hexicon

October 28, 2022

Comments of Hexicon USA, LLC in Response to Request for Information of The New England States Concerning Transmission of Offshore Wind

Hexicon USA, LLC ("Hexicon") submits these comments in response to the New England States' September 1, 2022 Request for Information regarding transmission for offshore wind in the New England region ("RFI"). Hexicon is a global floating offshore wind developer and technology provider and innovator with over 5 GW of projects under development. The New England region is projected to need 30 GW of offshore wind by 2050, much of which will be in the deeper waters of the Atlantic, with the first floating lease areas in New England set for auction in 2024.[1] The transmission that is designed and procured today will determine how *and whether* the region is able to technically and cost effectively scale offshore energy to the levels needed to meet not only near and mid-term energy targets, but also to address significant persistent and worsening power system reliability needs and the material increase in electricity costs that track fuel security vulnerability.

Hexicon applauds the identification by the New England states that transmission is enabling infrastructure for the significant energy cost savings, fuel security and system reliability, and job-creating and sustaining industry brought by offshore wind.

We encourage the New England states to plan and procure a capable transmission system that will integrate offshore wind at the scale needed to meet both climate and reliability needs, while doing so in a manner that will eliminate almost half of the offshore cabling and associated costs and environmental impacts of even "mesh-ready" radial export cables. These comments will discuss how up-front networking eliminates the single-source loss limit concern of 1,200 MWs and how a well-planned transmission system can use the same features that allows for power to instantaneously be rerouted if a 2 or 2.6 GW HVDC cable is lost, to allow system operators to move large amounts power around the system, directing energy to specific points and alleviating local power supply concerns. These comments will further discuss the tools that the states have to direct this design and procurement directly, including the June 2021 policy statement issued by the Federal Energy Regulatory Commission ("FERC") that affirmed that states may directly procure transmission – an undertaking already engaged in by Massachusetts and Maine – and may collaborate with entities like their RTOs, enlisting such organizations in a supporting role to a state-led process outside of the RTO-led regional transmission planning process.

[1] https://www.boem.gov/sites/default/files/documents/renewable-energy/state-activities/OSW-Proposed-Leasing-Schedule.pdf

1. The Need for a Capable, Well-Planned Offshore Transmission System: Reliability and Costs

The New England region has been increasingly challenged by winter reliability issues stemming from reliance on a just-in-time natural gas fuel delivery system that relies on nominations for fuel to be made well in advance of the operating hour, lack of firm service arrangements for natural gas generators, a paucity of gas storage, as well as market decisions. This reliance on a natural gas – which is often supplying over 60% of the region's energy needs – and a need for more fuel diversity from renewable energy, where most of the supply today in the New England region comes from 5.5 GW of behind the meter solar,[2] have resulted in regular warnings concerning system reliability.[3] As Commissioner Phillips recently stated at the September 2022 Open Meeting of the Federal Energy Regulatory Commission, the region is currently relying on "luck".[4] Offshore wind resources are necessary to move forward expeditiously for power system reliability in the face of degrading reliability of existing power generating assets and to provide energy cost relief to the region's consumers.

A period of colder winter temperatures during the winter of 2017-2018[5] resulted in a massive price adder to electric service due to the dramatic of spiking of natural gas prices over a short two-week period,[6] and challenges to system reliability. In contrast, **a 2020 study by the region's grid operator, ISO New England ("ISO-NE"), conducted in response to a request from a renewable energy developer, found that even 8GWs of offshore wind would reduce the production cost of electricity in the region by 50%, and cut carbon emissions by 1/3**.[7] These impacts did not scale in the ISO-NE study because of transmission system limitations, which led to curtailment of offshore wind with radial interconnections into the nearest shore points.[8]

The move to offshore wind has significant cost savings implications for consumers, with commodity price increases and spikes now at the level where larger offshore wind transmission and generation systems pay for themselves over a relatively short time period. This is further

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[2] https://www.iso-ne.com/about/what-we-do/in-depth/solar-power-in-new-england-locations-and-impact

[3] *See e.g., ISO-NE Warns Fuel Supply Issues May Threaten Winter Power System Reliability* https://www.powermag.com/iso-ne-warns-fuel-supply-issues-may-threaten-winter-power-system-reliability/; *Close Calls as Region's Power Grid Walks a Tightrope* https://commonwealthmagazine.org/energy/close-calls-as-regions-power-grid-walks-a-tightrope/

[4] Comments made by Commission Willie Phillips during the September 22, 2022 FERC open meeting. A recording of the meeting is available at the following URL: https://www.youtube.com/watch?v=DJzK-peYhT4

[5] https://isonewswire.com/2018/04/25/winter-2017-2018-recap-historic-cold-snap-reinforces-findings-in-operational-fuel-security-analysis/

[6] *See ISO New England, 2018 Annual Markets Report* at p. 1 "Energy costs totaled $6 billion, up 34%, or $1.5 billion, on 2017. The increase was driven by higher natural gas prices, particularly during the winter... ." https://www.iso-ne.com/static-assets/documents/2019/05/2018-annual-markets-report.pdf

[7] https://www.iso-ne.com/static-assets/documents/2020/10/2019-anbaric-economic-study-final.docx at 1 and 17.

[8] *Id.* at 17.

exacerbated by payments that have been necessary to retain non-pipeline dependent generation[9] and fuel supplies.[10]

The enormous impacts of planned transmission have already been seen in Texas. There, the nation's first and, by far largest, planned transmission system built in west-Texas to facilitate to-be-built onshore wind[11] has helped achieve **savings to date of $28 billion to Texas consumers,**[12] with several decades of additional savings still to be realized.

To address renewable energy goals and system reliability and cost issues, new transmission will be necessary.

The transmission system in New England is well understood and the grid in both Maine and southeastern Massachusetts is a system of limited power absorption and export capabilities. Simply interconnecting power to the closest substation is a recipe, not only for significant expense and a larger environmental footprint, but also for curtailment of power system injection more often than is desirable if the region is going to realize the value of its investments and decarbonize the grid. New England can meet projections of a need for at least 30 GWs of offshore wind, with 15 or 20 GW needed just for Massachusetts,[13] but it needs enabling transmission to be realized.

In the north, the limitations of the bulk power system in Maine are well studied and documented. The series of constraints moving from north to south have resulted in a limitation on the development of onshore wind in Maine.[14] Transmission systems are built to serve

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[9] The Mystic generating station in Everett, MA sought and received a cost of service agreement (sometimes referred to as a "reliability must run" or "RMR" agreement) with ISO-NE to remain in operation for reliability reasons. https://www.utilitydive.com/news/ferc-approves-cost-recovery-for-exelons-mystic-gas-plant/544978/ This followed a study by ISO-NE that found the Mystic, LNG fuel supply was necessary for system reliability. https://www.iso-ne.com/static-assets/documents/2018/01/20180117_operational_fuel-security_analysis.pdf

[10] https://isonewswire.com/wp-content/uploads/2022/08/DraftFERCTechConferenceEverettandEnergyAdequacyProblemStatement-8.29-final.pdf

[11] https://www.texastribune.org/2013/10/14/7-billion-crez-project-nears-finish-aiding-wind-po/

[12] https://www.utilitydive.com/news/texas-solar-and-wind-resources-saved-consumers-nearly-28-billion-over-12-y/634893/ (October 25, 2022). *See also*, American for a Clean Energy Grid's analysis from 2017: Texas as a National Model for Bringing Clean Energy to the Grid, "Few predicted the magnitude of the economic benefits of the Texas CREZ Project: annual electricity production cost savings of $1.7 billion per year plus another $5 billion in incremental economic development. With a service life of 30 to 50 years, **the benefits of the CREZ lines will return their construction cost of $7 billion many times over**." https://cleanenergygrid.org/texas-national-model-bringing-clean-energy-grid/

[13] *See Massachusetts Decarbonization Roadmap*, December 2020 at slides 15 and 55. https://www.mass.gov/doc/ma-decarbonization-roadmap-lower-resolution/download

[14] *See* ISO New England, *2021 Regional System Plan* at, e.g., Section 4.5.2 "Limited transmission infrastructure in northern and western Maine poses the primary obstacle to interconnecting new onshore wind resources. Current

electrical loads in an area and, increasingly, with some additional transfer capability. The Maine system north of very southern Maine was fully subscribed before it hit 1 GW of onshore wind, despite a state goal for double that capacity.[15] The issue is that the transmission system is unable to handle more significant injections of power. This resulted in a series of two "cluster" studies by ISO-NE.[16] Cluster studies group generation together so that multiple entities can share the cost of interconnection upgrades that may be too costly for a single generator. The cluster studies revealed the high costs of interconnecting new generation, and the need for new transmission to move new generation to load centers.[17] The cluster approach also proved too costly and the additional onshore generation and enabling transmission did not move forward. Since that time, additional capacity may be added to Maine with the New England Clean Energy Connect project, which was transmission procured outside of the RTO-process directly by Massachusetts to move additional hydropower from Canada into the region.[18]

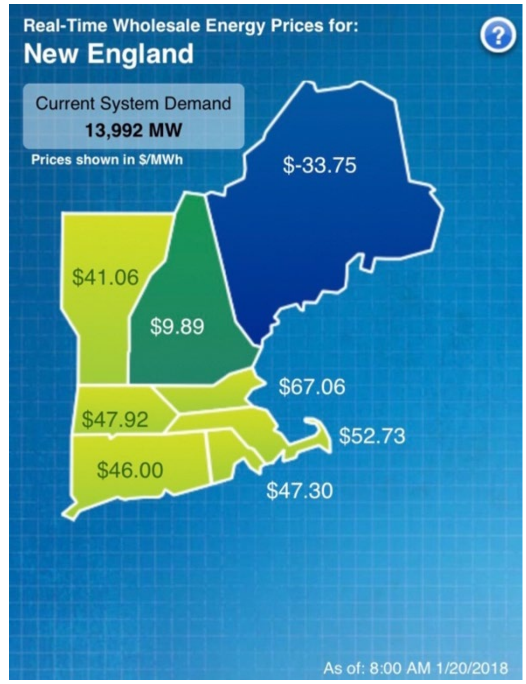

Figure 1: Snapshot of Regional Locational Marginal Prices

With the system at times export constrained, the lack of transfer capability can even be seen in the regional pricing wholesale energy price for power in certain hours. (**Figure 1**)

In the absence of coordinated, planned transmission, offshore generation bids as a bundled product with its own transmission export system. That transmission can be 20% to 30% of a given offshore wind project. The incentive for a bundled transmission and generation project is

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generator interconnections leave this part of the transmission system at its performance limit with little to no remaining margin. Each new interconnection request in the area involves lengthy and complex study work, identifies significant transmission infrastructure needs, and leads to individual project developers who are not able or willing to make sizable system upgrades that are required." And at fn. 72 "[Short circuit] [r]atios under 3.0, as is the case in much of Maine, pose particular technical challenges for establishing acceptable control system performance of the interconnecting inverter-based resources." https://www.iso-ne.com/static-assets/documents/2021/11/rsp21_final.docx

[15] *Ibid*.

[16] *2016/2017 Maine Resource Integration Study, Redacted Non CEII Version* https://www.iso-ne.com/static-assets/documents/2018/03/final_maine_resource_integration_study_report_non_ceii.pdf . Full versions of the ISO-NE cluster study reports are available from ISO-NE by completing their critical energy infrastructure information ("CEII") clearance process.

[17] *Final Second Maine Resource Integration Study, Redacted Non CEII Version* https://www.iso-ne.com/static-assets/documents/2021/01/second-maine-resource-integration-study-report-non-ceii-final.pdf

[18] The NECEC project has been the subject of extensive legal action and a now-overturned voter referendum.

to reduce transmission costs much as possible and seek the nearest point of interconnection. Turning to southern New England, the limitation of export cables seeking the nearest shore point was predicted in another ISO-NE study, where the grid operator found that the system could absorb approximately 5.8 GWs of offshore wind before onshore upgrades in the billions would be required.[19] (**Figure 2**)[20]

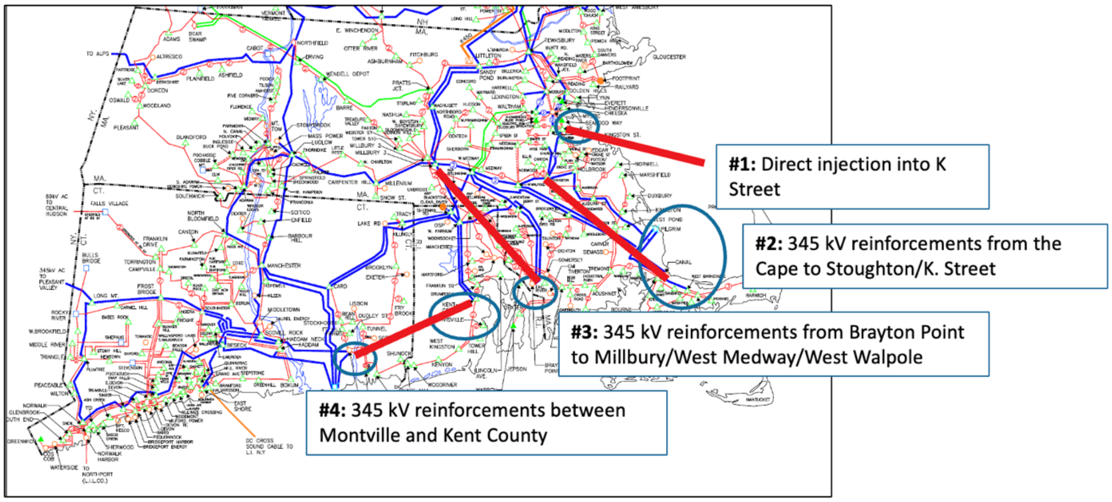

Figure 2: Onshore 345 kV Upgrades Needed in Southern New England Above 5.8 GW of Offshore Wind

By planning a transmission system of 1.2 GW cables to load centers, the system capability rises to over 11 GWs before significant onshore upgrades would be needed.[21] However, integrating still larger volumes of energy with more control and the ability to serve more areas can be realized with a more robust networked or "backbone" transmission system. This approach also significantly reduces the number, cost, and environmental impact of 1.2 GW export cables to load centers by allowing for the use of 2GW or 2.6 GW cables and provides for significant additional power system reliability benefits.

The prediction that the southeastern part of New England would quickly fill to capacity was borne out in practice. In October of 2020, ISO-NE launched a cluster study to address how to

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[19] The Brattle Group study commissioned by Anbaric Development Partners, *Offshore Transmission in New England: The Benefits of a Better Planned Grid* at 5. https://www.brattle.com/wp-content/uploads/2021/05/20360_offshore_wind_transmission_-_an_analysis_of_planning_in_new_england_and_new_york.pdf, ("Anbaric/Brattle Study") building on Planning Advisory Committee work of ISO-NE *2019 Economic Studies Detailed Assumptions* at 5 and 6. https://www.iso-ne.com/static-assets/documents/2019/08/a8_2019_economic_studies_detailed_assumptions.pptx ("August 19, 2019 PAC Presentation")
[20] August 19, 2019 PAC Presentation at 5.
[21] *Id.* at 13.

continue to integrate offshore wind into southern New England.[22] In the absence of a planned transmission system, suboptimal radials to the nearest point of interconnection will force onshore system upgrades with costs in the billions, and continue greater reliance on more expensive generating sources and continued exposure to fuel price volatility and geopolitical instability, instead of reaping billions of dollars in cost efficiencies to ratepayers.

2. A Well-Planned Offshore Grid, Design and Technology and the 1.2 GW Limit

"Mesh-ready" bundled export cable transmission designs have recently been embraced in New York and New Jersey appears to have followed suit, selecting a similar hub-type design with what appears to be a future program of continued bundled offshore generation with single-source loss size limited export cables.[23] While some network capability can provide limited potential benefits over a simple radial cable, the approach leaves the ability to design a more capable grid with a materially smaller footprint on the table.

The first issue is the loss of source limit. Where radial export cables are used – mesh-ready or not – the size of the cable is limited to a system's single source limit. In New England, this is a 1,200 MW value that was established in the past decade. The region has had a loss of source protocol going back into the early 1990s for Phase II. This "Procedure to Protect for the Loss of Phase II Imports" is an agreement between then New England Power Exchange, the New York Power Pool, and the then-smaller Pennsylvania, New Jersey, Maryland "PJM" power pool. When dispatch conditions across the three areas warranted, New England would back down its single largest loss of source to as low as 1,200 MW in certain hours. This check is still performed hourly by the three regions to this day. After a challenge resulting from the backdown of a nuclear generator in the region, the procedure was filed with FERC as Attachment G to the ISO-NE tariff.[24]

However, the Procedure to Protect for the Loss of Phase II does not contain a limit on the single source loss size. 1,200 MWs is not specified in the procedure and was agreed to as a *floor* to back the largest loss down to,[25] and is not a ceiling. Phase II regularly operates at well above the 1,200 MW level. The 1,200 MW single source limit was introduced in the last decade as a planning limitation in Planning Procedure No. 5. Radials export cables, again whether mesh-

[22] *Notice of Initiation of Cape Cod Resource Integration Study,* October 21, 2020 Presentation https://www.iso-ne.com/static-assets/documents/2020/10/a6_initiation_of_the_cape_cod_resource_integration_study.pdf
[23] *See* State of New Jersey, Board of Public Utilities October 26, 2022 Order in Docket No. QO20100630 at p. 45 "The future option value to build Option 3 facilities can be facilitated by requesting "mesh-ready" offshore substation designs in future OSW solicitations, as other states have done." (citing the NYSERDA mesh-ready approach).
[24] https://www.iso-ne.com/static-assets/documents/regulatory/tariff/attach_g/attachment_g.pdf
[25] System conditions in NYISO or PJM could result in a floor lower than 1,200 MW for the protocol, but NYISO and PJM will redispatch their systems so that the floor does not drop below the 1,200 MW number.

ready or simple connections with no expandability, cannot be larger than this 1,200 MW limit. New York sees a similar issue with mesh-ready export cables, there limited to 1,310 MW.

By networking cables up-front with HVDC breakers,[26] the loss of in-flow power on one line is rerouted in cycles to other lines and power continues to flow into the larger grid, supporting frequency and voltage so that additional reserves[27] to replace lost power above 1,200 MWs in order to meet NERC BAL standards are not necessary. In short: networking means that the loss of a, for example, 2 GW cable, does not result in the loss of 2 GW of power injections into the system. The power flow continues into the grid on other lines.

This can be accomplished with the following offshore substation designs in these graphics by DNV. The first is a ring-bus (**Figure 3**). It allows for power to be transferred between platforms in real time without switching lines in and out, and for the simultaneous export of power to shore while power is moved by system operators between other POIs.

[26] HVDC breakers are expected in projects outside of China, where currently in use, in the next five years, with the first installations being in Europeans transmission systems.

[27] "Reserves" are a service provided by generators to stand ready for the common occurrence of the loss of other generators or transmission lines on a power system. They are 10-minute synchronized (spinning) reserve. 10-minute non-synchronized (non-spinning) reserve, and 30-minute reserve (non-synchronized). System operators position the system so that at any given moment there are reserves available to cover 100% of the single largest contingency, and 50% of the next largest contingency.

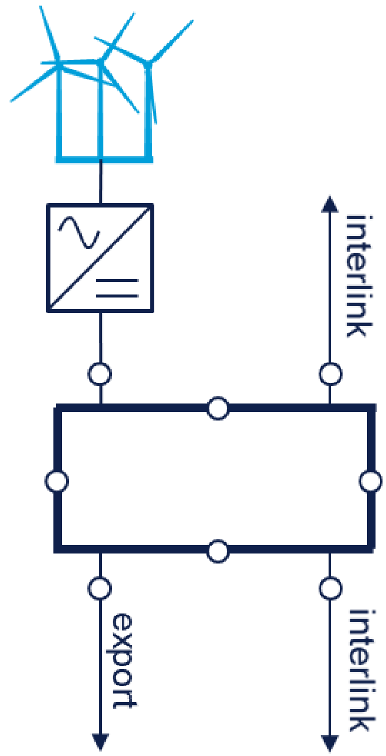

Figure 3: Offshore Ring Bus That Can Simultaneous Move GWs of Power Between Platforms and Export GWs of Power to Shore

A similar result can be achieved with a dual bus design (**Figure 4**):

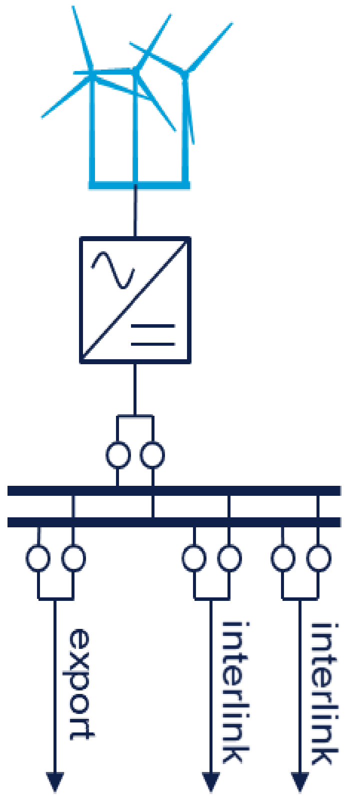

Figure 4: A Dual Bus Offshore Wind Substation That Can Simultaneously Move GWs of Power Between Platforms and Export GWs of Power to Shore

This capability comes into play in the next section, which depicts the design of a planned transmission system for New England. Freed from the 1.2 GW loss of source limit, the design reduces the number and associated costs and environmental impacts of the export cables, while allowing multi-GW power transfers to and from POIs around the grid, including enabling onshore power to utilize this expanded capability. This allows, for example, GWs of onshore wind in Maine to reach Connecticut, or southern New England legacy generation to directly supply Boston loads.

3. A Planned Transmission Grid for New England

A networked system for New England that could integrate ~20 GW utilizing 2 GW cables could be done with 10 export cables and look something like the following (**Figure 5**) versus the 17 cables needed utilizing 1.2 GW HVDC export lines:[28]

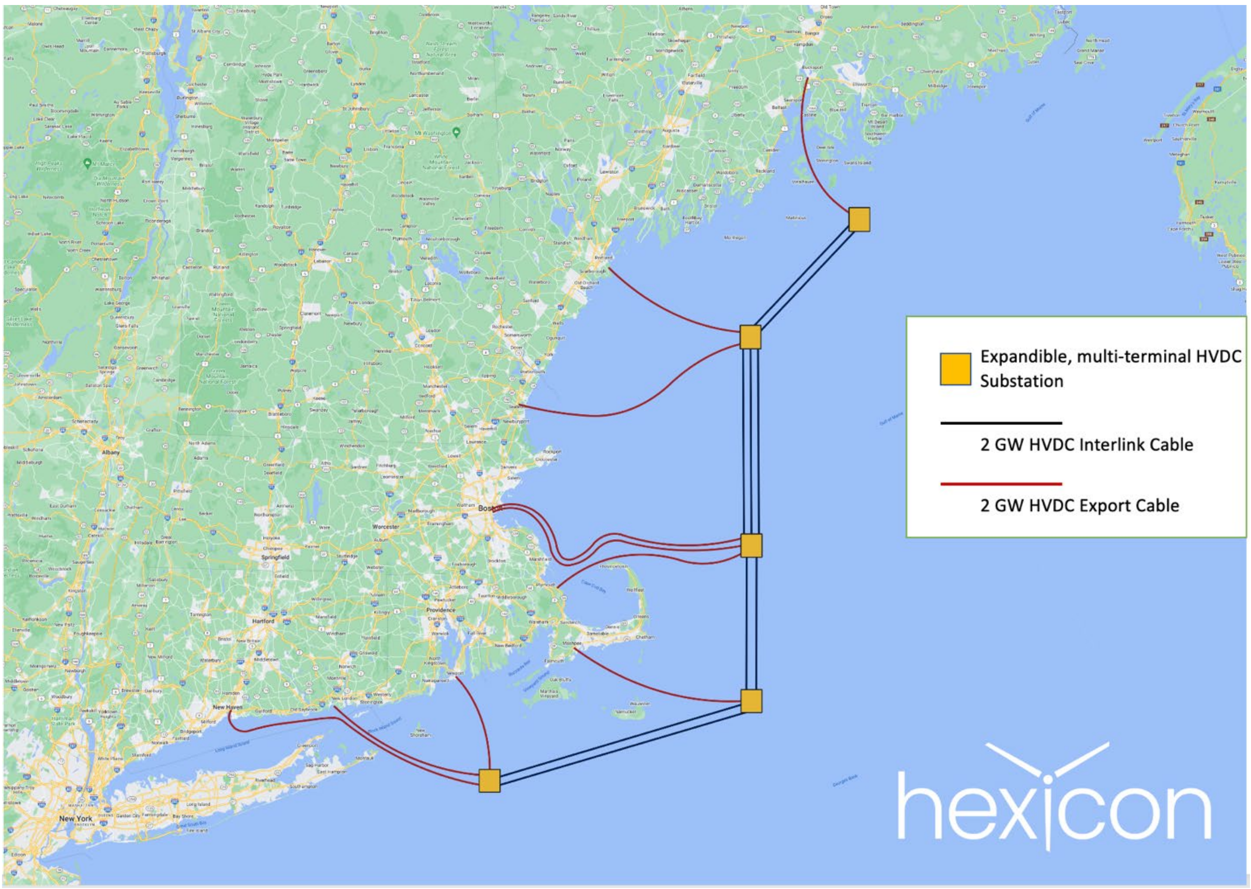

Figure 5: Planned Offshore Transmission System for New England Utilizing 2 GW HVDC Cables

[28] At 525kV, the emerging standard in Europe, 2 or 2.6 GW cables could be utilized. For example, designed for 525kV multi-terminal ready HVDC. Electric system operator, TenneT in Europe is procuring multiple 525kV HVDC multi-terminal ready systems for deployment of at least six transmission systems, which carry 2GW on each transmission cable, this decade. More information on TenneT's 2GW program can be found here: https://netztransparenz.tennet.eu/our-grid/offshore-outlook-2050/the-2gw-program/ New England could benefit from this planned transmission work that has set a supply chain standard at a capable level, reducing technology risks and lowering prices as a result of mass production. https://www.4coffshore.com/news/tennet-announces-hvdc-cable-tender-for-north-sea-grid-connections-nid26335.html

In the system depicted in Figure 5, the northern-most 2 GW (or 2.6 GW) cable allows for export of onshore wind and hydro from northern Maine from the Orrington area, or injections of offshore wind to serve northern Maine and New Brunswick. It also provides an expandible link to interconnect significant floating offshore wind in the Gulf of Maine, which otherwise does not have the needed transmission infrastructure in northern New England to be developed. This platform can also serve as a connector point for additional deep-water platform and connections to Maritime Canada offshore wind.

Coming south, a 2 GW line to the Portland, ME area allows for offshore wind to serve growing electrification load and alternatively provides another power export path for onshore Maine renewable energy. A line connecting the New Hampshire coast allows for imports of offshore wind and exports of power from the Seabrook nuclear power station – power that could now directly be routed to many parts of the New England grid. Three platform interties form a highway for this northern New England / Southern New England interface and provides the necessary infrastructure for development of the offshore wind in the Gulf of Maine that will be needed to provide the region with a substantial portion of anticipated 30 GW.

Two export lines into the Boston area form a first stage 4 GW design that can be expanded in later years, while a line to Plymouth, MA makes use of transmission infrastructure to enable transport of the first radially connected offshore wind farm power out of the constrained south eastern part of the system that is now the subject of ISO-NE cluster studies, which identify the need for significant transmission from SEMA to the Boston area.

A line to the Barnstable area of Cape Cod similarly allows for an export point and for system resilience when imports are needed from the larger grid, while southern Rhode Island similarly can make import or export use of a line. A line to southeastern, CT allows for power injections into the transmission system serving Millstone and legacy plants like fossil generating facilities at Montville and Middletown. This connection provides a significant source of offshore power to the area, while also allow for existing resources to export to other parts of the grid when needed for system reliability. Finally, the load in southwestern, CT is also integrated into the system, allowing for the significant price and environmental benefits of on and offshore renewable energy to efficiently reach the area.

4. State-Led Procurement

When it comes to policy-based transmission, the New England states have been clear that they disfavor the arrangement that was ultimately approved by FERC, after the initial compliance regime that provided state control was rejected in the Order No. 1000 process.[29] However, FERC has been clear in a recent transmission policy statement, issued in June of 2021, that states need not procure transmission through the RTO regional planning process, and instead may issue their own RFPs to procure desired system expansion.[30] There is already a history of direct transmission procurement in the region outside of the RTO-led planning process. Massachusetts issued an RFP and directed the contracting for transmission to import Canadian hydro power into Maine.[31] Just this week, Maine announced the selection of state-specified, and procured transmission to help enable interconnection of more onshore wind resources into the Maine system.[32] And several New England states have statutes that specifically provide for direct procurement of transmission generally or offshore wind specifically.[33]

In setting out its policy statement FERC explained:

> Developing cost-effective and reliable transmission facilities remains a priority of this Commission. Voluntary Agreements can further those goals by, for example, providing states with a way to prioritize, plan, and pay for transmission facilities that, for whatever reason, are not being developed pursuant to the regional transmission planning processes required by Order No. 1000. In addition, in some cases, Voluntary Agreements may allow state-prioritized transmission facilities to be planned and built more quickly than would comparable facilities that are planned through the regional transmission planning process(es).
>
> …in this policy statement, we clarify that neither the FPA nor the Commission's rules and regulations categorically preclude Voluntary Agreements among: (1) two or more states; (2) one or more states and one or more public utility transmission providers; or (3) two or more public utility transmission providers to plan and pay for new transmission facilities.[34]

This does not mean that there is no role for the technical expertise of regional planners. FERC noted that a state may choose to collaborate with an RTO.[35] This supporting role was recently seen in the state agreement approach in PJM, where PJM facilitated a competitive RFP and

[29] A May 30, 2019 presentation by the New England States Committee on Electricity, or "NESCOE", put it this way: "Is there a way to leverage ISO-NE Tx planning expertise – in a way that does not turn a state's public policy execution over to ISO-NE engineers?" https://nescoe.com/resource-center/tx1000-platts-may2019/

[30] State Voluntary Agreements to Plan and Pay for Transmission Facilities, 175 FERC ¶ 61,225 (June 17, 2021) ("FERC Policy Statement")

[31] https://macleanenergy.com/83d/

[32] https://www.maine.gov/tools/whatsnew/index.php?topic=puc-pressreleases&id=9382450&v=article088

[33] For example, Massachusetts and Connecticut have statutes that specifically allow for direct transmission procurement for offshore wind and collaboration with other states.

[34] FERC Policy Statement at 2 and 3.

[35] Id. at 3.

provided technical review and recommendations to a state-led approach. While PJM has provisions regarding such a process, FERC's policy statement does not require tariff language for such a collaboration, and rather expresses an invitation for entities to file to remove any tariff barriers that they believe may exist. In New England, states have already both directly procured transmission, as noted above, and engaged ISO-NE support in various study efforts over the years where the RTO has provided the role of technical expert to the states.[36] In short, the New England states are well positioned today to collaborate to solicit transmission to enable offshore wind and seek RTO technical support as needed, and need not utilize the ISO-NE public policy process or other transmission planning provisions of the ISO-NE tariff, but may choose to enlist ISO-NE's support in a state-led process.

With regard to cost allocation, while there is an *ex ante* cost allocation for public policy projects under the ISO-NE tariff, states need not rely on those provisions and may allocate costs among themselves as they see fit. The concern that states may not agree to an equitable allocation should be weighed against the alternative: states individually paying for significantly more transmission by themselves for each of their solicitations, only to get a far less capable or cost effective system for the investment.

Hexicon suggests that each participating state appoint a lead, high level agency representative to an empowered steering committee that will identify the type of transmission capabilities sought and work to issue an RFP for such a system. Criteria for project selection should review the integration of offshore wind, including minimizing environmental impacts, reducing energy costs directly and through system transfer capability and avoided energy security price spikes and subsidy programs, e.g. subsidies for retention of LNG facilities, as well as unlocking other renewable resources, and avoiding on shore system upgrades. Hexicon encourages states to look at the benefits in lowering energy costs, meeting climate targets, and avoided costs of going it alone in engaging in good faith cost sharing negotiations. As a default, for a grid like that depicted in Figure 5 above that directly benefits all New England states, participating states could pay for the offshore transmission system based on a load-weighted share, similar to the cost allocation utilized for reliability projects.

5. Conclusion

The acute reliability needs and climate policy goals of the New England states can be addressed through the large-scale procurement and deployment of offshore wind, much of which will be in the deeper waters of the Atlantic. Immediate power system reliability needs and state renewable energy goals are now inextricably intertwined, the latter is needed at scale and as

[36] *See e.g.,* New England Wind Integration Study, https://www.iso-ne.com/static-assets/documents/committees/comm_wkgrps/prtcpnts_comm/pac/reports/2010/newis_report.pdf (2010).

soon as possible to address the former. The procurement of a well-planned transmission system to enable renewables integration will save the region significant money and pay for itself over time, while providing the infrastructure needed to create thousands of good paying jobs in the trades. Business-as-usual, incremental planning approaches and are no longer options to solve for these pressing needs.

ISO-NE production cost studies and experience elsewhere in the country have shown, a well-planned system can maximize cost savings by incorporating larger amounts of $0 bid price renewable energy and collapsing market separation. Further, the type of transmission system described in these comments can do so while avoiding billions in otherwise needed onshore upgrades, materially reduce the number of offshore transmission cables needed – helping to address fisheries, navigation and marine life issues, and address system fuel security issues while improving overall power system reliability. These reliability benefits extend to a more robust power system that is also able to move onshore-generated power to where it is needed in other parts of the larger onshore grid.

Finally, the New England states have the tools and authority they need to begin a state-led transmission system procurement now. The sooner this work begins, the sooner the reliability, cost savings, climate, and job growth goals of the region can be achieved.

Respectfully submitted,

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