Updates
September 14, 2022
New England Requests Information on Electric Grid Upgrades To Integrate Offshore Wind

Five New England states issued a Request for Information (RFI) on September 1, seeking comment from interested stakeholders by October 14, 2022, on changes and upgrades to the regional electric transmission system to integrate renewable energy resources, particularly offshore wind. Connecticut, Maine, Massachusetts, New Hampshire, and Rhode Island are seeking information through the RFI that will help them improve the grid's reliability, resilience, and affordability for the regions' electricity customers. The states aim to improve the grid by integrating offshore wind and other renewable resources and leveraging federal funding for transmission investments under the Infrastructure Investment and Jobs Act (IIJA) and the Inflation Reduction Act (IRA). The RFI builds on information gleaned from earlier efforts of the New England states to engage with ISO New England (ISO-NE)[1] to study transmission needs in light of planned offshore wind deployment.

The joint RFI among the states outlines a conceptual framework for a modular offshore wind integration plan (Plan) and seeks comments on the Plan and other infrastructure upgrades. Information received during the comment period will inform the states' decisions to procure or facilitate transmission investment, inform planning activities, and further inform efforts to secure federal funding, including under the IIJA, and otherwise support infrastructure investment decisions.

Background

Recent federal actions to advance offshore wind development off the Atlantic coast demonstrate the significant potential for offshore wind near New England and Northeast load centers. Offshore wind resources will also be important in meeting state goals and requirements. For example, recent studies from New England states, including the Massachusetts *Energy Pathways to Deep Decarbonization* report, assume that 30,000 megawatts (MW) of offshore wind will be deployed by 2040 to 2050. This assumption was also used as the basis of future load assumption in the New England Power Pool 2021 *Economic Study on Future Grid Reliability* and the ISO-NE 2050 Transmission Study that ISO-NE performed in coordination with the New England States Committee on Electricity (NESCOE).

In particular, a 2020 ISO-NE study of offshore wind integration found that up to 5,800 MW of offshore wind could be connected to the existing New England regional grid without additional reinforcements. However, considerable transmission upgrades would be necessary for any significant quantities of offshore wind beyond that amount. Further, existing interconnection points are already at or beyond capacity with current offshore wind projects under contract or review. The report concluded that more or upgraded interconnection points are necessary. In addition to providing security to developers, eliminating transmission constraints would also provide material benefits for consumers.

Given the significant time required to plan, develop, and build transmission, and given the large amount of offshore wind development occurring in the New England region, the states recognized that planning for additional transmission and interconnection needs to happen now, leading to the release of this RFI. The states acknowledge that this planning could include the possibility of collaborating in the procurement of transmission resources associated with renewable energy generation and investigating possible funding opportunities under the IIJA, which includes provisions for funding transmission projects that provide regional reliability benefits and integrate renewable energy resources. The RFI is also intended to better inform each state's renewable energy planning and procurement efforts.

Updates and Changes to the Regional Electric Transmission System

Through the RFI, the states seek comments on changes and upgrades to the regional electric transmission system needed to integrate renewable energy resources. Broadly, the states are interested in identifying how they can best position themselves to access funding, minimize impacts to ratepayers, maximize the reliability of regional clean energy resources, determine the costs and benefits of different kinds of transmission lines, including high-voltage, direct current (HVDC), and consider environmental justice concerns as infrastructure development decisions are made.

Interested stakeholders should consider commenting on the advantages or disadvantages of different kinds of transmission lines, including the use of AC or DC, and whether 1,200MW HVDC lines should be the preferred standard in any offshore transmission procurement. This is particularly important considering the procurement requirements recently released in the third New York State Energy Research Development Agency (NYSERDA) solicitation for offshore renewable energy credits (ORECs), which requires that offshore wind projects bidding for the ORECs are "meshed ready" and use HVDC and the Bureau of Ocean Energy Management's (BOEM) notice that it "may condition" approval of construction and operation plans (COPs) for offshore wind projects in the New York Bight on the incorporation of regional transmission systems and meshed systems into the COPs.

Draft Modular Offshore Wind Integration Plan

Current contracts for offshore wind in New England are expected to use all existing and available transmission capacity at the most convenient and cost-effective points of interconnection. Upcoming offshore wind projects will require significant transmission upgrades across New England in order to successfully interconnect. The current procurement process for offshore wind has states contract offshore wind generation through power purchase agreements while developers take the responsibility to pay for system upgrades and associated costs resulting from interconnection. The existing planning process for ISO-NE does not proactively consider the potential landside reliability impacts of offshore wind interconnections and does not consider potential system upgrades needed to address reliability. In order to ensure that congestion costs do not increase and also to maintain system reliability, significant landside upgrades will be required to enable the interconnection of additional offshore wind. This is anticipated to cost billions of dollars.

The draft Plan proposes adopting a planned regional transmission investment approach for offshore wind integration that can improve system reliability and avoid costly reliability upgrades to the landside transmission system. Specifically, transmission solutions should accommodate up to 8,400 MW of offshore wind from current and future New England lease areas, in 1,200 MW increments, through 2040. Any projects should maximize access to and be consistent with the terms of U.S. Department of Energy (DOE) funding programs, including those established under the IIJA, through the DOE Transmission Facilitation Program and any Loan Programs Office (LPO) programs or resiliency funding. The draft Plan also suggests that transmission solutions are designed to allow future transmission lines to connect in a meshed manner and share landing points, consider other onshore clean energy, and use HVDC converter technology to support potential weaknesses in the grid.

In seeking comments on the draft Plan, the states are particularly interested in potential points of interconnection in the ISO-NE control area for all renewable energy resources, and the costs and benefits, including local co-benefits, associated with each point of interconnection. Specifically, interested stakeholders should comment on how offshore wind should be integrated deeper into the region's transmission system, if at all, as opposed to interconnecting at the nearest landfall. Offshore corridor options for transmission lines should be identified and describe how that corridor avoids or minimizes disturbance to marine resources. Stakeholders should also comment on how future interconnection between offshore converters can be optimized, particularly to facilitate

the transmission of power from offshore to multiple points of interconnection as needed. The RFI notes that Bridgeport, Connecticut, and Boston, Massachusetts, are potential efficient interconnection points for future offshore wind generation but seeks further information from developers on additional locations to consider.

The RFI also seeks comment on how ownership of transmission should be structured, including through the use of public-private partnerships, and how costs should be allocated to prevent cost-shifting between the states on their policy goals and ensure that local and regional benefits remain distinct so that ratepayers only pay for services that they benefit from.

RFI Is the Latest in Recent Efforts To Spotlight Offshore Wind Transmission Constraints

The RFI represents the latest effort of stakeholders to get their arms around transmission grid constraints and their significant impact on states' ability to achieve ambitious and growing offshore wind procurement targets. There is now widespread recognition at both state and federal levels of the upcoming difficulties in integrating significant amounts of offshore wind into existing transmission infrastructure.

For example, as noted above, the latest competitive solicitation for offshore wind in New York included requirements for projects proposing HVDC interconnections to be "meshed ready" based on results from the *New York State Power Grid Study*, which sought to identify ways to provide greater reliability and flexibility for future offshore transmission. NYSERDA's *Offshore Wind Cable Corridor Constraints Assessment*, which aims to understand the constraints of siting cables in New York state waters, and along overland routes to existing points of connection, is due to be published later this year.

At the federal level, DOE is preparing an Atlantic Offshore Wind Transmission Study to evaluate pathways to offshore wind goals through coordinated transmission solutions along the Atlantic coast in the near term (by 2030) and long term (by 2050). This DOE study is a two-year effort to evaluate coordinated transmission solutions for offshore wind energy development along the Atlantic coast. In the study, researchers from the National Renewable Energy Laboratory (NREL) and the Pacific Northwest National Laboratory (PNNL) will study multiple scenarios of interstate, interregional transmission topologies (including size, shape, branching, and location) between 2030 and 2050. The study will evaluate coordinated transmission solutions to enable offshore wind development; compare different transmission technologies and topologies through an analysis of costs, reliability, and resilience; evaluate key environmental and ocean co-use issues; and produce results that will inform decision-making and benefit stakeholders in their planning processes. In particular, the DOE study aims to identify cost and benefit trade-offs for high-voltage alternating and direct current technologies, identify critical deployment for the benefits of a coordinated transmission framework to outweigh the benefits of radial generator lead lines, and collect data and develop models for easy use by the offshore wind energy industry. The report is expected to be released by the end of 2023.

Separately, FERC is exploring wide-ranging reforms to the transmission planning processes and generator interconnection processes of transmission providers across the country, some of which will affect planning for offshore wind development. In its Regional Transmission Planning and Cost Allocation Notice of Proposed Rulemaking (NOPR), FERC has proposed a variety of reforms designed to promote long-term regional transmission planning that anticipates changes in generating supply (such as the addition of large quantities of offshore wind) farther in the future and attempts to incentivize interregional planning and coordination. As part of these reforms, FERC has proposed new defined roles for relevant state entities (such as states issuing the RFI) within the transmission planning region regarding the cost allocation method or methods that will apply to transmission facilities selected in a regional transmission plan. In a separate NOPR on the generator interconnection process, FERC is proposing reforms intended to address interconnection queue backlogs, improve certainty for developers, and prevent undue discrimination against new technologies. While neither

NOPR is expressly focused on offshore wind development, the reforms proposed by FERC will complement efforts by the states (such as the RFI).

The results of these studies will inform how states upgrade and invest in transmission infrastructure.

Next Steps

Interested stakeholders in the New England RFI should attend the upcoming public technical meeting, to be scheduled soon. Areas of focus for the meeting include discussing effective points of interconnection for offshore wind, how to minimize land-based transmission upgrades traditionally located in overburdened and underserved communities, how to design and implement HVDC systems, how to co-optimize transmission infrastructure to provide maximum consumer benefits, and how to reduce overall system cost and consumer impact. Stakeholders should also prepare and submit comments on the RFI, due by 4:00 p.m. EST on October 14, 2022, by email.

Endnote

[1] ISO-NE is the Regional Transmission Organization (RTO) that serves six New England states: Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont. It is responsible for operating wholesale power markets that trade electricity, capacity, transmission congestion contracts, and related products, in addition to administering auctions for the sale of capacity. ISO-NE operates New England's high-voltage transmission network and performs long-term planning for the New England system. https://www.ferc.gov/industries-data/electric/electric-power-markets/iso-ne.

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