ATTACHMENT A[1]

Year/Month	C1&2 Capacity Factor (%)
2018	**4.78%**
Jan	14.79%
Feb	-0.20%
Dec	-0.24%
2019	**1.22%**
Jan	2.82%
Feb	-0.20%
Dec	1.03%
2020	**-0.17%**
Jan	-0.19%
Feb	-0.18%
Dec	-0.14%
2021	**0.79%**
Jan	0.61%
Feb	0.55%
Dec	1.20%
2022	**10.20%**
Jan[2]	22.61%
Feb	3.58%
Dec	4.40%
2023	**1.26%**
Jan	-0.24%
Feb	4.17%
Mar	-0.17%
Grand Total[3]	**1.86%**

ACTIVE 689333357v1

[1] The source material for this Exhibit are United States Energy Information Administration ("EIA") Forms 860 and 923 (from 2018 through 2023). EIA Form 923 reports net generation, which is equal to gross generation minus the parasitic station load. However, when parasitic load is greater than gross generation, it results in negative values, as set forth above.

[2] The capacity factor in January of 2022 is artificial -- the previous owner of Canal was seeking to monetize oil use in advance of the sale to JERA and was therefore dispatching the facility in the energy market at essentially a zero fuel cost.

[3] The calculation of this figure excludes the artificial January 2022 average capacity factor.

Attachment B

(originally submitted in D.P.U. 23-42 as Initial Comments of JERA Americas, Attachment A)

JERA Redlined Proposed Changes (Definitions, Section 2.2.1.3, Section 2.2.1.8, and Section 2.2.1.9)

Attachment A

REQUEST FOR PROPOSALS FOR

LONG-TERM CONTRACTS FOR OFFSHORE WIND ENERGY PROJECTS

Issuance Date: TBD

Distribution Companies:

Fitchburg Gas & Electric Light Company d/b/a Unitil
Massachusetts Electric Company and Nantucket Electric Company, each d/b/a National Grid
NSTAR Electric Company d/b/a Eversource Energy

Massachusetts Department of Energy Resources

Definitions

"Affiliated Company" means an affiliated company as defined in Section 85 of Chapter 164 of the Massachusetts General Laws.[1]

"Clean Peak Energy Certificate" (CPEC). A credit received for each megawatt hour of energy or energy reserves at NEPOOL GIS that is adjusted by applicable Clean Peak Energy Certificate Multipliers and provided during a Seasonal Peak Period that represents a compliance mechanism as defined in the regulations.

"Clean Peak Standard" has the meaning as outlined in 225 CMR 21.00

"Control Area" means a geographic region in which a common generation control system is used to maintain scheduled interchange of Energy within and outside the region.

"BOEM" means the United States Bureau of Ocean Energy Management and includes its successors.

"Commercial Operation" means the status of a Generating Facility that has commenced generating electricity for sale, excluding electricity generated during trial operation.

Formatted: Font: Bold

"Coordination Announcement" shall mean a public announcement following RFP issuance but prior to the proposal submission deadline indicating if there are other New England state procurements with which DOER plans to coordinate regarding this solicitation.

"Deliver" or **"Delivery"** shall mean with respect to (i) Energy, to supply Energy into Buyer's ISO-NE account at the Delivery Point in accordance with the terms of the Long-Term Contract and the ISO-NE Rules, and (ii) RECs, to supply RECs in accordance with the terms of the Long-Term Contracts and the ISO-NE Rules.

"Department of Energy Resources" or "DOER" means the Massachusetts Department of Energy Resources established by Section 1 of Chapter 25A of the Massachusetts General Laws.[2]

"Distribution Company" means a distribution company as defined in Section 1 of Chapter 164 of the Massachusetts General Laws.[3]

"DPU" means the Massachusetts Department of Public Utilities.

"Energy" means electric "energy," as such term is defined in the ISO-NE Tariff, generated by the Generation Unit as measured in MWh in Eastern Prevailing Time as metered at the delivery point, which quantity will never be less than zero.

"Energy Diversity Act" means chapter 188 of the Acts of 2016, *An Act to Promote Energy Diversity*.

[1] https://malegislature.gov/Laws/GeneralLaws/PartI/TitleXXII/Chapter164/Section85.
[2] https://malegislature.gov/Laws/GeneralLaws/PartI/TitleII/Chapter25A/SectionI.
[3] https://malegislature.gov/Laws/GeneralLaws/PartI/TitleXXII/Chapter164/SectionI.

Field Code Changed
Field Code Changed
Field Code Changed

"Generation Unit" means a facility that converts a fuel or an energy resource into electrical energy.

"Generating Facility" means an Interconnection Customer's device for the production and/or storage for later injection of electricity identified in the Interconnection Request, but shall not include the Interconnection Customer's Interconnection Facilities.

"GIS" means the New England Power Pool ("NEPOOL") Generation Information System or any successor thereto, which includes a generation information database and certificate system, operated by NEPOOL, its designee or successor entity, that accounts for generation attributes of electricity generated or consumed within New England.

"Independent Evaluator" has the meaning provided in Section 1.5.

"Indexed Price Bid" shall mean an alternative price bid as outlined in Section 2.2.1.5.

"Indexing Adjustment" shall mean a price adjustment to an Indexed Price Bid as outlined in Section 2.2.1.5.

"Interconnection Agreement" means an agreement pursuant to the relevant section(s) of the ISO-NE Tariff among the facility owner, the interconnecting utility and ISO-NE, as applicable, regarding the interconnection of a Generation Unit(s) to the transmission system, as the same may be amended from time to time.

"Interconnection Customer's Interconnection Facilities" ("ICIF") means all facilities and equipment located between bidder's Offshore Wind Energy Generation facilities collector system step-up transformers and the point of change of ownership at the onshore interconnection, including any modification, addition, or upgrades to such facilities and equipment, constructed to physically and electrically interconnect the bidder's Offshore Wind Energy Generation facilities to the onshore transmission system.

"Interconnection Service" shall have the meaning ascribed to it in Schedule 22 to the ISO-NE Tariff.

"ISO" or **"ISO-NE"** means ISO New England Inc., the independent system operator established in accordance with the RTO arrangements for New England, or its successor.

"LGIP" means the interconnection procedures applicable to an Interconnection Request (as such term is defined in Schedule 22 to the ISO-NE Tariff) pertaining to a Generating Facility having a maximum gross capability at or above zero degrees F of more than 20 MW that are included in Schedule 22 to the ISO-NE Tariff.

"Long-duration energy storage system" means an energy storage system, as defined in section 1 of chapter 164 of the General Laws, that is capable of dispatching energy at its full rated capacity for a period greater than 10 hours.[6]

Formatted: Font: Bold

[6] https://malegislature.gov/Laws/SessionLaws/Acts/2022/Chapter179.

Field Code Changed

"Prospective Bidder" means an offshore wind leaseholder eligible to bid into the Section 83C solicitation, or a party directly involved in preparation of a bid with such a leaseholder.

"Rate Schedule" means Rate Schedule as set forth in in 18 CFR §35.2(b).

"Renewable Energy Certificates" or "RECs" means all of the GIS Certificates and environmental benefits associated with New Class I RPS eligible resources as further defined in the Form PPAs.

"Selection Team" means the Department of Energy Resources (DOER), in consultation with the Independent Evaluator.

"Service Agreement" has the meaning provided in 18 CFR §35.2(c)(2).

"**Surplus Interconnection Service**" means a form of Interconnection Service that allows a bidder to use any Unused Capability (as such term is defined in Schedule 22 to the ISO-NE Tariff) established in an Interconnection Agreement for an existing Generating Facility that has achieved Commercial Operation, such that if Surplus Interconnection Service is utilized the total amount of Interconnection Service at the same Point of Interconnection (as such term is defined in Schedule 22 to the ISO-NE Tariff) would remain the same.

Formatted: Font: Bold

"Tariff" has the meaning provided in 18 CFR §35.2(c)(1).

"Third-Party Offshore Wind Developer" means any entity developing offshore wind energy generation facilities.

As noted in Section 2.2.1.7 below, in recognition of the 15- to 20-year contract term, the Distribution Companies may issue multiple Long-Term Contracts for the selected projects developed in multiple phases. Bidders should specify their proposed timing of phases and proposed associated contracts.

2.2.1.3. Eligible Bids

An eligible bidder proposing to sell Offshore Wind Energy Generation and/or associated RECs pursuant to a Long-Term Contract must propose a price schedule for energy deliveries that conforms to this Section 2.2.1.3 and to Section 2.2.1.4 and Section 2.2.1.5 of this RFP.

All proposals must provide for a scheduled commercial operation date before January 1, 2032.

All proposals must include a commitment to interconnect to the ISO-NE Pool Transmission Facilities ("PTF") at a level equivalent to the Capacity Capability Interconnection Standard, as defined by ISO-NE, and supporting information must accompany the proposal as described below. Proposals that contain a commitment to execute a Surplus Interconnection Service agreement shall satisfy this eligibility requirement.

The bidder must provide production/delivery profile schedules of Offshore Wind Energy Generation with each proposal. Bidders are encouraged to provide a production/delivery schedule that is as accurate as possible based on historical weather data and consistent with the expected upgrades or the Surplus Interconnection Service proposed in their bids. In accordance with Section 83C, proposals must be cost effective for ratepayers over the duration of the Long-Term Contract.

Proposals may pair Offshore Wind Energy Generation with Energy Storage Systems that increase the benefits of the offshore wind project. Pairing in the context of this RFP means the inclusion of costs associated with the Energy Storage System with the

Offshore Wind Energy Generation, as described in Section 2.2.1.4, and providing an operational schedule for the proposed Energy Storage System according to the specifications described in Appendix A to this RFP. The operation of the Energy Storage System must be associated with the Offshore Wind Energy Generation and defined in the bidder's marked Form PPAs. The bidder proposing Offshore Wind Energy Generation paired with Energy Storage Systems must fill out the CPPD form such that the Offshore Wind Energy Generation profile (production/delivery profile) is provided both with and without operation of the Energy Storage System consistent with the proposed operational requirements and commitments. Bidders should propose Energy Storage operations that demonstrate the most value for Massachusetts ratepayers (e.g., by following the Commonwealth's anticipated load shape or delivering on peak). If a bidder proposes Energy Storage System pairing as an option to a bid without the Energy Storage System, this will be considered two separate bids by the Evaluation Team.

- Operating segments that are consolidated as part of the financial reporting process;
- Related parties with common ownership;
- Credit, debenture, and financing arrangements, whether a convertible equity feature is present or not; and
- Wholly owned subsidiaries.

2.2.1.7. Contract Term

The contract term for Long-Term Contracts is defined by Section 83C as a contract for a period of 15 to 20 years. Within these statutory parameters, bidders are encouraged to make their own determination as to the product delivery term that best fits their needs while meeting the requirements of this RFP. In recognition of the 15 to 20-year contract term specified in Section 83C, and if projects are developed in multiple phases, the Distribution Companies will consider issuance of multiple contracts (but not to exceed four for any proposal). Bidders should state their proposed number and timing of contracts and phase sizes consistent with these requirements, Section 2.2.1.2 and Appendix K.

A Long-Term Contract for Offshore Wind Energy Generation may include terms and conditions for RECs associated with the Offshore Wind Energy generation that exceed the term of the generation under contract.

2.2.1.8. Capacity Requirements

a. Each proposal must include a commitment to interconnect to the ISO- NE PTF at a Capacity Capability Interconnection Standard ("CCIS") equivalent level. Each proposal must include a commitment to complete the Forward Capacity Auction Qualification ("FCAQ") process set forth in Section III.13.1 of Market Rule 1 of ISO-NE's Transmission Markets and Services Tariff, and to meet all FCAQ requirements in order to establish its ability to interconnect at this level. Each Bidder's proposal must use the ISO-NE FCA Wind Qualification Template spreadsheet to approximate the qualified capacity associated with its proposed Offshore Wind Energy Generation project. The final amount of capacity to be requested and submitted by the bidder under the FCAQ will be determined in the ISO-NE FCA Wind Qualification Template spreadsheet, updated by the bidder with the required time series data for each of the most recent Capability Years for which there is supporting data at that time. Alternatively, a proposal may commit to enter into a Surplus Interconnection Service agreement, and such commitment shall also meet the requirements of this Section 2.2.1.8 without the need to participate in the FCAQ process.

b. Final determination of the subset of Network Upgrades required to support a bidder's CCIS-equivalent interconnection will be determined by the ISO-NE under FCAQ process (by definition, however, a Surplus Interconnection

Service Request pursuant to Section 3.3.1 of the LGIP will not require Network Upgrades). However, each proposal must include a realistic and specific plan to implement any transmission system upgrades or other work anticipated to be needed to achieve CCIS-equivalent interconnection, as identified under the FCAQ process or by a Surplus Interconnection Service Request. To the extent that ISO-NE studies have not yet been conducted to ascertain the portion of Network Upgrades and the associated costs required to achieve such CCIS-equivalent interconnection at the time of bidding, a bidder may include a preliminary non-binding overlapping impact study conducted by ISO-NE to identify the potential upgrades and associated costs that would be required by ISO-NE's CCIS interconnection determination or by a Surplus Interconnection Service Request, or may identify such costs through relevant studies and analyses performed by bidders or their consultants that approximate the applicable ISO- NE interconnection process. These studies and their supporting documentation, assumptions, and data must match closely ISO-NE study requirements for CCIS-equivalent interconnection or be consistent with the requirements of Section 3.3.1 of the LGIP. The Evaluation Team expects bidders to provide studies that are consistent with ISO-NE's approach and that approximate what the ISO-NE results would be.

c. Notwithstanding a. and b. above, once a bidder has completed the FCAQ process to establish the upgrades necessary to interconnect to the PTF at the CCIS level, or completed a Surplus Service Interconnect Request, it need not continue to obtain a Capacity Supply Obligation ("CSO") or participate in any Forward Capacity Auction ("FCA"). Obtaining a CSO or participating in any FCA is at the discretion of the bidder. The Distribution Companies will not purchase capacity under the Long-Term Contracts, and bidders will retain any Forward Capacity Market ("FCM") revenues received from ISO-NE.

2.2.1.9. Interconnection and Delivery Requirements

The delivery of Offshore Wind Energy Generation from a generation unit must occur throughout the term of the contract. Substitution of non-Offshore Wind Energy Generation is not allowed for delivery or firming of delivery. It is the responsibility of the bidder to satisfy the delivery requirement. The delivery point must be located so that Distribution Companies are not responsible for wheeling charges to move energy to the PTF. The Distribution Companies will not be responsible for any costs associated with delivery other than the payment of the bid prices for energy (and associated RECs) delivered. Similarly, Distribution Companies will not be responsible for any scheduling associated with delivery.

The bidder will be responsible for all costs associated with and/or arising from: (a) qualification in the FCAQ and interconnecting its project to the PTF at both the Network Capability Interconnection Standard ("NCIS") and a CCIS-equivalent level or executing a Surplus Interconnection Service agreement and (b) for ensuring that the

Offshore Wind Energy Generation is recognized in ISO-NE's settlement system as injected in the ISO-NE energy market at the specified and agreed delivery point. Regardless of whether or not the bidder elects to obtain a CSO and participate in the FCA, the bidder must complete any upgrades that are identified in the FCAQ process to interconnect at a level equivalent to CCIS.

Bidders must demonstrate that their proposed point of delivery into ISO-NE, along with their proposed interconnection and transmission upgrades, is sufficient to ensure full delivery of the proposal's Offshore Wind Energy Generation profile (production/delivery profile) as submitted in their bids. Proposals must include all interconnection and transmission upgrade costs required to ensure full delivery of the proposed Offshore Wind Energy Generation profile, including transmission upgrades that may need to occur beyond the point of interconnection. The amount paid for any energy and/or RECs under the PPA will be reduced to reflect any costs related to Offshore Delivery Facilities, 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 under any tariff or other cost recovery mechanism and that would have been paid by the bidder, i.e., under the tariffs and rules in place at the time of bid submittal but for that alternative collection arrangement. The production/delivery profile submitted by the bidder should reflect any remaining projected constraints or curtailments, if any, associated with the proposal (after inclusion of all Network Upgrades). If the subset of Network Upgrades associated with the NCIS and CCIS-equivalent interconnection standards or with a Surplus Interconnection Service agreement is not sufficient for delivery of the proposed delivery profile, the bidder must either (i) identify additional upgrades necessary to ensure the proposed delivery profile and include the costs of those additional upgrades in the proposed Network Upgrades, or (ii) reduce the proposed delivery profile to reflect the Network Upgrades included in the proposal. Cost estimates and supporting studies must be provided for any additional upgrades that are not associated with the NCIS and CCIS-equivalent interconnection standards or a Surplus Interconnection Service agreement. It is expected that these additional upgrades will be instituted as elective transmission upgrades.

Regardless of the approach followed, bidders must demonstrate that their Offshore Wind Energy Generation profile is consistent with any Network Upgrades identified in their proposal and that their proposed interconnection and transmission upgrades are sufficient to support full delivery of their Offshore Wind Energy Generation profile.

At no time will one or more Distribution Companies assume the responsibility of Lead Market Participant, as defined by ISO-NE.

The generation unit shall comply with all ISO-NE and FERC interconnection requirements for generation facilities and interregional ties, as applicable. All RECs associated with Offshore Wind Energy Generation and purchased pursuant to the Long-Term Contract must be delivered into the Distribution Companies' NEPOOL GIS accounts.

To meet this requirement, bidders must submit a plan that clearly demonstrates how Offshore Wind Energy Generation will be delivered from or by the proposed eligible

project to the delivery point that is a PTF Node as outlined in Section 6 of Appendix A to this RFP.

The bidder must detail the status (and conclusions, as available) of interconnection applications and studies, including Surplus Interconnection Service Requests, as further described in Section 6 of Appendix A to this RFP.

All bidders must have filed interconnection requests for Capacity Network Resource service with ISO-NE or Surplus Interconnection Service Requests as necessary and sufficient to gain a full understanding of the maximum expected interconnection costs for their proposed Offshore Wind Energy Generation capacity(ies).

Projects that have received their I.3.9 approval from ISO-NE must identify that approval and include documentation thereof in their proposal. Proposals for projects that do not have I.3.9 approval from ISO-NE must include an ISO-NE Feasibility Study or a study performed by a third party in accordance with the Network Capability Interconnection Standard as defined by ISO-NE Planning Procedure 5-6. All technical reports or system impact studies should approximate the ISO-NE interconnection process, including but not limited to clear documentation of study technical and cost assumptions, reasoning, and justification of such assumptions.

Projects with a Qualification Determination Notification ("QDN") from ISO-NE for their proposed capacity amount and commitment period as described in Section 2.2.1.8 of this RFP must include all QDN documentation in their proposal. All projects that do not have a QDN for their proposed capacity amount and commitment period must provide a study performed by ISO-NE or a third party in accordance with ISO-NE Planning Procedure 10 in order to prove ability to interconnect at the Capacity Capability Interconnection Standard. All technical reports or studies must reflect the current ISO-NE interconnection process and must also detail any assumptions with respect to projects that are ahead of the proposed project in the ISO-NE interconnection queue and any assumptions as to changes to the transmission system that differ from the current ISO- NE Regional System Plan. Proposals are strongly encouraged to include a scenario analysis in their studies that shows how changes in the project interconnection queue could impact their interconnection costs using the current ISO interconnection rules. Proposals are encouraged to include additional reports, analysis, and studies that support their interconnection and deliverability.

Projects that propose to use Surplus Interconnection Service must provide all studies prepared by ISO-NE pursuant to a Surplus Interconnection Service Request.

The burden is on bidders to provide the Evaluation Team with information, analysis, and studies required by the Evaluation Team in order to make a determination that the proposal includes all costs associated with completing the upgrades that would be required by ISO-NE's NCIS and CCIS. Bidders must provide adequate information and analyses regarding the upgrades and must explain how the identified upgrades will satisfy these interconnection standards.

ANALYSIS GROUP

Attachment C

Using Surplus Interconnection Service to Accelerate Decarbonization in Massachusetts

Judy Chang and Paul Hibbard
November 2023

Summary

Over the past two decades, Massachusetts has enacted laws and policies to greatly reduce – and eventually eliminate – greenhouse gas (GHG) emissions from the state's economy. The state's leaders have set an economy-wide requirement of net-zero GHG emissions by 2050, with interim emission-reduction targets of at least 50 percent by 2030 and 75 percent by 2040 (relative to emissions in 1990).[1] A major element of the state's roadmap to achieve these requirements is the deployment of offshore wind (OSW) resources. Currently, these OSW resources are contracted through utility procurements overseen by the Massachusetts Department of Public Utilities (DPU).

The level of OSW needed to meet the targets set in Massachusetts (along with similar procurement goals in neighboring New England states) is staggering; together, Massachusetts and other New England states are expected to deploy approximately 30 Gigawatts (GW) of OSW over the next two to three decades. This will not be easy. The challenges with and the protracted nature of the siting and permitting processes for transmission and other energy projects have recently received attention at the national level and funding assistance through federal legislation. And here in the Commonwealth, Governor Healey has created the Committee on Clean Energy Infrastructure Siting and Permitting to develop recommendations to swiftly remove barriers to responsible clean energy infrastructure development. Yet siting and permitting are not the only challenge - all this OSW capacity will need to interconnect with the regional grid in a way that preserves the level of reliability to which we are accustomed, while seeking to minimize total costs to consumers.

The Federal Energy Regulatory Commission (FERC) recently used its authority to reform the generator interconnection process to help reduce the costs and risks associated with interconnecting new generating resources to the grid. In part, FERC's reforms included putting in place a method of interconnection – "Surplus Interconnection Service" – to increase the efficient use of existing power grid infrastructure to speed the development, reduce the impacts, and lower the costs of integrating large quantities of clean energy projects. The New England Independent

[1] Commonwealth of Massachusetts, Session Laws, Acts 2021, Chapter 8, "An Act Creating a Next-Generation Roadmap for Massachusetts Climate Policy," approved March 26, 2021, available at: https://malegislature.gov/Laws/SessionLaws/Acts/2021/Chapter8.

System Operator (ISO-NE) has incorporated FERC's generator interconnection reforms into its rules. Thus, the Surplus Interconnection Service can now be a tool to help Massachusetts achieve its OSW procurement and GHG emission reduction targets.

The use of Surplus Interconnection Service is relatively new, and DPU and the local distribution utilities issuing solicitations for OSW have not yet fully accepted it as a valued option for the interconnection of OSW resources as part of the ongoing OSW resource procurements. *This needs to change*. DPU has the statutory authority and obligation to support the Commonwealth's achievement of its interim and net-zero GHG emissions reduction goals in its decisions, alongside its more traditional obligations to ensure reliability and minimize costs. The significant challenges associated with interconnecting, siting, and permitting the necessary amount of clean energy resources and associated transmission infrastructure suggest that the state should expeditiously examine any opportunities to simplify and accelerate the interconnection of clean energy resources, including OSW. Thus, one would expect the DPU would be encouraged by the potential to use available transmission capabilities enabled by the Surplus Interconnection Service because such service can reduce the risk of interconnecting new clean energy resources and thereby decrease consumer costs. Massachusetts policymakers and regulators need to maximize the opportunities that the use of Surplus Interconnection Service offers because it can provide an equivalent alternative to building new transmission, and thereby help boost the near-term development and integration of OSW in the Commonwealth and across the Northeast. The Surplus Interconnection Service offers the following benefits:

- It can accelerate interconnection for some projects in the first tranches of OSW development by eliminating the extensive interconnection study requirements because the new resources will be using existing transmission that already has demonstrated to provide reliability benefits to the regional grid.
- It can help Massachusetts and the region reduce the queuing and wait time for interconnection studies, and avoid many of the challenges associated with siting, permitting, and development of transmission infrastructure needed for a new connection to the power grid.
- This can help achieve operational OSW resources more expeditiously, and achieve GHG emission reductions sooner than otherwise.
- By using existing transmission capabilities, the Surplus Interconnection Service could reduce the risks, uncertainties, and overall costs to consumers associated with interconnection of some new OSW resources, and can reduce the environmental impacts associated with achieving the total level of OSW interconnection needed.

Given that most major transmission projects, particularly those that are of high-voltage and serve the regional system, can require as much as ten years to develop, permit, and build, allowing new OSW resources to connect using the Surplus Interconnection Service is one of the best tools that Massachusetts has to achieve the near-term OSW deployment goals. Thus, we urge Massachusetts policy makers and the DPU to immediately investigate and encourage the OSW resources to use the Surplus Interconnection Service that would help Massachusetts achieve its required decarbonization targets.

The Importance of Offshore Wind in Achieving Net-Zero by 2050

Massachusetts and several New England states have committed to achieving net-zero by 2050. Reaching this target will require the deployment of a significant amount of OSW resources: Massachusetts alone is projected to require 15-20 GW of OSW generation, and ISO-NE anticipates the region will need over 30 GW of OSW over the next 27 years.[2]

The Commonwealth is at a crossroads. The goal of a decarbonized energy system is set in law, interim deadlines are in place, and a schedule of associated procurements is underway. Yet recent events confront the state with unsettling questions: is it possible to achieve the needed decarbonization of the electric system at a pace required to meet the State's GHG emission reduction targets? Can this be done in a way that preserves reliable electric service? And can we achieve the resource and decarbonization targets while keeping consumer electricity costs as low as possible?

Governor Healey and the Administration recognize the vital role that state agencies and infrastructure review processes will play in supporting successful achievement of the state's decarbonization objectives. The recently convened Commission on Clean Energy Infrastructure Siting and Permitting is tasked with developing recommendations for regulatory and legislative reform to streamline clean energy siting. The Massachusetts Department of Energy Resources (DOER) and Department of Public Utilities are actively engaged in overseeing and supporting the procurement of OSW resources in accordance with the Climate Laws. And the local distribution utilities have administered several OSW procurements, and are preparing for more.

Developing the needed OSW resources and efficiently connecting them to the regional transmission grid is a monumental task. Proposals and concepts for how this could proceed range

[2] *Massachusetts 2050 Decarbonization Roadmap*, December 2020, available at https://www.mass.gov/info-details/ma-decarbonization-roadmap. See also, *Draft 2050 Transmission Study*, ISO New England Inc., November 1, 2023, Figure 1-2: Renewable Generation and Energy Storage Input Assumptions, p. 12.

from developing direct interconnections to the region's transmission system from various offshore locations to consideration of an offshore transmission network integrating the projects procured across multiple states. While not strictly limited to OSW resources, ISO-NE recently estimated that the transmission investments needed to meet New England states' electrification and renewable integration goals to be on the order of $16 to $26 billion by 2050.[3]

The expansion of both onshore and offshore transmission can be costly for ratepayers and much of the incremental transmission buildout will go through an intense and drawn-out siting and permitting approval process. As often noted, a major transmission project takes about ten years to develop, design, approve, permit, and build. All interconnecting OSW resource only have two options. They can work with ISO-NE to determine the best locations that would trigger the least costly transmission upgrades, or they can maximize the use of existing transmission. To support the OSW development, Massachusetts needs to use all available options to minimize risks and costs associated with developing the OSW to meet its statutory GHG emissions reduction targets.

National Policy Shift in Streamlining and Accelerating the Deployment of Renewable Energy

The challenges and the protracted nature of the siting and permitting processes for transmission and other energy projects have received attention at the national level. As a part of the efforts to reduce the costs and risks associated with transmission access, FERC has used its authority to reform the generator interconnection process. In 2018 and 2019, FERC issued Order Nos. 845 and 845-A that amended the FERC's *pro forma* Large Generator Interconnection Agreement (LGIA) and Large Generator Interconnection Procedures (LGIP).[4] As part of that reform, FERC improved the interconnection process by providing the industry with an efficient alternative that could reduce the convoluted procedures that usually take multiple years to support the interconnection of new generators or other resources.

In one of the provisions in its Order No. 845 and 845-A, FERC requires that all Independent System Operators (ISOs) and Regional Transmission Organizations (RTOs) put into place a "Surplus Interconnection Service" that would help increase the efficient use of existing transmission services. Accordingly, FERC Order No. 845 added a definition for "Surplus Interconnection

[3] Estimated costs are $16 to $17 billion under a scenario with a 51 GW winter peak, and $23 to $26 billion under a scenario with a 57 GW winter peak. *Draft 2050 Transmission Study*, ISO New England Inc., November 1, 2023, Table 5-8: Estimated Cumulative Costs by Year Studied, p. 52.

[4] Reform of Generator Interconnection Procedures and Agreements, Order No. 845, 163 FERC ¶ 61,043, April 18, 2019 (hereafter, "FERC Order No. 845"); Reform of Generator Interconnection Procedures and Agreements, Order No. 845-A, 166 FERC ¶ 61,137, February 21, 2019 (hereafter, "FERC Order No. 845-A").

Service" and defined the term as "any unused portion of Interconnection Service established in a Large Generator Interconnection Agreement, such that if Surplus Interconnection Service is utilized the Interconnection Service limit at the Point of Interconnection would remain the same."[5]

FERC then required all ISOs/RTOs to comply with the new regulations, including updating their generator interconnection rules and their tariffs to provide an expedited interconnection process for surplus interconnection service outside of the interconnection queue.[6] Further, FERC required transmission providers to perform "reactive power, short circuit/fault duty, and stability analyses studies for this service, [and] steady-state (thermal/voltage) analyses as necessary to ensure evaluation of all required reliability conditions."[7] Such requirements would ensure that all interconnected resources using the Surplus Interconnection Service will not compromise the reliable delivery of electricity.

ISO-NE subsequently complied with FERC regulations to provide the region with the Surplus Interconnection Service, recognizing the importance of such service in reducing the cost of transmission upgrades and the reduction in the time and risks associated with building new transmission. ISO-NE's revised tariff allows the region to capitalize on using the existing transmission system more efficiently.[8] Specifically, ISO-NE's tariff states:

> Surplus Interconnection Service allows an existing Interconnection Customer whose Generating Facility is already interconnected to the Administered Transmission System and is in Commercial Operation to utilize or transfer Surplus Interconnection Service at the existing Generating Facility's existing Point of Interconnection.

[5] FERC Order No. 845 at P 459.

[6] FERC Order No. 845 at P 477; see also *pro forma* LGIP §§ 3.3, 3.3.1.

[7] FERC Order No. 845 at P 455; see also *pro forma* LGIP § 3.3.1.

[8] ISO New England Inc. Transmission, Markets, and Services Tariff, Schedule 22: Large Generator Interconnection Procedures, § 3.3.

Surplus Interconnection Service Supports Maximum Use of Existing Transmission System

There is a Public Policy Imperative to Seek Every Possible Transmission System Interconnection Option to Minimize Risks while Accelerating Clean Energy Deployment

Against this backdrop, it is inconceivable that the state or region would miss *any* opportunity to simplify and accelerate the interconnection of OSW wind resources, particularly because the use of Surplus Interconnection Service makes existing transmission available to new OSW resources. Given the near and longer-term targets, Massachusetts and New England will need to capitalize on every possible approach to implement low-cost OSW interconnections. Specifically, by allowing OSW resources to make the maximum use of *existing* transmission assets and capabilities, OSW developers will face less risks associated with project siting, permitting and development. The use of Surplus Interconnection Service will lower the costs to ratepayers, accelerate the integration of new renewable resources, and pick up the pace of system decarbonization. Further, relying on existing energy infrastructure will reduce the delays and even more important, the local impacts associated with construction of new transmission facilities.

The rationale for full incorporation and utilization of Surplus Interconnection Service as soon as possible is not only to reduce consumer costs and accelerate decarbonization; it will spur the growth of the OSW industry in the Northeast, create momentum for all the procurements and projects to follow, and achieve initial steps towards decarbonization in a manner consistent with the goals of reliability and cost minimization. For these reasons, Massachusetts policymakers and regulators need to expedite the use of Surplus Interconnection Service and consider its use as a full, equivalent alternative in the State's solicitations for new OSW resources.

FERC Has Instituted and Encouraged the Use of Surplus Interconnection Service

As described above, the Surplus Interconnection Service is an approach that FERC has asked all the ISOs/RTOs and transmission providers to include in the set of approaches that resources can use to interconnect to the grid. The service is designed to allow new resources to maximize the use of existing transmission infrastructure by sharing the interconnections that have surplus capabilities.

Typically, the developer of a new resource such as a new generator or new transmission facility that brings in new imported resources into a region must place a request for interconnection with the relevant ISO/RTO, in our case, ISO-NE. The resource requesting such an interconnection is considered the "transmission customer" and following the request, the ISO will conduct technical analyses to determine whether the existing transmission network has available capability to deliver the electricity from the new resources. If the existing transmission system is fully utilized, the ISO

then follows specific analytical procedures to determine the best approach to upgrade the existing transmission system to accommodate the new transmission customer. Such analyses can take a substantial amount of time, particularly if there are other resources in the interconnection queue. While FERC has recently set new rules for ISOs and other transmission providers to reform the interconnection process to reduce potential delays, it is unclear when such reforms will be in place, or whether this will meaningfully reduce the time it takes for a major OSW resource to make its way through the interconnection study process.[9]

Even with reforms enacted, the most daunting aspects of the interconnection process for the OSW resources come after the ISO-NE studies. Effectively, ISO-NE's transmission system has been built-for-purpose, with very few areas where large-scale OSW resources can interconnect without triggering significant transmission upgrades. The first utility-scale OSW resource, the 800 MW Vineyard Wind project currently being built, is using up some of the available capabilities on the Cape Cod portion of the transmission grid. The next few hundreds of MWs are expected to use up the remaining available capabilities on the Cape. After those, any additional OSW resources are expected to trigger significant transmission upgrades. Two studies have presented estimates of the costs for interconnecting major new clean energy resources in New England – one by ISO-NE, and the other by Lawrence Berkeley National Laboratory. These estimates suggest that as more OSW resources are added to the system, the incremental transmission upgrade costs range from approximately $200 million to $400 million per 1,000 MW connected.[10,11] Thus, the cost for every incremental 800 or 1,000 MW of new OSW connecting onto the New England system likely will be of this order of magnitude. In addition to the likely high and uncertain costs of upgrading the transmission system, all new transmission infrastructure projects face an enormous amount of uncertainty with siting and permitting timeline and costs.

[9] Improvements to Generator Interconnection Procedures and Agreements, Order No. 2023, 184 FERC ¶ 61,054, July 28, 2023.

[10] Lawrence Berkeley National Laboratory finds the median interconnection cost for all ISO-NE projects since 2018 is $224/kW and the average cost is $422/kW, or $224 to $422 million per 1,000 MW connected. It finds a much lower average cost among offshore wind projects ($86/kW), however the report states in footnote 9 that this estimate "excludes the cost of transmission lines connecting OSW to onshore substations," and in the executive summary, states that these costs tend to not include "separately proposed merchant or pool transmission upgrades." Kemp, Julie Mulvaney, Joachim Seel, Will Gorman, Joseph Rand, Ryan H. Wiser, Will Cotton, and Kevin Porter, *Interconnection Cost Analysis in ISO-New England*, Berkeley Lab, June 2023, pp. 1, 7.

[11] ISO-NE estimates the total cost of transmission investments necessary to increase from a 35,000 MW peak load scenario in 2035 to a 51,000 MW peak load scenario in 2050 is $7 to $11 billion, or $438 to $688 million per 1,000 MW increase in peak load. *Draft 2050 Transmission Study*, ISO New England Inc., November 1, 2023, Table 5-8: Estimated Cumulative Costs by Year Studied, p. 52.

The Surplus Interconnection Service is designed to allow existing resources to instead share slack interconnection with new resources. As FERC put it,

> *"[T]he use of surplus interconnection service could reduce costs for interconnection customers by increasing the utilization of existing interconnection facilities and network upgrades rather than requiring new ones, improve wholesale market competition by enabling more entities to compete through the more efficient use of surplus existing interconnection capacity, and remove economic barriers to the development of complementary technologies such as electric storage resources ... [Further,] the use of surplus interconnection service could improve capabilities at existing generating facilities, prevent stranded costs, and improve access to the transmission system."*[12]

The use of Surplus Interconnection Service provides several benefits to Massachusetts and New England. First, the existing interconnection that hosts the Surplus Interconnection Service has already been determined by ISO-NE to be a reliable place to deliver energy. The hosting resource, when it obtained its interconnection agreement had to go through a full analytical and transmission upgrade process to ensure that the necessary transmission is available to deliver the resources' full output. Second, there is certainty with the physical transmission facilities. Third, there is operational history regarding the deliverability of the resource from the specific hosting interconnection, and thus, one can observe the historical availability of the facilities. Most importantly, using Surplus Interconnection Service will remove years of uncertainty associated with the buildout of new transmission facilities by avoiding the time-consuming and risky siting and permitting processes. Even as Massachusetts rightfully engages with stakeholders to reduce the risks and time associated with siting and permitting clean energy resources, any new infrastructure will likely still take at least three to five years to receive their proper permits.

There are areas on the ISO-NE system where existing resources can host new clean energy resources to interconnect via the Surplus Interconnection Service. For instance, JERA owns several oil-fired generating facilities on the Cape, the Canal units, which do not operate often. The existing interconnection point is secure and reliable because it has been used to serve the Cape and the broader New England region for several decades. These locations on the transmission system, along with other potential areas, present great opportunities for the interconnecting OSW

[12] FERC Order No. 845 at P 467.

resources and thereby benefit Massachusetts ratepayers by allowing OSW resources to efficiently use existing transmission system.

DPU's Decision to Not Allow the Use of Surplus Interconnection Service is Counter to the Climate Goals of the Commonwealth

The DPU should encourage the use of Surplus Interconnection Service in the evaluation of OSW projects, to be consistent with the Commonwealth's Climate Laws and DPU's statutory obligation to make decisions consistent with Massachusetts' decarbonization targets.

The potential use of Surplus Interconnection Service for interconnection of OSW at existing generating facilities was first raised in the procedural cycle of the last OSW resource procurement. As a result, the request to allow the use of Surplus Interconnection Service in OSW generators' bid offers – and from an evaluation perspective, for it to be considered at least on equal footing with new interconnection proposals – raises new administrative and procedural questions for the DPU. It is vital that the DOER, the utilities, and the DPU resolve these questions and not let them interfere with or deter the utilization of Surplus Interconnection Service by entities seeking to participate in future solicitations. If the DPU does not allow the use of Surplus Interconnection Service, it would impede the rapid development of OSW resources for the Commonwealth, frustrate Massachusetts' achievement of its decarbonization targets, increase risks and costs to electricity ratepayers, increase the regulatory burden associated with approving new infrastructure that might otherwise not be needed, and potentially increase the total land use and environmental impact of integrating new OSW resources. These are all factors that DPU should consider in its decisions going forward.

Recent events and evaluations of the forthcoming challenges associated with interconnecting a vast quantity of OSW along New England's coastline point to the importance of taking advantage of every potential option for Interconnecting OSW through both existing and new transmission infrastructure. In this context, proper consideration and evaluation of OSW proposals that use Surplus Interconnection Service will be an important tool for the Commonwealth to ensure that it can meet its interim and final GHG emission reduction targets. In fact, the OSW resources that are able to interconnect through the existing transmission infrastructure without the risks of further upgrade delays and cost escalations should be given priority, or at minimum, provided with credit for reducing the states and consumers' risks and costs. While a significant amount of additional transmission will still be needed in the long run, the use of Surplus Interconnection Service will help the first tranches of OSW resources to interconnect quickly and facilitate the Commonwealth achieving its statutory GHG emission reduction targets.

The DPU has the statutory authority, and arguably the statutory obligation, to seek out every possible way to efficiently meet the Massachusetts' targets for OSW deployment. The Massachusetts' 2021 Act Creating a Next-Generation Roadmap for Massachusetts Climate Policy directs the DPU to administer its responsibilities by prioritizing "safety, security, reliability of service, affordability, equity *and reductions in [GHG] emissions to meet statewide [GHG] emission limits and sublimits*."[13] The DPU now has a statutory mandate to prioritize reductions in GHG emissions consistent with statewide emission limits and sublimits, along with its long-standing traditional priorities. Making sure that the state is reducing barriers to OSW interconnection and maximizing the potential near-term addition of OSW resources is fully consistent with this statutory authority.

DPU can exercise this authority through its oversight of utility procurement RFPs, including its bid process, criteria, modeling assumptions, evaluation methods, and the resulting resources selected to enter into contracts with the utilities. Reasons provided by the Independent Evaluator in the recent solicitation proceeding to not allow bidders to use Surplus Interconnection Service are not satisfactory to answering the DPU's inquiry of "why the use of Surplus Interconnection Service" is counter to the interest of the soliciting parties and the state. For instance, the fact that the evaluation had never considered the use of Surplus Interconnection Service and that participation from resources using such service would complicate the evaluation process has no regulatory or economic foundation and are not persuasive. DPU should and must require the solicitation and evaluation processes to be improved and updated to account for the new and efficient use of existing transmission resources in the region.

Further, the Independent Evaluator's suggestion that the use of Surplus Interconnection Service would not contribute to the reliability of the system is ill-informed, reflects a misunderstanding of tariff rules and market dynamics. At minimum, the DPU should require that OSW bids involving Surplus Interconnection Service at existing generating facilities are allowed and valued in a manner that reflects Massachusetts' interest in accelerating the deployment of OSW while observing the regional market rules in maintaining or contributing to system reliability.

[13] Commonwealth of Massachusetts, Session Laws, Acts 2021, Chapter 8, "An Act Creating a Next-Generation Roadmap for Massachusetts Climate Policy," approved March 26, 2021, Section 1A, available at: https://malegislature.gov/Laws/SessionLaws/Acts/2021/Chapter8 (emphasis added).