



April 9, 2018

**VIA ELECTRONIC FILING**

The Honorable Kimberly D. Bose, Secretary  
The Honorable Nathaniel J. Davis, Sr., Deputy Secretary  
Federal Energy Regulatory Commission  
888 First Street, N.E. Washington, D.C. 20426

**Re: Participation of Distributed Energy Resource Aggregations in Markets Operated  
by Regional Transmission Organizations and Independent System Operators:  
Docket No. RM18-9-000**

**Distributed Energy Resources-Technical Considerations for the Bulk Power System;  
Docket No. AD18-10-000**

Dear Secretary Bose and Deputy Secretary Davis:

Attached with this cover letter, please find the Statement of Henry Yoshimura, on behalf of ISO New England Inc., in support of his appearance on Panel One of the April 10, 2018 Technical Conference noticed in the above-captioned dockets.

Respectfully submitted,

A handwritten signature in blue ink, reading "Theodore J. Paradise". The signature is fluid and cursive, with a long horizontal stroke extending to the left.

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**UNITED STATES OF AMERICA  
BEFORE THE  
FEDERAL ENERGY REGULATORY COMMISSION**

Participation of Distributed Energy	)	Docket No. RM18-9-000
Resource Aggregations in Markets	)	
Operated by Regional Transmission	)	
Organizations and Independent System	)	
Operators	)	
	)	Docket No. AD18-10-000
Distributed Energy Resources-Technical	)	
Considerations for the Bulk Power	)	
System	)	

**Statement of Henry Yoshimura, ISO New England Inc.**

**PANEL 1 - Economic Dispatch, Pricing, and Settlement of DER Aggregations**

**April 10, 2018**

**I. Summary of ISO New England’s Comments Concerning the DER NOPR**

ISO New England (“the ISO”) continues to urge the Commission to provide flexibility for each RTO and ISO to address the integration of distributed energy resources (“DERs”)<sup>1</sup> into wholesale markets. New England’s Settlement Only Resource and Demand Resource participation models have permitted the region to be a leader in DER development. To date, about 16 percent of the region’s electrical capacity is comprised of DERs, including energy efficiency measures.<sup>2</sup> Under the current market rules developed by the ISO and approved by the

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<sup>1</sup> DER is defined broadly here and includes all resources located in the distribution system including distributed generation and electric storage (located either in front of or behind the end-use customer meter), and behind-the-meter Demand Resources that includes demand response, energy efficiency, and more advanced technologies /configurations such as electric vehicles and micro-grids. While more expansive than the proposed Commission definition and NERC definition of DERs, it is inline with how NARUC defines DER as Commission Staff recently noted in its February 18, 2018 Staff Report in this docket.

<sup>2</sup> See Table 1.

Commission, together with the new approach to integrating electric storage resources scheduled for later this year, the ISO does not see a need for an additional DER participation model for New England at this time. Implementing the DER participation model envisioned under the DER NOPR would be costly and disruptive, and will not bring any additional value to New England. We believe that there would be little to no interest in participating in that new model if implemented in parallel with the current approach. And if the new model replaces the existing approach, DERs will likely exit the wholesale market. Therefore, the ISO must work with the states to determine how DERs ought to be integrated into the electric system in preparation for the time that operational control over DERs may be needed to maintain reliability and efficiency.

## **II. New England is a Leader in DER Development**

### **A. The Current New England Participation Models Support DER Development**

The current Settlement Only Resource (“SOR”) and Demand Resource (“DR”) participation models have permitted DERs to flourish in the New England region. As shown in Table 1 in the Appendix, DERs comprise about 16% of New England’s total electrical capacity. DERs can participate in the New England wholesale market as a SOR, a DR, or can monetize their value without participating in wholesale markets by reducing demand, which in turn reduces energy and capacity costs incurred by customers. In New England, the majority of DERs are in the form of passive, non-dispatchable distributed generation (*i.e.*, solar PV) and energy efficiency. In-front-of-the meter solar PV participates in the wholesale market as a SOR, and behind-the-meter solar PV and energy efficiency participates in the wholesale market as an On-Peak or Seasonal Peak Demand Resource. Going forward, most of the DERs that will be installed in New England in the foreseeable future will be in the form of solar PV and energy efficiency given the state support to date for these particular technologies.

## **B. Settlement Only Resources (“SORs”)**

SORs are Generator Assets that are each less than 5 MW and are often connected to the system at distribution voltages. SORs participate in the Real-Time Energy Market as a price taker (*i.e.*, SORs “self-dispatch” and are paid the Real-Time LMP when they produce energy). Because of this, SORs do not submit Supply Offers into the Day-Ahead or Real-Time Energy Markets and are not subject to ISO dispatch or telemetry requirements. There is no minimum size requirement for SORs that participate in the energy market. SORs could participate in the Forward Capacity Market (“FCM”), but all resources participating in the FCM are required to have at least 100 kW of capacity. Because SORs are not subject to ISO dispatch or telemetry requirements, SORs cannot provide Operating Reserves.<sup>3</sup> In our experience, however, DERs are unwilling to be subject to ISO dispatch and the associated requirements, and therefore opt to participate in the wholesale market as a SOR. The ISO’s SOR model accommodates the wholesale market participation of DERs by not requiring these DERs to be subject to ISO dispatch.

## **C. Demand Resources (“DRs”)**

DRs comprise behind-the-meter measures installed at end-use customer facilities – such as energy efficiency, load management, behind-the-meter generation and storage – that reduce end-use electricity demand. While the primary purpose of a DR is to reduce electricity demand, the Commission-approved market rules for New England allow DR resources composed of distributed generation and/or storage with the appropriate interconnection to receive compensation for energy injected into the electric system. Passive DR, such as energy efficiency, and non-dispatchable behind-the-meter generation, such as solar PV, may only

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<sup>3</sup> An SOR is eligible to provide Regulation service as Alternative Technology Regulation Resource.

participate in the FCM as these resources are not capable of responding to ISO dispatch. Active DR such as controllable loads, dispatchable behind-the-meter generation and/or storage that can respond to ISO dispatch may also only participate in the FCM at this time.<sup>4</sup> However, as of June 1, 2018, active DR will be able to submit demand-reduction supply offers directly into the Day-Ahead and Real-Time Energy Markets, and will be subject to economic dispatch. Since ISO New England co-optimizes the provision of energy and reserves, these offers will also be used to efficiently designate active DR resources to provide Operating Reserves. While active DR may continue to participate in the FCM, these resources may also choose to participate in the energy and reserves markets without taking on a Capacity Supply Obligation.

### **III. Developing an Additional DER Participation Model will be Costly, Disruptive, and Will Not Bring Additional Benefit to New England**

#### **A. Implementing a Market Participation Model is a Complex, Multi-Year Project**

Considering the complexity and effort in implementing a market participation model, a new DER participation model should be implemented only if, a) that model is needed and, b) participation is expected to be robust. This view is informed by the experience of ISO New England's efforts to fully integrate active DR into the energy and reserves markets, which has been a complex, multi-year project. Our effort in fully integrating active DR into the energy and reserves markets as a supply-side resource started in 2011 when the Commission issued Order 745. Implementation was delayed given the controversies surrounding Order 745.

Implementation efforts resumed once these controversies were resolved by the U.S. Supreme Court in 2016. Active DR is now scheduled to be fully integrated into the energy and reserve markets on June 1, 2018. While such efforts may be justified for given changes, there should be

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<sup>4</sup> Active DR is presently eligible to provide Regulation service as an Alternative Technology Regulation Resource.

an upfront understanding regarding the need for, and likely participation flowing from, such changes.

**B. A New DER Participation Model is Not Needed in New England, and Participation in Such a Model Would Not Be Robust**

In New England, we do not see a need for a new DER participation model, and we do not expect participation in such a model to be robust should one be developed. The new DER participation model that is contemplated in the DER NOPR assumes that DERs are dispatchable resources needing to participate in wholesale markets to access wholesale market revenue, and needing to be aggregated to meet minimum resource size requirements. However, Table 1 in the Appendix shows that the vast majority of DERs in the market today include passive, non-dispatchable energy efficiency and solar PV resources, and we expect this trend to continue into the foreseeable future. Where the resources choose to participate in the wholesale markets, passive, non-dispatchable DERs are currently integrated into the wholesale markets as a SOR (*e.g.*, in-front-of-the meter solar PV) or as an On-Peak or Seasonal Peak Demand Resource (*e.g.*, energy efficiency or behind-the-meter solar PV). We expect that these categories of resources will continue to grow in the foreseeable future given the state support for energy efficiency and solar PV in New England.

Since the DER participation model contemplated in the DER NOPR cannot be used by passive, non-dispatchable DERs such as energy efficiency and solar PV, implementing such a model will not encourage greater numbers of these resources to participate in the New England wholesale market. And there is no need to aggregate resources to participate in the market as a SOR since there is no minimum size requirement for SORs. The one potential incremental benefit that the participation model contemplated in the DER NOPR would produce is allowing

in-front-of-the meter, dispatchable DERs that are not active DR or electric storage resources<sup>5</sup> to provide Operating Reserves.<sup>6</sup> But to provide Operating Reserves, these DERs would need to submit Supply Offers to the ISO, be subject to ISO dispatch, performance requirements and comply with electronic dispatch, communication, telemetry and other technical requirements.

### **C. Replacing New England's Existing Model with that Contemplated in the DER NOPR will Cause DERs to Exit the Wholesale Market**

If the Commission requires the ISO to replace its existing SOR and/or DR rules with the DER participation model envisioned in the DER NOPR, the DERs that currently participate in the wholesale market will likely exit the market as they will not be willing or able to comply with the model's requirements. The ISO's experience with demand response is particularly noteworthy here. Ironically, as the U.S. Supreme Court affirmed the Commission's jurisdiction over demand response and new demand response participation models were implemented, demand response participation in wholesale markets declined. As market designs improved over time (*e.g.*, elimination of the floor price in the FCM, implementation of the FCM Pay-for-Performance construct), as EPA regulations changed to prohibit emergency engines from providing demand response, and as the rules for demand response became increasingly more comparable with that of wholesale generators, demand response participation in wholesale markets dramatically decreased. The same will likely happen with DERs if the DER participation model envisioned in the DER NOPR replaces New England's current approach.

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<sup>5</sup> With Order 841 which drops the minimum size requirement for storage to 100 kW, the need for a new DER approach is further reduced.

<sup>6</sup> Note that active DR and in-front of the meter electric storage resources will be able to provide Operating Reserves later this year.

#### **IV. The ISO Must Work with the States and Distribution Companies to Determine How a Potentially Large Increase in DERs are Best Integrated Into the Electric System**

The New England bulk-power system is currently not experiencing operational problems with the amount of DERs presently in the electric system. However, a large increase in DERs may require new tools for system operators to have a better understanding of the impacts of such resources in real time and have other transmission system resources that are able to react in the manner needed to counterbalance changes to the power system caused by large numbers of non-dispatchable resources. But the Commission cannot simply order the ISOs/RTOs to implement requirements that subject these DERs to ISO operational rules because these DERs may choose to monetize their value outside of the wholesale energy markets. There is little the ISO can do to direct the operation of DERs that do not participate in wholesale markets and that reside in the distribution system. This will require the ISO to work with the states and distribution companies to determine an approach that integrates all DERs into the overall electric system in a reliable and efficient manner.

#### **V. Conclusion**

The ISO urges the Commission to provide flexibility for each RTO and ISO to address the integration of DERs into wholesale markets. The current SOR and DR participation models have permitted New England to be a leader in DER development. Under the market rules developed by the ISO together with the new approach to integrating electric storage resources scheduled for later this year, we see no need for an additional DER participation model for New England at this time. Implementing the DER participation model envisioned under the DER NOPR would be costly and disruptive, and will not bring any additional value to New England. We believe that there would be little to no interest in the new DER participation model if implemented in parallel with the current approach. And if the new model replaces the existing



approach, DERs will likely exit the wholesale market and choose to monetize their value by reducing their allocation of wholesale energy and capacity costs.

Thank you for the opportunity to participate in this technical conference. I look forward to your questions.

Respectfully submitted,

\_\_\_\_\_/s/\_\_\_\_\_  
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Dated: April 9, 2018

## Appendix: Distributed Energy Resources in New England

**TABLE 1: New England Distributed Energy Resources as of 01/01/2018**

Distributed Energy Resource (DER) Category	Settlement Only Resource (SOR) Nameplate Capacity (MW)	Demand Resource (DR) Maximum Capacity (MW)	Total DER Capacity (MW)
Energy Efficiency	-	1,765	1,765
Demand Response (excluding behind-the-meter DG capacity)*	-	99	99
Natural Gas Generation	26	331	357
Generation Using Other Fossil Fuels	75	268	344
Generation Using Purchased Steam	-	19	19
Non-Solar Renewable Generation (e.g., hydro, biomass, wind)	523	126	649
Solar PV Generation participating in the wholesale market	810	48	858
Electricity Storage	1	-	1
Solar PV Generation <i>not</i> participating in the wholesale market	-	-	1,532
Total DER Capacity	1,436	2,656	5,625
Total DER Capacity/Total Wholesale System Capability**	4.1%	7.5%	15.9%

\* To avoid double-counting, demand response capacity reported here excludes any behind-the-meter DG capacity located at facilities providing demand response. Registered demand response capacity as of 01/2018 (MW): 684

\*\* System Operable Capacity (Seasonal Claimed Capability) plus SOR and DR Capacity as of 01/2018 (MW): 35,406