February 25, 2021

FirstLight Power Comments Re: Long-Term Contracts for Offshore Wind Energy Generation

FirstLight Power Services LLC (FirstLight) appreciates the opportunity to provide comments in response to the Massachusetts Department of Energy Resources ("DOER") draft Request for Proposals ("RFP") pursuant to Section 83C of Chapter 169 of the Acts of 2008 ("Section 83C"), as amended by the Energy Diversity Act.

FirstLight is a leading clean power producer and energy storage company in New England with a portfolio that includes 1.4 gigawatts (GW) of pumped-hydro storage, lithium-ion battery storage, hydroelectric generation, and solar generation. These local clean energy resources are a significant contribution to New England's existing zero-emissions electricity today, and provide critical support for Massachusetts's efforts to combat climate change and scale up clean energy resources.

Our largest asset, the Northfield Mountain pumped hydroelectric facility located in western Massachusetts, provides nearly 1,200 MW of emissions-free energy storage capacity and serves as an essential asset to maintaining regional reliability on the New England electric grid. As a leading clean energy producer with experience operating both large-scale renewable energy and storage assets, as well as distributed solar and battery storage projects in New England, FirstLight submits these comments to help support Massachusetts's efforts to advance its offshore wind goals in a manner that will maximize decarbonization and cost-effectiveness while maintaining grid reliability and resiliency.

The Scale of New England's Offshore Wind Programs Demands At-Scale Flexible Storage Solutions

Led by Massachusetts, New England's offshore wind progress over the past several years, from establishing long-term procurement goals to executing new offtake contracts, has been a critical step towards the decarbonization of our electric system. Even before execution of third solicitation under Section 83C, the New England ISO has already passed 3,000 MW of offshore wind capacity under contract, a figure which is expected to continue to rapidly increase through 2030. While offshore wind resources are crucially important, they are also not in themselves sufficient to create an integrated and reliable fully-clean electric grid without support from other renewable resources and storage.
New England's planned volume of offshore wind generation, exposed to similar weather patterns (and therefore likely faced with largely synchronous generation profiles), presents an enormous value proposition to ratepayers for improved utilization of large-scale flexible storage that can ensure this offshore electricity production is provided to New England customers at times when it is needed most—a value that will only be realized if the procurement vehicle is properly designed to elicit bids

that will deliver this. To reduce (or avoid) reliance on fossil-resources as the provider of needed back-up reliability, an outcome that would set decarbonization progress further behind, Massachusetts should more fully utilize existing renewable energy and storage resources to accelerate the State's path to a net-zero system.

Section 83C Offshore Wind Contracts Fail to Incentivize Generators to Prioritize On-Peak Production

The existing contract structure under Section 83C, a fully-bundled and fixed-price Power Purchase Agreement (PPA), may succeed in bringing more renewable generation to the grid, but fails to expose generators to market forces that encourage energy delivery in the periods of greatest value to consumers. This insulation from wholesale markets eliminates all incentives for offshore wind projects to pursue options to shift generation from off-peak to on-peak periods. Consequently, the electric system will be forced to rely on other resources, namely fossil fuel units, to balance system needs.

Through several recommendations listed further below, FirstLight believes that the system value of Section 83C projects could be significantly enhanced if offshore wind generators were properly incentivized to maximize clean energy delivery in the super-peak period (i.e., highest peak hour loads remaining after accounting for solar power contributions).

DOER's Proposed Incorporation of a Project's Ability to Supply Clean Peak Energy Certificates (CPECs) is Insufficient to Maximize Value to the Grid

While FirstLight believes it is correct to evaluate projects on the value of their ability to produce and supply CPECs, DOER's proposal in Section 2.3.1 of the RFP is insufficient to incentivize maximal CPEC value production. Without specific requirements or pricing incentives to maximize on-peak production, offshore wind generators will simply dispatch as their wind resource allows, bypassing a unique opportunity for efficient hybrid operation of wind generation and improved use of existing storage solutions to optimize delivery of that generation.

In addition, FirstLight strongly urges DOER not to restrict this offshore wind opportunity to only storage pairing that qualifies for CPECs. Given the scale of the offshore wind program (now 3,200 MW) and the scale of the CPEC program (which starts at only 1.5 percent of delivered electricity, likely equating to only a few hundred MW of CPEC resources), there is a mismatch as to scale. Allowing larger storage assets that do not qualify for CPECs to be properly valued under Section 83C will allow Massachusetts to leverage this procurement and minimize layered incentives across the two programs.

Likewise, pursing intermittent clean energy generation and clean peak production through separate vehicles (e.g. Section 83C and the Clean Peak program) will result in economic inefficiencies, and missed opportunities, for Massachusetts ratepayers.

FirstLight Recommends DOER Consider Several Changes to the RFP and the Resulting PPA to Minimize Economic Curtailment, Maximize Ratepayer Value, and Support Strategic Pairing with Energy Storage Systems

FirstLight recommends that DOER consider three recommended changes, offered below, to the Section 83C RFP and contracting structure. These recommendations would deliver improved system value to consumers only if enacted together.

1. FirstLight recommends that DOER alter the RFP to ensure corresponding terms of the PPA (Section 4.1) allow generators to sell the energy they produce when market prices are (or would be) negative to other buyers beyond the Electric Distribution Companies (EDCs) they are contracted with.

   Currently, the PPA not only restricts generators from finding other buyers during these market conditions, but Section 4.2 of the PPA also seeks to limit delivery altogether during negative pricing periods, stating:

   > "*…if during the Term of this Agreement the Locational Marginal Pricing (LMP) at the Delivery Point is negative, then…in such event Seller shall be under no obligation to schedule or Deliver Products at the Delivery Point during such negative LMP period*"[1]

   Appendix D of the PPA goes further to disincentive delivery during negative LMP periods by creating financial penalties, via effective reductions of the contracted pricing, for any delivered generation during these periods. While this provision may be somewhat effective in limiting the persistence of negative LMPs, it presents a much greater risk that offshore wind generation may be curtailed in large volumes, wasting a resource that could otherwise be stored for periods when it is needed most. Furthermore, the compounding consequence of this provision is continued reliance on fossil fuel plants for peaking needs rather than improved use of as-generated and, if properly incentivized, stored renewable energy. FirstLight recommends that these financial penalties noted in Appendix D be removed to preserve clear market signals and opportunity for storage assets.

2. FirstLight recommends that DOER consider modifying the existing manner in which REC prices are settled (currently a fixed schedule over the term of the PPA) so that generators are exposed to wholesale markets, with a specific intention of allowing generators to monetize dispatch strategies which prioritize on-peak performance. As a possible reference, FirstLight recommends considering components of the offshore wind procurement structure effective in New York State, where an "Index REC" offtake model[2] offers a robust hedge to generators (retaining the primary benefit of DOER's existing fixed-price structure) while also allowing generators to monetize the upside of optimal dispatch strategies and thus incentivizing them, through natural market forces, to maximize on-peak delivery.

3. FirstLight recommends that DOER build a stronger incentive, via the prescribed quantitative evaluation structure in Section 2.3.1 of the RFP, for offshore wind generators to operationally

[1] Appendix C-1 National Grid Version PPA, 2019. Page 25.
[2] Standard Form Offshore Wind Renewable Energy Certificate Purchase and Sale Agreement. The New York State Energy Research and Development Authority. 2020.

pair with Energy Storage Systems, including the deep storage possible at existing pumped storage facilities, which exists at a scale in New England that is well-matched to this solicitation for up to 1,600 MW of offshore wind. While the existing RFP structure technically accommodates proposals that pair with an Energy Storage System, limitations of the current evaluation structure, coupled with inadequate incentives for OSW developers to pursue operational pairing with existing electric storage, have failed to lead to such arrangements.

FirstLight recommends building on the existing mark-to-market comparison described in Section 2.3.1.1 of the RFP by performing an hourly (or sub-hourly) mark-to-market analysis that would highlight the value of a proposal that maximizes its generation during high-price market conditions by pairing with a new or existing Energy Storage System. Also, FirstLight recommends that DOER highlight in the RFP that the market price forecast used in the mark-to-market analysis is reflective of the State's bold decarbonization targets, as the shifting generation mix will have a direct impact on the system's hourly price curves.

Thank you for your consideration of these comments. FirstLight appreciates the opportunity to help Massachusetts advance its clean energy goals.

Sincerely,

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