FOR CONSIDERATION
July 25, 2018

TO: The Board of Trustees

FROM: Thomas Falcone

REQUEST: Approval of the Annual Report to the Board on the Resource Planning, Energy Efficiency and Renewable Energy Policy

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Requested Action

The Board of Trustees of the Long Island Power Authority (the "Board") is requested to adopt a resolution finding that the Long Island Power Authority and its subsidiary, LIPA (collectively the "Authority") have complied with the Board Policy on Resource Planning, Energy Efficiency and Renewable Energy (the "Policy") for the period since the last annual review, and approving the annual report for the Policy, which resolution is attached hereto as **Exhibit "A"**.

Background

By Resolution No.1372, dated July 26, 2017, the Board adopted the Policy. The Policy sets objectives for resource planning, power supply procurement, portfolio management, and energy efficiency programs that support the Authority's mission and the State's clean energy goals. The Policy also establishes regular performance reporting by Staff to enable the Board to assess performance against the objectives of the Policy.

Compliance with the Policy

Staff concludes that the Authority has complied with the objectives of the Policy for the period since the last annual review for the reasons set forth below.

Planning

The Policy states "Planning for and maintaining a power supply portfolio that meets applicable New York State Independent System Operator (NYISO) and New York State Reliability Council requirements, environmental standards, and the State's Clean Energy Standard" and "Updating the Integrated Resource Plan ("IRP") to reassess system needs, when such updates are necessary, but no less often than every five years."

- Pursuant to the IRP reviewed by the Board in July 2017, Long Island capacity reserves are expected to exceed the NYISO's minimum capacity requirement through 2035 without adding new resources. Additional capacity reserves could be required earlier if:
    - Some Long Island generating units retire, and
    - NYISO rules regarding locational capacity requirements change.
- System conditions remain similar to assumptions contained in the 2017 IRP, and there is no need to reassess system needs at this time.
- Port Jefferson Power Station, Northport Power Station and E.F. Barrett Generating Station proceeded with monitoring, modifications, and installation of equipment compliance with

section 316(b) of the Federal Clean Water Act, which states to install best available technology to reduce fish entrainment and impingement at circulating water intake systems.
- NO_X emission controls systems for Holtsville gas turbines were winterized to facilitate compliance during gas interruptions.
- Current procurements are projected to provide sufficient Renewable Energy Credits ("REC") for the Authority to meet the Clean Energy Standard through at least 2021, provided that surplus RECs not needed for compliance in 2017 and 2018 can be recognized toward the compliance requirements in 2019 and 2020. Beyond 2021, new procurements or REC purchases from NYSERDA will fulfill REC needs.

Managing the Portfolio

The Policy states "Managing the power supply portfolio to minimize cost and maximize performance, including power plant availability and thermal efficiency, within contractual constraints."

- All power supply portfolio contracts met or exceeded contract targets.
- Heat rate (efficiency) of generation fleet was better than industry average for comparable technologies, based on U.S. Energy Information Administration (EIA) data.
- Nine Mile Point Unit 2's capacity factor for 2017 exceeded industry average.
- Generation fleet availability was better than industry average, based on the NERC Generation Availability Data System.
- By the Authority's participation in the NYISO, power supply dispatch is optimized on a statewide basis. This minimizes the cost to customers, while preserving reliability.
- PSEG Energy Resource & Trade has met or exceeded all contractual performance targets, including Neptune and Cross Sound cable performance, generation bidding to the NYISO, load forecasting, fuel procurement and scheduling, as well as settlements and invoicing. Optimized purchases of oil and gas for power generation saved customers an estimated $24 million in 2017, while optimized scheduling of cable imports saved an estimated $4 million in 2017.
- Obtained improvements to National Grid's gas transportation rates for electric generation.
- During January 2018 cold snap, obtained emergency waiver of nitrogen oxides (NOx) limits to enable oil-fired gas turbines to meet load requirements and avoid highly uneconomic purchases of natural gas.

Competitive Procurement

The Policy states "Minimizing cost by competitively procuring generation and distributed energy resources through wholesale market purchases, bilateral contracts, and if appropriate, after balancing cost and risk, ownership or pre-payments for energy[1], utilizing to the extent feasible and cost-effective, Authority-owned land and rights to acquire legacy generating sites."

- As of June 1, 2018, the Authority's feed-in-tariffs and utility-scale RFPs achieved:
    - Feed-In Tariff I -- 21.6 MW in operation with a maximum potential of 31 MW.
    - Feed-In Tariff II -- 14.8 MW in operation with a maximum potential of 33 MW.

[1] The Authority owns an 18% share of Nine Mile Point Unit 2 and has certain options to buy generation assets, typically at the expiration of a power purchase agreement, or to prepay for energy in exchange for a discount. The Authority will not take construction or development-related risks on new generation projects.

- 280 MW Request for Proposals (RFP) -- a 24.9 MW solar project with a commercial operation date of July 1, 2018; and 34 MW still under development.
- Feed-In Tariff II (Non-Solar) -- maximum potential of 6 MW.
- South Fork RFP -- 90-MW wind project and two 5-MW battery projects under development.
- Feed-In Tariff III -- maximum potential of 10 MW.
- Feed-In Tariff IV (Fuel Cells) -- maximum potential of 40 MW.

Clean Energy

The Policy states "Procuring cost-effective renewable resources, renewable energy certificates, and behind-the-meter resources such as energy efficiency and demand response, including acting in coordination with other State energy authorities, if advantageous to our customers. In selecting among reasonably comparable alternatives, the Authority will opt for lower carbon-emitting resources" and "Integrating cost-effective distributed energy production and storage technologies into the power supply portfolio and enabling the economic and secure dispatch of resources deployed within the distribution system and within customer premises."

- 2017 Energy Efficiency Savings of 56.4 MW and 236,191 MWh, equivalent to eliminating 142,200 tons of CO_2. Peak demand reductions were 22.3% greater than the 2017 goal and the energy savings were 6.3% greater than goal.
- Although in 2017 there was a slowing of customer-side renewable installations due to several out of state leasing companies who left the Long Island market and NYSERDA incentives ending for residential installation, the customer side goals were exceeded. 2017 customer side renewable goals were 5.98 MW with an actual installed capacity of 11.4 MW, equivalent to an annualized energy goal of 15,000 MWh, with an actual annualized savings of 27,995 MWh.
- Deployed Advanced Meter Infrastructure to engage customers on energy usage and energy choices, develop new energy products and services, and benefit the resiliency of the electric system.
- Initiated Home Energy Reports to motivate customers to increase understanding of their energy needs and take active control of energy consumption.
- Deployed Dynamic Load Management ("DLM") and Edge load curtailment programs.
- Initiated "Supersaver" Pilot Project in Bellmore to address load pocket by promoting multiple tools and technologies such as customer analytics, DLM, smart thermostats, smart meters, and energy audits, which will deliver targeted load reduction and enhanced customer empowerment.
- Incentivized 1st Thermal Energy Storage Project.
- Collaborative partnership for developing a Microgrid Project in Huntington.
- Executed Public Partnerships with the Authority, NYSERDA, and NYPA to advance energy efficiency and clean energy technologies. Some notable programs that resulted from this collaboration were:
    - Combined Heat & Power,
    - Clean Communities Program,
    - Geothermal Heat Pumps,
    - REV Campus Challenge Program,
    - NY Energy Manager, and
    - Free Home Energy Audits for customers on Long Island.

- The Authority and PSEG Long Island represented Long Island interests in the NYS Energy Storage initiative. PSEG Long Island identified areas to integrate battery storage systems as well as analyzed relieving system constraints by proposing a battery storage solution.

Wholesale Market Policy

The Policy states "Minimizing cost by representing the interests of Long Island electric customers in the New York and regional wholesale markets and their respective stakeholder processes, as well as direct engagement with appropriate Federal and State regulatory authorities."

- Opposed rules that would increase Long Island's capacity requirements while reducing capacity requirements for other regions in New York.
- Evaluated alternative means to integrate the Social Cost of Carbon into NYISO markets.
- Obtained favorable cost allocations for Long Island for AC Transmission and Western New York public policy transmission projects.
- Negotiated a favorable allocation of cost for replacement of the Ramapo phase shifters, which are used to control power flows between NYISO and PJM.
- Opposed PJM's proposed cost allocation to New York, for NYISO's use of transmission lines between New York City and New Jersey.

Staff's 2018 Work Plan

The Staff 2018 Work Plan has the following initiatives related to the Policy:

Planning

- BSQ 2: Oversee PSEG Long Island's study of the peaking fleet and flexible/peaking resources needed to accommodate offshore wind and higher renewable energy on the electric grid.
- BSQ 4: Participate in the Public Service Commission's (PSC) offshore wind proceeding, review joint procurement methods with the New York State Energy Research and Development Agency (NYSERDA), and ensure fair allocations of costs for related transmission and generation needs.
- BSQ 9: Develop a common, long-term financial utility planning model to be used for power supply planning and business forecasting.
- BSQ 12: Oversee evaluation of existing initiatives and potential new initiatives in electrification of transportation and heating and cooling.

Managing the Portfolio

- BSQ 7: Negotiate appropriate rate reductions for new gas transportation contracts.
- BSQ 8: Obtain cost reductions for generation reflecting the effects of tax reform.
- BSQ 13: Examine gas prepays and seek an IRS private letter ruling, if necessary.

Competitive Procurement

- BSQ 5: Oversee negotiation of power contracts for two utility-scale solar projects selected

in the 2015 Renewable RFP.

Clean Energy

- BSQ 1: Establish multi-year plans for energy efficiency, the Clean Energy Standard, and energy storage, through at least 2023.
- BSQ 10: Oversee implementation of VDER Phase I and development of VDER Phase II.
- BSQ 11: Assess PSEG Long Island's progress in implementing locational pricing through the dynamic load management and VDER tariffs.

Wholesale Market Policy

- BSQ 3: Oversee PSEG Long Island's studies and the New York Independent System Operator's (NYISO) efforts to integrate carbon pricing, offshore wind, and flexible resources into the wholesale markets.
- BSQ 6: Advocate for fair allocations of cost for Western New York and AC Transmission public policy transmission projects.

Annual Review of the Policy

Staff recommends the attached changes to the Policy to improve clarity and to identify details of compliance with the Clean Energy Standard. When selecting among reasonably comparable resources, the revised Policy establishes a preference for resources with operational, environmental or economic benefits to the Authority's service territory. There are no other material proposed changes.

Recommendation

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

Attachments

Exhibit "A"	Resolution
Exhibit "B"	Resource Planning, Energy Efficiency and Renewable Energy Policy (redline)
Exhibit "C"	Resource Planning, Energy Efficiency and Renewable Energy Policy (clean)
Exhibit "D"	Report to the Board on the Resource Planning, Energy Efficiency and Renewable Energy Policy

Exhibit A

RESOLUTION APPROVING THE REPORT TO THE BOARD OF TRUSTEES ON THE RESOURCE PLANNING, ENERGY EFFICIENCY AND RENEWABLE ENERGY POLICY

WHEREAS, the Resource Planning, Energy Efficiency and Renewable Energy Policy (the "Policy") was originally approved by the Board of Trustees Resolution No.1372, dated July 26, 2017;

WHEREAS, the Board has received the annual Staff report on compliance with the Policy; and

WHEREAS, the Board has reviewed the Policy and affirms that changes to the Policy are required.

NOW, THEREFORE, BE IT RESOLVED, that consistent with the accompanying memorandum, the Board hereby finds that the Authority has complied with the Policy for the period since the last annual review, approves the annual report to the Board, and approves the updates to the Policy.

Dated: July 25, 2018

Exhibit B

Board Policy:	**Resource Planning, Energy Efficiency and Renewable Energy**
Policy Type:	**Operating Policies**
Monitored by:	**Oversight Committee**
Board Resolution:	**#1372, approved July 26, 2017** **#xxxx. amended July 25, 2018**

Board Policy on Resource Planning, Energy Efficiency and Renewable Energy

It is the policy of the Long Island Power Authority to supply the energy needs of the Authority's customers in a clean, reliable and affordable manner by:

- **Planning.** Planning for and maintaining a power supply portfolio that meets applicable New York State Independent System Operator and New York State Reliability Council requirements, environmental standards, and the State's Clean Energy Standard; and updating the Integrated Resource Plan to reassess system needs, when such updates are necessary, but no less often than every five years.
- **Managing the Portfolio.** Managing the power supply portfolio to minimize cost and maximize performance, including the economic scheduling of assets, power plant availability and thermal efficiency, within contractual constraints~~;~~.
- **Competitive Procurement.** Minimizing cost by competitively procuring generation and distributed energy resources through wholesale market purchases, bilateral contracts, and if appropriate, after balancing cost and risk, ownership or pre-payments for energy[1], utilizing to the extent feasible and cost-effective, Authority-owned land and rights to acquire legacy generating sites[2]~~;~~.
- **Clean Energy.** Procuring cost-effective renewable resources, renewable energy certificates~~,~~ ("RECs"), and behind-the-meter resources such as energy efficiency and demand response, including acting in coordination with other State energy authorities, if advantageous to our customers~~. In selecting among reasonably comparable alternatives, the Authority will opt for lower carbon-emitting resources;~~;[3] and integrating cost-effective distributed energy production and storage technologies into the power supply portfolio and enabling the economic and secure dispatch of resources deployed within the distribution system and within customer premises.
- **Wholesale Market Policy.** Minimizing cost by representing the interests of Long Island

[1] The Authority owns an 18% share of Nine Mile Point Unit 2 and has certain options to buy generation assets, typically at the expiration of a power purchase agreement, or to prepay for energy in exchange for a discount. The Authority will not take construction or development-related risks on new generation projects.

[2] In selecting among alternatives, the Authority will take into consideration the operational, environmental and economic benefits to the Authority's service territory, including their impact on long-term local employment.

[3] In selecting among reasonably comparable alternatives, the Authority will opt for lower carbon-emitting resources.

electric customers in the New York and regional wholesale markets and their respective stakeholder processes, as well as direct engagement with appropriate Federal and State regulatory authorities~~;~~.

- ~~Integrating cost-effective distributed energy production and storage technologies into the power supply portfolio and enabling the economic and secure dispatch of resources deployed within the distribution system and within customer premises;~~
- ~~Updating the Integrated Resource Plan to reassess system needs, when such updates are necessary, but no less often than every five years.~~

The Chief Executive Officer will report at least annually to the Board of Trustees on:

- Compliance with applicable regulatory and environmental standards ~~and the State's Clean Energy Standard~~;
- Resource adequacy of the power supply portfolio relative to the expectations of the most recent Integrated Resource Plan.
- Performance of individual generation resources against industry benchmarks and contractual standards;
- Activities ~~undertaken~~ to procure generation, renewable and distributed energy resources in a cost-effective manner~~;~~, including compliance with the State's Clean Energy Standard for the prior calendar year, disposition of surplus RECs, and reductions in consumption arising from behind-the-meter resources; and
- Activities ~~undertaken~~ to represent the interests of Long Island electric customers at the State, regional and Federal levels~~; and~~.
- ~~Resource adequacy of the power supply portfolio relative to the expectations of the most recent Integrated Resource Plan.~~

Exhibit C

Board Policy:	**Resource Planning, Energy Efficiency and Renewable Energy**
Policy Type:	**Operating Policies**
Monitored by:	**Oversight Committee**
Board Resolution:	**#1372, approved July 26, 2017** **#xxxx, amended July 25, 2018**

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- **Managing the Portfolio.** Managing the power supply portfolio to minimize cost and maximize performance, including the economic scheduling of assets, power plant availability and thermal efficiency, within contractual constraints.
- **Competitive Procurement.** Minimizing cost by competitively procuring generation and distributed energy resources through wholesale market purchases, bilateral contracts, and if appropriate, after balancing cost and risk, ownership or pre-payments for energy[1], utilizing to the extent feasible and cost-effective, Authority-owned land and rights to acquire legacy generating sites.[1]
- **Clean Energy.** Procuring cost-effective renewable resources, renewable energy certificates ("RECs"), and behind-the-meter resources such as energy efficiency and demand response, including acting in coordination with other State energy authorities, if advantageous to our customers;[2] and integrating cost-effective distributed energy production and storage technologies into the power supply portfolio and enabling the economic and secure dispatch of resources deployed within the distribution system and within customer premises.
- **Wholesale Market Policy.** Minimizing cost by representing the interests of Long Island electric customers in the New York and regional wholesale markets and their respective stakeholder processes, as well as direct engagement with appropriate Federal and State regulatory authorities.

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[3] In selecting among reasonably comparable alternatives, the Authority will opt for lower carbon-emitting resources.

The Chief Executive Officer will report at least annually to the Board of Trustees on:

- Compliance with applicable regulatory and environmental standards;
- Resource adequacy of the power supply portfolio relative to the expectations of the most recent Integrated Resource Plan.
- Performance of individual generation resources against industry benchmarks and contractual standards;
- Activities to procure generation, renewable and distributed energy resources in a cost-effective manner, including compliance with the State's Clean Energy Standard for the prior calendar year, disposition of surplus RECs, and reductions in consumption arising from behind-the-meter resources; and
- Activities to represent the interests of Long Island electric customers at the State, regional and Federal levels.

PSEG LONG ISLAND

Report to LIPA Board of Trustees on Resource Planning, Energy Efficiency and Renewable Energy

JULY 25, 2018

PSEG LONG ISLAND
We make things work for you.

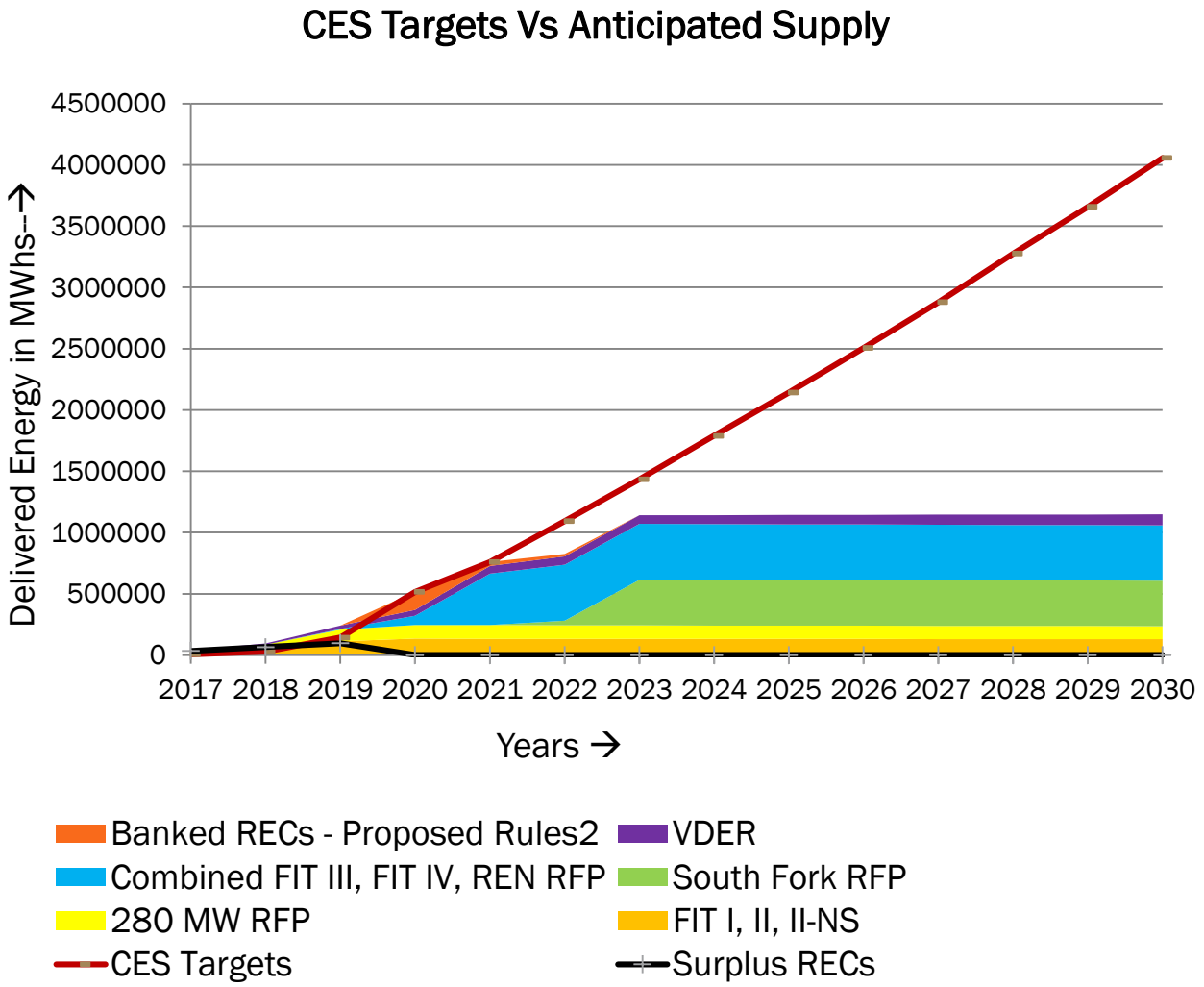
Background

On July 26, 2017 the LIPA Board of Trustees approved a Resource Planning, Energy Efficiency and Renewable Energy policy. The policy required annual reporting on:

- Compliance with applicable regulatory and environmental standards and the State's Clean Energy Standard
- Performance of generating units
- Procurement activities of generation, renewable and distributed energy resources
- Activities representing interests of Long Island electric customers at State, regional and Federal levels
- Resource adequacy of the power supply portfolio

Projected CES Targets and Anticipated Supply

- Current procurements are expected to provide sufficient REC credits to carry LIPA through 2021
- Targets may be further reduced as a result of greater than planned behind the meter renewable resources
- Future procurements or REC purchases from NYSERDA will be used to fulfill needs after 2021



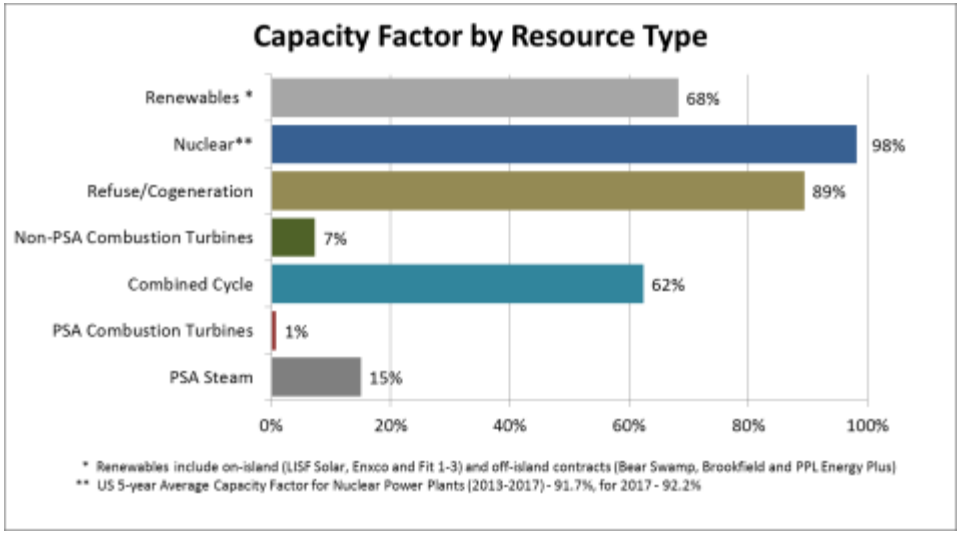
Generating Unit Environmental Compliance

- Compliance with applicable regulatory and environmental standards
  - Air permits and continuous emissions monitoring
  - Water discharge permits – monthly sampling and reporting
  - Petroleum and chemical bulk storage
  - Waste management

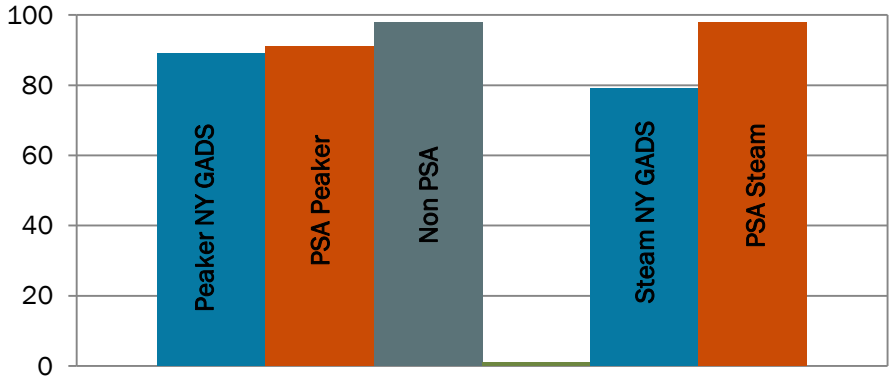
- Power Supply Agreement with National Grid
  - National Grid received emergency waiver of NOx limits during January 2018 cold snap
    - Winterizing NOX emission controls systems for Holtsville gas turbines to facilitate compliance during gas interruptions
  - 316b of Federal Clean Water Act requires best technology available to reduce fish entrainment and impingement at circulating water intake systems.
    - Port Jefferson – Installation of fish friendly traveling screens and circulating water pumps to meet updated DEC permit requirements is completed
    - Northport – Installation of fish friendly traveling screens and circulating water pumps is underway and is expected completed on schedule in 2021
    - Barrett – In process with NYSDEC to determine required technology. Likely outcome to be similar to Port Jefferson and Northport

Generating Unit Performance

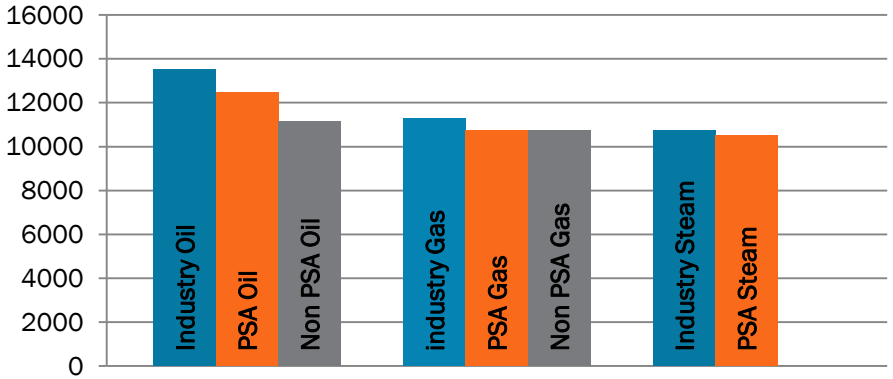
- All contracts met or exceeded contract targets
- Heat rate (efficiency) of fleet is better than industry average (EIA Data)
- Nine Mile Point 2 2017 capacity factor exceeded industry average
  - Capacity factor in 2018 will be lower as a result of routine refueling
- Availability of fleet is better than industry average (NERC Generation Availability Data System)



Availability Actual vs Industry
(Higher is Better)



Heat Rate Actual vs. Industry Average
(Lower is Better)



Renewable Procurement Activities

- Addressed the uncertainty caused by projects not moving forward and not cancelling by:
  - Setting a deadline for operation of FIT I, II and II-NS projects
  - Closely monitoring the progress of larger projects and ending pursuit of projects that are not viable
- Since last report
  - 11.8 MW have come on line
  - 10 MW have enrolled
  - 31 MW have cancelled or withdrawn

Procurement	Date of Issuance	Operational As Of June 1, 2018 (MW)	Projected (MW)
FIT I*	July 2012	21.6	21.6-31
FIT II	October 2013	14.8	24-33
280 MW RFP	October 2013	0	49-59
FIT II (NS)	May 2014	0	6
South Fork	June 2015	0	90
2015 Renewable RFP	December 2015	0	59
FIT III	July 2016	0	10
FIT IV	July 2016	0	40
Total		**36.4**	**299.6-330**

* Consists of FIT I projects that commenced operation after 1/1/15. Approximately 8 MW do not qualify for CES because they began operation prior to 2015.

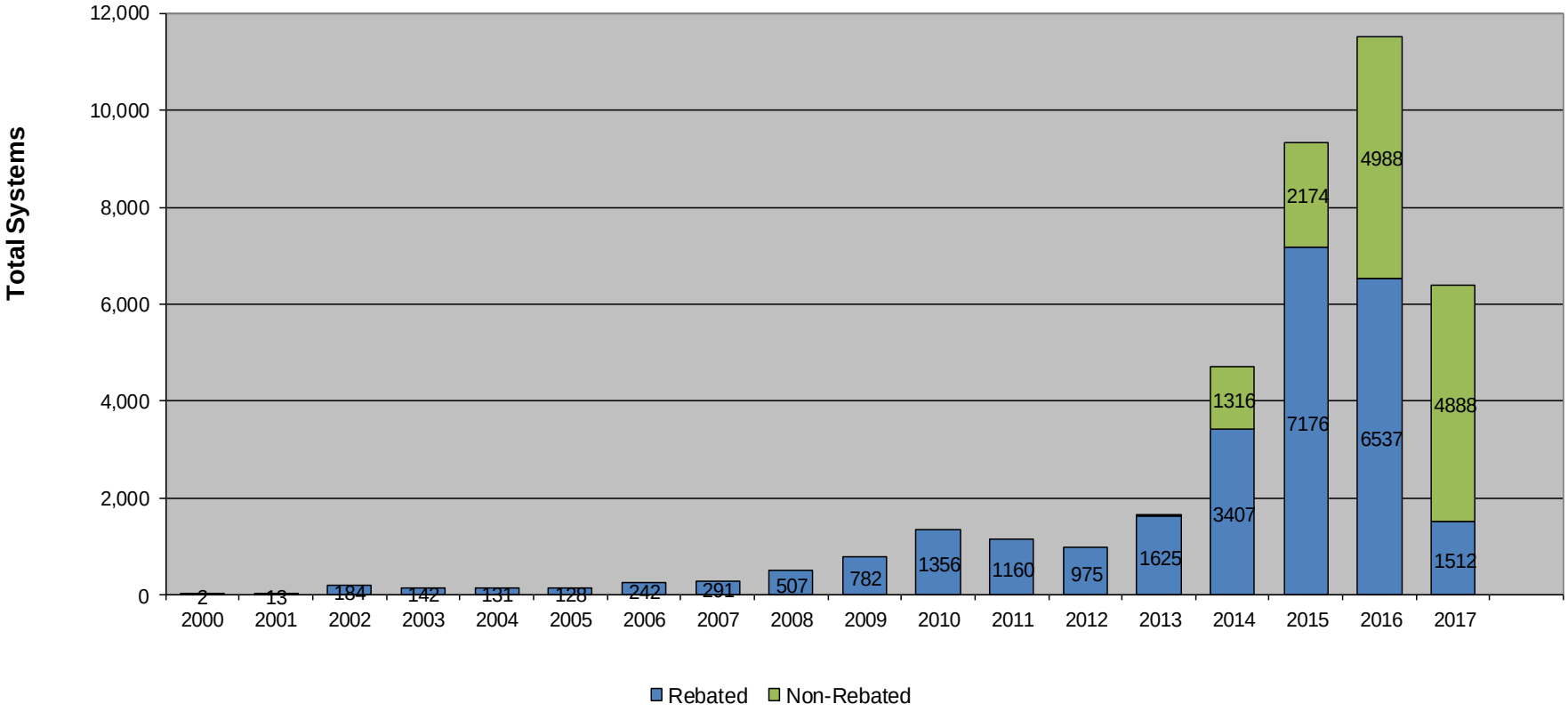
Customer-Side Renewables - 2017 Progress

- 2017 saw a slowing of customer-side renewable installations as several out of state leasing companies left the Long Island market and NYSERDA incentives had ended for residential installations

- Reduction was anticipated in goal setting process:
  - The megawatt goal was exceeded by 90 percent
  - The megawatt hour goal was exceeded by 86 percent

	Goal	Actual
Capacity (Megawatts)	5.98	11.40
Annualized Energy (Megawatt hours)	15,000	27,995

Solar Program History and Accomplishments*



*As of March 31, 2018

Customer Side – 2017 Energy Efficiency Program

- 2017 Performance was good
  - Expenses were 5.2% below budget
  - Projected peak demand reductions were 22.3% greater than goal
  - Projected energy savings were 6.3% greater than goal

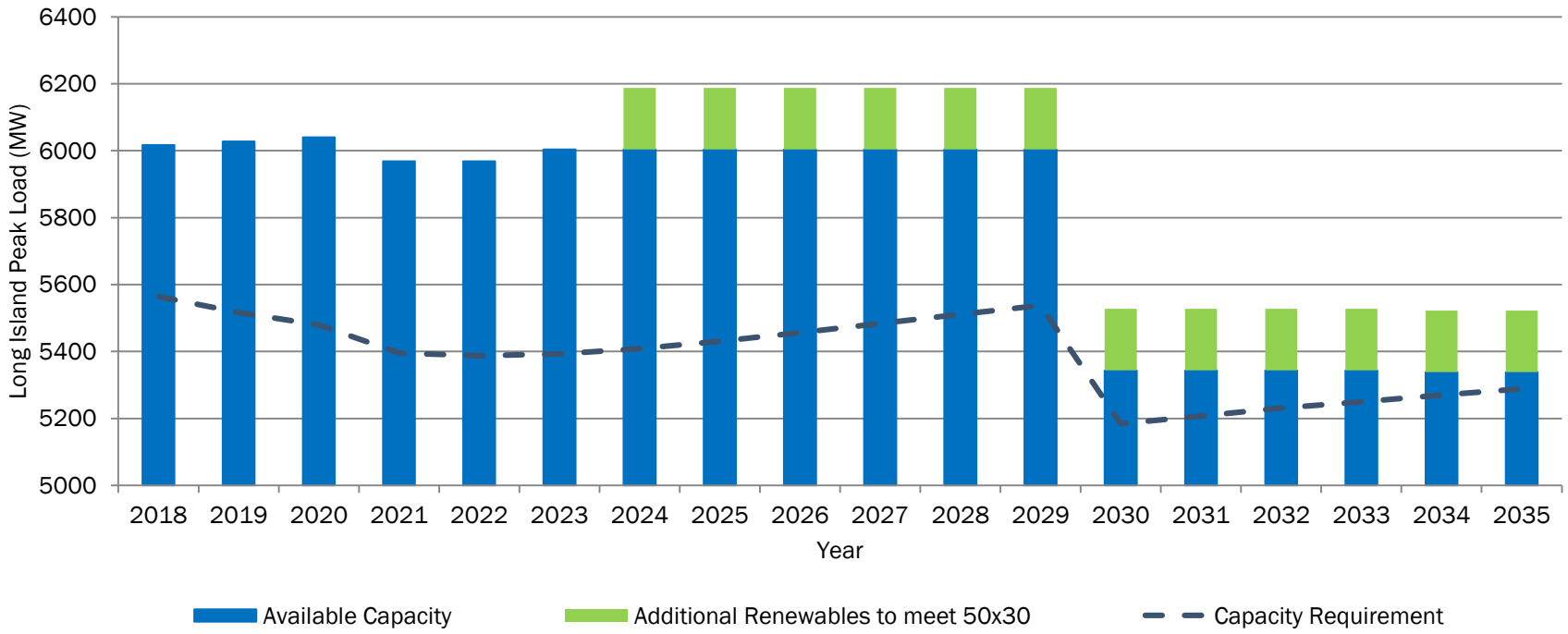
Program	PSEG Long Island Annual Energy Efficiency and Renewable Energy Budget	Energy Efficiency and Renewable Energy Actual Cost	Coincident Demand Savings (MW)		Energy Savings (MWh)	
			Goal	Verified Ex Ante	Goal	Verified Ex Ante
Commercial Efficiency Program	**$40,152,724**	**$37,298,732**	**23**	**25.6**	**95,005**	**102,139**
Residential Programs						
EEP	$16,827,594	$15,401,305	15.3	18.6	112,884	138,920
Cool Homes	$5,965,372	$7,005,211	1.65	2.81	2,693	2,705
Residential Energy Affordability Partnership (REAP)	$2,850,913	$3,054,333	0.337	0.276	905	645
Home Performance Programs	$12,972,806	$13,336,156	0.54	2.59	1,619	3,054
Home Energy Management	$2,665,756	$1,119,578	N/A	N/A	30,179	11,104
Subtotal Residential Programs	**$41,282,441**	**$39,916,584**	**17.8**	**24.3**	**148,280**	**156,427**
Total Energy Efficiency Portfolio	**$81,435,165**	**$77,215,316**	**40.8**	**49.9**	**243,285**	**258,566**

Representation of Long Island interests

- **FERC and NY Independent System Operator Rulemaking**
  - Opposing proposed rule that would increase Long Island's capacity requirements, while reducing all other regions in New York State
  - Evaluating alternative means to integrate the Social Cost of Carbon into NYISO markets
  - Obtained favorable cost allocation for Long Island for AC Transmission and Western New York public policy transmission projects
- **Studies to support PSEG Long Island customer interests**
  - Study Long Island's peaking generation fleet & integrate batteries and demand response to support intermittent renewable generation
  - Results of the study are expected by the end of the year
  - Market rules for energy storage
- **Partner with NYSERDA to reduce the cost of offshore wind development**
  - Collaborating with NYSERDA and others to develop procurement and market mechanisms for OSW

Resource Adequacy

- Resource adequacy of the power supply portfolio relative to expectations of the most recent Integrated Resource Plan



*As of March 31, 2018