September 27, 2022

To: Rhode Island Public Utilities Commission
From: Anbaric Development Partners
Re: **Docket No. 22-22-EL – The Narragansett Electric Company Draft Request for Proposals for Long-Term Contracts for Offshore Wind Energy Pursuant to the Affordable Clean Energy Security Act R.I. Gen. Laws Chapter 39-31**

Anbaric Development Partners (Anbaric) appreciates the opportunity to provide comments on the Narragansett Electric Company's Draft Request for Proposals for Long-Term Contracts for Offshore Wind Energy Pursuant to the Affordable Clean Energy Security Act R.I. Gen. Laws Chapter 39-31. Anbaric develops clean energy projects that supply renewable energy to customers and projects that optimize the power grid using energy storage. Anbaric is developing multiple offshore wind transmission projects in the Northeast and these comments draw on that work to focus on the challenges associated with integrating incremental offshore wind with the New England grid, and opportunities to rationalize offshore wind integration through the forthcoming offshore wind energy RFP.

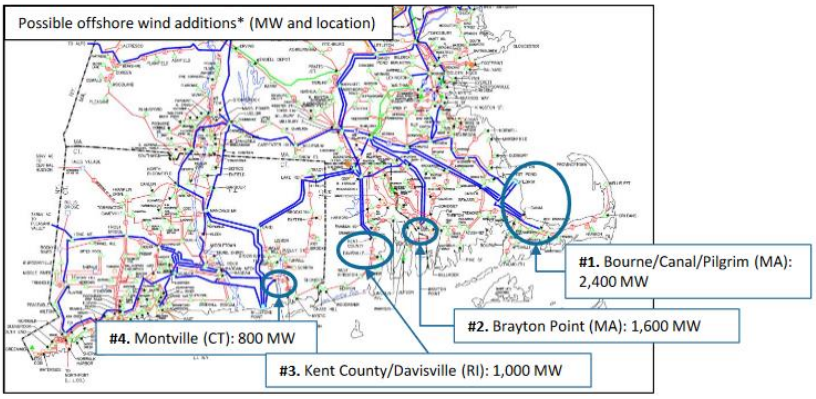
Context

Bringing offshore wind to shore and connecting to the terrestrial grid has become increasingly challenging in New England. Challenges are manifest in increasing interconnection costs and concerns about the environmental and community impact of a multiplicity of export cables spread across the seabed, numerous uncoordinated landing points for export cables, and terrestrial impacts of transmission from the shore to points of interconnection (POIs) with the ISO-NE grid.

Costs for interconnecting the next offshore wind projects will likely be significant. ISO-NE's 2019 Economic Study for NESCOE evaluated POIs in Southeast New England and identified injection capacities that could be accommodated at each POI (or POI cluster in the case of Cape Cod) before major new 345kV transmission are required (slide 3, excerpted below).

Study Finding: Anticipated Injection Capabilities Without Major Transmission Reinforcements

- Interconnection customers are proposing to use AC cable connections from the wind farm lease areas to coastal 345 kV substations
- Based on the currently expected transmission system for 2030, the ISO anticipates that the depicted levels (5,800 MW) of offshore wind additions have the potential to be accomplished without major additional 345 kV reinforcements*



*Some 345 kV reinforcement/expansion may still be needed for this scenario. This anticipation is preliminary (system impact studies have not been completed for all of these MW). This anticipates minimal interconnection at nameplate levels and capacity interconnection at intermittent capacity values – does not anticipate all of the MW being able to run simultaneously at nameplate levels at all times on the system.

Note that the numbering (#) of the interconnection points has changed from earlier PAC presentations

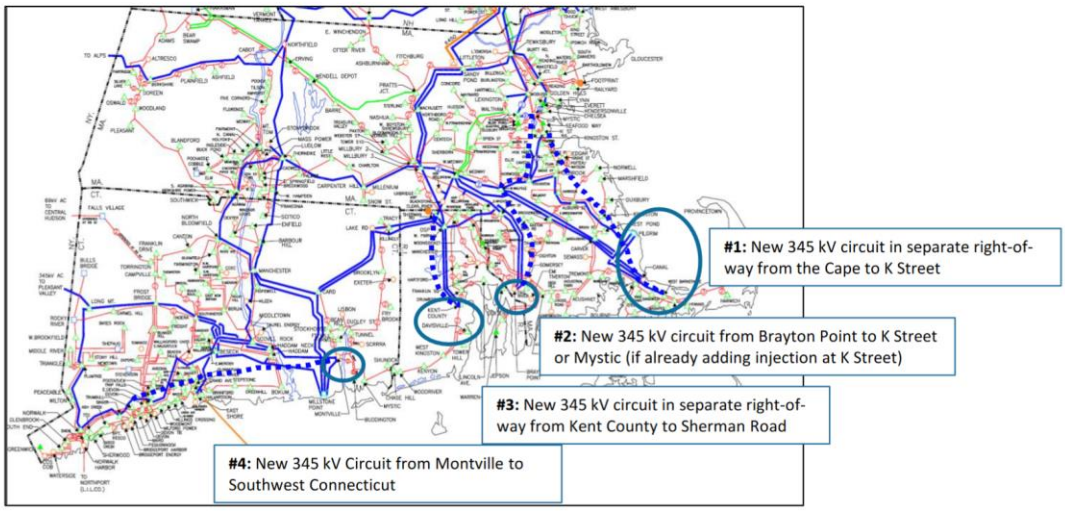
Offshore wind projects already contracted are using up almost all of this injection capability:

- Cape Cod: 2,800 MW total = 800 MW Vineyard Wind + 800 MW Park City Wind + 1200 MW Commonwealth Wind
- Brayton Point: 1,200 MW total = 800 MW Mayflower Wind I + 400 MW Mayflower Wind II
- Kent County/Davisville: 704 MW from Revolution Wind

Per ISO-NE's analysis, interconnecting 600-1,000 MW of additional capacity at these locations would require new 345kV transmission in new rights of way (RoWs) (slide 4, excerpted below).

Study Finding: Additional Southern Shore Injections Likely Require Significant Reinforcements

- Additional offshore wind injections at the interconnection points on the southern shore, above the levels shown on the prior slide, would require significant transmission reinforcements, as represented conceptually below



Siting challenges related to overhead transmission would likely require undergrounding new transmission, which could cost hundreds of millions of dollars and delay interconnection of needed offshore wind significantly. For example, if 600 MW to 1,000 MW is connected to Kent County/Davisville, new 345kV transmission in a new RoW would be required to Sherman Road substation in Burrillville. The straight-line distance from the Kent County substation to Sherman Road substation is 31.6 miles but given siting challenges for a new RoW the transmission would likely need to travel underground via roadways and other existing corridors, increasing the length to 40-50 miles. Relatively recent underground 345kV transmission projects in New England have averaged $19.5 million per mile (see slide 7 of presentation on recent projects submitted to ISO-NE). This per-mile cost implies an upgrade cost for just the new 345kV transmission from Kent County to Sherman Road of roughly $780 million to almost $1 billion. Upgrades for 600 MW to 1,000 MW connecting to Brayton Point or Cape Cod could cost 1.5 to 2 times as much (Brattle Group and CHA estimated the cost of new 345kV transmission from the Cape to Boston at $1.4 billion, see slide 82).

The extended timeframes required to complete onshore upgrades must also be taken into account. The last major transmission projects in Southeast New England – the New England East West Solutions (NEEWS) projects – took an average of 7.4 years to complete, with the longest duration project (NEEWS – IRP) taking 9 years from approval to entering service (see

Greater Boston Cost Comparison, slide 12). Backing into expensive projects with similar completion timelines would undermine achievement of Rhode Island's offshore wind and climate objectives and hinder efforts to attract offshore wind related jobs and economic development.

Regional Coordination on Transmission

Collaborating with other New England States to build an integrated offshore transmission grid would reduce costs and environmental impacts, and position Rhode Island to access federal funding from the Infrastructure Investment and Jobs Act. The Regional Transmission Initiative Request for Information issued by Rhode Island and four other New England States in September is an encouraging step toward such regional collaboration. The RFI notes:

> *"[A]dopting a new paradigm of planned, regional transmission investment for OSW integration has the potential to improve access to [offshore wind] and other clean energy resources; improve overall system reliability; and avoid significant, and potentially very costly, reliability upgrades to the landside transmission system".*

If Rhode Island collaborates with other New England States on a modular buildout of multiple 1,200 MW HVDC links, transmission costs would be shared among states. A 1,200 MW HVDC link be able to supply Rhode Island with 600 MW to 1,000 MW of offshore wind. Other states could subscribe the remaining capacity of a 1,200 MW line, or the federal government could serve as anchor customer for the remaining capacity under the new Transmission Facilitation Program including in the infrastructure bill.

Independent transmission can additionally serve as a platform for third-party purchases of renewable energy through power purchase agreements (PPAs), enabling financing and deployment of offshore wind without relying entirely on state-led procurements. In Texas, strategic investments in transmission through the Competitive Renewable Energy Zone (CREZ) program have enabled significant onshore wind deployment through corporate PPAs. In the Netherlands independent transmission has enabled corporate PPAs for offshore wind. Building on this experience, strategic investment in transmission can enable market-driven offshore wind deployment by large corporate and non-profit entities in the Northeast seeking local renewables to meet sustainability commitments.

For offshore wind in particular it is worth noting that independent, planned transmission is a necessary platform to enable small and mid-sized procurements pursued by third-party buyers. High voltage alternating current (HVAC) transmission systems for offshore wind are most economical in the 300 MW to 500 MW range, and high voltage direct current (HVDC) systems are most economical in the 1,000 MW to 1,400 MW range, both of which are far larger than most third-party buyers can support. However, by making transmission available to serve as a platform for procurement, states can enable third-party purchases and unlock a large source of demand.

Additionally, an independent transmission approach increases competition, as offshore wind bids no longer depend on queue priority, onshore upgrades, and utilization of scarce landfall

routes. In Germany and the Netherlands this independent transmission approach led to unsubsidized bids from offshore wind developers. And procuring transmission separately from generation increases competition for the transmission buildout itself. This increased competition further reduces costs, and is evident in comparing NJ's solicitation for offshore transmission – which received 80 bids from 13 bidders – versus MA's latest procurement for bundled generation plus transmission – for which there were only two bidders.

RFP Additions

In order to realize the potential benefits of regionalized offshore wind transmission, this RFP for offshore wind energy should include provisions that would facilitate integration of selected with farms with a regional ocean grid. The requirement for bidders to undertake commercially reasonable efforts to interconnect to regionalized offshore wind transmission included in the Commitment Agreement is an important step toward preserving the ability for Rhode Island to realize the benefits of a shared ocean grid.

Two additional provisions should be added to the RFP to enable potential utilization of shared transmission and to provide Rhode Island with additional information that will enable evaluation of the benefits of utilizing shared transmission.

First, the RFP should make explicit that prices paid by Rhode Island consumers would be reduced to reflect savings resulting from use of shared transmission. The RFP already notes in Section 2.2.3.4 Interconnection and Delivery Requirements, that:

> The amount paid for any energy and/or RECs under the PPA will be reduced to reflect any costs related to network upgrades and/or the interconnection of the project to the transmission system of the interconnecting utility that are collected under the ISO-NE Tariff or ISO-NE rules.

Regionalized offshore transmission facilities may be procured outside of currently existing ISO-NE rules, either through a Voluntary State Agreement, or through coordinated state-led procurement. Accordingly, the following clause should be added to accommodate such a scenario.

> The amount paid for any energy and/or RECs under the PPA will be reduced to reflect any costs related to network upgrades and/or the interconnection of the project to the transmission system of the interconnecting utility that are collected under the ISO-NE Tariff or ISO-NE rules or related to utilization of regionalized offshore transmission facilities procured by one or more New England States.

Rhode Island would also benefit from additional information on the technical and commercial implications of utilizing shared transmission. Having such information would facilitate comparison of utilizing project-specific generator lead lines versus interconnecting new wind farms to shared transmission. Accordingly, the following section should be included at the end of Section 2.2.3.4.

Bidders must describe how proposals would be affected if the Eligible Facility is connected to regionalized offshore transmission facilities. Bidders should describe technical and commercial provisions of the bid that would facilitate potential utilization of regionalized offshore transmission facilities. Bidders should describe technical design elements that enable potential interconnection with regionalized offshore transmission facilities. Bidders should describe how bids would be affected if projects interconnect to regionalized offshore transmission facilities and how the bidder would propose to share interconnection cost savings with Rhode Island Energy's customers if the Eligible Facility is connected to regionalized offshore transmission facilities.

Conclusion

The grid in Southeast New England is saturated with offshore wind and interconnecting the next increments of offshore wind may require major investments in transmission: either difficult and expensive 345kV transmission in new RoWs or larger, longer HVDC transmission links that route around constraints and connect to distant load centers. Imposing these costs on Rhode Island alone would increase the unit price of energy significantly and lead to a less efficient buildout of the grid to achieve New England-wide goals.

The Regional Transmission Initiative RFI is an encouraging first step toward developing shared, regional transmission for offshore wind and accessing federal funding. Designing this RFP to solicit information from bidders on potential integration with regionalized offshore wind transmission will enable Rhode Island to fully evaluate the impacts of utilizing shared transmission on costs, environmental impacts, and the ability to continue scaling offshore wind in New England.