Rate Codes: 281, 283, 291)

3. Rates and Charges per Meter:

a) Schedule of Rates

The rates for this service code are set forth below.

Secondary Service

Rate Code 281	June to September Inclusive	October to May Inclusive
Service Charge per day	$2.22	$2.22
Demand Charge per kW of demand	$16.92	$15.51
Energy Charge per kWh	$.0290	$.0117

Primary Service

Rate Code 281	June to September Inclusive	October to May Inclusive
Service Charge per day	$2.22	$2.22
Demand Charge per kW of demand	$15.80	$14.42
Energy Charge per kWh	$.0284	$.0111
Demand Charge per kvar of Reactive Demand	$.27	$.27

b) Rate Code 283 - Seasonal

The following changes to 3.a) above apply to Customers who terminate service for at least four (4) continuous months from October through May and submit a signed Application:

VIII.SERVICE CLASSIFICATIONS (continued):

G. SERVICE CLASSIFICATION NO. 2L - VMRP
Voluntary Large Demand Metered Service With Multiple Rate Periods (continued):
(Rate Codes: 282 and M282)

3. Rates and Charges per Meter per Month:

a) Schedule of Rates

The rates for this service code are set forth below.

Rate Code 282-(Secondary)*

Service Charge per day	$1.83
Meter Charge per day	$.2900

	Rate Periods**		
	1	2	3
	Off-Peak all year 11 p.m. to 7 a.m.	On-Peak* June - Sept. weekdays 12 noon to 8 p.m.	Intermediate all other hours
Demand Charge per kW Total of 3 Rate Periods	none	$57.51	$4.93
Energy Charge per kWh Total of 3 Rate Periods	$.0035	$.0251	$.0210
Minimum Demand Charge per Meter per kW per Rate Period	none	$55.58	$6.74

*For Rate Code M282 (Secondary), the modified peak period is from 3 p.m. to 8 p.m.

** See Paragraph IV.A.10, “Daylight Savings Time”, on Leaf No. 99.

VIII.SERVICE CLASSIFICATIONS (continued):

G. SERVICE CLASSIFICATION NO. 2L - VMRP
Voluntary Large Demand Metered Service With Multiple Rate Periods (continued):
(Rate Codes: 282 and M282)
Rates and Charges per Meter per Month (continued):

Rate Code 282-(Primary)

Service Charge per day	$1.83
Meter Charge per day	$.8700

	Rate Periods**		
	1	2	3
	Off-Peak all year 11 p.m. to 7 a.m.	On-Peak* June - Sept. weekdays 12 noon to 8 p.m.	Intermediate all other hours
Demand Charge per kW Total of 3 Rate Periods	none	$54.66	$4.72
Energy Charge per kWh Total of 3 Rate Periods	$.0032	$.0226	$.0190
Demand Charge per kvar of Reactive Demand Total of 3 Rate Periods	none	$.27	$.27
Minimum Demand Charge per Meter per kW per Rate Period	none	$52.91	$6.44

* For Rate Code M282 (Primary), the modified peak period is from 3 p.m. to 8 p.m.

**See Paragraph IV.A.10, “Daylight Savings Time”, on Leaf No. 99.

b) Adjustments to Rates and Charges

Each Customer’s bill will be adjusted for the Power Supply Charge, Increases in Rates and Charges to Recover PILOT Payments, the Shoreham Property Tax Settlement Rider, the Distributed Energy Resources Cost Recovery Rate, the New York State Assessment Factor, Revenue Decoupling Mechanism, the Securitization Offset Charge, and the Delivery Service Adjustment.

4. Minimum Charge - All Rate Codes

The monthly Minimum Charge is the sum of the Service and Meter Charges, and may include an annual Demand Charge (See 6.below), plus Adjustments to Rates and Charges.

VIII.SERVICE CLASSIFICATIONS (continued):

I. SERVICE CLASSIFICATION NO. 2 - MRP
Large General and Industrial Service With Multiple Rate Periods (continued):
(Rate Codes: 284, 285, M284, M285)
Character of Service (continued):

d) The Authority may consider loads with a minimum estimated demand of 10,000 kW for service at 69,000 volts or higher.

e) The Primary Rate will also apply to Customers served at 23,000 or 33,000 volts.

f) The Transmission Rate will apply to Customers served at 69,000 volts or higher.

3. Rates and Charges per Meter per Month:

d) Schedule of Rates

The rates for the service code are set forth below.

Rate Code 285	Secondary	Primary	Transmission
Service Charge per day	$9.93	$10.43	$10.43
Meter Charge per day	$2.90	$7.56	$7.56
		Rate Periods**	
	1 Off-Peak all year midnight to 7 a.m.	2 On-Peak * June-Sept. except Sundays 10 a.m. 10 a.m. to 10 p.m.	3 Intermediate all other hours
Demand Charge per kW			
Secondary	none	$28.38	$6.75
Primary	none	$24.36	$5.97
Transmission	none	$20.14	$4.90
Energy Charge per kWh			
Secondary	$.0058	$.0376	$.0240
Primary	$.0034	$.0327	$.0210
Transmission	$.0034	$.0306	$.0197
Minimum Demand Charge per Meter per kW per Rate Period			
Secondary	none	$33.50	$9.21
Primary	none	$28.76	$8.13
Transmission	none	$23.79	$6.68

*For Rate M285, the modified peak period is from 3 p.m. to 10 p.m. on weekdays (Monday – Friday)
** See Paragraph IV.A.10, “Daylight Savings Time”, on Leaf No.99.

VIII.SERVICE CLASSIFICATIONS (continued):

I. SERVICE CLASSIFICATION NO. 2 - MRP
Large General and Industrial Service With Multiple Rate Periods (continued):
(Rate Codes: 284, 285, M284, M285)
Rates and Charges per Meter per Month (continued):

Rate Code 284	Secondary	Primary	Transmission
Service Charge per day	$9.93	$10.43	$10.43
Meter Charge per day	$2.90	$7.56	$7.56
		Rate Periods**	
	1	2	3
	Off-Peak all year 11 p.m. to 7 a.m.	On-Peak * June - Sept weekdays 12 noon to 8 p.m.	Intermediate all other hours
Demand Charge per kW			
Secondary	none	$54.99	$5.50
Primary	none	$49.38	$4.93
Transmission	none	$36.91	$3.68
Energy Charge per kWh			
Secondary	$.0001	$.0321	$.0207
Primary	$.0001	$.0230	$.0042
Transmission	$.0001	$.0217	$.0040
Minimum Demand Charge per Meter per kW per Rate Period			
Secondary	none	$54.99	$7.25
Primary	none	$49.57	$6.68
Transmission	none	$36.88	$5.06

* For Rate Code M284, the modified peak period is from 3 p.m. to 8 p.m.

** See Paragraph IV.A.10, “Daylight Savings Time”, on Leaf No. 99.

b) Adjustments to Rates and Charges

Each Customer’s bill will be adjusted for the Power Supply Charge, Increases in Rates and Charges to Recover PILOT Payments, the Shoreham Property Tax Settlement Rider, the Distributed Energy Resources Cost Recovery Rate, the New York State Assessment Factor, Revenue Decoupling Mechanism, the Securitization Offset Charge, and the Delivery Service Adjustment.

VIII. SERVICE CLASSIFICATIONS (continued):

K. SERVICE CLASSIFICATION NO. 5
Traffic Signal Lighting (continued):
(Rate Code: 980)

4. Definition of Control Mechanism for Billing Purposes:

   A control mechanism is a device that controls the signal lights and other traffic/pedestrian equipment at an intersection.

5. Rates and Charges

   a) Rates per Signal Face of Light per Month

      $8.10 per control mechanism per month.
      $2.40 per incandescent signal face per month.
      $3.30 per LED signal face per month

   b) Adjustment to Rates and Charges

      Each Customer's bill will be adjusted for the Power Supply Charge, Increases in Rates and Charges to Recover PILOT Payments, the Shoreham Property Tax Settlement Rider, the Distributed Energy Resources Cost Recovery Rate, the New York State Assessment Factor, the Securitization Offset Charge, and the Delivery Service Adjustment.

6. Terms of Payment

   The Customer shall pay the balance due in cash, including checks and money orders, on receiving the bill. Late payments shall be subject to Late Payment Charges.

7. Term of Service

   a) The Authority will provide service to the Customer until service is terminated either by the Customer or the Authority.

   b) The Customer shall give the Authority thirty (30) days written notice when requesting termination of service.

   c) The Authority may terminate service to the Customer in accordance with the provisions of this Tariff, after giving the Customer thirty (30) days written notice.

VIII.SERVICE CLASSIFICATIONS (continued):

L. SERVICE CLASSIFICATION NO. 7
Outdoor Area Lighting:
(Rate Code: 780)

1. Who Is Eligible

Customers who used this service for outdoor lighting before December 5, 1986, provided:

a) Suitable overhead distribution facilities exist, except,

b) When only one (1) span of overhead secondary cable per lighting fixture is needed. In such cases, the Authority will provide the cable on existing poles.

2. Character of Service

a) Unmetered, single-phase, 60 hertz, alternating current supplied to Authority-owned, operated, and maintained lighting facilities, and

b) Provided for approximately 4,210 hours per year (4,222 for a leap year), at suitable voltages chosen by the Authority, and

c) Provided to mercury vapor and incandescent lighting facilities.

3. Rates and Charges

a) Rates per Mercury Vapor Facility per Month

Type Luminaire	Approximate Lumens	Total Watts	Monthly Rates
Area Light*	7,000	200	$14.96
Area Light*	21,000	455	$21.22
Flood Light*	21,000	455	$23.16
Flood Light*	52,000	1,100	$48.59

b) Rates per Incandescent Facility per Month

Type Luminaire	Approximate Lumens	Total Watts	Monthly Rates
Flood Light*	100 c.p.	92	$6.12
Flood Light*	250 c.p.	189	$10.44

* These luminaires are no longer available for new installations or unit replacements.

c) Adjustments to Rates and Charges

Each Customer's bill will be adjusted for the Power Supply Charge, Increases in Rates and Charges to Recover PILOT Payments, the Shoreham Property Tax Settlement Rider, the Distributed Energy Resources Cost Recovery Rate, the New York State Assessment Factor, the Securitization Offset Charge, and the Delivery Service Adjustment.

VIII.SERVICE CLASSIFICATIONS (continued):

M. SERVICE CLASSIFICATION NO. 7A
Outdoor Area Lighting - HPS (High Pressure Sodium), MH (Metal Halide), and LED (Light Emitting Diode):
(Rate Codes: 781, 782)

1. Who Is Eligible

   Customers who will use this service for outdoor lighting, provided:

   a) Suitable overhead distribution facilities exist, except

   b) When only one (1) span of overhead secondary cable per lighting fixture is needed. In such cases, the Authority will provide the cable on existing poles. Charges for additional cable and poles are given below.

2. Character of Service

   d) Unmetered, single-phase, 60 hertz, alternating current supplied to Authority-owned, operated, and maintained lighting facilities, and

   e) Provided for approximately 4,090 hours per year (4,102 for a leap year), at suitable voltages chosen by the Authority, and

   f) Provided to high pressure sodium (HPS), metal halide (MH) and light emitting diode (LED) facilities.

3. Rates and Charges

   a) Rates per Lighting Facility per Month

Lamp Type	Type Luminaire	Approximate Lumens	Total Watts	Monthly Rates
HPS*	Area Light	6,400	108	$21.76
HPS*	Flood Light	27,500	309	$26.69
HPS*	Flood Light	50,000	476	$35.47
MH*	Flood Light	36,000	453	$36.08
MH*	Flood Light	110,000	1093	$39.31
HPS**	Full Cut-off	4,000	63	$29.57
HPS**	Full Cut-off	6,300	91	$29.66
HPS	Full Cut-off	9,500	128	$30.08

VIII.SERVICE CLASSIFICATIONS (continued):

M. SERVICE CLASSIFICATION NO. 7A
Outdoor Area Lighting - HPS (High Pressure Sodium), MH (Metal Halide), and LED (Lighting Emitting Diode) (continued):
(Rate Codes: 781, 782)
Rates and Charges (continued):

Lamp Type	Type Luminaire	Approximate Lumens	Total Watts	Monthly Rates
HPS**	Full Cut-off	28,500	305	$33.71
HPS**	Full Cut-off	50,000	455	$43.42
MH**	Full Cut-off	20,500	288	$33.88
MH**	Full Cut-off	36,000	455	$43.42
LED	Full Cut-off	19,270	168	$33.71
LED	Full Cut-off	29,100	255	$43.42

*Commencing October 1, 2003, not available for new installations or replacements.

** Effective January 1, 2019 these luminaires are no longer available for new installations or unit replacements. Effective January 1, 2022, bulbs and photocells replacements for these luminaires will also no longer be available.

b) The charge for Additional Overhead Secondary Cable and Poles dedicated to the Customer is $16.95 per span per month.

c) Adjustments to Rates and Charges

Each Customer's bill will be adjusted for the Power Supply Charge, Increases in Rates and Charges to Recover PILOT Payments, the Shoreham Property Tax Settlement Rider, the Distributed Energy Resources Cost Recovery Rate, the New York State Assessment Factor, the Securitization Offset Charge, and the Delivery Service Adjustment.

4. Minimum Charge

The monthly Minimum Charge is the facilities charge computed under the rates in 3 a), b) and c) above for the number of lighting facilities in place on the billing date.

5. Terms of Payment

The Customer shall pay the balance due in cash, including checks and money orders, on receiving the bill. Late payments shall be subject to Late Payment Charges.

VIII.SERVICE CLASSIFICATIONS (continued):

N. SERVICE CLASSIFICATION NO. 10
Public Street and Highway Lighting Energy and Connections:
(Rate Codes: 1580, 1581)

1. Who Is Eligible

   a) Customers who will use this service for lighting of public streets, highways, parks, parking fields, and similar areas where facilities are owned and maintained by governmental agencies or their agents, and

   b) The Authority will furnish service only after suitable agreements are signed that cover energy requirements and service connections.

2. Character of Service

   a) Unmetered, single-phase, 60 hertz, alternating current supplied to Customer-owned, operated, and maintained lighting facilities (a lighting facility includes luminaries, posts, supply circuits, and all associated equipment needed), and

   b) Provided at suitable voltages chosen by the Authority.

3. Rates and Charges

   a) The Energy Charge per Lighting Facility per Month is $.0485 per kWh, for the monthly kWhs of unmetered lighting service specified in this Tariff.

   b) The Underground Connection Charge per Month is $3.64 per Energy Delivery Point serving one or more underground-supplied lighting facility as described in Special Provision 7.*a.* below.

   c) Adjustments to Rates and Charges

      Each Customer's bill will be adjusted for the Power Supply Charge, Increases in Rates and Charges to Recover PILOT Payments, the Shoreham Property Tax Settlement Rider, the Distributed Energy Resources Cost Recovery Rate, the New York State Assessment Factor, Delivery Service Adjustment, and the Securitization Offset Charge.

4. Minimum Charge

   The monthly Minimum Charge is the total Underground Connection Charge, plus Adjustments to Rates and Charges.

5. Terms of Payment

   The Customer shall pay the balance due in cash, including checks and money orders, on receiving the bill. Late payments shall be subject to Late Payment Charges.

VIII.SERVICE CLASSIFICATIONS (continued):

P. SERVICE CLASSIFICATION NO. 12
Back-Up and Supplemental Service (continued):
(Rate Codes: 680, 681)

4. Character of Service

a) 60 hertz, single or three-phase alternating current.

b) Service is metered at one standard delivery voltage, and the Authority will determine the site-specific characteristics and make the necessary adjustments to maintain that delivery voltage.

5. Rates and Charges for Backup and Supplemental Service

a) Customers requiring Supplemental Service will pay the rates and charges under another suitable Service Classification. In this case, the Customer will comply with the terms of this Service Classification including the interconnection provision, that are in addition to, and do not conflict with the requirements of the suitable Service Classification.

(1) Customers that receive their non-Authority supply from the New York Power Authority (NYPA) under the Recharge NY program will be designated as Rate Code 680.

(2) Customers that are a Qualifying Facility under Part 292 of Title 18 of the Code of Federal Regulations, and choose to pay the rates under this Service Classification will be designated as Rate Code 681.

(3) Customers that are eligible for net metering pursuant to § 66 – j or § 66 – l of the Public Service Law will be designated with the rate code associated with that suitable Service Classification.

(4) Any Back-up Service provided in conjunction with Supplemental Service will be included with the usage and demand billed at the specified rates for Supplemental Service.

b) Service Charge per Installation per Month (Rate Code 681)

(1) The Service Charge applies to all Back-Up Service except when this service is combined with Supplemental Service.

	Back-Up and Supplemental Service
Secondary Voltage (7 KW and less):	$42.39
Secondary Voltage (Above 7 KW):	$77.06
Primary Voltage:	$127.16

VIII.SERVICE CLASSIFICATIONS (continued):

P. SERVICE CLASSIFICATION NO. 12
Back-Up and Supplemental Service (continued):
(Rate Codes: 680, 681)
Rates and Charges for Backup and Supplemental Service (continued):

(2) Customers taking service at the transmission voltage level shall pay the full cost of metering devices and any other Local Facilities as part of the Interconnection Charge (see 6. and 7. below) and will not pay a monthly Service Charge.

c) Demand Charges for Distribution recover the costs of distribution facilities not paid for by the Customer as a lump sum payment or in the Service Charge.

Contract Demand Charge per KW per Month (Rate Code 681)

The Contract Demand Charge is paid monthly for capacity contracted for by Back-Up and Supplemental Service Customers taking service at the primary and secondary distribution levels, as described in Special Provision 11.*e.* below.

	Back-Up and Supplemental Service
Secondary:	$3.21
Primary:	$2.68

As-Used Demand Charge per KW per Month (Rate Code 681)

The As-Used Demand Charge is paid in addition to the Contract Demand Charge by Back-Up and Supplemental Service Customers taking service at the primary and secondary distribution levels for demand used during an interruption of the non-Authority supply. The demand billed shall be the highest demand during the month, but not less than one hundred percent (100%) of the highest demand in the last eleven (11) months.

	Back-Up and Supplemental Service
Secondary:	$3.21
Primary:	$2.68

VIII.SERVICE CLASSIFICATIONS (continued):

P. SERVICE CLASSIFICATION NO. 12
Back-Up and Supplemental Service (continued):
(Rate Codes: 680, 681)
Rates and Charges for Backup and Supplemental Service (continued):

d) Energy Charges per kWh (Rate Code 681)

Energy Charges per kWh for both Back-Up and Supplemental Service

	Rate Periods*		
	1	2	3
	Midnight to 7 a.m. all year	June - Sept., except Sunday, 10 a.m. to 10 p.m.	All remaining hours
Secondary	$.0023	$.2352	$.0341
Primary:	$.0012	$.2273	$.0317
Transmission	$.0001	$.2174	$.0281

* See Paragraph IV.A.10, “Daylight Savings Time”, on Leaf No. 99.

e) Reactive Power Charge

Net Reactive Demand Charge per kvar = $.27 for primary and transmission voltage services only, and applies from 7 a.m. through 11 p.m.

VIII.SERVICE CLASSIFICATIONS (continued):

S. SERVICE CLASSIFICATION NO. 16- AMI
Advanced Metering Initiative Pilot Service (continued):
(Rate Codes: M188, M288)

4. Residential and Small General Service Time–Differentiated Pricing

Residential and Small General Service (rate codes 280 and 288) Customers participating in the Pilot Service will be charged the rates as stated below.

a) Schedule of Rates (Rate Code M188 and M288)

	June to September Inclusive	October to May Inclusive
Service Charge per day	$.4200	$.4200

	June to September Inclusive	October to May Inclusive
Energy Charge per kWh		
	Period 1	Period 2
7 p.m. to 2 p.m. weekdays and all day Saturday and Sunday	$.0546	$.0546
	Period 3	Period 4
2 p.m. to 7 p.m. Weekdays	$.3889	$.1382

All the terms and conditions will apply as described in the Customer's previous rate and Service Classification.

b) Adjustments to Rates and Charges

Each Customer's bill will be adjusted for the Power Supply Charge, Increases in Rates and Charges to Recover PILOT Payments, the Shoreham Property Tax Settlement Rider, the Distributed Energy Resources Cost Recovery Rate, the New York State Assessment Factor, Revenue Decoupling Mechanism, the Securitization Offset Charge and the Delivery Service Adjustment.

c) Minimum Charge

The Minimum Charge is the Service charge plus Adjustments to Rates and Charges.