

March 12, 2021

Ms. Aida Camacho-Welch, Secretary
New Jersey Board of Public Utilities
44 South Clinton Avenue, 9th Floor
Post Office Box 350
Trenton, NJ 08625

Via email to: Board.Secretary@bpu.nj.gov

**Re: Docket No. QO20100630
In the Matter of Offshore Wind Transmission
Comments re: Feb. 26, 2021 Technical Conference**

Dear Ms. Camacho-Welch:

The Business Network for Offshore Wind appreciates this opportunity to provide comments regarding New Jersey's offshore wind transmission options.

The Business Network for Offshore Wind (the "Network") is the only 501(c)(3) nonprofit organization solely focused on the development of the U.S. offshore wind industry and advancement of its supply chain. The Network is not a trade association, but rather, provides one leading voice for the offshore wind business community. We bring together developers, policymakers, academia, global experts, and hundreds of member businesses for critical discussions and networking opportunities.

The Network applauds the New Jersey Board of Public Utilities ("NJBPU") on its groundbreaking efforts to holistically evaluate the benefits and risks of coordinated U.S. offshore wind transmission configurations. New Jersey's efforts – and the state's offshore wind program as a whole – are at the leading edge of the rapidly-expanding U.S. offshore wind industry.

The Network also commends NJBPU, NJBPU staff, consultants supporting NJBPU's transmission efforts, and all the panelists for a well-run and thought-provoking Technical Conference on February 26, 2021. In combination with the Federal Energy Regulatory

Commission (FERC)'s October 27, 2020 [Technical Conference regarding Offshore Wind Integration in RTOs/ISOs](#), there is growing consensus across a diverse range of industry stakeholders that states, including New Jersey, cannot exclusively rely upon the incumbent generator lead-line interconnection approach to achieve their respective offshore wind targets.

The Network, as (1) convener of the principal offshore wind industry participants, and (2) stimulator of the U.S. offshore wind supply chain, considers transmission challenges to be an existential constraint upon the ability of the offshore wind industry to reach its full potential in the United States. New Jersey and other offshore wind-interested U.S. states all face this same hard truth.

Non-incumbent generators face a number of challenges under the current generator lead-line interconnection approach. The majority of coastal, easy-to-access points of interconnection have already been secured by incumbents. This requires new market entrants and non-incumbents to look further inland to the higher voltage transmission network where there is available capacity, as noted during the February 26, 2021 Technical Conference. The continued use of radial export cables will likely add additional cost and time to the development of future offshore wind projects. A coordinated offshore wind transmission approach, if implemented correctly, could serve to increase competition by providing increased capacity and access to the onshore grid

In its [Offshore Wind Transmission White Paper](#) (“Network Transmission Paper”), published in October 2020, the Network analyzed and explored the benefits of several offshore wind transmission planning options. See, Network Transmission Paper at 38. The report also provides six recommendations that policymakers should consider as they plan how to best resolve the seemingly intractable “chicken and egg” challenge of offshore wind generation versus transmission development. The six recommendations are summarized as:

1. Integrated transmission planning should weigh all benefits.
2. Transmission planning should incorporate public policy objectives.
3. Plan proactively.
4. Plan for a longer time horizon.
5. Quantify all benefits.
6. Better synchronize inter-regional planning.

See, Network Transmission Paper at 20. As detailed below, New Jersey has already made significant progress on virtually all six of these fronts. However, given the exploding global offshore wind industry, the Network urges New Jersey to maintain this forward momentum.

First, New Jersey has identified and started to quantify the benefits associated with planned offshore wind transmission solutions. New Jersey’s [Energy Master Plan](#) (EMP) notes that “planned transmission to accommodate the state’s offshore wind goals provides the opportunity to decrease ratepayer costs and optimize the delivery of offshore wind generation into the state’s transmission system.” See, Energy Master Plan, at 117. The EMP also observes that a coordinated offshore transmission approach may lead to better environmental outcomes,¹ enhanced grid stability, and significantly reduced permitting risk.

A planned offshore transmission approach can improve overall grid reliability and stability by providing multiple paths for power to flow to shore. The real-world consequences of maintaining grid reliability have been dramatically illustrated by the recent power outages in Texas, and the rolling blackouts across California during August 2020. In the event of an offshore cable failure, a coordinated offshore grid with multiple paths reduces the risk to consumers and wind farm operators of having gigawatts of offshore wind generation assets unable to deliver power for extended periods of time while radial cable issues are addressed. Multiple paths to shore can also reduce curtailments by enabling routing of power to unconstrained areas. Ratepayers

¹ Overall environmental impacts are, to some extent, proportional to overall cable length, and the sensitivity of the benthic environment off the New Jersey coast is not uniform.

benefit from these reduced curtailments and enhancements to reliability, and this value must be quantified and should be considered as New Jersey assesses its long-term offshore wind transmission options.

There are also benefits to the generator lead-line approach of interconnecting offshore wind facilities. NJBPU's February 26, 2021 Technical Conference highlighted many of these benefits, and the revenue, locational, and physical interconnection risks posed to offshore wind project developers by a shared transmission solution.

Second, in its [November 18, 2020 Order](#), NJBPU formally requested that PJM incorporate New Jersey's [7,500 MW offshore wind goal](#) into PJM's Regional Transmission Expansion Plan (RTEP) process. The Network commends NJBPU on this historic first use of PJM's State Agreement Approach (SAA).

The Network echoes some of the comments made by Lauren Thomas of PSE&G regarding the important of transparency to reduce the amount of risk that is priced into bids, and those of Sharon Segner of LS Power on the importance of ensuring that sufficient detail is provided regarding the transmission alternatives being proposed as well as their underlying financial framework.

It is also essential to ensure sufficient transparency with respect to the evaluation criteria that will be used to assess the alternatives offered under the SAA. NJBPU's November 18, 2020 Order outlines three very different options that will likely result in materially different costs and benefits:

1. Upgrade PJM transmission system to shore substations
2. Upgrade shore substations to over beach crossing to new (wet) collector stations
3. Interconnecting collector stations in a "network" or "backbone"

Prospective transmission developers will need to assess which option, or combination of these options, is likely to offer the greatest value to New Jersey ratepayers, and how PJM and NJBPU will quantify this value.

Third, New Jersey has proactively planned for longer time horizons through the development of the [New Jersey Offshore Wind Strategic Plan](#) (“OSWSP”), the state’s transmission investigation, and other aspects of its offshore wind program. The Network encourages New Jersey to maintain this long view beyond 7,500 MW of offshore wind capacity. This is important for several reasons, most notably the state’s goal of achieving 100% clean energy and at least an 80% reduction in greenhouse gas emissions by 2050.

The EMP defines New Jersey’s goal of “100% clean energy by 2050” to mean 100% carbon-neutral electricity generation by 2050. See, EMP at 11, 34. Offshore wind is central to meeting New Jersey’s 2050 energy goals in a cost-effective and timely manner. See, OSWSP at 74. In fact, the energy modeling conducted in support of the EMP concluded that the least-cost scenario for New Jersey to meet its 2050 100% clean energy goals included **11 GW of offshore wind**. See, EMP at 105; OSWSP at 74; New Jersey Department of Environmental Protection Global Warming Response Act [80 x 50 Report](#) at 68 (emphasis added). Offshore wind is a massive clean energy opportunity for New Jersey’s long-range decarbonization goals, but, without a planned or coordinated offshore transmission approach, the probability of achieving this 11 GW figure is low.

Moreover, this 11 GW prediction is just one of several data points suggesting that the New Jersey offshore wind market is, in fact, larger than 7,500 MW by 2035. Perhaps more significantly, over the past approximately twelve months, offshore wind markets in Europe and Asia have seen

oftakers – including Amazon – execute massive corporate power purchase agreements (“PPAs”) for offshore wind-generated electricity.

The corporate PPA trend is only likely to expand. In January 2021, brands like Amazon, Facebook, Google, Microsoft, Clorox, General Motors, Disney, Johnson & Johnson, McDonald’s, Target, and Walmart signed onto a [statement](#) from the Renewable Energy Buyers Association (“REBA”) laying out corporate America’s significant demand for the clean electricity that will allow them to meet their own aggressive decarbonization goals. Although a [920 MW corporate PPA](#) for offshore wind was executed in Taiwan, European deals have tended to be in the hundreds of MW. The development of a shared offshore transmission grid could improve project economics to develop facilities with lower cumulative nameplate capacities, which could unlock new revenue streams, in the form of new private offtake opportunities, that might not otherwise be feasible for offshore wind developers to pursue. Offshore wind developers could bid into future New Jersey solicitations while simultaneously negotiating private offtake agreements, then leverage economies of scale by constructing a single facility whose output is allocated accordingly.

Furthermore, utilizing an innovative transmission framework that enables offshore wind corporate PPAs would enable New Jersey to achieve its clean energy policy goals without solely relying upon New Jersey ratepayers. Some of the aforementioned corporate giants (Target, WalMart, McDonald’s) who have recently voiced their clear demand for large amounts of renewably generated electricity have dozens or hundreds of locations in New Jersey alone. This is a not-insignificant amount of electricity, and New Jersey is in a position to enable offshore wind to be the resource of choice to serve that demand. Constructing a planned, integrated offshore transmission system that would unlock economically viable and cost-competitive offshore wind projects at the sub-gigawatt scale may present very attractive opportunities for corporate PPAs.

Established markets in Europe are seeing record-breaking auction sales for offshore wind lease space and are putting steel (and concrete) into the water in fixed-bottom and floating offshore wind arrays. During 2020, Europe invested \$31.8 billion into offshore wind. There are now 162 operation offshore wind projects globally, with 200 GW in development. The European Commission ultimately aims to have 300 GW of European offshore wind capacity online by 2050, and the Offshore Renewable Energy Action Coalition (OREAC) envisions 1,400 GW of offshore wind deployed globally by 2050.

Asian markets are also exploding, with China – having installed 2.1 GW during 2020 alone - poised to soon surpass Germany and perhaps even the United Kingdom in terms of deployed offshore wind capacity. Japan recently committed to bring 45 GW online by 2045, and South Korea has announced a \$43 billion investment into what is planned to be an 8.2 GW offshore wind facility.

Mature markets in Europe are also leading on innovative offshore grid solutions. The Kriegers Flak Combined Grid Solution (KF CGS), fully operational as of December 2020, connects the Danish and German electricity grids via the Kriegers Flak (Denmark) and Baltic 1 & 2 (Germany) offshore wind facilities. KF CGS enables transmission of offshore wind generated power and cross-border trading of electricity. Denmark and Germany are already moving forward with more ambitious plans to construct [two offshore energy hubs](#) in the North and Baltic Seas.

The North Sea energy hub will be sited on an artificially constructed island approximately 50 miles west of Jutland, with an approximate cost of \$34 billion. This facility – “[the largest construction project in the history of Denmark](#),” according to the Danish Ministry of Climate, Energy and Utilities - will have an initial capacity of 3 GW, could be scaled to 10 GW, and will be connected to Germany, as well as the power grids of other North Sea countries, like the

Netherlands, Belgium, and the U.K. Like the KF CGS, these interconnections create opportunities for cross-border power trading, which helps stabilize each country's grid, increase liquidity, and enhance competition. The target completion date for the North Sea energy hub is 2030.

The second energy hub, planned for the naturally occurring Baltic Sea island of Bornholm, will have an initial total capacity of 2 GW, and will link the German and Danish grids. 50 Hertz (German TSO) and Energinet (Danish TSO) have signed a letter of intent to collaborate on the Bornholm Energy Island. Future ambitions for the Bornholm project include interconnecting the Baltic countries, like Poland, Estonia, Latvia, and Lithuania.

New Jersey's third offshore wind solicitation is scheduled to be released in 2022, likely following lease auction(s) in the New York Bight. This will bring new developers, including non-incumbents, into a position to enter the New Jersey offshore wind market. The ability of developers to compete and participate in future New Jersey offshore wind capacity solicitations will depend heavily on the ability to interconnect to the New Jersey grid, and to price that into bid proposals. Early clarification on the development process and confirmation of timelines for offshore backbone transmission will be critical to the success of future solicitations.

The Business Network for Offshore Wind appreciates this opportunity to provide comments regarding New Jersey's offshore wind transmission options and looks forward to continuing to work with New Jersey to aid the state in continuing to make its offshore wind industry a reality.

Very truly yours,



Brandon W. Burke
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Business Network for Offshore Wind