

Integrated Resource Plan

LIPA Board of Trustees Meeting

March 27, 2024

Presented by: Gary Stephenson, Senior Vice President of Power Supply









Discussion Topics





Key Findings and Initiatives



Outreach and Engagement









What is an Integrated Resource Plan?

- An IRP studies the supply-side (i.e., generation, energy storage), demand-side (i.e., energy efficiency, demand response, distributed energy resources), and transmission investments that LIPA may need to make over the next 10 to 20 years to provide clean, reliable, cost-effective service to customers under a range of scenarios.
- LIPA's last IRP was released in 2017 and determined that LIPA would not need to add generation to meet load growth through at least 2035, mainly due to increased energy efficiency and renewable energy. The decision was made to forego new or repowered fossil-fueled generation and instead concentrate on a clean energy future.
- An IRP considers customer usage trends, existing resources, policy and regulatory requirements, changing technology, risks, and opportunities, among other factors.



There were a range of scenarios modeled in the IRP

- The IRP's recommendations are based on scenario modeling that assesses the impacts of planning uncertainties and considers alternative solutions to achieve Climate Act targets while satisfying system reliability requirements.
- The starting point for the scenarios is a base case that includes the clean resource objectives in the Climate Act and follows trajectories for renewable energy development and beneficial electrification of heating and transportation similar to those detailed in the Scoping Plan produced by the New York Climate Action Council.
- Besides the base case, the following additional scenarios were assessed in the IRP:
 - Accelerated economywide decarbonization
 - Expanded interties from Long Island to other regions
 - Accelerated transition away from fossil fuel combustion
 - Expanded demand-side measures
 - Advanced technologies



Integrated Resource Plan Summary Guide

- To help customers and stakeholders understand the plan's assumptions, findings, and next steps, the Summary Guide was simplified around answers to frequently questions.
- Topics in the Summary Guide include:
 - New York's Climate Act
 - Decarbonizing the electric grid
 - Offshore wind
 - Dispatchable emissions-free resources and storage
 - Utility-scale and rooftop solar
 - Electrification of transportation and heating
 - Electrification and electric sales through 2040
 - Planning for the effects of climate change
 - Managing the cost of the clean energy transition



Summary Guide



Key Findings and Initiatives



What are the **key findings** of the IRP?

- 1. By 2030, the addition of solar and offshore wind resources will cause LIPA's **carbon footprint to decline** by over 70% from 2010 levels.
- 2. Offshore wind projects already under development will **connect 2,400 megawatts to the Long Island grid**, out of a statewide goal of 9,000 MW by 2035, with more to come as forecasts show as much as 18,000 MW or 18 gigawatts of offshore wind by 2050.
- 3. Long Island's high-voltage transmission grid will need to be built out to integrate large amounts of clean energy, including offshore wind, some of which will be exported to the rest of New York. The Propel NY Energy project will meet these transmission needs through 2030 and beyond, although further study is required to assess transmission needs for a zero-carbon electric grid by 2040.
- 4. As offshore wind and battery storage resources come online, LIPA will be able to retire up to 800 MW of existing Long Island power plants by 2030.
- 5. Demand-side measures, such as LIPA's energy efficiency rebate programs and customer installations of solar photovoltaic systems, are projected to effectively offset economy-driven growth in electricity sales between now and 2030.



What are the **key findings** of the IRP?

- 6. LIPA's transition to TOD rates in 2024 and 2025 will encourage **customers to shift energy use outside of peak hours and thereby help moderate growth in peak electric demand**, which is a main driver of the need for investments to upgrade the transmission and distribution system. LIPA will need to further expand on TOD rates with managed charging solutions in future years.
- 7. Significant growth in electricity consumption is expected post-2030 as heating and transportation are increasingly electrified.
- 8. Clean, distributed resources will transform the local electric grid into a two-way street, requiring upgrades in distribution capacity and controls, including the associated information technology systems to intelligently manage the grid.
- 9. For the post-2030 period, the industry will need to develop new solutions and technology to balance electric supply and demand on an hourly, daily, and seasonally to fully replace dispatchable fossil units.



What are the **key initiatives** of the IRP?

- Participate in large-scale statewide clean energy procurements conducted by NYSERDA to achieve New York's 70% renewable by 2030 objective, selectively procured using LIPA's low cost of capital where there are likely to be savings or localized opportunities.
- 2. Procure additional energy storage to reach up to 750 MW on Long Island in cooperation with NYSERDA and through selective LIPA procurements.
- 3. Phase out power contracts with Long Island fossil generation owners to retire up to 800 MW of fossilfueled generation.
- Work with the project developer and stakeholders to complete the \$3.3 billion Propel NY Energy project to build out the transmission "backbone" connecting Long Island to the rest of New York for offshore wind.
- 5. Implement Time-of-Day rates in 2024 and 2025 along with managed charging programs to **minimize the peak hour load increase expected from the increasing electrification of transportation**.



What are the **key initiatives** of the IRP?

- 6. Develop a multi-year energy efficiency, beneficial electrification, and demand response plan that maximizes opportunities for cost-effective programs, while investing in disadvantaged communities and supporting low and moderate-income customers.
- 7. Increase hosting capacity by 700 MW for distributed energy resources and continue to promote customer-owned DER, including rooftop solar and storage.
- 8. Prioritize the retirement of fossil fuel generating stations in areas within or near disadvantaged communities.
- **9.** Prepare the electric grid to meet the challenge of climate change by designing for the increasing frequency of extreme temperatures and severe weather, configuring supply resources to provide resiliency, and continuing investments to storm harden the electric grid.
- **10. Support research into zero-emission, dispatchable generation** to enable the complete replacement of fossil-fueled generation by 2040.



What are we **recommending?**

- The findings offer a look at an evolving energy landscape of renewable technologies and decarbonization initiatives and illustrate how we can meet the goals of New York's Climate Act while maintaining reliability and affordability.
- The energy landscape will shift over the next five years, and LIPA is well-positioned to navigate those changes.





Follow-up studies to the IRP are currently underway

These studies include:

- Identifying any reliability deficiencies or operational concerns with expected generation retirements
- Reviewing storage needs and identifying preferred Long Island and Rockaways points of interconnection
- Establishing a new multi-year energy efficiency program
- Reviewing the customer journey for EV and heat pump electrification and deploying new tools and programs to assist both customers and installers
- Assessing projected resource margins for extreme weather events, including low renewable output, high summer temperatures, and increasing duration of heat waves
- Completing the Climate Vulnerability Study and Resilience Plan





Navigating the costs of the clean energy transition

- Most of the costs for the state's clean energy transition will be paid by electric load-serving entities, according to their proportionate share of the statewide load.
- The changes in LIPA's Power Supply Charges between now and 2030 are relatively predictable (excluding volatile commodity prices).
- As clean energy resources are added through 2030, LIPA estimates that the cost associated with transmission upgrades will grow from less than 10% of the Power Supply Charge today to over 50% by 2030.
- Much of these increases in clean energy costs will be offset by declining commodity costs and the associated cost of fossil-fueled infrastructure.
- Based on what we know today, the Power Supply Charge, which accounts for about half of LIPA's total electricity charge, is expected to grow at about 2% per year in real dollars through 2030 (about \$9/per month in 2023 dollars for a typical residential customer), assuming reasonably stable commodity costs.





Outreach and Engagement



Outreach and Communications

Stakeholder and public engagement is a key component of the integrated resource planning process.

- LIPA conducted outreach to stakeholders, elected officials, and news media outlets on the findings, initiatives, and ways the public could participate and provide comments.
- This outreach included social media content, e-mail campaigns, physical mailings of the Summary Guide, briefings with stakeholders and elected officials, and media interviews.
- LIPA and PSEG Long Island provided the opportunity for LIPA customers and other stakeholders to comment on the IRP either directly on the form posted on the PSEG Long Island website, through email or in person at public hearings.
- There were 35 individuals signed up to receive direct notices for IRP events and information.



Educational Video Series

- LIPA created a 4-part educational video series on various topics, including:
 - Part I: What is an Integrated Resource Plan?
 - Part II: Offshore Wind
 - Part III: <u>Decarbonizing the Electric Grid</u>
 - Part IV: <u>Electrification Maintaining</u> <u>Reliability and Affordability</u>
- The series can be viewed on LIPA's <u>LinkedIn</u> <u>company profile</u> and through <u>email campaigns</u>.





Public **Participation**



Public Comments

- LIPA held three public comment hearings on February 12, 13, and 15, 2024, in Nassau County and the Rockaways, with both in-person and virtual participation options.
- About 20 members of the public attended the hearings and seven individuals delivered comments during the hearings.
- There were seven written submissions sent via email to IRP@lipower.org, including comments from representatives of National Grid Ventures, the New York Battery and Energy Storage Technology Consortium, the Long Island Federation of Labor, the New York Solar Energy Industries Association and the Long Island Progressive Coalition.

Public Comments on 2023 IRP Summary Guide Summary of Public Comments: Table of Contents Peter J. Gollon PhD. | Submitted February 12, 202 Page 1-4 Fred Harrison | Submitted February 12, 2024 Page 5-8 Page 9-17 Valerie Strauss, National Grid Ventures | Submitted February 12, 2024 Ryan Madden, Long Island Progressive Coalition | Submitted February 12, 2024 Page 18-24 Mark Sertoff | Submitted February 13, 2024 Page 25-26 Billii Roberti, Green Choices Consulting | Submitted February 13, 2024 Page 27-29 Dr. William Acker, NY BEST | Submitted February 23, 2024 Page 30-35 Note: Verbal comments from Nassau & Suffolk sessions are available in the transcrip



Community Support



What are **stakeholders** saying?



"I want to commend LIPA and PSEG for their commitment to this process in putting forward the IRP. It is well-timed. The Infrastructure Investment Jobs Act, Inflation Reduction Act, CHIPS and Science Act, and New York State CLCPA ultimately all coincide with one another, they represent a tremendous opportunity to secure billions of dollars in investment in New York State. Those dollars can and must be spent to rebuild our energy grid and our economy at large."

Ryan Stanton, Long Island Federation of Labor





"The Building and Construction Trades Council embraces LIPA's Integrated Resource Plan for its forward-thinking approach to renewable energy. This plan is not just about green energy; it's about creating solid, skilled trade opportunities that include apprenticeship programs will benefit our members and every community on Long Island for generations to come."

Matthew Aracich, Building and Construction Trades Council of Nassau & Suffolk

"NY-BEST applauds this approach and encourages LIPA to begin as soon as possible to move the plan forward into measurable, time-bound and action-oriented steps to achieve the goals set forth in the IRP. NY-BEST supports the action plan outlined by the 2023 IRP to support the implementation of the State's Climate Leadership and Community Protection Act"

Dr. William Acker, NY-BEST



What are **stakeholders** saying?



"As the leading business organization on Long Island, we commend LIPA and PSEG Long Island for presenting an Integrated Resource Plan that skillfully balances economic development with environmental stewardship. This plan is a testament to LIPA and PSEG Long Island's commitment to fostering a thriving, sustainable business environment that can attract investment and drive innovation across our region."

Matt Cohen, Long Island Association



"LIPA's Integrated Resource Plan is a bold step forward in our fight against climate change. By prioritizing renewable energy sources like offshore wind, LIPA and PSEG Long Island lead by example, showing how utilities can be part of the solution in building a sustainable future for all."

Neela Lockel, EAC Network



"United Way supports LIPA and PSEG Long Island's Integrated Resource Plan for its vision in ensuring that the transition to renewable energy includes social equity and job creation. This plan recognizes the importance of supporting our communities through this transition, ensuring that no one is left behind."

Theresa Regnante, United Way



What are **stakeholders** saying?







"The Sustainability Institute at Molloy University commends LIPA for its transparent planning process utilized in developing an Integrated Resource Plan (IRP) that puts Long Island on-track to meet New York State's ambitious targets for energy transition from fossil fuels to clean renewable energy. This comprehensive initiative reflects a detailed dedication to providing a blueprint for responsibly meeting our energy needs, while promoting a just energy transition and ensuring that safeguarding the wellbeing of our planet for the benefit of future generations—is paramount."

Neal Lewis, Sustainability Institute at Molloy University

"The AERTC commends LIPA for its leadership in advancing the adoption of clean energy through its Integrated Resource Plan. This initiative aligns with our mission to promote energy innovation and education, marking a significant step towards a more sustainable and energy-efficient Long Island."

Bob Catell, Advanced Energy Research and Technology Center

"The Long Island Builders Institute stands in strong support of LIPA's Integrated Resource Plan, recognizing its potential to drive growth in the construction industry through sustainable development projects. This plan lays the groundwork for building a greener Long Island, and we are excited about the opportunities it presents for innovation in sustainable building practices."

Mike Florio, Long Island Builders Institute



Acknowledgments

LIPA's resource planning process is a collaborative effort.

- The 2023 IRP was developed by LIPA's service provider, PSEG Long Island, with active involvement from LIPA staff and assistance from utility consultants and industry researchers, who provided input on emerging technologies such as advanced battery storage, including short- and long-term feasibility as well as risks and challenges to consider in model development.
- LIPA would like to recognize the valuable contributions provided by:





Questions?

Gary Stephenson SVP, Power Supply

lipower.org



FOR CONSIDERATION March 27, 2024		
TO:	The Board of Trustees	
FROM:	Thomas Falcone	
RE:	Consideration of Approval of the Findings and Key Initiatives Contained in the 2023 Integrated Resource Plan	

Requested Action

The Board of Trustees (the "Board") of the Long Island Power Authority ("LIPA") is requested to adopt a Resolution, attached hereto as <u>Exhibit "A"</u>, approving the key findings and initiatives contained in the 2023 Integrated Resource Plan, which will guide next actions by LIPA Staff.

Background

Utilities conduct Integrated Resource Plans ("IRPs") to identify long-term resource needs and to evaluate available options to ensure access to adequate electric power resources to serve customers reliably and affordably. IRPs were introduced in the 1970s to integrate the evaluation of the major categories of options in resource planning, including demand-side measures, generation, and transmission. LIPA's last IRP was issued in 2017.

In July 2019, New York State enacted the Climate Leadership and Community Protection Act ("Climate Act"), one of the country's most aggressive clean energy and greenhouse gas reduction laws. The Climate Act includes, among other goals, a requirement that 70% of electricity consumed in the state by 2030 be produced from renewable energy; the development of 6,000 megawatts ("MW") of distributed solar by 2025, 3,000 MW of energy storage by 2030, and 9,000 MW of offshore wind by 2035; and 100% zero-carbon electricity generation by 2040. In June 2021, LIPA's service provider, PSEG Long Island, supported by consultants and industry researchers, commenced the development of this IRP to project resource needs for Long Island and the Rockaways. The Climate Act requirements are key inputs to the scenarios evaluated in the study, and significantly impact the electricity supply and demand outlook in Long Island and the rest of New York State.

LIPA Staff presented the objectives, key challenges, and timeline for the IRP to the Board at its June 23, 2021 meeting. To initiate public engagement on the IRP development, LIPA held a 30-day public comment period on the proposed Scope of Work ("SOW"), which commenced on July 23, 2021. LIPA received 18 comments that were reviewed, consolidated, and presented to the LIPA Board. The Board approved the final SOW at its September 22, 2021 meeting. The analytic studies for the IRP were completed in December 2022, followed by a review and the publication of the IRP Summary Guide in November 2023. The key findings and initiatives of the 2023 IRP were presented to the Board at its November 15, 2023 meeting and released publicly. Public outreach has continued into 2024, as further detailed below.

IRP Summary Guide

The IRP Summary Guide (see **Exhibit D**) is organized around themes in the form of frequently asked questions and written in an accessible style to help customers and stakeholders understand the IRP's assumptions, findings, and next steps. It consists of approximately 67 pages of information and analysis on topics including:

- New York's Climate Act
- Decarbonizing the electric grid
- Offshore wind
- Dispatchable emissions-free resources and storage
- Utility-scale and rooftop solar
- Electrification of transportation and heating
- Electrification and electric sales through 2040
- Planning for the effects of climate change
- *Managing the cost of the clean energy transition*

Public Outreach on the IRP Findings and Initiatives

To ensure customers and stakeholders were aware of LIPA's IRP, LIPA conducted extensive outreach to stakeholders, elected officials, and news media outlets on the findings, initiatives, and ways the public could participate and provide comments. This outreach included social media content, e-mail campaigns, physical mailings of the Summary Guide, briefings with stakeholders and elected officials, and media interviews. LIPA's social media content on LinkedIn garnered over 10,000 impressions and an 11.15% engagement rate. LIPA also created an <u>IRP webpage</u> and an educational video series featuring subject matter experts.

Media placements included Newsday, News 12, the Long Island Business News, Herald Community Newspapers, Vision Long Island's Main Street News program, and the American Public Power Association. Media clips are attached as **Exhibit C**.

LIPA provided customers and stakeholders with the opportunity to comment on the IRP through email, the PSEG Long Island website, or in person at public hearings and LIPA Board meetings. There were 35 individuals who signed up to receive direct notices for IRP events and information. Six written submissions were sent via email to IRP@lipower.org, including comments from representatives of National Grid Ventures, the New York Battery and Energy Storage Technology Consortium, the Long Island Federation of Labor, and the Long Island Progressive Coalition.

LIPA held three public comment hearings on February 12, 13, and 15, 2024, in Nassau County and the Rockaways, with in-person and virtual participation options. Due to inclement weather, the in-person hearing planned for Suffolk County was switched to virtual-only. The public comment sessions were also listed on the <u>News 12 events page</u>. 19 members of the public attended the hearings and seven individuals delivered comments during the hearings. Transcripts are attached as **Exhibit B**.

Public Comments on the IRP

Nearly all the public comments received by email and at the public hearings supported LIPA's participation in the statewide clean energy transition and the IRP's reliance on renewable resources and energy efficiency to meet load growth. The complete comments are available on LIPA's website (<u>link</u>). To cohesively address the input provided, LIPA has grouped the comments into ten (10) separate categories, summarized the feedback, and provided a LIPA Staff response for each category, as presented below.

1) <u>LIPA's Commitment to NYS's Climate Act Goals</u>

There were numerous remarks on the 2023 IRP, most of which indicated support for LIPA's efforts in developing a plan that serves as a roadmap to a clean energy future for Long Island and the Rockaways. One commenter stated that the IRP should have greater recognition of the outstanding work needed to achieve New York State's Climate Act goals.

LIPA Staff Response:

LIPA appreciates the positive responses to its IRP and is committed to driving the Long Island and the Rockaways transition to a clean energy future while maintaining high reliability and affordability of power supply to its customers. The energy landscape continues to evolve, and LIPA intends to continue to lead and be responsive to these changes.

2) <u>Long-Term Resource Portfolio</u>

There were several comments and questions on the makeup of LIPA's future resource portfolio. These comments related to (i) the criticality of Dispatchable Emission-Free Resources ("DEFRs") to maintain the reliability of the system and the need to continue to support research and development of all new clean energy technologies, (ii) concerns about relying on certain technologies and fuels such as hydrogen, renewable natural gas ("RNG"), and nuclear; and (iii) concerns about fossil fuel retirements, particularly given the uncertainties about the timing of renewables and beneficial electrification, and the impact of certain legacy generator retirements on related tax and PILOT payments.

LIPA Staff Response:

To maintain system reliability and meet New York's Climate Act goals, the 2023 IRP estimates that Long Island will need 3-6 gigawatts ("GWs") of DEFRs by 2040. DEFRs represent a "proxy technology" needed to replace the flexibility of existing fossil power plants but do not represent LIPA's commitment to deploy any particular technology or fuel source. LIPA periodically revisits the economics of its ownership interest in the Nine Mile Point 2 nuclear facility. Based on the last such

analysis, this facility represents a clean, relatively low-cost source of energy. On a statewide basis, nuclear will be a critical component in driving New York State towards a zero-carbon electric grid by 2040.

Any delays and cancelations of offshore wind projects, solar and battery storage additions, or beneficial electrification will likely require adjustments to the retirement schedule of the fossil fuel power plants. LIPA continually monitors changing conditions, including those from resource projections and market rules, and will adjust the resource plan accordingly to maintain the reliability that our customers deserve. Regarding the impact of tax and PILOT payments at Barrett, Northport, and Port Jefferson, LIPA has executed settlement agreements with the taxing jurisdictions where the plants are located to gradually lower the payments by approximately 50% on these plants through 2027. The settlements also include provisions that if any units at those sites continue to operate beyond 2027, proportional payments will be made for up to five more years based on 2027 tax levels and the remaining capacity at the site.

3) <u>Energy Efficiency</u>

Certain comments emphasized the importance of energy efficiency programs and initiatives, particularly on the value and need to support the mass adoption of heat pumps. One commenter brought up the need to address the pre-weatherization needs of customers when considering energy efficiency improvements and the need to undertake a whole-house approach (e.g., remediation of mold, asbestos, and lead). Another commented on the impact of electrification on LIPA's kilowatt-hour ("kWh") sales and grid efficiency and the potential value of electric vehicles, especially when these are used to provide backup power and grid services.

LIPA Staff Response:

As noted in the IRP, one of LIPA's key next steps is to develop a multi-year energy efficiency and beneficial electrification plan through 2030 that sets forth a pathway to meet New York State goals along with spending targets for disadvantaged communities. LIPA invests approximately \$90 million annually in energy efficiency, beneficial electrification, and demand-side programs. The IRP included growth projections for adopting air-source, ground-source, and hybrid heat pumps. LIPA has a rebate program for customers installing heat pumps, which complements newly enacted federal tax credits, and periodically reviews the design and incentives associated with this and other energy efficiency programs. LIPA is currently rolling out its outreach and marketing plan focused on the adoption of heat pumps.

As indicated in the IRP, the electrification of transportation and heating will result in significant load growth post-2030, translating into higher energy sales for LIPA. Electrification will also drive sharp growth in the system's peak load, which LIPA is looking to partially mitigate by supporting customers' adoption of smart EV charging practices, managing the timing of electricity usage, and encouraging the adoption of TOD rates. LIPA is conducting further studies of the EV market, including managed charging and "vehicle-to-everything" interconnections.

4) <u>LIPA Ownership of Clean Energy Assets and Use of Available Federal Incentives</u>

Certain comments focused on the incentives available to public power utilities to fund clean energy investments under the Inflation Reduction Act ("IRA"), the Infrastructure Investment Jobs Act, and the CHIPS and Science Act, and whether these were considered in the 2023 IRP. There were several

comments regarding whether LIPA has considered the impact of owning or part-owning renewable energy generation and installing and owning utility thermal energy networks ("UTENs").

LIPA Staff Response:

LIPA expects to rely on the New York State Energy Research and Development Authority ("NYSERDA") procurements for a significant portion of its clean energy supply since those procurements benefit from economies of scale (particularly for offshore wind) and statewide scope, which results in reduced costs to LIPA and its customers. LIPA can and will utilize its low cost of capital to procure energy assets independently where it finds localized clean energy opportunities that benefit its customers. Examples of such opportunities include energy storage to bolster system reliability needs in certain locations and Long Island-based utility-scale solar projects. Regarding offshore wind, at the first of the three public comment sessions, LIPA's CEO clarified that the Authority does not expect to take an ownership position in large-scale offshore wind projects for the near term, as it would expose LIPA to significant commercial and permitting risks in a still developing industry that do not fit within LIPA's risk tolerance. Developers of such projects have experienced these risks over the last several years.

Regarding UTENs, LIPA is currently working with National Grid to develop a pilot project at Suffolk County Community College. UTENs, however, are more analogous to a local natural gas distribution network and are not a significant part of LIPA's current clean energy strategy, which focuses primarily on air and ground source heat pumps.

5) <u>Rate Impact</u>

Some commenters expressed concerns regarding the rate impact of transitioning to a 100% zero emissions electric grid. In addition, one commenter stated that there are fixed costs hidden in volumetric rates that subsidize solar and that all fixed costs should be included in the fixed monthly charge. There were also comments and questions about the impact of delays in the rollout of LIPA's Time-of-Day ("TOD") Rates, its outreach plan, and whether LIPA has evaluated rate designs other than TOD rates.

LIPA Staff Response:

Minimizing the bill impacts to customers is always of paramount concern to LIPA and includes those associated with transitioning to a zero-emissions electric grid by 2040. As noted in the IRP, the Power Supply Charge, which accounts for about half of LIPA's total electricity charge, is expected to grow at about 2% per year in real dollars through 2030 (a cumulative increase of approximately \$9 dollars per month in 2023 dollars for a typical residential customer by 2030), assuming reasonably stable commodity costs and other foreseeable assumptions. Rate increases from 2030 to 2040 are more difficult to quantify given the uncertainty associated with the actual types of technology to be deployed, their location, and the accompanying technology costs.¹ However, LIPA monitors and studies developing trends and is focused on implementing the least cost solutions to achieve statewide goals. Moreover, it should be noted that the costs associated with NYSERDA's contracts for offshore wind and other resource procurements, as well as upgrades to LIPA's transmission to support offshore wind, will be

¹ The Climate Action Council Scoping Plan has made a forecast for the state as a whole, which is available at: <u>https://climate.ny.gov/resources/scoping-plan/</u>

shared among load-serving entities statewide based on their proportionate share of the load in New York. LIPA will also continue to pursue federal grant opportunities, where available, to help offset the cost of climate resiliency measures and other related initiatives.

LIPA offers electricity bill discounts to low-to-moderate-income ("LMI") customers to ensure that energy bills are no greater than 6% of household income. It also offers enhanced incentives to its LMI customers to adopt energy efficiency improvements that reduce their overall energy bills. These programs are continuously evaluated and modified.

LIPA is in the process of implementing TOD rates. The delay in the rollout will have no impact on the projected long-term level of customer participation or on IRP findings. There is a robust multichannel outreach plan for the rollout of TOD rates tailored to the program's early rollout and later stages. This includes multiple direct customer communications focused on TOD through mail, email, bill messages, and mass-market advertising (including targeted digital and social media channels). In addition, there is planned outreach to municipalities, interest groups, and other key stakeholders. No other rate designs were considered in the IRP, although it notes in its "key initiatives" the future development of managed charging "vehicle to everything" programs.

6) <u>Renewables</u>

Several comments and questions were raised about specific renewable energy technologies. These included:

(i) Batteries – highlighting the benefits of energy storage and support for greater deployment of batteries, including Retail Energy Storage and a Community Energy Storage programs; improvements in LIPA's energy storage procurement process; and urging LIPA to engage in greater public outreach to help educate public officials and the public about the facts of energy storage, particularly concerning fire and safety concerns that have led to some local communities in Long Island to adopt local moratoria prohibiting battery energy storage.

(ii) Offshore Wind ("OSW") – inquiries about the impact of OSW project delays and cancellations on LIPA's carbon footprint; whether the Empire Wind 2 project would be rebid; and whether there will be better community outreach for future projects. One commenter stated that OSW projects on Long Island should create good union jobs.

(iii) Solar – Support for greater deployment of solar, particularly on commercial properties and on the distribution system; the benefits of and support for the deployment of solar plus storage systems; and considerations for recommendations made in the Long Island Solar Roadmap.

One commenter expressed that solar and wind are unreliable and inefficient and that these technologies, as well as batteries, also damage the environment and use child labor.

LIPA Staff Response:

(i) Batteries – As stated in the IRP, it is one of LIPA's key initiatives through 2030 to procure additional energy storage on Long Island in cooperation with NYSERDA and through selective LIPA procurements. LIPA is currently in the final stages of a 175+ MW energy storage solicitation. Over time,

additional storage development on Long Island will result in up to 750 MW of storage per the IRP by 2030. On February 6, 2024, Governor Kathy Hochul released the initial recommendations from the Inter-Agency Fire Safety Working Group, outlining enhanced safety standards for battery energy storage systems. These recommendations are currently undergoing public comment and, if adopted, should help alleviate battery fire and safety concerns. LIPA's TOD rates will also provide another revenue stream to incentivize residential customers to install storage and reduce their electric bills.

(ii) Offshore Wind – Delays and cancellations of certain OSW proposed projects will not materially affect the long-term reduction of LIPA's carbon footprint as recent OSW project awards by NYSERDA reinforce the state's commitment to meeting its OSW goal of 9,000 MWs by 2035, a key element of LIPA's clean energy strategy. LIPA is unable to comment on whether the development of Empire Wind 2 project will continue as that decision is the purview of the project developer. LIPA agrees that OSW projects off Long Island will undoubtedly create jobs, environmental benefits, and increased infrastructure investment that will benefit all Long Island residents.

(iii) Solar – LIPA strongly supports the development of solar projects on Long Island as demonstrated by tariffs that encourage the adoption of behind-the-meter solar, which have led to by far the highest amount of rooftop solar development in New York State – projected to be approximately 1,200 MW by 2030. In terms of large-scale solar development, LIPA has secured via RFPs over 200 MW of solar and continually examines the economics of all renewables – including solar – to ensure that its resource portfolio reflects the most economic choices for its customers. The Long Island Solar Roadmap, while a helpful document, does not examine the feasibility of solar projects but rather the potential for solar via land use development.

LIPA considers solar, wind, and battery storage integral to its current and future resource plans. The addition of DEFRs will address renewable intermittency, resulting in a reliable and fuel-diverse resource portfolio. Finally, LIPA does not, and would never, countenance the use of child labor in the development of these technologies.

7) <u>Stakeholder Engagement</u>

One commenter stated that only a handful of experts and consultants were solicited to contribute to the IRP process despite the vast implications of the energy transition on disadvantaged communities and that there was a need for greater recognition in LIPA's IRP of the importance of stakeholder engagement to achieve New York' goals. Another commenter stated that releasing the data underlying the IRP findings would be helpful for full transparency and to support stakeholder engagement.

LIPA Staff Response:

LIPA agrees that community and stakeholder engagement is critical to achieving New York's CLCPA goals and is committed to robust community engagement. Regarding the development of LIPA's 2023 IRP, it was a collaborative process led by PSEG Long Island on behalf of LIPA, with assistance and contributions from utility consultants and industry experts from Brookhaven Science Associates and Stony Brook University. LIPA also endeavored to provide avenues for public engagement and input, including (i) holding a 30-day public comment period on LIPA's Draft IRP Scope of Work on June 23, 2021, where it received 18 comments from the public, (ii) creating an IRP webpage, where it provided information to the public, and where the public could provide input via email; (iii) holding various Board

Meetings where the status of IRP development was discussed and which were open to the public; (iv) releasing the IRP Summary Guide in a plain English format to allow a more robust stakeholder engagement process; and (v) holding three public comment sessions in February 2024, where LIPA received the public and written comments noted herein.

LIPA recognizes that New York State's clean energy transition is a monumental undertaking that will impact all New Yorkers and that members of our disadvantaged communities are most at risk. Consequently, LIPA intends to fully comply with and follow all the guidelines developed by the state's Climate Justice Working Group.

In terms of data availability and transparency, LIPA seeks to make as much of that data available as possible. A significant amount of data and information is provided in LIPA's IRP Summary Guide in an easy-to-read format, including graphics that illustrate the issues and considerations. The IRP Summary Guide discusses all the key drivers of the results. Several proprietary models and certain counterparty information are embedded within the IRP analysis. Members of the public should feel free to contact LIPA if there is specific information they are seeking.

8) <u>Transmission and Distribution</u>

There were comments related to the benefits of a bi-directional transmission grid, the potential benefits of burying distribution lines, and the need for more discussion in the IRP on the latter topic.

LIPA Staff Response:

LIPA recognizes the importance of bi-directional transmission – and distribution – infrastructure. Such capability increases efficiency and reliability and reduces overall costs by making increased use of infrastructure assets. This can be particularly true at the distribution level as the increased implementation of distributed energy resources likely will change the power flows on the network in a dynamic manner, necessitating an increase in hosting capacity (i.e., the ability to accommodate increased capacity on the network) along with the implementation of advanced grid controls. LIPA is investing to increase distribution hosting capacity by 700 MW, supporting further deployment of distributed energy resources.

Regarding the burying of distribution and transmission lines, while such efforts increase reliability by making circuits less susceptible to weather events, it is generally not cost-effective to bury existing lines. A greater reliability contribution could be obtained for the dollars from other investments. That said, LIPA routinely considers line burial where circumstances warrant consideration.

9) <u>Other</u>

One commenter inquired whether some of LIPA's strategic objectives related to operational performance (e.g., reliability and resiliency, customer experience) were benchmarked to publicly owned or investor-owned utilities. A single comment related to the apparent failure of the third-party service provider model.

LIPA Staff Response:

In terms of measuring its performance as a company, LIPA compares its performance against both public and investor-owned utilities in many areas, including customer service, reliability, IT and cyber security, safety, electric rates, and other areas². For example, LIPA aims to be in the top 10% of similarly sized utilities nationwide with above-ground networks for reliability. LIPA aims to be in the top 25% among similarly sized utilities in the northeast for customer satisfaction. LIPA releases numerous reports on its website containing this information, including quarterly and annual reports on performance metrics and work plans, which include benchmarks and historical data. LIPA is also undertaking a comprehensive review of the third-party service provider model.

Acknowledgments

LIPA's 2023 IRP planning process has been a collaborative effort developed by LIPA's service provider, PSEG Long Island and LIPA Staff, with assistance from utility consultants and industry researchers, who provided input on emerging technologies such as advanced battery storage. LIPA would like to recognize the valuable contributions provided by PSEG Long Island, The Brattle Group, M. J. Beck Consulting, Brookhaven Science Associates, and Stony Brook University.

Conclusion and Next Steps

LIPA Staff reviewed the public comments and concluded that the comments are constructive, warrant due consideration during the implementation of IRP initiatives, and will help inform future in-depth assessments of major projects and programs and planning for procurements. However, none of the comments change the IRP's findings and key initiatives. Accordingly, Staff recommends carrying out the key actions detailed in the 2023 IRP.

Attachments:Exhibit "A"ResolutionExhibit "B"Transcripts of Public Hearings on the Draft 2023 IRPExhibit "C"Media ClipsExhibit "D"Summary Guide: 2023 Integrated Resource Plan

² For more information, see the LIPA Board's Policies at https://www.lipower.org/purpose/

RESOLUTION APPROVING THE KEY FINDINGS AND INITIATIVES OF THE 2023 INTEGRATED RESOURCE PLAN

WHEREAS, LIPA launched the 2023 Integrated Resource Plan with a presentation at its June 23, 2021 Board meeting and by taking public comments on the scope of work; and

WHEREAS, the LIPA Board reviewed the public comments and approved the scope of work for the 2023 IRP at its September 22, 2021 Board meeting; and

WHEREAS, LIPA launched the 2023 Integrated Resource Plan public comment period with a presentation by LIPA staff to the Board at its November 15, 2023 meeting, describing the objectives, key challenges and timeline for the IRP; and

WHEREAS, the Board has reviewed the 2023 IRP key findings and initiatives, public stakeholders have submitted comments on the IRP, and the Board has determined that none of the comments warrant a change in the IRP's findings and key initiatives.

NOW, THEREFORE, BE IT RESOLVED, that the findings and key initiatives of the 2023 IRP are hereby approved, and the Chief Executive Officer is authorized and directed to implement the IRP key initiatives, as outlined in the IRP Summary Guide.

Dated: March 27, 2024

<u>Exhibit "B"</u>

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2	LONG ISLAND POWER AUTHORITY
3	X
4	INTEGRATED RESOURCE PLAN (IRP)
5	PUBLIC HEARING VIA ZOOM
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7	X
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9	February 12th, 2024
10	6:00 P.M.
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12	
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14	BEFORE:
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16	THOMAS LOCASCIO,
17	LIPA, Director of External Affairs
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2	APEARANCES:
3	Tom Falcone
4	Other LIPA STAFF
5	ALSO PRESENT:
6	Fred Harrison
7	Neal Lewis
8	
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2	<u>proceedings</u>
3	MR. LOCASCIO: Great! Well, good
4	evening, everyone, and thank you for joining us
5	today. I'm Tom Locascio, LIPA's director of
6	external Affairs, and on behalf of the Long Island
7	Power Authority, want to extend a warm welcome to
8	all of you as we gather for a crucial discussion on
9	our path forward in energy management and
10	sustainability.
11	Your presence here underscores the
12	importance of community engagement in shaping the
13	future of energy on Long Island and in the
14	Rockaways. Today we're here to discuss LIPA's
15	Integrated Resource Plan, or IRP, a comprehensive
16	strategy that charts our course toward a
17	sustainable, reliable, and resilient energy future.
18	The IRP is our blueprint for
19	meeting the growing energy needs of our region
20	while prioritizing clean energy initiatives,
21	reducing carbon emissions and enhancing our grid's
22	resilience against the challenges of tomorrow.
23	The development of the IRP is a
24	meticulous process informed by rigorous analysis,
25	technological advancements and a commitment to

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2 environmental stewardship.

I want to acknowledge the team 3 from PSE&G Long Island, who's sitting next to me? 4 Who led the technical analysis of the document that 5 we produced here at LIPA. It reflects our joint 6 dedication to not only meeting, but exceeding New 7 York's ambitious, clean energy goals. Through the 8 IRP we aim to transform how energy is generated, 9 10 distributed and consumed across Long Island and the Rockaways ensuring a cleaner, greener future for 11 12 our communities. 13 We are hosting a series of public 14 comment sessions over this week to provide a platform for your insights, concerns, and 15 suggestions. Your feedback is invaluable as it 16 will help refine our strategies and ensure that the 17 IRP aligns with the needs and aspirations of the 18 communities that we serve. 19 These public comment periods are 20 obviously tonight. We have one scheduled for 21 tomorrow that is going to be virtual due to the 22

23 impending weather forecast that's going to take

24 place at 10:00 a.m. tomorrow. And we have one

25 scheduled for Thursday evening in the Rockaways at

1 6:00 p.m. 2 To kick off today's session, I'm 3 pleased to introduce LIPA's Chief Executive Officer 4 Tom Falcone, who will provide a presentation on the 5 6 IRP, highlighting its key components, objectives, and the impact it aims to achieve. 7 Following the presentation, we'll 8 open the floor for public comments and questions. 9 10 Thank you once again for your Together we can ensure a 11 participation. sustainable and prosperous energy future for the 12 13 Long Island and the Rockaways. Over to you. Thanks. 14 Thank you, Tom. 15 MR. FALCONE: And thank you for those who've made it in person and 16 those on virtually. I'll summarize some of the key 17 takeaways of the IRP, and then we're here for you 18 to listen to you and for your comments, and to 19 respond to your comments, and ultimately your 20 questions. 21 22 First, I just say that there's a handy guide and it's written in a format that tries 23 to address what we believe are the most frequently 24 asked questions. So there's more material in here 25

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than I'll be going over tonight. It's one part of 2 a conversation. We're going to start with the 3 Integrated Resource Plan presentation, then next 4 steps, and then go to the public comment so I'll 5 6 try and be brief to be respectful of time. Here with me in the room -- if you 7 go to the next page. Next page. Here with me in 8 the room, I'm pleased to have Tom Simpson, Gary 9 Stephenson will be at the other public comment 10 hearings, but can't be here tonight. Yuri Fishman, 11 Director of Power Resources and Contract 12 13 Management. Lucy, Director of Strategy and 14 Planning, and Pete Angelina, Manager of Capacity Markets and Regulatory Policy, all of which have 15 worked on this proud. So thank you for your 16 efforts. 17 A little bit about LIPA. 18 LTPA is the third largest, not-for-profit public power 19 utility in the United States; just to give you an 20 idea of scale, serving 1.2 million customers of 21 about 3 million people. We own the transmission 22 and distribution system, and we contract with PSEG 23 for management services and serve under the PSEG 24 brand name. 2.5

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1 The system we're talking about 2 here tonight is about 15,000 miles of poles and 3 wires and about 5,500 megawatts of generation. 4 But it is one part -- if you go to the next page, of an 5 6 integrated electric grid. The electric grid is a huge and complicated machine. And we're here 7 focused on Nassau and Suffolk Counties and the 8 Rockaway Peninsula. 9 10 And on the page shows you various units, power plants, sources of energy, but some of 11 those sources of energy also include transmission 12 13 cables into the electric grids in PJM, Pennsylvania, New Jersey, Maryland, the rest of New 14 York, and into New England. So it's all one big 15 16 grid. If we go to the next page. 17 What You know, an integrated resource plan, is an IRP? 18 this handy booklet ultimately is a study out 20 19 years, looking at what we need to do to comply with 20 the CLCPA but really focuses on the first seven or 21 eight years which are actionable. And as with any 22 projection, the nearer you are to the present day 23 the more you know about it and the further you are 24 25 away, the more that small changes in assumptions

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would change your conclusions. The last IRP was released in 2017 that really set the table for today in that we did not move forward with new or re-powered fossil generation, which really sets the ability to transition to cleaner energy sources now.

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So the summary guide, that if you 8 can either download or get online here, it gives 9 you an outline of the key findings and also of the 10 key next steps or conclusions. You can get it with 11 12 this OR code. But -- and there's also some handy 13 dandy videos, educational video series that you can see on LinkedIn or on LIPA's website or through 14 e-mail campaigns, but let's get into it. 15 So first, next page. Who conducted the IRP? 16 Ιt was really a collaborative effort by LIPA service 17 provider, PSEG, active involvement from utility 18 consultants and industry partners, including 19 Brattle, BSA, MJ Beck, and Stony Brook, all listed 20 here. So we thank them all for their contributions 21 that led us to this product. 22 Obviously, the center of this --23

24 if you go to the next page -- and the objectives 25 we're trying to meet include the State's Climate

Act, which was passed in 2019 and have a number of 2 intermediate-term action items. So those include 3 things like 70 percent by 2030 on a statewide basis 4 for renewable energy. 2035, which would be 9,000 5 megawatts of offshore wind on a statewide basis. 6 And a hundred percent of new, you know, light duty 7 vehicles being zero emission. A hundred percent 8 zero-carbon grid by 2040, that's the big one, but 9 also an 85 percent reduction in economy-wide carbon 10 emissions by 2050. So that means electrifying 11 other segments of the economy that currently are 12 13 served by fossil fuels. The scenarios -- if you go onto 14

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the next page -- that were studied there was a base 15 scenario and then a number of other scenarios that 16 tested how stable our conclusions were under a 17 variety of assumptions. So accelerated 18 economy-wide decarbonization, expanded enterprise 19 to other regions, accelerated transition away from 20 combustion, expanded demand-side measures and 21 advanced technologies, and I looked at each of 22 And those are covered a little more in the 23 those. actual guide. 24

25 But where do we get our power

If you go to the next page. So the chart 2 today? on the right shows that about 47 percent of our 3 power comes from Old Island fossil units. Those 4 are base load units like a Port Jeff or Barrett, 5 but they're also peaking plants, which look a lot 6 more like aircraft engines. We get about 19 7 percent from zero-carbon sources. Those include 8 nuclear power plants as well as solar, both in 9 10 front of and behind the meter. But about 34 percent of our power comes from being 11 12 interconnected with a broader grid. 13 So whether into New England or the 14 rest of New York or into the New Jersey, Pennsylvania, Maryland market. And the New York 15 system operator on a, you know, minute by minute, 16 day by day basis looks at the cost of producing 17 power running plants here on Long Island, and the 18 cost of buying it and selling it, and optimizes 19 this portfolio for the lease costs for customers. 20 21 So about 34 percent of the time, it's coming from those imports. 22 If we go to the next page though, 23 we'll start getting into some of the key takeaways. 24 And like I said, this presentation is not meant to 25

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cover everything. We have the handy booklet for 2 But, you know, some of the things that you 3 that. should be aware of. Figure 5, if you look out 4 through 2030, about 4,500 megawatts of projects are 5 6 anticipated to land on Long Island today. You know, presently what we can anticipate, things that 7 are in development. And that includes about 1400 8 megawatts of solar, 2,400 megawatts of offshore 9 wind, and a target of 750 megawatts of energy 10 11 storage. 12 So how big is 4,500 megawatts? 13 Well, pretty good. Pretty good size. The grids about 5,500 megawatts on a peak basis. So that's a 14 pretty good amount of new resources coming online. 15

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17 shows you is we go from Figure 4 to Figure 6, and 18 the figures refer to the handy booklet. What you 19 see is that with those resource additions, we get 20 about half of our energy from offshore wind

And if we go to the next page, what it kind of

21 compared to basically 0 percent in 2022.

As of right now, there are about 10 turbines that are up about five or active. Our first project will be completed in the first quarter of 2024; first offshore wind project. But

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we go from basically zero to about half of our 2 energy from a single source, and that's offshore 3 So that's guite something in seven years. 4 wind. Nuclear state hangs in there about 5 stable the fossil units. The base load units going 6 go from 43 to 14 percent. The peaker units go from 7 4 percent to 2 percent but provide very valuable 8 stabilizing resources. Solar expands by about 50 9 percent, going from five to 7 percent. Imports go 10 down to about 15 percent. So it's a very dramatic 11 change in our sources of power over a very short 12 13 period of time. If we go to the next page. What 14 does it mean for carbon emissions? And the story 15 there too, with these types of additions, it would 16 reduce LIPA's carbon footprint about 70 percent 17 from 2010 levels. So that's a dramatic change. 18 Carbon has been declining for quite some time, but 19 this will be a dramatic reduction in carbon in a 20 very short period of time. 21 If we go to the next page. 22 So offshore wind is in the news, a very popular topic 23 and the state has a goal of 9,000 megawatts of 24 offshore wind by 2035. And we estimate that at 25

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1 least 2,400 megawatts of that will come to Long 2 Island and possibly a lot more. 3 Additionally, while the goal is 4 9,000 by 2035, there are some forecasts, including 5 those of the scoping plan of the Climate Action 6 Council that show that we could require to achieve 7 a zero-carbon grid, 18,000 megawatts or more by 8 2050. But what you see on the page is that LIPA 9 was the contract off-taker. We signed the 10 agreement for that South Fork Wind project; the 11 12 first project. But in the rest of the cases, we 13 are partnering with NYSERDA and taking a portion of their projects. 14 However, those developers are 15 bidding in and looking for the lease cost location 16 to interconnect, and often they choose LIPA's 17 service territory. So there are three projects 18 currently in development that would interconnect on 19 Long Island. And while we may not be the end user 20 of all of the power, the grid still has to 21 accommodate that electricity and has to work. 22 If we go to the next page. I had 23 mentioned South Fork, and obviously, that's a very 24 exciting project from the perspective that it's the 25

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It's the first project to be developed in 2 first. federal waters. It was the first one we signed it, 3 and it will be the first up and running. Somebody 4 has to be first, but I think what's more important 5 6 is that it's first of many, many thousands. So -but those are some beautiful and interesting 7 pictures. 8 If we go to the next page. 9 One of the key findings though is okay, it's great. 10 You're going to add a lot of offshore wind to the 11 12 arid. Does the grid work? You know, does it still 13 work? With that -- those new sources of energy, because you're adding right now, the grid is 14 optimized and built around existing power plants 15 distributing from existing locations. 16 And now you're going to have new injections of new power 17 plants from different locations. 18 And one of the things that LIPA 19 and PSEG had done was back in 2020, partnered with 20 Con Edison and looked and did some evaluation of 21 like the interconnection points. And the cost of 22 those interconnection points, and concluded that 23 there would be at least a few thousand megawatts of 24 offshore wind out of the first 9,000 that would 25

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land on Long Island.

That was validated by work done by 3 then the Public Service Commission and NYSERDA in 4 declaring a public policy transmission need, which 5 then triggered a competitive bidding process which 6 then triggered the selection of a particular 7 project. One of 19 projects in June of 2023; 8 Propel New York Project. And why is that 9 10 significant? It's shown here on Figure 14, and there's more information in the Handy booklet. 11 But why is that significant? 12 13 Well, it's really a necessary transmission upgrade to accommodate that first 3000 megawatts of 14 offshore wind. And it's a very large project. 15 It's about \$3.3 billion investment paid for by customers 16 across the state because it will ultimately 17 accommodate energy all across the state. 18 So a very important finding in 19 what we also found in the IRP is we do not need to 20 add more inner ties at least through the 2030 21 However, as we go forward into the future, 22 period. especially if the grid is, you know, 18,000 or more 23 megawatts of offshore wind, there could be a need 24 for further investments. 2.5

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1 2 If we go to the next page, though and this goes back to the last IRP, and what we 3 said was we did not move forward with a number of 4 large fossil fuel investments at the time signing 5 contracts. And the import of that is really shown 6 on figure eight. We are perfectly positioned to 7 phase down those fossil units without any stranded 8 cost to our customers. 9 10 And what you see in the figure is the dark colors are things units we have under 11 12 contract in terms of capacity. And when they flip 13 to the light color, that's what we project we may still need, but that wouldn't be under capacity 14 that we may need to renew to maintain a reliable 15 16 grid. But what that shows is we can 17 retire units between now and 2030. We will make 18 those decisions though only when the new sources of 19 energy come online. We don't have to decide today. 20 21 We can decide when the new power plants are up, but what it shows is we're perfectly positioned that as 22 new sources of generation are ready, like offshore 23 wind or solar we do not have stranded costs that we 24 25 have to pay for old units. We no longer need.

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1 If we go to the next page, figure 2 nine, it just forecasts some of the unit 3 retirements that accrue could occur between now and 4 2030. But as mentioned, the exact order and 5 amount, and timing would depend on the actual 6 interconnection and operability of the new 7 generation sources. We don't have to make the 8 decisions based on projections, we can make them 9 10 based on actuals. If we go to the next page here, 11 12 what we see here though is for some of our older 13 steam turbine units in Island Park, in North Port, and Port Jefferson. The capacity factor of those 14 units is already down quite a bit. And by capacity 15 factor, I mean, how much energy do they produce 16 relative to their maximum production if they ran 17 full out or flat out. And what you can see is that 18 these projections are from 1999, 2010, 2015, 2020 19 actuals, and then a projection of 2024. We already 20 21 see the units being used less and less, and that will continue as we add more sources of clean 22 energy. And so these units are targeted for 23 potential retirements as new sources come online. 24 25 If we go to the next page, Page 5,

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what's frequently asked is -- well, that's great. 2 You want to electrify transportation and heating. 3 That must mean growing load. Is the grid ready for 4 the growing load? And what was that even look 5 6 like? And what we see here on Figure 28 more information, handy dandy booklet, is that for the 7 near term, we still have a very good news story, 8 which is to say that the top dotted lines show the 9 projected sales for the Long Island grid. The 10 amount of energy used before the effect of our 11 energy efficiency and solar programs; rooftop solar 12 13 programs. In the end of those, you get the light blue color and what you see is basically flat load. 14 And then you can add in growing electric vehicle 15 load and space heating load. And what you see is 16 that there is a big uptick in energy usage. 17 It's largely still flat through about 2030, but there is 18 a big uptick in the back end. And you might say, 19 well, it could be more or less or different. 20 21 And of course, with any projection, it could be more or less and different 22 and likely will be, as a matter of fact. All these 23 projections, I think the one thing you can assure 24 yourself of is that they're incorrect, but 25

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hopefully they're close enough. 2 What we can say though is that based on these projections, we have 3 adequate resources for the near term. And further, 4 we have a lot of flexibility in how we retire units 5 to accommodate any needs that may occur. But we 6 fully support if folks want to go out and buy an 7 Matter of fact, you can just click over if ΕV. 8 you're sitting at home right now to Tesla or your 9 10 favorite dealer and click on an EV right now. You don't even have to wait until the end if you're 11 12 very excited. You don't have to wait until the end 13 of my presentation.

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14 If you go to the next page, you know, this shows why we're excited and interested 15 16 in helping our customers meet their energy needs from electricity. And that's because only 13 17 percent of the state's carbon emissions is from 18 electricity. The green bid approximately 60 19 percent is from heating buildings and from 20 transportation. And so if the State is going to 21 hit its goal of an 85 percent reduction in carbon 22 emissions, we need to do our part to help meet the 23 demands through clean heating heat pumps, primarily 24 in residential and EVs. And your next car will 25

probably have a battery. And it's not just because 2 I tell you, but because it's -- they're fun, 3 they're fast, they're efficient, so trust us. 4 But I do have good news on heating 5 as well because people often ask this question, and 6 that's shown on Page 25, and it's a wonderful 7 opportunity to be green. And I don't just mean 8 good for carbon, I also mean good for your wallet. 9 About 40 percent of long islander's heat with fuel 10 oil and fuel oil is a very expensive way to heat. 11 12 And what Figure 25 shows you is that it would take 13 a hypothetical customer who has oil, heat, and maybe central air conditioning and their central 14 air conditioning unit breaks. Well, they can, 15 instead of installing a central air conditioning 16 unit, they can install a heat pump, which can do 17 both air conditioning and heat. 18 And yes, the unit would cost, you 19 know, twice as much, but they would get a federal 20 21 rebate, they would get a LIPA rebate, and the net cost would be about a couple thousand dollars more 22 than just going to the central air conditioning 23 unit. However, their home heat bill would be more 24 than cut in half, and the breakeven period would be 25

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less than a year, their carbon footprint would be 2 about 50 percent smaller, their heat bill would be 3 50 percent smaller too. So it's a wonderful 4 opportunity to be green and green. Green for your 5 6 wallet as well. And the same is new for new 7 construction shown on Page 26. It's cheaper to 8 build it all-electric, and that's wonderful 9 opportunity. 10 Another thing that we're showing 11 here on Page 26 is, let's say you want to encourage 12 13 beneficial electrification, what are some of the things you could do if you're the electric company? 14 One of the things you could do is encourage time of 15 day rates, because where is most of the usage for 16 if you heat your home with electricity with a heat 17 The sales are overwhelmingly overnight in pump? 18 the winter, and we can give you a break for that. 19 A much lower electric rate overnight in the winter. 20 21 We can give you a lower electric rate for your EV, and we can give you a lower 22 electric rate if you say, put on solar with the 23 storage. So these are all things that by 24 encouraging you know, basically breaking the day 25

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into two prices we can help our customers save 2 money while making beneficial choices and help make 3 them more economical. So that's one of the reasons 4 we're pursuing this transition to time-of-day 5 6 rates. It's very consistent with where the state of New York is headed. 7 Another significant item, page 27, 8 people say, is the group ready for all this new 9 10 electric heat load? And one thing that's really fascinating is this page both shows the effects of 11 12 time of day rates, which by 2030 will save us about 13 270 megawatts of peak, which is about a power plant, a small power plant. But more significantly 14 we have built the electric grid and built the 15 electric grid to meet peak demand. 16 And that occurs during the summer, in the afternoon when everybody 17 is running their air conditioning. 18 However, during the winter when 19 they're all heating with natural gas and fuel oil, 20 21 we have a lot of excess capacity on the electric And what this shows is that we can, a lot of arid. 22 customers to heat pumps and still have a summer 23 peaking utility. And that's that green line 24

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compared to the blue line. Even out through 2040,

we expect to still be a summer peaking utility, 2 which is to say that we had to build the grid to 3 meet the summer peak, and we're trying to use the 4 grid in the winter as well. And so that means that 5 that's a very interesting opportunity to just use 6 better the assets that we have. 7 And certainly, there will be some 8 investments we'll also need to make, and 9 transformers and other things that won't all be 10 perfect. But from a high level and a big level, it 11 shows that we have a lot of excess capacity to use 12 13 the grid more efficiently than we currently do by both heating and cooling with electric. Almost 14 So I've been talking a while and pretty soon 15 done. 16 it would be your turn. One other topic is just that we're 17 moving toward a more bi-directional grid. And what 18 that means is, as people put solar and storage or 19

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get an EV we're moving to a grid that currently is optimized around going one way from the power plant to your home. But increasingly we'll go two ways. And one of the things that we're very focused on is making sure that we have the technology and the hosting capacity, meaning the ability and the

1 substations to accommodate that bi-directional 2 grid. 3 And we're certainly also not only 4 looking to make these upgrades but to use our 5 status as a public power entity to seek federal 6 grants to help us defer some of the costs to make 7 the upgrades. So this is certainly an also an 8 important finding from the IRP that there are 9 10 things that we need to do to enable the future, and that to take some long lead time. 11 12 Almost, I think the next to last 13 point, only two points. Bear with me. So one additional point that I think is a long-term point, 14 it falls beyond this IRP, but an important one. 15 And that is that we have the technology and the 16 wherewithal to make a huge dent in our -- sorry, a 17 huge portion of this transition we talked about 18 moving to getting by 2030 or so, about half of our 19 power from offshore wind, about a 70 percent 20 reduction in carbon emissions. 21 These are really big numbers, but we need to get to a zero-carbon 22 electric grid. And zero carbon is more complicated 23 than a 70 percent reduction in carbon. 24 25 That last 30 percent does require

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some new technology. And what we're showing here and describe further in the book is something that is, in eloquently named dispatchable emission-free resources. We had engineers come up with the name rather than these Madison Avenue marketing people. So it's a very, very accurate title; dispatchable emission-free resources.

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And what do we mean by that? 9 We mean that we need right now, one of the advantages 10 of a fossil fuel power plant is you turn it on and 11 12 it can produce whatever power you need. And as we 13 get more and more of our power from solar and wind and other renewable sources, well the environment 14 determines how much power is produced. 15 And yet what we find is that while the environment may 16 determine how much is produced, our customers 17 prefer that they determine how much is consumed. 18 And so what that means is that you need to have 19 something to wrap around that intermittency. 20 And currently, we do that with natural gas and peaking 21 units. 22 But to get to a truly zero carbon 23

24 grid we need to develop and deploy some new 25 technology; these dispatchable emission-free

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And there's lots of different proposals 2 resources. of what that might be out there. And there's a lot 3 of things in development. So some people talk 4 about hydrogen, and others talk about new battery 5 6 chemistries, and some talk about carbon capture. What we point out is that we need to -- in order to 7 get to a zero-carbon grid, we need some of that. 8 But we don't have to decide on it today. 9

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We have enough wherewithal with 10 the technology we have and guite a bit of runroom 11 before we have to make a decision or commitment. 12 13 And the reality is, we redo these IRPs every five years or so, and we'll have much better information 14 on the right technologies and what's in development 15 and what's working five years from now than we have 16 today. So these are decisions that we know we need 17 to make, but we don't need to make them right now. 18 We can make them in the next IRP. 19

20 One final point. I know you're 21 tired of listening to me and you're very excited by 22 that, so. But, you know, another thing that is --23 something that we're frequently asked, especially 24 what about the cost? You know, it's a great time. 25 You're going to add 4,500 megawatts of new stuff to

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2 the grid and you're going to reduce the carbon, 70 3 percent, all that other stuff.

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But what does it mean for the 4 And what we show here, the blue stuff is bill? 5 power supply costs projected for the traditional 6 fossil capacity fossil generating plants, 7 traditional sources of power, and the green stuff 8 is the transmission and the new sources of 9 generation. And what you see is the green stuff 10 costs more, but the blue stuff goes away. And the 11 12 net top line is a power supply charge which is 13 about half of customer bills. That is going up roughly 2 percent a year in real dollars. And so 14 It's not going down, but 15 that's not great news. it's not bad news either for what is a, you know, 16 billions of dollars of investment in electric grid. 17 I think that that's actually pretty good news all 18 things considered, but we all know that we would 19 prefer those that go down right on and up. 20 21 But the fact that this energy transition, at least from now through 2030 where we 22 have the most information, we can do it in a way 23 that is affordable. I think it's very good news. 24 With all the normal caveats that come with the blue 25

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stuff being including commodity prices, for 2 example, and, you know, fuel oil and natural gas or 3 world commodities, that can change, but there's a 4 reasonable projection. 5 6 So we get to the exciting part, which is your comments because this whole crew here 7 already knew what I was going to say. And so we're 8 here to explain the 2023 IRP results more 9 information in our handy summary guide. We're here 10 to hear your comments on it. We have these public 11 comment sessions on the next page, including one 12 13 tomorrow, which will now be virtual in Suffolk County. 14 We had planned to do it in person, 15 but we're expecting some inclement weather. 16 And so we will move that to a virtual hearing so that no 17 one has to drive in the snow. And then we'll have 18 an in-person in the Rockaways on February 15th. 19 And with that, we're now ready to 20 actually listen rather than talk. And so I'm going 21 to turn it over to our trustee team here to help 22 manage the people who are here to participate in 23 person and on virtually. 24 25 MR. LOCASCIO: Great. Thank you,

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2 Tom.

So we are in person and virtual 3 So what I would do at this point is ask 4 tonight. anyone that is on Zoom, if you do intend to make 5 6 comments to raise your hand on Zoom. This way we have a number of people that I know have expressed 7 interest in participating to observe. We want to 8 make sure we get all public comments and we are 9 going to start with those that are in the room. 10 So if you're in the room and you 11 12 do have a desire to comment, I would ask you to 13 come up to the podium now to speak. Fred Harrison? 14 15 MR. HARRISON: Yeah. Thank you. I'm a retired teacher, 16 My name is Fred Harrison. resident of Merrick. I volunteered with Food and 17 Water Watch and a host of other organizations on 18 Long Island. 19 I want to thank Tom very much for 20 21 your good summary. I also appreciated the videos that we now have out that we got to see you doing 22 the good examples of this. I also want to say that 23 there are going to be other people that I know 24 25 coming, not today, but at other points in

2 submitting testimony because I've spoken to them 3 about it. So there'll be more than me addressing 4 this issue.

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So let me begin. I'm going to 5 give you a quick summary, and then I'm going to 6 leave with you a longer piece that I have with more 7 detail about what I have to say. So let me begin. 8 LIPA's Integrated Resource Plan is 9 10 filled with lots of good information. It was a very good read, which is a surprising thing to say. 11 12 I compliment the authors on the work. And as true 13 of many good reports, it informs as well as raises lots of good questions about the choices ahead. 14 How the Long Island Power Authority implements the 15 priorities identified in the IRP will be of great 16 consequence to ratepayers. Many experts, as well 17 as leaders of public power utilities, have 18 concluded that a key to a lower-cost renewable 19 energy future lies in the Inflation Reduction Act 20 or IRA. 21 In fact, the IRA's incentives were 22 explicitly designed to reduce the cost of rapidly 23

24 transitioning away from fossil fuels. IRA funding

25 is available for energy storage, transmission,

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2 distributed energy resources, and renewable energy 3 infrastructure investments; areas which the IRP has 4 identified as priorities.

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Unfortunately, LIPA's IRP says 5 nothing about how to meet the plan's goals in the 6 most cost-effective manner possible. In 2021, at 7 the first opportunity for public comment on the 8 IRP, I requested the study look at every nonprofit 9 option for meeting CLCPA goals. I thought it 10 appropriate that an IRP address an issue that 11 12 ratepayers contend with the cost of electricity. 13 LIPA rates are amongst the highest in the country. In fact, they're the fourth highest for similarly 14 sized electricity, and they're the top in rates for 15 public power systems, even aside Alaska, Hawaii, 16 and of several small utilities creating adverse 17 economic impact throughout Long Island's economy. 18 A year later in August 2022, the 19 Inflation Reduction Act passed, allowing public 20 power utilities to benefit from the direct pay tax 21 Subsequently, the Fitch presentation to 22 credits. the Board noted that the IRA opened new 23 opportunities for public power systems to lower 24 25 cost to ratepayers through direct ownership of

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2 renewable power projects.

At the February 2023 Board 3 meeting, I urged LIPA to include the IRA in its IRP 4 The recommendation was not acted upon. planning. 5 6 In Minnesota, utilities are required to maximize the benefits of the federal IRA in their IRPs, 7 Michigan's largest utility, DTE Energy in its 8 recent IRP, projected 500 million in savings after 9 10 incorporating IRA tax benefits. Utilities around the country are 11 12 already figuring out how to leverage the IRA to 13 benefit ratepayers. Why not LIPA? There are several initiatives included in LIPA's IRP which 14 meet the criteria set out by the IRA. These offer 15 the possibility of rate-payer savings and should be 16 vigorously pursued. 17 The first two initiatives that --18 I have to blow my nose, I'm sorry, I have a cold. 19 Apology, followers. The first two initiatives 20 21 identified by the IRP had to do with power supply. That 50 percent of customer bills, which has 22 primarily been responsible for recent rate 23 increases. There are great opportunities here for 24 25 LIPA and its ratepayers.

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1 New York State has long been the 2 leader in supplying cheap non-profit electricity to 3 its citizens and businesses. In 1961, the New York 4 Power Authority completed the Niagara Project, the 5 largest hydropower facility in the Western 6 Hemisphere at that time. It's still is New York's 7 biggest energy producer supplying no low-cost 8 fossil fuel electricity to ratepayers. That was 60 9 years ago; the 20th century. We need a Niagara 10 Project for the 21st century. We need a 11 12 feasibility study of non-profit publicly owned 13 21st-century renewable energy resources, including offshore wind and utility-scale solar. With LIPA 14 large customer base, LIPA's project management 15 skills, and NYSERDA's expertise, ratepayers could 16 see enormous benefits. 17 The idea of government ownership 18 of the electrical power supply in New York goes 19 back to 1907 when Republican New York Governor, 20 Charles Hughes, he later became chief of the United 21 States, declared that the state's undeveloped water 22 power "should be preserved and held for the benefit 23 of the people and should not be surrendered to 24 private interests." 25

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In 1931, then-Democratic Governor 2 Franklin Roosevelt signed the Power Authority Act, 3 designed to "give back to the people the water 4 power, which is theirs." This led to the Niagara 5 Project. The opening of which was celebrated by 6 President Kennedy and former presidents Hoover, 7 Truman and Eisenhower. 8 Today's ratepayers have similar 9 10 concerns about huge corporations taking control of the wind and sun for their own gain. Offshore wind 11 12 corporations are determined to profit handsomely at 13 rate payer's expense. If they can't, they walk away or threaten to walk away from their 14 In rejecting the recent request for 15 commitments. larger offshore wind subsidies, New York State 16 Public Service Commission Chair, Rory Christian 17 declared "We signaled that ratepayer funds are not 18 an unlimited piggy bank for anyone's disposal." 19 Commissioner John Howard concurred noting that the 20 threat of increased costs as the state shifts to 21 renewable energy. Howard called for moving forward 22 with "eyes wide open and pokapop (sic) shut." 23 24 Not only should the feasibility of publicly-owned offshore wind be examined, but the 25

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1 possibility of utility-scale publicly-owned solar 2 should be studied as well. Other public utilities 3 are already moving in that direction. 4 East Bay Community Energy in 5 California now called AVA, a publicly owned 6 Community Choice Energy Company serving 1.7 million 7 customers is exploring using the new tax incentive 8 to participate in mid-size solar projects at 9 commercial and industrial sites. 10 The Sacramento Municipal Utility 11 12 District, SMUD, is taking advantage of the IRA for 13 its Country Acres project plan for the 344 megawatts of solar and 172 megawatts of battery 14 15 storage. As the IRP notes, Long Island is 16 "one of the most attractive areas of New York state 17 to install short solar." The Long Island Solar 18 Roadmap tells us where those opportunities are. 19 Ten years ago, LIPA was treated as a national 20 21 leader in encouraging distributed solar. Now with access to lower-cost financing and the direct pay 22 benefits offered by the IRA, LIPA should once again 23 be the innovative. 24 25 LIPA reports "significant untapped

2 potential for root pass solar with typical customer 3 seeing payback of 7.6 years." This potential is 4 important for two reasons.

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Firstly, a LIPA's sponsored and 5 finance solar program could save ratepayers money. 6 Additionally, an accelerated solar program would 7 affect post-2030 energy planning. The IRP points 8 out that significant new power supply will be 9 needed after 2030 to achieve a zero-carbon electric 10 grid by 2040. Would the more rapid expansion of 11 12 solar and storage provide us with the power we 13 need? Would rooftop solar and storage be cheaper than offshore wind purchase power agreements? What 14 would be the optimum combination for ratepayers? 15 Any increase in reliables -- excuse me, any 16 increase in reliance of renewables would require 17 more energy storage. 18

Again, IRA direct pay benefits would apply to these investments. The IRP states on Page 48 that "the economics of adding more storage beyond the assumed amount of 750 megawatts are not favorable at present." Is this still an accurate assessment in light of the IRA?

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From reading the report, there was

no indication that the IRA was taken into consideration when arriving in its conclusion. Initiative six of the IRP is not so much about power supply but would have a very important rule in reducing ratepayer costs and greenhouse gas emissions. Initiative six speaks to beneficial electrification.

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A key part of beneficial 9 10 electrification is the transition to heat pumps as Mr. Falcone spoke about. The report shows that 11 between 400 and 500,000 Long Island households 12 13 could save money with cold air heat pumps; a trifecta for long islanders. Heat pumps smooth out 14 LIPA seasonal demand, reduce costs for ratepayers, 15 16 and cut greenhouse gas emissions, and IRA benefits 17 apply.

What can LIPA do? 18 LIPA can get directly involved in heat pump installation and 19 finance. Currently, most LIPA ratepayers are 20 21 excluded from LIPA-sponsored programs designed to encourage the transition to heat pumps because 22 their household income is too high. 23 24 To qualify for low and moderate-income, LMI benefits, family income must 25

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be below 80 percent immediate income. 2 Under this formula, most of the households in Levittown, 3 Seaford, or Baldwin, that is my area of Nassau 4 County, do not qualify for LIPA assistance in 5 6 shifting to renewable heat and or power. LIPA should be exploring the feasibility of directly 7 helping these ratepayers, sharing the savings made 8 possible by wives' energy investments. 9

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10 For example, a pilot project in South Carolina called 'Help My House', finances 11 energy-efficient upgrades that could participants 12 13 average electricity use by more than a third. Participants did not pay anything upfront for their 14 home improvements. Instead, they repay their 15 utility over time as part of their electricity 16 bill. And because their energy use was 17 significantly down, participants' total electric 18 bills typically went down even when including loan 19 payments. 20 21 More than a dozen public power utilities in eight states offer on-bill financing 22 programs to their customers so that these kinds of 23

24 programs can be implemented. Even LIPA programs 25 designed to assist low and moderate-income

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1 households that face financial shortfalls according 2 to PSEG's recent energy efficiency plan, more needs 3 to be done. 4 For example, in New York City, 5 NYPA, NYSERDA, and the New York City Housing 6 Authority as part of the Clean Heat Challenge are 7 combining forces and resources to purchase 30,000 8 window heat pump units for NYCHA residents. 9 10 Certainly, on Long Island, public housing -- and we have public housing would benefit 11 12 from a similar program. There are many other 13 initiatives worthy of ambulation, and I'm not going to detail them. Some of them are in the longer 14 piece I will give you. Utilities around the 15 country, rightly post how they're using the new IRA 16 and the other benefits of public power to bring 17 affordable renewable energy to ratepayers. LIPA 18 needs to join them. Thank you. 19 MR. LOCASCIO: Thank you, Mr. 20 21 Harrison. I believe we are joined on Zoom by our board chair, Tracy Edwards. 22 So Gasper, if you would at this 23 point, bring Chair Edwards into the meeting? 24 25 MR. GASPER: Almost done.

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2	MR. LOCASCIO: Okay.
3	MS. EDWARDS: Good evening.
4	MR. LOCASCIO: Hi, Chair Edwards.
5	How are you?
6	MS. EDWARDS: Good. Good evening.
7	Thank you very much. I just wanted to thank
8	everyone for all of your hard work and thank you,
9	Mr. Harrison, for your comments. I'm here just
10	like everyone else is to listen and learn and I'll
11	be taking very good notes. So thank you very much
12	for allowing me to say a few words, and Tom, thank
13	you and the entire team seated for all of the hard
14	work with us. Thank you.
15	MR. LOCASCIO: Thank you, Chair
16	Edwards. Okay.
17	Can we have anyone else in the
18	room that would like to speak?
19	Mr. Lewis.
20	MR. LEWIS: Good afternoon. My
21	name is Neal Lewis. I'm executive director over at
22	the Sustainability Institute of Molloy University.
23	And very pleased to be able to participate in
24	today's hearing. I want to commend LIPA team and
25	the PSEG team with producing this Integrated

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2 Resource Plan.

As I'm looking at the year, I'm 3 wondering how many times since we've done this. Ι 4 do recall plans that go back quite a few years, and 5 it's -- frankly, it's quite exciting to see what a 6 transformation of our planning compared to earlier 7 versions going back 15, 20 years ago. The 8 projection for the demand -- increasing demand from 9 10 long islanders for electricity was much higher back I have to try and see if I have old copies 11 there. 12 of the old plans, but the shots really have 13 dramatically tipped down. I think described it as 14 essentially a flat growth before you add into it 15 the potential EV and electrification that's the 16 beneficial electrification. But it seems like the 17 way you're at right now is such a dramatic 18 difference just as a result of energy efficiency, 19 homeowner solar, and such. So I wanted to draw 20 21 attention to just how different the plan is, how the other big differences are all the points that 22 Tom emphasized about transitioning to renewables at 23 really incredible rate. 24

I wanted to ask, in terms of

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questions, I don't have many questions, but I just thought in terms of observation and just a few questions.

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One is, you know, some -- the --5 while it's exciting and really thrilling to see the 6 growth in solar that's projected for the next few 7 years, I do want to make sure, or just try and 8 raise the concern of making sure that we're not 9 10 losing a significant amount of solar in that equation. So I noticed -- I wanted to ask the 11 questions for the record of -- if you compare the 12 13 chart for the handout, it looks like the chart was on Page 30 and 33 that compared where we are 14 currently in terms of our breakdown, how much is 15 from solar and other sources compared to where we 16 plan to be by 2030. 17 And if I'm -- I just, you know, 18

19 that's an area I would just ask the question of if 20 the growth and solar is from 5 percent to 7 21 percent, you know, should that be a greater part of 22 mix? Should it be a more of a commitment to solar 23 as part of the solution so that there's a greater 24 emphasis on the energy being distributed and some 25 of the benefits that you get in an integrated plan

1 where you include a significant portion that's 2 integrated? 3 There's also an economic basis for 4 the individual businesses. You know, I drive 5 around, I see businesses as I happen to sit on the 6 Nassau County Planning Commission where we see 7 plans for projects that are under the review 8 And I'm always just struck by the fact 9 process. 10 that almost none of the new commercial building construction on Long Island includes solar on. ТΟ 11 12 me, it seems like where we're at in this stage of 13 the game, to build a building that is going to be around for at least 30, 40, maybe 50, 70 years and 14 do not plan from day one to design the roof in such 15 a way so that you can sort of move the mechanicals 16 around and maximize the opportunity for solar to 17 not plan into it, energy management systems, 18 battery storage, all these things. It's just 19 amazing to me that we're still building buildings 20 21 that could have been built the same way largely 10, And particularly the most striking 22 20 years ago. about that is just not putting solar on the 23 buildings. 24 Now, a lot of that it just has to 25

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do with the people. The fact that the builder is 2 not going to pay the energy bill once the building 3 is up and running. So they're not looking to 4 include features that are going to dramatically 5 6 reduce their bills going to that point. Tom made in his presentation, and 7 when we're talking about green, are we talking 8 about the environmental benefits? Yes. 9 But also, green could be a significant benefit economically 10 for the particular individuals, whether its 11 12 homeowners is the point he was making right now. Ι 13 would say yes, the same argument could be made in the commercial sector if there was a greater 14 commitment to solar. 15 16 So there is a section in here, I didn't read it fully, where you talked about some 17 of the efforts to reduce the grid costs for solar. 18 And I know that if -- I believe I understood from a 19 previous meeting of the Board where there were 20 21 efforts to get grants that may not have been successful from federal government, so that there'd 22 be other sources of income, which are all for, to 23 help improve the grid so that we can manage a 24 25 greater commitment to distributed energy.

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1 2 So that's an area I just perhaps would prefer additional comments. And you know, 3 I'll end on a rates question, but I also want to 4 say on renewables and efficiency, I think there's 5 some great opportunity with converting to heat 6 pumps and a very positive program that PSEG are 7 implementing. But I do recognize that you know, I 8 agree it could be -- it could be stronger. 9 There 10 is some new not-for-profit and grant-based efforts. There's a clean energy hub that's now getting 11 12 underway on Long Island, and they're going to be --13 we're in the process of I'm participating and or no cooperative extensions taking the lead on that. 14 And we'll always be participating along with the 15 coalition of different groups. 16 And one of the emphasis of that 17 effort is to have people that can go out into the 18 community and talk to homeowners about converting 19 and taking advantage of the finances that are 20 21 available for heating pumps, which can be you know, quite advantageous if you qualify. And I do 22 acknowledge the point that was made in a previous 23 speaker about how the qualification levels are 24 quite low for a low amount, but nonetheless, at 25

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1 least let's work on, you know, really getting the 2 word out about the program it exists today because 3 it is a great program. 4 But unfortunately, if you follow 5 social media and whatnot, the impressions about 6 heat pumps are kind of outdated. People still 7 think that their value on Long Island is very 8 limited, and they haven't really gotten the message 9 10 that it's a great way to be green both ways to save money and save on the environment. 11 So I just wanted to end on the 12 13 question about how we're doing with rates on Long 14 Island. You know as environmentalists, this doesn't mean we don't care about rates. 15 Rates are major concern to Long Islanders. I did -- by the 16 way, I did serve on a LIPA Board back then. 17 I finished in 2012, and I know that from our 18 meetings, you know, that was sort of like the big 19 issue, of course. But while we've heard about how 20 21 bad our rates are, it does seem like this plan is identifying some improvement by more or less you 22 know, modulating the increases so that they're 23 smaller and sort of the rest of the area is kind of 24 25 caught up to us.

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1 So it seems to me that LIPA is not 2 sticking out as being so much higher than others in 3 the area. I think that's what's this report seems 4 to also be confirming. So I just want to draw 5 attention to that too. 6 So thank you, all. 7 I do appreciate this effort when it comes to energy 8 issues. So much of the work is all about planning 9 and taking a long view, and then realizing you're 10 going to come back a couple years later and 11 12 reanalyze it all. So it is a process. We need to 13 stay engaged, and I appreciate the commitment that our public utility, LIPA is our public utility here 14 on Long Island, that our public utility has to its 15 transparency and plan. So thank you, all. 16 MR. LOCASCIO: Thank you, Neal. 17 At this time, I would ask if we 18 have anyone on Zoom that has their hand raised to 19 provide comments. No one has their hand raised. 20 21 Okay. So right now, we have nobody on Zoom with their hand raised to provide 22 If you are on Zoom and you do want to 23 comments. provide comments, we would ask that you raise your 24 hand now, so we know that you have an interest in 25

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coming in. We'll give it a couple moments. 2 MR. FALCONE: And while we're here 3 you know, since we have the time I didn't want to 4 delay other people who may need to go, but I'd be 5 happy to address some of Fred and Neal's questions 6 now, and we'll do so more fully as we present the 7 material to the Board. We're really here to take 8 comment tonight, not to listen, not to necessarily 9 speak, but since we have the moment, you know, I 10 think, Fred, you've made the point in the past 11 12 about -- and first of all, thank you for noting 13 that it's a readable document. We spent a lot of time trying to 14 make it readable and understandable and it isn't 15 always easy. You know, the number of times you 16 have to redo the chart until you find the right 17 chart is not easy. But thank you to the team who 18 devoted that time to it. All the folks here on the 19 panel that tried to make this as readable a 20 21 document understandable as possible. 22 You've mentioned the past IRA And, you know, the federal government 23 incentives. has passed two very large commitments to clean 24 energy over the course of the last couple of years. 25

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1 One was the Infrastructure and Jobs Act, and the 2 other one was the Inflation Reduction Act. 3 The Infrastructure and Jobs Act 4 has a number of sources of grant funding, and the 5 Inflation Reduction Act has not only some sources 6 of grant funding, but you know, principally tax 7 And the federal government pays for about credits. 8 a third of renewable energy projects through tax 9 credits. 10 LIPA is trying to maximize both. 11 12 On the Inflation and Jobs Act, those are 13 competitive grants we're out there beating the bush and applying for the right grants. Neal mentioned 14 one of them. Dealing with hosting capacity and 15 they're mentioned in my remarks and we've got other 16 grant applications going in, and we have 17 historically done very well on federal grants, 18 mostly related to strong partnering or -- patent 19 about \$2 billion over the last decade. 20 21 So we've historically put a lot of emphasis on that because that's opportunities to 22 upgrade the grid without charging our customers and 23 trying to minimize rates. And it's one of the 24 25 advantages of being a public power entity.

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1 With regard to the IRA grants in 2 particular, LIPA even played a pretty significant 3 role in making those available for public power. 4 Historically, the only way for a public entity to 5 access those grants was to contract with a private 6 entity. Since public entities don't pay taxes and 7 a long-standing, we sought some other mechanism to 8 allow public or private ownership and LIPA along 9 with the coalition of other people, but, you know, 10 some of our folks here play a leadership role in 11 that coalition, were able to get favorable 12 13 treatment when those tax credits were renewed. You know, unfortunately, not all 14 the rules are written yet, and so we're still very 15 active in commenting on very mundane things like 16 the domestic content rule and other things as 17 recently as a few weeks ago. So this is a, you 18 know, the rules are not yet done. That also 19 includes grants for nuclear production, which we 20 own part of a nuclear power plant, making sure that 21 that's another source of grants to reduce costs. 22 You know when I think about those 23 opportunities, and we do cover it a little bit in 24 25 the book, we don't go into great detail, but we do

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kind of lay out our thinking a little bit on Page 3 31. And when you look at overwhelmingly the energy 4 that will be added to the Long Island grid in the 5 near term, it is offshore wind. And that is a very 6 specialized area that you know, it is -- there's 20 7 gigawatts of offshore wind in Europe.

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There's one project in the United 8 States that's built-in state waters and one in 9 10 federal waters. And we're involved in one of those, but it was a very specialized area where 11 12 experience does count. I saw the CEO, of one of 13 the offshore wind developers recently and I said to him, you know, I thought I was a not-for-profit. Ι 14 was looking at your financial statements, 15 apparently, you're not-for-profit too! But he 16 didn't get the joke. But if you've been looking at 17 their earnings, you know it's an area that 18 experience does count and matter and technological 19 development. And so I think that that's something 20 21 very, very different from say doing, you know, developing say solar, where the technology is not 22 that different. 23 2.4 But offshore wind, you better know

25 what you're doing. Maybe there are opportunities

to partner, maybe there are other opportunities, 2 but that's overwhelmingly where that comes in. So 3 our philosophy on that has been taking a small 4 share of larger projects and economies of scale 5 6 matter. And, you know, even for us, the 7 amount of offshore we need to buy for Long Island 8 is a fraction of the amount of offshore wind New 9 York State is going to buy and taking a small share 10 of someone else's big project because of the 11 12 economies of scale overwhelms the financing cost 13 and the risk transfer. But there are opportunities, we're looking at them, we're using 14 them. 15 16 MR. HARRISON: Yeah. The study -because I heard you say this, I don't mean to 17 interrupt you. 18 MR. FALCONE: Sure, go ahead. 19 MR. HARRISON: You know, I think a 20 feasibility study on this question is because you 21 may be correct, you may be incorrect. 22 It may be that it's possible for NYPA and LIPA and NYSEDRA to 23 work together and contract, have it built by the 24 25 same contractors that are doing it now, and then

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1 take ownership, and reduce the ongoing costs that 2 are going to be associated with private ownership 3 10, 15, 20 years out. 4 MR. FALCONE: True. 5 6 MR. HARRISON: We're going to be paying. So those kinds of questions, I think, need 7 to be studied. I don't have an answer, and I'm not 8 convinced anybody has an answer until they can show 9 us that they actually looked at what the potential 10 are, the costs, so on. 11 12 MR. FALCONE: So, Fred, I'm happy 13 to answer. The question is has it been studied? And why couldn't you contract with these parties? 14 And then they turn the project over to you and own 15 And we have studied that. And you know, if 16 it. you let me speak. 17 The couple of things, I mean, 18 background is I was an investment banker, so I 19 worked on billions and billions of dollars of 20 project finance. And one of the things that we did 21 in battery storage, for example, here on Long 22 Island, is rather than just go out for bid for 23 battery storage, we said, well, geez, what we 24 really want the developers to do is to develop the 25

2 projects, and then we could take ownership of -3 ownership of them with our lower cost of capital.
4 And that's where we bid the projects. And people
5 said to us at the time that there wouldn't really
6 be a market for that.

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But we have a couple thousand 7 megawatts of bids and that's a viable alternative 8 to reduce cost. And so that's actually something we 9 did and have looked at and are doing. I think the 10 different factor for offshore wind compared to 11 12 storage or solar where many, many, many people can 13 provide it is an offshore wind. There's a set number of federal leases. And so it is not a open 14 competition in quite the same way. At some price, 15 16 you can buy anything. I mean, so that I agree, but you certainly want someone else to take the 17 construction risk. 18

We're kind of in early days you know, on and offshore wind and things may develop over time. So maybe we'll look at it when it's a mature industry in the United States 10 years from now, different than we look at it today. But, you know, I think if you were looking at it today, we could write up a white paper and everything else,

but I think all you need to do is look at 2 (unintelligible) or every source or a variety of 3 other folks, stock price. And that's really all 4 you need to know about offshore wind development in 5 6 the United States and its state of maturity right And that's the challenge. I mean, that's 7 now. going to be the key factor that any analysis of 8 white paper is going to look at. Even the folks 9 who know what they're doing are struggling. And 10 you'd have to come up that curve. 11 12 So I'm sure they'd be happy with 13 some kind of risk share agreement to do that, but that's going to be your challenge. But there are 14 many opportunities to use IRA grants, and we are 15 certainly looking at them. 16 To your point about heat pumps you 17 know, we're big enthusiasts and we have a number of 18 things that we're doing right now as we -- as we 19 speak to study what we can do to help customers buy 20 21 heat pumps and that may include financing or leasing arrangements. We're looking at it. 22 Ιt certainly includes easing the point of sale because 23 these things are sold not bought. Nobody wakes up 24 and says, I want to buy a heat pump today. It's my 25

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air conditioning unit broke. And I call Bob and 2 Bob comes out and he's going to put in an air 3 conditioning unit and does Bob tell me, oh, we got 4 to put in a heat bump and what does it cost to 5 6 finance it and everything else? So we have a number of things that 7 we're working on currently. The IRP identifies the 8 opportunity and the need; it doesn't answer every 9 question. So there's more to come including in our 10 2024 performance metrics. 11 12 Neal, you had mentioned a couple 13 of questions about load and flat load, and certainly, if you went back historically, load was 14 growing or projected to grow faster, and there are 15 a variety of reasons for that. 16 You know, I think partially it's 17 the way electric companies forecast load as well, 18 which is, you know, it's the regression models and 19 regression models look at history and trend and 20 21 extend. And if you went back to the, you know, late 90s, there was faster load growth. People 22 were buying TVs, you know, and other equipment, 23 energy efficiency wasn't as rapid. These 24 inflection points are kept forecast, but what we 25

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1 have seen is -- and the same would be true for EVs, 2 but we have a projection for EVs. Let's be honest, 3 you know, it's a projection. 4 We need to monitor it and update 5 it and see what customers are doing relative to 6 what we expect them to do, not just in the next 7 IRP, but between IRPs because our customers, they 8 have a way of doing things, you know the way they 9 want to do them, rather than the way we want to 10 project them. And so catching those inflation 11 12 points is very important. 13 So that has been a notable change over the history, but we do have a tremendous 14 amount of clean energy that are -- that is coming 15 16 in. You asked a question about solar 17 and will grow by about 50 percent. That's 18 consistent with the State's objectives for 19 distributed solar. The economics are very good. 20 You know, we don't control all the levers, 21 especially on rooftop solar. Some of it is 22 customer choice, some of it is how active 23 developers are, but the economics are there. 24 I 25 mean, the economics are there, the program is

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there, and we have about 40 percent of the roof --2 state's rooftop solar market, so we're only about 3 12 percent of the state's load. 4 So we're doing pretty well in that 5 area, but we don't control all the factors, but 6 it's something we think about and look at. 7 And it's much like heat pumps. But I'd say that, you 8 know, the economics on heat pumps are overwhelming. 9 We're not seeing the customer adoption. So that's 10 the one difference. 11 You had mentioned the efforts to 12 13 reduce the cost of solar and storage, and some of that is those federal grants, like IIJA. You 14 mentioned the Clean Energy Hub, but you know, LIPA 15 is proud to actually fund the Clean Energy Hub here 16 on Long Island. That's a grant that LIPA makes to 17 NYSEDRA and partners with NYSERDA. And so we're 18 very enthusiastic about that opportunity. 19 And then finally, you had asked a 20 question about rates on Long Island. And it is 21 pretty much what you surmise, which is that our 22 rates are competitive with our region and we work 23 very hard with our board to make sure that rates 24 25 are inflationary while we're still making a

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commitment to great, reliable, good customer 2 satisfaction in hitting the state's clean energy 3 goals. So you can always do something for less. 4 But we don't want to compromise, reliability or 5 resiliency. We need to have a reliable grid. We 6 need to have a clean grid. We need to have great 7 customer satisfaction, and we need to do it at 8 rates that are very competitive for our region of 9 the country. 10 And so I just figured I would use 11 the time we have to answer some of those questions. 12 13 I don't know if anyone else has raised their hand. 14 MR. LOCASCIO: There's no one with 15 a hand raised. Okay. We'll give one final chance 16 for folks on Zoom. We have nobody with their hand 17 raised. Going once, going twice? 18 (No response.) 19 MR. LOCASCIO: Okay. So that, my 20 friends concludes our first public comment hearing 21 on LIPA's Integrated Resource plan. I want to 22 thank everyone who came out in person and those 23 that are attending via Zoom for taking the time to 24 25 talk about this very important topic.

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7	I, MARC RUSSO, a Shorthand
8	(Stenotype) Reporter and Notary Public within and
9	for the State of New York, do hereby certify that
10	the foregoing pages 1 through 60, taken at the time
11	and place aforesaid, is a true and correct
12	transcription of my shorthand notes.
13	IN WITNESS WHEREOF, I have
14 15	hereunto set my name this 21st day of February, Mau Ausso
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17	MARC RUSSO
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1 LONG ISLAND POWER AUTHORITY 2 -----X INTEGRATED RESOURCE PLAN (IRP) PUBLIC HEARING VIA ZOOM February 13, 2024 10:00 a.m. -----X 11 BEFORE: THOMAS LOCASCIO, LIPA Director of External Affairs MGR Reporting, Inc.

1	APPEARANCES:	
2	For LIPA:	
3	Thomas Locascio,	
4	Director of External Affairs	
5	Gary Stephenson,	
6	Senior Vice President of Power Suppl	У
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1 2-13-24 - LIPA IRP Public Hearing 2 MR. LOCASCIO: Good morning, 3 everyone, and welcome to the second public session on LIPA's Integrated Resource Plan, 4 snow storm edition. 5 I'm Tom Locascio, LIPA's Director 6 7 of External Affairs, and on behalf of the Long Island Power Authority we want to extend a 8 9 warm welcome to all of you as we gather for a 10 discussion on our path forward in energy 11 management and sustainability. 12 Your presence here underscores the 13 importance of community engagement in shaping 14 the future of energy on Long Island and in the 15 Rockaways. 16 Today we're here to discuss LIPA's 17 Integrated Resource Plan, or IRP, a 18 comprehensive strategy that charts our course 19 towards a sustainable, reliable and resilient 20 energy future. The IRP is our blueprint for 21 22 meeting the growing energy needs of our region while prioritizing clean energy initiatives, 23 reducing carbon emissions and enhancing our 24 25 grid's resilience against the challenges of MGR Reporting, Inc. 1-844-MGR-RPTG

1 2-13-24 - LIPA IRP Public Hearing 2 tomorrow. 3 I want to acknowledge the team from PSEG Long Island who are on the Zoom, 4 panelists, who led the technical analysis of 5 6 the document that we produced. It reflects 7 our joint dedication to not just meeting but exceeding New York's ambitious clean energy 8 9 goals. As I mentioned, today is the 10 11 second public comment session to provide for 12 your insights, concerns and suggestions. Your 13 feedback is invaluable as it will help refine our strategies and ensure that the IRP aligns 14 with the needs and aspirations of the 15 communities that we serve. 16 17 Following today's hearing, we have 18 one additional hearing taking place later this 19 week in Far Rockaway and that's going to take place Thursday evening at 6:00 p.m. 20 To kick off today's session, I'm 21 22 pleased to introduce Gary Stephenson, LIPA's 23 Senior Vice President of Power Supply, who will provide a presentation of the IRP. 24 25 Following the presentation we'll open the MGR Reporting, Inc. 1-844-MGR-RPTG

1 2-13-24 - LIPA IRP Public Hearing floor for public comments and questions. 2 3 So at this point I'm going to turn it over to Gary to present on the IRP. 4 5 Gary. 6 MR. STEPHENSON: Thank you, Tom. 7 Good morning, everyone. Maybe a good place to start here 8 9 is to go through the agenda, we have quite a flew slides we'd like to get through and one 10 11 of my goals is to make sure we're perfectly 12 clear. And if something isn't clear on the back end, we've got opportunities for 13 questions and public comments, so very much 14 looking forward to some feedback here. 15 16 One of the things I wanted to start off by saying is the IRP I think of the 17 18 IRP as kind of putting together a three-legged 19 stool, which is you need sort of three legs to make sure you've got a good, stable stool, and 20 21 for us that's making sure we have affordable 22 electricity and energy for our customers. The 23 second leg of the stool is making sure that's reliable. And then the third leg of the stool 24 25 is making sure it's clean and sustainable. So MGR Reporting, Inc.

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1 2-13-24 - LIPA IRP Public Hearing 2 that's our job here. A lot of work has gone into making sure we have a stable three-legged 3 4 stool. 5 So let's go to the next page, 6 please. 7 So again, thank you for your 8 input, your attendance here. Again we 9 encourage your feedback, we're part of a 10 conversation so very much looking forward to 11 incorporating your comments and discussing those with our board. 12 13 Tom mentioned this, but the team 14 here at Long Island Power, of course, Tom Falcone is our CEO, I'm the Senior VP of Power 15 16 Supply, and I'm joined by Tom Simpson, he's 17 our Director of Power Supply Planning. The PSEG Long Island team here is here, Yuri 18 19 Fishman, who is the Director of Power 20 Resources and Contract Management and Lucyna 21 Khazanovich is Director of Strategy and 22 Planning. 23 I want to say thank you to both, they provided a lot of the analytical 24 25 horsepower that went behind this very complex MGR Reporting, Inc. 1-844-MGR-RPTG

1 2-13-24 - LIPA IRP Public Hearing 2 and thorough analysis. So a little bit of background here 3 We've got about 1.2 million 4 about LIPA. 5 We, of course, serve Long Island customers. and the Rockaway Peninsula, just about 20 6 7 million megawatt hours of energy requirements every year. We got -- you can see the 8 9 generated capacity there, about five and a 10 half gigawatts, 500 megawatts, all translates 11 to an operating budget of \$2.3 million a year, 12 capital budget of \$900 million. 13 We -- importantly, we provide 14 oversight to PSEG Long Island, we've got a long-term contract with those management 15 16 services and the services provided under the PSEG Long Island brand name. 17 18 So it bears repeating that -- just 19 mentioned that we live on an island, which is 20 very important when it comes to electrical 21 service. Our territory spans Nassau and 22 Suffolk counties and the Rockaway Peninsula. 23 And in addition to the on-island generation that we have, we have very important links to 24 25 other networks, most important being the link MGR Reporting, Inc. 1-844-MGR-RPTG

1 2-13-24 - LIPA IRP Public Hearing 2 to the rest of New York ISO, which controls 3 the grid in New York State, across New York State. And then the links back to PJM, which 4 5 is the Mid Atlantic and then up to New England 6 through the New England markets. 7 And we're going to talk a lot about wind in this presentation. You'll see 8 9 some of that wind coming onshore and we're 10 going to sort of discuss the implications of that as we move forward. 11 12 So it bears repeating here what is 13 The way I think about it is sort of an IRP. 14 our plan for making sure that we've got a balance between the supply side and the demand 15 16 side, and that we've got the transmission investments that are required to make sure we 17 18 can provide that clean, reliable, 19 cost-effective service. 20 The last IRP we did was back in 21 2017, that was a very important IRP for what 22 it decided not to do, which was to invest in 23 more fossil fire generation on the island. We instead concentrated on our clean energy 24 25 future and that turned out to be a really MGR Reporting, Inc. 1-844-MGR-RPTG

1 2-13-24 - LIPA IRP Public Hearing 2 strong, wise decision that is paying dividends 3 today. So as we move forward with this 4 5 new IRP we're looking at customer usage trends 6 and probably first and foremost changing 7 technology. There's a lot of new things on 8 the horizon for us as a utility. And so just a little bit of 9 10 background here in terms of where you can find 11 more information. We've organized findings of the IRP around themes in the forms of answers 12 13 to frequently asked questions just to help you 14 sort of navigate the analysis. 15 So we've put out what was called 16 the IRP summary guide and that can be viewed 17 online on our website. We've also got 18 physical copies, if you like hard, tactile 19 pieces of paper, we've got those physical 20 copies available at the public comment 21 sessions which you can have. You can scan 22 that QR code to get the link to the summary 23 guide. And then in terms of public 24 25 outreach, we put out a four-part video series MGR Reporting, Inc.

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1 2-13-24 - LIPA IRP Public Hearing 2 that you can view. My screen went black, 3 unfortunately, let me see here. Let me switch to my laptop. 4 5 Can you guys still hear me? 6 MR. LOCASCIO: We can and see you 7 as well. MR. STEPHENSON: 8 Okay. So 9 four-part video series here, that you can 10 view, that's posted on LinkedIn and other 11 venues, so you can take a look at that, that's 12 got good information on it and it's also on our website. So please view those. 13 14 And then just to reiterate, we've 15 had a lot of partners here; PSEG Long Island 16 provided the analytical work to do the IRP. We also had the help of multiple partners, 17 18 Brattle, Stony Brook University, others that 19 provided a lot of contributions, so we want to thank them. 20 21 All right. And then it just bears 22 repeating, New York's Climate Act, we've got 23 some very big goals here in the future. Which the first is by 2035, let's say, by 2040, 24 25 we've got to get to a zero carbon grid. And MGR Reporting, Inc. 1-844-MGR-RPTG

1 2-13-24 - LIPA IRP Public Hearing 2 then by 2050 kind of economy-wide carbon 3 reduction. So a tremendous amount of work that has to be done over the next couple 4 decades. 5 Some of the scenarios that were 6 7 modeled in the IRP, you can see. We've got a base case, which assumes kind of what the last 8 9 chart showed in terms of carbon reductions. 10 We also looked at other scenarios that included accelerated decarbonization, expanded 11 12 transmission interties from Long Island to 13 other regions. Expanded demand-side measures 14 and other advanced technologies. 15 All the scenarios led to sort of 16 systems and outcomes that were reliable, clean, affordable. 17 18 So just in terms of where we are 19 today, what this slide shows is kind of our 20 pie chart of energy supply. And what you can 21 see here in 2022, about 43 percent of our 22 energy comes from fossil baseload units; up 23 14 percent from nuclear, five percent from solar, about a third from imports. So that 24 25 kind of goes back to what I was saying earlier MGR Reporting, Inc.

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1 2-13-24 - LIPA IRP Public Hearing 2 about us being an island so we import a lot of 3 our energy from PJM and New England. That chart is going to change 4 5 quite dramatically on the next slide. I quess the other thing I should say before you switch 6 7 is that we really rely on that thing on the bottom right, which fossil peakers. Right now 8 9 it's a key thing for reliability. Although they don't run much, they are a very important 10 piece of the pie in terms of making sure we've 11 12 got a reliable grid. On days we hit our 13 summer peaks, it's very common that those 14 fossil peakers are running just to keep the 15 lights on. So what are the key findings of 16 The first is by 2030, and this is 17 the IRP? kind of the big sort of big moment or really 18 19 important statistic, by 2030 what we're anticipating is that the addition of solar and 20 21 off-shore wind will drive our carbon footprint 22 down by over 70 percent from 2010 levels. So 23 pretty dramatic drop in carbon output from our fleet from 2010 levels, 70 percent reduction. 24 25 And the chart on the right which MGR Reporting, Inc. 1-844-MGR-RPTG

1 2-13-24 - LIPA IRP Public Hearing 2 shows in the first sort of grouping there is the amount of solar. You can see that in 3 terms of size and also in service state. I'11 4 5 sort of point your attention to behind the 6 meter solar, that's a very important element 7 of our portfolio, 1200 megawatts of behind the meter rooftop solar; very important as we move 8 9 forward.

Offshore wind, you can see the 10 11 three projects that will be landed on Long 12 Island. The first South Fork Wind is nearing completion of construction, that should happen 13 14 here in the next few weeks. And then Sunrise and Excelsior also have contracts to supply 15 16 with in-service states in early -- late 2020s and early 2030s. 17

18 The second or the third piece 19 there is the energy storage, batteries 20 primarily. You can see that we have a couple 21 of batteries right now at East Hampton and 22 Montauk and then we're running an RFP for 23 additional battery storage on the island. Also very important as more wind comes online 24 25 to ensure we don't get curtailment, we need to MGR Reporting, Inc.

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1 2-13-24 - LIPA IRP Public Hearing 2 get more battery storage to kind of get 3 coupled with that to make it as economic and 4 reliable as possible.

5 So by 2030, as I said, the 6 declining carbon footprint. And what you can 7 see here is sort of the change. So on the left is the 2022 pie chart, which I mentioned 8 9 on the last slide. And the big change over 10 that eight years is the big green part here, 11 that's wind. So we expect almost 49 percent 12 of our energy needs will be supplied by 13 off-shore wind. We still have nuclear slice, 14 seven percent solar, and we can see a dramatic reduction in the amount of fossil baseload and 15 16 imports that are required.

17 I'll also just point out that the 18 fossil peakers are still there in 2030, very 19 important from a reliability perspective that 20 they are in the little pie, even though they 21 don't contribute much in terms of energy, they 22 have outsized importance from a reliability 23 perspective.

24 So the next slide kind of shows 25 year by year what happens in terms of carbon MGR Reporting, Inc. 1-844-MGR-RPTG

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emission reductions and you can see we go from
2010 12.3 million tons of CO2, dropping down
to 3.5 by 2030, that's the over 70 percent
reduction. I think that's all I wanted to say
in this slide so you can go to the next.
And here a little more about wind

8 which has been very much in the news lately, 9 of course, with a lot of wind developers sort 10 of struggling with the new sort of industry, 11 new supply chain struggles, all kinds of 12 hurdles that I think are normal for a new 13 industry.

14 So without getting into too much detail about which ones -- which projects will 15 16 succeed in the future, I think it's safe to say that there's a tremendous wind resource 17 18 out there in the ocean, it's a great place to 19 site it. And if it's -- these particular projects doesn't complete it, I'm pretty 20 confident that others will. But you can see 21 22 it's pretty large so we've got the State, its 23 goal, so 9,000 megawatts by 2035 and some of forecasts show up to 18,000 which would be a 24 25 tremendous amount of energy coming from

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1 2-13-24 - LIPA IRP Public Hearing off-shore wind. 2 3 And let's see, what do I want to say? We can skip this slide, we hit most of 4 5 this. 6 This is an important one, which 7 talks about, okay, we're going to build plenty of new off-shore wind. Very important that we 8 9 build transmission systems that can both 10 import and then all that new energy off-shore 11 wind, energy on to the island and then get it 12 to the rest of New York State, this is a 13 statewide goal around decarbonization. So 14 it's important we build out the transmission system so we can move that power to the north 15 16 and points into the rest of the state. 17 So right now the big project that 18 is underway is the Propel New York Project, 19 and that's a multibillion dollar investment in the State of New York in terms of 20 21 decarbonizing the grid. So we think that's a 22 very positive project and we're hopeful it 23 gets concluded on time. It's again a linchpin in terms of decarbonizing the State. 24 25 Right now our studies indicate MGR Reporting, Inc. 1-844-MGR-RPTG

1 2-13-24 - LIPA IRP Public Hearing 2 that that project will get us at least through 3 this 2030 period and beyond and then as we add even more off-shore wind, it's possible that 4 5 even more transmission will be required. So on this slide what we talk 6 7 about here is that we've got a lot of flexibility as a utility. We primarily have 8 9 -- our portfolio is primarily made up of power 10 purchase agreements, contracts with the 11 operators and owners of those power plants. 12 The most notable is our agreement with 13 National Grid, they operate all the legacy 14 LILCO power plants on the island. And what that allow us to do as a utility is sort of 15 16 modulate how we ramp down the fossil fuel 17 units on the system. 18 So as time goes on and we see how 19 much wind gets built and whether it gets built on the schedule that was articulated on the 20 21 last page, we can begin to ramp out of these 22 fossil fuel contracts pretty easily. 23 So again that's going to be done in the context of making sure we did the most 24 25 reliable thing, do things that keep rates MGR Reporting, Inc. 1-844-MGR-RPTG

1 2-13-24 - LIPA IRP Public Hearing affordable and then always in mind that we're 2 3 trying to get toward that overall 100 percent decarbonization goal by the time that the 4 5 CLCPA targets dictate. 6 So right now the thinking is that 7 LIPA will be able to retire up to 800 megawatts of existing Long Island power 8 9 plants by 2030. And as I said, the biggest 10 contract we've got is with National Grid, that's for about half of our supply, 35 -- or 11 12 more than half, 3,550 megawatts of generation. 13 And right now we haven't identified specific 14 units for retirement but as we move through time here and things become clearer both on 15 the transmission side in terms of wind, the 16 17 transmission will be completely built out and 18 then the off-shore wind and as that gets built 19 out and battery storage gets implemented, we'll be able to identify specific units. 20 We think most likely will be some of the steam 21 22 units mostly because those are the oldest, 23 some of those were built in the early 60s, mid 60s and they are towards the end of their 24 25 natural age of their power plant and they tend MGR Reporting, Inc.

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1 2-13-24 - LIPA IRP Public Hearing 2 to be the least efficient of our fossil fleet. 3 You can see just looking at the graph here, this shows what's called capacity 4 5 factor, which is the amount of time the power plants run versus kind of their theoretical 6 7 maximum amount of production. And you can see that capacity factor dropping pretty 8 9 dramatically over the years here, those 10 plants, all three, were of the big fossil steam units, were built to run baseload. 11 Thev 12 were built to run at capacity factors above 13 50 percent. And what we're seeing in the 14 future looks like for the most part they'll be running in the very low, below 20 percent 15 16 range. 17 So as that begins to sort of play out, those decisions around retirements for 18 19 particular units will become clear and we'll 20 take that step when we get there. 21 So this one, another important 22 slide, what it shows is our load and customer 23 demand in terms of energy, total megawatt hours or kilowatt hours over time. And what's 24 25 important here is that the period between 2024 MGR Reporting, Inc. 1-844-MGR-RPTG

1 2-13-24 - LIPA IRP Public Hearing and 2030 essentially shows that we are 2 3 relatively flat in terms of energy growth and that is a good thing and it depends on being 4 5 driven by a couple items. 6 One is customer energy efficiency, we have a very effective program for making 7 sure we have the most efficient system as 8 9 possible and customers are getting access to 10 various devices and various systems that allow 11 the most efficient use of energy. 12 And then the other piece is that we see increasing amounts of behind the meter 13 14 I mentioned on one of the earlier solar. charts we're expecting somewhere around 15 16 1200 megawatts behind the meter solar. And 17 that acts as a negative load and that keeps 18 the growth of the energy piece of the pie at 19 least down relatively flat through 2030. 20 Now what happens after 2030 is we 21 start to see the impacts of two things. One 22 is increased electrification of the transportation sector, we're starting to see 23 more and more EVs of course, electric 24 25 vehicles, and so that will begin to add to the MGR Reporting, Inc. 1-844-MGR-RPTG

1 2-13-24 - LIPA IRP Public Hearing overall energy consumption on the island. 2 3 And then the other piece is the growth from what's called beneficial 4 5 electrification, primarily heat pumps. I've got a couple slides later on that talk about 6 7 what a great thing those are, heat pumps, are for customers in terms of saving money and 8 9 being more efficient, it's effectively taking 10 energy, especially heating energy out of the fossil fuel sector and moving it over to the 11 12 electricity sector. So the idea is we clean 13 up the electric grid and then we move on and 14 try to pull in some of the heating load which is currently served by fossil fuels. 15 16 So we should see some pretty significant ramp ups especially in the winter 17 18 months as more and more heat pumps come 19 online. 20 And I think I hit most of this so 21 I'm not going to spend much time. Probably 22 the key thing here is that complete 23 decarbonization to get there, we're really going have to focus as a state on the 24 25 transportation sector because that's close to MGR Reporting, Inc. 1-844-MGR-RPTG

1 2-13-24 - LIPA IRP Public Hearing 2 a third of our carbon emissions are from the 3 transportation sector. So electrifying that is going to be a big challenge but also pay 4 big dividends in terms of carbon reductions. 5 6 I mentioned heat pumps, I'll give 7 a little pitch here for how what a great thing these devices are. You know the island is, I 8 9 wouldn't say unique, but it's one of the 10 defining characteristics from an energy perspective is it uses a lot of oil to heat 11 12 during the winter and so the economics of 13 switching out oil heating to heat pump are 14 pretty compelling, especially when you couple it with the rebates that are available from 15 16 LIPA and the federal government in terms of incentives you can see there in some cases the 17 18 pay back is almost immediate in terms of heat 19 pumps for customers.

20 So one of the big opportunities 21 for the island is as older boiler systems 22 start to breakdown and require upgrades or 23 investments, flipping over to heat pump would 24 make a lot of sense. So big task for us as we 25 move forward is to make sure that we're

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1 2-13-24 - LIPA IRP Public Hearing 2 communicating that with customers and we're 3 getting good uptick with our contractor network in that regard. 4 5 This talks about our time of day 6 rates. And this is, I would say, a lot of 7 words here but I would say the time of day rates are extremely important for us moving 8 9 forward because as we begin to have an 10 increase in penetration of renewables we're 11 going to need to engage customers in a 12 different way and make sure that they are 13 shifting their energy use outside of the peak 14 hours to the off-peak hours and especially as we start to see that electric demand start to 15 16 increase making sure that customers, for 17 example, don't charge their EVs at 5:00 p.m., 18 that's just a very -- that's a key thing to 19 maintain reliability and affordability. 20 So what we are doing here with the 21 time of day rates is providing that incentive 22 so that people begin to think about, okay, 23 maybe can I turn my EV on in term of charging after the peak is over, maybe I can do all of 24 25 my kind of washing and drying, kind of thing, MGR Reporting, Inc. 1-844-MGR-RPTG

1 2-13-24 - LIPA IRP Public Hearing 2 after peak hours. 3 So that's a big event for us going into 2025 rolling out that time of day rate. 4 5 And then what this shows is a 6 different take on -- pointing out the graph 7 here, a different take on things the previous chart showed energy consumption, this actually 8 9 shows our peaks both the summer peak and the 10 winter peak. And sort of a good news story 11 here, I think it's a very good news story 12 which is Long Island traditionally has been a summer peak utility. As we start to see more 13 and more heat pump penetration on the island 14 we will start to see more of a winter peak, 15 16 that's the green chart here. 17 Now the good news is that the 18 system was built, both the power supply system 19 and the T & D system on the island, was built to ensure that we could get through a summer 20 21 peak, so we've got a lot of capacity there to 22 grow the winter side of things. 23 So what you see here is through 24 the planning period really the winter peak 25 doesn't even get to the point of the summer MGR Reporting, Inc. 1-844-MGR-RPTG
1 2-13-24 - LIPA IRP Public Hearing 2 peak, but I guess the way I would think about 3 this is we're using the system more efficiently overtime as that winter peak 4 5 grows. So again a plug for more and more conversion of fossil fuel heating over to 6 7 electric heating in the form of heat pumps. That's the driver there so that's something we 8 9 can accommodate and we very much want to 10 incent. 11 And then I think I'll probably 12 move on to the interest of time here, I'll 13 just skip this one for a moment. 14 And then talk about this last 15 chart. And this gets to the point of 16 reliability. I mentioned those fossil peaking units previously, so eventually we're going to 17 18 reach a point where we're going to make a 19 decision about those fossil units that provide 20 that peaking service that, reliability 21 benefit. And this is an area of a lot of R & 22 D right now, a lot of time and effort, not 23 just in New York but across the entire United States, across the world. How do you build 24 25 systems that can replace fully dispatchable MGR Reporting, Inc.

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2 fossil units? What's the technology there
3 that can do that in a way that doesn't emit
4 carbon?

5 So people have talked about things 6 like hydrogen, small modular nuclear reactors, 7 maybe very long duration battery systems. The challenge we face with the offshore wind will 8 9 be even though it's got tremendous really good capacity factors, so running a lot, producing 10 11 a lot of carbon free energy, we get wind 12 lulls. It won't be unusual to have periods in the middle of the summer where we don't get 13 much production from the off-shore wind, so 14 we'll need to replace that with something that 15 16 we can dispatch. So doing that in a way that's emissions free it's a big challenge for 17 18 the industry.

And so as we move through time, we will be very careful monitoring this. This will be the key in terms of our ability, not just as one utility but as an industry, to get to completely decarbonized grid, is this development of these units that are coined DEFRs, Dispatchable Emission Free Resources.

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1 2-13-24 - LIPA IRP Public Hearing 2 I think by the next IRP process 3 it's going to be very important over the next five years that we get a lot more clarity 4 5 around what those DEFRs will consists of, what they'll cost and how they'll be dispatched. 6 7 And then I haven't talked a lot about the cost side of things. Again 8 9 three-legged stool so affordable, sustainable and reliable. This talks about affordability 10 11 and the chart just shows the 50 percent or so 12 of our power supply costs, so if you think about your bill as a customer, it's roughly 13 half of it's the power supply charge and the 14 other half is transmission and distribution 15 16 costs, kind of the wires charge. And what this shows is that at 17 18 least based off our forecasting, we don't see 19 a tremendous increase in supply cost going 20 forward. You can see there just a pretty 21 nominal increase over time as the fossil units 22 ramp down, sort of darker areas there, and the 23 renewable resources in the green come in. So that's a good thing, it gives 24 us some room to really grow the system to make 25 MGR Reporting, Inc.

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1 2-13-24 - LIPA IRP Public Hearing 2 sure that we maintain reliability and we do it 3 in a way that's affordable for our customers. Okay, so next steps. 4 Right now 5 we're in the process of doing some followup studies so identifying any reliability 6 7 deficiencies that are expected with any of the retirements that we talked about. Reviewing 8 9 our storage needs, we need, as I said, we need 10 to couple that with the wind coming online to make sure we don't have a situation where the 11 12 wind gets curtailed. So being able to store that energy is very important. 13 14 And then establishing a new multiyear energy efficiency program. 15 So we 16 have got a lot of work ahead of us, this isn't the end this is sort of beginning and we're 17 18 looking forward to it. 19 Is that my last chart? Okay. So 20 opportunities for public participation, you 21 can see there. This is one of them and so 22 we're looking forward to your comments. We do 23 have an upcoming session on Thursday at the Rockaways which hopefully will be in person, 24 25 and you can of course submit all of your MGR Reporting, Inc. 1-844-MGR-RPTG

1 2-13-24 - LIPA IRP Public Hearing written comments to that IRP@LIpower.org. 2 3 And so now I think we're going to turn it over to public comments and I think 4 Tom is going to... 5 6 MR. LOCASCIO: Thank you, Gary. 7 And thank you for the thorough presentation. So we are at the public comment 8 9 portion of today's meeting. We have a good 10 number of people on Zoom as attendees. What I 11 would ask at this point if you are planning to 12 make comments to please raise your hand virtually now and we will bring people in in 13 14 the order they raise their hand. 15 First up we have Ryan Stanton. 16 Ryan we're going to bring you into the panel 17 right now. Thank you for taking the time to 18 be here. 19 MR. STANTON: Very thorough 20 presentation. Privileged to have the 21 opportunity to represent the Long Island 22 Federation of Labor. I wanted to offer a few 23 comments on behalf of the 250,000 union members and their families in Nassau and 24 Suffolk counties. 25

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1 2-13-24 - LIPA IRP Public Hearing We ultimately support the adoption 2 3 of the Long Island Power Authority's IRP. As you all know, we periodically engage in this 4 5 process. We were fortunate enough to testify 6 a number of years ago back in 2017, and since 7 that time New York State has adopted the CLCPA, the Climate Leadership and Community 8 9 Protection Act. 10 So the significant changes from 11 the last IRP to now, the union movement has 12 and will continue to play an active role in 13 advancing the CLCPA, much of which is 14 reflected in today's presentation. And our movement is made of up working people and by 15 16 virtue of living on Long Island, we're on the front lines of climate change and dealing with 17 18 the impacts.

As New York State and LIPA make decisions on resources and how to secure them, we ask that you consider the needs of working people, they're simultaneously during the crises of climate change and affordability. Therefore I'd like to draw attention to several key points that were made and are laid MGR Reporting, Inc.

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1 2-13-24 - LIPA IRP Public Hearing out in the IRP. 2 3 Integrating into the grid substantial new renewable generation and 4 battery storage; 5 Investing significantly in the 6 transmission grid serving Long Island and the 7 Rockaways; 8 9 A phasing out of fossil fuel 10 generation over time; 11 And using clean electricity to 12 decarbonize heating and transportation 13 specifically with support for disadvantages 14 communities. There's four bullet points that I 15 16 pulled directly from the IRP. 17 So we support the integration of 18 substantial new generation -- renewable 19 generation and storage. They were mentioned, and I'll focus specifically on the Long Island 20 21 interconnection wind projects; South Fork 22 Wind, Sunrise and Excelsior. They have potential to be significant drivers of Long 23 Island's economy. 24 If we're to be successful in 25 MGR Reporting, Inc. 1-844-MGR-RPTG

1 2-13-24 - LIPA IRP Public Hearing 2 achieving the milestones outlined in the IRP 3 and CLCPA, these projects must be completed and operational, they must create good union 4 5 jobs along the way. 6 And then ultimately in order to 7 realize the full potential offered by these projects, there must be significant 8 9 investments in the transmission grid. As was 10 referenced, the Propel New York Project 11 creates a bidirectional grid, provides 12 efficiency, redundancy and reliability to New 13 Yorkers across all regions. 14 So we ultimately get to see the 15 benefits of these investments upstate and 16 downstate. The renewable portfolio really 17 does a great service to the ratepayers through 18 that investment, allows us to realize the full 19 potential. It's just a common sense 20 investment that helps taxpayers, ratepayers 21 across all of New York State. 22 And as we rebuild our economy to 23 be more climate safe more inclusive, to address historic inequities, we must employ 24 25 and "all of the above" energy approach. So MGR Reporting, Inc. 1-844-MGR-RPTG

1 2-13-24 - LIPA IRP Public Hearing while we forge a path to decarbonization, 2 3 fossil fuel plants, as was mentioned during the presentation, they currently provide a 4 5 reliable base load generation, and I know the folks at LIPA really, truly, fully appreciate 6 7 how important that is. So I just have an obligation to 8 9 highlight and reiterate the importance of 10 that. It's imperative that we have enough 11 alternative energy readily available and affordable and before phasing out those fossil 12 fuel plants. And so that's probably something 13 14 that gets lost in the public discourse today and really needs to be -- it can't be 15 16 overstated. 17 And so I want to commend LIPA and 18 PSEG for their commitment to this process and 19 putting forward the IRP. It's well timed, The 20 Infrastructure Investment Jobs Act, Inflation 21 Reduction Act, CHIPS and Science Act and New 22 York State CLCPA ultimately all coincide with 23 one another, represent a tremendous opportunity to secure billions of dollars in 24

25 investment in New York State. Those dollars

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1 2-13-24 - LIPA IRP Public Hearing can and must be used to rebuild our energy 2 3 grid and our economy at large so that it's climate safe, inclusive of working people and 4 5 has a significant impact on climate change. So just in closing, I'd like to 6 7 thank LIPA, thank PSEG for laying out a roadmap to securing a clean energy future that 8 9 in implemented in a way that considers working 10 people and has the promise of a brighter more 11 sustainable future. Thank you. 12 MR. LOCASCIO: Thank you, Ryan. We're going to move you back to the attendee 13 14 list. Next up we have Ryan Madden. 15 And 16 then for planning purposes, we have Billi Roberti after Ryan and Andrew Manitt after 17 18 Billi. 19 Those are all the hands we have raised at this point, if you are on Zoom and 20 21 you do have an interest in speaking, I would 22 ask you to please raise your hand now so we 23 have you in the queue. 24 Ryan Madden, the floor is yours. 25 MR. MADDEN: Thank you. I seem to MGR Reporting, Inc. 1-844-MGR-RPTG

1 2-13-24 - LIPA IRP Public Hearing 2 have the distinguished honor of following Ryan 3 Stanton in public hearing processes over the last few months. So thank you Ryan and the 4 5 Long Island Fed for their comments. 6 My name is Ryan Madden, I'm the 7 client and energy campaigns director at the Long Island Progressive Coalition. We have a 8 9 long history of building New York's clean 10 energy future from passing Green Jobs Green New York to the Climate Leadership and 11 12 Community Protection Act. We also helped 13 develop the LIPA public power act to end the 14 private management of LIPA in favor of a publicly-managed utility. 15 16 We first like to thank LIPA for its statewide leadership in the renewable 17 18 transition, despite the limitations imposed by 19 the current management structure. We are excited about the opportunity to better meet 20 21 the mandates of the CLCPA with a fully public 22 We also like to communicate LIPA. 23 appreciation for the documents and videos to explain the IRP to the public. 24 25 Our comments are informed by our MGR Reporting, Inc.

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1 2-13-24 - LIPA IRP Public Hearing 2 commitment to a just transition to a hundred 3 percent renewable energy for the region. The belief that sustained community engagement is 4 5 necessary to achieve that and that LIPA has 6 the potential to do more to ensure an 7 equitable future. Thus informed our understanding of a third party provider model 8 9 has been a failure, reflected in aspects of 10 PSEG process to develop this IRP, we'll be submitting written comments with further 11 12 details. 13 On community engagement, it's 14 concerning that only a handful of experts and consultants were solicited to contribute to 15 16 the IRP. No other stakeholders were seemingly 17 involved, despite the implication for 18 disadvantage communities, towns and villages, 19 nonprofits, community organizations, utility workers, low-income ratepayers, indigenous 20 21 nations and more. While reference was made to the 22 23 priority of integrating the needs of disadvantage communities, which we applaud, 24 25 we're left wondering how that can happen MGR Reporting, Inc.

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1 2-13-24 - LIPA IRP Public Hearing without making full consistent and sustained 2 3 engagement, especially in vital planning processes. It is this reason that LIPC 4 5 developed a proposal for the community stakeholder board included in LIPA Public 6 7 Power Act. This lack of prioritization for 8

9 multi-stakeholder engagement is reflected 10 through the sections on the future of solar. 11 It does not integrate the recommendations of 12 the Long Island Solar Roadmap. This untapped 13 potential that making valuable contributions 14 to meeting and exceeding LIPA's CLCPA goals, 15 as well as provide excess energy to the grid.

16 Finally, in order for time of day 17 rates to be implemented effectively, for more 18 demand response programs to come into 19 practice, for more resilience planning to take 20 place and for more utility programs to be 21 utilized, more ratepayer and community 22 engagement needs to happen. There's no 23 recognition of the need for this to be a vital part of meeting the state goals of th IRP. 24 25 On building renewables in the IRA.

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1 2-13-24 - LIPA IRP Public Hearing The IRP states that LIPA plans to meet the 2 3 state's energy goals at the lowest possible cost for its customers by using all the tools 4 5 available to derive the best outcomes, but does not seriously explore it's ability to 6 7 build its own renewables, especially utilizing benefits under the Inflation Reduction Act. 8 9 There's a reference to LIPA developing its own 10 projects around the repurposing of existing fossil fuel sites, but the implications are 11 12 not clear. 13 The viability and publicly-owned 14 renewables by LIPA from offshore wind to midsize solar, to thermal energy networks to 15 16 battery storage must be thoroughly examined. 17 When it comes to offshore wind, 18 especially with the cancelation of projects 19 like Empire Wind II, LIPA could look at 20 co-ownership opportunities, perhaps even with 21 the New York Power Authority. 22 When it comes to solar, we can 23 look at the Long Island Solar Roadmap for prime opportunities for LIPA to step in, 24 25 especially as it makes targeted facility MGR Reporting, Inc. 1-844-MGR-RPTG

1 2-13-24 - LIPA IRP Public Hearing 2 upgrades to expand hosting capacity or project significant growth in DER penetration. 3 LIPA should look into the 4 5 installing and owning thermal energy networks. 6 In addition to making geothermal heat pumps 7 more affordable for ratepayers, the minimal fee for access to the network could provide 8 9 another revenue stream for LIPA. 10 LIPA must proceed cautiously over the three to six gigawatts of DEFRs projected 11 12 in our emergency mix. To all extents 13 possible, the future of our electric grid must 14 not contain false solutions like biofuels, renewable and natural gas, biomass, waste 15 16 incineration and green hydrogen. It must 17 focus on renewables and technologies that have 18 been proven to work like solar and wind 19 coupled with battery storage and exploration 20 of tidal and wave power. 21 Hydrogen for electricity 22 generation is not a zero emissions technology 23 regardless of how the hydrogen is produced. Hydrogen combustion produces nox emissions and 24 25 tremendously problematic local and public MGR Reporting, Inc. 1-844-MGR-RPTG

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 health issues and is against Section 73 of the
 CLCPA.

Utilities across the US are 4 5 increasingly pursuing projects that blend hydrogen with natural gas for various end 6 7 uses. However research shows these projects will increase consumer costs, exacerbate air 8 9 pollution awhile minimally reducing greenhouse 10 gas emissions. The results of the LIPA 11 Hydrogen Demonstration Project in Brentwood with General Electric verified this. 12

13 The demonstration achieved only 14 marginal reductions in CO2 while increasing 15 nox emissions and consuming more water. For 16 these reasons, Caithness should be looked at 17 for a complete transition to a renewable 18 energy site, not a future for hydrogen.

Biomethane is being proposed as a substitute for various processes, but this renewable natural gas, like fossil gas, is nearly pure methane. For these reasons, we urge LIPA not to rely on RNG or hydrogen or other supposedly clean fuels 'cause we don't know if they will count for CLCPA purposes, it

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1 2-13-24 - LIPA IRP Public Hearing 2 could be a useless investment, they are not 3 clean and continue to release co-pollutants, and there isn't RNG to utilize. 4 We should rather research 5 6 technologies like wave and tidal turbines, 7 which are also dispatchable with unlimited supply around Long Island. 8 9 LIPA's utilization of nuclear 10 energy must be revisited. The future of 11 nuclear must grapple with the contents of 12 nuclear reactors are not green, a red paper by the Atlanta Nation, the Environmental Task 13 14 Force and the American Indian Law Alliance. With the limited time, I'll 15 16 mention there was no evaluation of the rate 17 design aside from the time of day rates, nor 18 the impacts of delays in implementing TOD on 19 TRP forecast. Similarly the canceled wind 20 21 projects are not accounted for, which is 22 likely unfortunate timing but speaks to the 23 need for proactive contingency planning. And a core missing piece that 24 25 should be looked at is addressing gap funds MGR Reporting, Inc. 1-844-MGR-RPTG

1 2-13-24 - LIPA IRP Public Hearing 2 for pre-weatherization needs. And we see 3 nothing about buried distribution lines that are prone to failing during storms. 4 The 5 avoided costs of frequent repairs paired with the lost revenue because customers cannot use 6 7 electricity must be factored in. And with that I want to thank you 8 9 for your time and hard work that this IRP 10 reflects. I'm looking forward to see how it 11 can be better shaped moving into the future. 12 Thank you. MR. LOCASCIO: Thank you, Ryan. 13 14 We appreciate you being here today. 15 We're going to move you back to 16 the attendee list and we'll be bringing in Billi Roberti. 17 18 I would mention again if there are 19 folks on Zoom that would like to make 20 comments, we ask that you raise your hand. After Billi we have Andrew Manitt and he's the 21 22 last person at this point that we have in the 23 queue to speak. 2.4 With that, I'll turn it over to 25 Billi Roberti. MGR Reporting, Inc.

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1 2-13-24 - LIPA IRP Public Hearing MS. ROBERTI: Good morning. 2 3 Everything Ryan said I agree with, okay, so I may be duplicating a little bit. 4 5 My name is Billi Roberti, I'm a 6 homeowner in Huntington Station with solar 7 geothermal, an EV and a heat pump clothes dryer. So surprise, I'm a renewable energy 8 9 and energy efficiency consultant. My company 10 is Green Choice Consulting. Thank you for 11 this opportunity to speak. 12 I have some questions included in 13 my comments. Overall the IRP summary is good 14 in can do. What it lacks is a vision of the future, isn't that important when planning for 15 16 it? 17 In terms of the strategic 18 objectives, when it talks about reliability 19 and resilience, it wants to go to the top 20 ten percent reliability among peer utilities, 21 which means comparing it to public-owned 22 utilities. Or do you mean investor-owned 23 utilities? Two different populations. Public-owned utilities have much higher 24 25 satisfaction ratings so that's a higher bar. MGR Reporting, Inc. 1-844-MGR-RPTG

1 2-13-24 - LIPA IRP Public Hearing Customer experience, deliver top 2 3 25 percent customer satisfaction in JD Power studies. Same question: The public-owned 4 5 utilities, a much higher bar, which one are we talking about? 6 7 Clean energy, encourage beneficial electrification of transportation and 8 9 buildings such as electric vehicles and cold 10 climate heat pumps, does this include 11 geothermal heat pumps, the most efficient and 12 peak reducing kind? Cold climate heat pumps 13 usually refer to air source heat pumps. We 14 need to get our terminology consistent and 15 clear. 16 Information technology and cyber 17 security, deploy modern grid management 18 technology and data analytics benchmarked the 19 top 25 percent of utilities. Again, are we 20 comparing it to publicly-owned utilities or investor-owned utilities? 21 22 In terms of key findings, by 2030 23 the additional of solar and offshore wind resources will cause LIPA's carbon footprint 24 25 to decline by over 70 percent from 2010 MGR Reporting, Inc. 1-844-MGR-RPTG

1 2-13-24 - LIPA IRP Public Hearing levels, how will this be affected by delays in 2 3 current offshore wind projects? As offshore wind and battery 4 5 storage resources come online, LIPA will be 6 able to retire up to 800 megawatts existing 7 LIPA power plants by 2030. How will delays in current offshore wind projects affect these 8 9 figures and dates? 10 LIPA's transition to time of day rates in '24 to '25, these dates are now 2025 11 to 2026 since this rollout is now scheduled to 12 13 start in 2025 due to PSEG IT problems. Ноw 14 will this one-year delay affect your demand reduction goals? 15 16 What is the public outreach plan 17 for time of day rates? Hopefully it's already 18 started for people opening new accounts since 19 they will automatically be put on these rates, they need to know to shift as much electricity 20 use as possible out of that peak time of 3:00 21 22 to 7:00 p.m. 23 Outreach should be started soon 24 for everyone else. Existing customers much 25 need to know to shift electricity use out of MGR Reporting, Inc. 1-844-MGR-RPTG

1 2-13-24 - LIPA IRP Public Hearing 2 that peak. So far there have been two bill inserts about time of day rates since 2022. 3 Outreach of the inserts is largely infective, 4 5 many people like me get their bills online and don't look at them. I just looked at two 6 7 years' worth today before this meeting. More publicity via television, radio and social 8 9 media needs to be done and on early, often and 10 inclusively. 11 And two-way transmission is a 12 really good upgrade to our grid. How about 13 decarbonizing the grid? The IRP still 14 includes Empire Wind II, which has been canceled. How confident are you that it will 15 16 be rebid? If it is rebid by Equinor, how confident are you that they will do a much 17 better job in public outreach so that 18 19 opposition in Long Beach and Island Park is 20 quelled? 21 What will happen to the tax and 22 pilot payments at Barret, Northport and Port 23 Jefferson if some or all of the plants are retired? The explanation is unclear in the 24 25 Will they end when the plants are report.

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1 2-13-24 - LIPA IRP Public Hearing 2 decommissioned or closed no longer working, 3 not necessarily taken apart? VDER, Value of Distributed Energy 4 5 Resources, that calculation killed solar for commercial properties, which is a vastly 6 7 untapped solar potential since they can often produce more electricity than they need so 8 9 community solar is a good way to create a new 10 revenue stream for the building owners. 11 What are you doing to modify VDER, 12 also known as Darth Vader, in order to 13 encourage more commercial properties to 14 install community solar? We have a tremendous untapped resource, we have tremendous solar 15 16 capacity on Long Island. 17 Regarding battery storage. Since 18 in East Hampton, municipalities have 19 instituted battery storage bans. My town has. This slows progress. What public outreach is 20 21 LIPA doing to allay these fears? Fire fears. 22 Disbatchable emission-free resources, DEFRs, 23 and storage. I think time will tell that RNG, 24 hydrogen gas and carbon capture will not work 25 as well as many think and will have very MGR Reporting, Inc.

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 limited use.

3 What's a net energy cost from electrolysis to create the hydrogen gas from 4 5 the water and then convert it back to electricity? I'd rather research dollars 6 7 going to technologies like wave and tidal turbines, they are also dispatchable and 8 9 there's an unlimited free supply of this 10 untapped energy around Long Island, we're an island for goodness sake. 11

12 What is lacking in how LIPA's 13 revenues will increase with these changes? 14 Now I know we shouldn't count our chickens before they hatch, but we should also at least 15 16 put something in that we expect revenues to 17 increase. Cheap, nonprofit electricity would 18 be great, there's no mention of the Inflation 19 Reduction Act or how it can provide funding 20 for energy storage, transmission, distributed 21 energy resources and renewable energy 22 infrastructure investments. Areas which the 23 IRP has identified as priorities. The IRA provides public power 24

25 utilities with direct pay tax credits for

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1 2-13-24 - LIPA IRP Public Hearing 2 installing these assets. Private companies don't have -- investor-owned utilities don't 3 have this option. 4 There's also no forward thinking 5 6 on LIPA owning or part owning any renewable 7 energy resources, such as utility-scale offshore wind or solar. The Long Island Solar 8 9 Roadmap tells us where these solar 10 opportunities are and we're not exploiting 11 that. 12 With so much water surrounding the 13 island, LIPA should conduct some feasibility 14 studies on owning up and coming technologies to take advantage of tidal and wave energy 15 16 generation. These two are continuously 17 generating resources so they have no gaps in 18 production unlike wind and solar and can be 19 curtailed if needed. They're being developed 20 in Europe, just take a look at the science channel. They are talking all about studies 21 22 being done on the Orkney Islands where 23 tremendous, destructive tidal and waves going on that they are checking out how well their 24 25 equipment will hold up.

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1 2-13-24 - LIPA IRP Public Hearing 2 Both air source heat pumps and 3 ground source heat pumps, I'll call it geothermal, increase energy consumption and 4 5 LIPA revenue. When demand is low in winter, 6 LIPA's not doing enough to support customers 7 transitions to them. PSEG just now changed how the rebates are calculated and lowered the 8 9 cash incentive, that's the wrong direction 10 here. I counted five bill inserts since 11 12 2022 promoting air source heat pumps without 13 any mention of the more efficient geothermal 14 Why is PSEG public outreach heat pumps. geared to promoting the second-best heating 15 16 and cooling system and none to promoting the 17 best? 18 The tables in your report 19 comparing the cost of buying a new central air 20 conditioning system versus air source heat 21 pump does not even include a column for 22 geothermal heat pumps and the costs don't show 23 the reductions from federal and state credits. My clients have been amazed that geothermal 24 25 ends up costing less to install than air MGR Reporting, Inc. 1-844-MGR-RPTG

1 2-13-24 - LIPA IRP Public Hearing 2 source heat pumps when all the rebates and tax 3 credits are factored in. Their lower maintenance and operating costs are another 4 5 plus. It is in LIPA's best interest to 6 7 drive the adoption of geothermal heat pumps because they lower summer peak, add to winter 8 9 consumption yet and slow the growth of winter 10 peak compared to air source heat pumps. It would be good if LIPA looked 11 12 into installing and own utility thermal energy networks. By the way, what is happening with 13 14 the Public Service Commission mandated LIPA UTEN Pilot? Having seen anything about that. 15 16 In addition to making geothermal heat pumps 17 more affordable for ratepayers with the UTENs, 18 the minimal fee for accessing the network 19 would provide another revenue stream for LIPA, it can be a great investment. 20 21 Also I see no mention of the 22 increase kilowatt sales which means higher 23 revenue for LIPA from customers switching from 24 fossil fuel heating to heat pumps and from 25 cars with internal combustion engines to EVs. MGR Reporting, Inc. 1-844-MGR-RPTG

1 2-13-24 - LIPA IRP Public Hearing 2 This income potential is completely ignored, 3 the focus has been on ensuring enough 4 capacity. Also overlooked is that as winter 5 6 consumption grows, the grid efficiency 7 improves and this may offset the projected 8 rate increases to pay for all the grid 9 upgrades. Better all year round usage lowers 10 the per kilowatt cost to LIPA because it uses 11 more of its capacity regularly, it's not just 12 sitting out there in a bank not collecting any 13 interest by the way. 14 Other comments. I see nothing about burying distribution lines that are 15 16 prone to failing during storms. Although 17 expensive, the avoided cost of frequent 18 repairs paired with the lost revenue because 19 customers cannot use electricity must be 20 factored in. Avoided costs are very important 21 to pay attention to. 22 I believe, on another point, the 23 fixed monthly charge, the basic service, should cover the full amount of billing and 24 25 fixed costs to provide electric service since MGR Reporting, Inc. 1-844-MGR-RPTG

1 2-13-24 - LIPA IRP Public Hearing 2 solar customers still rely on the grid. That's a kind of insurance. Some of these 3 costs are hidden in rates that volumetric, 4 5 meaning the more you use the more you pay even if that use is during low consumption times. 6 7 Being tied to the grid is Why should those who are not net 8 insurance. 9 zero electricity subsidize those who are? And 10 by the way it also subsidizes fossil fuel 11 users. Infrastructure and other charges 12 buried elsewhere and moved into a fixed charge would reduce these other costs and there would 13 be no net change to those who are not net 14 In other words, we are putting the 15 zero. 16 costs where they belong. 17 I disagree with the assessment 18 that lifetime ownership costs of EVs are on 19 par with internal combustion energy vehicles. My experience is that EVs are substantially 20 21 The battery is expected to last at lower. 22 least ten years, most original owners keep 23 their cars for only five. Plus EV batteries are going down in cost over time. 24 But the 25 savings and no fluctuations in gas prices MGR Reporting, Inc.

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1 2-13-24 - LIPA IRP Public Hearing 2 which go up and down by \$0.10 sometimes in a 3 week's time and no maintenance, so little maintenance. You don't have an engine. You 4 5 don't have to do the lube of the engine, you 6 don't have an alternator, you don't have a 7 carburetor. You don't have an exhaust system. MR. LOCASCIO: If you could wrap 8 9 up and then you can submit your written testimony. 10 MS. ROBERTI: I'm glad LIPA is 11 12 studying vehicle to everything, electric grid and buildings. The car battery could provide 13 enough electricity to modestly power a home 14 for days during a system power outage. 15 16 Thank you again and please consider adding some of my ideas to the IRP. 17 18 Thank you. 19 MR. LOCASCIO: Thank you so much, 20 Billi. Good seeing you as always, too. 21 We're going to bring in Andrew. 22 At this point we have no other speakers behind 23 Andrew so I would remind folks if there is a desire to speak, please raise your hand now so 24 25 we make sure we bring you in. MGR Reporting, Inc.

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1 2-13-24 - LIPA IRP Public Hearing 2 And with that, I'll turn it over 3 to Andrew. MR. MANITT: Thank you for your 4 5 professional planning efforts and the opportunity to comment on the IRP. 6 7 My name is Andrew Manitt and I work with the sustainability institute at 8 9 Molloy University. 10 First of all, we're encouraged 11 that LIPA is keeping on track in its planning 12 to meet its portion of New York State climate goals, it's good to see. It didn't always 13 14 seem that way but it seems like you are now. I do want to reiterate some of 15 16 Billi's comments about ground source heat pumps, they do seem to be missing from the 17 18 planning and I think that's a mistake. 19 I also want to stress that it's 20 important to have diversity in generation. 21 Looking at the projections, we do seem to be 22 putting a lot of our eggs into the offshore 23 wind basket. I think it would be useful to try to diversify that more either with new 24 25 technologies that are coming online or with MGR Reporting, Inc. 1-844-MGR-RPTG

1 2-13-24 - LIPA IRP Public Hearing 2 more solar. 3 I think you should consider policies that promote more solar battery 4 5 combination installations at homes and businesses not only for the goals of reducing 6 7 greenhouse gas emissions and meeting state goals, but also for the peak shaving that they 8 9 can provide and promoting resilience here on 10 Long Island for when storms come and people are off the grid not of their own choice. 11

Having a battery back up is useful thing forhomes and businesses.

14 I have a couple of questions about some of the graphs. In the graph on page 58, 15 16 will the cost of megawatt hour building envelope improvements come down into the 17 18 avoided costs range as heat pumps become more 19 I'm assuming that one of the reasons common? 20 the cost per savings is so high on building 21 envelopes is because a lot of buildings aren't 22 heated with electricity so you're not saving a 23 lot of electricity by improving building 24 envelopes.

25 It would be good to know what the MGR Reporting, Inc. 1-844-MGR-RPTG

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 projection is if -- as more buildings are
 electrified whether that changes that
 particular calculation.

Also in the forecast of costs 5 6 graph on page 62, it shows growing costs from 7 renewables through 2040. But as I understand it most of the cost of renewables is in the 8 9 capital cost not the operating cost. At some 10 point in the future when there's a sufficient 11 renewable capacity built out, do those costs 12 start coming down? That's my question about that graph. I know it's out of the planning 13 14 window but it would be interesting to know.

15 And my last comment is kind of a 16 The graphic on page 45 is a little picky one. confusing at first glance. You've got the 17 18 label wind lull periods sitting right in the 19 period that isn't a wind lull with two arrows 20 pointing out towards the lulls. I think it 21 would be more understandable if you had two separate labels, one in each of the lull 22 23 periods that said lull period.

And that's all I've got. Thank you very much for the opportunity.

> MGR Reporting, Inc. 1-844-MGR-RPTG

1 2-13-24 - LIPA IRP Public Hearing 2 MR. LOCASCIO: Great. Thank you, 3 Andrew. So at this time we do not have any 4 5 additional speakers lined up in the queue. Ι will give it a couple more seconds in the 6 7 event we have someone that hasn't had a chance to raise their hand just yet. 8 9 MR. STEPHENSON: As you wait, 10 because I think Billi and Ryan both mentioned 11 it. I think it's an important item which is 12 tidal energy. We have looked at that, we 13 continue to look at that. It's got some 14 interesting characteristics in that it could be kind of anti-correlated, to use a technical 15 16 term, with the offshore wind. In other words, during those wind lulls there's no reason to 17 18 think that the tidal energy would dissipate, 19 so that's a good thing. 20 But even if you get beyond the 21 costs of tidal energy, you've got the issue 22 which is it's the D in DEFR, which is dispatchable, it's not dispatchable. 23 So although I think it may play a role in the 24 25 future, it doesn't have that dispatchability MGR Reporting, Inc. 1-844-MGR-RPTG

1 2-13-24 - LIPA IRP Public Hearing 2 which I think is going to be a critical component going forward. 3 MR. LOCASCIO: Great. Thank you, 4 5 Gary. So at this time we have no 6 7 additional speakers lined up in the queue, so 8 that will conclude today's public comment 9 session. 10 I do want to thank again everyone 11 that came out this morning on a snow day to 12 join us virtually for the second installment 13 of our IRP public comments. 14 As a reminder, we will have a final public comment session on Thursday 15 16 evening at 6:00 p.m. at the YMCA in Far 17 Rockaway. 18 Comments can also be submitted by 19 e-mail to IRP@LIpower.org, and that will 20 conclude today's hearing. Thank you again, 21 everyone. Have a great day. 22 (Time noted: 11:06 a.m.) 23 24 25 MGR Reporting, Inc.

1-844-MGR-RPTG

1 2-13-24 - LIPA IRP Public Hearing CERTIFICATE 2 3 STATE OF NEW YORK) 4 : ss.: COUNTY OF QUEENS 5) 6 7 I, NICOLE MANN, a Notary Public for and 8 within the State of New York, do hereby certify: 9 I reported the proceedings in the 10 within-entitled matter, and that the within 11 transcript is a true record of such proceedings. 12 I further certify that I am not related to any of the parties to this action by blood or by 13 14 marriage and that I am in no way interested in the 15 outcome of this matter. 16 IN WITNESS WHEREOF, I have hereunto set my hand this 20th day of February 2024. 17 18 19 20 21 22 23 NICOLE MANN 24 25 MGR Reporting, Inc. 1-844-MGR-RPTG
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2	LONG ISLAND POWER AUTHORITY
3	X
4	2023 Integrated Resource Plan
5	Public Hearing
6	X
7	Rockaway YMCA
8	207 Beach 73rd St
9	Arverne, NY 11692 ·
10	
11	February 15th, 2024
12	6:00 p.m.
13	
14	
15	BEFORE:
16	
17	TOM LOCASCIO,
18	LIPA
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2	APEARANCES:
3	FOR LIPA:
4	Tom Locascio, Director of External Affairs
5	Other LIPA Staff
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7	Marc Russo, Stenographer
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1	
2	<u>proceedings</u>
3	MR. LOCASCIO: Good evening. My
4	name is Tom Locascio with LIPA and I'm here tonight
5	for the public hearing on the 2023 Integrated
6	Resource Plan.
7	The Time is now 6:30 p.m. This
8	hearing has been held open since before 6:00 p.m.
9	tonight. There have been no members of the public
10	here wishing to make a comment.
11	I will ask one last time, is there
12	anyone present here that would like to make a
13	comment?
14	(No response.)
15	MR. LOCASCIO: No one has
16	responded.
17	The time is now 6:31 p.m. and the
18	hearing is officially adjourned.
19	(At 6:31 p.m., the proceedings
20	were concluded.)
21	
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25	
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MGR REPORTING, INC., 1-844-MGR-RPTG

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2	STATE OF NEW YORK)
3	SS.
4	COUNTY OF NEW YORK)
5	
6	
7	I, MARC RUSSO, a Shorthand
8	(Stenotype) Reporter and Notary Public within and
9	for the State of New York, do hereby certify that
10	the foregoing pages 1 through 4, taken at the time
11	and place aforesaid, is a true and correct
12	transcription of my shorthand notes.
13	IN WITNESS WHEREOF, I have
14	hereunto set my name this 16th day of February,
15	2024.
16	Marc Pusso
17	MARC RUSSO
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19	
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Concordance

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Main Street News: Planning for the future of our electric grid



Long Island Business News: March 15, 2024

Renewable energy: keeping costs, production & demands in check

Long Island's position as a leading adopter of technology and renewable energy is reaching fruition, and will continue to pay dividends in meeting increasing demand for power, while keeping costs and carbon production under control.

The South Fork Wind Farm, which began providing energy to Long Island for the first time in December, is on track to reach full capacity in the coming days, according to executives of Long Island Power Authority, it's a milestone that puts a spotlight on the region's leadership.

It also comes as Long Island has continued to lead the rest of New York State in the adoption of electric vehicles, and maintains a brisk pace of embracing rooftop solar across Nassau and Suffolk counties.

The sum of it all places the region at a very busy intersection of change for the energy industry.

GARY STEPHENSON: "The future for utilities is a lot more interesting and exciting. And it's really important for us to get our customers engaged with that."

"It's sort of like a three-legged stool that we have to balance," said Gary Stephenson, senior vice president of power supply at LIPA. "The three legs of the stool are affordability, reliability and sustainability. And if one of those legs is broken, the stool's not going to stand up very well."

Sustainability, in this case, focuses largely on decarbonization efforts that line up with federal and state goals.

"We've got all these very challenging goals on the supply side to decarbonize the fleet," Stephenson said. "But if we can't do that in a way that is affordable for customers, then we're going to run into some significant challenges. If we can't decarbonize in a way that maintains grid reliability, that's going to be an enormous challenge to continue on the decarbonization path because people won't stand for it."

Interviews with Long Island energy executives point to these trends as key factors in the transition to more renewables, adding affordable energy and meeting increased demand:

More renewable energy supply—particularly wind and solar – will continue to play a vital role over both short and long terms.

As electric vehicles and residential and commercial heat pumps increase in adoption, managing demand on the grid will require continued efficiency as well as programs such as PSEG-Long Island's Time of Day rates, which are now available to incentivize off-peak power use.

Long-term projections show energy costs should stay stable over time, as efficiency programs, newer technology and cheap renewables balance growing thirst for more electricity.

LIPA, which owns the region's grid, maintains an integrated resource plan calls for use of 70 percent renewable energy by 2030, a zero-carbon electric grid by 2040, and encouragement of broad adoption of heat pumps and electric vehicles along the way.

Other energy companies such as SUNation Energy, which delivers rooftop and other solar solutions to customers—and

RICHARD MURDOCCO: "The whole system is interconnected, and, as energy demand increases, solar and renewables help meet that need."

Contractors who have been installing thousands of residential heat pumps across Long Island—have been transitioning the region into next-generation energy solutions.

Federal tax incentives, which can provide savings of up to 30 percent on solar installations, and the \$5,000 New York State rebate program help lower the total cost of deployment for homeowners, says Richard Murdocco, SUNation Energy vice president of marketing and client experience.

Legislation is now pending within state Senate and Assembly committees, which would boost the state solar rebate to up to \$10,000—a move Murdocco says would help at the very moment the region is working to increase available energy.

"The whole system is interconnected," Murdocco said, and as energy demand increases, solar and renewables help meet the need. But, he said, "the efficiency of all these items is better, too. Our demand [for energy] rose but the efficiency of the technology grows as well."

Which makes increasing the financial incentives for solar installation even more of a sensible solution.

And efficiency is a big part of LIPA's long-term roadmap for keeping energy costs level.

MIKE VOLTZ: "The beauty of heat pumps is they produce three to five times as much heat energy, and then in the summertime, they produce air conditioning for [commercial and residential] buildings."

"It's the transition away from fossil fuels to electric heat pumps," said Mike Voltz, director of energy efficiency and renewables for PSEG-Long Island. "Electric heat pumps have a coefficient of performance between three and five, which basically means that every BTU of energy you put into a heat pump, you get three to five (back), depending on the particular unit.

"The beauty of heat pumps is that they produce three to five times as much heat energy, and then in the summertime, they produce air conditioning for [commercial and residential] buildings."

He says that the utility company's goal this year is to convert 3,600 housing units—both new construction and existing—from oil or gas to heat pumps.

Voltz also noted that, even with 85,000 buildings now fitted with rooftop solar throughout Long Island, the buildout there continues apace at several thousand new conversions a year.

PSEG Long Island is also boosting incentives in another way: Time of Day rates that provide discounts of up to 40 percent for customers who opt in and push most of their electricity use to off-peak, overnight hours. Particularly for those who might charge their electric vehicles at home, doing this during overnight hours can help balance demand on the grid as well as keep monthly bills lower, Voltz said.

National Grid would agree with this assessment, especially related to customers seeking more and more ways to become energy and efficient and green within their homes and businesses.

"Over the last 20 years, we have seen growths in commercial and residential customers taking actions to make major energy improves in their properties and homes," Wendy Frigeria, spokeswoman for National Grid, said. She noted that the company has, and continues, to work with customers "by providing energy reduction programs or service that have helped them identify areas of needs and incentives" for efficiency.

For LIPA's Stephenson, innovation and opportunity are entering a new era with opportunities for the region.

"The future for utilities is a lot more interesting and exciting," Stephenson said. "And it's really important for us to get our customers engaged with that."

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LIFOCUS

ENERGY AND THE ENVIRONMENT

Renewable energy: keeping costs, production & demands in check



GARY STEPHENSON: "The future for utilities is a lot more interesting and exciting. And it's really important for us to get our customers engaged with that."

BY ED MOLTZEN LIBN CONTRIBUTING WRITER

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News 12: February 12, 2024

LIPA holding public comment session on Integrated Resource Plan in Nassau

Audience: ~35,000 views



Herald Community Newspapers: February 16, 2024

LIPA's Integrated Resource Plan lays out the blueprint for Long Island's shift to clean energy

The Long Island Power Authority recently unveiled its comprehensive Integrated Resource Plan, outlining how it will achieve the state's goals of creating a zero-carbon power grid in the next six years.

New York state's Climate Act of 2019 established several ambitious goals to combat climate change. The state plans to move away from fossil fuels, generating 70 percent of its electricity from renewable sources by 2030 and 100 percent by 2040 — with an overall goal of reducing greenhouse emissions by 85 percent by 2050.

LIPA's Integrated Resource Plan shows how it will make the shift from fossil fuels, which account for almost half of Long Island's electricity production, with "imports" from other regional energy markets, such as coal and oil, responsible for 34 percent. Meanwhile, clean, renewable sources, such as solar, account for just 5 percent.

But by 2030, LIPA, which is headquartered in Uniondale, plans to repurpose its existing power plants and cut fossil fuel use to just 14 percent, while slicing import use in half, to 15 percent. According to LIPA, this could be accomplished by increasing the production of offshore wind energy.

"Everybody thinks this is something we're doing in the future," Thomas Falcone, chief executive officer of LIPA, said at the recent public information session on Monday in Uniondale, in which he presented LIPA's plan and invited comments and questions from residents. "We're doing these things right now."

But one key factor the plan fails to address is how LIPA's proposed overhaul of its infrastructure and a shift in power sources will financially impact ratepayers.

LIPA is a public authority that contracts with private companies, like PSEG and National Grid, which provide the electricity and operate the systems that LIPA oversees. According to LIPA, they are the third-largest "not-for-profit" public utility in the United States. However, despite this not-for-profit categorization, LIPA's rates are the fourth-highest in the nation compared with utilities of similar size, according to the latest U.S. Energy Administration report.

"I read the (Integrated Resource Plan) and saw a lot of great things in there," said Fred Harrison, a retired teacher who attended a public information in Uniondale. "They address that we're going to need more electric vehicle charging stations and more rooftop solar and offshore wind — but it doesn't explain or look at how we're going to do this in an affordable manner."

Harrison, who is an advocate for the Reimagine LIPA campaign — a movement on Long Island to transform LIPA into a nonprofit electric utility — spoke at the public session and pointed out

that under LIPA's plan, solar energy use would only rise from the current 5 percent to just 7 percent by 2030.

He also questioned why LIPA wouldn't aim to utilize more accessible and cheaper solar power, instead of contracting with private offshore wind companies.

"Not only should the feasibility of publicly owned offshore wind be examined, but the possibility of utility-scale publicly owned solar," Harrison said.

He asked the LIPA's board members to look into whether "the rapid expansion of rooftop solar and storage could provide us with power we need and be cheaper than offshore wind power purchase agreements."

"I think the different factor for offshore wind, compared to storage for solar, is for offshore wind there is a set number of federal leases," Falcone said. "We are still in the early days of offshore wind, so maybe when it is a more mature industry 10 years from now, we'll look at it differently than we do today — but I think all you need to do is look at Orsted, Eversource, and a variety of other (energy companies') stock prices, and that is all you really need to know about wind development in the United States right now."

Harrison said that in communities like Freeport, which have their own publicly owned power systems, residents pay roughly 40 percent less than LIPA customers, and that for-profit utilities have "made lots of money off of Long Island ratepayers."

"Electric power works best when not run by private interests," Harrison said, adding that he and other customers share concerns about "huge corporations taking control of the wind and sun for their own gain."

###

American Public Power Association: January 30, 2024

Long Island Power Authority Utilizes Video Series to Detail Integrated Resource Plan

Home periodical article Long Island Power Authority Utilizes Video Series to Detail Integrated Resource Plan

The Long Island Power Authority is sharing details on its latest integrated resource plan through a series of videos.

Jen Hayen, Director of Communications for LIPA, noted that this is the first time that LIPA has utilized a video series to provide details on its IRP.

Tom Falcone, CEO of LIPA, has shared the videos through his Twitter and LinkedIn accounts. LIPA has also utilized its LinkedIn account to share the videos.

Part one of the video series discusses key findings, how LIPA plans to meet its clean energy goals, and how the public can participate in the process.

"An integrated resource plan is a look out over the next twenty years but really focusing on the next seven years and saying what transmission, what power plants, what clean energy, what demand response, what batteries, what do we need to reliably and affordably meet" the needs of its customers in an environmentally sustainable way, Falcone said in part one of the video series.

He noted that the IRP looks at a number of different scenarios addressing how the future may unfold.

"This is the beginning of a public process," he said in part one of the video series. The IRP was published in November. "We plan to do hearings in February," he said.

Between now and then, LIPA is taking written comments and Falcone said LIPA welcomes feedback on Long Island's energy future.

In Part II of the IRP video series, Falcone and LIPA's Senior Vice President of Power Supply Gary Stephenson discuss how LIPA plans to meet the state's goal of 9,000 MW of offshore wind by 2035, what investments are needed in the transmission system to support the clean energy transition, and the impact this emerging industry will have on Long Island and in the Rockaways.

Hayen said that LIPA plans to publish about one video per week through the start of the public comment sessions in February.

###

Newsday: November 14, 2023

LIPA to release 2024 budget, power needs plan as new trustees join board

Three new LIPA trustees, including its first chairperson in three years, will face a deluge of new numbers, power studies and decisions as the utility on Wednesday releases its 2024 budget, its plan for new power resources and its performance analysis of grid manager PSEG Long Island.

Chairwoman Tracey Edwards takes a position that hadn't been officially filled since former Glen Cove Mayor Ralph Suozzi resigned as chairman in 2021. (Trustee Mark Fischl, who leaves the board this week, had run the meetings as vice chairman for years.) Also joining the board Wednesday are attorney Claudia Lovas and David Manning, Brookhaven National Laboratory director of government affairs and a former National Grid executive vice president.

Edwards in an interview Tuesday said her approach as she takes the chair position at LIPA is to focus on customers.

"Customer service and ratepayers, that's what we have to keep our eye on," she said. "Continuous improvement. If we're focused on making progress and working together cooperatively then we're good."

WHAT TO KNOW

- LIPA on Wednesday will release a \$4.19 billion operating budget for 2024. Customers can expect to see a roughly \$19 increase in their monthly bills next year.
- LIPA is also expected to release a power map for the coming decades that lays out the vision for injecting more green energy into the grid while retiring fossil fuel plants.
- Three new trustees also will join the board: Chairwoman Tracey Edwards, attorney Claudia Lovas and David Manning, a former National Grid executive vice president.

Edwards said she believes that "ultimately everybody wants to do a good job and that's all we have to do is have our eye on the same goal. It's like a family."

Edwards, a former state Public Service Commissioner who recently took the position of senior vice presidents at Las Vegas Sands, previously served as regional vice president of operations for telecom giant Verizon, including for a time overseeing call centers.

"I'm going to lean on my experiences with Verizon," she said. "I was fortunate enough to have had the best customer service results and I'm going to make sure we're doing the same" at LIPA and PSEG.

LIPA on Wednesday will release a \$4.19 billion operating budget for 2024 that includes a \$32 million increase for new initiatives, such as time-of-day rates and better cybersecurity, \$13.4 million for increased wages, \$13.5 million for higher retirement costs, \$8 million for higher debt-service payments, and \$27 million for inflation not tied to labor costs. PSEG recently inked a

new contract with its unionized workforce that includes a cumulative 15.5% wage increase over four years.

Customers can expect to see a roughly \$19 increase in their monthly bills next year compared with projected monthly bills this year, largely because power supply costs — the cost of buying energy and fuel — are expected to increase next year by \$237 million, compared with actual costs in 2023. Part of the increase is \$79 million more for renewable energy purchases.

LIPA on Wednesday is also expected to release its power map for the coming decades known as an integrated resource plan, which lays out the working vision for injecting more green energy into the grid while retiring fossil fuel plants. As Newsday has reported, LIPA expects around half its energy to come from offshore wind over the next half decade and expects to begin retiring fossil fuel plants. It's a huge balancing act, and fueled in part by state law and initiatives that seek to eliminate carbon-based power sources by 2040.

Among the issues the new board will be wrestling with are efforts by PSEG and LIPA to make improvements in customer call centers, where declining performance compared with prior years led PSEG to launch a call-center "get well" plan to improve performance.

On a separate track later this week, a state legislative committee on the future of LIPA will be meeting at Hofstra University to vote on a final report and proposed legislation that would seek a LIPA transition to a fully public utility.

The move, if approved by the full State Legislature and Gov. Kathy Hochul, would put LIPA directly in charge of its own fate, after PSEG's contract expires in 2025. That would mean a significantly increased role for the authority along with projected savings of up to \$80 million a year, studies have said. PSEG says the current arrangement with PSEG running the system is best for customers.

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Newsday: November 14, 2023

LIPA's Power Prediction

Analysis: LIers will get half their energy from wind by 2030



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TOP STORIES

LIPA'S WIND POWER PROJECTION

Will produce half of LI's energy by 2030: analysis

FIRST IN NEWSDAY

BY MARK HARRINGTON mark.harrington@newsday.co

Long Island will get around half its energy from offshore wind resources by 2030 and customers will begin paying around 2% more per year in their power supply charge as more green energy makes its way onto the local and state grids by that time, according to a new power-resource analysis by LIPA and PSEG.

The analysis foresees an oversized reliance on an energy source in offshore wind that has yet to make its way onto the local grid as 2024 comes to a close. But LIPA officials say the road map for a quick ramp-up is in place, along with aggressive plans for more solar, battery storage and even technologies that are under development — some that could extend the life of fossil fuel plants.

The piants. "It's basically a handful of wind farms that need to get built" in seven years, said LIPA, chief executive Tom Falcone, who added the customer costs were "manageable" and the time frame "not impossible," if somewhat flexible. "If it happens by 2031 versus 2029 it probably doesn't change anything we're doing."

The analysis comes as offshore wind in the United States is facing a crisis of cost and as big European wind-farm developers are recording sizable impairment charges tied to their investments while seeking higher rates for energy. Already, Denmark-based Orsted, which is developing the soonto-be completed South Fork Wind Farm, has canceled two much larger wind farms planned for New Jersey, and it still hasn't made a final decision on whether it will move forward with Sunrise Wind, a project designed to bring 924-megawatts to Long Island bw 2025

by 2025. It also comes at a time of change for LIPA itself. A state



Denmark-based Orsted's South Fork Wind Farm project under construction off the Rhode Island coast.

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The analysis comes as offshore wind in the United States is facing serious cost issues.

commission examining the future of LIPA is expected to release a final report this week on a plan to make LIPA a fully public utility, while the LIPA board is undergoing change with a new chairwoman in former Public Service Commission Tracey Edwards.

LIPA budget release

On Wednesday, LIPA will also release its 2024 budget, one that could see monthly bills next year could increase by around \$19, to \$184, officials said.

The power-resource plan, set for release this week, foresees the retirement of around 800-megawatts of fossil-fuel powered plants, impacting facilities large and small around Long Island by 2030, as more offshore wind comes online, and battery-storage units gradually replace smaller plants known as "peakers," which serve the grid during high-demand summer periods.

More findings in study Among other findings and projections in the study:

An increase in the amount of battery storage on Long Island from a current 10-megawatts to up to 750 megawatts, a plan that would put large facilities of lithium-ion battery barns across the region. The move could prove challenging given recent protests and moratoriums on battery-storage plants after three fires this year, including one in Southampton

An increase in the number of solar-power installations and customer-installed batteries across Long Island by 700 megawatts, a dramatic shift from a power source that makes up around 5% of LIPA's grid, including several large solar farms. The study foresees a large but steady increase in rooftop solar across Long Island.

 Power imported from off Long Island through electric cables will drop by more than half as a percentage of LIPA's power needs, from a current 27% to 15% by 2030.

Yet LIPA's ability to send power to other regions of the state will increase during the

> EDWARDS NAMED NEW LIPA BOARD CHAIR A10

period, with the creation of a major state-sponsored transmission project known as Propel New York. LIPA says that with existing cables and Propel, there should be enough cable capacity to forgo the need for any other major cables beyond the region through 2030.

Retiring peaking units

The plan to reduce fossil-fuel power plants will begin to gain steam around 2025, according to the plan, when LIPA begins to retire peaking units in Shoreham, Glenwood Landing and West Babylon. (Some had been scheduled for retirement earlier this decade, but the plans were delayed after large cable failures).

Tailures). Under the plan, LIPA by 2030 envisions retiring up to 376 megawatts of capacity at the E.F. Barrett power station in Island Park, up to 376 megawatts at the Port Jefferson power station, and up to 387 at the Northport station. The steam unit retirements would shut down the major power producers at Port Jefferson and Island Park, but keep smaller peakers in place as needed. Only one of three steam units at Northport would be retired by 2030, according to the plan, keeping the others available as needed. LIPA has negotiated lower

WEB TOOL

TEACHES ABOUT

WIND CAREERS A19

tax payments tied to the plants, and has the option to extend them for five years beyond 2027, when LIPA's contract with owner National Grid expires. The plan explores the possibility that power stations subject to plant retirements could be "repurposed" to serve as transmission stations for green energy. LIPA has proposed using the Shoreham and West Babylon sites that now hold peakers for use as battery storage sites.

New York State has awarded contracts for about 8,400 megawatts of offshore wind to supply power to the state by 2030, with 3,600 of that planned for connection onto the Long Island grid. But that may be less than half of what's needed by 2040 to meet state climate goals.

'Many development risks'

LIPA's power plan points to "many development risks," including requests for increased power prices from developers and opposition to large transmission cables in some communities, as have already been experienced in Wainscott and Long Beach.

The plan foresees eventual success in the shift to a mainly wind-powered grid, noting that "even if one project falls through, another will take its place," given a large stable of developers and a "large" wind resource. Gov. Kathy Hochul's office is planning a new bid request for projects that requested power-price increases. A \$3.3 billion state-backed plan will see an expansion of the cable capacity of the grid to allow more offshore wind projects to connect through Long Island.

land. Putting so much reliance on offshore wind could stress the system during periods that the report calls "wind-lulls," which could last up to 24 hours on average about 30 times a year. Lulls of more than 48 hours could happen about seven times a year, with lulls occurring 70% of the time during peak summer months. As a result, LIPA will need "sufficient backup resources to withstand multiday wind lulls," the report notes.

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Newsday: November 13, 2023

LIPA sees big increase in offshore wind power by 2030, but headwinds remain

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- The analysis comes as offshore wind in the United States is facing serious cost issues.

It also comes at a time of change for LIPA itself. A state commission examining the future of LIPA is expected to release a final report this week on a plan to make LIPA a fully public utility, while the LIPA board is undergoing change with a new chairwoman in former Public Service Commission Tracey Edwards.

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LIPA has negotiated lower tax payments tied to the plants, and has the option to extend them for five years beyond 2027, when LIPA's contract with owner National Grid expires. The plan explores the possibility that power stations subject to plant retirements could be "repurposed" to serve as transmission stations for green energy. LIPA has proposed using the Shoreham and West Babylon sites that now hold peakers for use as battery storage sites.

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Putting so much reliance on offshore wind could stress the system during periods that the report calls "wind-lulls," which could last up to 24 hours on average about 30 times a year. Lulls of more than 48 hours could happen about seven times a year, with lulls occurring 70% of the time during peak summer months. As a result, LIPA will need "sufficient backup resources to withstand multiday wind lulls," the report notes.

While the plan estimates that projects already in the pipeline for transmission, solar and battery storage will keep the grid reliable, "significant additional clean resources" will be needed beyond 2030 to meet the goal of fully phasing out plants by 2040.

LIPA's peak load requirement is expected to grow from by around 1,400 megawatts by 2040, driven primarily by electric cars and heating. About 41,000 LIPA customers have electric vehicles now, the most in the state. The change will necessitate the addition of between 3,000 and 6,000 megawatts of what the report calls "dispatchable emission-free resources and storage," an amount equivalent to "replacing the existing fleet of fossil-fueled power plants …"

Many of the technologies expected to be used to replace natural-gas plants are a new generation of generators that use "green" hydrogen and biogas, which is made from decomposing organic material. National Grid has announced targets to replace up to 20% of natural gas demand with biogas, and blend "20% green hydrogen and 30% biogas into its networks by 2040.

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SUMMARY GUIDE

2023 INTEGRATED RESOURCE PLAN

Powering What's Next for Long Island and the Rockaways



At LIPA,



the Power is Yours.

Proudly serving Long Island and the Rockaways.

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with clean, reliable, and affordable energy.	Board of Trustees	9
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PART 2 -

Executive Summary

A roadmap to the clean energy future for Long Island and the Rockaways.

This section begins on page 15.

PART 3 -----

Report Findings

Transitioning to a zero-carbon electric grid is the primary driver of the Integrated Resource Plan.

This section begins on page 23.

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PART 3

Conclusion

Integrated Resource Planning is a collaborative process and includes participation from the public.

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Next Steps, Public Participation, and Acknowledgements



Jones Beach Energy & Nature Center | Wantagh, New York

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PROUDLY SERVING OUR CUSTOMERS WITH CLEAN, RELIABLE, AFFORDABLE ENERGY.

About LIPA

The Long Island Power Authority (LIPA) is the third-largest public power utility in the United States, serving 1.2 million customers. LIPA's purpose is to serve our customers and community by providing clean, reliable, and affordable energy to Long Island and the Rockaways.

LIPA owns the electrical transmission and distribution system serving our community and contracts for most of the management services and power supply used to operate our electric grid. Since 2014, LIPA has contracted with PSEG Long Island for management services, and LIPA provides service to customers under the PSEG Long Island brand name. LIPA owns about 250 megawatts ("MW") of nuclear generation, contracts with National Grid for 3,550 MW of generating capacity, and contracts with other providers for 1,750 MW of on-island generation and 990 MW of transmission cable capacity to facilitate purchases from electric markets in New York, New England, and the mid-Atlantic states.

LIPA is governed by a local Board of Trustees who are responsible for contracting with vendors; setting policy, strategy, and performance metrics for PSEG Long Island's service to our customers; financing the infrastructure investments necessary for a reliable electric grid; and leading Long Island's transition to a clean energy future.

Fast Facts

Customers

Residential Customers: 1,026,143 Commercial Customers: 133,597

Energy Requirements

19,884,053 megawatt-hours

Generating Capacity

~5,550 MW

2023 Peak Demand

~5,000 MW

Transmission System

1,400 miles

Distribution System

Miles overhead: 9,000 Miles underground: 5,000 Transformers: 189,000

Substations

Transmission: 30 Distribution: 152

2024 Proposed Budget

Operating: \$4.3 Billion Capital: \$905 Million



Our Purpose

LIPA's purpose is to serve our customers and community by providing clean, reliable, and affordable energy to Long Island and the Rockaways. As a not-for-profit utility, LIPA is a value-driven organization that puts our customers first in every action and decision.

Vision

LIPA's vision is to be our customers' trusted energy partner. To achieve our vision, LIPA will:

- Actively engage with our customers and the communities we serve.
- Respond to our customers' needs and exceed their expectations.
- Be a recognized innovator in our industry to better serve our customers.
- Be known as a steward of our environment and community.

Values

Service: Our work is service. Everything we do is for the benefit of our customers.

Collaboration: Operate as one LIPA team. Everyone is included.

Excellence: One plan, with relentless implementation. Clear performance goals.

Thomas Falcone, LIPA CEO, at the one year anniversary of the Calverton Solar Energy Center in July 2023.

Board of Trustees

A local Board of Trustees govern LIPA. The Board consists of nine Trustees, five of whom are appointed by the Governor, two by the Temporary President of the State Senate, and two by the Speaker of the State Assembly.

The Trustees serve for staggered four-year terms. All Trustees reside on Long Island or in the Rockaways and have relevant utility, corporate Board, or financial experience. LIPA does not compensate Trustees for their service.

Visit **lipower.org** for more information.



Tracey Edwards Chair



Laureen Harris Trustee



Vanessa Baird-Streeter Trustee



Claudia Lovas Trustee



Drew Biondo Trustee



Dominick Macchia Trustee



Valerie Anderson Campbell Trustee



Mili Makhijani Trustee



David Manning Trustee

Board Policies Establish LIPA's Strategic Direction

The LIPA Board provides strategic direction through a set of governance policies. The Board's policies define LIPA's purpose and vision and set expectations for the strategic outcomes that management will deliver in the areas of reliability, customer experience, clean energy, affordability, information technology, and fiscal sustainability. The Board reviews each of its policies annually, and LIPA management reports on outcomes in reports to the Board for each policy.

For more information about the Board's policies, visit lipower.org/purpose.



LIPA's Strategic Objectives



Reliability and Resiliency

- Top 10% reliability among peer utilities
- Improve circuit conditions that cause repeated customer outages
- Invest in system resiliency to reduce outages and restoration times from severe weather
- Independently verify and validate PSEG Long Island's emergency restoration planning



Customer Experience

- Deliver top 25% customer satisfaction in J.D. Power studies
- Continual improvement in ease of customer interaction, as measured by customer surveys
- Invest in technology to enhance the convenience of billing, payments, appointments, and emergency restorations



Clean Energy

- 70% renewable energy by 2030
- Zero-carbon electric grid by 2040
- Encourage beneficial electrification of transportation and buildings (i.e., electric vehicles and cold climate heat pumps)



Customer Affordability

- Maintain regionally competitive electric rates
- Prioritize investments to balance cost and service quality
- Maintain affordable electric bills for low-income customers and disadvantaged communities



Information Technology and Cybersecurity

- Deploy modern grid management technology and data analytics benchmarked to the top 25% of utilities
- Protect digital infrastructure and customer data, as measured by an annual independent assessment of cybersecurity practices
- Clearly communicate customer information collection policies



Fiscal Sustainability

- Achieve AA-category credit ratings by reducing LIPA's debt-to-assets ratio from 90%+ to 70% or less by 2030
- Maximize grants and low-cost funding sources
- Develop budgets and financial plans that maximize customer value and aggressively manage costs
- Provide customers and investors with timely, transparent, accurate, and useful information to evaluate LIPA's financial performance and plans

Executive Management

The LIPA team is proud to serve our customers. Our leadership team brings extensive utility experience to the organization in all core business functions, including transmission and distribution operations, power supply, customer experience, information technology, finance, legal, strategy, performance management, communications, and external affairs.

Visit lipower.org/leadership for more information on each member of LIPA's management team.



Thomas Falcone Chief Executive Officer



Billy Raley Senior Vice President, Transmission and Distribution



Barbara Ann Dillon, Esq., PHR Vice President of Human Resources and Administration



Mujib Lodhi Chief Operating Officer



Werner Schweiger Executive Advisor for Operations



Jennifer Hayen Director of Communications



Dennis Anosike Chief Financial Officer



Gary Stephenson Senior Vice President, Power Supply



Kenneth Kane Senior Advisor for Oversight



Bobbi O'Connor General Counsel and Secretary to the Board of Trustees



Donna Mongiardo, CPA Vice President, Controller



Tom Locascio Director of External Affairs



Rick Shansky

Former Senior Vice President, Power Supply and Wholesale Markets

LIPA would like to acknowledge the many contributions to our customers, including for this 2023 Integrated Resource Plan made by Rick Shansky, who retired in November 2023. Mr. Shansky's career spanned over four decades, starting at the Long Island Lighting Company in 1981.

On behalf of our customers, we thank Mr. Shansky for his 15 years of service at LIPA.



Thomas Falcone, LIPA CEO, and Mark Fischl, Former Vice Chair of the Board, accepting the Sue Kelly Community Service Award at the American Public Power Association's National Conference in June 2023.

PUBLIC

Sue Kelly Community Service Award

Long Island Power Authority

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Environmental Leadership

Since LIPA's inception in 1998 as a public power utility, we have been committed to protecting the environment. LIPA's vision for power supply is to provide clean, reliable, and resilient electricity to our customers at an affordable cost that both maintains the economic competitiveness of our region and minimizes the economy-wide greenhouse gas emissions for Long Island and the Rockaways by encouraging the electrification of vehicles, buildings, and equipment.

Our environmental leadership includes some of the first and largest renewable energy projects and initiatives to promote decarbonization in New York State:

- In 2011, the Long Island Solar Farm (LISF) began delivering power to customers. LISF is a 32 MW solar farm located at Brookhaven National Laboratory and, at the time, was one of the largest solar farms in the eastern United States. It generates enough renewable energy to power approximately 4,500 homes.
- In 2015, LIPA sought new resources to meet load growth on the South Fork of Long Island. A portfolio of clean resources was selected, consisting of load control programs, battery storage, and an offshore wind farm. In 2017, LIPA signed a Power Purchase Agreement for South Fork Wind – the first offshore wind farm in federal waters and in New York State. The 130 MW project will power 70,000 homes and offset 300,000 tons of carbon emissions and is expected to be operational by the end of 2023.
- In 2021, LIPA launched a procurement for at least 175 MW of bulk energy storage projects. As of November 2023, negotiations are ongoing with developers of several projects in Suffolk County for completion in 2025.
- In 2023, the Board voted to make LIPA the first electric utility in New York State to implement Time-of-Day ("TOD") rates as the standard billing option. Most customers will be transitioned to this new rate in 2025.
- By 2030, Long Island and the Rockaways will have 1,200 MW of rooftop solar. As a leader in rooftop solar, LIPA exceeded New York's target solar goal for 2025 four years early and accounts for 40% of statewide rooftop solar projects – roughly three times its share of statewide electric sales.
- LIPA has achieved 5.26 trillion British thermal units ("TBtu") towards its energy efficiency goal of 7.9 TBtu by 2025, offering a wide selection of incentives, rebates, and programs to both residential and commercial customers on Long Island and the Rockaways to assist them in reducing their energy usage.



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EXECUTIVE SUMMARY



A ROADMAP TO A **CLEAN ENERGY FUTURE** FOR LONG ISLAND AND THE ROCKAWAYS.



LIPA periodically conducts an Integrated Resource Plan ("IRP") to study the need for generation, transmission, and demandside resources to provide clean, reliable, and affordable electricity to Long Island and the Rockaways.

LIPA's last IRP was released in **2017** and it determined that LIPA would not need to add generation to meet load growth through at least 2035, mainly due to increased energy efficiency and renewable energy. As a result, the decision was made to forego new or repowered fossil-fueled generation and instead concentrate on a clean energy future. That future was further defined in 2019 by New York's Climate Leadership and Community Protection Act ("CLCPA" or "Climate Act") and the goals it established for economywide carbon reduction and clean resource additions.

LIPA's 2023 IRP aims to provide an action plan through 2030 to meet interim milestones established in the Climate Act, while framing resource decisions that will need to be made later to achieve 100% zero-emission electricity by 2040. Transitioning to an entirely carbon-free grid involves adding new clean energy sources, investing in transmission, and retiring older, fossil-fueled power plants.

Now **By 2025 By 2030 Resilient and Distributed Grid Renewable Energy**/ Clean Energy Economy Over 157,000 clean energy jobs 3,000 MW of energy storage **Clean Energy Standard** 70% electricity from renewable energy **Energy Efficiency and** GHG Reduction 40% reduction in greenhouse gas emissions from 1990 levels **Building Decarbonization** Energy 185 Tbtu end-use savings in buildings and industrial facilities **Renewable Energy** 6,000 MW of distributed solar More than 200.000 new jobs added 10,000 MW of distributed solar 6,000 MW of energy storage

Figure 1: New York's Climate Act Goals



New York's Climate Act

Passed in 2019, New York's Climate Act is among the most aggressive in the nation, calling for an orderly and just transition to a clean energy economy that creates good-paying jobs and fosters healthy communities. Figure 1 shows the goals established by the Climate Act, which include time-bound objectives for greenhouse gas ("GHG") emissions reductions from electricity production, sales of zero-emission vehicles, and resource-specific requirements for distributed solar, renewable energy, energy storage, and offshore wind.

LIPA, along with the state and other New York utilities, is taking action to achieve the goals of the Climate Act, including a 100% zero-carbon electric grid by 2040 and an 85% reduction in economywide carbon emissions by 2050. A significant portion of the economywide carbon emissions reductions will come from using the zero-carbon electric grid of the future as the clean energy source to decarbonize other sectors of the economy, including transportation, buildings (heating), industry, and agriculture.

The Climate Act goals will change how our electric system operates and how we plan to ensure best-in-class reliability. The potential impacts of climate change, from unpredictability in weather patterns to an increase in the frequency of extreme weather events, provide further challenges and add complexity to the planning process.

To support the implementation of the Climate Act, the action plan developed by the 2023 IRP includes:

- Integrating into the grid substantial new renewable generation and battery storage.
- Investing significantly in the transmission grid serving Long Island and the Rockaways.
- Phasing out fossil-fueled generation over time.
- Using clean electricity to decarbonize heating and transportation, with support for disadvantaged communities and lowand moderate-income customers.

For more information on the Climate Act, please visit climate.ny.gov.



KEY FINDINGS



What are the key findings of the IRP?

1

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By 2030, the addition of solar and offshore wind resources will cause LIPA's **carbon footprint to decline by over 70%** from 2010 levels.

Offshore wind projects already under development will connect 2,400 megawatts ("MW") to the Long Island grid, out of a statewide goal of 9,000 MW by 2035, with more to come as forecasts show as much as 18,000 MW or 18 gigawatts ("GW") of offshore wind by 2050.

Long Island's high-voltage transmission grid will need to be built out to integrate the large amounts of offshore wind, some of which will be exported to the rest of New York. **The Propel NY Energy project will meet these transmission needs through 2030 and beyond,** although further study is required to assess transmission needs for a zero-carbon electric grid by 2040.

As offshore wind and battery storage resources come online, LIPA will be able to **retire up to 800 MW of existing Long** Island power plants by 2030.

Demand-side measures, such as LIPA's energy efficiency rebate programs and customer installations of solar photovoltaic ("PV") systems, are projected **to effectively offset economy-driven growth in electricity sales between now and 2030**.

LIPA's transition to TOD rates in 2024 and 2025 will encourage customers to shift energy use outside of peak hours and thereby help moderate growth in peak electric demand, which is a main driver of the need for investments to upgrade the transmission and distribution ("T&D") system. LIPA will need to further expand on TOD rates with managed charging solutions in future years.

Significant growth in electricity consumption is expected post-2030 as heating and transportation are increasingly electrified.

Clean, distributed resources will transform the local electric grid into a two-way street, requiring **upgrades in distribution** capacity and controls, including the associated information technology ("IT") systems to intelligently manage the grid.

For the post-2030 period, the industry will need to develop **new solutions and technology to balance electric supply and demand** on an hourly, daily, and seasonal basis to fully replace dispatchable fossil units.

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KEY INITIATIVES

What are the key initiatives that LIPA needs to undertake through 2030?

Participate in large-scale statewide clean energy procurements conducted by NYSERDA to achieve New York's 70% renewable by 2030 objective, selectively procured using LIPA's low cost of capital where there are likely to be savings or localized opportunities.

For more information, see "Decarbonizing the Electric Grid" on page 29.

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Procure additional energy storage to reach up to 750 MW on Long Island in cooperation with NYSERDA and through selective LIPA procurements.

For more information, see "What storage has LIPA procured to date? Is LIPA on target to meet its share of the state's 3,000 MW by 2025 and 6,000 MW by 2030 storage objectives?" on page 48.

Phase out power contracts with Long Island fossil generation owners to **retire up to 800 MW of fossil-fueled generation**. For more information, see "What are LIPA's existing fossil fuel power plant contracts and how will they be retired?" on page 34.

Work with the project developer and stakeholders to complete the **\$3.3 billion Propel NY Energy project to build out the transmission "backbone"** connecting Long Island to the rest of New York for offshore wind.

For more information, see "Can Long Island's electric grid handle the amount of offshore wind that will be produced?" on page 43.

Implement TOD rates in 2024 and 2025 along with managed charging programs to minimize the peak hour load increase expected from the increasing electrification of transportation.

For more information, see "What can LIPA do to encourage customers to reduce electricity consumption during system peak periods?" on page 56.

Develop a multi-year energy efficiency, beneficial electrification, and demand response ("EEBEDR") plan that maximizes opportunities for cost-effective EEBEDR programs, while investing in **disadvantaged communities** and supporting low and moderate-income customers.

For more information, see "What are LIPA's plans for customer energy efficiency and demand-side management programs?" on page 57 and "What is being done to help disadvantaged communities meet Climate Act goals?" on page 58.

Increase hosting capacity by 700 MW for distributed energy resources ("DER"), and continue to promote customerowned DER including rooftop solar and storage.

For more information, see "How LIPA is reducing the cost of grid expansion for distributed resources" on page 50.

Prioritize the retirement of fossil fuel generating stations **in areas within or near disadvantaged communities**. For more information, see "What is being done to help disadvantaged communities meet Climate Act goals?" on page 58.

Prepare the electric grid to meet the challenge of climate change by designing for the increasing frequency of extreme temperatures and severe weather, configuring supply resources to provide resiliency, and **continuing investments to storm harden the electric grid**.

For more information, see "Planning for the Effects of Climate Change" on page 59.

Support research into zero-emission, dispatchable generation to enable the complete replacement of fossil-fueled generation by 2040.

For more information, see "What are the leading dispatchable emissions-free technologies that are under development?" on page 47.

REPORT FINDINGS

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TRANSITIONING TO **A ZERO-CARBON ELECTRIC GRID** IS THE **PRIMARY DRIVER** OF THE 2023 IRP.

Background

LIPA has organized this report around themes in the form of answers to frequently asked questions to help customers and stakeholders understand the IRP's assumptions, findings, and next steps.

What is an IRP?

An IRP studies the supply-side (i.e., generation, energy storage), demand-side (i.e., energy efficiency, demand response, distributed energy resources), and transmission investments that LIPA may need to make over the next 10 to 20 years to provide reliable, cost-effective service to customers under a range of scenarios. An IRP considers customer usage trends, existing resources, policy and regulatory requirements, changing technology, risks, and opportunities, among other factors.

The current IRP has a study period of 2023 to 2040, focusing on actions and decisions that need to occur between now and 2030. LIPA will re-evaluate any actions beyond 2030 in the next IRP planning cycle with updated information and assumptions.

The IRP findings and actions are stable between now and 2030 under a wide range of scenarios, while the conclusions for the period beyond 2030 are subject to significant revision based on developments over the next seven years.

How was the IRP developed?

Figure 2 shows a high-level overview of the IRP process. The modeling and analysis conducted in the IRP utilize a scenariobased approach reflecting various pathways to achieve a clean energy future. Modeling involves projecting customer demand and simulating the dispatch of resources to meet that demand, including costs to purchase generating capacity, energy, and transmission service under existing or planned contracts and through regional power markets.

The scenarios follow trajectories similar to those developed in the Scoping Plan¹ for economywide decarbonization developed by New York's Climate Action Council. For each scenario, the IRP considers a range of options to maintain reliability while complying with the Climate Act's decarbonization targets, including, for example, replacing fossil generation with renewables and/or storage technologies, as well as expanding the use of customer load management and energy efficiency programs.

Figure 2: Integrated Resource Planning Methodology



¹ The New York State Climate Action Council's Scoping Plan can be viewed at <u>https://climate.ny.gov/resources/scoping-plan/</u>

Which scenarios are modeled in the IRP and how do the scenarios influence the IRP's recommendations?

The base case for the IRP models the clean resource additions called for under the Climate Act and uses the same trajectories for beneficial electrification of heating and transportation as detailed in the **Climate Actions Council's** <u>Scoping Plan</u>. Besides the base case, the following additional scenarios were assessed in the IRP:

- Accelerated economywide decarbonization This scenario assumes faster penetration of EVs and heat pumps, which results in higher load growth in the early years of the planning horizon. This scenario results in minimal changes in local resource needs compared to the base case during the actionable period from 2023 to 2030. The relatively modest increase in peak demand can be satisfied by maintaining a portion of the existing fleet of fossil-fueled plants, planned offshore wind resources, and meeting residual reliability needs by importing generating capacity over existing and future transmission interties.
- Expanded interties from Long Island to other regions This scenario assumes another 600 MW transmission intertie to the rest-of-state. The modeling shows that further expansion beyond the Propel NY Energy project will not be needed during the actionable period of the IRP through 2030. As more offshore wind is connected to LIPA's system after 2030, future studies will indicate any need for additional transmission interties based on then-current information. For more information about the Propel NY Energy Project's future interties for offshore wind, see the "Offshore Wind" section on page 39.
- Accelerated transition away from fossil fuel combustion This scenario examines potential accelerated decarbonization at a faster pace than the Climate Action Council trajectories for the state. The IRP concluded that the lack of technological readiness, limited supply, and higher costs of low carbon fuel technologies through 2030 would pose major challenges to meaningful action.
- Expanded demand-side measures This scenario examines adding demand-side programs beyond the current offerings, which have focused on rebates for efficient end uses and incentives for demand management measures. The new measures include TOD and utility programs featuring two-way communication and control capabilities for EV chargers, thermostats, and behind-the-meter battery storage systems. LIPA plans to pursue these measures. For more information on the proposed programs see, "What are LIPA's plans for customer energy efficiency and demand-side management programs?" on page 57.
- Advanced technologies This scenario examines emerging clean generation technologies, including long-duration storage solutions not possible with current lithium-ion batteries. Each of the solutions tested under this scenario faces significant feasibility challenges through 2030 due to factors such as lack of technological maturity, permitting requirements, and lack of suitable sites on Long Island.

Who conducted the IRP?

LIPA's resource planning process is a **collaborative effort, led by LIPA's service provider, PSEG Long Island, on behalf** of LIPA, with active involvement from LIPA staff and assistance from utility consultants. Experts from Brookhaven Science Associates and Stony Brook University also provided input on emerging technologies such as advanced battery storage, including short- and longer-term feasibility as well as risks and challenges to consider in model development. In addition, LIPA will engage stakeholders and the public through public comment sessions to answer questions and refine IRP recommendations as well as the action plan to be implemented through 2030.

Creating a Resilient Electric Grid

LIPA continues to make substantial investments in the reliability and resiliency of the T&D system, with \$77 million invested in storm hardening in the 2023 budget and \$84 million proposed in the 2024 budget.

LIPA has invested \$6.4 billion since 2016 to reduce the number and duration of outages. Over the past ten years, more than 1,275 miles of distribution mainline circuits have been strengthened, leading to a 49% drop in damage-related outages in storm-hardened zones. LIPA has also storm hardened 10 substations, to protect from dangerous storm surge.

Since 2021, LIPA has taken actions as part of a 5-year storm mitigation plan that include removing hazardous trees, trimming branches that interfere with power lines, and strengthening transmission load pockets.

With these programs, and others, the minutes of interruptions experienced by customers due to a major storm hitting Long Island is expected to be reduced by an additional 18% between 2021 and 2025. More information on the actions LIPA is taking to strengthen the electric grid can be found on page 59.



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Decarbonizing the Electric Grid

How does LIPA supply the electricity needs of its customers?

LIPA's service territory spans Nassau and Suffolk Counties in Long Island and the Rockaway Peninsula in Queens County. Jutting out off the coast, Long Island is at the tail end of New York State's electric grid. Our geographical location poses unique challenges, from seasonal weather events (i.e., winter storms and hurricanes) to constrained interties with regional electric grids.

Electricity is generated at power plants or renewable energy sites and moves through a complex system, referred to as the electric grid, which includes substations, transformers, and power lines that connect electricity producers to customers. Much of Long Island is interconnected for reliability and commercial purposes, forming a redundant, resilient network that is planned, controlled, and operated centrally by the local utility and the New York State Independent System Operator ("NYISO").

Figure 3 shows that Long Island's electric resources consist of seven major interconnection cables to regional markets, dozens of fossil-fueled power plants, five solar farms, and two battery storage systems. There are multiple power supply projects under development, including four major offshore wind projects and three additional interties to LIPA's service territory.

Figure 3: Long Island and the Rockaways Electric Grid





How does the electric grid meet Long Island's energy needs today?

Electric loads vary throughout the year, with the highest loads typically occurring on weekday afternoons in the summer (referred to as the "peak"). Since electricity can only be stored in limited quantities, generation and imports must be controlled to match customer demand on a minute-by-minute basis. The most efficient or economical power plants run all day long and are known as "baseload plants." Smaller generating plants that can be started up quickly, but with higher operating costs, are run only to meet the peak loads of each day – these are known as "peakers." LIPA also imports power to fill needs not met by on-island generation or when power production costs are lower in neighboring regions. LIPA's power imports are sourced from the Nine Mile Point 2 and FitzPatrick nuclear power plants in Oswego, New York and electricity markets throughout New York State and neighboring regions.

Figure 4 shows that approximately 47% of LIPA's power is produced by local fossil-fueled power plants and 19% is from emissions-free solar farms and nuclear plants. 34% of LIPA's power supply is from imports purchased each day in the New York, New England, and Mid-Atlantic electricity markets. Since market purchases are pooled from many different power stations, the ultimate source of energy production can only be estimated.



Figure 4: Sources of Long Island Electricity Production in 2022

Note: The solar category includes both customer-owned solar and utility-scale solar farms.

How will LIPA bring cleaner energy sources to Long Island and the Rockaways?

The IRP anticipates that additional solar, storage, and offshore wind resources will need to be developed and connected to the electric grid. LIPA has three options for procuring these resources. First, LIPA's electric rate tariff provides for payments to customer-owned solar and storage for the energy they supply to the grid. Second, LIPA may issue Requests For Proposals to construct utility-scale resources. Third, LIPA can contract with NYSERDA to purchase a share of the renewable energy credits ("RECs") it regularly procures from clean energy suppliers. NYSERDA is the state's designated procurement entity for purchasing RECs from wind and solar projects and "storage credits" from energy storage projects to meet Climate Act goals for investor-owned utilities. Similar to the other state utilities, LIPA may purchase on a voluntary basis up to its pro rata share of the RECs and storage credits obtained by NYSERDA, based on its share of the statewide load. LIPA serves about 12-13% of the state's load and has been a participant in the statewide cost-sharing arrangement.

LIPA has the option to employ its access to low-cost capital for a portion of its needs under an ownership arrangement. However, at present, the only generation owned by LIPA is an 18% share of the Nine Mile Point 2 nuclear plant in Oswego, New York. LIPA expects to rely on the NYSERDA procurements for a significant portion of its clean energy supply since those procurements benefit from economies of scale (particularly for offshore wind) and statewide scope (i.e., the ability to contract for utility-scale solar and land-based wind located off Long Island), both of which result in reduced cost. **LIPA plans to procure independently, using its access to low-cost capital, where it finds it is likely to be able to do so at a lower cost or where there are localized clean energy opportunities. Examples of such opportunities include LIPA's procurement of the South Fork Wind project, which will help meet local energy demand on the South Fork of Long Island, storage to bolster system reliability needs in certain locations, and Long Island-based utility-scale solar and storage projects. In this way, LIPA plans to meet the state's clean energy goals at the lowest possible cost for its customers by using all of the tools available to derive the best outcomes.**



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What resources are being added to decarbonize the Long Island electric grid?

LIPA and New York State are taking actions on both the demand- and supply-sides to achieve a zero-carbon electric grid. On the demand-side, enhanced energy efficiency programs and incentives that encourage customers to install rooftop solar, storage, and heat pumps and switch to EVs will play important roles in helping Long Island and the state reduce GHG emissions. On the supply side, **Figure 5** shows the clean energy resources under development that will add thousands of megawatts of new clean resources to the Long Island and Rockaways electric grid by the early 2030s. These include:

- 1,419 MW of customer-owned solar and local solar farms
- 2,368 MW of offshore wind
- 750 MW of battery storage

With expected additions, the future clean energy portfolio is expected to total about 4,500 MW compared to LIPA's 2023 peak demand of approximately 5,000 MW. While the sheer size of the additions is impressive, adding 1 MW of battery storage, solar, or wind is insufficient to replace 1 MW of fossil fuel generation. Some fossil fuel generation will be needed to serve as backup to intermittent generation until new technologies for long-duration, dispatchable, emissions-free resources become available at scale. This fossil generation will run less, serving to balance renewables, so the carbon emissions of the Long Island grid will decline steeply. For more information, see "How will the system's peak load change through 2040?" on page 55.

Figure 5: Long Island Clean Energy Projects in Service by the Early 2030s

Solar (1,419 MW)	Size (MW _{AC})	In-Service (Est./Act.)	
Long Island Solar Farm	32	2011	
Eastern Long Island Solar Project	11	2013	
Shoreham Solar Commons	25	2018	
Riverhead Solar	20	2019	
Kings Park Solar 1 and 2	4	2019	
Solar Feed-in Tariffs I-III	89	2021-2022	
LI Solar Calverton	23	2021	
Behind-the-Meter	1,200	2030	
Solar Communities (FIT V)	15	2025	
Offshore Wind (2,368 MW)	Size (MW _{AC})	In-Service (Est./Act.)	
South Fork Wind Farm	130	2024	
Sunrise Wind	924	2026	
Excelsior Wind	1,314	2030	
Energy Storage (750 MW)	Size (MW _{AC})	In-Service (Est./Act.)	
East Hampton & Montauk Storage	10	2018 & 2019	
2023 RFP Awards (Pending)	175+	2025	
Future Storage Additions	565 2030		
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What will be the sources of Long Island's electricity in 2030?

Figure 6 shows that by 2030, nearly half of the power supply to Long Island will be sourced from offshore wind, with an additional 19% from zero-carbon solar and nuclear. Long Island fossil plants will provide 16% of electric needs, while imports from neighboring electric grids are projected to provide 15%.



Figure 6: Sources of Long Island Electricity Production in 2030 | 22,011 GWh

Note: The solar category includes both customer-owned solar and utility-scale solar farms. Estimate excludes recently announced Excelsior Wind.

How will new clean energy resources affect LIPA's carbon footprint through 2030?

Figure 7 shows that LIPA's carbon footprint is projected to decline over 70% by 2030 compared to 2010. Much of this depends on adding offshore wind to the Long Island electric grid.



Figure 7: Carbon Emissions Footprint for LIPA's Power Supply from 2010 to 2030



What is the outlook for fossil fuel generation for LIPA's service territory?

As new clean energy sources are added to the grid, LIPA will ramp down its fossil fuel power purchase agreements. Contracts for selected units will be extended into the 2030s to support system operating flexibility and reliability, primarily to balance the intermittency of renewables and serve as backup during lulls in offshore wind production and when the sun goes down. **Figure 8** shows the remaining contract terms for LIPA's existing power purchases by category and indicates the potential for ramping down contracts that are not needed. **Nearly all of LIPA's power purchase agreements are subject to renewal by 2030, so the portfolio can be re-shaped based on need.** The complete elimination of fossil generation will require the development of new technology that can be deployed reliably at scale for dispatchable emissions-free resources. There are several demonstration projects of potential technologies that are in various phases of development. For more information, see "What are the leading DEFR technologies that are under development" on page 47.



Figure 8: Phase-Out of Fossil Fuel Power Contracts

PSA with National Grid for LILCO Legacy Generation
Modern Combustion Turbines
Modern Combined Cycle Plants

What are LIPA's existing fossil fuel power plant contracts and how will they be retired?

LIPA's single largest fossil fuel purchase agreement is the Power Supply Agreement ("PSA") with National Grid Genco for 3,550 MW of Long Island Lighting Company ("LILCO") era legacy generation. **Under the PSA, LIPA has the right to cease purchasing electricity from selected units before the contract's expiration in April 2028. LIPA has retired 420 MW to date, with around 200 MW of additional combustion turbine retirements pending**. As shown in **Figure 9**, LIPA expects to ramp down some of the Genco steam turbines that will not be needed for system reliability but will likely extend the PSA for units that will be necessary post-2028 under the existing Federal Energy Regulatory Commission ("FERC") regulated cost-of-service arrangement.

The timing for ramping down the steam turbines at "E.F. Barrett" (Island Park), Port Jefferson, and Northport will be determined based on further analysis. The facilities were originally intended for baseload use during the LILCO era but have operated at annual capacity factors below 25% (see **Figure 10**), which indicates a reduced need to keep the units in service. IRP modeling indicates that any steam turbines that remain in service by 2030 would operate at a capacity factor well below 10%.

For LIPA's other expiring power purchase agreements, all options remain on the table — whether to let the contracts expire or extend under renegotiated terms. Generators without power purchase agreements have the option to operate as merchant plants, selling their energy and capacity in the NYISO power market, as long as they are able to meet pending regulations on emissions from generating sources.

Waste-to-Energy Plants
Potential Contract Extensions

Figure 9: Long Island Fossil Fuel Unit Retirements to Date and Planned Near-Term Retirements

Retired Unit	Technology	Size (MW)	Retirement Date	
E.F. Barrett Gas Turbine ("GT") #7 (Island Park)	Gas Turbine	18	2011	
Far Rockaway	Steam	100	2012	
Glenwood Landing	Steam	228	2012	
Montauk Diesels 2 to 4	Diesel	6	2013	

Planned Near-Term Retirements	Technology	Size (MW)	Retirement Date	
Shoreham GT #1 and #2	Gas Turbine	71.5	2025	
Glenwood GT #1	Gas Turbine	15	2025	
Glenwood GT #3	Gas Turbine	55	2025	
West Babylon GT #4	Gas Turbine	52	2025	
E.F. Barrett (Island Park)	Steam Turbine	188-376	by 2030	
Port Jefferson	Steam Turbine	188-376	by 2030	
Northport	Steam Turbine	up to 387	by 2030	

Note: The exact order, amount, and timing of steam turbine retirements to be determined.

How much do the Long Island fossil fuel power plants run?

Capacity factors are the ratio of annual electric energy production as compared to the theoretical maximum. New baseload power plants typically need to run at capacity factors in excess of 70% to be economic. While Long Island's baseload plants built post-2000 continue to operate close to their design duty, the LILCO-era steam turbines, which are well maintained but have been in service for 50 to 70+ years, are no longer operating as originally intended. As shown in **Figure 10**, while each plant was running around a 50%+ capacity factor in the 1990s, **the production (and resulting GHG emissions) at each plant has declined sharply in recent years and is projected to further decline as offshore wind and other renewables continue to be added to the electric grid.**





Figure 10: Long Island Has Become Less Dependent on Steam Turbines for Baseload Generation

What will happen to the tax and PILOT payments at Barrett, Northport, and Port Jefferson if some or all of the plants are retired?

Between 2018 and 2022, LIPA entered into settlement agreements to gradually lower the payments on these plants 47% by 2027, saving our customers approximately \$554 million. For most units that are ramped down before 2027, payments will continue according to the settlement schedules through 2027. For any units that may continue to operate past 2027, proportional payments on the remaining capacity will be made at the 2027 levels for up to five additional years.

What are the U.S. EPA's recently proposed regulations to limit carbon emissions from new and existing fossil fuel units? How will they affect Long Island fossil fuel generators?

In May 2023, the EPA proposed new greenhouse gas ("GHG") guidelines under the Clean Air Act ("CAA") for new and existing power plants. The standards focus on large baseload plants that plan to operate far into the future to ensure they control GHG emissions starting in 2030. The CAA requires large emission sources to use control technologies that are adequately demonstrated considering cost and energy requirements and environmental impacts. Under the new proposed standards, carbon capture and sequestration ("CCS") and alternative fuel co-firing with low-GHG hydrogen (transitioning to entirely clean hydrogen over time) are identified as best systems of emissions reduction ("BSER"), with CCS and low-GHG fuels identified as separate compliance "pathways."

Any large, frequently operating combined-cycle natural gas-fired power plant would have to either install a 90% efficient CCS system by 2035 or operate nearly entirely on clean hydrogen by 2038. These requirements may apply in the future to several combined cycle generators on Long Island, such as the Caithness Energy Center, which operates a 350 MW combined-cycle unit. Since CCS is unlikely to provide a viable solution for Long Island, local units subject to the BSER standards would likely choose the clean fuel pathway provided in the proposed rules.

Long Island's steam turbines operating on oil and gas would not be subject to the BSER requirement because of their low capacity factors but would need to meet minimum standards for GHG emissions per megawatt-hour. National Grid reports that all its Long Island steam turbines, which are located at the E.F. Barrett, Port Jefferson, and Northport power stations, currently meet the proposed standards. The new standards likely would not apply to most, if not all of Long Island's many combustion turbines, which operate at low capacity factors and are used mainly for summer and winter peak conditions. Nonetheless, any combustion turbines expecting to operate post-2040 would need to at a minimum convert to clean fuel to comply with the state's Climate Act.

The EPA's CCA proposal is in the early stages of rulemaking and will likely continue to evolve before it is adopted.

Can existing sites for fossil fuel generation be repurposed for clean energy?

Existing transmission infrastructure was built to export power from generation locations to the rest of the electric grid. As older fossil fuel units are phased out, their interconnection rights and export capacity can be repurposed for offshore wind and storage additions. Figure 11 shows some of the fossil fuel generation sites that may be repurposed for clean energy. LIPA has proposed to develop battery storage at the Shoreham and West Babylon sites. The E.F. Barrett site will host a new substation as part of the Propel NY Energy transmission project, which will partially repurpose the site for offshore wind. The 1,260 MW Empire Wind 2 project is planning to construct an onshore substation nearby E.F. Barrett, with a connection to the new Propel NY Energy substation. LIPA may exercise its right to purchase other generating sites from National Grid for repurposing when the existing fossil fuel plants are shut down. Such sites could be leased to clean energy developers for storage or transmission facilities or developed for LIPA's own projects.

Has LIPA reviewed the effects of its fossil-fired plants on disadvantaged communities?

LIPA has prioritized shutting down power plants within or near areas classified as disadvantaged communities. Four such plants are scheduled to be shut down between 2025 and 2028 (see **Figure 9** on page 35). The remaining fossil fleet will operate less frequently and thereby emit less as more and more clean generation is placed in service before being phased out completely by 2040 or possibly converted to clean fuels.



Figure 11: Potential Repurposing Sites on Long Island

Disadvantaged communities in LIPA's service territory include:

Nassau County

Westbury Village, New Cassel, Elmont, Hempstead Village, Uniondale, East Meadow, Valley Stream Village, South Valley Stream, Inwood, Oceanside, Roosevelt, Long Beach City, Glen Cove City, and East Massapequa

Suffolk County

Huntington Station, East Farmingdale, Wyandanch, West Babylon, North Amityville, Copiague, Lindenhurst Village, Brentwood, Islandia Village, Bay Shore, North Bay Shore, Central Islip, Ridge, Patchogue Village, Yaphank, Shirley, Mastic, Calverton, Flanders, Westhampton Beach Village, and Tuckahoe

Queens County

The Rockaways

To view an interactive map of disadvantaged communities across New York State visit: https://on.ny.gov/3FJ5kCk

Has LIPA considered a faster transition to renewables than what is in the Climate Act?

The most significant components of the state's plan for decarbonizing downstate New York's electricity supply between now and 2035 are the addition of up to 9,000 MW of offshore wind projects and their associated grid upgrades. The development schedules for many of these projects are established but could be delayed. Further discussion of delay risks can be found in the offshore wind section on page 39. At this point, accelerating the downstate offshore wind and transmission projects already in the pipeline is unlikely, as are significant new resource additions before 2030 (the IRP action period) that are not already in the permitting process.



Offshore Wind

What is the state's master plan for the development of offshore wind?

Offshore wind is poised to become the largest source of energy for Long Island and the Rockaways by 2030. State policymakers have focused on offshore wind as a crucial addition for the downstate region, complementing land-based renewables from upstate and Canada as the means to decarbonize the state's electric sector, recognizing that there are limits to the development of land-based renewable energy in the downstate region. The NYSERDA procurement processes for offshore wind, other renewables, and storage ensure that the most cost-effective projects are selected for state contracts while meeting Climate Act goals for specific resource categories.

The Climate Act sets a goal of 9,000 MW of offshore wind energy by 2035, enough to power 6 million homes, and contracting and development activities are on track to meet this goal. As shown in **Figure 13**, **approximately 6,300 MW of offshore wind is in development, with ~2,400 MW expected to connect to Long Island.**² The Scoping Plan issued by the Climate Action Council anticipates that as much as 18 GW of offshore wind resources may be needed to achieve a zero-carbon grid by 2040.



Figure 12: Current Procurements for Offshore Wind Development | 2,400 MW of Offshore Wind to Connect to Long Island

² On June 22, 2023, the New York Public Service Commission directed the NYISO to plan for interconnection of at least 4,770 MW of offshore wind into New York City, in addition to at least 3,000 MW to be connected into Long Island pursuant to the Long Island Offshore Wind Export Public Policy Transmission Project.



Figure 13: Contracted New York Offshore Wind Projects

Project Name	Owner	Size (MW)	Contract Off-Taker	Contract Award Date	Interconnect Utility	In-Service Date
South Fork Wind	Ørsted and Eversource	130 MW	LIPA	2019/2024	LIPA	2024
Sunrise Wind	Ørsted and Eversource	924 MW	NYSERDA	2024	LIPA	2026
Empire Wind 1	Equinor	810 MW	NYSERDA	2024	Con Edison	2027
Attentive Energy One	TotalEnergies, Rise Light & Power, Corio Generation	1,404 MW	NYSERDA	2023	Con Edison	2030
Community Offshore Wind	RWE Offshore Renewables and National Grid Ventures	1,314 MW	NYSERDA	2023	Con Edison	2030
Excelsior Wind	Vineyard Offshore	1,314 MW	NYSERDA	2023	LIPA	2030

What are the risks of developing such large-scale offshore wind projects?

Offshore wind faces many development risks as the sponsors execute all the steps needed to make projects come together, such as federal and state permitting, interconnection studies, contracting, equipment procurement, and financing. Permitting for onshore cables and substations may result in delays due to route and design changes to address community concerns. **LIPA's South Fork Wind project was completed in March after having experienced some of these delays**. The larger projects procured by NYSERDA, which are still in the pre-construction phase, are currently facing their own set of challenges.

Why have offshore wind project developers sought contract amendments with NYSERDA?

In June 2023, offshore wind project developers currently under contract with NYSERDA filed petitions with the PSC for the ability to amend contracts for Empire Wind 1 and 2, Sunrise Wind, and Beacon Wind to increase pricing, citing a combination of supply chain difficulties, labor, interconnection costs, and inflation which have led to increased costs to develop the projects. The requests varied for each project, with increases ranging from 27% to 66% of the per-megawatt-hour cost of the Offshore Wind RECs that would have been paid by electric customers statewide. In October 2023, the PSC denied the petitions.³ Developers with existing uneconomic contracts have been given the option to terminate those contracts and rebid in future solicitations.

What happens if some of the offshore wind projects are delayed or canceled?

If the NYSERDA projects are delayed or canceled, it likely will require adjustments to the retirement schedules for LIPA's fossil-fuel generators, but there are many paths to meet the state's objective of 9,000 MW of offshore wind by 2035. The offshore wind resource is large, with many different leaseholders, so even if one project falls through another will take its place. Even for the current projects, if canceled, the work completed to date to design and permit the projects would remain available for a future proposal.

What is Governor Hochul's '10-Point Action Plan'?

In October 2023, Governor Hochul released a 10-Point Action Plan to expand and support the growing large-scale renewable energy industry in New York, reaffirming the state's commitment to achieving the Climate Act goals. The plan outlines a comprehensive set of actions being taken to lay the foundation for a sustainable future for all New Yorkers through the expansion of the state's growing clean energy economy and renewable energy sector, including **another round of offshore** wind and renewable project awards in the near future, and accelerated future competitive procurements to backfill any contracted projects that are canceled.⁴

³ Public Service Commission, Title of Matter/Case: In the Matter of Offshore Wind Energy, 23105/15-E-0302; 18-E-0071

⁴ <u>https://www.nyserda.ny.gov/All-Programs/Large-Scale-Renewables</u>

South Fork Wind Farm

LIPA's South Fork Wind Farm was one of 21 projects proposed in response to a 2015 LIPA Request for Proposals to meet the growing energy demands of the eastern end of Long Island.

In January 2017, the LIPA Board of Trustees approved a power purchase agreement to buy energy from the project, which was the **first such agreement of its kind in the nation at the time**. As an electric utility, LIPA will buy the energy, capacity, ancillary services, and renewable energy credits from the project, which is being developed by Ørsted and Eversource.

South Fork Wind was initially proposed as a 90-megawatt project. In November 2018, LIPA agreed to purchase an additional 40 megawatts of clean energy from the project – extra power available from improving turbine technology.

Years in the making, final project approval was granted by the U.S. Department of the Interior's Bureau of Ocean Energy Management in January 2022 with significant milestones made since, including:

- Groundbreaking February 2022
- Onshore cable installation May 2023
- First monopile foundation June 2023
- Offshore wind substation installation July 2023
- Onshore substation completion August 2023
- First turbine installation November 2023
- Project complete, 12 turbines powered up March 2024

The wind farm consists of 12 Siemens wind turbine generators, running 318 feet in blade length and spanning over 656 feet in rotor diameter – about the length of two football fields.

Located 35 miles east of Montauk Point, South Fork Wind will deliver power to the local substation in the Town of East Hampton through undersea and underground transmission cables from the offshore wind farm.

South Fork Wind is an important part of Long Island's ability to meet our share of the statewide goals. With its completion in March 2024, it will add enough renewable electricity to the Long Island grid to power 70,000 homes and offset 300,000 tons of carbon emissions yearly.



South Fork Wind's first turbine tower, blades, and nacelle preparing to leave the Port of New London, Connecticut on October 31, 2023.

2023 Integrated Resource Plan

CROWLEY

Photo courtesy of Ørsted

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Propel New York State's Renewable Energy Future

Can Long Island's electric grid handle the amount of offshore wind that will be produced?

State regulators and operators recognize that our region's transmission backbone must be bolstered for clean energy, including offshore wind. In 2020, LIPA and Con Edison conducted technical studies to assess the need for system expansion and, based on the results, recommended to the PSC that additional transmission cables would be needed to enable the transmission of offshore wind from Long Island to New York City, Westchester County, and the rest of the state.⁵ In June 2023, following a competitive evaluation, the NYISO selected Propel NY Energy, a project proposed by a collaboration of the New York Power Authority and New York Transco. The Propel NY Energy will greatly enhance the reliability and resiliency of the area grid and relieve historic congestion with new underground and submarine electric transmission lines and new stations across parts of Nassau, Suffolk, Queens, Bronx, and Westechester Counties. It will allow bi-directional integration of clean energy resources –helping deliver planned offshore wind from Long Island, as well as generation resources from other parts of the state to Long Island.

The Propel NY Energy project includes:

• Approximately 90 miles of new underground and submarine transmission lines and four new stations - three on Long Island

PROPEL NY ENERGY

- Three new high-voltage cables that connect Long Island to the statewide grid (via New York City and Westchester County)
- Increases in transfer capability between Long Island and the statewide grid to bi-directionally move energy as needed
- Capacity to deliver up to 3,000 MW of offshore wind

Figure 14: Improving the Long Island Transmission Backbone Source: <u>Propel NY Energy</u>



5: The LIPA Board policy on 'Public Policy Transmission Planning,' requires LIPA staff to evaluate whether public policy requirements drive the need for physical modifications to the Long Island Transmission District ('Long Island PPTNs'). For more information, visit: *lipower.org/purpose*.

Does the PSC's recent decision denying price increases for offshore wind developers affect the Propel NY Energy project?

No, the Propel NY Energy project is not tied to specific offshore wind or generation projects. The Project offers a multitude of benefits to the Long Island and statewide grid, including, but not limited to the delivery of offshore wind to help meet the state's Climate goals.

Dispatchable Emission-Free Resources ("DEFRs") and Storage

How does offshore wind affect the operation of LIPA's electric grid?

Offshore wind is expected to have an average annual capacity factor of around 50%, but there is considerable variation in output on a daily and seasonal basis. **Figures 15 and 16** illustrate supply and demand balancing when a large percentage of the power supply is produced from offshore wind.

Figure 15 shows a system load projection for a representative day in 2030 versus the projected output of the nondispatchable resources (i.e. nuclear, wind and solar) assumed to be available for that day. The gap between the load and the non-dispatchable resources would have to be served by controllable imports, local fossil generation, and energy storage. The load curve peaks in the morning and again in the early evening when the daily peak hour tends to occur. The significant dip during the daytime is due to the impact of behind-the-meter solar. Wind generation occurs at all times of the day but tends to be stronger at night. For this particular day, in some of the early morning hours the available wind resource is in excess of local needs and would be exported off-island, whereas for the other hours the wind could be used locally.

Figure 16 shows that over the course of a typical year there is normally less wind during the summer peak season than at other times of the year. This means that even with a buildout of offshore wind interconnecting to Long Island, LIPA will remain dependent on imports and local dispatchable resources for local reliability and will need to maintain a portion of the existing fossil-fueled fleet for load balancing for the time being. In the post-2030 period, new technologies and clean fuels will be needed to replace the operational flexibility of fossil generation with DEFRs such as long-duration storage, clean hydrogen, and CCS. For more information, see the "What is the statewide plan to achieve a zero-carbon electric grid by 2040" section on page 46.



Figures 15 and 16: System Balancing Need Large-Scale Development of Offshore Wind

Note: On a monthly basis, the net storage effect is effectively zero.

What are wind lulls and how do they affect grid operations?

Integrating offshore wind into the existing downstate power system presents certain challenges for electric system operations. A recent report by the New York State Reliability Council⁶ finds that, for the northeastern Atlantic seaboard, wind lulls — defined as energy production less than 20% of full potential output – lasting up to 24 hours occur on average 30 times each year. Wind lulls of 48 hours or longer occur on average about seven times per year. About 70% of these wind lulls occur during the peak four-month summer period from June to September. Figure 17 shows an example of one of the most extreme offshore wind lull periods of the last two decades, which affected the entire Atlantic seaboard from New Jersey to Rhode Island and extended over ten days in August 2017.

Long Island will need sufficient backup resources to withstand multi-day wind lulls. These needs cannot be met with existing storage technologies, due to their limited duration (generally four hours) and the need for an energy source to charge.

Figure 17: Modeled Offshore Wind Output for Extreme Wind Lull Events that Occurred in August 2017



Wind Farm Lease Sites Survey - New Jersey to Rhode Island August 2017

How will Long Island maintain reliability through 2030?

The resource additions required to implement the Climate Act, including offshore wind farms, the Propel NY Energy offshore wind transmission project, and new energy storage projects, will be sufficient to ensure local reliability through **2030**. Significant additional clean resources and DEFRs will be needed after 2030 to meet the Climate Act's goal to phase out fossil fuels by 2040 and address evolving state and federal initiatives to limit GHG emissions.



What is the statewide plan to achieve a zero-carbon electric grid by 2040?

Figure 18 shows the statewide installed generating capacity projection from the Zero Emission Study prepared for NYSERDA and DPS in 2021, which was used as an input in the Climate Action Council's Scoping Plan for economywide decarbonization. **The study projects a total need for 90 GW of installed generating capacity by 2040, including about 18 GW of "other thermal" generation capacity that would remain operational for backup power needs fueled by renewable natural gas or other clean fuels (i.e., hydrogen) and 15.5 GW of battery storage**. NYISO's 2021-2040 System & Resource Outlook Report⁷ projects a need for up to 120 GW by 2040, including between 27 and 45 GW of DEFRs, depending on the scenario assumptions.



Figure 18: Climate Action Council Scoping Plan Projections for New York Installed Capacity Through 2040

What are Long Island's projected resource needs between 2030 and 2040?

Figure 19 shows the Long Island resource need for 2022 and the IRP base case scenario for projected years 2030 and 2040. The chart shows that, in addition to the offshore wind and storage resources called for in the Climate Act, Long Island will need between 3 and 6 GW of DEFRs by 2040 to meet the capacity requirement, equivalent to replacing the existing fleet of fossil-fueled power plants with zero-emission resources.

There are two main reasons for the increase in the local capacity requirement between 2030 and 2040. **First, Long Island's peak load is expected to increase by about 1,400 MW, driven primarily by the electrification of transportation.** Second, the available resource mix is expected to change significantly, as fossil generation is replaced by solar, wind, short-duration storage, and DEFRs. 1 MW of solar, wind, or storage provides less of a reliability contribution than 1 MW of fossil generation, for the reasons described above, and therefore total installed capacity, including DEFRs to backup renewables during wind lulls, must increase.

The optimal mix of storage, renewables, and DEFRs in the post-2030 timeframe remains uncertain at this time.

^{7:} The Outlook: Key Findings Datasheet - NYISO



Figure 19: Long Island Generation Capacity

Note: The chart does not include customer-owned solar and other behind-the-meter resources, which help to reduce the load that LIPA needs to serve.

What are the leading DEFR technologies that are under development?

DEFRs represent a proxy technology that will be needed in the future to replace the flexibility of modern combustion turbines to serve system demand when intermittent generation is unavailable. DEFR technologies currently under development include turbines and fuel cells driven by hydrogen or biogas and small modular nuclear reactors. Biogas, also known as renewable natural gas ("RNG"), is a mixture of methane and other gases produced from the decomposition of organic matter. The advantages of RNG include compatibility with existing infrastructure and preservation of jobs and tax revenues from natural gas distributors. The downsides include limited current and future supply in the Northeast and an unclear path for carbon accounting under New York rules and regulations. National Grid, the natural gas supplier for Long Island's residential and commercial customers, has announced targets to serve up to 20% of gas demand with RNG by 2030 and blend 20% green hydrogen and 30% RNG in their gas network by 2040.

Considerable attention is focused on the development of hydrogen-based solutions. "Green hydrogen" can be produced in an electrolyzer using surplus renewable power and converted back into electricity through re-electrification in gas turbines, engines, or fuel cells. At the federal level, the U.S. Department of Energy ("DOE") has identified co-firing with hydrogen as a pathway for compliance with stricter GHG emissions standards (see "What are the U.S. EPA's recently proposed regulations to limit carbon emissions from new and existing fossil units" on page 36). The 2021 Infrastructure Investment and Jobs Act appropriates \$9.5 billion for the DOE clean hydrogen program, and the Inflation Reduction Act provides additional policies and incentives for hydrogen, including a production tax credit that has further boosted a U.S. market for clean hydrogen. **Many demonstration projects for generating electricity with hydrogen are in development nationwide**. For example, the Cricket Valley Energy Center, one of the state's newest and most efficient natural gas-burning generators located about 20 miles east of Poughkeepsie, has announced a demonstration project with General Electric as the first step toward 100 percent conversion of the plant to clean fuel.



Another potential solution that has received some attention at the national level is carbon capture and storage. Most carbon capture research has focused on underground or undersea sequestration at locations with favorable geologic formations, such as oil and gas fields. Such opportunities do not exist on Long Island and are thought to be limited in New York State but further research is needed.

What storage has LIPA procured to date? Is LIPA on target to meet its share of the state's 3,000 MW by 2025 and 6,000 MW by 2030 storage objectives?

LIPA currently has 10 MW of 8-hour utility battery storage at two installations on the South Fork of Long Island. On the customer-side, Long Island was the first region of the state to offer residential battery storage incentives, with about 2,000 installations to date. The residential battery storage market appears to be on an exponential growth path. LIPA's pending transition to Time-of-Day rates will provide another revenue stream to incentivize customers to install storage to reduce their electric bill, which should give a further boost to the residential storage market in our service territory.

Going forward, it will make sense to site a significant portion of the Climate Act's statewide storage targets in the LIPA and Con Edison service territories. LIPA has an ongoing solicitation for 175+ MW of utility-scale battery storage to be located on Long Island, and NYSERDA is actively developing its strategy for statewide storage solicitations, which may include locational carve-outs or incentives for downstate New York.

Would accelerating LIPA's share of the state's 2025 and 2030 storage goals lower costs or GHG emissions by allowing the early retirement of more peaker plants?

The IRP modeled the addition of 325 MW of storage on Long Island by 2025, ramping up to a total of 750 MW by 2030, compared to a system peak load of about 5,000 MW. The economics of adding more storage beyond the assumed amount of 750 MW by 2030 are not favorable at present. The early addition of storage would have a limited effect on the reduction of carbon emissions through 2030, with the primary driver of such carbon reductions being the addition of offshore wind to the Long Island electric grid. Without the additional clean energy supply, storage does not have a significant impact on carbon emissions.

Nonetheless, storage will be essential to help replace a portion of the reliability and dispatchability attributes of fossil generation and to meet future load growth driven by accelerating customer adoption of EVs and building electrification beginning in the late-2020s. The industry anticipates that energy storage costs will decline in the coming years as battery storage technologies mature and new non-lithium ion solutions are developed, and this should improve the overall economics of storage installations.
Utility Scale and Rooftop Solar

What is the outlook for more solar on Long Island?

LIPA estimates that by 2030 Long Island will have over 1,200 MW of rooftop solar and 200 MW of solar farms, putting the region on track to exceed LIPA's 1,300 MW share of the statewide 10,000 MW solar goal. Customers have been installing solar at a steady pace of about 6,500 new systems per year since 2017, which has reduced LIPA's load growth by about 60 MW per year. There remains significant untapped potential, including brownfield sites and parking lots. Figure 20 shows that LIPA's service territory is among the most attractive places in New York to install rooftop solar, with a typical customer seeing a payback in 7.6 years. LIPA continues to explore the potential for new feed-in-tariffs to help incentivize solar projects benefiting low- and moderate-income residents and disadvantaged communities.



Figure 20: Simple Payback Period for a Typical Residential Rooftop Solar Project

What causes the economics of rooftop solar to be so favorable for LIPA customers?

Typically, customers who add rooftop solar choose a system big enough to generate the same amount of electricity each year that their household consumes. The solar customer's production and consumption are not matched, meaning the customer sells excess generation to the grid sometimes and buys it back at other times (i.e., overnight and during the winter months), relying on the electric grid to balance production and consumption.

With net metering, LIPA and other New York utilities allow customers with distributed generation to "bank" credits for the electricity they generate when they aren't using it. This essentially allows the customer to sell electricity to the grid at the fully loaded retail rate (i.e., the full cost of the energy, backup generation, electric transmission and distribution system, and customer service), rather than just the avoided cost of the energy the excess solar generation is displacing. As a result, customers' delivery and power supply charges from the utility are mostly or even entirely avoided, leaving primarily the fixed monthly charge, which pays for only a portion of the billing and fixed costs of providing electric service to the home or business.

This benefit is especially useful for LIPA customers because LIPA's fixed charges are the lowest of all the major New York utilities, as shown in **Figure 21**. Another factor that favors Long Island for solar installations is its relatively high average daily solar insolation. According to figures compiled by the National Renewable Energy Laboratory, southeast New York has the highest solar irradiance in the state.



Figure 21: Monthly Fixed Charges Compared to Major New York Utilities



How will the electric grid change with the influx of distributed solar?

Distributed solar and storage transform the electric grid into a two-way street, requiring upgrades for both capacity and controls. LIPA's service provider, PSEG Long Island, has mapped the T&D system's "hosting capacity" (i.e., the ability of the electric grid to interconnect generation) across LIPA's entire service territory and determined that over 37% of the distribution feeder circuits have less than 1 MW of spare capacity, and 3% have no spare capacity at all.

LIPA is taking actions to ensure the system will be able to handle growth in DERs:

- Developing new approaches to incorporate DER forecasts in planning for local feeder capacity.
- Deploying a DER Management System platform to provide greater visibility to system operators so that they can monitor and manage DERs larger than 1 MW.
- Making targeted facility upgrades to expand hosting capacity where we project significant growth in DER penetration.

What is LIPA doing to reduce the cost of grid expansion for distributed resources?

LIPA is seeking a federal grant for \$250 million toward \$550 million of upgrades to the distribution system to allow for additional interconnection capacity for distributed solar and storage. The proposal builds upon two recent actions taken by LIPA to address hosting capacity constraints and lower interconnection costs for project developers, including:

- A recently launched Interconnection Cost Sharing 2.0 Framework, under which the cost of upgrades that can benefit multiple DER projects are shared among those projects and with customers.
- A study to identify distribution system constraints and technical solutions to address those constraints on LIPA's distribution circuits, utilizing the latest distribution system modeling technology, smart inverter breakthroughs, and recently upgraded hosting capacity mapping technology.

LIPA will partner with developers and municipalities to interconnect community solar and other DERs serving low-income customers and disadvantaged communities.

Electrification of Transportation and Heating

What are New York's objectives for electrification?

Electric vehicles ("EVs") and heat pumps are key pillars of the state's policy to achieve an 85% reduction in economywide GHG emissions by 2050. Most of New York's carbon emissions come from transportation and the heating of residential and commercial buildings, as shown in Figure 22. New York aims to achieve a zero-carbon electric grid by 2040 and to use that grid as the fuel of the future for transportation and heating.

New York is phasing out the sale of most internal combustion engine cars by 2035, and studies show that one to two million New York homes will need to be electrified with heat pumps by 2030, including all new single-family and low-rise residential buildings and 10-20% of commercial space heating, to meet the Climate Act objectives. LIPA and the state offer tools and services to electrify Long Island transportation and heating, including rebates, TOD electric rates, and infrastructure development.

Figure 22: New York State Carbon Emission Sources



Source: New York State Department of Environmental Conservation 2022 Statewide GHG Emissions Report

How many Long Island and Rockaways customers drive EVs?

Long Island and the Rockaways have 41,000 registered EVs, which is approximately 21% of the electric vehicles in New York as compared to approximately 13% of the state's electric load. With new federal tax credits, limited maintenance, and low fuel costs, lifetime ownership costs of EVs are on par with internal combustion engine vehicles, while the cost of batteries, a significant component of EVs, will continue to decline with improved technology and the maturity of the supply chain. LIPA anticipates that EV adoption will increase significantly and is planning for and supporting that transition by its customers.



What is LIPA doing to support customers' transition to EVs?

LIPA has a variety of programs and activities to support EVs. These include:

- Offering customers savings opportunities through TOD rates, which provide low super off-peak electric rates to encourage nighttime charging, with savings for a typical EV of \$56.50 per month.
- EV Hosting Capacity Maps to assist developers in finding suitable locations for EV fast charging.
- Incentives and rebates for developers to install EV Level 2 and fast chargers.
- Transformer replacements to increase the distribution grid's capacity for EV charging.

LIPA is further studying the EV market and customers' transportation electrification journey, including managed charging and vehicle-to-everything (i.e., the electric grid and building). LIPA aims to further improve the customer experience for EV owners over the next several years by adding tools and resources, along with customizing education and outreach based on customer segments and needs.

How many electric chargers are available in LIPA's service territory?

LIPA has an \$88 million plan to build out the infrastructure to support more than 4,550 chargers across Long Island and the Rockaways by 2028, as shown in Figure 23. LIPA facilitates the transition to EVs through an EV make-ready program and by upgrading the electric grid to support charging.

LIPA's EV incentives include rebates for Level 2 EV chargers and covering 100% of the utility-side make-ready cost and between 50%-100% of the customer-side make-ready cost for fast chargers, with higher levels of support provided for chargers in disadvantaged communities. LIPA also supports infrastructure upgrades to serve public sector electric vehicle fleets (i.e., government, municipalities, and not-for-profits) and public transport (i.e., school and transit buses) and added a fleet advisory service in 2022. LIPA continues to study the EV charging market and plans to make continued enhancements to programs to support the electrification of transportation.

PORT TYPE	2021	2022	2023	2024	2025	2026	2027	2028	TOTAL
	ACTUAL	ACTUAL	LIPA TARGET	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	
LEVEL 2	0	87	400	293	558	774	1,007	933	4,052
DC FAST CHARGER	48	100	103	54	68	47	47	30	498
TOTAL	48	187	503	347	626	821	1,054	964	4,550

Figure 23: Publicly Available Electric Vehicle Chargers in LIPA's Service Territory

How do Long Island and the Rockaways customers currently heat their homes?

LIPA is particularly focused on the electrification of heat because Long Island and the Rockaways are an ideal market for heat pumps – 39% of homes heat with oil, as shown in Figure 24. That's about ten times the national average, and these homes could potentially see significant savings by switching to a heat pump (see Figure 25). Currently, 7% of Long Island homes are heated with electricity, compared to 40% nationally.



Figure 24: Long Island Homes Heat with Oil at 10x the National Average

What is LIPA doing to support customers' transition to heat pumps?

LIPA offers substantial rebates for customers installing heat pumps, which complement newly enacted federal tax credits. There are also enhanced incentives for low- and moderate-income customers. LIPA and its service provider, PSEG Long Island, are also undertaking several initiatives to aid customers and installers, including:

- Developing a customer tool to aid in the heat pump decision-making process factoring in weather, energy rates, customer household data, fuel source, and available technologies.
- Enhancing outreach to customers with a high propensity to adopt heat pumps and ensuring they have the proper educational materials, decision support, and a direct link to a qualified contractor network.
- Studying building envelope weatherization and financing opportunities.

Are heat pumps cost-effective for customers?

With LIPA rebates and federal tax credits, **LIPA estimates that between 400,000 and 500,000 Long Island and Rockaways households could save money by installing a cold climate heat pump**. This presents an extraordinary opportunity to help customers save money and accelerate New York's decarbonization. These savings opportunities are primarily available when customers are replacing existing central air conditioning and/or heating equipment or for new construction.

Figure 25 shows the economic and carbon impact for a typical Long Island single-family home that heats with fuel oil and needs to replace an aging central air conditioning unit. A cold climate heat pump could reduce heating costs for a home with oil heat by approximately \$2,300 per year and reduce carbon emissions by 46%. The additional cost of the heat pump would pay for itself in less than one year. As the carbon intensity of the electric grid declines over the next twenty years, the carbon reduction from using a heat pump will approach 100%.

In new construction, heat pumps pay for themselves immediately because builders avoid the upfront cost of installing fossil fuel equipment and separate air conditioners, as heat pumps also provide air conditioning. Figure 26 shows the savings from installing a heat pump instead of a gas furnace in a newly constructed home. With LIPA rebates and federal tax credits, the upfront savings from a heat pump is approximately \$4,700, with the annual savings totaling \$931. There are additional incentives available for low-income households.

The examples are typical, however, every home is different. LIPA recommends getting quotes from several contractors to estimate how much you might save from installing a cold climate heat pump.



Figure 25: Heat Pumps Save Money and Carbon for Oil Heat⁸

Existing Building - Oil Burner	Buy New Central Air Conditioning	Buying New Air-Source Heat Pump	
Upfront Cost	\$7,278	\$16,687	
LIPA Rebate*	-	(\$5,383)	
Federal Tax Credit*	-	(\$2,000)	
Net Cost	\$7,278	\$9,304	
Annual Home Heat Bill	\$3,824	\$1,487	
Annual Savings	-	\$2,336	
Payback Period	- 0.9 years		
Carbon Footprint from Heating (2022)	46%		
Carbon Footprint from Heating (2040)	100%		

Figure 26: Heat Pumps Save Money and Carbon for New Construction⁸

New Construction - Gas Furnace	Buy New Central Air Conditioning + Gas Furnace	Buying New Air-Source Heat Pump	
Upfront Cost	\$14,080	\$16,687	
LIPA Rebate*	-	(\$5,383)	
Federal Tax Credit*	-	(\$2,000)	
Net Cost	\$14,080	\$9,304	
Annual Home Heat Bill	\$2,366	\$1,435	
Annual Savings	-	\$931	
Payback Period	-	Immediate	
Carbon Footprint from Heating (2022)	-	-25%	
Carbon Footprint from Heating (2040)	-	-100%	

Can the electric grid handle the electrification of transportation and heating?

Studies indicate that electricity use will grow between 65 and 80% by 2050, primarily to electrify the transportation and building sectors that currently produce most of the state's carbon emissions. That level of electrification will not only increase the overall electric load, but also eventually shift the system peak demand from the summer to the winter.

While 80% load growth may sound like a lot, it is less than 2% per year when spread over 30 years. As shown in Figure 27, in the 1950s, electric sales grew an average of 8% annually, roughly doubling every nine years. That pace slowed to about 7% in the 1960s, 4% in the 1970s, 3% in the 1980s, 2% in the 1990s, and less than 1% in 2000s. Meeting the growing electric needs of consumers over the next 30 years will require grid modernization and investment, including innovative electric rate designs (i.e., TOD rates), new customer programs, and smarter grid technologies. However, meeting this load growth is something electric utilities have done before.



Figure 27: U.S. Electricity Growth Since 1950 (3-Year Rolling Average)

Source: Monthly Energy Review, U.S. Energy Information Agency, March 2021.

8: These examples reflect an average Long Island End Use Load Profile built by NREL. Fuel price assumptions include a retail residential natural gas price of \$19.62/MMBtu, the average monthly price between Aug 2022 and July 2023 published by the U.S. Energy Information Association, and a retail fuel oil price of \$4.59/gallon, which is the weekly average home heating oil price for Long Island region during the period between Oct-31-2022 and Oct-23-published by <u>NYSERDA</u>.

Electrification and Electricity Sales Through 2040

How will electricity sales on Long Island and the Rockaways change through 2040?

As shown in **Figure 28**, electricity sales are expected to remain steady through 2030 as energy efficiency and rooftop solar continue to moderate growth driven by the economy, while **electrification of transportation and heating will result in significant load growth post-2030**.

Figure 28: LIPA Electricity Sales Projection Through 2040



How will the system's peak load change through 2040?

Figure 29 shows the trend for peak demand on Long Island and the Rockaways through 2040. The IRP estimates that changing customer usage patterns in response to TOD rates will result in a peak load reduction of 270 MW by 2030 or 6% of the total load. This will reduce the need for system expansion of transmission and distribution system and generation, resulting in cost savings for LIPA that are passed back to customers through electric rates.

Beyond 2030, electrification will drive sharp growth in the system's peak load. The effect can be mitigated if customers adopt smart EV charging practices, which LIPA is encouraging through TOD rates and future managed charging programs. Consequently, despite increasing electrification, the 2040 system peak is not expected to exceed the record peak of 5,915 MW experienced in July 2011. Additionally, while heating electrification will drive significant growth in winter peak load, LIPA is projected to remain a summer peaking utility through 2040.



Figure 29: Summer and Winter Peak Electric Demand Through 2040



What can LIPA do to encourage customers to reduce electricity consumption during system peak periods?

LIPA has introduced a standard offer TOD Rate to take effect in 2024. Most customers will be transitioned to this new rate in 2025. The TOD rate will allow customers to save on their bills when using electricity during off-peak hours.

The peak period for demand is currently 3 p.m. to 7 p.m. during weekdays. In terms of decarbonization, power generated during peak demand hours emits up to 50% more carbon than electric generation outside of those hours. The generating units that have to run during peak hours are among the least efficient and highest emitting.

Developing and implementing new or enhanced electric rate designs is crucial to managing the sales growth and peak demand from the electrification of transportation and heating. As shown in Figure 30, customers who run home appliances in off-peak hours can see typical savings of up to \$12 per month on their electricity bills, depending on the rate plan, and an additional \$14 per month by pre-cooling their homes in the summer. Customers with electric vehicles and/or home energy storage systems can save \$40-108 per month by charging at night.

Figure 30: Customer Bill Savings on the TOD Rate and Super Off-Peak Rates vs. the Flat Rate 9

Super Off-Peak Rate

TOD Rate						
(Save before 3	p.m.	or	after	7	p.m.)	

(Smaller savings before 3 p.m. or after 7 p.m. and larger discounts between 10 p.m. and 6 a.m.)

Initial Savings (Before any Changes to Electric Use)	Save \$3.50 per month	Save \$5.75 per month	
Dishwasher	Save \$0.50 per month	Save \$1.50 per month	
Washing Machine	Save \$1.75 per month Save \$4.50 per month		
Electric Dryer	Save \$2.25 per month Save \$6.00 per mont		
Pre-Cool Home (Before 3 p.m.)	Save \$12.75 per month (in the summer) Save \$13.75 per month (in the		
Pool Pump	Save \$4.00 per month (in the summer)	Save \$6.50 per month (in the summer)	
Battery Storage Optimized Use	Save \$40.00 per month	Save \$51.25 per month	
Electric Vehicle	Save \$43.50 per month Save \$56.50 per mor		
Total Savings (including changes)	`Save up to \$91.50 per month (\$108.25 in the summer)	`Save up to \$125.50 per month (\$147.75 in the summer)	

When customers choose to shift their usage to less costly times of the day, it decreases the amount of generation capacity and delivery infrastructure needed during peak times, reducing carbon emissions, and lowering system costs, with the cost savings passed back to customers through electric rates.

More information can be found in LIPA's fact sheet about the TOD rate.

What are LIPA's plans for customer energy efficiency and demand-side management programs?

Energy efficiency ("EE") and demand-side management ("DSM") are crucial components to achieving New York's objective of an 85% reduction in economywide GHG emissions by 2050. The Climate Act requires 185 trillion Btu of EE by 2025.

LIPA invests approximately \$90 million annually on EE and DSM programs, which are paid for by a DER charge on customers' bills. These programs include rebates for EV chargers, heat pumps, refrigeration, and other programs. LIPA's TOD rates further incentivize customers to shift the use of appliances and EV charging outside high-cost peak hours.

The IRP envisions several new DSM programs in future years, including managed systems for charging, heating, and cooling that signal customer-owned devices to shift energy usage from peak load hours in the summer and winter. These measures can be applied to smart charging/discharging for EVs, networked customer-owned storage, and smart thermostats and water heaters. LIPA is also exploring vehicle to grid ("V2G") opportunities, including using school bus fleets as electricity storage devices during summer peak periods when school is out, and new rules for customers who want to use their EVs as emergency backup for electric service to residences. IRP analysis indicates that emerging advanced DSM measures, together with TOD rates, could reduce the system peak load by up to 500 MW by 2030.

The IRP recommends the development of a multi-year energy efficiency program with a goal to maximize investment in cost-effective measures, as measured in terms of \$/ton of carbon reduction relative to the cost of renewable generation. A multi-year program is necessary to manage customer rate impacts and match incentives to the expected rate of uptake by customers. Figure 31 illustrates how programs are selected. Each bar shows the projected cost and potential GWh savings for a particular EE program. LIPA compares the projected cost of the program to the projected savings (i.e., LIPA's avoided costs triggered by the demand reduction, as shown as a shaded range on the chart), which include direct costs for power supply and imputed costs for GHG emissions reductions. Programs that have a net benefit using this cost test, which is standard throughout the industry, are included for funding in LIPA's EE budget.

^{9.} These estimates are based on average household appliance usage. The typical household already uses most of its electricity off-peak, so the "initial savings" is without assuming changes to electric usage. The additional savings estimates for dishwashers, laundry, pool pumps, and electric vehicles assume customers move their appliance usage to the lowest price period. The "initial savings" does not include savings for customers with pool pumps or EVs, as their usage is higher than the typical customer. Pre-cooling and pool pump savings only apply to the summer months. The battery storage example shows the savings available from using residential storage to optimize a TOD rate. LIPA will help every customer estimate their individual savings potential based on their actual usage patterns.



Figure 31: Cost-Effectiveness of Energy Efficiency Programs



What is being done to help disadvantaged communities meet Climate Act goals?

The Climate Act requires that at least 35% of the benefits from investments go to disadvantaged communities and lowto moderate-income customers on a statewide basis. The benefits can take various forms, such as residential envelope measures to improve energy efficiency, EV incentives and charging stations, heat pump incentives and programs, low-income energy assistance and low-income community solar programs, such as LIPA's 15 MW feed-in tariff.

LIPA will fully comply with the Climate Act and follow guidelines developed by the state's Climate Justice Working Group, which has designated certain areas in the state as disadvantaged communities. LIPA continues to work with NYSERDA and other state agencies to identify measures that qualify as clean energy assistance in disadvantaged communities and will comply with pending requirements to periodically report on progress through a statewide reporting system being developed by NYSERDA.

Planning for the Effects of Climate Change

How does climate change affect our region's electric grid?

Extreme heat can overheat equipment and increase energy demand due to the widespread use of air conditioners and other cooling systems, putting a significant strain on the grid. Extreme cold weather is also a risk due to stress put on equipment, mechanical failures, and interruptions of fuel supply. **Figure 32** summarizes certain system vulnerabilities and adaptation measures. LIPA's ongoing initiatives targeting climate resiliency include:

- Incorporating rising temperatures into load forecasting, with average temperatures increasing 0.5 degrees Fahrenheit per decade, which approximates to 50 MW of peak system load per decade.
- Designing the power system for higher peak temperatures.
- Planning adequate backup power sources for clean generation, including long-duration storage and dispatchable emissions-free resources, to accommodate solar and wind variability and lulls.

A key objective set by the LIPA Board is to mitigate the effects of climate change through multi-year programs that reduce the number and duration of outages after significant storms. Since 2016, LIPA has invested over \$6.4 billion in infrastructure to improve the reliability and resiliency of Long Island's electric grid. These investments include:

- Designing the electric grid for Category 3 hurricane winds.
- Hardening the worst-performing distribution circuits.
- Elevating flood-prone substations.
- Hardening transmission supply to every substation in a load pocket.¹⁰
- Reducing the number of customers behind each smart switch to less than 500 to minimize customer outages from an electrical fault (i.e., a tree coming into contact with a wire).
- Increasing hazard tree removal and deploying data analytics to the tree trim cycle.
- Increasing the use of technology to improve the protection of electrical circuits.

Figure 32: Electric System Climate Vulnerabilities and Adaptation Measures

Future Climate Hazards



- Average temperate increase 0.5°F per decade under a moderate emissions scenario
- Heat waves increase in frequency, duration, and intensity
- Precipitation increases by 13% through 2050
- Sea level rises 1.3 feet by the year 2040
- Extreme events of all types increase in frequency and intensity

System Vulnerabilities



- Extreme heat may cause overheating across a variety of system assets
- Sea level rise and flooding may damage assets situated in flood zones, coastal areas, and low-lying topographies
 - Extreme wind and ice storms may damage overhead assets such as poles and towers
- Emergency response, worker safety, public safety, 0&M, outage prediction, load forecasting, capacity planning, reliability planning, and asset management may all be impacted by climate hazards in significant and varying degrees

Adaptation Measures



- LIPA has already undertaken some adaptation measures to improve resilience, including upgrading and replacing equipment and constructing cooling systems and flood-proof stuctures
- LIPA is assessing additional measures across the system that improve reliability and increased resilience

10: A "Load Pocket" is an area on the electrical system that, because of transmission limitations, must have internal generation resources available as the area cannot be served entirely by external sources.



What studies related to climate change are currently underway?

LIPA and PSEG Long Island participate in the New York Independent System Operator ("NYISO"), New York State Reliability Council ("NYSRC"), and Electric Power Research Institute ("EPRI") working groups on planning for future extreme weather events.

NYSRC's Extreme Weather Working Group is developing criteria for resource planning and operating the state's power system to increase resiliency in the event of more extreme weather events. EPRI's Climate READi collaborative convenes thought leaders, government stakeholders, scientific researchers, and electric industry experts to build an informed and consistent approach to evaluate climate data, assess asset vulnerability at all levels from planning to operations, identify risk mitigation options, and inform decision making on optimal investment prioritization.

Using these sources of industry, government, and scientific knowledge, LIPA is conducting a **Climate Change Vulnerability Study** that supports infrastructure planning, system operations, and emergency response by providing information used for:

- Climate projections
- Identification of high-impact/low-likelihood extreme weather events
- System exposure assessments and impact ranking

The Climate Change Vulnerability Study will be followed by a Climate Change Resilience Plan reflecting the latest climate science, which will be used to update strategies for addressing gradual climate change and extreme events, such as more frequent heat waves and renewable energy production droughts.

Will customers have to pay for all these investments to mitigate climate change?

LIPA continues to pursue significant grant opportunities to help offset the cost of climate resiliency measures for its customers. LIPA's status as a public power utility makes it eligible for federal grants for storm recovery not available to for-profit utilities. As shown in **Figure 33**, LIPA has received multiple grants from the Federal Emergency Management Agency ("FEMA") for mitigation programs, including hardening of the overhead distribution system that sustained damage during Superstorm Sandy (2012) and Tropical Storm Isaias (2020). These FEMA grants have reduced costs that would otherwise be paid by customers by \$1.8 billion over the last decade, with an additional \$458 million of pending awards.

Figure 33: Summary of Storm Costs and FEMA Grants

\$ in millions

Federally Declared Weather and Other Events	LIPA Recovery Costs	Federal Grants
Tropical Storm Irene (2011)	\$170	\$154
Superstorm Sandy (2012) Sandy Mitigation	\$671 	\$604 \$665
Winter Storm Nemo (2013)	\$17	\$11
Winter Storm Stella (2017)	\$14	\$4
Tropical Storm Isaias (2020) Isaias Mitigation	\$309 	\$276 \$465*
COVID-19 Pandemic (2020-2022) COVID-19 Pandemic Mitigation	\$26 	\$6* \$10*
Tropical Storm Ida (2021)	\$9	\$7
Winter Storm Elliott (2022)	\$3	\$2*
Total	\$1,219	\$2,204

*Applied for — LIPA waiting for FEMA decision.

Managing the Cost of the Clean Energy Transition

What are the costs and benefits of the state's clean energy transition?

The state's Climate Action Council issued a statewide Scoping Plan that included a study¹⁰ to model technical pathways for New York to achieve the economywide decarbonization targets of the Climate Act and evaluate the implications of these pathways on energy demand, GHG emissions, and costs. The "Integration Study" includes an estimate of the costs and benefits of the policies needed to implement the state's clean energy transition across multiple sectors, including electricity, transportation, and heating. The study concluded that the Scoping Plan initiatives would produce net benefits of more than \$100 billion for the state as a whole (i.e., the amount by which the cost of compliance would be exceeded by avoided costs and health benefits associated with cleaner air).

A notable feature of the Scoping Plan is the economywide Cap-and-Invest program, under which the revenues collected from the sale of carbon dioxide emission allowances to power plants and other sources would be used to fund clean energy programs and otherwise offset consumers' costs for the clean energy transition. LIPA intends to work with the responsible state agencies to develop regulations and procedures to assure that a fair share of these funds are dedicated to Long Island.

How will the clean energy transition affect LIPA's electric rates?

Most of the costs for the state's clean energy transition will be paid by electric load-serving entities, such as LIPA, according to their proportionate share of the statewide load. This means that the clean energy additions and transmission grid expansion for clean energy, including NYSERDA's contracts for offshore wind projects interconnected to Long Island and upgrades to LIPA's transmission grid for offshore wind, will be paid for by customers statewide. Likewise, LIPA customers will contribute to statewide costs for projects located in other regions.

The changes in LIPA's Power Supply Charges between now and 2030 are relatively predictable (excluding volatile commodity prices) as we have reasonable cost estimates for much of the clean resource buildout that is currently under development and will be placed in service over the next seven years. As clean energy resources are added through 2030, LIPA estimates that its costs for clean energy, energy storage, and associated transmission upgrades will grow from less than 10% of the Power Supply Charge today to over 50% by 2030 (see **Figure 34**). Much of these increases in clean energy costs will be offset by reduced fuel and other commodity costs and the cost savings associated with fossil retirements.

Based on what we know currently, the Power Supply Charge, which accounts for about half of LIPA's total electricity charge, is expected to grow at about 2% per year in real dollars through 2030, assuming reasonably stable commodity costs. This is encouraging news for customers planning to increase their electricity consumption by switching to EVs and heat pumps. As discussed in the "Electrification of Transportation and Heating" section, these technologies are not only good for the environment, but also offers consumers significant opportunities to save money on their energy bills.

Estimates beyond 2030 are subject to significant uncertainty, as technological innovations in generation, storage, and clean fuels needed to reach zero emissions by 2040 are unknown and can only be assumed. Project location and technology, also have a significant effect on cost, but remain to be selected through competitive procurements over the next two decades. Additionally, as discussed above, the rules and regulations to implement the economywide Cap-and-Invest program are still being determined and will influence consumer costs, benefits, and electric bills.



Figure 34: Projected Power Supply Costs Through 2030



Note: Assumes forward market prices for commodities and electricity.

How does LIPA assist its financially vulnerable customers?

LIPA offers electricity bill discounts to low- to moderate-income ("LMI") customers with the goal that energy bills should be no greater than 6% of household income. We routinely assess and update our energy affordability discounts based on the economic conditions facing households on Long Island and the Rockaways. In July 2022, LIPA increased its base LMI discounts by 33%. In 2023, LIPA made a 6.7% increase to adjust for cost-of-living increases experienced by our customers. For 2024, LIPA is proposing an additional \$4 million (a 20% increase) through a combination of a 3.8% increase in the average discount and a 25% increase in participation levels by the end of the year.



Figure 35: Funding for Low-Income Customer Discounts

2023 Integrated Resource Plan

2024

Many customers experienced financial distress during the COVID-19 pandemic and could not pay their electric bills. In response, LIPA instituted an arrears management program and forgave all arrears incurred through May 1, 2022, for participating LMI customers, funded partly by a \$9.8 million New York State budget appropriation. **Over 11,000 LMI customers benefited from arrears relief totaling \$25 million**.

For those customers who struggled financially due to COVID-19 but did not meet LMI criteria, LIPA offered forgiveness of balances owed up to \$2,000 through that same period under the Phase 2 Forgiveness Program. **Approximately 39,000 customers received bill credits through this program, totaling an estimated \$37 million**. A similar program for small commercial customers with demands that never exceeded 40 kW or that averaged less than 20 kW over an annual period was made available in February 2023. The bill credits for arrears forgiveness for small commercial customers benefited approximately 750 small commercial customers and totaled approximately \$1.2 million.

How is LIPA assisting low- to moderate-income customers in making the transition to clean energy?

LIPA offers enhanced heat pump incentives for low-income customers to ensure that LMI households can afford to transition to clean, electric heat pumps. These enhanced rebates are complemented by new federal tax credits for LMI households, with point-of-sale rebates up to \$8,000 for any heat pump used for home heating and cooling.

LIPA also provides enhanced support for low-income households to make home efficiency improvements. Households can receive personalized energy audits and free or discounted energy-efficient appliances. LIPA's 2023 budget included \$5.5 million to support weatherization (sealing and insulation) projects for LMI households, lowering heating and cooling bills and providing extra comfort by eliminating leaks and drafts.



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2023 Integrated Resource Plan

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CONCLUSION



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THE FINDINGS OF THE 2023 IRP OFFER A LOOK AT AN EVOLVING ENERGY LANDSCAPE OF RENEWABLE TECHNOLOGIES AND DECARBONIZATION INITIATIVES.

Next Steps

The findings of the 2023 IRP offer a look at an evolving energy landscape of renewable technologies and decarbonization initiatives. The plan illustrates how LIPA can meet and exceed the goals of New York's Climate Act while maintaining the two most critical aspects of service to customers - reliability and affordability. The energy landscape is certain to shift over the course of the next five years, and LIPA is well-positioned to navigate those changes.

While the analysis for the 2023 IRP is complete, the work is not done. Follow-up studies to the IRP are currently underway, including:

- Identifying any reliability deficiencies or operational concerns with ٠ expected generation retirements.
- Reviewing storage needs and identifying preferred Long Island and ٠ Rockaways points of interconnection.
- Establishing a new multi-year energy efficiency program. ٠
- Reviewing the customer journey for EV and heat pump electrification • and deploying new tools and programs to assist both customers and installers.
- Assessing projected resource margins for extreme weather events, ٠ including low renewable output, high summer temperatures, and increasing duration of heat waves.
- Completing the Climate Vulnerability Study and Resilience Plan.

Public Participation

LIPA provided ongoing opportunities for public participation throughout the integrated resource planning process. This included a public comment period on the proposed Scope of Work, along with public comment sessions and a public comment period on the key findings and initiatives published in the IRP Summary Guide.

Interested parties can visit the *IRP webpage* for more information and to keep up to date with the continued progress on the implementation of the initiatives of the IRP. Interested parties can also sign up for LIPA's IRP mailing list to receive related communications via email.

Acknowledgements

LIPA's resource planning process is a collaborative effort, developed by LIPA's service provider, PSEG Long Island, with active involvement from LIPA staff and assistance from utility consultants and industry researchers, who provided input on emerging technologies such as advanced battery storage, including short- and long-term feasibility as well as risks and challenges to consider in model development.

LIPA would like to recognize the valuable contributions provided by:

- PSEG Long Island
- **Brookhaven Science Associates**
- The Brattle Group M. J. Beck Consulting
- Stony Brook University





Brattle MJ.Beck









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

March 26, 2024

Via Electronic Mail

Honorable Tracey Edwards, Chairwoman Board of Trustees Long Island Power Authority 333 Earle Ovington Blvd. Suite 403 Uniondale, NY 11553 boardoftrustees@lipower.org

Re: Matter 17-00696 - In the Matter of Long Island Power Authority and PSEG Long Island LLC Integrated Resource Plan

Dear Chairwoman Edwards:

On behalf of the New York State Department of Public Service (DPS or Department), I am pleased to provide DPS' comments concerning the Integrated Resource Plan (IRP or Plan), which was prepared by PSEG Long Island LLC (PSEG LI or Service Provider) for the Long Island Power Authority (LIPA). The IRP Summary Guide detailed LIPA's plan to meet both New York's climate goals, and the electric resource needs of Long Island and the Rockaways.¹

The purpose of the 2023 IRP is to outline a strategic roadmap for transitioning LIPA's power resource to 100 percent clean energy by 2040 and for meeting the future energy needs of Long Island and the Rockaways in a reliable, economical, and environmentally sustainable manner. Specifically, the IRP:

1) Assesses current and future energy demand by evaluating energy consumption trends on Long Island and the Rockaways, and the growth in electrified transportation, electric heating, and energy efficiency and demand-side management programs;

2) Identifies the most clean and effective mix of energy resources to meet anticipated demand, mainly focusing on renewable energy (such as solar and wind) and emerging technologies (like battery storage);

¹ LIPA IRP Summary Guide, <u>https://www.flipsnack.com/lipower/2023-irp-summary-guide/full-view.html</u> (accessed March 11, 2024).

3) Ensures that the planning and execution of energy projects complies with applicable state and federal regulations, particularly New York State's Climate Leadership and Community Protection Act (CLCPA), which sets ambitious goals for reducing greenhouse gas emissions and increasing renewable energy production;

4) Considers the necessary upgrades to existing energy infrastructure and the development of new infrastructure to support the integration of renewable energy sources and enhance the reliability and resilience of the power grid;

5) Evaluates the economic impact of different strategies, including the cost and benefits such as job creation and economic growth from the development of renewable energy projects; and

6) Recognizes the need for education and outreach to customers, communities, and stakeholders regarding the clean energy transition.

LIPA held three public comment sessions on February 12, 13 and 15, 2024. LIPA received ten (10) comments regarding the IRP. Commenters made specific suggestions on how LIPA could improve the IRP to better fulfill the requirements of the CLCPA, while also ensuring the reliability of the electric system.

Commentors in support of the IRP suggested that: 1) LIPA should release the data that explains how they calculated the expected solar, wind, and storage delivery and capacity contributions; 2) Roof top solar should be utilized to meet the daily gap between the electric system's load needs and what the non-dispatchable resources can provide; 3) Publicly owned offshore wind and utility scale solar should be utilized; 4) The retirement of existing generation facilities should be carefully planned; 5) The bulk storage procurement process should be streamlined; 6) A retail energy storage incentive program should be utilized; and 7) A community storage program should be developed.

One commenter opposed the transition toward renewable energy, and contended that it would be preferable to utilize combined cycle power plants.

Additional comments expressed concern regarding cost, lack of transparency, and stakeholder engagement. Another comment suggested that there was insufficient engagement with disadvantaged communities. One comment stated that the IRP should have referenced how LIPA could leverage the funding available through the Inflation Reduction Act (IRA) to offset the costs of the investments in storage, distributed resources and renewable energy infrastructure.

A commenter stated that LIPA will be able to access the Federal Investment Tax Credit (ITC) to offset some of the cost of its planned storage investments. Further, the same commenter suggested that LIPA could improve its storage procurement process by "incorporating lessons learned from the current on-going bulk procurement."²

The Department encourages LIPA and PSEG LI to incorporate the feedback provided in the public comments into its electric resource planning and its other plans for reaching the State's clean energy goals, such as the annual Utility 2.0 update(s).³ Further, the Department is encouraged by the progress LIPA and PSEG LI have made toward fulfilling these goals and how the IRP will enhance planning development over the next few years. Also, the Department recognizes the opportunities and challenges ahead in securing a safe, reliable, and affordable clean energy future, and acknowledges that this process will rely on constant stakeholder engagement.

As we undergo this transition, it is important that LIPA and PSEG LI focus on integrating the attainment of clean energy goals into all aspects of their operations. Further, the importance of considering how utility operations may impact Disadvantaged Communities, and incorporating that consideration in planning practices is essential. Finally, the IRP Summary Guide's key findings identify critical elements of this process, including the importance of building out the transmission system to accommodate renewable energy, Offshore Wind development, the importance of innovative technologies and strategies for grid and usage management, and the importance of a robust energy storage market on Long Island and the Rockaways.

The Department would like to thank LIPA and PSEG LI for their work on the development of the IRP, and their consideration of these comments in future electric resource planning.

Respectfully Submitted,

Rory M. Christian Chief Executive Officer

CC: Thomas Falcone, LIPA Chief Executive Officer Bobbi O'Connor, LIPA General Counsel & Secretary to the Board of Trustees Gary Stephenson, LIPA Senior Vice President of Power Supply David C. Lyons, PSEG LI Interim President & Chief Operating Officer Andrea Elder-Howell, PSEG LI Vice President Legal Services Paul Napoli, PSEG LI Vice President Power Systems Management Carrie Meek Gallagher, DPS LI Director Nicholas Forst, DPS LI Deputy Director Peter Hilerio, DPS LI Counsel

² New York Battery and Energy Storage Technology Consortium, Inc. comments on LIPA's 2023 Integrated Resource Plan (February 23, 2024).

³ Matter 14-01299, In the Matter of PSEG-LI Utility 2.0 Long Range Plan.