

May 20, 2022

Ocean Wind 2 Comments

**RE: Request For Additional Information In The Matter Of Declaring Transmission To Support Offshore Wind A Public Policy Of The State Of New Jersey
Docket No. QO20100630**

Ocean Wind II, LLC (“Ocean Wind 2”, “OW2” or the “Project”) is writing to provide comments to the “Offshore Wind Developers” questions in the New Jersey Board of Public Utilities’ (“BPU”) Request for Additional Information dated April 27, 2022 (and updated May 9, 2022) in the above-referenced matter (“Request for Additional Information”).

By order dated June 30, 2021 in Docket No. QO21050825 (the “BPU OW2 Order”), the BPU awarded OW2 Offshore Renewable Energy Credits (ORECs) in New Jersey’s second offshore wind solicitation in connection with OW2’s contemplated 1,148 MW offshore wind (OSW) generation project off the coast of New Jersey. The BPU’s OW2 Order anticipates Ocean Wind 2 Phase 1 to have a Commercial Operation Date (“COD”) of August 2028, with Phase 3 reaching COD in January 2029. In the order, the BPU specifically “encourages continued discussion and negotiation between BPU Staff and OW2 to determine if the use of “State Agreement Approach” (“SAA”) transmission capability, in lieu of part or all of the OW2’s existing interconnection plan, is in the mutual interest of OW2 and New Jersey ratepayers.” To evaluate the opportunity for utilization of any selected SAA proposals, OW2 has reviewed publicly available information and is providing comments to the Offshore Wind Developers questions in the Request for Additional Information in Docket No. QO20100630, the docket in which BPU requested that PJM Interconnection, LLC (“PJM”) incorporate New Jersey’s offshore wind goals into the PJM transmission planning process, via the SAA.

The Project commends New Jersey for the innovative and nation-leading SAA process to address the electrical grid interconnection challenges impacting offshore wind development. However, it is important to note that projects already awarded in New Jersey’s second offshore wind solicitation will face a different set of challenges and risks from the SAA process than projects proposed in New Jersey’s upcoming offshore wind solicitations. The Project’s comments below largely reflect the specific challenges facing OW2 and the implications of incorporating any selected SAA proposal into its design, permitting, construction, operations, and OREC pricing.

Offshore Wind Developers:

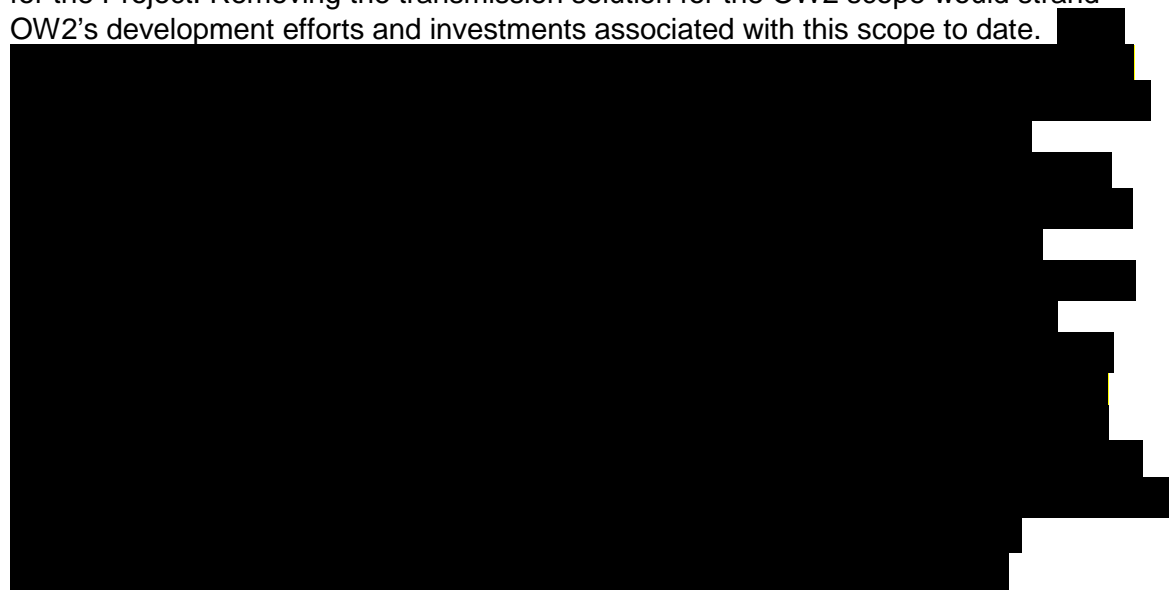
- 1. What are the most significant risks to completing your OSW generation project(s) on time and within budget if your project relies on one or more SAA transmission projects? How can those risks be best mitigated?**

OW2 was bid prior to the BPU's initiation of the SAA process. OW2 therefore did not base its proposal to incorporate the additional risks, costs, and timeline impact of relying on a SAA transmission project in its awarded OREC price. OW2 bid the OREC price based on OW2 developing and operating the power export solution for the Project. By designing, constructing, and operating the transmission solution, OW2 is best able to manage the cost, schedule, permitting and operational risks. SAA Options 2 and 3 would remove most of the transmission system from the OW2 project scope, and therefore, reduce OW2's ability to influence and manage related risks. Without control of the development, construction, permitting and operations phases of the transmission solution, OW2 anticipates changes in the project risk profile related to cost, schedule, and availability. If OW2 was to utilize an SAA proposal, OW2 would likely require mitigating measures to protect it from these additional risks.

SAA Option 2 or 3

Cost Risks

OW2 has made significant expenditures on electrical system designs, permitting, site investigations, real estate, and stakeholder outreach to meet the COD timeline outlined in the BPU OW2 Order. SAA Options 2 and 3 would remove the transmission solution from the scope and likely require a reconfiguration of the electrical system design of the Project, require redrafting significant portions of the federally required Construction and Operations Plan, and require new associated agency outreach and nearshore and onshore environmental and regulatory analysis. All of this would create additional costs for the Project. Removing the transmission solution for the OW2 scope would strand OW2's development efforts and investments associated with this scope to date.



[REDACTED]

Schedule Risks

With responsibility for the development and construction of the power generation and transmission segments of the Project, OW2 is currently able to ensure that the completion of the transmission solution is timed to align with the energization of the generation segment. Separating responsibility for the development and construction of those two segments increases the risk that energization of the generation asset and Project COD will be delayed due to misaligned permitting and construction schedules, PJM tariff requirements, and/or legal challenges.

[REDACTED]

Once permitted, both the OW2 Project and any successful SAA proposal would need to closely coordinate their construction schedules and specifications. If the transmission system is not available for energization when planned, the Project COD will be delayed. Offshore wind generator installation schedules are planned multiple years in advance to enable the generation developer to secure vessels capable of installing the wind turbine generators (“WTGs”) and other offshore components. If the transmission system is late or inconsistent with the agreed specifications, the Project would experience delays in its COD, as well as be subject to potentially increased O&M costs in the event of unplanned WTG idling.

The ongoing PJM tariff reform adds additional uncertainty for OW2. [REDACTED]
[REDACTED] It

remains unclear to OW2 how it would be able to change its current point of interconnection (“POI”) to an offshore substation that is not yet constructed and maintain its queue position. OW2 is concerned that it may be required to abandon its current queue position and file a new interconnection request, which likely would cause delays to its COD.

[REDACTED]

Operational Risks

In addition to cost and schedule risks, removing operation of the transmission solution from OW2 scope creates potential misalignment between the generator and transmission operator. The transmission operator may not be incentivized or capable of maintaining or optimizing the transmission line in a manner that enables maximum availability and deliverability of the offshore wind power.

[REDACTED]

Mitigation Opportunities

[REDACTED]

SAA Options 1a and 1b

[REDACTED]

If Option 1a or 1b did not include OW2’s Smithburg POI, or OW2 was required to change its POI to participate in the SAA, OW2 would likely need to withdraw its current interconnection request and submit a new interconnection request for a new POI. The timing of a new request and its impact on the Project schedule remains unclear to OW2 due to the ongoing PJM tariff reform process.




2. **For new Bureau of Ocean Energy Management (“BOEM”) leaseholders, are there concerns about obtaining a PJM queue position given that a Board decision on the SAA may constrain the potential points of interconnection (“POIs”) for future New Jersey OSW projects? Please describe the considerations related to utilizing SAA POIs and how OSW developers might switch from their queue positions (if already acquired) to the SAA-provided POI.**

OW2 remains concerned about its ability to transfer its existing PJM interconnection applications to use SAA POIs without losing its position in the queue. OW2 believes a mechanism for existing projects to switch its current queue positions to a SAA POI is required without it being deemed a material modification by PJM. Such a mechanism would be critical to enable OW2 to shift to POIs not yet constructed without losing its queue position. This mechanism would also enable the BPU to coordinate a more efficient use to optimize any SAA proposal selected.

3. **If the Board were to select one or more Option 2 proposals under the SAA— onshore substations to offshore collector platforms (see, the November 18, 2020 Board Order under this same docket for more information on the Options¹)— please provide additional details and considerations for connecting and coordinating OSW generation projects in terms of the costs, timing and operability of the OSW generation projects.**

To evaluate the cost, timing, and possibility of interconnecting OW2 to a SAA Option 2 proposal, OW2 would require additional information on:

1. The precise location of the offshore collector station and what site investigation information is available along the route between the OW2 lease area and SAA proposed collector station. This information is critical to design the route, prepare permits, design the electrical system, and determine Project costs. 
2. The SAA Option 2 proposal’s project timeline, including site investigation, permitting, and construction schedules. OW2 requires this information to align and optimize permitting and construction schedules with the SAA Option 2 project. Without this information, OW2 will not be able to secure permits in a timely manner and experience construction schedule misalignment with the SAA

project resulting in stranded assets and additional costs for the transmission owner, generator, and NJ rate payers.

3. The technical specifications of the offshore substation and transmission system. This information will be critical to determine what equipment would be required for OW2 to connect at the substation and estimate associated capital expenditures, operating expenses, and losses along the export system.
4. The modalities of connection such as SCADA interactions, revenue metering, protection architecture, compliance requirements to establish appropriate interconnection interfaces.

In addition to additional technical information from the transmission developer, it will be critical to secure a better understanding of how the PJM tariff reform and SAA process will work together. Specifically, how existing queue positions looking to transfer to the SAA proposal will be handled by PJM. Under the proposed PJM tariff reform process, the generator would need to identify the precise location and technology (HVDC or HVAC) of the point of interconnection, in this case the offshore substation, in its interconnection application. [REDACTED]

[REDACTED]

A mechanism to change the physical point of interconnection for currently active applications, without triggering a major modification by PJM, likely would be required to maintain project timelines.

4. **If the Board were to select one or more Option 3 proposals under the SAA—offshore network connecting lease areas and substations to each other—please provide additional details and considerations for connecting and coordinating OSW generation projects in terms of the costs, timing and operability of the OSW generation projects.**

To fully evaluate the cost, timing, and possibility of interconnecting OW2 to a SAA Option 3 proposal, OW2 would require additional information on:

1. The precise location of the offshore collector station and what site investigation information is available along the route between the OW2 lease area and SAA proposed collector station. This information is critical to design the route, prepare permits, design the electrical system, and determine project costs. [REDACTED]
2. The SAA Option 2 proposal's project timeline, including site investigation, permitting, and construction schedules. OW2 requires this information to align and optimize permitting and construction schedules with the SAA Option 3 project. Without this information, OW2 will not be able to secure permits in a

timely manner and experience construction schedule misalignment with the SAA project resulting in stranded assets and additional costs for the transmission owner, generator, and NJ rate payers.

3. The technical specification of the offshore substation and transmission system. This information will be critical to determine what equipment would be required for OW2 to connect at the collector station and estimate associated capital expenditures, operating expenses, and losses along the export system.
4. The modalities of connection such as SCADA interactions, revenue metering, protection architecture, compliance requirements to establish appropriate interconnection interfaces.

In addition to additional technical information from the transmission developer, it will be critical to secure a better understanding of how the PJM tariff reform and SAA process will work together. Specifically, how existing queue positions looking to transfer to the SAA proposal will be handled by PJM. Under the proposed PJM tariff reform process, the generator would need to identify the precise location and technology (HVDC or HVAC) of the point of interconnection, in this case the offshore substation, in its interconnection application. [REDACTED]

[REDACTED] A mechanism to change the physical point of interconnection for currently active applications, without triggering a major modification by PJM, likely would be required to maintain project timelines.

5. If an SAA Option 2 or Option 3 proposal is selected, is there any situation in which an OSW generation project would not be able to use the SAA Option 2 or Option 3 solution?

Ocean Wind 2 considers the following when evaluating SAA Option 2 or 3 proposal feasibility:

1. Does the proposed developer and operator meet the Project's safety and environmental standards?
2. Will the transmission system be available in time for Ocean Wind 2 to meet the BPU award COD dates or will it create any delays for OW2?
3. Can the Project transfer or amend its current PJM interconnection application for the proposed POI and not lose its position in the queue or trigger a major modification by PJM?

Safety and Environmental Standards

The top priority of the Project is to maintain strict health, safety, and environmental ("HSE") standards during development, construction, and operations. OW2 holds its service providers and partners to the same standards. Any SAA proposal must demonstrate a similar commitment and meet OW2's HSE requirements before OW2 would agree to participate. These standards are critical when working in harsh conditions

and environmentally sensitive ecosystems like those found off the coast of New Jersey. Maintaining these high standards is critical to protecting the Project and the emerging offshore wind industry's license to operate. If OW2 does not believe an awarded SAA Option 2 or 3 proposal can meet the Project's safety and environmental standards during the development, construction, and operation phases, OW2 would find utilization of the SAA proposal infeasible.

Project Schedule

Maintaining the Project's COD set forth in the BPU OW2 Order is an important priority for New Jersey and OW2. From public information available from the SAA Option 2 and Option 3 proposals, OW2 is concerned that none of the SAA Option 2 or 3 proposals would be completed in time to meet the OW2 2028/2029 COD. To meet the OW2 COD set forth in the BPU OW2 Order, the SAA Option 2 or 3 proposals would need to be available for use beginning in early 2028 or sooner.

[REDACTED]

PJM Interconnection Process

OW2 currently has an interconnection request submitted to PJM.

[REDACTED]

6. How should the Board consider the optimal locations for Option 2 substations? Should such determinations occur at the time of the Board's SAA decision or following the Board's OSW generation solicitations? If the location is determined after the generation solicitations, what type of coordination between generation and transmission developers would be required?

[REDACTED]



- 7. Describe if and how the primary transmission line technology used for the Option 2 proposal, HVAC or HVDC, affects the development – timing, sizing, locational considerations and costs – of new OSW projects.**

The HVAC proposals need to be evaluated very carefully in terms of feasibility, voltage stability, reactive compensation requirements, and grid robustness to ensure the system is suitable for offshore wind. Long distance HVAC proposals will face technical challenges and likely require reactive power compensators along the route. These additional offshore structures add permitting and stakeholder risks. For longer distances, HVDC become a more cost-effective technology. Current offshore wind turbines do not have the capability to operate at very low short circuit power and HVAC transmission in certain scenarios can increase the risks for such conditions. To mitigate this risk, the offshore wind developer may have to install synchronous condensers, which has not been done so far from shore and will face permitting, operating, and maintenance challenges.

- 8. For an Option 2 or Option 3 scenario, do you believe that the selection of HVAC or HVDC will affect the ability to receive federal funding that may prioritize “innovative” technologies? Please address availability of federal funding for transmission and/or federally-backed loans/loan guarantees.**

Yes, the selection of HVDC is likely to be considered a more innovative technology, thus increasing the likelihood of receiving federal funding, tax credits, and federally backed loans and guarantees

- 9. Describe how risks of cable outages are managed with HVAC versus HVDC technology, particularly where using large single HVDC lines for any offshore segment.**

Cable outages are generally assumed as a frequency per unit length of cable. HVDC will require less cable installed length than HVAC solutions, resulting in an improved theoretical availability. However, this may be counterbalanced by introducing a single point of failure along the transmission line.

10. For an Option 2 or Option 3 scenario, please address whether an HVAC or HVDC would better integrate into a multi-state or multi-regional offshore wind transmission grid? Should coordination or future computability opportunities affect the Board’s evaluation of proposals

The project does not have a position on this question.

11. How does the selection of an Option 2 transmission solution affect the permitting risk for OSW generation projects? What about an Option 1b?

[REDACTED]

[REDACTED]

12. Please share any other important risks associated with an Option 2 solution that can impact project development.

The HVAC Option 2 proposals need to be evaluated very carefully in terms of feasibility, voltage stability, reactive compensation requirements, and grid robustness to ensure the system is suitable for offshore wind. Long distance HVAC proposals will face technical challenges and likely require reactive power compensators along the route. These additional offshore structures add permitting and stakeholder risks. For longer distances, HVDC become a more cost-effective technology. Current offshore wind turbines do not have the capability to operate at very low short circuit power. The Option 2 HVAC proposals create the risks for such conditions. In order to mitigate this risk, the offshore wind developer may have to install synchronous condensers, which has not been done so far from shore and will face permitting, operating, and maintenance challenges.

[REDACTED]

13. Through what mechanisms should the risk of Option 2 or Option 3 cable failures be allocated? Does the potential risk for failure impact the preference for HVAC versus HVDC cables?

[REDACTED]

14. If an Option 2 or Option 3 proposal is selected, please detail the potential reliability and economic benefits.

[REDACTED]

15. For the build out of transmission facilities under the current generator radial lines approach, please provide additional details and considerations on the costs, feasibility, timing and operability of requiring OSW developers of future projects to utilize certain specified technology types, including potentially identifying common Original Equipment Manufacturers, requiring mesh ready offshore substations, or other future-proofing specifications. Further, please detail the anticipated coordination that would be required to eventually interconnect between mesh-ready substations, including any anticipated unavailability of OSW generation or other foreseeable risks.

[REDACTED]

16. For an Option 2 and Option 3 proposal, please provide additional details and considerations on the costs, feasibility, timing and operability of requiring OSW developers of future projects to utilize certain specified technology types, including potentially identifying common Original Equipment Manufacturers,

requiring mesh-ready³ offshore substations, or other future-proofing specifications. Further, please detail the anticipated coordination that would be required to eventually interconnect between mesh-ready substations, including any anticipated unavailability of OSW generation or other foreseeable risks.



OW2 appreciates the opportunity to provide comments to the BPU's ongoing evaluation of the SAA proposals. OW2 looks forward to further discussion with the BPU to determine if any SAA proposals could be utilized by the Project. If there are any questions regarding OW2's responses or the BPU would like to request any additional information, please reach out to the OW2 team.

Respectfully submitted,

Jonathan J. Forde
Ocean Wind 2 Development Director