BEFORE THE
PUBLIC SERVICE COMMISSION
STATE OF NEW YORK

In the Matter of Offshore Wind Energy	**)**	**Case 18-E-0071**
Proceeding on Motion of the Commission To Implement a Large-Scale Renewable Program and a Clean Energy Standard	**)**	**Case 15-E-0302**

VERIFIED PETITION FOR EXPEDITED APPROVAL OF ENHANCED OFFSHORE RENEWABLE ENERGY CREDITS

EMPIRE OFFSHORE WIND LLC AND BEACON WIND LLC

June 7, 2023

George Pond
Barclay Damon LLP
80 State Street
Albany, New York 12207
gpond@barclaydamon.com

TABLE OF CONTENTS

BEFORE THE
PUBLIC SERVICE COMMISSION
STATE OF NEW YORK

In the Matter of Offshore Wind Energy	)	**Case 18-E-0071**
Proceeding on Motion of the Commission To Implement a Large-Scale Renewable Program and a Clean Energy Standard	)	**Case 15-E-0302**

VERIFIED PETITION FOR EXPEDITED APPROVAL OF ENHANCED OFFSHORE RENEWABLE ENERGY CREDITS

Empire Offshore Wind LLC ("Empire Wind") and Beacon Wind LLC ("Beacon Wind" and, collectively, "Petitioners") respectfully submit this Verified Petition for Expedited Approval of Enhanced Offshore Renewable Energy Credits pursuant to Rule 35 of the Commission's Rules, 16 NYCRR § 35 (2022).

INTRODUCTION

Petitioners have entered into agreements with the New York State Research and Development Authority ("NYSERDA") for the purchase and sale of Offshore Wind Renewable Energy Certificates ("ORECs" and such agreements, "OREC Agreements") and are developing the Empire Wind 1 ("EW1"), Empire Wind 2 ("EW2"), and Beacon Wind 1 ("BW1") (individually, "Project"; collectively, "Projects") offshore wind generating facilities. Collectively, these Projects will deliver nearly 33 GW of renewable energy into the heart of New York City and western Long Island.

Through the relevant OREC solicitations Petitioners offered to supply ORECs at a price that was sufficient to support the development of the Projects. However, since these OREC solicitations were conducted, numerous exogenous factors, including rampant inflation, global supply chain disruptions and soaring interest rates associated with the COVID-19 pandemic, the Russia-Ukraine conflict and the increasing pace of the energy transition, have adversely impacted a broad range of industries including the power industry. These adverse economic impacts have imposed unprecedented and escalating cost increases on the Projects Moreover, the aggregate effect on the Projects has been exacerbated by the protracted duration of permit proceedings and the interconnection process, which exposed the Projects to cost increases and limited the options for mitigation. Despite Petitioners' cost control efforts and advances in permitting and interconnection, these unforeseeable events have substantially reduced the Projects' ability to attract the approximately [redacted] investment necessary to support their construction and operation in a globally competitive market.

To fulfill the Commission's statutory obligation to procure sufficient offshore wind to meet the goals set by the Legislature in the Climate Leadership and Community Protection Act ("CLCPA") at just and reasonable rates in these difficult circumstances, Petitioners respectfully request authorization for amendments to the OREC Agreements including mechanisms that adjust for inflation, interconnection cost adjustment and an extension in the tenor of the OREC Agreement. This Proposal seeks to redress the impact of unforeseeable economic conditions on the Projects and restore the Projects' ability to attract the capital required for them to move forward. The details of this request are set forth in Section II(B) of the Analysis and Exhibit A of this Petition Prompt action granting this relief will fulfill the Commission fundamental statutory obligations while bringing numerous benefits to New York ratepayers. Specifically:

(a) Granting the relief will enable New York to meet the requirements of the CLCPA in a timely and cost-effective manner. Notwithstanding the challenges that have been experienced, each Project is in a sound position to reach commercial operation earlier and at a cost below the expected cost of any entirely new offshore wind facility of similar size—even with the modifications that are being requested through this Petition.

(b) Granting the requested relief will allow Petitioners to utilize the substantial progress in permitting, interconnection, and project procurement to maintain the current project schedule, allowing New York to realize its offshore wind ambitions sooner and when fully operational provide about 12% percent of the 70% renewable energy generation required by the CLCPA.

(c) Granting the requested relief will deliver substantial reliability benefits to New York's transmission system - it will support the continued development of 33 GW to meet growing supply shortages in New York and reduce the risk that New York will be required to delay the retirement of fossil fuel resources to maintain system reliability.

(d) By granting the requested relief, the Commission will allow the Projects to deliver substantial economic benefits to New York, in addition to community and workforce investments in offshore wind infrastructure and thousands of good-paying jobs. The Projects' investments will provide New York the platform to build a skilled workforce and generate economic activity in the offshore wind supply chain based on New York's early leadership role in the offshore wind industry.

(e) As referenced in an appended report by the market consultant ICF (Exhibit B), developing the Projects on the current schedule will avoid subjecting New Yorkers to higher amounts of harmful emissions and greenhouse gases. Additionally, without the Projects, New York ratepayers are expected to pay higher energy and capacity prices.

In sum, the Petitioners remain strongly committed to their partnership with New York and herein put forward measures to allow for positive outcomes for the Projects and for New York State.

BACKGROUND

I. THE PETITIONERS

The Petitioners are indirectly jointly owned by Equinor ASA ("Equinor") and bp plc ("bp") Equinor and bp are global leaders in the development, financing, construction, operation, and

maintenance of offshore wind facilities. Collectively, Equinor and bp have over 100 years of experience developing large scale energy projects around the world, with over 10 GW of offshore wind capacity in operation or active development around the world, including projects in the United States, the United Kingdom, Norway, Poland, Germany, Japan, and South Korea.

As a result of this experience, Petitioners, through Equinor and bp, have developed extensive technical and commercial expertise relevant to the development, construction, and operation of offshore wind projects, including project design and management, manufacturing and fabrication, offshore construction and installation, sub-sea installation, maritime construction and logistics environmental assessment, safety, security and sustainability, operations and maintenance, interconnection, energy marketing, and community outreach.

Petitioners designed the Projects and tailored their bids for the OREC Agreements based on Petitioners' deep understanding and experience with other offshore wind projects, and Petitioners remain uniquely well positioned to timely deliver offshore wind energy to the residents of New York.

II. THE PROJECTS

A. Empire Wind 1

In 2019, NYSERDA awarded the OREC Agreement to Empire Wind[1] for an 816 MW[2] offshore wind generating facility to be situated within Renewable Energy Lease Area OCS-A 0512, located approximately 14 miles south of Long Island, New York. The facility will consist of up to 57 Vestas V236-150 MW turbines able to power 400,000 homes. The turbines will be

[1] NYSERDA initially awarded the OREC Agreement to Equinor Wind US LLC, which subsequently assigned the agreement to Empire Offshore Wind LLC in 2021

[2] The capacity rating provided for each Project represents the quantity of capacity selected by NYSERDA through the solicitation Each OREC Agreement permits the seller to deviate from the selected amount subject to a "Maximum Project Capacity" specified in the agreement that limits the purchase obligation of NYSERDA

connected to shore by a 230kV AC transmission system consisting of an unmanned offshore platform, two cable circuits and an onshore substation at the South Brooklyn Marine Terminal, in Brooklyn, New York ("SBMT"). Operation of the facility will be supported by an Operations and Maintenance ("O&M") facility to be constructed at SBMT.

The EW1 facility will interconnect at the Gowanus Substation in New York City. The Petitioners are presently negotiating a Large Generator Interconnection Agreement with Consolidated Edison, Inc ("Con Edison") and the New York Independent System Operator, Inc ("NYISO"), which is expected to be finalized in the coming months.

EW1 continues to advance through both the state and the federal permitting process. The Bureau of Ocean Energy Management ("BOEM") issued a Draft Environmental Impact Statement ("DEIS") for the Empire Wind project (covering both EW1 and EW2) in November 2022, and the Petitioners expect to receive BOEM's approval of the Empire Wind Construction and Operations Plan ("COP") in January 2024.

The siting application under Article VII of the New York Public Service Law ("Article VII") for EW1 was filed with the Commission on June 20, 2021 in Case 21-T-0366. The Commission found that application to be complete on January 24, 2022. Since that time, Empire Wind has been engaged in settlement negotiations relating to the terms and conditions of the Certificate of Environmental Compatibility and Public Need ("Certificate") to be issued by the Commission for that Project. Empire Wind expects to conclude these settlement negotiations in the summer of 2023 and to submit a Joint Proposal of Settlement to the Commission shortly thereafter.

Since the execution of the EW1 OREC Agreement, and in parallel with the state and federal permitting process, Empire Wind matured the facility design and awarded almost all major

supplier contracts. Empire Wind intends for construction to commence in the first half of 2024, which would require a significant ramp up in investment activity in the near term, especially at SBMT, where the Petitioners have engaged extensively with local stakeholders to ensure local support for the buildout of the port. The increased level of activity during the construction phase is also expected to lead to job opportunities in New York. Empire Wind is actively engaged with union representatives in anticipation of entering into formal Project Labor Agreement negotiations.

B. Empire Wind 2

In 2022, NYSERDA awarded an OREC Agreement to Empire Wind for a 1,260 MW offshore wind generating facility, EW2, to be situated adjacent to EW1 within Renewable Energy Lease Area OCS-A 0512. EW2 will consist of up to 90 Vestas V236-150 MW turbines able to power approximately 600,000 homes. The turbines will be connected to shore by a 345kV AC transmission system consisting of an unmanned offshore platform, two cable circuits, and an onshore substation in Oceanside, NY, located in Long Island. Operation of the facility will be supported by the O&M facility to be constructed at SBMT adjacent to the EW1 Onshore Substation.

The offshore wind facility will interconnect at a new substation to be constructed on property owned by Empire Wind and located approximately 03 miles from the Barrett Substation in Western Long Island, and Empire Wind is currently also negotiating a Large Generator Interconnection with Long Island Power Authority ("LIPA") and NYISO.

Like EW1, EW2 continues to advance through the federal and state permitting process. BOEM's November 2022 DEIS also addressed EW2, and Empire Wind expects to receive BOEM's approval of the Empire Wind COP in January 2024.

Empire Wind filed an Article VII application for EW2 with the Commission on June 17, 2022, in Case 22-T-0346. The Commission found that application complete on December 29, 2022. In March 2023, Empire Wind commenced settlement negotiations relating to the terms and conditions of the Certificate to be issued by the Commission for that project. Empire Wind expects an efficient settlement process and to submit a Joint Proposal of Settlement to the Commission when settlement concludes.

In the BOEM review process, EW1 and EW2 have been evaluated as two phases of the same project within the Lease OCS-A 0512 area and thus share many of the same suppliers and contracts. The installation of the EW2 offshore components will be planned to extract as many synergies as possible with the offshore installation campaign for EW1. Empire Wind will commence construction of the onshore components of EW2 upon approval of state and local permits, expected in in the second half of 2024, with the aim to reach commercial operations in 2028. Empire Wind expects EW2 to generate a significant amount of investment and employment in New York and is also actively engaged with union representatives in anticipation of entering into formal Project Labor Agreement negotiations. Empire Wind also is in discussions with local stakeholders regarding community investment opportunities in the vicinity of the cable route and Point of Interconnection in Oceanside, New York.

C. Beacon Wind 1

In 2022, NYSERDA awarded an OREC Agreement to Beacon Wind for a 1,230 MW offshore wind generating facility, BW1, to be situated within BOEM Renewable Energy Lease Area OCS-A 0520 that will power approximately 600,000 homes. The OCS-A 0520 lease area is located approximately 60 miles east of Montauk Point, New York. BW1 will consist of turbines sized between 17-23 MW and will be connected to a substation in Astoria, Queens, New York, by

a 200-mile, 320kV HVDC link consisting of an unmanned offshore platform, two submarine export cables, and an onshore substation at Astoria, Queens. The onshore substation will be located on the site previously occupied by certain simple cycle peaking facilities owned by Astoria Gas Turbine Power LLC, which facilities are currently being decommissioned to accommodate the construction of the onshore substation Operations will be conducted from the O&M facility at SBMT discussed above.

Since the award of the BW1 OREC Agreement, Beacon Wind has matured the BW1 Project, engaged and prepared for awarding supplier contracts, secured property rights, matured the grid connection at Astoria, and significantly progressed state and federal permitting. The Project is now at a critical juncture: it has received proposals for most of its components and is ready to award a significant number of procurement contracts.

BW1 is currently being evaluated by NYISO for energy and capacity resource interconnection service in NYISO's ongoing Class Year 2023 Facilities Study process. Beacon Wind expects to commence negotiations of its Large Generator Interconnection Agreement with Con Edison when this study concludes and the NYISO awards energy and capacity resource interconnection service rights.

The Article VII application for BW1 was filed with the Commission on May 13, 2022, in Case 22-T-0294. The Commission found that application to be complete on November 21, 2022. On January 9, 2023, Beacon Wind filed a notice of impending settlement in that case. Settlement negotiations began on May 24, 2023. Beacon Wind expects an efficient settlement process and to submit a Joint Proposal of Settlement to the Commission when settlement concludes.

BW1 is advancing through the federal permitting process. Beacon Wind has completed extensive surveys and scientific studies of the lease area and submitted a COP to BOEM. Beacon

Wind expects BOEM to commence the environmental review under the National Environmental Policy Act ("NEPA") in Q2/Q3 2023 and for federal approvals to be issued in 2025.

III. THE EXHIBITS ACCOMPANYING THIS PETITION

Petitioners are providing three exhibits along with this Petition. Exhibit A provides additional detail on Petitioners' request for relief. Exhibit B is a report on a study performed by ICF Consulting of the changes in energy prices and air emissions that would result from the delays associated with bringing online capacity to replace the Projects. Exhibit C contains a report prepared by Wood Mackenzie, a global research and consultancy group supplying data, written analysis and consultancy services to the energy, chemicals, renewables, metals and mining industries This presentation describes and quantifies the projected evolution of supply and demand in the offshore wind industry.

ANALYSIS

I. UNFORESEEABLE ECONOMIC FORCES HAVE ERODED THE FINANCIAL ATTRACTIVENESS OF THE PROJECTS

The principal drivers of the unforeseeable increases in Project costs are unprecedented global and regional supply chain bottlenecks, on top of the upward pressures on price due to the current global inflationary environment and increases in the cost of capital, driven by rising interest rates. Moreover, the aggregate effect on the Projects has been exacerbated by the protracted duration of permit proceedings and the interconnection process, which exposed the Projects to further cost increases and limited the options for mitigation. These points are addressed in the sections that follow, including Petitioners' efforts to control and offset cost increases where possible.

The cumulative effect on the Projects is demonstrated in Figure 1 below, which shows the real internal rate of return ("Real IRR") and nominal equity internal rate of return ("Nom EIRR")

for each of the Projects as of the date of their OREC bids to NYSERDA (first column) and as of the first quarter of 2023 (last column).

Figure 1: Returns Have Eroded Significantly Below Required Levels[3]

Figure 1 shows the aggregated impacts of price inflation, supply chain bottlenecks, interest rate increases, and delays and cost increases in the interconnection process on real project returns and nominal equity returns. As this figure shows, real returns on each of the Projects have fallen far below the range that can reliably attract the investment necessary to move forward in a globally competitive market for capital. The underlying causes of these adverse financial impacts are described below.

A. Unprecedented Macroeconomic Conditions Have Impacted the Projects

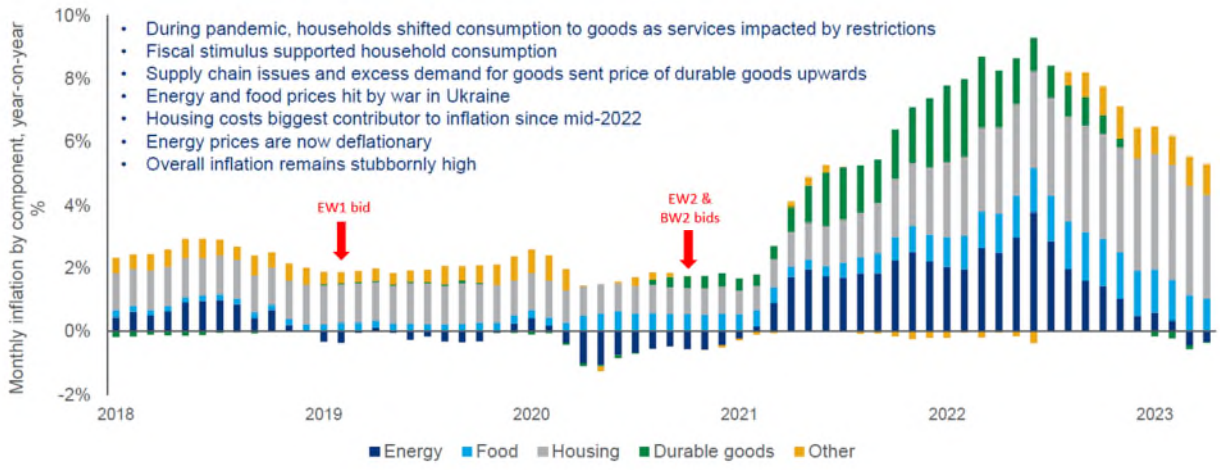
The Projects secured OREC Agreements with New York through their participation in the Offshore Wind Solicitations organized by NYSERDA. In February 2019, Empire Wind submitted

[3] Returns include value improvement measures described in this petition To the extent that the Petitioners believe the Projects to be eligible for tax benefits, including those from the Inflation Reduction Act, these tax benefits have also been incorporated into the economics of the Projects

a bid for EW1 into the 2018 solicitation, while Empire Wind submitted a bid for EW2 and Beacon Wind submitted a bid for BW1 into the 2020 solicitation in October 2020.

Following the 2020 solicitation, the global economy experienced significant turmoil. Specifically, the COVID-19 pandemic caused widespread economic disruption. Following an initial period of contraction due to lockdown measures and reduced economic activity, economies started to recover and reopen in early 2021. This led to a surge in demand for goods and services boosted by fiscal stimulus. However, many industries, including manufacturing and construction, were still operating at reduced capacity due to the pandemic and struggled to meet demand. This was compounded by a disruption of international trade due to travel restrictions and reduced transportation capacity, making it difficult for businesses to access raw materials, components, and finished products from abroad. The limited supply of goods and services in relation to demand led to sharp inflationary pressure starting in the spring 2021 as shown in Figure 2.

Figure 2: US Consumer Price Inflation



Source: Wood Mackenzie Presentation annexed to this Petition as Exhibit C

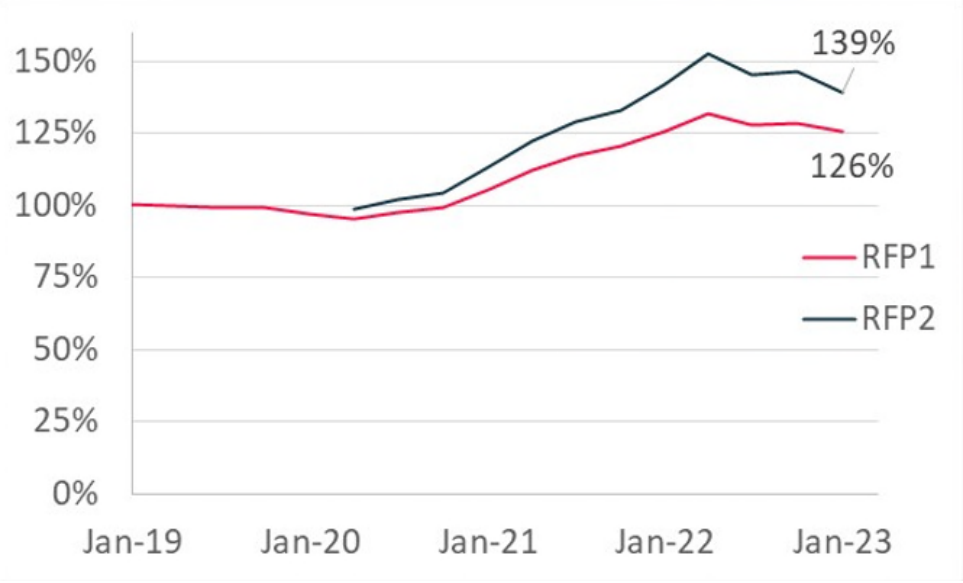
In addition to the challenges posed by the pandemic, the war in Ukraine had further economic consequences starting immediately after the invasion in March 2022. Trade restrictions,

border closures, and geopolitical tensions impeded the flow of key commodities, finished goods, and services. Given the importance of natural gas supply from Russia to Europe, the conflict also compromised the security and reliability of energy supply in Europe, leading to a sharp increase in energy prices globally and stimulating interest in energy storage and domestic supply, including from renewable sources.

The offshore wind industry is now striving to adapt to this macroeconomic environment in which inflation is highly volatile, far exceeds pre-COVID levels and estimates, and has proven far more persistent than expected[4]. In New York, NYSERDA recognized the challenge posed by this new paradigm and, as part of the 2022 offshore wind solicitation, proposed an indexation mechanism to adjust the OREC contract strike price just prior to bid submission and the time the COP is approved. The mechanism uses a mix of underlying indices composed of Labor, Fabrication and Machinery Materials, Steel, Diesel, and Copper. As illustrated in Figure 3, the NYSERDA index shows significant inflation since the time of the Project bids.

[4] *See, eg,* Michael S Derby, New York Fed Model Finds Inflation Pressures More Persistent Than Thought, Reuters (Mar 8, 2023), available at: https://wwwreuterscom/markets/us/new-york-fed-model-finds-inflation-pressures-more-persistent-than-thought-2023-03-09/

Figure 3: NYSERDA Index Evolution Since Respective Bid Dates



It is important to note that, while the composite index developed by NYSERDA appropriately illustrates the inflation observed by a generic industry relying on manufacturing, labor and commodities, it does not account for dynamics specific to the offshore wind and electric generation industries, in which high global demand has led to supply chain bottlenecks driving prices of specialty equipment to record highs. An example of this is the manufacturing of electrical equipment such as transformers, which is roughly captured by the Federal Reserve Economic Data ("FRED") index in Figure 4 showing an increase of more than 60% since the EW2 and BW1 bids.

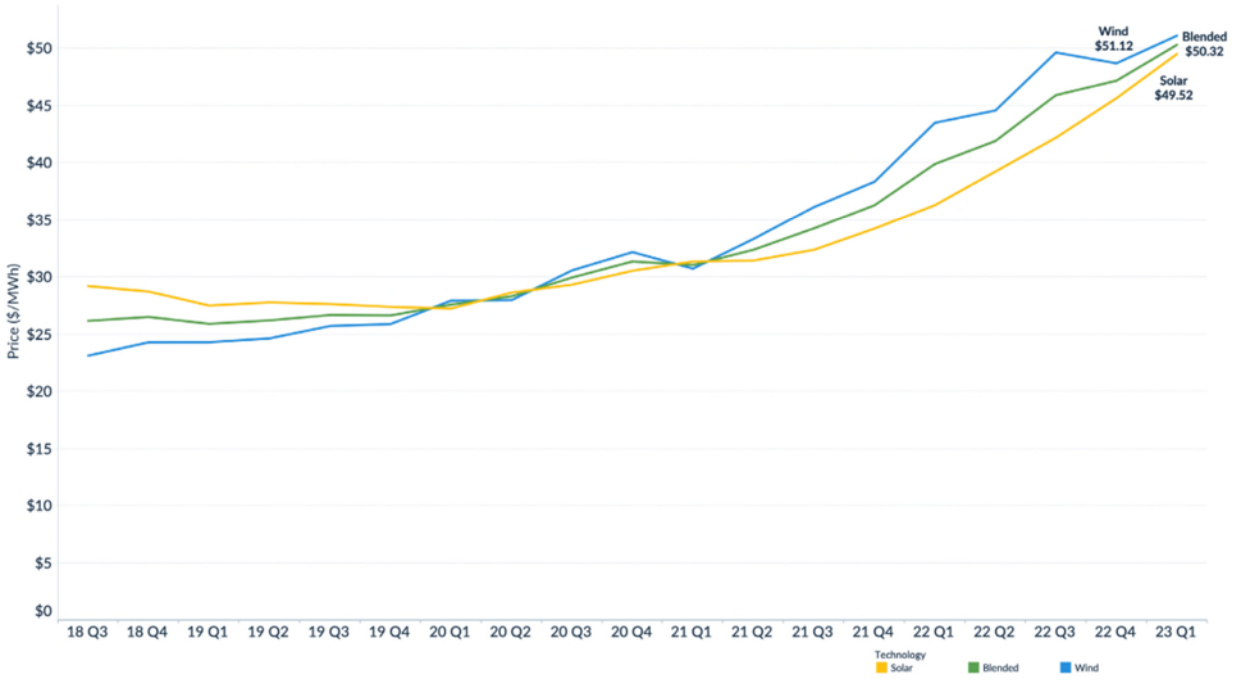
Figure 4: Electric Power and Specialty Transformer Manufacturing

Source: Federal Reserve Bank of St Louis - fredstlouisfedorg

In addition to increasing the underlying costs of the equipment and services required for the construction and commissioning of the Projects, the current inflationary period has resulted in rapid increases in interest rates as central banks seek to bring inflation under control. These higher interest rates have a direct and substantial impact on the cost of the capital required for the Projects to move forward. The Secured Overnight Financing Rate ("SOFR") and the US Treasury rates are the reference rates that underpin much of the commercial debt market in the United States and, as such, drive project borrowing costs. Over the last fifteen months, these rates have increased at the fastest pace in decades, and project borrowing costs and corporate cost of capital have increased accordingly.

The aggregate effect of increased costs and increased cost of capital materializes in the energy prices offered by renewable energy developers to the market. LevelTen Energy produces a quarterly index of Power Purchase Agreement ("PPA") prices in the United States shown in Figure 5. It shows a roughly 60% increase in onshore wind PPA prices since Q1 2021, with a continuing trend in Q1 2023.

Figure 5: Solar and Wind PPA price – US Market Average



Source: LevelTen Energy Q1 2023 PPA Price Index

In summary, the Projects have faced a set of unprecedented macroeconomic conditions, which have manifested in escalatory pressure on costs and an increase in the cost of capital. The effect is particularly prominent on EW2 and BW1, for which the Petitioners submitted bids just before the global economic situation deteriorated and before the longer term impact of the supply chain disruptions associated with COVID had become clear.

B. The Supply Chain Bottlenecks and Global Inflationary Pressures Have Led to Unprecedented Cost Increases for the Projects

The combined impacts of unanticipated supply bottlenecks and the current global inflationary environment described above have led to substantial cost increases for the Projects. The extent of those cost increases differs among the Projects as demonstrated on a per MW basis in Figure 6 below:

Figure 6: Construction Cost Capex Per MW Increases Despite Mitigation Efforts

EW1 was awarded its OREC Agreement as part of New York's first offshore wind solicitation. Due to the immaturity of the industry, the Project has had a number of opportunities for value engineering, such as increasing turbine size and refining foundation design, so that although cost inflation has eroded value, the absolute cost increase for EW1 has been more contained than for EW2 and BW1.

EW2 and BW1 were awarded OREC Agreements as part of the second offshore wind solicitation in New York, just prior to the market impact of inflation and supply chain turmoil EW2 was bid in at a more advanced level of technical maturity than EW1, particularly for the offshore scope, and the Project has therefore been unable to benefit from concept-related value improvements to the same extent as EW1. The EW2 Project has been developed with a strategy of maximizing synergies with EW1, including by developing EW1 and EW2 as part of a single continuous offshore campaign and leveraging economies of scale in the procurement process. However, some of these benefits have been eroded by cost inflation as well as delays in the grid interconnection process, which has in turn separated the anticipated continuous installation

campaign for EW1 and EW2 into two discontinuous campaigns and increased costs, as discussed further below.

BW1 has been subject to similar market impacts as EW2, but has also been able to incorporate lessons learned from EW1 and EW2. The Project is not as advanced in its development process, however it has significantly matured its design and procurement, thus providing a level of certainty on its cost basis that is similar to that of EW2.

1. Wind Turbine Generator Cost Pressures

Wind Turbine Generators ("WTGs") are the most significant single cost component of an offshore wind farm accounting for roughly [redacted] of the total CAPEX spend for the Projects. The cost basis underpinning Petitioners' OREC bids for the Projects were based on a deep understanding of the global WTG supplier market. When Empire Wind selected Vestas as their preferred supplier for EW1 and EW2 in October of 2021, their costs were in line with Empire Wind's bid expectations. Since that time, WTG-related manufacturing costs have risen substantially due to unprecedented and unforeseeable market forces, including the impact of the Ukraine war.

[redacted]

[redacted]

2. Offshore Substation Cost Pressures

Petitioners' procurement of long lead items for offshore substations follows a similar pattern. Petitioners pre-qualified [redacted] tenderers of which [redacted] were invited to tender in Q3 2021 and again in Q4 2022. While the Q3 2021 tender produced costs generally in line with Petitioner's bid expectations, which were based on detailed design studies, the results of the second tender round in Q4 2022 were almost double those received in Q3 2021. The majority of the increase in bid prices is driven by material and equipment cost increases caused by contract supply chain disruption, price inflation and raw material availability. The contract was awarded in Q2 2023 with a price in line with those offered in the second tender round.

Figure 8 – Offshore Substation Cost Progression

[redacted]

3. HVDC Cost Pressures

BW1 will use a 320kV HVDC system to transmit power to shore. The contractor's scope for this package includes the onshore substation and offshore substation, including jacket and all the HVDC equipment. Petitioners' OREC bid estimates were based on experience from other similar projects in Europe supported by a project-specific technical study conducted by Siemens.

Multiple suppliers conducted detailed design concept studies between 2021-22 leading to supplier bids to a tender conducted at the end of 2022. [redacted]

[redacted]

The increase was driven by tight market conditions with very few viable suppliers responding to significant demand from offshore wind and other industries, elevated commodity prices/inflation, and higher than expected civil/building costs at the onshore substation site. [redacted]

In addition to the scope above, the cost of cable fabrication is highly dependent on assumed copper and lead pricing, which has doubled during this period and, ultimately, has resulted in the total fabrication price doubling. The final price remains subject to market force outside of the Petitioners' control.

4. Operational Cost Pressures

The Petitioners are also experiencing an increase in expected operational costs, as the cost increases from inflation carry through cumulatively to the entire operating period of each Project. Because revenues are fixed nominally and costs are increasing, any increase in operational costs has a direct impact on margins and, consequently, on the ability to attract capital to the Projects. Figure 9 below shows the increase in operational cost for each Project.

Figure 9: Operations Cost Capex Per MW Increases Despite Mitigation Efforts

Petitioners have seen operational cost increases in numerous areas but particularly on vessel day rates and insurance premiums. For example, as shown in Figure 10, the assumed day rate for an SOV (service operation vessel for day-to-day maintenance) has increased by about [redacted] from 2020 (based on shipping brokers' market research) to 2023 [redacted].

Figure 10 – SOV Dayrate Cost Progression

Insurance premiums have also increased due to a combination of inflation, tighter market conditions, and increases in project CAPEX. In general, increases seen on project CAPEX flow directly through to the OPEX estimates via insurance, component replacement, and contingency.

C. Higher Than Anticipated Interest Rates Have Further Increased the Projects' Cost of Capital

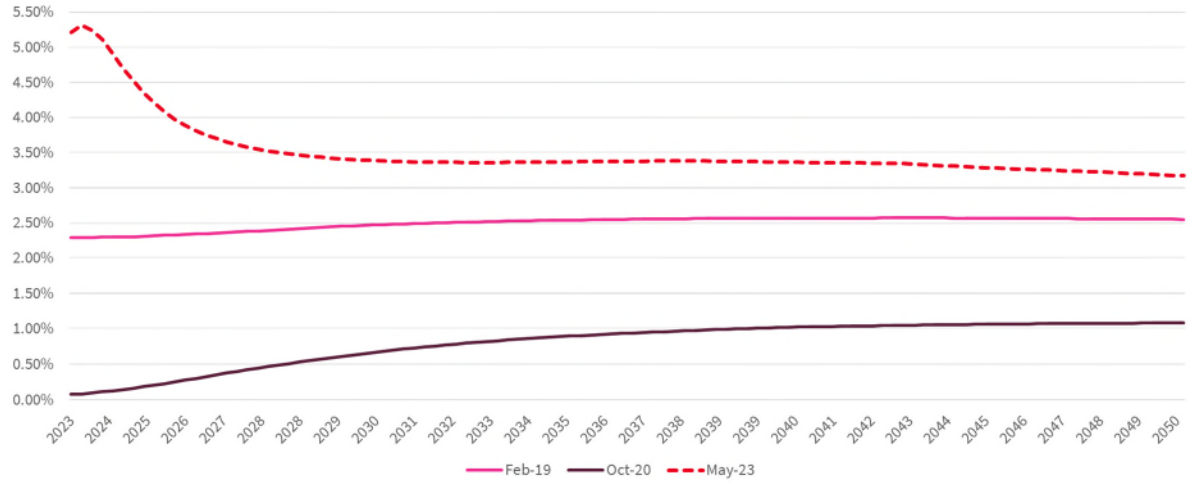
In addition to increasing the underlying costs of the equipment and services required for the construction and commissioning of the Projects, the current inflationary period has resulted in rapid increases in interest rates as central banks seek to bring inflation under control. Projects that entered into offtake contracts during a period of low interest rates are now being constructed in an environment with significantly higher interest rates. These higher interest rates have a direct and substantial impact on the cost of the capital required for the Projects to move forward[5].

The SOFR and the US Treasury rates are the reference rates that underpin much of the commercial debt market in the United States and, as such, drive project borrowing costs. Figure

[5] *See* Case 15-E-0302, *Proceeding on Motion of the Commission to Implement a Large-Scale Renewable Program and a Clean Energy Standard*, Order Authorizing Voluntary Modification of Certain Tier 1 Agreements at 10 (Nov 20, 2020) ("Tier 1 Contract Modification Order"). ("As compared to conventional generators, renewable projects have relatively high, initial capital expenditures and relatively lower operating expenses, making them highly sensitive to the cost of capital. The cost of capital is itself sensitive to the amount of risk inherent in the development").

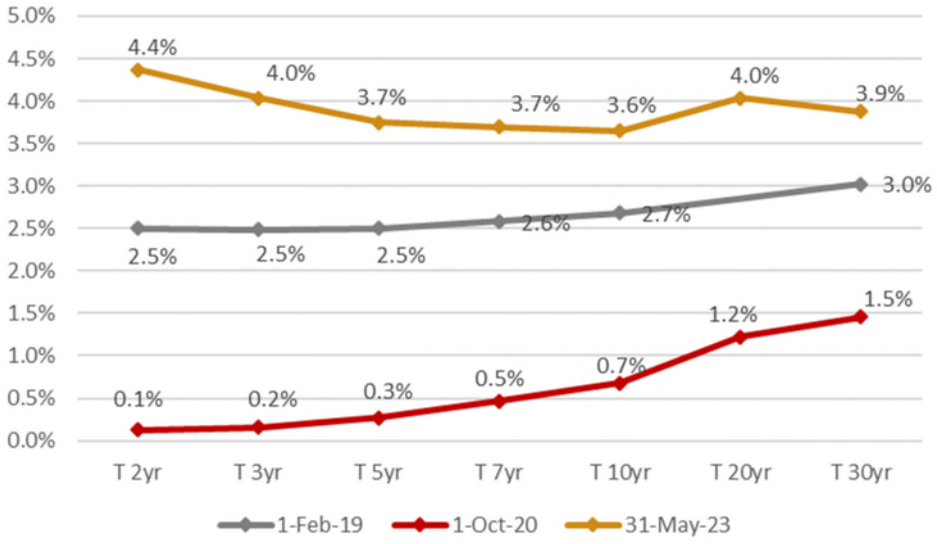
11 below illustrates the expected SOFR rate at the time of the Project bids compared to the anticipated rate in today's market Figure 12 shows the US Treasury rates for various tenors at the time of the Project bids compared to today's market. The current SOFR rates are roughly double, an increase of approximately three percentage points compared to the rates anticipated in 2019, and an even greater increase over the rate expectations in October 2020. Similarly, US Treasury rates today for all market tenors show an increase over the historical observations at the time of the original bids.

Figure 11: Secured Overnight Financing Rate (SOFR) Forward Curves at Bid vs Today



Source: Bloomberg

Figure 12: US Treasury Rates for Various Tenors at Bid vs Today



Source: Bloomberg

The Projects are negatively impacted by this increase in interest rates and the related increase in costs, particularly EW1 and EW2, which are nearing the end of their respective permitting processes and will soon require construction debt financing.

D. Petitioners' Component Cost Containment Measures and Effectiveness

While costs have increased, Petitioners have worked diligently to find areas where cost savings and schedule accelerations can be achieved These efforts have successfully captured savings of over $[redacted] for EW1 and EW2 and over $[redacted] for BW1 The following are examples of such measures which have been implemented:

- **Selecting Cost-Effective Foundations**: Petitioners considered using gravity base system ("GBS") foundations for the Empire Wind project. GBS foundations are large concrete structures (>150 ft in diameter) positioned on the seafloor and ballasted down to provide a base for the tower and WTG. Petitioners subsequently determined that market dynamics, along with other considerations, such as

environmental effects, meant that the significant capital investment associated with standing up a supply chain to fabricate and transport these massive structures would only benefit, and be used by, the Empire Wind project. [redacted].

- **Increasing the EW2 Export Cable Voltage**: Petitioners have proposed changing the EW2 export cables from three 230kV lines to two 345kV lines. This value improvement maintains the same export capacity but lowers the costs of the export cables and associated switchgear by approximately $[redacted].
- **Using Aluminum Conductor in Interarray Cables**: After analysis and diligence, Petitioners are proposing to use an aluminum conductor instead of a copper conductor in the BW1 interarray cabling. This change is expected to save approximately $[redacted] in costs at BW1.
- **Operation Cost Mitigations**: To mitigate increasing operational costs, Petitioners have worked to create synergies between Projects, and changed O&M strategies to reduce costs and headcount projections.
- **Optimizing tax credits**: The Inflation Reduction Act created several new tax incentives to encourage the development of clean energy projects, including opportunities for developers to increase the amount of available Investment Tax Credits. Petitioners have been actively working to develop a path that secures these extra credits for the Projects.
- **Creating Schedule Efficiencies**: Petitioners identified several ways to improve the efficiency of the permitting and construction schedules:

a. Optimizing the construction timeline for the SBMT site preparation work and the EW1 onshore substation to be located at the same site, saving four months on the construction timeline.

b. Petitioners secured the property rights to a potential alternative onshore substation location for EW2, which was anticipated to have less remediation needs prior to commencing site prep and construction. Purchasing this parcel allowed Petitioners to save approximately three months on the construction schedule. It also freed up the original substation parcel to provide an alternative site for the Point of Interconnection for EW2, which has become necessary due to the challenges associated with placing the EW2 Point of Interconnection at LIPA's facilities at Barrett.

c. Developing an alternative solution at the Astoria Point of Interconnection for BW1 to connect at 345kV instead of an interconnection at 138kV possibly leading to an extensive schedule of upgrades. Developing the new 345kV substation is estimated to save 2-3 years on the construction schedule for BW1 and provide reliability benefits.

Petitioners' ability to identify and deliver value improvement opportunities for the Projects is an integral part of the Projects' development process that continues throughout the life of the Projects. However, as the lifecycle for each Project progresses and the design concept becomes fixed, the magnitude of value improvement opportunities diminishes. The design concepts for EW1 and EW2 are now frozen, and the design concept for BW1 will freeze this year. With the freezing of Project design concepts, the opportunities for further value improvements are limited.

E. The Interconnection Process Has Caused Delays and Created Significant Risk of Cost Increase

The Projects face substantial risk of delays and cost increase due to the conditions of the existing transmission systems in New York City and Long Island. It is well known that the transmission infrastructure in New York State requires substantial upgrades in order to accommodate the nine gigawatts of offshore wind committed under the CLCPA, while allowing certain conventional energy plants to retire under the Department of Environmental Conservation's Peaker rule. It is a monumental task rendered particularly challenging by the aging condition of

the grid: in certain areas, the combination of aging equipment with post-hurricane-Sandy regulations means that even a moderate capacity addition will lead to substantial upgrades, in some cases as extensive as requiring a full substation reconstruction. Further, under the NYISO process a detailed analysis of upgrades required inside a substation occurs only late in the process, when it is too late to develop alternative solutions. Therefore, even with extensive analysis based on publicly available information, a developer may not be able to identify the full range of upgrades required until late in the interconnection process, well after they have submitted a request or entered into an offtake agreement.

This problem is recognized by New York State, who has initiated a Public Policy Transmission Need process in Long Island and is considering a similar process in zone J (New York City). These are positive developments in the industry which will help future projects interconnect to the grid in a cost-effective manner but will still take some time to be implemented.

Looking more specifically at the Projects: prior to submitting interconnection requests, the Petitioners conducted extensive analysis of potential points of interconnection throughout New York and Long Island, including detailed power flow analyses designed to proactively identify constraints and the upgrades that would be required to interconnect the Projects.

Despite these efforts, each of the Projects has experienced unanticipated obstacles that have resulted in either an increase of the risk associated with the interconnection cost or a limitation of the ability of the Projects to capture cost efficiencies.

For instance, while EW1 is close to entering into an interconnection agreement with Con Edison, the Petitioners have been informed that the outages required to upgrade the Gowanus Substation have been delayed by over a year because: (1) Con Edison can take its Gowanus Substation out of service only during certain outage windows when its system is less stressed by

demand for heating or cooling; and (2) Con Edison has already committed to using upcoming outage windows at Gowanus to perform other upgrades required to accommodate planned retirements of certain fossil fueled generating resources. EW1 and Con Edison are cooperating to mitigate the consequences, but the delay has added significant schedule risk for EW1 first energy.

EW2 also has faced significant obstacles in obtaining interconnection service. Initially, Empire Wind proposed to interconnect EW2 to the Barrett Substation owned by LIPA. After submitting the interconnection request for EW2, during the System Reliability Impact Study (SRIS), Empire Wind was informed that EW2 interconnection at the existing Barrett Substation could not be supported because of the state of equipment at the proposed point of interconnection, outage constraints, and environmental concerns. As a result, Empire Wind was forced to shift its point of interconnection to another site proximate to Barrett Since this shift, EW2 has been coordinating with LIPA to engineer the POI, but due to complexities related to permitting, transmission owner resource constraints and delays to the NYISO process, the in-service date has been delayed by approximately 14-months compared to the project baseline schedule.

The delays in obtaining interconnection service for EW2 have impacts beyond the interconnection process as they have prevented EW1 and EW2 from capturing the significant efficiencies and cost savings associated with using a single, continuous offshore installation campaign as was initially planned. Because WTGs and foundations are fatigued at a much faster rate if they are installed but not energized (i.e., not connected to the grid), a delay in grid readiness for EW2 means that the WTGs for EW1 and EW2, and potentially other offshore equipment, must be installed in two separate offshore installation campaigns to preserve the operating life of the power generating equipment Shifting to two, discontinuous installation campaigns adds substantial

logistical costs in part due to demobilization and remobilization. Additionally, certain installation windows may need to be renegotiated, exposing the Project to cost increases.

On the other hand, the preliminary Long Island Public Policy Transmission Need award is believed to have a positive effect on EW2, as some of the transmission upgrades being carried out would reduce the congestion otherwise faced by the Project. It could also benefit the Project by bringing overall costs down by creating synergies between EW2 and the Public Policy Transmission Need developer. These benefits however are conditioned on appropriate coordination of the interconnection and Public Policy Transmission Need processes and on timely execution of the upgrades, which is a source of uncertainty for EW2.

For BW1, extensive third-party studies performed ahead of initiating the NYISO interconnection process initially indicated excellent feasibility to interconnect BW1 at the Astoria West 138kV substation, at a reasonable cost. However, after entering the interconnection process, significant concerns about the feasibility of the outage schedule necessary to upgrade equipment inside the substation arose Faced with significant uncertainty about the viability of pursuing interconnection at the Astoria West 138kV substation, Beacon Wind was compelled to develop an alternative interconnection solution on the 345 kV network to ensure the timely interconnection of BW1. The result increases the costs of interconnecting BW1 by approximately $120M due to the need to build a new 345 kV POI and a 1-year delay for the In-Service date of BW1 compared to bid assumption, however avoids a multi-year delay if not done.

The cost consequences of these delays are magnified by the increasing misalignment between the pricing in the OREC agreements and the commercial operation dates of the Projects. Because the pricing schedules contained in the OREC agreements were premised on the expected timing of the Projects at bid submission, the significant delays in achieving interconnection service

and, ultimately, reaching commercial operation have eroded the net present value of the revenues under the OREC agreements at the same time that these Projects have seen dramatic increases in costs. This is due to the nominal price structure of the OREC agreements whereby the developer retains the full cost of any delays including those delays outside the developer's control.

F. Lengthy Permitting Processes Have Unavoidably Exposed the Projects to Deteriorating Economic Conditions

Extended permitting timelines have exacerbated the intense and unforeseeable economic pressures on Project costs. In practice, project permitting timelines have proven highly unpredictable for what is still a nascent US industry working with skilled but under-resourced agencies over the course of multiple administrations. Moreover, the Projects' extended permitting proceedings were already ongoing during the unforeseeable economic turmoil, thereby fully exposing the Projects to the supply chain bottlenecks, rampant inflation, and rising capital costs described above. As a result, the Projects face materially greater costs than the parties to the OREC Agreements contemplated.

Utility-scale offshore wind projects cover very large physical areas at sea and require substantial new or upgraded onshore support infrastructure (ports, terminals, staging and assembly sites, grid interconnections, etc.) that itself needs to be designed, permitted, and built. These various projects are captured in a complex lattice of interlinked federal, state, and local permitting

requirements[6]. With the exception of OCSLA[7], none of the permitting statutes has been tailored to fit offshore wind projects, and there is no integrated process for melding the various permit proceedings. Even under OCSLA, there is at best sparse legal precedent to guide agencies and applicants, and BOEM is still regularly issuing and revising its policies.[8]

Offshore wind development also requires exceptionally large early capital commitments to support the permitting process. Because the US offshore wind industry is nascent and related uses of the ocean are novel, numerous scientific and engineering studies must be conducted, at great scale, to understand the physical and biological conditions across tens of thousands of acres of the continental shelf. These studies must be completed before or during the permitting process[9]. The related costs measure in the hundreds of millions of dollars, unavoidably front-loading major costs in the development process.

Pioneering projects like Empire Wind and Beacon Wind are helping to forge the permitting template for the future, but at the price of substantial uncertainty in the requirements and duration

---

[6] For example, permits and reviews are required for Empire Wind and Beacon Wind under the Outer Continental Shelf Lands Act; Clean Air Act; Clean Water Act; Rivers & Harbors Act; Endangered Species Act; Marine Mammal Protection Act; Magnuson-Stevens Fishery Conservation and Management Act; Coastal Zone Management Act; National Environmental Policy Act; and National Historic Preservation Act. Many state and local authorizations and reviews are also required, such as state water quality certifications under the Clean Water Act, coastal consistency certifications under the Coastal Zone Management Act, certificates of environmental compatibility and public need for siting interconnection facilities under Article VII; approval of conditions of service under the Open Access Transmission Tariff (OATT) of the New York Independent System Operator, Inc, easements for underwater cables from the New York State Office of General Services, as well as terrestrial rights of way from various municipalities and private land owners.

[7] Outer Continental Shelf Lands Act, 43 USC 1331 *et seq* (providing authority for an offshore wind leasing program).

[8] For example, BOEM has proposed, and is informally applying, substantially revised expectations for a Construction and Operations Plan ("COP"), which is the central authorization sought from BOEM for an offshore wind project. *See* https://wwwboemgov/sites/default/files/documents/renewable-energy/DRAFT%20BOEM%20NOI%20Checklist%20FDMS%20BOEM%202022-0056pdf (proposed requirements before BOEM will initiate environmental impact analysis under NEPA).

[9] *See*, *eg*, 30 CFR Sections 585610-611 (requirements for Site Assessment Plan) and Sections 585626-627 (requirements for COP).

of Project permitting. The federal and state permitting processes are not amenable to being truncated or accelerated by the applicant. Numerous projects including Empire Wind and Beacon Wind have sought the assistance of the Federal Permitting Improvement Steering Council, which Congress established under the Fixing America's Surface Transportation Act ("FAST-41"). The Steering Council is charged with overseeing the timeline for permitting complex infrastructure projects, yet the Steering Council cannot itself change the timeline or requirements dictated by the agencies[10]. Fourteen years after BOEM's offshore regulatory program came into effect, BOEM has issued final decisions for only two utility-scale offshore wind projects with at least a dozen projects still in the queue.

II. GRANTING THE PETITION WOULD EFFECTUATE THE COMMISSION'S STATUTORY OBLIGATIONS UNDER THE CLCPA AND THE PUBLIC SERVICE LAW

The Commission's fundamental statutory obligation established in Section 65(1) of the Public Service Law ("PSL") is to ensure "safe and adequate and in all respects just and reasonable" energy service for New York's ratepayers[11]. Without altering this key obligation, the Legislature assigned the Commission a key role in fulfilling the requirements of the CLCPA. In the CLCPA, the Legislature found that urgent action was required to address global climate change, and it established a goal of reducing greenhouse gas emissions from all anthropogenic sources in New York by 100 percent over 1990 levels by the year 2050, with an incremental target of at least a 40

---

[10] 42 USC § 4370m-6(d) ("Nothing in this subchapter (1) supersedes, amends, or modifies any Federal statute or affects the responsibility of any Federal officer to comply with or enforce any statute; or (2) creates a presumption that a covered project will be approved or favorably reviewed by any agency"). *See* Message from Executive Director of the Steering Council, July 6, 2021, available at https://wwwpermitsperformancegov/about/announcements/message-executive-director-permitting-council-fpisc ("FAST-41 coverage does not predetermine the outcome of any federal decision making process with respect to any project FAST-41 is a voluntary program governed by the statutory eligibility criteria and expressly does not alter any applicable statutory or regulatory requirement, environmental review process, or public involvement procedure").

[11] PSL § 65(1)

percent reduction in climate pollution by the year 2030[12]. As part of that plan to mitigate the impact of climate change, the CLCPA amended the PSL to adopt a new Section 66-p requiring the Commission to ensure that at least 70 percent of state-wide electric generation would be supplied by renewable generation by 2030 and that 100 percent of state-wide electric generation would be supplied by renewable generation by 2040[13]. PSL Section 66-p also directed the Commission to establish programs to secure 9 GW of offshore wind generating capacity by 2035[14].

The CLCPA also imposes a requirement on all State agencies to consider, in the context of issuing permits, licenses, administrative approvals and decisions, "whether such decisions are inconsistent with or will interfere with the attainment of the statewide greenhouse gas emissions limits" established by the DEC under the CLCPA[15]. If such administrative approvals or decisions are found to be inconsistent or to interfere, agencies "shall provide a detailed statement of justification as to why such limits/criteria may not be met, and identify alternatives or greenhouse gas mitigation measures to be required where such project is located"[16].

For the reasons set forth below, Petitioners respectfully submit that the requested revisions to their OREC Agreements proposed herein represent by far the best way to satisfy the Commission's foregoing fundamental statutory requirements given the unforeseeable economic realities facing the Projects.

---

[12] Chapter 196, § 4 of the NY Laws of 2019

[13] NY Pub Serv L § 66-p(2)

[14] NY Pub Serv L § 66-p(5)

[15] L 2019, ch 106, §7(2) (effective January 2020)

[16] *Id*, §8(1)

A. The Commission Will Secure Significant Benefits for Ratepayers by Granting the Requested Relief

1. Granting the Petition Will Minimize the Cost to Ratepayers of Meeting CLCPA Requirements

The unforeseen and unprecedented circumstances described above have not only affected the costs of the Projects; they have increased costs across a broad range of industries including the power industry.

While no infrastructure developer has been untouched by these forces, developers in the offshore wind industry have been uniquely affected because of; (1) the long development and permitting timelines required for offshore projects, which can take approximately 7-10 years from lease award to commercial operation, which leaves projects exposed for longer, (2) the early lock-in of revenues for the projects through state/government auction process often 5 years prior to commercial operations and (3) the acute supply chain constraints felt in offshore wind and the wider power sector driven by the growth of renewable energy generation needed to deliver on the energy transition and resolve security of supply issues in Europe. These forces have combined to upend the economics of numerous offshore wind projects currently being developed on the east coast continental shelf.

Unfortunately, the economic forces that have negatively impacted the Projects are likely to persist in the near term as shorter-term macroeconomic challenges are superseded by longer lasting constraints in the offshore wind and wider electrical infrastructure sectors. An analysis focusing specifically on the offshore wind supply chain performed by Wood MacKenzie, which is attached to this Petition as Exhibit C, finds that the price of components for offshore wind projects will continue to experience significant pressure through at least the end of the decade due to significant supply chain constraints driven by huge increases in the growth rate of offshore wind resources

and global electrification. In the base case the report predicts annual GW demand in 2030, excluding China, will be over ten times greater than in 2020, largely underpinned by agreed government subsidies through 2027. The report also makes clear that government targets far exceed even this, representing more than double the base case forecast by the report. What is more, by locking in revenue streams many of these projects may be exposed to changes in macroeconomic conditions likely to lead to delays and cancellations thus pushing more demand into the latter half of the decade further hampering supply chain development and exacerbating supply chain issues.

Wood MacKenzie estimates that $25 billion of investment is required in the supply chain[17] in the next few years for the industry to meet demand peaks in the second half of the decade. The need for investment is particularly acute for vessels, where 80% of the capacity required to meet demand in 2030 does not exist today, and for foundations, where investments in new fabrication facilities need to be made five years or more ahead of facility completion. The shortage of supply creates significant investment opportunities, but it also means that offshore wind supply chains will remain strained for the foreseeable future, and that a strategy to pause projects to wait out current supply chain constraints is not likely to lead to reduced costs.

The confluence of these factors means that any new offshore wind resources that are committed to replace the current OREC Agreements will likely come at a premium to the cost of purchasing ORECs from the Projects after the OREC Agreements are modified as requested by this Petition. This Petition provides an opportunity for the Commission to help avoid the higher costs for consumers that are likely to result from termination of the OREC Agreements. In

[17] Specifically in the following areas: fabrication of vessels, foundations supply, and turbines supply (blades, towers, and nacelles).

particular, the advanced stage of the Projects provides New York with greater cost and timing certainty than alternative supply options. Because EW1 and EW2 have locked in many key contracts, these Projects provide a cost profile and execution plan that is more certain to what could be achieved with current market pricing. Similarly, all of the Projects, including BW1, have completed the tender process to identify suppliers for [redacted] EW has already awarded export -and inter array cable and all marine installation contracts for foundations, turbines and offshore substation, and Beacon Wind is well-positioned t[redacted] to the extent not already done. BW1 is similarly positioned to lock in the cost of [redacted], a crucial supply agreement, by end-2023. As a result, the Projects have greater certainty that they will receive timely deliveries of schedule-critical project components and at prices likely to be lower than those available in the future for less mature projects. Since offshore wind project components are in short supply globally, less mature projects are likely to confront higher costs and longer, more uncertain delivery times.

2. Granting the Petition Will Allow New York to Meet New York's CLCPA and Offshore Wind Goals in a Timely Manner

Since executing their OREC Agreements, the Petitioners have been working diligently to advance the development of the Projects to be in-service as fast as possible. This includes applying for major permits, advancing through the interconnection process, and entering into strategic partnerships to support the development of a world class offshore wind supply chain in New York. For instance:

a. The Article VII siting application for each of the Projects has been submitted and deemed complete, with Empire Wind currently engaged in Article VII settlement negotiations for both EW1 and EW2 and Beacon Wind commencing settlement discussions on May

24, 2023.

b. The federal permitting process for EW1 and EW2 is nearing completion, with authorization to commence construction expected in the first half of 2024. Similarly, the BW1 permitting process is maturing rapidly after exhaustive surveys, data collection, and analysis over the past few years, and the two-year NEPA process is expected to begin shortly.

c. Each of the Projects has made significant progress proceeding towards securing interconnection service. Both EW1 and EW2 have completed the NYISO study process and currently are in the process of negotiating interconnection agreements with the NYISO and their connecting transmission owners. In the case of BW1, the Project has completed its System Reliability Impact Study and is currently participating in NYISO's Class Year 2023 Facilities Study.

The substantial progress made in permitting, siting, and interconnection will ensure that these Projects reach commercial operation on a timetable that aligns with New York's 2030 climate goals; other offshore wind projects still seeking offtake awards are unlikely to provide these benefits on the desired timeline.

Granting the Petition will help ensure that New York is able to achieve its ambitious clean energy goals[18]. The Petitioners stand ready to move forward with the development of the Projects and are eager to support New York in achieving its objectives set out in the CLCPA. Granting the Petitioners' requested relief will allow the Projects to attract the investment necessary to support their construction and avoid the loss of over 3 GW of offshore wind capacity—an amount that represents more than a third of New York's 9 GW offshore wind goal and when fully operational approximately 12%[19] of the renewable generation required to meet the CLCPA target.

[18] *See* Tier 1 Contract Modification Order at 11 ("In addition to these benefits, the proposal has the potential to accelerate the State's progress towards the renewable energy goals included in the CLCPA. These ambitious goals will require a considerable increase in Tier 1 procurements and highlights the importance of minimizing project attrition" (footnote omitted)).

[19] EW1 30%, EW2 45%, BW1 48%

3. Granting the Petition Will Support the Development of Capacity Capable of Meeting New York's Growing Reliability Needs Without the Need to Extend the Life of Fossil Fuel Plans Currently Set to Retire

As NYISO explained in its 2022 Reliability Needs Assessment, reliability margins in the New York City area face a substantial risk due to limited generation and transmission to serve forecasted demand. One major cause of these tightening margins is the Department of Environmental Conservation's ("DEC") Peaker Rule, which is expected to force the retirement of approximately 1,500 MW of simple cycle peaking units in New York City in 2025. While a portion of these retirements is expected to be offset by the scheduled addition of the 1,250 MW Champlain Hudson Line in 2026,[20] New York's ability to meet reliability needs even under normal operating conditions—particularly in the New York area—could be imperiled by even limited shifts in supply and demand, as the NYISO recently explained:

> The reliability margins within New York City may not be sufficient even for expected weather if (i) forecasted demand in New York City increases by as little as 60 MW in 2025, (ii) the CHPE project experiences a significant delay, or (iii) there are additional generator deactivations beyond what is already planned. In fact, the long-term demand forecast to be updated in early 2023 is expected to increase substantially due to strong commercial and residential growth along with increased electrification of transportation and home appliances. Additionally, until the CHPE project or other permanent solution is in-service, the reliability margins will continue to be less than 100 MW for the assumed system demand, indicating that current plans significantly rely on a single project for the future reliability of the New York City grid[21].

[20] New York Indep Sys Operator, Inc, 2022 Reliability Needs Assessment at 7 (Nov 15, 2022) ("2022 RNA"), available at https://wwwnyisocom/documents/20142/2248793/2022-RNA-Reportpdf/b21bcb12-d57c-be8c-0392-dd10bb7c6259

[21] 2022 RNA at 8

As NYISO made clear at another point in its 2022 RNA, several factors could force it to continue to operate a number of simple cycle peaking units in New York City for several years after their scheduled retirement in 2025.

> If the CHPE project experiences a significant delay, the forecasted demand in New York City increases by as little as 60 MW in 2025, or there are additional generator deactivations beyond what is already planned, some generation affected by the Peaker Rule may need to remain in service until permanent solutions are completed to avoid exceeding the reliability margins[22].

Moreover, while transmission security margins on Long Island are forecast to be less constrained than those in New York City, the ability to maintain reliability on Long Island will depend on both the timely completion of planned generation resources, including the 1,260 MW EW2. Notably, NYISO's analysis indicates the delays or cancellation of planned resource additions could result in transmission security deficiencies "as early as 2023 by about 300 MW," with these deficiencies further increasing "just under 600 MW in 2032"[23]. In such circumstances, NYISO would be required to authorize existing simple cycle peaking units on Long Island to operate beyond their scheduled retirement dates in 2025 as well.

Granting the Petition will help mitigate these reliability risks by supporting the continued and timely development of over 3 GW of offshore wind capacity capable of powering the homes of millions of New Yorkers. Together, EW1 and BW1 will deliver 2 GW of offshore wind into the heart of New York City. The 2046 MW combined nameplate capacity of EW1 and BW1 would provide over 770 MW of needed Unforced Capacity ("UCAP") to Zone J, while the 1,260 MW EW2 would provide over 475 MW of UCAP on Long Island, which is not readily available from any resource other than offshore wind.

---

[22] *Id* at 68

[23] *Id* at 67-68

The expected generation profile of the Projects is complementary to summer demand, making offshore wind a strong fit for New York. As reflected in the figure below, the output of EW1 is expected to be highest during those hours in which system-wide demand is peaking and the need for capacity is highest.

Figure 13 – NYISO Gold Book Average Zone J Demand Forecast June - August vs EW1 Average Production Forecast

4. Granting the Petitions Will Generate Significant Economic Benefits for New Yorkers and Allow New York to Maintain Its Current Leadership Position in Offshore Wind

Since acquiring their lease areas, the Petitioners have made New York the central focus of their planning and development strategy in order to maximize the economic opportunities and benefits that are created for New Yorkers through the construction and operation of the Projects. The Petitioners' commitment to ensuring that New Yorkers benefit from New York's investment in offshore wind and clean energy is reflected in the terms of their agreements, which collectively

obligate the Petitioners to generate approximately $33 billion in economic benefits[24] in New York through the construction and initial operation of the Projects. Notably, this economic benefits commitment reflects only the economic benefits that are expected to accrue through the third year of commercial operation of each Project and does not account for the billions of dollars in additional economic benefits that will be created over the operational life of these Projects.

The Petitioners also have made substantial commitments focused on building the capacity of the offshore wind supply chain in New York to ensure that New Yorkers have the skills and support necessary to benefit from these opportunities. Specifically, the Petitioners have committed to invest $52 million in community and workforce development activities These investments have been carefully crafted to form the foundation of a vibrant offshore wind industry in New York, which has the potential to support up to thousands of new jobs and billions of dollars of local economic activity.

The Petitioners already have taken significant steps towards achieving these economic benefits, including:

(a) Entering into a lease to establish a world-class offshore wind staging port at SBMT that will generate hundreds of millions of dollars in economic benefits during the construction phase of the Projects in an area that has been identified as a Disadvantaged Community by the Climate Justice Working Group;[25]

(b) Selecting SBMT as the home of the Petitioners' dedicated O&M base, which will result in billions of dollars of additional spending in New York over the operational life of the Projects;

(c) Collaborating with the New York City Economic Development Corporation and Sunset Park Task Force to launch a clean energy community investment

[24] Total reflects the sum of the Expected Total Dollars in the OREC Agreements for each of the Projects. The Expected Total Dollars for the Projects are as follows: (1) $792,236,000 for EW1; and (2) a combined $2,534,031,000 for EW2 and BW1.

[25] *See* NYSERDA, Disadvantaged Communities Map, *available at*: https://wwwnyserdanygov/ny/Disadvantaged-Communities

fund to support sustainable growth, empowerment of members of disadvantaged communities, and climate justice in New York City; and

(d) Establishing numerous partnerships with community-based organizations and non-governmental organizations

The benefits of the investments that the Petitioners plan to make go beyond the direct investment in construction and operation of the Projects. Ultimately, the investments made by the Petitioners to foster New York labor and businesses will support the development of an offshore wind supply chain that will encourage other offshore wind developers to make New York a central part of their development and construction strategies—attracting yet additional economic activity and skilled labor to New York.

Time is of the essence. Numerous states in the Northeast and Mid-Atlantic regions have made commitments to develop the infrastructure and trained workforce required to attract the offshore wind industry to those states. While New York has established itself as a leader in this space through its early commitment to offshore wind and quick recognition of the associated economic opportunities, delaying the investments that will be made in connection with the construction of the Projects would risk losing New York's head start in this developing industry to other states.

5. Granting the Petition Will Benefit Ratepayers by Reducing Energy Prices and Emissions

The Projects will generate significant energy cost savings and health benefits to New York residents. As detailed further in the attached report from ICF, the operation of the Projects is expected to generate significant cost savings by reducing energy and capacity prices and avoiding

the adverse health effects associated with the emissions of CO_2 and other pollutants. Specifically, ICF estimates that if the Projects are delivered on time they contribute[26]:

(a) Reduction in energy costs in Zone J by approximately $700 million; and

(b) Reduction in energy costs in Zone K by approximately $300 million; and

(c) Reduction in capacity costs in New York by $1.5 billion; and

(d) Reduction in emissions of carbon dioxide by 96 million tons, with a social cost to New Yorkers of approximately $1.5 billion[27]; and

(e) Reduction in emissions of other harmful pollutants including sulfur dioxides, nitrous oxide and particulates.

Failure to achieve these mandated targets will impose direct costs on New York residents that can be avoided if the Commission takes the actions required for the Projects to move forward on their current schedules.

B. The Commission Should Take the Following Action to Address Cost Increases and Ensure Safe and Adequate Service at Just and Reasonable Rates

The Petitioners seek an order from this Commission authorizing an amendment to the OREC Agreements to return the Projects to levels sufficient to attract the approximately $[redacted] investment required for their construction[28]. More specifically, the Petitioners request authorization for amendments to the OREC Agreements to incorporate each of the following mechanisms and changes:

(a) Inflation adjustment mechanisms; and

(b) Interconnection cost adjustment mechanisms; and

---

[26] Cumulative impact between 2027 and 2035 assuming a three-year delay in offshore wind capacity deployment equivalent to the combined capacity of EW1, EW2 and BW1.

[27] *See* ICF Report, Exhibit B.

[28] *See* Tier 1 Contract Modification Order at 10 (approving contract modification when "financing challenges are magnified by other exogenous factors generally outside the control of developers, including difficulties in siting, higher tariffs on component costs, and, most recently, the COVID-19 pandemic").

(c) An extension in the tenor of the OREC Agreement

A brief explanation of these proposed changes is provided below, with a more detailed explanation provided in Exhibit A to this Petition.

1. Inflation Adjustment for costs incurred during the Construction Period. In its most recent offshore wind solicitation (ORECRFP22-1), NYSERDA recognized the impact of market volatility on offshore wind projects with fixed revenue contracts by adopting an inflation adjustment mechanism to address fluctuations in project construction costs[29]. The Petitioners request authorization for amendments to the OREC Agreements to incorporate an inflation adjustment mechanism similar to one recently adopted by NYSERDA, with certain adjustments to the calculation of the inflation adjustment to better reflect the actual cost increases observed during the development of the Projects as further described in Exhibit A.

2. Inflation Adjustment for costs incurred during the Operational Period. As described in Section IA of the Analysis, the impact of inflation is not isolated to the construction period: it carries through the entire operating period. Thus, the Petitioners request that the OREC Agreements for EW2 and BW1[30] be modified to cumulatively apply a factor to the Index OREC which is equal to half of the Consumer Price Index in each successive year after the year in which the delivery term commences. Such mechanisms are commonly applied to offshore wind offtake contracts in other markets, including the United Kingdom, France and Poland.

3. Interconnection Cost Sharing. As outlined in Section IE, developers lack visibility into the state of existing grid infrastructure, creating uncertainty regarding the upgrades

[29] NYSERDA, *Purchase of Offshore Wind Renewable Energy Certificates*, Request for Proposals ORECRFP22-1, Section 422 (Dec 23, 2022) (describing Inflation Adjustment mechanism).

[30] Because the price schedule included in the EW1 OREC Agreement already includes a 2% escalator, this mechanism would only be applied to EW2 and BW1.

required to connect an offshore wind resource and the associated costs. As with the construction cost inflation mechanism, NYSERDA has recognized this issue, proposing a mechanism through the ORECRFP22-1 that shares interconnection cost risk between New York State and the developer. The mechanism allows the developer to propose a baseline for interconnection costs. Costs (or savings) above or below this baseline are shared between the state and the developer. Applying this mechanism to the project would reduce the risk for the Projects, providing more certainty in the investment proposition, and could lead to cost savings for New York State.

4. Extension of OREC Agreement Tenor. The Petitioners also request an extension of the tenor of the OREC Agreement for EW1 from 25 years to 30 years from the beginning of the contract delivery term. Given the timing of a Final Investment Decision ("FID") and the timeline to secure construction funding, this issue is more critical for EW1 than for EW2 and BW1. To improve the investment framework for EW1, Petitioners are proposing an extension of the EW1 OREC Agreement from a contract tenor of 25 years to a contract tenor of 30 years from COD.

5. Alternative mechanisms. In addition to the mechanisms requested above, the Petitioners have considered the application of other mechanisms directly related to the drivers of business case deterioration, including, but not limited to the following:

(a) A permitting schedule delay escalator, which would apply an upward adjustment to the OREC strike price reflecting the difference between the actual permitting schedule and a standard baseline permitting schedule.

(b) An interest rate adjustment, which would adjust the OREC strike price to account for the difference between current interest rates and interest rates expected at the time of the bid.

(c) Curtailment compensation, which would seek to compensate the Projects for an expected production level if grid congestion issues are not resolved prior to the Projects coming online.

While these mechanisms could also provide acceptable forms of relief, they are not included in the primary ask above.

CONCLUSION AND REQUEST FOR EXPEDITED ACTION

Notwithstanding the obstacles discussed, Petitioners have diligently progressed the development of each of the Projects. However, as described above, additional support is required to restore the Projects' ability to attract the capital commitments needed for their timely development and construction.

To maintain the current timeline for the Projects and to satisfy the Commission's statutory obligations under the CLCPA and the Public Service Law to rapidly develop renewable energy resources at just and reasonable rates, the Petitioners respectfully request that the Commission take action on this Petition by no later than 31st October 2023.

The request for a ruling prior to the above date is driven by the need to imminently make decisions required to maintain the current schedule on all Projects. The timing is related to upcoming milestone decisions in the November/December regarding award of procurement contracts for EW1, EW2 and BW1, and project development milestones which significantly increase the spend profile for Empire Wind, in particular Granting this Petition prior to this date will provide the Petitioners with the certainty necessary to support the continued development of the Projects.

With approval of major permits for EW1 and EW2 expected in the near term, Petitioners currently expect that capital requirements for the Projects will ramp up considerably in the coming months. For instance, [redacted]

[redacted]. In addition, to prepare for construction activity in the first half of 2024, ramp up of equipment purchase and pre-construction preparation under existing contracts is required. As a result, expended costs at the end of 2023 for [redacted][31].

Figure 14 – EW Costs Over Time

[redacted]

While BW1 is not as far advanced as EW1 and EW2, the Petitioners expect capital requirements to increase significantly in the coming months. [redacted]

[31] Data as of March 2023

In short, the Petitioners are requesting expedited action to allow them to move forward promptly with efforts to secure and finalize major supply contracts and maintain the current Project timelines. To ensure the continued development of the Projects, the Petitioners respectfully request that the Commission issue an order no later than 31st October 2023 approving this Petition.

Respectfully submitted

/s/ George Pond

George Pond
Barclay Damon LLP
80 State Street
Albany, New York 12207
gpond@barclaydamoncom

Dated: June 7, 2023

EXHIBIT A

Exhibit A
Petitioners' Request For Relief

As explained in Section II.B. of their Petition, the Petitioners request authorization for amendments to their OREC Agreements to incorporate each of the following mechanisms, the application of which is described in detail below:

a) Inflation adjustment during the development period; and
b) Inflation adjustments during the operational period; and
c) Interconnection cost adjustment mechanisms; and
d) An extension in the tenor of the OREC Agreement.

a. *Inflation Adjustment Mechanism*

The proposed Inflation Adjustment mechanism is based on the mechanism that NYSERDA has adopted for use in its most recent OREC solicitation (ORECRFP22-1) but has been adjusted in limited respects to tailor the mechanism to the circumstances of the Projects.[1]

As reflected in the equation below, the Petitioners' proposed Inflation Adjustment mechanism maintains the general framework that NYSERDA has adopted for ORECRFP22-1. Like NYSERDA's mechanism, the Petitioners' proposed Inflation Adjustment mechanism would adjust the Index OREC strike prices reflected in the OREC Agreements to reflect changes in the costs of labor, fabrication and machinery materials, steel, the spot price for Ultra-Low Sulfur Diesel, and Copper. The Petitioners also propose to use the same indices and data sources used by NYSERDA in its Inflation Adjustment mechanism. These indices do not fully capture the price increases experienced because they do not reflect the cost of the specific components used in the construction of offshore wind resources. Nevertheless, the Petitioners are proposing to use these

[1] NYSERDA, Purchase of Offshore Wind Renewable Energy Certificates, Request for Proposals ORECRFP22-1, Section 4.2.2 (Dec. 23, 2022) (describing Inflation Adjustment mechanism).

same indices because they are widely available, transparent, and consistent with the framework that NYSERDA has adopted in other contexts.

However, Petitioners believe that certain adjustments to NYSERDA's framework are necessary to reflect the facts and circumstances of the Projects. First, the Petitioners have eliminated the 20% fixed component included in the formula for the Inflation Adjustment mechanism being used by NYSERDA in its ongoing solicitation process and adjusted the weighting factors to account for the elimination of the fixed component. The adjusted formula yields a result that more accurately reflects the actual cost increases observed by the Projects.

Second, the Petitioners propose to change the dates at which the pricing adjustment would be made for EW1 and EW2. NYSERDA's Inflation Adjustment framework provides for an adjustment to the OREC strike price to reflect inflation between the last revision to the OREC RFP prior to the deadline for the submission of proposals to supply ORECs and the approval of the Construction and Operation Plan ("COP").[2] Because EW1 and EW2 have entered into a number of key procurement contracts and have limited exposure to further indexation, in the case of EW1 and EW2, the Petitioners have modified the Inflation Adjustment Mechanism such that the adjustment would be made through the date of this Petition rather than the date of approval of the Construction and Operation Plan ("COP") for EW1 and EW2. As EW1 and EW2 have locked in many key procurement contracts and have limited remaining indexation left in their cost basis, the Petitioners believe that limiting the adjustment through the Petition filing date is appropriate adjustment for EW1 and EW2 to reflect inflation between the dates on which each of the Projects submitted proposals to NYSERDA to supply ORECs and the date of this Petition will provide the

[2] *Id.*

Petitioners with the necessary price certainty while limiting the impact of changes in price that occur after the date of this Petition.[3] Because BW1 is at an earlier stage in the procurement process with greater exposure to changes in price through contract indexation, the Petitioners propose to adjust the OREC strike price for BW1 through the date of COP approval consistent with NYSERDA's mechanism.

In sum, the Petitioners request that the OREC Agreements be modified to include the following formula to adjust the OREC strike price.

$$OREC_{adj} = OREC_{bid} \times \left(0.375 \times \frac{Index_{\tau Labor}}{Index_{\beta Labor}} + 0.3125 \times \frac{Index_{\tau Fabrication}}{Index_{\beta Fabrication}} + 0.125 \times \frac{Index_{\tau Steel}}{Index_{\beta Steel}} + 0.125 \times \frac{Index_{\tau ULSD}}{Index_{\beta ULSD}} + 0.0625 \times \frac{Index_{\tau Copper}}{Index_{\beta Copper}}\right)$$

Where:

$OREC_{adj}$ is the Index OREC Strike Price or Fixed OREC Price after adjustment

$OREC_{bid}$ is the Index OREC Strike Price or Fixed OREC Price included in the applicable OREC Agreement

$Index_{\beta}$ (for each commodity or component) is the average of the last six months or two quarters of published data available as of the final RFP revision prior to the Proposal Submission Deadline.[4] The table below provides the $Index_{\beta}$ values at the time of the final RFP revision prior to the Proposal Submission Deadline for ORECRFP18-1 and ORECRFP20-1.

[3] Because the OREC Agreement for EW1 includes a schedule of OREC strike prices that escalates on a year-over-year basis, the pricing schedule for the delivery term under the agreement would need to be modified to reflect inflation between the bid submission deadline and the date of this Petition.

[4] The final RFP revision dates are January 15, 2019 for EW1 and September 16, 2020 for EW2 and BW1.

Commodity Index	Value ORECRFP18-1	Value ORECRFP20-1
$Index_{\beta,Labor}$	134.350	140.650
$Index_{\beta,Fabrication}$	131.583	141.167
$Index_{\beta,Steel}$	201.950	160.950
$Index_{\beta,ULSD}$	2.079	1.052
$Index_{\beta,Copper}$	2.731	2.611

$Index_{\tau}$ (for each commodity or component) will be calculated as the average of the monthly or quarterly values for the six months prior to the following dates:

a) For EW1 and EW2: the date this Petition is filed

b) For BW1: the date the Project receives approval of its COP from BOEM

b. *Inflation Adjustments during the Operational Period*

As noted in the Petition, the Petitioners have experienced an increase in the costs of the Projects during the operational phase. The Petitioners thus propose the application of a Consumer Price Index ("CPI") adjustment to the OREC strike price for EW2 and BW1 on an annual basis.[5] The annual adjustment would not apply to EW1 since the pricing schedule contained in the EW1 OREC Agreement already includes a 2% annual nominal escalation.

The Petitioners believe that it is appropriate to limit the amount of any price adjustment to a fraction of the total change in the CPI in a given year to reflect a sharing of the risk. Thus, the Petitioners propose to amend the OREC Agreements for EW2 and BW1 to apply the following formula in each year following the year in which the Project begins delivery under the OREC Agreement :

$$OREC_{Contract\ Year} = OREC_{Contract\ Year-1} \times \left(1 + \frac{1}{2} CPI_{Contract\ Year-1}\right)$$

[5] Because the CPI adjustment would be applied during the delivery term of the OREC Agreement, the CPI adjuster would be applied after adjusting the OREC strike price to reflect inflation in accordance with the inflation adjustment mechanism described above.

Where:

$OREC_{Contract\ Year}$ is the Index OREC Strike Price or Fixed OREC Price in the current Contract Year

$OREC_{Contract\ Year-1}$ is the Index OREC Strike Price or Fixed OREC Price during the preceding Contract Year.

c. *Interconnection Cost Adjustment*

The Petitioners propose to apply the Interconnection Cost Adjustment mechanism that has been developed by NYSERDA for ORECRFP22-1 to the Petitioners' OREC Agreements.[6] Under NYSERDA's Interconnection Cost Adjustment mechanism, interconnection costs that exceed an Interconnection Cost Allocation Baseline are shared between the offshore wind developer and NYSERDA, and the OREC strike price is increased to reflect NYSERDA's share of the excess costs. Conversely, to the extent that actual interconnection costs are lower than the Interconnection Cost Allocation Baseline, any net savings are shared with NYSERDA through a reduction to the OREC strike price. For the purpose of the Interconnection Cost Adjustment mechanism, the Petitioners propose the Interconnection Cost Allocation Baselines below, based on the Projects' interconnection plans.

EW1: Interconnection Cost Allocation Baseline at $48 million

EW2: Interconnection Cost Allocation Baseline at $358 million

BW1: Interconnection Cost Allocation Baseline at $83 million

The Petitioners further propose that NYSERDA's share of any net savings or of any increase in costs above the Interconnection Cost Allocation Baseline would be 80%.

[6] NYSERDA, Purchase of Offshore Wind Renewable Energy Certificates, Request for Proposals ORECRFP22-1, Section 4.2.1 (Dec. 23, 2022) (describing interconnection cost adjustment mechanism).

d. *Extension of OREC Agreement Tenor*

This mechanism would mitigate some of the impact caused by rising interest rates on the financing plan for the EW1 project. An extended contract tenor would increase the potential debt sizing for the project which has been severely constrained by the growth in expected interest payments to be met by project cash flows. In order to implement this proposal, the Petitioners anticipate (i) modifying the definition of Contract Tenor contained in the EW1 OREC Agreement to reference 30 years as opposed to 25 years and (ii) extending the Outer Limit Date by five years to January 1, 2057 (as opposed to January 1, 2052).