September 1, 2022

REGIONAL TRANSMISSION INITIATIVE

NOTICE OF REQUEST FOR INFORMATION and SCOPING MEETING

This Notice (Notice) of Request for Information (RFI) is being issued by the states of Connecticut, Maine, Massachusetts, New Hampshire, and Rhode Island (Participating States)[1] to solicit comment from interested stakeholders, electric transmission industry representatives, offshore wind developers, and others regarding changes and upgrades to the regional electric transmission system needed to integrate renewable energy resources, including but not limited to offshore wind resources, as well as significant other new renewable resources developed in areas of the region requiring new transmission to integrate into the New England bulk electric system. Participating States are also seeking comments on a conceptual framework for a multistate Modular Offshore Wind Integration Plan. The Modular Offshore Wind Integration Plan is available on the Regional Transmission Initiative web page and attached to this RFI as Exhibit 1. In addition, a major point of focus for the Participating States is securing access to federal funding, especially under the Infrastructure Investment and Jobs Act (IIJA), for any projects that result from possible future procurements. The Participating States seek comment on the best means to facilitate accessing these federal funds. The Participating States look forward to engaging with stakeholders throughout this process, which may include public meetings and further opportunities for written comments.

Background

The Participating States agree that New England and the Northeast region have important renewable energy resource potential, including offshore wind resource areas, in near proximity to load centers and that these resources will be an important element in meeting state goals and requirements.

For example, the Massachusetts *Energy Pathways to Deep Decarbonization* report, All Options scenario, assumed up to 30,000 megawatts (MW) of offshore wind by the 2040-2050 timeframe.[2] This scenario forms the basis of the future load assumption of the NEPOOL 2021

[1] Given Vermont's vertically integrated structure and the lack of any shoreline to act as a potential point of interconnection for offshore wind, which is a substantial, though not sole, focus of this RFI, Vermont will not act as a Participating State. However, Vermont is generally supportive of a regionally organized effort to gather information that will aid each state's planning activities and potentially facilitate federal funding opportunities for transmission upgrades and will remain a close observer of this Request for Information and may participate in subsequent discussions regarding its content and/or next steps. Vermont also shares the objectives of reliably greening New England's energy supply and grid while ensuring that ratepayer costs related to such efforts are minimized.

[2] *Energy Pathways to Deep Decarbonization*, December 2020, p. 113.

Economic Study – Future Grid Reliability Study and ISO – New England (ISO-NE) 2050 Transmission Study.[3]

ISO-NE's last major study of offshore wind integration, completed in 2020, indicated that as much as 5,800 MW of offshore wind additions have the potential to be interconnected into the existing grid without major new additional 345 kV reinforcements to the landside transmission system. Any significant quantity of offshore wind beyond that amount may not be able to interconnect into the regional grid without significant transmission upgrades. In addition, the most easily accessible interconnection points along the southern New England coast are already at or beyond their full capacity with those offshore wind projects under contract or review.

Experience has shown that the process of planning for, developing and building new transmission infrastructure takes many years. Therefore, if the Participating States wish to integrate significant additional amounts of renewable resources like offshore wind in the early 2030s and secure access to federal funding opportunities, it is necessary to begin the process of identifying the most effective interconnection sites and begin planning and designing the transmission infrastructure necessary to permit offshore wind integration, avoid curtailments, maintain system reliability, meet state policy goals, and accomplish this in a cost-effective manner. This planning could include the possibility of states collaborating in a procurement of transmission resources associated with future renewable energy generation. In this regard, the Biden Administration has publicly announced its commitment to improving the nation's infrastructure, including energy infrastructure, and its goal to develop as much as 30 gigawatts of offshore wind by 2035. IIJA includes provisions for funding the development of transmission projects that provide for regional reliability benefits and integrate renewable energy resources. The U.S. Department of Energy (DOE) anticipates having further details and specifics of the application process for this funding later this year. The Participating States will be reviewing guidance released by DOE in planning for future possible procurements consistent with these federal initiatives.

There have been important recent studies, reports and quantitative modeling exercises conducted by various other Northeast states, DOE, trade organizations, and specifically the ISO-NE that provide a rich, diverse set of insights into offshore wind and related transmission development strategies and pathways that may be viable in New England. In the Integrated Resources Plan recently released by the Connecticut Department of Energy and Environmental Protection (CT DEEP), one scenario concluded that, if transmission constraints in New England were eliminated, benefits to consumers would be significant.[4]

In December 2020, Massachusetts released the 2050 Decarbonization Roadmap to provide the Commonwealth with a comprehensive understanding of the necessary strategies and transitions

[3] Connecticut alone will need 11,052 MW of offshore wind, including that already contracted, to meet the state's 100% Zero Carbon Target. See, 2020 Integrated Resources Plan, issued December 2021.
[4] 2020 Integrated Resources Plan, p. 67.

in the near- and long-term to achieve Net Zero by 2050.[5] The Roadmap demonstrated that it is likely that based on cost and availability, the vast majority of new clean electricity for Massachusetts will come from renewable generation, particularly the world-class offshore wind resource off the New England coast. The pathways analysis forecasted approximately 15 GW of Massachusetts offshore wind by 2050, with New England's offshore wind capacity growing to more than 30 GW by 2050, unless purposefully constrained in the model.

The Maine Renewable Energy Goals Market Assessment released by the Governor's Energy Office in February 2021 evaluated multiple scenarios through which Maine could achieve its renewable portfolio standard requirement of 80% by 2030 and found a scenario including regional coordination with respect to transmission could significantly lower costs. The study also concluded transmission development will be key to achieving the state's renewable energy requirements and discussed various approaches for coordinated planning.[6] Furthermore, through the Maine Offshore Wind Roadmap, a U.S. Economic Development Administration-funded participatory initiative led by the Governor's Energy Office to create an economic development plan for the offshore wind industry in Maine, the state has released an offshore wind transmission initial technical review that discusses various considerations related to offshore transmission technology, innovation, coordination approaches, and potential benefits.[7] Given that Maine is earlier in the planning process, it will participate in the RFI process and observe the development of the southern New England MOWIP, all of which may contribute to Maine's thoughtful approach to advancing offshore wind.

New Hampshire has led the development of the Bureau of Ocean Energy Management (BOEM) Gulf of Maine Task Force and established the Commission on Offshore Wind and Port Development. The Commission issued a report noting the value that New Hampshire's workforce can provide in the development of supply chain operations, construction, and maintenance of offshore wind infrastructure.[8] The report also addresses New Hampshire's fisheries and the importance of limiting environmental impacts to those valuable resources, noting the need for a balanced approach to offshore wind development.

The most recent edition of the Vermont Comprehensive Energy Plan, published in January 2022, illustrates potential pathways to meet its legally binding carbon emissions reduction targets – many of which include offshore wind as a least cost resource. The Plan recognizes that its interconnectedness with its neighbors offers opportunities to access supply from a diversity of resources not otherwise available within Vermont's own borders with production shapes that could prove highly valuable in meeting decarbonization goals. To best meet these principles, Vermont, through the integrated resource planning processes of its vertically integrated distribution utilities, remains open-minded about the prospect of construction of transmission

[5] See Massachusetts 2050 Decarbonization Roadmap available at https://www.mass.gov/info-details/ma-decarbonization-roadmap
[6] Renewable Energy Goals Market Assessment, p. 61.
[7] Offshore Wind Transmission Technical Review – Initial Report
[8] See Report on Greenhouse Gas Emissions, and Infrastructure and Supply Chain Opportunities as it Relates to the Deployment of Offshore Wind in the Gulf of Maine available at https://www.des.nh.gov/sites/g/files/ehbemt341/files/documents/offshore-wind-deployment-report.pdf

facilities to enable procurement of offshore wind, as well as onshore resources within and outside of New England.

The Participating States are aware that the DOE is currently preparing an Atlantic Offshore Wind Transmission Study (AOWTS) which will evaluate multiple pathways to offshore wind goals through coordinated transmission solutions along the U.S. Atlantic Coast in the near term (by 2030) and long term (by 2050) under various combinations of electricity supply and demand while supporting grid reliability and resilience. The AOWTS is expected by the end of 2023. In addition, ISO-NE is conducting multiple relevant studies including the 2050 Transmission Study which is a comprehensive long-term regional transmission study designed to inform stakeholders of the amount and type of transmission infrastructure needed to cost-effectively integrate clean energy resources and meet New England states' energy policy goals and requirements. This effort by the Participating States is not intended to supplant any of these studies. Rather, the Participating States will use information provided through this RFI process, and results of the studies referenced above and others, to inform possible future actions with the goal of accessing federal funds. The Participating States intend to rely on results from such studies where appropriate rather than duplicating those efforts.

For the reasons described above, the Participating States are issuing this RFI to better inform each state's renewable energy planning and future procurement efforts. The Participating States will collaborate in reviewing responses to this Notice and in the development of any potential subsequent Request for Proposals. Nothing in this RFI commits any state or group of states to any future project, policy, or procurement. This RFI is for informational purposes only.

The Participating States reserve the right to issue follow up questions in response to any submittals received. Any written responses to such follow up will be posted on the Regional Transmission Initiative web page.

By way of this Notice, the Participating States announce that they will be holding a virtual meeting to provide any needed clarification to interested stakeholders on the questions raised in this RFI. The Participating States will issue a notice of the date and time for this virtual meeting at a later date.

The Participating States request written public comments on the following major topics relating to transmission planning and integration, as well as other transmission-related topics not listed below:

Comments on Changes and Upgrades to the Regional Electric Transmission System Needed to Integrate Renewable Energy Resources:

1. Comment on how individual states, Participating States, or the region can best position themselves to access U.S. DOE funding or other DOE project participation options relating to transmission, including but not limited to funding,

financing, technical support, and other opportunities available through the federal Infrastructure and Investment Jobs Act; and

2. Comment on ways to minimize adverse impacts to ratepayers including, but not limited to, risk sharing, ownership and/or contracting structures including cost caps, modular designs, cost sharing, etc.

3. Identify the advantages and disadvantages of utilizing different types of transmission lines, like alternating current (AC) and direct current (DC) options for transmission lines and transmission solutions. Should 1200MW/525kV HVDC lines be a preferred standard in any potential procurement involving offshore transmission lines?;

4. Comment on whether certain projects should be prioritized and why. For example, should a HVDC offshore project that eliminates the need for major land-based upgrades be prioritized over another HVDC offshore project that does not eliminate such upgrades;

5. Identify any regional or interregional benefits or challenges presented by the possibility of using HVDC lines to assist in transmission system restoration following a load shedding or other emergency event and particularly from using the black start capabilities of HVDC lines in the event of a blackout;

6. Identify the benefits and/or challenges presented by using land based HVDC lines or other infrastructure to increase the integration of renewable energy (other than offshore wind) in New England to balance injections of offshore wind;

7. Comment on the region's ability to use offshore HVDC transmission lines to facilitate interregional transmission in the future;

8. Comment on any just-transition, environmental justice, equity, and workforce development considerations or opportunities presented by the transmission system buildout and how these policy priorities are centered in decisions to develop future infrastructure;

9. Comment on how to develop transmission solutions that maximize the reliability and economic benefits of regional clean energy resources.

Comments on the Draft MOWIP:

10. Identify potential Points of Interconnection (POIs) in the ISO-NE control area for renewable energy resources, including offshore wind. What are the benefits and weaknesses associated with each identified POI? To the extent your comments rely on any published ISO-NE study, please cite accordingly;

11. Similarly, comment on whether there are benefits to integrating offshore wind deeper into the region's transmission system rather than simply interconnecting at the nearest landfall (*e.g.,* using rivers to run HVDC lines further into the interior of New England). If there are enough benefits to make this approach feasible, please comment on any obstacles, barriers, or issues that Participating States should be aware of regarding such an approach;

12. Identify likely offshore corridor options for transmission lines. Please comment on the potential for such corridor options, include size of the corridor footprint and potential number of cables that can be accommodated, to minimize the number of lines and associated siting and environmental disturbance needed to integrate offshore wind resource. For any offshore corridor identified, please indicate how the corridor avoids or minimizes disturbances to marine resources identified in the applicable plan, including the Connecticut Blue Plan and the Massachusetts Ocean Management Plan;

13. Identify strategies to optimize for future interconnection between offshore converters, either AC or DC, to permit power flow between converters to facilitate the transmission of power from offshore to multiple POIs as needed. Similarly, comment on the ability of offshore converters from competing manufacturers to communicate with one another in this future case;

14. Comment on the benefits and/or weaknesses of different ownership structures, such as a consortia of developers with transmission owners or use of U.S. DOE participation as an anchor tenant through its authorizations in the federal Infrastructure and Investment Jobs Act, for new offshore transmission lines;

15. Comment on cost allocation mechanisms that would prevent cost-shifting between the states based on their policy goals and ensure that local and regional benefits remain quantifiably distinct. How should any future potential procurement identify and distinguish local, regional, and state-specific benefits (e.g., reliability) such that ratepayers only pay for services that they benefit from?

16. Comment on the benefits and/or weaknesses of using a public-private partnership that might include one or more states or U.S. DOE as part owners with private developers or other sources; and

17. Comment on the co-benefits of landfalling offshore transmission lines, such as improvements to reliability and/or resilience (*i.e.*, through the use of HVDC converters or otherwise), economic development (*e.g.*, port development, hydrogen production, *etc.*) and any local system benefits. Identify ways to measure and maximize these co-benefits when evaluating transmission buildout.

Written comments may be filed via email at transmission@newenglandenergyvision.com on or before **October 14, 2022 by 4:00 p.m.** All materials submitted by stakeholders in this proceeding will be posted on the Regional Transmission Initiative web page and may be subject to the relevant state disclosure laws governing public access to information. Any questions may be directed to transmission@newenglandenergyvision.com. After receiving public comment, the Participating States will post additional information about any next steps on the Regional Transmission Initiative web page.

Massachusetts will review any written comments posted on Regional Transmission Initiative web page; no confidential information shall be submitted to Massachusetts directly by any commenters and any information received by Massachusetts that constitutes a public record may be required to be disclosed under Massachusetts Public Records Law, M.G.L. c. 66 et seq.

Exhibit 1

Modular Offshore Wind Integration Plan

Conceptual Framework for New England

The 2021 ISO-NE Regional System Plan notes that the New England region is transforming to a cleaner grid through the widespread development of new resources.[9] One of the key elements of this transition is adding offshore wind (OSW). The OSW projects that have been contracted by New England states, plus the recent contracts for an additional 1,600 MW in Massachusetts that are currently under regulatory review, are expected to use up all of the existing, available transmission capacity at the most convenient (and cost-effective) points of interconnection along Cape Cod and Rhode Island. ISO-NE studies show that the next tranche of OSW projects would trigger significant transmission upgrades across New England.[10]

Under the current procurement paradigm to bring these resources online, States contract OSW generation through power purchase agreements and the OSW developers take the full responsibility (*i.e.,* they pay) for all system upgrades resulting from interconnection and all other associated costs. ISO-NE's existing regional transmission planning process does not proactively take into account the potential impact of the OSW interconnections (*i.e.*, landside reliability impacts). The existing planning process also does not consider the potential system upgrades needed to address reliability that any OSW-triggered system upgrades may avoid. As additional offshore wind is interconnected under this paradigm, significant landside upgrades will be necessary to enable interconnection of additional offshore wind while maintaining system reliability and not increase congestion costs.[11] The cost of these additional transmission upgrades will be substantial, in the scale of billions of dollars. While some of these system upgrades are associated with interconnecting the offshore wind resources onto the existing system, many will simultaneously relieve congestion and address reliability concerns.

By contrast to the current approach and process, adopting a new paradigm of planned, regional transmission investment for OSW integration has the potential to improve access to this and other clean energy resources; improve overall system reliability; and avoid significant, and

[9] rsp21_final.docx (live.com).
[10] See, ISO-NE Cape Cod Resource Integration Study.
[11] See, Connecticut Integrated Resource Plan, pp 131-138.

potentially very costly, reliability upgrades to the landside transmission system paid for by the region as a whole. Initial steps towards this planned investment paradigm are detailed below.

1. *Participating States*

The participating New England states include: Connecticut, Maine, Massachusetts, New Hampshire, and Rhode Island (Participating States) are considering a plan to explore the most efficient, least-cost solutions for offshore wind integration. The Participating States believe that having a planned buildout can de-risk the project delivery challenges associated with contracting additional projects in the absence of any additional low-cost interconnection points. Participation by any Participating State should not be interpreted as obligating any state to purchase, support or fund any specific project or to adopt or agree to any particular policy or future procurement.

2. *Parameters for Offshore HVDC Solutions*

- Eligible solutions should be scalable, cost-effective, and sufficiently flexible to accommodate up to 8,400 MW from current and future New England leaseholds. The Participating States are actively considering HVDC transmission solutions in 1,200 MW increments through 2040. As more technical information and solutions become available, such framework can be updated as appropriate.
- All projects shall be designed to maximize access to, and be consistent with, the terms of any applicable U.S. Department of Energy (DOE) funding programs including, but not limited to, programs established under Infrastructure Investment and Jobs Act (IIJA). Potential programs would include the DOE Transmission Facilitation Program, Loan Programs Office programs, resiliency funding, etc.
- Transmission developers are encouraged to provide the widest array of potential transmission solutions while ensuring that ratepayers are not exposed to excessive costs or risks. However, the Participating States will control timing of each 1,200 MW increment; the efficient use of interconnection points; and discretion to not move forward with a portion or phases of the project portfolio.
- This Modular Offshore Wind Integration Plan is not to be construed as advancing a public policy transmission upgrade as currently defined by the ISO-NE for Order No. 1000 purposes.

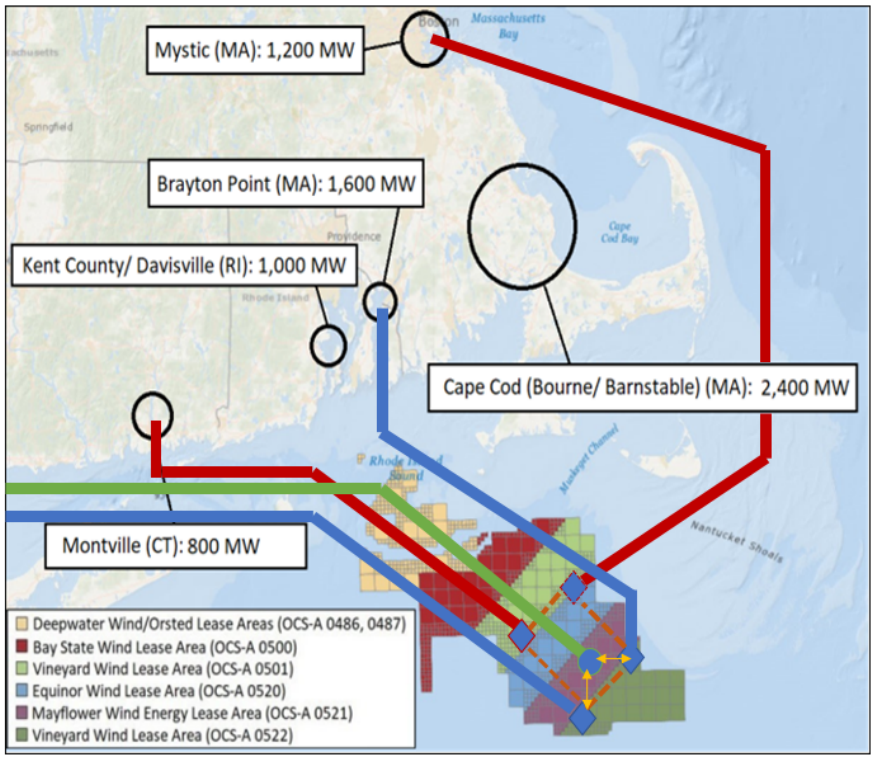
- To maximize operational flexibility, reliability, resiliency, and system efficiency, the relevant operational infrastructure, and specifically HVDC converters, should be designed in a manner that future transmission lines can connect in a meshed manner and share the landing points. HVDC transmission topologies that include offshore converters that enable inter-area transfers of OSW generation to various network points within ISO-NE and potentially beyond, are encouraged. Please note Figure 1 below is included for illustrative purposes only.
- The Participating States will recommend or prioritize certain land-based points of interconnection, based on state-specific considerations (such as interregional transfer capability, siting considerations, etc.) and overall project timing. Initial assessments suggest that Bridgeport, Connecticut and Boston, Massachusetts areas are potential efficient interconnection points for the next tranche of OSW generation. Developers are encouraged to provide additional information for the Participating States to consider.
- Projects are encouraged to integrate with the landside grid in a way that minimizes curtailments of renewable energy generation. Transmission solutions or portfolios of transmission solutions that consider other clean energy located onshore, while use the HVDC converter technology to support potential weak areas of the grid are encouraged.

Phased Offshore Wind Transmission Concept Plan

Phase I two 1200 MW HVDC lines in Blue one each for MA and CT

Phase II Future 1200 MW HVDC lines in Red

NYSERDA Beacon 1230 MW HVDC line in Green (to Astoria, Queens)



Dashed lines represent future potential interconnections between converters to increase offshore grid flexibility

Double Arrow lines represent future potential interconnections between converters of projects in different ISOs to permit controlled interregional transfers of offshore wind power