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February 27, 2021

Chairman Robert F. Mujica, Jr.
Public Authorities Control Board
New York State Division of the Budget
Room 128, State Capitol
Albany, New York 12224

Via USPS Priority Mail

Re: PACB Review of South Fork Wind

Dear Chairman Mujica:

The Long Island Power Authority ("LIPA") is mandated by statute to submit to the Public Authorities Control Board ("PACB") for review *all* significant projects (defined to be projects of more than one million dollars). For whatever reason, LIPA has chosen *not* to submit the South Fork Wind Farm project proposed by South Fork Wind, LLC to PACB for review.

Unfortunately, the South Fork Wind Farm represents an opportunity squandered. As proposed, it is a disaster looking for a place to happen and a time to embarrass those who endorsed it. It is three times more expensive than comparable offshore wind projects and cannot provide power to meet peak electrical demand, which is its stated purpose. The Shoreham Nuclear Power Plant left us with a debt of six billion dollars that Long Island residents are still paying down with nothing to show for it. The South Fork Wind Farm will likewise leave residents with a multi-billion-dollar debt with little to show for it. Furthermore, in its current form, the project will likely be used as an example of a renewable energy project *not* to be repeated, and as such pose a threat to future offshore wind energy projects and risks tarnishing the name of renewable energy for years to come.

Pursuant to Public Authorities Law,[1] the Public Authorities Control Board "shall have the power and <u>it</u> <u>shall</u> <u>be</u> <u>its</u> <u>duty</u> to receive applications for approval of the … construction of any project proposed by: [*inter alia*] Long Island Power Authority [emphasis added.]"[2] In July 2020, LIPA admitted that it "has never submitted a Power Agreement to the PACB for approval[.]"[3] This is a clear violation of New York's Public Authorities Law.

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1 Public Authorities Law, Art. 1-A NYS Public Authorities Control Board §§ 50 - 51 and Art. 5 Public Utility Authorities, Title 1-A Long Island Power Authority § 1020

2 *Id.* § 51 (k)

3 *Huntington Town Council Member Eugene Cook vs. Long Island Power Authority, et al.* (index 604663-20 [Sup Ct, Suffolk County, Com. Div. 2019]), Defendants' Memo of Law in Support of Motion to Dismiss (at p. 28)

Oversight of LIPA has never been more important than it is now, and especially PACB oversight that is mandated by New York State Law.

To quote New York State Senate Majority Leader Andrea Stewart-Cousins: "crucial information should never be withheld from entities that are empowered to pursue oversight." [4]

I respectfully submit this letter and request that PACB fulfill its statutory obligations to review the proposed South Fork Wind Farm; and when making its determination on whether to approve (with or without conditions) or reject the South Fork Wind Farm proposal, to consider the reasons herein listed (below), please –

1. The price of energy from the South Fork Wind Farm (90 megawatts) is 22 cents.[5]
2. The same amount of renewable energy from Sunrise Wind will cost only 8 cents, or one-third the price of South Fork Wind.[6]
3. Ratepayers in Nassau and Suffolk Counties will be overcharged $1.025 billion for South Fork Wind's energy when compared to energy from Sunrise Wind.[7]
4. The offshore lease areas for Sunrise Wind and South Fork Wind are only three miles apart and can be connected together, thereby eliminating the need for a separate parallel export cable (60 miles long) off the southern coastline of Long Island.[8]
5. According to LIPA, the principal purpose of the South Fork Wind Farm is to provide power to meet peak electrical demand in the summer. Still, LIPA internal reports confirm that the South Fork Wind Farm *cannot* reliably provide power to meet peak electrical demand.[9] One report states that offshore "wind alone has a very small effective capacity due to the distinct statistical possibility that it may have very low available power output at the time of a peak-period contingency."[10] A subsequent

4 NY Post, Feb 15, 2021 (https://nypost.com/2021/02/12/democrats-in-rebellion-against-cuomos-nursing-home-coverup/)

5 Exhibit A - The price is 21.9 cents per kilowatt-hour (c/kWh). On January 22, 2021, the New York Office of the State Comptroller (NYS OSC) disclosed that it had based its valuation of $1.625 billion on total projected energy of 7.4 million megawatt-hours (over the 20-year initial contract term). South Fork Wind's Projected Energy Deliveries in Contract Year 0 (37,040 MWh) and Contract Year 20 (334,564 MWh) combined equals 371,604 MWh. Total projected energy delivered in each year (371,604 MWh) multiplied by 20 years is 7,432,080 MWh (over 20 years). The NYS OSC valuation ($1,624,738,893) devided by total energy (7,432,080 MWh) is $218.61/MWh or 21.9 cents/kWh. NB: By the time the South Fork Wind Farm is operational, the transmission upgrades that it was supposed to defer will have been completed.

6 Exhibit B - On October 23, 2019, Ørsted announced that the price of energy from its Sunrise Wind project is $80.64/MWh or 8 cents/kWh.

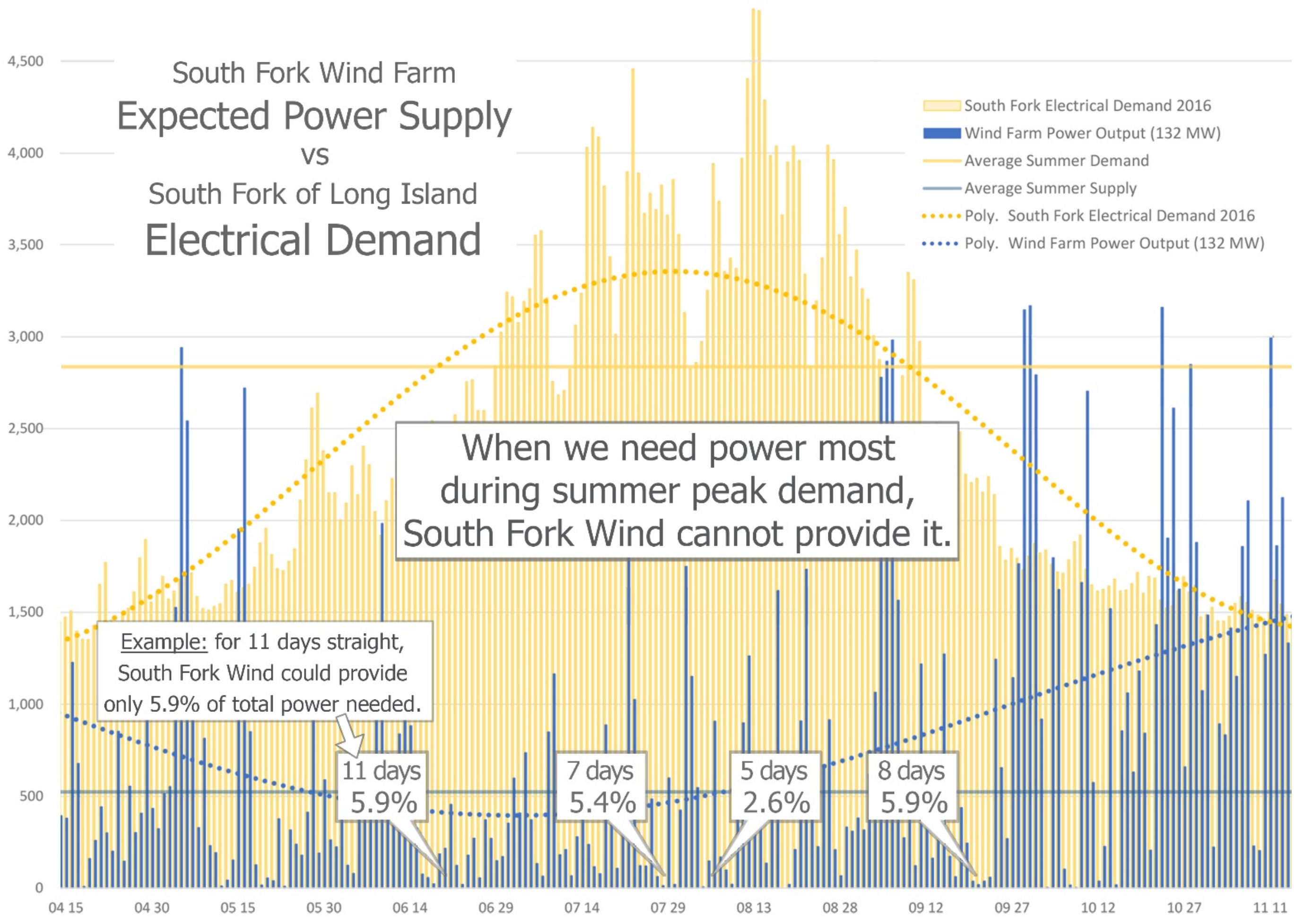
7 South Fork Wind's contract valuation ($1,624,738,893) less the price for the same amount of renewable energy from Sunrise Wind ($599,322,931) represents an overcharge of $1,025,415,958 for energy from South Fork Wind.

8 The offshore lease areas for Sunrise Wind (OCS-A-0487) and South Fork Wind (OCS-A-0517) are three miles apart and use similar cables to interconnect the individual wind turbine generators and to consolidate the power before exporting the energy via submarine cable with a larger capacity using either HVDC or HVAC.

9 LIPA disclosed a recent set of internal reports pursuant to FOIL on January 22, 2021.

10 Exhibit C - WESC Report (2016), Calculation of Effective Forced Outage Rate of Offshore Wind (DWW100) and Offshore Wind and Battery (at p. 2, last paragraph).

report reads (in reference to the earlier report): "The [aforementioned] … analysis assumed no correlation between high load and persistent low-wind conditions. Initial analysis of temperature/wind correlation in the Block Island data provided by DWW [Deepwater Wind] indicates that such a correlation may exist. Therefore, basing the portfolio analysis on an uncorrelated … basis is not believed to be excessively conservative."[11] Another LIPA report states that "Deepwater Wind's offshore wind project … would have a May through September Peak Period unavailability … of 29.9% … [and] shortfalls occur on 77 of the 152 Peak Period days, or about 50% of the days … [and there] are periods of up to 4 consecutive days where Wind+Battery [33 MW] shortfalls are occurring in August and September" (NB: LIPA installed only two 5 MW battery facilities).[12] Please see the graph (below).



Source: US National Oceanic and Atmospheric Administration (NOAA), National Center for Environmental Information (NCEI), daily temperature data for Montauk Airport (USC00300889, 40.952 -72.2977) and Bridgehampton (USW00054780, 41.07306 -71.92333) for the past 20 years (2000 to 2020). Offshore wind speed data (10-minute intervals) from NOAA Stations: Buzzards Bay, MA for 2017 (BUZM3, anemometer height: 24.8m); MONTAUK POINT, 23 NM SSW for 2016 (44017, anemometer height: 5 m); and, NANTUCKET 54NM SE for 2015 (44008, anemometer height: 5 m). Electrical load data east of Canal Substation (areas 1, 2 & 3) for 2016, 2017 & 2018 is provided by PSEG Long Island.

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[11] Exhibit D - LIPA internal report by WESC: SF Portfolio Load Cycle Analysis, 2016 (at p. 3, last ¶ & p. 4, first ¶)

[12] Exhibit E - LIPA internal report: South Fork RFP Deepwater OSWind Proposal EFOR Analysis (at pp. 2-3). Note: LIPA did *not* install a 33 MW battery, only two 5 MW batteries facilities (East Hampton and Montauk).

Demand Letter

On February 19, 2021, a demand letter was delivered to LIPA (see "Demand Letter" Exhibit F).[13] The Demand Letter requires that LIPA comply with all statutory provisions pursuant to the Long Island Power Authority Act ("LIPA Act") and submit to the Public Authorities Control Board ("PACB") the recently executed amendment to the power purchase agreement ("PPA Amendment") between it and South Fork Wind LLC (formerly Deepwater Wind South Fork LLC).[14]

The Demand Letter complies with the terms of Justice Elizabeth H. Emerson's recent Order in the matter of *Huntington Town Council Member Eugene Cook v LIPA, et al* (dated February 17, 2021).[15]

Power Purchase Agreement (PPA) and Amendment

The PPA Amendment is for the expanded capacity of the proposed South Fork Wind Farm. Since the amendment has *not* been disclosed to the public, the public knows neither the degree to which the wind farm has been expanded nor the price of energy generated from that expanded capacity. Ratepayers on Long Island have been asking LIPA, a public utility, for the price that they will have to pay pursuant to the power purchase agreement and any subsequent amendment, all of which constitute a public contract; but after four years, still, we know neither the full price (including amendments) nor the total capacity of the wind farm.

When it comes to offshore wind, there is a void of information. The expansive dark unknown includes issues that have *not* been adequately addressed, such as: has the additional costs of onshore infrastructure like new fast-start peaker plants (that have to quickly kick-in to compensate for an erratic supply of renewable energy) been included in the overall cost of offshore wind development; or whether New York State is being too optimistic in relying on offshore wind as a silver bullet. What happens if the private sector builds the wind farms then sells the collateralized *projected* revenue to offload the risk that the offshore wind farm is *not* as advertised? For example, a recent study of 6,400 wind turbines in Denmark found that after twelve years, the average cost of operating an offshore wind turbine had increased by 84% and that its capacity to generate power declined from a "load factor of 55% at age 1 to one of only 33% at age 12."[16] At what point does an offshore wind farm become economically unviable? After twelve years, the developer would have sold its interests long-ago, and whoever is left carrying the wind farm on its books when the music stops will likely declare bankruptcy. In this

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[13] Exhibit F - The Demand Letter was delivered via email to Assistant General Counsel Lisa M. Zafonte, Esq. of the Long Island Power Authority (to lzafonte@lipower.org) on February 19, 2021 (and via USPS Prority Delivery).

[14] Power purchase agreement between Long Island Power Authority and then Deepwater Wind South Fork, LLC (now South Fork Wind, LLC) dated February 6, 2017.

[15] *Ibid*

[16] Wind Power Economics – Rhetoric and Reality by Professor Gordon Hughes, School of Economics, University of Edinburgh published November 4, 2020.

instance, will New York State taxpayers have to bail-out nine gigawatts of wind farms to keep the lights on? These issues and more need to be addressed.

Pursuant to the LIPA Act, Section 1020-f (aa), LIPA "shall not undertake any project without the approval of the public authorities control board [PACB]" and PACB shall only grant such approval based "upon its determination that: (1) the project is financially feasible … (2) the project does not materially adversely affect overall real property taxes in the service area; (3) the project is anticipated to <u>result</u> <u>generally</u> <u>in</u> <u>lower</u> <u>utility</u> <u>rates</u> in the service area; and (4) the project will not materially adversely affect overall real property taxes or utility rates in other areas of the state of New York [emphasis added]."

Therefore, I respectfully request that PACB review the power purchase agreement between LIPA and South For Wind LLC and any subsequent amendment thereto.

In the meantime, if I can be of any further assistance, please don't hesitate to contact me via email (Si@oswSouthFork.info) or mobile (1-631-903-9154).

Sincerely yours,

Si Kinsella

Si Kinsella

C/c: Honorable Assemblywoman Amy Paulin
Member of Public Authorities Control Board
700 Post Rd # 252Room 128,
Scarsdale, New York 10583

Honorable Senator Leroy Comrie
Member of Public Authorities Control Board
11343 Farmers Blvd
Queens, New York 11412

Honorable Assemblyman Joseph M. Giglio
Member of Public Authorities Control Board
700 West State Street
Olean, New York 14760

Honorable Senator Andrea Stewart-Cousins
Majority Leader of the New York State Senate
28 Wells Avenue, Building #3
Yonkers, New York 10701

Honorable Senator Todd Kaminsky
55 Front Street, Room 1
Rockville Centre, New York 11570

Honorable Senator James Gaughran
485 Underhill Blvd, Suite 102
Syosset, New York 11791

Honorable Senator Anthony Palumbo
2 North Country Road, Suite 203
Mt. Sinai, New York 11766

Honorable Assemblyman Fred W. Thiele, Jr.
3350 Noyac Road, Building B, Suite 1
Sag Harbor, NY 11963

Honorable Andrew M. Cuomo
Governor of New York State
NYS Capitol Building
Albany, New York, 12224

Mr. Mark Fischl, Vice Chairman
Board of Trustees of Long Island Power Authority
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Honorable Ralph Suozzi
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Mr. Ali Mohammed
Board of Trustees of Long Island Power Authority
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Mr. Thomas Falcone
Long Island Power Authority
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Uniondale, New York 11553

Honorable Eugene Cook
Town Hall, 100 Main Street
Huntington, New York, 11743-6991

Honorable Senator Mario Mattera
260 Middle Country Road, Suite 102
Smithtown, New York 11787

Honorable Senator Alexis Weik
90-B West Main Street
Patchogue, New York 11772

Honorable Senator Phil Boyle
6 West Main Street, Suite B
Bay Shore, New York 11706

Honorable Senator Kevin Thomas
990 Stewart Ave., Suite LL 45A
Garden City, New York 11530

Honorable Assemblyman Michael J. Fitzpatrick
285 Middle Country Rd. Suite 202
Smithtown, NY 11787

Honorable Assemblyman Jarett Gandolfo
859 Montauk Highway, Suite 1
Bayport, NY 11705

Honorable Assemblywoman Jodi Giglio
30 West Main Street, Suite 103
Riverhead, NY 11901

Honorable Assemblywoman Judy Griffin
74 N. Village Ave.
Rockville Centre, NY 11570

Honorable Assemblyman Michael Montesano
111 W. Old Country Road, Suite 202
Hicksville, NY 11801

Honorable Assemblywoman Stacey Pheffer Amato
9516 Rockaway Beach Boulevard
Rockaway Beach, NY 11693

Honorable Assemblyman Doug Smith
991 Main Street, Suite 202
Holbrook, NY 11741

Honorable Assemblywoman Michaelle C. Solages
1690 Central Court
Valley Stream, NY 11580

Honorable Assemblyman Steve Stern
95 Broad Hollow Road, Suite 100
Melville, NY 11747

AC340
State
of
New York

CONTRACT ENCUMBRANCE REQUEST

* FOR DATA ENTRY ONLY

Amendment/
Supplemental

ORIGINATING AGENCY CODE	BATCH NUMBER		BATCH TYPE	NUMBER OF DOCUMENTS	NET AMOUNT
21670	1	0	TCC	1	**$1,624,738,893**

Originating Agency: Long Island Power Authority		Contract No.: C-000883	Action Code: A
Payee I.D.	Additional		Administering Agency
Payee Name (Limit to 30 Spaces): Deepwater Wind South Fork, LLC		Payee Name (Limit to 30 Spaces)	
Payee Address (Limit to 30 Spaces): 56 Exchange Terrace, Suite 300			
Payee Address (Limit to 30 Spaces)			
City (Limit to 20 Spaces): Providence		State (Limit to 2 Spaces): RI	Zip Code: 02903
Contract Amount: **$1,624,738,893**		Contract Period MM/DD/YY to MM/DD/YY: OSC approval plus 20 years with option to extend for an additional 5 years	
Security/Retainage Amount			
Description (Limit to 50 Spaces): Purchase Power Agreement			
Description (Limit to 50 Spaces)			
Provisions (Limit to 63 Spaces)			

Preparer's Signature: Maria I Gomes, Director of Procurement	Preparer's Phone Number: (516) 719-9235
Agency Finance Officer's Signature: Joseph Branca, CFO	Date: 1-30-17

Audit Status	Category	Award	Audit Class	Project Code
Data Received	Audit Group	Date Approved	Data Rejected	Auditor's Initials

Line	Act	Amount	Dept	Cost Center	Var	Yr	Object

OSC

☐ Check if continuation form is attached.

Confidential Information

POWER PURCHASE AGREEMENT BETWEEN LIPA AND DEEPWATER WIND SOUTH FORK, LLC
ESTIMATED CONTRACT VALUE

Contract Year	*Projected Energy Deliveries (MWh) (PPA-Appendix 3)* [1]	*Contract Price If Effective Date is On or Prior to 3/31/17 (PPA-Appendix 4)* [2]	*Annual Contract Payment*
0	37,040	$160.33	$5,938,623
1	371,604	$168.35	$62,558,233
2	371,604	$176.76	$65,686,144
3	371,604	$185.60	$68,970,452
4	371,604	$194.88	$72,418,974
5	371,604	$200.73	$74,591,543
6	371,604	$206.75	$76,829,290
7	371,604	$212.95	$79,134,168
8	371,604	$219.34	$81,508,194
9	371,604	$225.92	$83,953,439
10	371,604	$228.18	$84,792,974
11	371,604	$230.46	$85,640,903
12	371,604	$232.77	$86,497,312
13	371,604	$235.10	$87,362,286
14	371,604	$237.45	$88,235,908
15	371,604	$237.45	$88,235,908
16	371,604	$237.45	$88,235,908
17	371,604	$237.45	$88,235,908
18	371,604	$237.45	$88,235,908
19	371,604	$237.45	$88,235,908
20	334,564	$237.45	$79,440,906
Base Term Estimated Contract Value			**$1,624,738,893**

Extended Term			
20	37,040	$94.80	$3,511,392
21	371,604	$94.80	$35,228,059
22	371,604	$96.80	$35,971,267
23	371,604	$99.00	$36,788,796
24	371,604	$101.20	$37,606,325
25	334,564	$103.40	$34,593,918

ESTIMATED CONTRACT VALUE w Extended Term **$1,808,438,650**

[1] These amounts are based on P50 projections of energy deliveries meaning there is a 50% probability of the actual deliveries being higher than these amounts and a 50% probability of them being lower.

Source: LIPA Response (Jan 22, 2021) to Kinsella FOIL Request (Aug 24, 2020)

Confidential Information

POWER PURCHASE AGREEMENT BETWEEN LIPA AND DEEPWATER WIND SOUTH FORK, LLC

ESTIMATED CONTRACT VALUE

[2] Years 21-25 assume LIPA elects the Extended Term.

Note: All of the information in this spreadsheet except for the Estimated Contract Value is Confidential and should not be released to the public.

AC340
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of
New York

CONTRACT ENCUMBRANCE REQUEST

Amendment/
Supplemental

* FOR DATA ENTRY ONLY

ORIGINATING AGENCY CODE	BATCH NUMBER		BATCH TYPE	NUMBER OF DOCUMENTS	NET AMOUNT
21670	1	0	TCC	1	1.6 billion

Originating Agency: Long Island Power Authority		Contract No.: C-000883	Action Code: A
Payee I.D.	Additional		Administering Agency
Payee Name (Limit to 30 Spaces): Deepwater Wind South Fork, LLC		Payee Name (Limit to 30 Spaces)	
Payee Address (Limit to 30 Spaces): 56 Exchange Terrace, Suite 300			
Payee Address (Limit to 30 Spaces)			
City (Limit to 20 Spaces): Providence		State (Limit to 2 Spaces): RI	Zip Code: 02903
Contract Amount: $1.6 billion		Contract Period MM/DD/YY to MM/DD/YY: OSC approval plus 20 years with option to extend for an additional 5 years	
Security/Retainage Amount			
Description (Limit to 50 Spaces): Purchase Power Agreement			
Description (Limit to 50 Spaces)			
Provisions (Limit to 63 Spaces)			

Preparer's Signature: Maria I Gomes, Director of Procurement			Preparer's Phone Number: (516) 719-9235	
Agency Finance Officer's Signature: Joseph Branca, CFO			Date: 1-25-2017	
Audit Status	Category	Award	Audit Class	Project Code
Data Received	Audit Group	Date Approved	Data Rejected	Auditor's Initials

Line	Act	Amount	Dept	Cost Center	Var	Yr	Object

OSC

☐ Check if continuation form is attached.

Source: LIPA Response (Jan 22, 2021) to Kinsella FOIL Request (Aug 24, 2020)

Maria Gomes

From: Rick Shansky, P.E.
Sent: Tuesday, January 24, 2017 4:25 PM
To: Maria Gomes
Subject: RE: DeepWater
Attachments: DWW CV.xlsx

Your choice - $1.8B (25) or $1.6B (20). As the extension option is weak, perhaps go with 20 years.

From: Maria Gomes
Sent: Tuesday, January 24, 2017 4:22 PM
To: Rick Shansky, P.E.
Subject: DeepWater

Would you know the value for this so I can prepare an AC340?, 740 million?
Term- start date:
End date- 25 years after start date
Please confirm.
Thanks.

LIPA Long Island Power Authority

Maria Gomes
Director of Procurement
(o) 516-719-9235
LIpower.org

Ørsted

Source: *Ørsted A/S*

October 23, 2019 15:31 ET

Sunrise Wind signs power purchase agreement with New York

On 18 July 2019, New York selected Sunrise Wind as the preferred bidder for an 880MW offshore wind farm. Sunrise Wind has now signed a 25-year OREC purchase-and-sale agreement with the New York State Energy Research and Development Authority (NYSERDA).

The Sunrise Wind project has an average all-in development cost of USD80.64 per MWh (2018 prices) with an expected average OREC cost of USD22.62 per MWh.

Sunrise Wind is a 50-50 partnership between Ørsted, the world's leading offshore wind developer, and Eversource, New England's largest energy company. Subject to Ørsted's and Eversource's final investment decision, the offshore wind farm is expected to be operational in 2024.

Martin Neubert, Executive Vice President and CEO of Ørsted Offshore, says:

"Ørsted and Eversource are pleased to announce the signing of the power purchase agreement for this landmark project which will bring large-scale clean energy to New York, and we look forward to working with NYSERDA, suppliers, local communities and other stakeholders to bring Sunrise Wind to life. The offshore wind industry offers great opportunities for long-term industrial development, and Sunrise Wind will bring skilled jobs to the state during construction and throughout its operational lifetime."

As part of its winning proposal for New York's largest offshore wind project, Sunrise Wind will bring economic development by constructing an operations and maintenance hub in Port Jefferson, Long Island, investing in additional port infrastructure upgrades and establishing offshore wind training programs in the state of New York. Furthermore, Sunrise Wind is exploring transmission partnerships with the New York Power Authority (NYPA) and the leading New York utility Con Edison. Located over 30 miles east of Long Island's Montauk Point, Sunrise Wind will be barely noticeable from shore.

North East cluster

Sunrise Wind is part of Ørsted's and Eversource's North East cluster comprising South Fork, Sunrise Wind and Revolution Wind with a total capacity of approx. 1.7GW. Ørsted and Eversource will be able to leverage procurement synergies and optimize the construction and operation of the project portfolio. Ørsted and Eversource have signed a wind turbine contract with Siemens Gamesa Renewable Energy for the joint venture's North East cluster. Subject to Ørsted's and Eversource's final investment decision, all three offshore wind farms will install Siemens Gamesa's 8.0MW turbines.

Source: LIPA Response (Jan 22, 2021) to Kinsella FOIL Request (Aug 24, 2020)

Ørsted has set up offices in New York City and Long Island and is currently developing New York State's first offshore wind project, the South Fork Wind Farm off Long Island.

The information provided in this announcement does not change Ørsted's previous financial guidance for the financial year of 2019 or the announced expected investment level for 2019.

For further information please contact:

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Tom Lehn-Christiansen
+45 99 55 60 17
tomlc@orsted.dk

Ørsted Investor Relations
Allan Bødskov Andersen
+45 99 55 97 69
alban@orsted.dk

The Ørsted vision is a world that runs entirely on green energy. Ørsted develops, constructs and operates offshore and onshore wind farms, bioenergy plants and provides energy products to its customers. Headquartered in Denmark, Ørsted employs 6,300 people. Ørsted's shares are listed on Nasdaq Copenhagen (Orsted). In 2018, the group's revenue was DKK 76.9 billion (EUR 10.3 billion). For more information on Ørsted, visit orsted.com or follow us on Facebook, LinkedIn, Instagram and Twitter.

Attachment

- Sunrise Wind

CALCULATION OF EFFECTIVE FORCED OUTAGE RATE OF OFFSHORE WIND (DWW100) AND OFFSHORE WIND PLUS BATTERY (DWW100+LIE400)

Introduction

This document describes the calculations performed to determine the statistical effective forced outage rate of the DWW100 offshore wind resource, and this wind resource combined with a 33 MW × 8 hour (264 MWh) battery.

The DWW100 offshore wind resource consists of fifteen 6 MW wind turbines, yielding an aggregate nameplate capacity of 90 MW, collector system and transmission losses not considered. The maximum output of the plant, at the onshore point of interconnection is proposed to be limited to 75 MW by means of wind turbine curtailment.

The goal of the South Fork RFP process is to obtain resources that can serve as an alternative to transmission capacity in order to cover transmission contingencies during high loading conditions. Wind generation is inherently variable, however, and its local capacity contribution must be determined by statistical analysis.[1] The key metric is the effective forced outage rate (EFOR), which is the weighted probability that the resource is not available at the time it is needed.

The LIE400 battery has been proposed for the same location as the DWW100 point of interconnection, introducing the possibility of using this battery to "firm" the offshore wind resource to yield a greater local capacity contribution.

Data Source

The DWW100 wind data are based on a historical year's meteorological data, from which the DWW100 proposer's wind resource consultant (AWSTruePower) has "back-casted" wind turbine hourly output. These data were provided to WESC in the spreadsheet "App 9-1 Deepwater ONE - 8760_Equivalent FOR_rms v01.xlsx".

Analysis Methodology

The EFOR analysis was limited to the months of May to September. For the analysis of the wind resource alone, the analysis was further limited to the hours from 2 pm to 9 pm each day, which correspond to the peak hours of the South Fork area load curve. A target local capacity contribution P_t was selected. For each peak-period hour h, the per-unit unserved energy $E_{us}(h)$ was calculated as:

[1] The local capacity contribution is different than the effective contribution to system-wide generation capacity (UCAP).

WESC

$$\text{if}\left(P_W \geq P_t\right), E_{us}(h) = 0$$
$$\text{else}\left(E_{us}(h) = 1 - {P_W(h)}/{P_t}\right)$$

where $P_W(h)$ is the average wind power output for the respective hour.

The EFOR is the average value of $E_{us}(h)$ over the peak-period hours in the peak season. The target capacity contribution P_t was varied over a range to define the relationship of EFOR to the capacity contribution.

The calculation of EFOR for the wind resource combined with the "firming" battery is more complex as it requires modeling the battery state of charge. This analysis is performed on a 24-hour per day basis within the peak season. At each non-peak hour, the entire wind resource output is used to increase the battery's state of charge, unless the wind resource output is greater than the battery power rating (33 MW) or if the battery maximum state of charge (264 MWh) has been reached. If the wind output is greater than 33 MW, then 33 MW is devoted to the battery charging (unless the maximum state of charge has been reached), and the remainder flows into the grid. If the battery maximum state of charge has been reached, then all wind production flows to the grid during non-peak hours.

During peak hours, the battery is used to supplement the wind resource output to the extent that the total of wind plus battery output is 33 MW, provided sufficient battery state of charge exists. If the battery has been discharged to zero state of charge, then the output is limited to that of the wind alone. The combined output of the wind and battery in each peak hour is P_W and the formula above is used to calculate the hourly unserved energy, which is then averaged to determine the EFOR. As in the case of the wind resource alone, the target capacity contribution P_t was varied over a range to define the relationship of EFOR to the capacity contribution.

This analysis did not include battery losses, so the results are slightly optimistic.

EFOR Calculation Results

The methodology described above was used to calculate the EFOR for the DWW100 wind resource alone, and the DWW100 wind resource combined with the LIE400 battery. The results are displayed in Figure 1.

Conventional generation resources typically have an EFOR of around 5%. Therefore, this value has been used as the basis to define the capacity contribution of these resources. The 5% EFOR is shown by the green dashed line in Figure 1. It intersects with the wind resource alone curve at 2 MW, and the combined wind and battery resource at approximately 40 MW. On the basis of a desired EFOR of 5%, the wind alone has a very small effective capacity due to the distinct statistical possibility that it may have very low available power output at the time of a peak-period contingency.

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Provided the transmission system has the capacity to recharge the battery during off-peak periods, the battery alone provides an effective capacity equal to its 33 MW rating. Combining the wind and battery shows a small amount of synergy between the resources because the 5% EFOR capacity is 40 MW, which is slightly greater than the sum of the 2 MW wind capacity contribution and 33 MW battery capacity contribution.

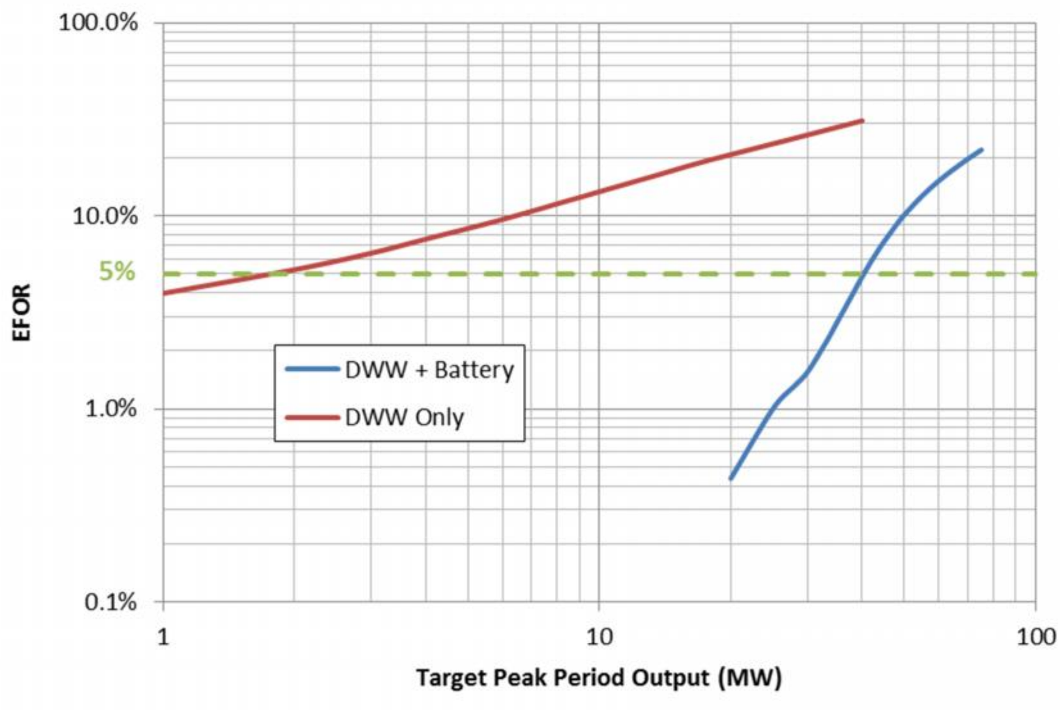

Figure 1 Effective forced outage rate (EFOR) for DWW 100 wind resource alone and combined with the LIE400 33 MW battery.

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SF RFP PORTFOLIO LOAD CYCLE ANALYSIS

Loading of certain transmission cables serving the South Fork are the some of the critical transmission constraints which the RFP seeks resources to mitigate. Unlike overhead transmission lines, which respond quickly to loading changes, the thermal time constants of underground cables are very long. Therefore, the constraints posed by the cables are not only determined by the peak load, but also by the loss factor defined by the hourly load profile to which the cable is subjected[1]. Deployment of generation, energy storage, and demand reduction resources change the shape of the peak-day hourly load profiles for the areas covered in the South Fork RFP. In general, the deployment of these resources will tend to "flatten" the load profile, thus increasing the loss factor and consequently decrease the peak load limit of the cables.

An analysis has been performed to determine South Fork peak-day hourly load profiles for the years 2022, 2023, and 2030 with application of Portfolios 2, 3, 5, and 6. Portfolio 1 is a transmission option that does not modify the shape of the load profile. Portfolio 4 was not analyzed because its description does not provide sufficient quantitative information on which to base the analysis. These years were selected as the most critical to the transmission planning process. Each analysis was performed for Area 1 alone, and for the combined loading and resources of Areas 2 and 3, as the critical cable loading issues do not require discrimination between Area 2 and Area 3 loads and resources.

Although the initial purpose of this analysis was to determine load profiles for the purpose of cable rating determination, this analysis has revealed results that can inform the evaluation and optimization of the resource portfolios. Of particular note are findings indicating that battery resources may not be able to be fully utilized, even on peak days, due to insufficient duration and depth of load "valleys" in which re-charging may be performed. (High load periods are typically caused by heat waves, and many heat waves are multi-day events where several days in a row achieve daily peaks that are close to the overall peak. Therefore, the analysis assumes the load cycles are recurring.) Another significant finding is that most of the portfolios reduce the peak transmission capability to the South Fork, by virtue of the increased loss factor on underground cable circuits.

Load Profile Modeling Approach and Assumptions

The analyses of the portfolios were performed on an hour-by-hour basis for each study year using the forecast peak-day load profile for each area, deploying the resources such that the peak demand of each area is reduced, thus flattening the load profile. The demand response resources (AEG and NEX) were the initial resources applied in each analysis,

[1] Loss factor is the mean square of the hourly cable loading in per-unit of the peak load. Loss factor can be related to a load factor, as explained later in this report.

followed by fuel cell, microgrid, wind, battery storage, and lastly, dispatchable fuel-burning resources (combustion turbines, reciprocating engines). The deployments were made with due regard for the characteristics and limitations of each of the resources comprising the portfolio. This is a painstaking, mostly manual process when performed in a spreadsheet with full knowledge of the entire load cycle. This raises the important question of how these resources will be controlled, and how accurate will be that control, in the actual operating environment where future load demand is not known precisely. It is likely that very substantial resources may need to be committed to developing the operating systems required to control these assets, and additional human resources may be required to operate this relatively small portion of the LIPA system.

The assumptions and limitations of each resource type as used in this analysis are as defined below:

AEG-100 (Demand Response)

This demand response is primarily achieved through modification of HVAC system operation, via customer thermostat setpoints and cycling limitations. When air conditioning thermostat setpoints are raised at the start of the four-hour load reduction period, a substantial initial drop in load is assumed to occur, followed by a slow rise with a two-hour thermal time constant (assumed), reaching the guaranteed demand decrease value at the end of the four hour reduction period. When the period concludes, it is assumed that the thermostats will be immediately reset to the comfort level. This will cause a step increase in demand assumed to be equal and opposite to the negative demand step at the start of the load reduction period. This rebound in demand is assumed to decay with a two hour time constant. The parameters of this load modification behavior are such that the rebound energy is approximately 70% of the energy decrease during the reduction period, which is typical for HVAC demand response programs.

Figure 1 plots the assumed change in demand, in per-unit of the guaranteed demand reduction value, as a function of the hour of day. This demand modification profile is admittedly speculative. However, it can be safely concluded that an HVAC demand modification will have a substantial rebound, and this rebound will take place immediately following the end of the demand reduction period. Because of the small magnitude of the AEG proposal, and the fact that other dispatchable resources were used to “fill in” around this assumed profile, the assumptions made for this demand response do not have a significant effect on the profiles.

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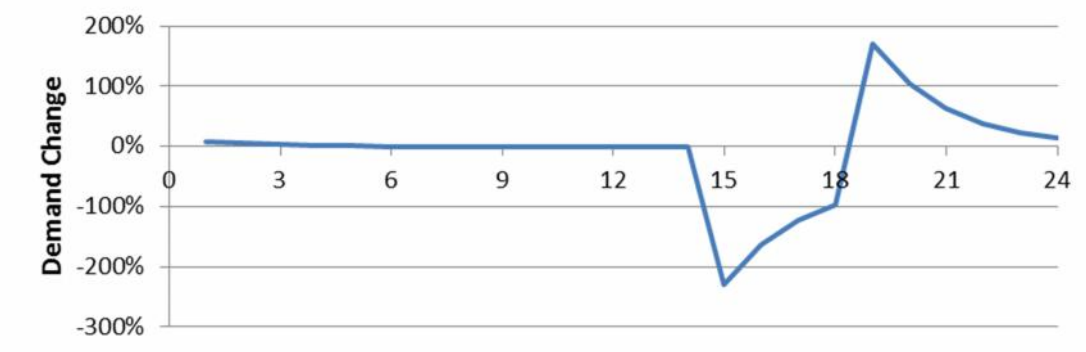

Figure 1 Assumed hourly demand change profile for AEG 100, in percent of guaranteed reduction

Thermal Energy Storage (NEX)

In the portfolios where the NEX thermal energy storage resource was included, this resource was deployed on a flat basis at rated value for the most optimal consecutive four hour period. The rebound, or recharge, was at 57.5% of the rated value over eight early morning hours.

Fuel Cell (FCE)

Due to the characteristics of the fuel cell resource, it was assumed to be flat-loaded to capacity on a 24 hour basis during peak days.

Battery Storage (AES, LIE, GCN)

Both battery energy storage discharge and recharge were assumed to be fully dispatchable to meet the goal of demand reduction. The limitations on charge/discharge rate (MW), and maximum stored energy (MWh) for each battery resource were observed at all times. Additionally, the energy available for discharge into the system was discounted by the stated round-trip losses of the battery resource. The LIE400 33 MW battery was treated as a special case for years 2023 and 2030, paired with the DWW wind resource. This hybrid resource is described separately below.

Offshore Wind + Battery (DWW100 + LIE400)

The DWW100 offshore wind resource, which has a 90 MW installed wind turbine capacity and 75 MW output limitation, was modeled as a hybrid resource in combination with the 33 MW, 264 MWh LIE400 battery. Separate analysis has shown that the hybrid resource can deliver 40 MW block capacity over an eight hour period with a 5% effective forced outage rate (EFOR). For this analysis, it was assumed that the combined resource can deliver a total of 320 MWh of energy as needed over one day's peak load period. There were a few hours in the analysis where the combined resource delivered slightly more than 40 MW.

The EFOR analysis assumed no correlation between high load and persistent low-wind conditions. Initial analysis of temperature/wind correlation in the Block Island data provided

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by DWW indicates that such a correlation may exist. Therefore, basing the portfolio analysis on an uncorrelated 5% EFOR basis is not believed to be excessively conservative.

Microgrids (ANB)

The ANB microgrid projects were (optimistically) assumed to be fully dispatchable to meet area load-leveling needs with the constraints that the maximum demand change is limited to the rated value, and the total energy of the peak reduction is limited to eight times the microgrid's rating. Based on the composition of the microgrids, an energy rebound of 70% was assumed for the microgrids in Areas 2 and 3, and 60% for Area 1. This rebound was assumed to be dispatchable to the most advantageous hours for area load leveling. The assumptions regarding the microgrids' flexibility are speculative, as these are not clearly defined in the proposals.

Combustion Turbines (HAL) and Reciprocating Engines

In general, these resources were deployed only as necessary to reduce peak demand. An exception is that the HAL turbine in Area 1 was deployed on a 24 hour basis to "recharge the battery" as specified in the portfolio descriptions.

PEAK LOAD REDUCTION

Table 1 displays the peak load reduction results determined by the portfolio analyses. In many cases, the achievable reduction is significantly less than the total of the resource capabilities of each portfolio. This is due to insufficient time or available energy to accommodate battery recharging, and the reliability constraints assumed for the hybrid wind and storage resource. Figure 2 shows load curves for Profile 3 in 2023 as an example. The significant issues experienced with each portfolio are discussed below.

Table 1
Area Peak Loads and Load Reduction (MW)

	2022		2023		2030	
Portfolio	**Area 1**	**Areas 2+3**	**Area 1**	**Areas 2+3**	**Area 1**	**Areas 2+3**
None	28.1	283.0	28.9	290.6	35.1	353.1
Portfolio 2	18.8 (-9.3)	227.9 (-55.1)	19.6 (-9.3)	225.0 (-65.6)	25.0 (-10.1)	285.8 (-67.3)
Portfolio 3	23.1 (-5.0)	234.7 (-48.3)	24.0 (-4.9)	234.7 (-55.9)	29.4 (-5.7)	296.7 (-56.4)
Portfolio 5	22.1 (-6.0)	235.3 (-47.7)	18.1 (-10.8)	242.1 (-48.5)	23.2 (-11.9)	302.1 (-51.0)
Portfolio 6	22.6 (-5.5)	220.8 (-62.2)	22.6 (-6.3)	228.3 (-62.3)	28.7 (-6.4)	283.7 (-69.4)

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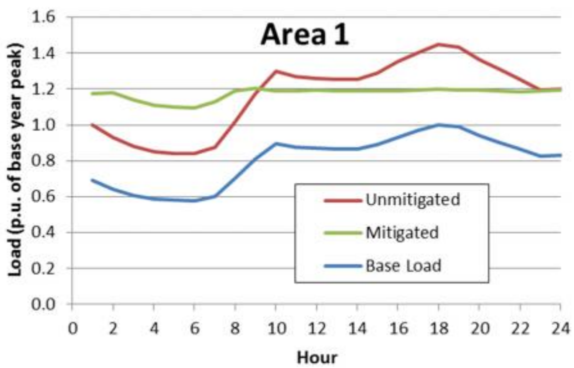

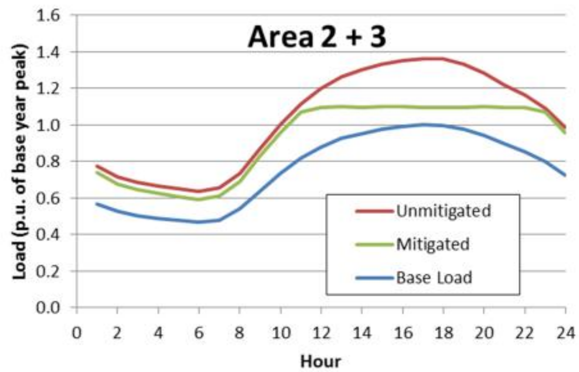

Figure 2 Base load profile, 2023 load profile, and 2023 profile with Portfolio 3 applied

Portfolios 2 and 3

For Area 1, the constraining factors are both the energy capacity of the LIE battery and the amount of time in which it could be recharged at a rate within its power limitation in order to achieve rated energy. For Areas 2+3, except in 2022, the constraining factor is the assumed 240 MWh limit of the DWW + LIE400 hybrid resource. In 2022, the constraining factor for Areas 2+3 is the maximum 33 MW output of the LIE400 battery.

Portfolio 5

The load was flat-lined in Area 1 for only partial deployment of resources requiring recharging or having a rebound characteristic. These resources could not be increased to their rated MW capacities without causing new peaks in the normally off-peak periods. For Areas 2+3, battery energy capacity was the limiting factor to peak load reduction.

Portfolio 6

The limitation to peak load reduction in Area 1 is the power limit of the reciprocating engine generators. In Areas 2+3, the limiting factor was the assumed energy capability of the hybrid wind and storage resources.

Load Factors and Cable Rating Impacts

Effective Load Factor

The truly relevant characteristic of a load profile shape to cable ampacity is the loss factor, as mentioned previously. However, the cable ampacity software used by PSEG-LI uses as an input the load factor (average load divided by peak load) as a convenience to the user. An industry rule-of-thumb, that is presumed to be used by the ampacity software to convert load factor (*LdF*) to loss factor (*LsF*), is:

$$LsF = 0.7 \cdot LdF^2 + 0.3 \cdot LdF$$

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Because the load reduction portfolios result in highly atypical load profile shapes, it was decided that it would be most accurate to convert the loss factor from the resulting net load curves, and then convert these into effective loss factors using the above relationship. This is expected to provide a more realistic assessment of cable thermal impact than direct application of the actual load factor.

Portfolio Effective Load Factors

Table 2 provides the effective load factors for the portfolios for the study years. The 23 kV transmission cables east of Amangasett are subjected to Area 1 load, and under contingency conditions the entire Area 1 load is carried by one of these cables. The Southold-Buell and Canal-Southampton cables are affected by the total load of Areas 1, 2, and 3. The Riverhead-Canal 138 kV cable loading is affected by the sum of all areas, plus the loading at Canal. Thus the load factors are calculated for the combinations of area loadings as shown.

The portfolios can be seen to substantially increase the load factors, which tend to decrease the peak load capacity of underground transmission lines which serve the respective areas.

Table 2
Effective Load Factors

		Portfolios				
Areas	**Year**	**None**	**2**	**3**	**5**	**6**
Area 1	**2022**	0.786	0.969	0.981	0.990	0.926
	2023	0.786	0.954	0.971	0.997	0.926
	2030	0.786	0.948	0.959	0.996	0.910
Areas 1+2+3	**2022**	0.758	0.866	0.860	0.892	0.870
	2023	0.758	0.855	0.847	0.889	0.867
	2030	0.758	0.840	0.828	0.869	0.859
All + Canal	**2022**	0.750	0.856	0.851	0.882	0.859
	2023	0.750	0.845	0.840	0.876	0.856
	2030	0.750	0.832	0.822	0.861	0.849

Net Load Reduction

At the time this report was drafted, [redacted] Therefore, the impact of the load profiles on transmission capacity into Area 1 during a long-duration can be determined. Table 3 summarizes the impact of the portfolios on both peak load and transmission capacity, with the difference between the reduction in load and decrease in transmission capacity shown as "net improvement".

Defining effectiveness as the amount of net improvement divided by the peak load decrease, the effectiveness values of the portfolios for Area 1 are in the range of 68% to 77%, excluding Portfolio 3. The effectiveness of this portfolio is in the range of 45% to 57%, due to the greater reliance on energy storage and demand response with rebound in this portfolio instead of generation resources.

Analysis of the individual effectiveness of resources in a portfolio is revealing. Such a marginal analysis was performed for Portfolio 2 in 2030. Starting from the no-mitigation load profile, the individual resources were turned on one at a time with the same output/input profile as used to meet the all-resource portfolio dispatch. The AEG demand response resource provides only 37% effectiveness, the LIE battery provides 64% effectiveness, and the HAL combustion turbine provides a 110% effectiveness. The generation resource provided an incremental effectiveness greater than 100% because the change in the load profile decreased the load factor, and thus increased transmission capacity. This effectiveness variation between different types of resources might be considered as part of the economic evaluation of resources.

Similar information for cables feeding Areas 2 and 3 were obtained as this draft was completed and a future update of this report will include analysis of load profile impacts on transmission constraints applying to these areas.

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Table 3
Area 1 Net Transmission Loading

		Portfolios				
Year		**None**	**2**	**3**	**5**	**6**
2022	**Peak Load**	28.1	18.8	23.1	22.1	22.6
	Transmission Capacity	23.3	20.7	20.6	20.5	21.3
	Gross Load Reduction		9.3	5.0	6.0	5.5
	Capacity Reduction		2.6	2.7	2.8	2.0
	Net Improvement		6.7	2.3	3.2	3.5
2023	**Peak Load**	28.9	19.6	24.0	18.1	22.6
	Transmission Capacity	23.3	20.9	20.7	20.4	21.3
	Gross Load Reduction		9.3	4.9	10.8	6.3
	Capacity Reduction		2.4	2.6	2.9	2.0
	Net Improvement		6.9	2.3	7.9	4.3
2030	**Peak Load**	35.1	25.0	29.4	23.2	28.7
	Transmission Capacity	23.3	21.0	20.9	20.4	21.5
	Gross Load Reduction		10.1	5.7	11.9	6.4
	Capacity Reduction		2.3	2.4	2.9	1.8
	Net Improvement		7.8	3.3	9.0	4.6

Source: LIPA Response (Jan 22, 2021) to Kinsella FOIL Request (Aug 24, 2020)

South Fork RFP Deepwater Offshore Wind Proposal
EFOR Analysis

Background and Assumptions

The Selection Committee has considered Deepwater Wind's nominal 90 MW[1] Offshore wind proposal connecting at the East Hampton substation in the portfolio analysis for Phase III. Due to the intermittent nature of the wind resource, this proposal has a UCAP of 33 MW representing the average capacity that the wind project could provide on a summer season basis. However, the wind project will vary in output and cannot be expected to provide a firm 33 MW during the South Fork peak load period 1PM-9PM. Therefore, the Selection Committee has considered coupling this wind proposal to LI Energy Storage's 33 MW battery storage proposal to use off-peak wind energy to charge the battery and discharge the stored energy--minus losses--during the peak hours.

This assessment is a simplification of the two options in isolation (i.e. without assessment of other generation resources or customer load) during the Peak Period May through September. The following describes the assessment and comparison of estimated peak period unavailability (or equivalent forced outage rate) of the offshore wind project option (Wind Only option) and the combination of offshore wind and battery option (Wind+Battery option).

The source of wind resource data for this assessment is the P50 annual hourly wind output data (App 9-1 Deepwater ONE - 8760.xlsx) and P90 annual hourly wind output data (L-T_MDM-8760_Scaled_to_P90_WS_Unlocked-Deliver~.xlsx). This data is a representation of hourly wind farm output for a given year adjusted to the long term average. According to Deepwater Wind: "The project energy production was estimated for each hour of the year using the input wind speed dataset, density-adjusted turbine power curve, and estimated project losses." Deepwater Wind estimates that the overall uncertainty in the wind resource is 7%.

We make the following common assumptions in this assessment:

- The assessment is performed on a daily basis where there are two main periods: Peak and Off-Peak.
- The Peak Hours are 1PM to 9PM.
- The Peak Period is May through September during Peak Hours (a total of 1224 hours per year)
- The Off-Peak Hours are 9PM to 1PM.
- To be 100% available during Peak Hours, the Offshore wind project will be required to produce 264 MWh (33 MW x 8 hours).

For the Wind Only option, we assumed:

- Any daily shortfall of wind energy during the Peak Period is attributed to unavailability (or equivalent forced outage rate, EFOR).

For the Wind+Battery option, we assumed:

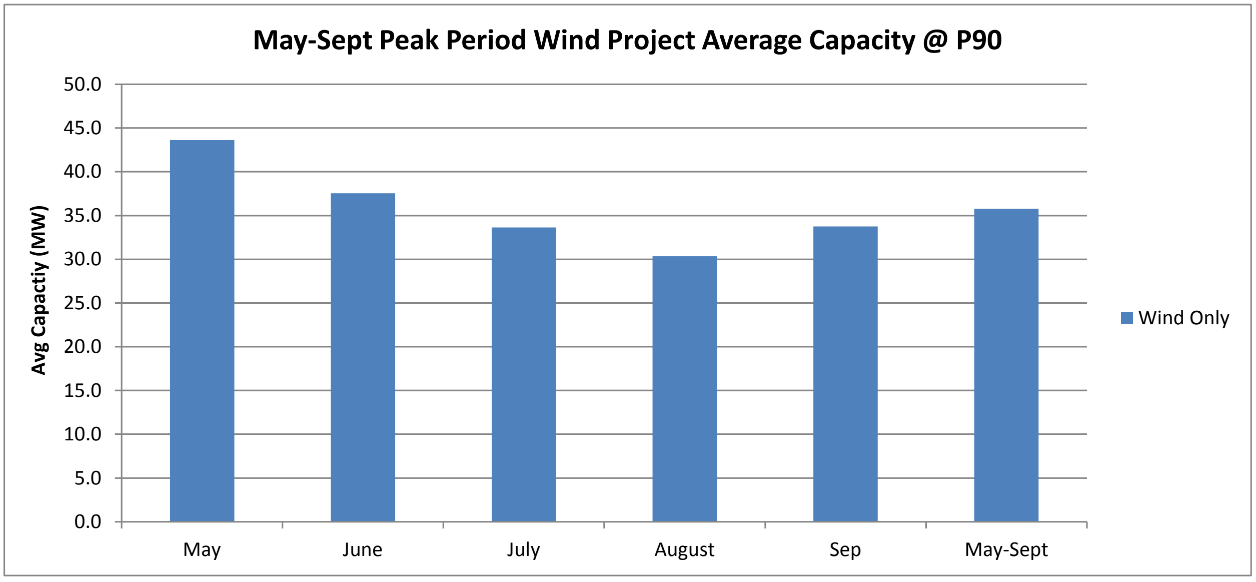
[1] According to the Deepwater Wind proposal (DWW100), the maximum capacity output from the export facility of the wind farm will be 75 MW. This maximum is reflected in the wind data where the maximum hourly energy production is 75 MWh.

South Fork RFP Deepwater Offshore Wind Proposal
EFOR Analysis

- The Off-Peak wind output from 9PM the previous evening through 1PM of the present day charges the battery; no other energy source charges the battery
- The battery charges at a cycle efficiency of 89% (as indicated in the LIE400 proposal) with a goal of a full load charge of 264 MWh.
- The Peak Period wind is accepted first, and then the battery is discharged to fill the remaining required energy.
- Unused battery energy at the end of the daily Peak Period is carried over to next day.
- For simplification, the battery is assumed to be 100% available.
- Any daily shortfall of energy during the Peak Period is attributed to unavailability.

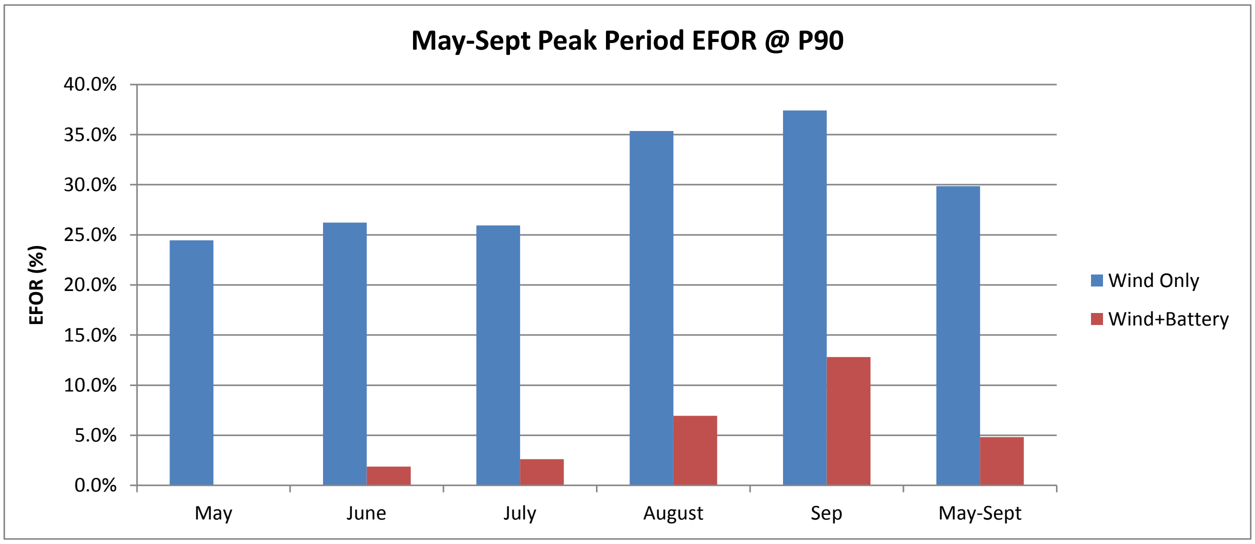
Unavailability at P90 Probability Level

Based on this P90 wind resource data and the assumptions above, Deepwater Wind's offshore wind project has a May through September Peak Period average capacity of 35.8 MW without the assistance of LI Energy Storage battery (shown in the figure below). Although this average capacity during the Peak Period is greater than 35.8 MW, there are many Peak Periods when the wind resource is not sufficient and encounters a shortfall.



An accumulation of these shortfalls on an energy basis shows that Deepwater Wind's offshore wind project at P90 probability level would have a May through September Peak Period unavailability (or EFOR) of 29.9% without the assistance of LI Energy Storage battery (as shown in the figure below). When the battery resource is coupled to the wind project, the off-peak wind energy charges the battery and that energy is discharged during the Peak Period. The EFOR of the Wind+Battery option is estimated to be an average of 4.8% at the P90 wind resource probability level.

South Fork RFP Deepwater Offshore Wind Proposal
EFOR Analysis



Without the battery, shortfalls occur on 77 of the 152 Peak Period days, or about 50% of the days. With the battery, shortfalls occur on 19 of the 152 Peak Period days, or about 12%. Most of the Peak Period unavailability occurs in August and September. Based on the representative data, there are 7 days in both August and September that have shortfalls. The assessment shows:

- The 77 days of Wind Only shortfall means that the battery will be called upon at least 77 times during the 152 day Peak Period.
- There are periods of up to 4 consecutive days where Wind+Battery shortfalls are occurring in August and September.
- Some Peak Periods see shortfalls across the full 8 hours.
- The average number of shortfall hours during the 8 hour peak period is 4.7 hours (i.e. the first three hours are covered by the battery and the last five hours are in shortfall).
- Typically, the hourly shortfalls occur at the end of the Peak Period after the battery has been fully discharged.

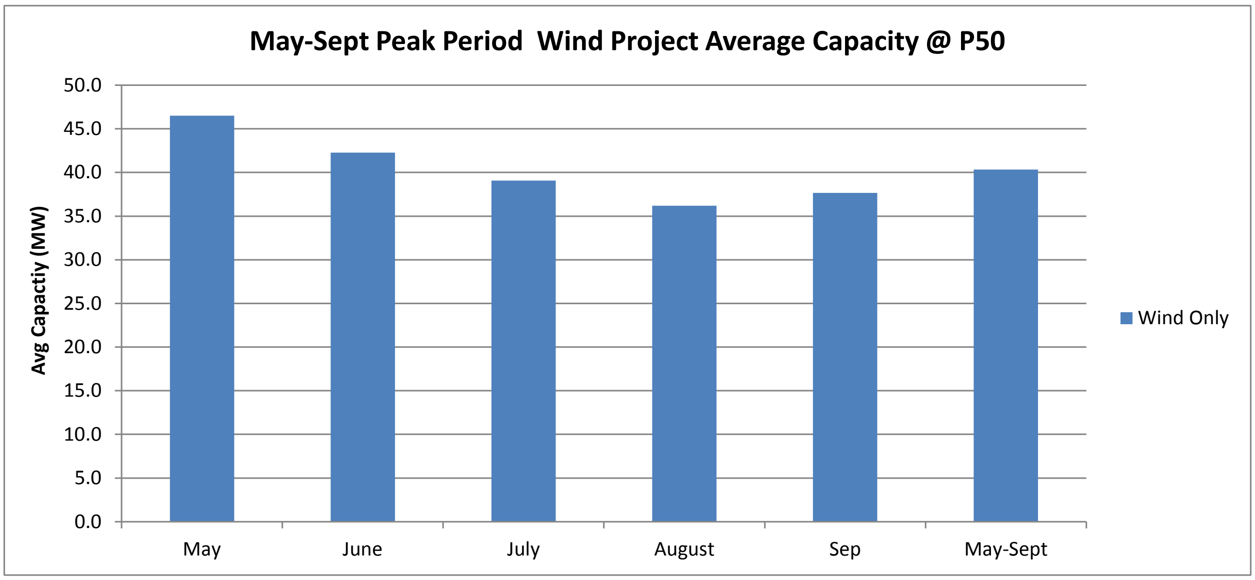
Table 1 – EFOR and Shortfalls of Wind Only Option and Wind+Battery Option at P90

	Wind Only				Wind+Battery			
Month	EFOR	Number of Days with Peak Period Shortfalls	Average Unavailable Capacity during Shortfalls (MW)	Average Duration during Shortfalls (Hour)	EFOR	Number of Days with Peak Period Shortfalls	Average Unavailable Capacity during Shortfalls (MW)	Average Duration during Shortfalls (Hour)
May	24.5%	10	25.0	5.8	0.0%	0	0.0	0.0
June	26.2%	13	20.0	4.7	1.9%	2	9.3	3.5
July	25.9%	18	14.7	5.2	2.6%	3	8.9	3.7
August	35.4%	20	18.1	6.5	6.9%	7	10.1	4.6
Sep	37.4%	16	23.2	6.5	12.8%	7	18.1	5.7
May-Sep	**29.9%**	**77**	**19.6**	**5.7**	**4.8%**	**19**	**12.8**	**4.7**

Source: LIPA Response (Jan 22, 2021) to Kinsella FOIL Request (Aug 24, 2020)

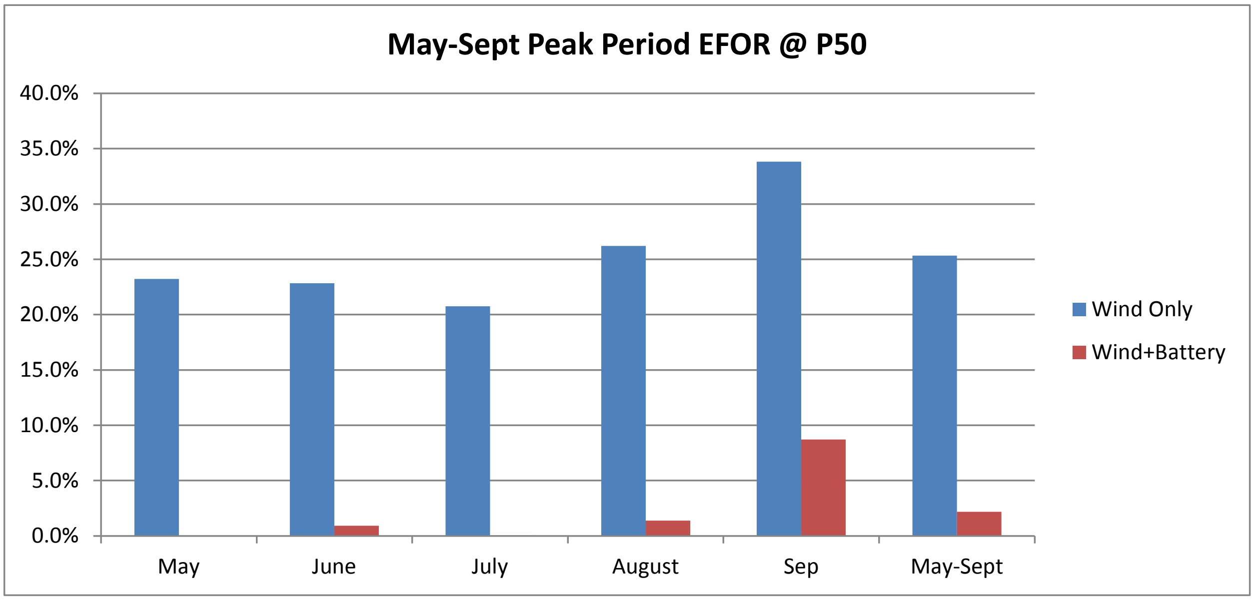
Unavailability at P50 Probability Level

Based on this P50 wind resource data and the assumptions above, Deepwater Wind's offshore wind project has a May through September Peak Period average capacity of 40.3 MW without the assistance of LI Energy Storage battery (shown in the figure below). Although this average capacity during the Peak Period is greater than 40.3 MW, there are many Peak Periods when the wind resource is not sufficient and encounters a shortfall.



An accumulation of these shortfalls on an energy basis shows that Deepwater Wind's offshore wind project at P50 probability level would have a May through September Peak Period unavailability (or EFOR) of 25.3% without the assistance of LI Energy Storage battery (as shown in the figure below). When the battery resource is coupled to the wind project, the off-peak wind energy charges the battery and that energy is discharged during the Peak Period. The EFOR of the Wind+Battery option is estimated to be an average of 2.2% at the P50 wind resource probability level.

South Fork RFP Deepwater Offshore Wind Proposal
EFOR Analysis



Without the battery, shortfalls occur on 65 of the 152 Peak Period days, or about 42% of the days. With the battery, shortfalls occur on 8 of the 152 Peak Period days, or about 5%. Most of the Peak Period unavailability occurs in September. Based on the representative data, there are 4 days in September that have shortfalls. The assessment shows:

- The 65 days of Wind Only shortfall means that the battery will be called upon at least 65 times during the 152 day Peak Period.
- There are periods of up to 2 consecutive days where Wind+Battery shortfalls are occurring in August and September.
- Some Peak Periods see shortfalls across the full 8 hours.
- The average number of shortfall hours during the 8 hour peak period is 4.9 hours (i.e. the first three hours are covered by the battery and the last five hours are in shortfall).
- Typically, the hourly shortfalls occur at the end of the Peak Period after the battery has been fully discharged.

Table 2 – EFOR and Shortfalls of Wind Only Option and Wind+Battery Option at P50

	Wind Only				Wind+Battery			
Month	EFOR	Number of Days with Peak Period Shortfalls	Average Unavailable Capacity during Shortfalls (MW)	Average Duration during Shortfalls (Hour)	EFOR	Number of Days with Peak Period Shortfalls	Average Unavailable Capacity during Shortfalls (MW)	Average Duration during Shortfalls (Hour)
May	23.2%	11	21.6	5.8	0.0%	0	0.0	0.0
June	22.8%	11	20.6	4.4	0.9%	1	9.0	4.0
July	20.7%	11	19.3	4.5	0.0%	1	0.5	2.0
August	26.2%	16	16.8	5.6	1.4%	2	7.0	4.0
Sep	33.8%	16	20.9	6.5	8.7%	4	21.6	6.5
May-Sep	**25.3%**	**65**	**19.7**	**5.3**	**2.2%**	**8**	**13.7**	**4.9**

South Fork RFP Deepwater Offshore Wind Proposal
EFOR Analysis

Observations for the Wind+Battery Option

Based on this initial assessment, the simplified Wind+Battery option is estimated to reduce the unavailability of the Wind Only option during the Peak Period between 84% and 91% for the P90 and P50 resource probability levels, respectively. Without the battery, the Wind Only option is estimated to experience unavailability of over 25% during the Peak Period and therefore, is not a viable option for the South Fork RFP needs. However, the assessment estimated the Peak Period average EFOR of the simplified Wind+Battery option to be between 2.2% and 4.8%. This EFOR is within the range of typical EFOR for a conventional generating unit. Furthermore, the combined resources would not realistically be required for the full defined five month Peak Period and would only be needed during days of highest demand.

The EFOR of the Wind+Battery option may be further alleviated with appropriate Off-Peak charging of the battery using existing generation or other new generation. Although the estimated shortfalls are concentrated in July, August and September when the South Fork peak customer load has the highest probability of occurring, the flexibility of using other generation to charge the battery is a significant benefit to this resource combination. Therefore, from a conceptual perspective, the Wind+Battery option is a reasonable resource option for detailed evaluation in Portfolio scenarios.

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February 19, 2021

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

Via USPS registered mail
C/o: Lisa M. Zafonte, Esq.
Assistant General Counsel
Email: lzafonte@lipower.org

Re: Public Authorities Control Board
Approval of South Fork Wind PPA and Amendment

Dear Mr. Falcone:

Pursuant to the Long Island Power Authority Act ("LIPA Act"), Section 1020-f, Long Island Power Authority ("LIPA") "shall not undertake any project without the approval of the public authorities control board [PACB]" to the extent that the "project" is defined under Section 1020-b (12-a) to mean, *inter alia*, an action undertaken by LIPA that: "Commits the authority to a contract or agreement with a total consideration of greater than one million dollars and does not involve the day to day operations of the authority."

To quote Andrea Stewart Cousins earlier this week: "crucial information should never be withheld from entities that are empowered to pursue oversight." [1]

As you are aware, LIPA entered into a power purchase agreement with then Deepwater Wind South Fork, LLC (now South Fork Wind, LLC) on February 6, 2017 ("South Fork PPA"). The South Fork PPA had received approval from New York Office of the State Comptroller ("NYOSC") on March 29, 2017. NYOSC valued the South Fork PPA at $1,624,738,893 (contract number: C000883). Also, LIPA and South Fork Wind entered into an (undisclosed) amendment to the South Fork PPA for expanded capacity in or around

[1] New York Post, Feb 15, 2021 (https://nypost.com/2021/02/12/democrats-in-rebellion-against-cuomos-nursing-home-coverup/)

September 2020. LIPA refuses to disclose publicly the extent to which the proposed South Fork Wind project has been expanded and the price to be passed on to ratepayers for such expanded capacity. By concealing the amendment to the South Fork PPA, LIPA avoids public scrutiny of its expanded capacity as expressed in the amendment and review pursuant to Public Service Law, Article VII that is currently before the New York State Public Service Commission (case 18-T-0604).

In July 2020, LIPA admitted that it "has never submitted a Power Agreement to the PACB for approval[.]" This is a clear violation of New York's Public Authorities Law,[2] which requires LIPA to receive approval for a power purchase agreement that is "greater than one million dollars and does not involve the day to day operations of the authority."[3] LIPA's failure to obtain PACB approval renders the South Fork PPA and any amendment thereto null.

In 1995, PACB was created as a mechanism to balance LIPA's extensive authority. "LIPA's broad powers were circumscribed by the Legislature through its amendment of section 1020-f of the Public Authorities Law. The PACB was thereby given review power over 'projects' undertaken by LIPA."[4] Evidently, the legislature believed "greater oversight regarding major decisions of the authority will be possible. By using the standards contained in the bill, the [PACB] will provide an independent evaluation of whether proposed actions of the Authority are financially feasible … will result in lower utility costs to customers in the service area, and will not materially adversely affect real property taxes and utility rates outside the LILCO service area."[5]

Had LIPA submitted and received approval from PACB for the South Fork PPA and any amendment(s) thereto, as it is statutorily compelled to do, my life since August of 2017

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2 Public Authorities Law, Art. 1-A NYS Public Authorities Control Board §§ 50 - 51 and Art. 5 Public Utility Authorities, Title 1-A Long Island Power Authority § 1020

3 *Id.* § 1020-b (12-a) (iii)

4 *Suffolk County v Long Is. Power Auth.*, 177 Misc 2d 208, 213-214 [Sup Ct, Nassau County 1998]

5 Mem of Assembly in Support, 1995 McKinney's Session Laws of NY, at 2199.

would have been far better by a long way than it has been due to LIPA's failure to comply with New York State Law. In essence, I would not have had to do the job that PACB would have had to do had LIPA not illegally circumvented PACB review. Due to LIPA's failure, South Fork Wind has been a constant threat like a Damoclean sword.

My involvement in LIPA's ill-conceived, poorly planned, and illegal offshore wind project dates back to August 2017 when the Wainscott Citizens' Advisory Committee (of which I was a member at the time) asked me to investigate an offshore wind farm proposal by then Deepwater Wind South Fork. Since that time, the matter of South Fork Wind has caused irreparable harm and injury to my community and me. For example, out of the thirty-four lawyers (the vast majority of whom are employed at taxpayers' expense) participating in the New York State Public Service Commission Article VII proceeding (case 18-T-0604), not one lawyer raised the issue of why neither LIPA nor South Fork Wind would disclose the price of energy from South Fork Wind's facility. As you know, I had to commence an Article 78 proceeding [6] to force disclosure of the obscenely high cost of energy from South Fork Wind's 90-megawatt facility (see details on page 8). Also, neither LIPA nor South Fork has disclosed the amendment to the South Fork PPA, including by how much the capacity has been increased and the price of energy from that increase in capacity.

During the Article VII review, I have submitted well over ten thousand pages of testimony and exhibits mainly on issues pertaining to the protection of ratepayers from South Fork Wind's exorbitant prices; the absence of a basis of need for the facility; the wind farm's economic unviability; and, its inability to satisfy the purpose for which it was awarded a power purchase agreement – to reliably provide power to meet peak demand – a failed purpose that LIPA then later expanded upon. These issues would have presented themselves under review by PACB, and I would have been spared the injury of years of stress and having to work late into the night.

LIPA's failure to comply with its statutory obligations to submit to PACB for review and receive approval for the South Fork Wind power purchase agreement and any

[6] *Simon V. Kinsella vs NY Office of the State Comptroller,* Index 904100-19 [Sup Ct, Albany County 2019]

amendment(s) thereto has had a direct, persistent, and adverse effect on my family and me during this past four years.

In the recent matter of *Huntington Town Council Member Eugene Cook vs. Long Island Power Authority, National Grid Generation LLC, Town of Huntington*[7] before New York State Supreme Court Justice Emerson, Defendants' admitted to the following in their Memorandum of Law in Support of Motion to Dismiss (dated July 16, 2020) –

> Since May 1998, LIPA has sought PACB approval in connection with various "projects," as defined under Public Authorities Law § 1020-b (12-a), including financings, real property leases, asset acquisitions and more. See Krinick Aff. at ¶ 11. <u>None have included a request for approval of a Power Agreement</u> [emphasis added]. Indeed, since its inception, LIPA has entered into numerous Power Agreements with developers and power suppliers, all of which have been in excess of $1,000,000. <u>See id</u>. These <u>agreements are part of LIPA's day-to-day obligation</u> to secure safe and <u>affordable</u> electricity for its customers, and, thus, expressly excluded from the "projects" defined under Public Authorities Law § 1020-b (l2-a). Accordingly, <u>LIPA has never submitted a Power Agreement to the PACB for approval</u>, because such approval is not required [emphasis added].

LIPA claims that it never sought approval from PACB for a "Power Agreement" on the grounds that such agreements "are a part of LIPA's day-to-day" obligations and are, therefore, expressly excluded from any requirement to obtain approval from PACB. LIPA's position is contrary to both <u>fact</u> and <u>law</u>.

<u>In fact</u>, the PPA award to South Fork Wind pursuant to Request for Proposals for South Fork Resources ("South Fork RFP") was *neither* issued *nor* administered by LIPA. LIPA did not

[7] *Huntington Town Council Member Eugene Cook vs. Long Island Power Authority, National Grid Generation LLC, Town of Huntington*, Index 604663-20 [Sup Ct, Suffolk County, Com. Div. 2019]

manage the day-to-day operations of the procurement process and its subsequent PPA award. The South Fork RFP was issued by and administered by PSEG Long Island "as agent of and acting on behalf of LIPA[.]"[8]

On June 24, 2015, PSEG Long Island, LLC issued the South Fork RFP that reads –

> On January 1st, 2015, PSEG Long Island assumed responsibility for LIPA's power supply planning, and its affiliate provides certain services, such as purchasing power and fuel procurement, to LIPA related to these responsibilities. [The RFP continues,] PSEG Long Island and Servco (collectively referred to as "PSEG Long Island" or "PSEG LI"), as agent of and acting on behalf of LIPA per the A&R OSA, will administer this RFP on behalf of LIPA.[9]

The South Fork RFP expressly assigns responsibility for the day-to-day operations of LIPA's "power supply planning … such as purchasing power and fuel procurement" to PSEG Long Island and includes the administration of the South Fork RFP.

The South Fork PPA, likewise, expressly states that PSEG Long Island, *not* LIPA, is "to operate and manage [LIPA's] transmission and distribution system and other utility business functions, including [LIPA's] power supply planning … such as purchasing power and fuel procurement[.]" [10] The South Fork PPA reads as follows –

> WHEREAS, pursuant to the Amended and Restated Operation Services Agreement ("A&R OSA") dated December 31, 2013, … PSEG Long Island LLC through its operating subsidiary, Long Island Electric Utility Servco ("Servco"), assumed the responsibility as [LIPA's] service provider, <u>to</u> <u>operate</u> <u>and</u> <u>manage</u> [LIPA's] transmission and distribution system and other utility business functions, including [LIPA's] power supply planning, and Servco's

[8] Request for Proposals for South Fork Resources ("South Fork RFP") issued June 24, 2015 by PSEG Long Island, LLC (at p. 1).
[9] *Ibid*
[10] Power Purchase Agreement ("South Fork PPA") between Long Island Power Authority ("LIPA") then Deepwater Wind South Fork, LLC (now South Fork Wind, LLC) dated February 6, 2017 (at p. 1).

affiliate provides certain services, such as purchasing power and fuel procurement, to [LIPA] related to these responsibilities[.][11]

In law, specifically in the matter of *AEP Resources Service Company v Long Island Power Authority, et al.,*[12] concerning an award of a contract regarding a similar project to that proposed by South Fork Wind, "an off-island electrical transmission system,"[13] Supreme Court Justice Winslow *rejected* LIPA's claim and ruled *against* LIPA making it clear that the award "is not something LIPA does day-to-day nor does it constitute part of such day-to-day operations of LIPA so as to be excluded from the statutory definition of 'project' and thus be exempt from PACB review. Were LIPA's interpretation of Public Authorities Law § 1020-b accurate, then few, if any, contracts would be reviewable by the PACB, clearly an unintended result."[14] Further, the court ordered LIPA to "submit all agreements arising out of the RFP to the PACB[.]"[15]

Justice Winslow's ruling (above) sits comfortably with an earlier ruling by Justice Winick in the matter of *Suffolk County v Long Is. Power Auth.*[16] In this case, LIPA applied to PACB for its approval of a project that required, *inter alia*, LILCO to enter into three separate agreements with LILCO affiliates or subsidiaries, one of which was a power supply agreement whereby a LILCO affiliate would sell electric power to LIPA. On July 16, 1997, PACB approved the project as a whole, including the power supply agreement that LIPA properly ratified subsequently, and the court agreed "that LIPA was required to apply to the PACB for approval [and that this] is not disputed."[17] At the time, LIPA did not dispute that it was statutorily compelled to seek approval from PACB for either the project as a whole or the power supply agreement in part.

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11 *Ibid*
12 *AEP Resources Serv. Co. v Long Island Power Auth., et al*, 179 Misc 2d 639 [Sup Ct, Nassau County 1999]
13 *Id.* (at p. 1)
14 Supreme Court Justice opinion, *AEP Resources Serv. Co. v Long Is. Power Auth., et al*, 179 Misc 2d 639 [Sup Ct, Nassau County 1999]
15 *Id.* (at p. 4)
16 *Suffolk County v Long Is. Power Auth.*, 177 Misc 2d 208 [Sup Ct, Nassau County 1998]
17 *Ibid*

Accordingly, there is no basis in fact or in law that supports LIPA continuing with the South Fork Wind project; one that is based on an illegal granting of a power purchase agreement and amendment(s) thereto that had not received statutorily mandated approval from PACB. Pursuant to Section 1020-f of the LIPA Act, LIPA "shall not undertake any project without the approval of the public authorities control board [PACB]" and, therefore, LIPA's actions are *ultra vires* rendering the South Fork PPA illegal. It is well established that the "general rule of law is that no right of action can spring out of an illegal contract." [18] Since the South Fork PPA is an illegal contract, any amendment thereto would be null.

The importance of PACB oversight is clearly evident in the instant matter of the South Fork PPA and any amendment(s) thereto. Pursuant to Section 1020-f (aa), which begins with the words: "Notwithstanding any other provision of law to the contrary" – LIPA "shall not undertake any project without the approval of" PACB.

Had LIPA fulfilled its statutory obligations and submitted to PACB the proposed South Fork PPA and any amendment(s) thereto, PACB would have had the opportunity to review, *inter alia*, the project's financial feasibility and whether or not the "project is anticipated to result generally in lower utility rates in the service area[.]" [19] LIPA's failure to comply with New York State Law denied PACB of that opportunity.

The LIPA Act, Section 1020-f (r) may grant LIPA the power "[t]o enter into agreements to purchase power from … any private entity, or any other available source at such price or prices as may be negotiated" but such power is subject to PACB approval and it is also limited to the extent that such power is "necessary or convenient to carry out the <u>purposes</u> <u>and</u> <u>provisions</u> of this title" including subsection (r). LIPA does *not* have authority to enter into a power purchase agreement that is contrary to the "purposes and provisions" of the LIPA Act, and PACB review

[18] *Carmine v Murphy*, 285 NY 413, 414 [1941]
[19] Long Island Power Authority Act § 1020-f (aa)

may impose conditions, as it often has done in the past, to address issues related to the South Fork PPA and any amendment(s) thereto.

The purposes and provisions of the LIPA Act are articulated within Section 1020-a of the act which reads (in part) as follows –

> "[S]uch an authority will provide safe and adequate service at rates which will be lower than the rates which would otherwise result and will facilitate the shifting of investment into more beneficial energy demand/energy supply management alternatives, realizing savings for the ratepayers and taxpayers in the service area … Moreover, in such circumstances the replacement of such investor owned utilities by such an authority will result in an improved system and reduction of future costs and a safer, more efficient, reliable and economical supply of electric energy."

Furthermore, in the Matter of *Citizens For An Orderly Energy Policy v Cuomo* "the recurring and unavoidable theme reflected in the legislative history is that the intended *sine qua non* objective of the Act was to give LIPA the authority to save ratepayers money by controlling and reducing utility costs".[20]

PACB review would have likely arrived at the unavoidable conclusion that the legislative findings and declarations appear to be written with the view of expressly prohibiting an "investor owned" facility from charging obscenely high rates such as those proposed by South Fork Wind; but we will never know unless LIPA, now, submits the amendment to the South Fork PPA to PACB for review, and, perhaps, we can all avoid South Fork Wind taking LIPA and ratepayers for a ride in the opposite direction to that intended by New York State legislators.

On March 29, 2017, the New York Office of the State Comptroller ("NYOSC") valued the South Fork PPA at $1,624,738,893 based on total projected energy deliveries throughout the duration of the contract term (20 years) of 7,432,080 MWh. The price that will be passed onto

[20] *Citizens For An Orderly Energy Policy v Cuomo* (78 NY2d 398, 414)

ratepayers for the South Fork PPA, therefore, is $218.61/MWh. On October 23, 2019, Ørsted A/S announced a power purchase agreement for Sunrise Wind with a price of only $80.64/MWh. If the same amount of energy (i.e. 7,432,080 MWh) was purchased from Sunrise Wind instead of South Fork Wind, it would cost only $599,322,931, which is $1,025,415,958 less expensive.

Astonishingly, the NYOSC approved a contract pursuant to a non-competitive opaque procurement process where the company administering the procurement, PSEG Long Island, awarded the PPA to its (undisclosed) New-Jersey-based business partner, Deepwater Wind where the contract award is more than two-and-a-half-times more expensive ($1.025 billion) than the same amount of renewable energy from an offshore lease area (Sunrise Wind lease area OSC-A 0487) only three miles away from the South Fork Wind lease (OSC-A 0517). This situation is offensive to all ratepayers, taxpayers and law-abiding residents, and the risk of such a situation is precisely what PACB review is designed to mitigate.

Accordingly, this letter constitutes a demand that LIPA comply with all statutory provisions pursuant to the Long Island Power Authority Act that compels LIPA to submit to the Public Authorities Control Board the amendment to the power purchase agreement between it and South Fork Wind, LLC for approval, immediately.

I hope that you and your family are well during this difficult time.

Sincerely yours,

Si Kinsella

Si Kinsella