



February 28, 2018

VIA ELECTRONIC FILING

The Honorable Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

Re: ISO New England Inc., Docket No. ER18-____-000
Forward Capacity Auction Results Filing
April 13, 2018 COMMENT DATE REQUIRED BY REGULATION

Dear Secretary Bose:

Pursuant to Section 205 of the Federal Power Act (“FPA”)¹ and Section III.13.8.2 of the ISO New England Transmission, Markets and Services Tariff (the “Tariff”),² ISO New England Inc. (the “ISO”) submits this Forward Capacity Auction Results Filing (“FCA Results Filing”) for the twelfth Forward Capacity Auction (“FCA”).³ Section III.13.8.2 (a) of the Tariff requires the ISO to file the results of the FCA with the Federal Energy Regulatory Commission (“Commission” or “FERC”) as soon as practicable after the FCA is complete. The twelfth FCA was held on February 5-6, 2018 for the June 1, 2021 through May 31, 2022 Capacity Commitment Period. The ISO submits this filing in accordance with the Tariff.

Pursuant to Section III.13.8.2 (c) of the Tariff, any objection to the FCA results must be filed with the Commission within 45 days from the date of the FCA Results Filing. **Accordingly, any objections must be filed on or before April 13, 2018, and the ISO requests that the Commission**

¹ 16 U.S.C. § 824d (2006).

² The rules governing the Forward Capacity Market (“FCM Rules”) are primarily contained in Section III.13 of the Tariff, but also may include other provisions, including portions of Section III.12.

³ Capitalized terms used but not otherwise defined in this filing have the meanings ascribed thereto in the Tariff, the Second Restated New England Power Pool Agreement and the Participants Agreement.

issue a notice setting an April 13, 2018 comment date.⁴ As discussed below, the ISO requests an effective date of June 28, 2018, which is 120 days from the date of this submission.

In accordance with Section III.13.8.2 of the Tariff, this submission contains the results of the twelfth FCA, including the Capacity Zones in the auction; the Capacity Clearing Price in each of those Capacity Zones; a list of which resources received Capacity Supply Obligations in each Capacity Zone; and the amount of those Capacity Supply Obligations. Pursuant to Tariff Section III.12.4, the Capacity Zones for the twelfth FCA were the Southeast New England (“SENE”) Capacity Zone, the Northern New England (“NNE”) Capacity Zone and the Rest-of-Pool Capacity Zone. The SENE Capacity Zone includes Northeastern Massachusetts/Boston (“NEMA/Boston”), Southeastern Massachusetts, and Rhode Island. The NNE Capacity Zone includes Maine, New Hampshire and Vermont. The Rest-of-Pool Capacity Zone includes Connecticut and Western/Central Massachusetts.

The auction commenced with a starting price of \$12.684/kW-month and concluded after four rounds for the SENE, NNE, and Rest-of-Pool Capacity Zones, and for the New York AC Ties and Hydro-Quebec Highgate external interfaces. Resources in those Capacity Zones and external interfaces will be paid at the Capacity Clearing Price set pursuant to the system sloped demand curve of \$4.631/kW-month.⁵ The auction continued for an additional round for the Phase I/II HQ Excess external interface and for the New Brunswick external interface. Imports over the Phase I/II HQ Excess interface will be paid at the Capacity Clearing Price of \$3.701/kW-month and imports over the New Brunswick external interface will be paid at the Capacity Clearing Price of \$3.155/kW-month.

Section III.13.8.2 (b) of the Tariff requires the ISO to provide documentation regarding the competitiveness of the FCA. The documentation may include certification from the auctioneer and the ISO that: (i) all resources offering and bidding in the FCA were properly qualified in accordance with the provisions of Section III.13.1; and (ii) the FCA was conducted in accordance with the provisions of Section III.13. Pursuant to Section III.13.8.2 (b), the ISO has included the Testimony of Stephen J. Rourke, Vice President of System Planning at the ISO (“Rourke Testimony”); the Testimony of Robert G. Ethier, Vice President of Market Operations at the ISO (“Ethier Testimony”); the Testimony of Jeffery McDonald, Vice President of Market Monitoring and the Internal Market Monitor (“IMM”) at the ISO (“McDonald Testimony”); and the Testimony of Lawrence M. Ausubel, the auctioneer (“Ausubel Testimony”).

The ISO tenders the instant filing in compliance with Section III.13.8.2 of its Tariff pursuant to Section 205 of the FPA, and the ISO requests that the Commission find that the ISO conducted the twelfth FCA in accordance with its FERC-approved Tariff.

⁴ 45 days from February 28, 2018 is Saturday April, 14, 2018. Because the Tariff requires that comments be filed within 45 days of the FCA Results Filing, the ISO requests that the comment date be set for Friday April 13, 2018.

⁵ Existing resources with multi-year obligations from previous auctions will be paid based on the Capacity Clearing Price in the auction in which they originally cleared. Self-supplied resources will not be paid through the FCM.

I. COMMUNICATIONS

All correspondence and communications in this proceeding should be addressed to the undersigned as follows:

Kevin W. Flynn, Esq.
Senior Regulatory Counsel
ISO New England Inc.
One Sullivan Road
Holyoke, MA 01040-2841
Tel: (413) 535-4177
Fax: (413) 535-4379
E-mail: kflynn@iso-ne.com

II. STANDARD OF REVIEW

The ISO tenders the instant filing in compliance with Section III.13.8.2 of its Tariff and pursuant to Section 205 of the FPA.⁶ The ISO respectfully requests that the Commission find that the twelfth FCA Results Filing meets the standard of Section 205, in that the results are just and reasonable rates derived from the auction that was conducted in accordance with the ISO's FERC-approved Tariff.

III. REQUESTED EFFECTIVE DATE

The ISO respectfully requests that the Commission accept the twelfth FCA Results Filing, confirming that the auction was conducted in conformance with the ISO's Commission-approved Tariff, to be effective June 28, 2018 which is 120 days after the date of submission. Under the Tariff, parties have 45 days to file with the Commission an objection to the FCA Results Filing.⁷ An effective date of 120 days from the date of submission gives interested parties an opportunity to respond to any objections and provides the Commission time to review the FCA Results Filing and associated pleadings.

IV. SPECIFIC FCA RESULTS

A. Capacity Zones Resulting From the Auction

⁶ It should be noted that the Commission has consistently held that the matters properly in dispute in the annual FCA results filing are the results of the FCA and not the underlying market design or rules. *See e.g., ISO New England Inc.*, 130 FERC ¶ 61,145 at P 33 (2010) (finding that challenges to the FCM market design are outside the scope of the proceeding evaluating the FCA results filing).

⁷ Tariff Section III.13.8.2 (c).

Section III.13.8.2 (a) of the Tariff requires the ISO to provide the Capacity Zones resulting from the FCA. The Capacity Zones for the twelfth FCA were SENE, NNE and Rest-of-Pool. The Capacity Zones determined under Section III.13.2.3.4 of the Tariff are the same Capacity Zones that were modeled pursuant to Section III.12.4 of the Tariff.

B. Capacity Clearing Price

The Tariff requires the ISO to provide the Capacity Clearing Price in each Capacity Zone (and, pursuant to Section III.13.2.3.3 (d), the Capacity Clearing Price associated with certain imports, if applicable).⁸ For the twelfth FCA, the descending clock auction starting price in each Capacity Zone was \$12.684/kW-month. As explained in the Ethier Testimony, the auction resulted in the same Capacity Clearing Price of \$4.631/kW-month for the SENE, NNE and Rest-of-Pool Capacity Zones.⁹

Imports over the New York AC Ties external interface, totaling 524 MW and imports over the Hydro-Quebec Highgate external interface, totaling 57 MW, will also receive a Capacity Clearing Price of \$4.631/kW-month. Imports over the Phase I/II HQ Excess external interface, totaling 442 MW will receive a Capacity Clearing Price of \$3.701/kW-month. Imports over the New Brunswick external interface, totaling 194 MW, will receive a Capacity Clearing Price of \$3.155/kW-month.¹⁰

C. Capacity Supply Obligations

The Tariff requires the ISO to specify in the FCA Results Filing the resources which received Capacity Supply Obligations in each Capacity Zone.¹¹ This information is provided in Attachment A.

The Tariff also requires the ISO to list which resources cleared as Conditional Qualified New Generating Capacity Resources and to provide certain information relating to Long Lead Time Generating Facilities.¹² No resources cleared as Conditional Qualified New Generating Capacity Resources in the twelfth FCA. In addition, there were no Long Lead Time Generating Facilities that secured a Queue Position to participate as a New Generating Capacity Resource in the twelfth FCA; and as such, there were no resources with a lower queue priority that were selected in the FCA subject to a Long Lead Time Generating Facility with a higher queue priority.

D. De-List Bids Reviewed For Reliability Purposes

⁸ Tariff Section III.13.8.2 (a).

⁹ Ethier Testimony at 12.

¹⁰ *Id.* at 15-16.

¹¹ Tariff Section III.13.8.2 (a).

¹² *Id.*

Prior to the twelfth FCA, pursuant to Section III.13.2.5.2.5, the ISO reviewed each submitted Retirement De-List Bid, Permanent De-List Bid, Static De-List Bid, Export De-List Bid, and Administrative Export De-List Bid to determine if the capacity associated with each such bid was needed for reliability reasons. During the FCA, also pursuant to Section III.13.2.5.2.5, the ISO reviewed each Dynamic De-List Bid to determine if the capacity associated with each such bid was needed for reliability reasons. The capacity is deemed to be needed for reliability reasons if a violation of any North American Electric Reliability Corporation (“NERC”), Northeast Power Coordinating Council (“NPCC”), or ISO criteria would occur in the absence of the capacity. The ISO’s review of de-list bids considered the availability of all existing supply resources in the FCM, including Demand Resources.

The ISO process for performing the reliability review of de-list bids is provided in Section III.13.2.5.2.5 of the Tariff and in Section 7 of the ISO New England Planning Procedure No. 10 — Planning Procedure to Support the Forward Capacity Market (“PP-10”).

1. **Accepted De-List Bids**

Pursuant to Section III.13.2.5.2.5, all de-list bids submitted during the qualification process were subject to a reliability review prior to the twelfth FCA. No de-list bids submitted during the qualification process were rejected for reliability reasons. During the FCA, a total of 2,772 MW of capacity from Dynamic De-List Bids were reviewed. Two Dynamic De-List Bids were rejected, as described below.

2. **Reliability Review Of De-List Bids**

Section III.13.8.2(a) requires the ISO to enumerate bids rejected for reliability reasons pursuant to Section III.13.2.5.2.5, and the reasons for those rejections. In the twelfth FCA, the ISO rejected two Dynamic De-List Bids for reliability reasons. Specifically, the ISO rejected Dynamic De-List Bids submitted by Exelon Generation Company, LLC for the Mystic 7 and Mystic 8 generating facilities. Mystic 7 is a steam unit, fueled by either natural gas or oil, depending on market conditions and fuel availability, with approximately 575 MW of FCA Qualified Capacity for the twelfth FCA, and is located in the Northeast Massachusetts/Boston (“NEMA/Boston”) Load Zone. Mystic 7 de-listed all of its FCA Qualified Capacity at \$5.000/kW-month. Mystic 8 is a combined cycle unit, fueled solely by natural gas, had approximately 703 MW of FCA Qualified Capacity for the twelfth FCA, and is also located in the NEMA/Boston Load Zone. Mystic 8 de-listed all of its FCA Qualified Capacity at \$5.499/kW-month.

In his testimony, Mr. Stephen Rourke addresses the ISO’s reasons for rejecting the Dynamic De-List Bids. Mr. Rourke explains that the ISO rejected the bids for local reliability reasons because allowing the resources to leave the market would have resulted in a violation of NERC, NPCC, or ISO criteria.

V. DOCUMENTATION OF COMPETITIVENESS

Section III.13.8.2 (b) of the Tariff requires the ISO to provide documentation regarding the competitiveness of the FCA. The documentation may include certification from the auctioneer and the ISO that: (i) all resources offering and bidding in the FCA were properly qualified in accordance with the provisions of Section III.13.1 of the Tariff; and (ii) the FCA was conducted in accordance with the provisions of Section III.13 of the Tariff. In this regard, the ISO has included the Rourke Testimony, the Ethier Testimony, the McDonald Testimony, and the Ausubel Testimony.

In his testimony, Mr. Rourke, who oversaw the qualification of resources, certifies that all resources offering and bidding in the twelfth FCA were qualified in accordance with Section III.13.1 of the Tariff.¹³ Mr. Rourke also testifies that he oversaw the reliability review of de-list bids for the twelfth FCA.¹⁴

In his testimony, Dr. Ethier explains the prices resulting from the auction and how the prices were determined.¹⁵ Dr. Ethier also explains the prices over the external interfaces and why some of those prices were lower than other Capacity Clearing Prices.¹⁶

Dr. McDonald explains that the IMM reviewed de-list bids from existing resources and offers from new resources submitted during the qualification process.¹⁷ Dr. McDonald testifies that he oversaw the IMM's review of these bids and offers and certifies that such review was performed in accordance with the provisions of Section III.13.1 and Section III.A.21.2.¹⁸ Dr. McDonald also notes that the IMM's determinations with respect to the offers and bids were accepted by the Commission.¹⁹

Dr. Ausubel, the auctioneer, and chairman and founder of Power Auctions LLC, the company that helped implement and administer the FCA, certifies that the auction was conducted in accordance with Section III.13.2.²⁰ Dr. Ausubel's certification is based on his vast experience in conducting energy auctions.

VI. ADDITIONAL SUPPORTING INFORMATION

¹³ Rourke Testimony at 3-4.

¹⁴ *Id.* at 4.

¹⁵ Ethier Testimony at 12-15.

¹⁶ *Id.* at 15-16.

¹⁷ McDonald Testimony at 2-3.

¹⁸ *Id.*

¹⁹ *Id.* at 3.

²⁰ Ausubel Testimony at 4.

The ISO tenders the instant filing in compliance with Section III.13.8.2 of its Tariff pursuant to Section 205 of the FPA.²¹ Section 35.13 of the Commission's regulations generally requires public utilities to file certain cost and other information related to an examination of cost-of-service rates.²² However, the results of the FCA are not traditional "rates" and the ISO is not a traditional investor-owned utility. Therefore, to the extent necessary, the ISO requests waiver of Section 35.13 of the Commission's regulations. Notwithstanding its request for waiver, the ISO submits the following additional information in compliance with the identified filing regulations of the Commission applicable to Section 205.

35.13(b)(1) - Materials included herewith are as follows:

- a. This transmittal letter;
- b. Attachment A: List of Capacity Supply Obligations;
- c. Attachment B: Testimony of Stephen J. Rourke;
- d. Attachment C: Testimony of Robert G. Ethier
- e. Attachment D: Testimony of Jeffrey McDonald;
- f. Attachment E: Testimony of Lawrence M. Ausubel; and
- g. Attachment F: List of governors and utility regulatory agencies in Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont to which a copy of this filing has been mailed.

35.13(b)(2) - The ISO respectfully requests that the Commission accept this filing to become effective on June 28, 2018, which is 120 days after the submission of this FCA Results Filing.

35.13(b)(3) - Pursuant to Section 17.11 (e) of the Participants Agreement, Governance Participants are being served electronically rather than by paper copy. The names and addresses of the Governance Participants are posted on the ISO's website at <https://www.iso-ne.com/participate/participant-asset-listings/directory?id=1&type=committee> . An electronic copy of this transmittal letter and the accompanying materials have also been emailed to the governors and electric utility regulatory agencies for the six New England states which comprise the New England Control Area, and to the

²¹ As noted above, the Commission has consistently held that the scope of the proceeding evaluating the annual FCA results filing is limited to the results of the FCA. *See e.g., ISO New England Inc.*, 130 FERC ¶ 61,145 at P 33 (2010) (finding that challenges to the FCM market design are outside the scope of the proceeding evaluating the FCA results filing).

²² 18 C.F.R. § 35.13 (2017).

New England Conference of Public Utility Commissioners, Inc. The names and addresses of these governors and regulatory agencies are shown in Attachment F.

35.13(b)(4) - A description of the materials submitted pursuant to this filing is contained in the transmittal letter;

35.13(b)(5) - The reasons for this filing are discussed in this transmittal letter; and

35.13 (b)(7) - The ISO has no knowledge of any relevant expenses or cost of service that have been alleged or judged in any administrative or judicial proceeding to be illegal, duplicative, or unnecessary costs that are demonstrably the product of discriminatory employment practices.

VII. CONCLUSION

In this FCA Results Filing, the ISO has presented all of the information required by the Tariff. The ISO has demonstrated that the twelfth FCA was conducted in accordance with the Tariff, as found just and reasonable by the Commission. The ISO has specified the Capacity Zones that were used in the auction. The ISO has also provided the Capacity Clearing Price for each of the Capacity Zones and external interfaces, and it has provided a list of resources that received Capacity Supply Obligations. Finally, the ISO has provided documentation in the form of testimony, regarding the outcome of the twelfth FCA. Accordingly, the ISO requests that the Commission accept the results of the twelfth FCA within 120 days of this filing.

Respectfully submitted,

By: /s/ Kevin W. Flynn

Kevin Flynn, Esq.
Senior Regulatory Counsel
ISO New England Inc.
One Sullivan Road
Holyoke, MA 01040-2841
Tel: (413) 535-4177
Fax: (413) 535-4379
E-mail: kflynn@iso-ne.com

cc: Governance Participants (electronically) and entities listed in Attachment F.

Attachment A

ID	Name	Type	Capacity Zone ID	Capacity Zone Name	State	Load Zone	Status	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	May-22
760	NORTH GORHAM	Generator	8505	Northern New England	ME	ME	Existing	1.108	1.108	1.108	1.108	1.096	1.096	1.096	1.096	1.096	1.096	1.096	1.096
761	SHAWMUT	Generator	8505	Northern New England	ME	ME	Existing	5.417	5.417	5.417	5.417	7.074	7.074	7.074	7.074	7.074	7.074	7.074	7.074
766	CABOT TURNERS FALLS	Generator	8500	Rest-of-Pool	MA	WCMA	Existing	67.881	67.881	67.881	67.881	67.881	67.881	67.881	67.881	67.881	67.881	67.881	67.881
767	SIS CONCORD	Generator	8505	Northern New England	NH	NH	Existing	12.042	12.042	12.042	12.042	12.439	12.439	12.439	12.439	12.439	12.439	12.439	12.439
768	GENERATOR HOOKSETT	Generator	8505	Northern New England	NH	NH	Existing	3.244	3.244	3.244	3.244	7.013	7.013	7.013	7.013	7.013	7.013	7.013	7.013
769	HADLEY FALLS 1&2	Generator	8500	Rest-of-Pool	MA	WCMA	Existing	9.192	9.192	9.192	9.192	24.883	24.883	24.883	24.883	24.883	24.883	24.883	24.883
772	NEWPORT HYDRO	Generator	8505	Northern New England	VT	VT	Existing	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
774	LOWER LAMODILLE COMPOSITE	Generator	8505	Northern New England	VT	VT	Existing	15.800	15.800	15.800	15.800	15.800	15.800	15.800	15.800	15.800	15.800	15.800	15.800
775	MIDDLEBURY COMPOSITE	Generator	8505	Northern New England	VT	VT	Existing	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
776	N. RUTLAND COMPOSITE	Generator	8505	Northern New England	VT	VT	Existing	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
779	MIDDLESEX 2	Generator	8505	Northern New England	VT	VT	Existing	0.514	0.514	0.514	0.514	1.414	1.414	1.414	1.414	1.414	1.414	1.414	1.414
781	WEST DANVILLE 1	Generator	8505	Northern New England	VT	VT	Existing	0.000	0.000	0.000	0.000	0.078	0.078	0.078	0.078	0.078	0.078	0.078	0.078
786	KEZAR LEDGEMERE COMPOSITE	Generator	8505	Northern New England	ME	ME	Existing	0.403	0.403	0.403	0.403	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971
789	CEC 002 PAWTUCKET US	Generator	8506	Southeast New England	RI	RI	Existing	0.078	0.078	0.078	0.078	0.574	0.574	0.574	0.574	0.574	0.574	0.574	0.574
792	CENTENNIAL HYDRO	Generator	8500	Rest-of-Pool	MA	WCMA	Existing	0.094	0.094	0.094	0.094	0.554	0.554	0.554	0.554	0.554	0.554	0.554	0.554
793	METHUEN HYDRO	Generator	8506	Southeast New England	MA	NEMA	Existing	0.000	0.000	0.000	0.000	0.147	0.147	0.147	0.147	0.147	0.147	0.147	0.147
794	MINIOWAWA	Generator	8505	Northern New England	NH	NH	Existing	0.119	0.119	0.119	0.119	0.567	0.567	0.567	0.567	0.567	0.567	0.567	0.567
795	RIVER MILL HYDRO	Generator	8505	Northern New England	NH	NH	Existing	0.000	0.000	0.000	0.000	0.044	0.044	0.044	0.044	0.044	0.044	0.044	0.044
796	GOODWIN DAM	Generator	8500	Rest-of-Pool	CT	CT	Existing	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000
797	CEC 003 WYRE WYND US	Generator	8500	Rest-of-Pool	CT	CT	Existing	0.249	0.249	0.249	0.249	1.108	1.108	1.108	1.108	1.108	1.108	1.108	1.108
798	COLEBROOK	Generator	8500	Rest-of-Pool	CT	CT	Existing	0.510	0.510	0.510	0.510	0.490	0.490	0.490	0.490	0.490	0.490	0.490	0.490
800	KINNETOWN 8	Generator	8500	Rest-of-Pool	CT	CT	Existing	0.048	0.048	0.048	0.048	0.571	0.571	0.571	0.571	0.571	0.571	0.571	0.571
801	WILLIMANTIC 1	Generator	8500	Rest-of-Pool	CT	CT	Existing	0.000	0.000	0.000	0.000	0.164	0.164	0.164	0.164	0.164	0.164	0.164	0.164
802	WILLIMANTIC 2	Generator	8500	Rest-of-Pool	CT	CT	Existing	0.000	0.000	0.000	0.000	0.057	0.057	0.057	0.057	0.057	0.057	0.057	0.057
803	TOUTANT	Generator	8500	Rest-of-Pool	CT	CT	Existing	0.000	0.000	0.000	0.000	0.139	0.139	0.139	0.139	0.139	0.139	0.139	0.139
804	PUTNAM	Generator	8500	Rest-of-Pool	CT	CT	Existing	0.051	0.051	0.051	0.051	0.383	0.383	0.383	0.383	0.383	0.383	0.383	0.383
806	MECHANICSVILLE	Generator	8500	Rest-of-Pool	CT	CT	Existing	0.000	0.000	0.000	0.000	0.103	0.103	0.103	0.103	0.103	0.103	0.103	0.103
807	CEC 004 DAYVILLE POND US	Generator	8500	Rest-of-Pool	CT	CT	Existing	0.000	0.000	0.000	0.000	0.049	0.049	0.049	0.049	0.049	0.049	0.049	0.049
808	SANDY HOOK HYDRO	Generator	8500	Rest-of-Pool	CT	CT	Existing	0.000	0.000	0.000	0.000	0.056	0.056	0.056	0.056	0.056	0.056	0.056	0.056
810	QUINEBAUG	Generator	8500	Rest-of-Pool	CT	CT	Existing	0.098	0.098	0.098	0.098	0.910	0.910	0.910	0.910	0.910	0.910	0.910	0.910
811	BANTAM	Generator	8500	Rest-of-Pool	CT	CT	Existing	0.014	0.014	0.014	0.014	0.067	0.067	0.067	0.067	0.067	0.067	0.067	0.067
812	BEEBE HOLBROOK	Generator	8500	Rest-of-Pool	MA	WCMA	Existing	0.063	0.063	0.063	0.063	0.062	0.062	0.062	0.062	0.062	0.062	0.062	0.062
813	TUNNEL	Generator	8500	Rest-of-Pool	CT	CT	Existing	0.149	0.149	0.149	0.149	1.139	1.139	1.139	1.139	1.139	1.139	1.139	1.139
814	PATON	Generator	8505	Northern New England	VT	VT	Existing	0.006	0.006	0.006	0.006	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019
815	CARVER FALLS	Generator	8505	Northern New England	VT	VT	Existing	0.017	0.017	0.017	0.017	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
816	CAVENDISH	Generator	8505	Northern New England	VT	VT	Existing	0.172	0.172	0.172	0.172	0.605	0.605	0.605	0.605	0.605	0.605	0.605	0.605
817	TAFTSVILLE VT	Generator	8505	Northern New England	VT	VT	Existing	0.012	0.012	0.012	0.012	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030
818	PIERCE MILLS	Generator	8505	Northern New England	VT	VT	Existing	0.091	0.091	0.091	0.091	0.156	0.156	0.156	0.156	0.156	0.156	0.156	0.156
819	ARNOLD FALLS	Generator	8505	Northern New England	VT	VT	Existing	0.092	0.092	0.092	0.092	0.130	0.130	0.130	0.130	0.130	0.130	0.130	0.130
820	PASSUMPSIC	Generator	8505	Northern New England	VT	VT	Existing	0.068	0.068	0.068	0.068	0.227	0.227	0.227	0.227	0.227	0.227	0.227	0.227
821	GAGE	Generator	8505	Northern New England	VT	VT	Existing	0.140	0.140	0.140	0.140	0.314	0.314	0.314	0.314	0.314	0.314	0.314	0.314
822	SMITH (CVPS)	Generator	8505	Northern New England	VT	VT	Existing	0.401	0.401	0.401	0.401	0.510	0.510	0.510	0.510	0.510	0.510	0.510	0.510
823	EAST BARNET	Generator	8505	Northern New England	VT	VT	Existing	0.438	0.438	0.438	0.438	0.782	0.782	0.782	0.782	0.782	0.782	0.782	0.782
824	BATH ELECTRIC HYDRO	Generator	8505	Northern New England	NH	NH	Existing	0.233	0.233	0.233	0.233	0.238	0.238	0.238	0.238	0.238	0.238	0.238	0.238
825	SEASBURG WIND	Generator	8500	Rest-of-Pool	MA	WCMA	Existing	0.096	0.096	0.096	0.096	1.062	1.062	1.062	1.062	1.062	1.062	1.062	1.062
827	CENTER RUTLAND	Generator	8505	Northern New England	VT	VT	Existing	0.019	0.019	0.019	0.019	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028
833	BARNET	Generator	8505	Northern New England	VT	VT	Existing	0.062	0.062	0.062	0.062	0.121	0.121	0.121	0.121	0.121	0.121	0.121	0.121
834	COMPTU FALLS	Generator	8505	Northern New England	VT	VT	Existing	0.105	0.105	0.105	0.105	0.351	0.351	0.351	0.351	0.351	0.351	0.351	0.351
835	DEWEY MILLS	Generator	8505	Northern New England	VT	VT	Existing	0.300	0.300	0.300	0.300	0.622	0.622	0.622	0.622	0.622	0.622	0.622	0.622
836	EMERSON FALLS	Generator	8505	Northern New England	VT	VT	Existing	0.006	0.006	0.006	0.006	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033
837	KILLINGTON	Generator	8505	Northern New England	VT	VT	Existing	0.003	0.003	0.003	0.003	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023
839	LADD'S MILL	Generator	8505	Northern New England	VT	VT	Existing	0.013	0.013	0.013	0.013	0.048	0.048	0.048	0.048	0.048	0.048	0.048	0.048
840	MARTINSVILLE	Generator	8505	Northern New England	VT	VT	Existing	0.036	0.036	0.036	0.036	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090
841	MORETOWN 8	Generator	8505	Northern New England	VT	VT	Existing	0.098	0.098	0.098	0.098	0.191	0.191	0.191	0.191	0.191	0.191	0.191	0.191
842	NANTANA MILL	Generator	8505	Northern New England	VT	VT	Existing	0.029	0.029	0.029	0.029	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083
843	NEWBURY	Generator	8505	Northern New England	VT	VT	Existing	0.062	0.062	0.062	0.062	0.122	0.122	0.122	0.122	0.122	0.122	0.122	0.122
844	OTTALIQUECHEE	Generator	8505	Northern New England	VT	VT	Existing	0.169	0.169	0.169	0.169	0.535	0.535	0.535	0.535	0.535	0.535	0.535	0.535
845	SLACK DAM	Generator	8505	Northern New England	VT	VT	Existing	0.091	0.091	0.091	0.091	0.259	0.259	0.259	0.259	0.259	0.259	0.259	0.259
846	WINDOOSKI 8	Generator	8505	Northern New England	VT	VT	Existing	0.217	0.217	0.217	0.217	0.330	0.330	0.330	0.330	0.330	0.330	0.330	0.330
847	WOODSIDE	Generator	8505	Northern New England	VT	VT	Existing	0.046	0.046	0.046	0.046	0.069	0.069	0.069	0.069	0.069	0.069	0.069	0.069
849	CRESCENT DAM	Generator	8500	Rest-of-Pool	MA	WCMA	Existing	0.125	0.125	0.125	0.125	0.302	0.302	0.302	0.302	0.302	0.302	0.302	0.302
850	GLENDALE HYDRO	Generator	8500	Rest-of-Pool	MA	WCMA	Existing	0.146	0.146	0.146	0.146	0.477	0.477	0.477	0.477	0.477	0.477	0.477	0.477
851	GARDNER FALLS	Generator	8500	Rest-of-Pool	MA	WCMA	Existing	0.099	0.099	0.099	0.099	0.635	0.635	0.635	0.635	0.635	0.635	0.635	0.635
852	SOUTH BARRIE HYDRO	Generator	8500	Rest-of-Pool	MA	WCMA	Existing	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
853	WEBSTER HYDRO	Generator	8500	Rest-of-Pool	MA	WCMA	Existing	0.000	0.000	0.000	0.000	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043
854	ORANGE HYDRO 1	Generator	8500	Rest-of-Pool	MA	WCMA	Existing	0.000	0.000										

ID	Name	Type	Capacity Zone ID	Capacity Zone Name	State	Load Zone	Status	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	May-22		
1344	LAKE ROAD 3	Generator	8500	Rest-of-Pool	CT	CT	Existing	279.000	279.000	279.000	279.000	279.000	279.000	279.000	279.000	279.000	279.000	279.000	279.000	279.000	
1345	WESTBROOK	Generator	8505	Northern New England	ME	ME	Existing	530.000	530.000	530.000	530.000	530.000	530.000	530.000	530.000	530.000	530.000	530.000	530.000	530.000	
1368	ROCKY GORGE CORPORATION	Generator	8505	Northern New England	ME	ME	Existing	0.069	0.069	0.069	0.069	0.067	0.267	0.267	0.267	0.267	0.267	0.267	0.267	0.267	0.267
1376	PPL WALLINGFORD UNIT 1	Generator	8500	Rest-of-Pool	CT	CT	Existing	43.473	43.473	43.473	43.473	43.473	43.473	43.473	43.473	43.473	43.473	43.473	43.473	43.473	43.473
1377	PPL WALLINGFORD UNIT 2	Generator	8500	Rest-of-Pool	CT	CT	Existing	43.019	43.019	43.019	43.019	43.019	43.019	43.019	43.019	43.019	43.019	43.019	43.019	43.019	43.019
1378	PPL WALLINGFORD UNIT 3	Generator	8500	Rest-of-Pool	CT	CT	Existing	44.045	44.045	44.045	44.045	44.045	44.045	44.045	44.045	44.045	44.045	44.045	44.045	44.045	44.045
1379	PPL WALLINGFORD UNIT 4	Generator	8500	Rest-of-Pool	CT	CT	Existing	42.937	42.937	42.937	42.937	42.937	42.937	42.937	42.937	42.937	42.937	42.937	42.937	42.937	42.937
1380	PPL WALLINGFORD UNIT 5	Generator	8500	Rest-of-Pool	CT	CT	Existing	44.425	44.425	44.425	44.425	44.425	44.425	44.425	44.425	44.425	44.425	44.425	44.425	44.425	44.425
1385	Milford Power 1 Incremental	Generator	8500	Rest-of-Pool	CT	CT	Existing	267.610	267.610	267.610	267.610	267.610	267.610	267.610	267.610	267.610	267.610	267.610	267.610	267.610	267.610
1386	MILFORD POWER 2	Generator	8500	Rest-of-Pool	CT	CT	Existing	267.093	267.093	267.093	267.093	267.093	267.093	267.093	267.093	267.093	267.093	267.093	267.093	267.093	267.093
1412	ANP-BELLINGHAM 1	Generator	8506	Southeast New England	MA	SEMA	Existing	254.704	254.704	254.704	254.704	254.704	254.704	254.704	254.704	254.704	254.704	254.704	254.704	254.704	254.704
1415	ANP-BELLINGHAM 2	Generator	8506	Southeast New England	MA	SEMA	Existing	247.295	247.295	247.295	247.295	247.295	247.295	247.295	247.295	247.295	247.295	247.295	247.295	247.295	247.295
1432	GRS-FALL RIVER	Generator	8506	Southeast New England	MA	SEMA	Existing	3.028	3.028	3.028	3.028	3.028	3.028	3.028	3.028	3.028	3.028	3.028	3.028	3.028	3.028
1478	MYSTIC 8	Generator	8506	Southeast New England	MA	NEMA	Existing	703.324	703.324	703.324	703.324	703.324	703.324	703.324	703.324	703.324	703.324	703.324	703.324	703.324	703.324
1572	GRANBY SANITARY LANDFILL QF US	Generator	8500	Rest-of-Pool	MA	WCMA	Existing	2.167	2.167	2.167	2.167	2.382	2.382	2.382	2.382	2.382	2.382	2.382	2.382	2.382	2.382
1616	MYSTIC 9	Generator	8506	Southeast New England	MA	NEMA	Existing	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1625	GRANITE RIDGE ENERGY	Generator	8505	Northern New England	NH	NH	Existing	675.675	675.675	675.675	675.675	675.675	675.675	675.675	675.675	675.675	675.675	675.675	675.675	675.675	675.675
1630	RISEP	Generator	8506	Southeast New England	RI	RI	Existing	551.668	551.668	551.668	551.668	575.444	575.444	575.444	575.444	575.444	575.444	575.444	575.444	575.444	575.444
1631	Indeck-Energy Alexandria, LLC	Generator	8505	Northern New England	NH	NH	Existing	15.031	15.031	15.031	15.031	15.031	15.031	15.031	15.031	15.031	15.031	15.031	15.031	15.031	15.031
1649	EP Newington Energy, LLC	Generator	8505	Northern New England	NH	NH	Existing	559.500	559.500	559.500	559.500	559.500	559.500	559.500	559.500	559.500	559.500	559.500	559.500	559.500	559.500
1656	HULL WIND TURBINE US	Generator	8506	Southeast New England	MA	SEMA	Existing	0.033	0.033	0.033	0.033	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088
1672	KENDALL CT	Generator	8506	Southeast New England	MA	NEMA	Existing	162.000	162.000	162.000	162.000	162.000	162.000	162.000	162.000	162.000	162.000	162.000	162.000	162.000	162.000
1691	FORE RIVER-1	Generator	8506	Southeast New England	MA	SEMA	Existing	708.000	708.000	708.000	708.000	708.000	708.000	708.000	708.000	708.000	708.000	708.000	708.000	708.000	708.000
1693	WEST SPRINGFIELD GT-1	Generator	8500	Rest-of-Pool	MA	WCMA	Existing	39.000	39.000	39.000	39.000	39.000	39.000	39.000	39.000	39.000	39.000	39.000	39.000	39.000	39.000
1694	WEST SPRINGFIELD GT-2	Generator	8500	Rest-of-Pool	MA	WCMA	Existing	39.000	39.000	39.000	39.000	39.000	39.000	39.000	39.000	39.000	39.000	39.000	39.000	39.000	39.000
1720	MIDDLEBURY LOWER	Generator	8505	Northern New England	VT	VT	Existing	0.481	0.481	0.481	0.481	1.042	1.042	1.042	1.042	1.042	1.042	1.042	1.042	1.042	1.042
2278	BARKER LOWER HYDRO	Generator	8505	Northern New England	ME	ME	Existing	0.312	0.312	0.312	0.312	0.771	0.771	0.771	0.771	0.771	0.771	0.771	0.771	0.771	0.771
2279	BARKER UPPER HYDRO	Generator	8505	Northern New England	ME	ME	Existing	0.336	0.336	0.336	0.336	0.664	0.664	0.664	0.664	0.664	0.664	0.664	0.664	0.664	0.664
2280	BENTON FALLS HYDRO	Generator	8505	Northern New England	ME	ME	Existing	0.663	0.663	0.663	0.663	2.053	2.053	2.053	2.053	2.053	2.053	2.053	2.053	2.053	2.053
2281	BROWNS MILL HYDRO	Generator	8505	Northern New England	ME	ME	Existing	0.168	0.168	0.168	0.168	0.498	0.498	0.498	0.498	0.498	0.498	0.498	0.498	0.498	0.498
2282	DAMARISCOTTA HYDRO	Generator	8505	Northern New England	ME	ME	Existing	0.000	0.000	0.000	0.000	0.239	0.239	0.239	0.239	0.239	0.239	0.239	0.239	0.239	0.239
2283	EUTIS HYDRO	Generator	8505	Northern New England	ME	ME	Existing	0.030	0.030	0.030	0.030	0.072	0.072	0.072	0.072	0.072	0.072	0.072	0.072	0.072	0.072
2284	GARDINER HYDRO	Generator	8505	Northern New England	ME	ME	Existing	0.388	0.388	0.388	0.388	0.952	0.952	0.952	0.952	0.952	0.952	0.952	0.952	0.952	0.952
2285	GREENVILLE HYDRO	Generator	8505	Northern New England	ME	ME	Existing	0.038	0.038	0.038	0.038	0.166	0.166	0.166	0.166	0.166	0.166	0.166	0.166	0.166	0.166
2286	HACKETT MILLS HYDRO	Generator	8505	Northern New England	ME	ME	Existing	0.003	0.003	0.003	0.003	0.245	0.245	0.245	0.245	0.245	0.245	0.245	0.245	0.245	0.245
2287	MECHANIC FALLS HYDRO	Generator	8505	Northern New England	ME	ME	Existing	0.078	0.078	0.078	0.078	0.212	0.212	0.212	0.212	0.212	0.212	0.212	0.212	0.212	0.212
2288	NORWAY HYDRO	Generator	8505	Northern New England	ME	ME	Existing	0.000	0.000	0.000	0.000	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028
2290	PITTSFIELD HYDRO	Generator	8505	Northern New England	ME	ME	Existing	0.225	0.225	0.225	0.225	0.653	0.653	0.653	0.653	0.653	0.653	0.653	0.653	0.653	0.653
2292	YORK HYDRO	Generator	8505	Northern New England	ME	ME	Existing	0.063	0.063	0.063	0.063	0.353	0.353	0.353	0.353	0.353	0.353	0.353	0.353	0.353	0.353
2424	CITIZENS BLOCK LOAD	Generator	8505	Northern New England	VT	VT	Existing	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000
2425	SPRINGFIELD REFUSE-NEW	Generator	8500	Rest-of-Pool	MA	WCMA	Existing	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2426	Hydro Kennebec	Generator	8505	Northern New England	ME	ME	Existing	6.334	6.334	6.334	6.334	9.866	9.866	9.866	9.866	9.866	9.866	9.866	9.866	9.866	9.866
2430	BELDEN-NEW	Generator	8505	Northern New England	VT	VT	Existing	0.830	0.830	0.830	0.830	2.014	2.014	2.014	2.014	2.014	2.014	2.014	2.014	2.014	2.014
2431	DOUGE FALLS-NEW	Generator	8505	Northern New England	VT	VT	Existing	2.974	2.974	2.974	2.974	3.739	3.739	3.739	3.739	3.739	3.739	3.739	3.739	3.739	3.739
2432	HUNTINGTON FALLS-NEW	Generator	8505	Northern New England	VT	VT	Existing	2.944	2.944	2.944	2.944	5.695	5.695	5.695	5.695	5.695	5.695	5.695	5.695	5.695	5.695
2433	RYEGATE L-NEW	Generator	8505	Northern New England	VT	VT	Existing	19.000	19.000	19.000	19.000	18.716	18.716	18.716	18.716	18.716	18.716	18.716	18.716	18.716	18.716
2434	GORGE 1R HYDRO-NEW	Generator	8505	Northern New England	VT	VT	Existing	0.435	0.435	0.435	0.435	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
2435	VERGENNES HYDRO-NEW	Generator	8505	Northern New England	VT	VT	Existing	0.849	0.849	0.849	0.849	1.421	1.421	1.421	1.421	1.421	1.421	1.421	1.421	1.421	1.421
2439	BROCKWAY MILLS US	Generator	8505	Northern New England	VT	VT	Existing	0.028	0.028	0.028	0.028	0.094	0.094	0.094	0.094	0.094	0.094	0.094	0.094	0.094	0.094
2462	PLAINVILLE GEN QF US	Generator	8506	Southeast New England	MA	SEMA	Existing	2.060	2.060	2.060	2.060	2.287	2.287	2.287	2.287	2.287	2.287	2.287	2.287	2.287	2.287
2466	CHERRY 7	Generator	8500	Rest-of-Pool	MA	WCMA	Existing	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800
2467	CHERRY 8	Generator	8500	Rest-of-Pool	MA	WCMA	Existing	3.400	3.400	3.400	3.400	3.400	3.400	3.400	3.400	3.400	3.400	3.400	3.400	3.400	3.400
2468	CHERRY 10	Generator	8500	Rest-of-Pool	MA	WCMA	Existing	2.100	2.100	2.100	2.100	2.100	2.100	2.100	2.100	2.100	2.100	2.100	2.100	2.100	2.100
2469	CHERRY 11	Generator	8500	Rest-of-Pool	MA	WCMA	Existing	2.100	2.100	2.100	2.100	2.100	2.100	2.100	2.100	2.100	2.100	2.100	2.100	2.100	2.100
2470	CHERRY 12	Generator	8500	Rest-of-Pool	MA	WCMA	Existing	4.999	4.999	4.999	4.999	4.999	4.999	4.999	4.999	4.999	4.999	4.999	4.999	4.999	4.999
9100	CL&P Connecticut Portfolio	Demand	8500	Rest-of-Pool	CT	CT	Existing	9.731	9.731	9.731	9.731	9.731	9.731	9.731	9.731	9.731	9.731	9.731	9.731	9.731	9.731
9103	CLM C&I Energy Efficiency	Demand	8500	Rest-of-Pool	CT	CT	Existing	3.495	3.495												

ID	Name	Type	Capacity Zone ID	Capacity Zone Name	State	Load Zone	Status	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	May-22
12274	GREEN MOUNTAIN DAIRY	Generator	8505	Northern New England	VT	VT	Existing	0.205	0.205	0.205	0.205	0.211	0.211	0.211	0.211	0.211	0.211	0.211	0.211
12323	COVENTRY CLEAN ENERGY #4	Generator	8505	Northern New England	VT	VT	Existing	2.456	2.456	2.456	2.456	2.512	2.512	2.512	2.512	2.512	2.512	2.512	2.512
12450	NYP& - CMR	Import	8500	Rest-of-Pool			Existing	68.300	68.300	68.300	68.300	68.300	68.300	68.300	68.300	68.300	68.300	68.300	68.300
12451	NYP& - VT	Import	8500	Rest-of-Pool			Existing	13.000	13.000	13.000	13.000	13.000	13.000	13.000	13.000	13.000	13.000	13.000	13.000
12504	Thomas A. Watson	Generator	8506	Southeast New England	MA	SEMA	Existing	105.200	105.200	105.200	105.200	105.200	105.200	105.200	105.200	105.200	105.200	105.200	105.200
12504	Devon 15-18	Generator	8500	Rest-of-Pool	CT	CT	Existing	187.589	187.589	187.589	187.589	187.589	187.589	187.589	187.589	187.589	187.589	187.589	187.589
12505	Middletown 12-15	Generator	8500	Rest-of-Pool	CT	CT	Existing	187.600	187.600	187.600	187.600	187.600	187.600	187.600	187.600	187.600	187.600	187.600	187.600
12509	UNH Power Plant	Generator	8505	Northern New England	NH	NH	Existing	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
12510	Swanton Gas Turbine 1	Generator	8505	Northern New England	VT	VT	Existing	19.304	19.304	19.304	19.304	19.304	19.304	19.304	19.304	19.304	19.304	19.304	19.304
12511	Swanton Gas Turbine 2	Generator	8505	Northern New England	VT	VT	Existing	19.349	19.349	19.349	19.349	19.349	19.349	19.349	19.349	19.349	19.349	19.349	19.349
12521	Lowell Power Reactivation	Generator	8500	Rest-of-Pool	MA	WCMA	Existing	74.000	74.000	74.000	74.000	74.000	74.000	74.000	74.000	74.000	74.000	74.000	74.000
12524	Cos Cob 13&14	Generator	8500	Rest-of-Pool	CT	CT	Existing	36.000	36.000	36.000	36.000	36.000	36.000	36.000	36.000	36.000	36.000	36.000	36.000
12526	Pierce	Generator	8500	Rest-of-Pool	CT	CT	Existing	74.085	74.085	74.085	74.085	74.085	74.085	74.085	74.085	74.085	74.085	74.085	74.085
12530	Sheffield Wind Farm	Generator	8505	Northern New England	VT	VT	Existing	3.108	3.108	3.108	3.108	3.108	3.108	3.108	3.108	3.108	3.108	3.108	3.108
12551	Kibby Wind Power	Generator	8505	Northern New England	ME	ME	Existing	16.413	16.413	16.413	16.413	32.616	32.616	32.616	32.616	32.616	32.616	32.616	32.616
12553	Covanta Haverhill Landfill Gas Engine	Generator	8506	Southeast New England	MA	NEMA	Existing	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
12564	Waterbury Generation Facility	Generator	8500	Rest-of-Pool	CT	CT	Existing	95.821	95.821	95.821	95.821	95.821	95.821	95.821	95.821	95.821	95.821	95.821	95.821
12581	CL&P - Conservation & Load Management (CL&M) - Energy Effi	Demand	8500	Rest-of-Pool	CT	CT	Existing	424.992	424.992	424.992	424.992	424.992	424.992	424.992	424.992	424.992	424.992	424.992	424.992
12583	CL&P Distributed Generation FCM 2010	Demand	8500	Rest-of-Pool	CT	CT	Existing	34.232	34.232	34.232	34.232	34.232	34.232	34.232	34.232	34.232	34.232	34.232	34.232
12584	Conservation and Load Management Program	Demand	8500	Rest-of-Pool	CT	CT	Existing	2.139	2.139	2.139	2.139	2.139	2.139	2.139	2.139	2.139	2.139	2.139	2.139
12586	Efficiency Maine Residential Efficient Products	Demand	8505	Northern New England	ME	ME	Existing	14.683	14.683	14.683	14.683	14.683	14.683	14.683	14.683	14.683	14.683	14.683	14.683
12590	Ameresco CT DSM	Demand	8500	Rest-of-Pool	CT	CT	Existing	5.749	5.749	5.749	5.749	5.749	5.749	5.749	5.749	5.749	5.749	5.749	5.749
12597	Cambridge Energy Alliance-1	Demand	8506	Southeast New England	MA	NEMA	Existing	0.653	0.653	0.653	0.653	0.653	0.653	0.653	0.653	0.653	0.653	0.653	0.653
12598	Cambridge Energy Alliance-2	Demand	8506	Southeast New England	MA	NEMA	Existing	4.736	4.736	4.736	4.736	4.736	4.736	4.736	4.736	4.736	4.736	4.736	4.736
12620	UI Conservation and Load Management Programs	Demand	8500	Rest-of-Pool	CT	CT	Existing	74.191	74.191	74.191	74.191	74.191	75.133	75.133	75.133	75.133	74.191	74.191	74.191
12657	Unitil CORE Energy Efficiency Programs-2	Demand	8500	Rest-of-Pool	MA	WCMA	Existing	8.022	8.022	8.022	8.022	8.022	8.022	8.022	8.022	8.022	8.022	8.022	8.022
12670	ngrid_nema_fca1_eoedr	Demand	8506	Southeast New England	MA	NEMA	Existing	155.825	155.825	155.825	155.825	155.825	155.825	154.122	154.122	154.122	154.122	155.825	155.825
12671	ngrid_nh_fca1_eoedr	Demand	8505	Northern New England	NH	NH	Existing	6.991	6.991	6.991	6.991	6.991	6.991	6.991	6.991	6.991	6.991	6.991	6.991
12672	ngrid_ri_fca1_eoedr	Demand	8506	Southeast New England	RI	RI	Existing	236.699	236.699	236.699	236.699	236.699	236.699	230.919	230.919	230.919	230.919	236.699	236.699
12673	ngrid_sema_fca1_eoedr	Demand	8506	Southeast New England	MA	SEMA	Existing	190.504	190.504	190.504	190.504	190.504	190.504	186.890	186.890	186.890	186.890	190.504	190.504
12674	ngrid_wcma_fca1_eoedr	Demand	8500	Rest-of-Pool	MA	WCMA	Existing	256.937	256.937	256.937	256.937	256.937	256.937	255.117	255.117	255.117	255.117	256.937	256.937
12684	NSTAR EE NEMA	Demand	8506	Southeast New England	MA	NEMA	Existing	493.343	493.343	493.343	493.343	493.343	493.343	493.343	493.343	493.343	493.343	493.343	493.343
12685	NSTAR EE SEMA	Demand	8506	Southeast New England	MA	SEMA	Existing	94.023	94.023	94.023	94.023	94.023	94.023	94.023	94.023	94.023	94.023	94.023	94.023
12693	PSNH CORE Energy Efficiency Programs	Demand	8505	Northern New England	NH	NH	Existing	82.943	82.943	82.943	82.943	82.943	66.851	66.851	66.851	66.851	66.851	82.943	82.943
12694	Acadian Company - Ball Plant II - Combined Heat and Power P	Demand	8506	Southeast New England	NH	NH	Existing	2.111	2.111	2.111	2.111	2.111	2.111	2.111	2.111	2.111	2.111	2.111	2.111
12696	7.9 MW CHP Plant	Demand	8505	Northern New England	NH	NH	Existing	10.800	10.800	10.800	10.800	10.800	10.800	10.800	10.800	10.800	10.800	10.800	10.800
12705	Cape Light Compact Energy Efficiency Portfolio	Demand	8506	Southeast New England	MA	SEMA	Existing	43.794	43.794	43.794	43.794	43.794	43.794	43.794	43.794	43.794	43.794	43.794	43.794
12749	Bridgewater Correctional Complex Cogeneration	Demand	8506	Southeast New England	MA	SEMA	Existing	1.412	1.412	1.412	1.412	1.412	1.412	1.412	1.412	1.412	1.412	1.412	1.412
12753	MA SEMA state colleges	Demand	8506	Southeast New England	MA	SEMA	Existing	0.147	0.147	0.147	0.147	0.147	0.147	0.147	0.147	0.147	0.147	0.147	0.147
12754	Tewksbury State Hospital Cogeneration	Demand	8500	Rest-of-Pool	MA	WCMA	Existing	0.734	0.734	0.734	0.734	0.734	0.734	0.734	0.734	0.734	0.734	0.734	0.734
12757	NHEC Energy Efficiency Programs	Demand	8505	Northern New England	NH	NH	Existing	0.959	0.959	0.959	0.959	0.959	0.959	0.959	0.959	0.959	0.959	0.959	0.959
12779	CPLN CT On-Peak	Demand	8500	Rest-of-Pool	CT	CT	Existing	2.290	2.290	2.290	2.290	2.290	2.290	2.290	2.290	2.290	2.290	2.290	2.290
12786	CSG Aggregation of DG and 24 hr lighting EE - NEMA1	Demand	8506	Southeast New England	MA	NEMA	Existing	12.318	12.318	12.318	12.318	12.318	12.318	12.318	12.318	12.318	12.318	12.318	12.318
12790	CSG Aggregation of DG and 24 hr lighting EE - RI	Demand	8506	Southeast New England	RI	RI	Existing	0.217	0.217	0.217	0.217	0.217	0.217	0.217	0.217	0.217	0.217	0.217	0.217
12791	CSG Aggregation of DG and 24 hr lighting EE - SEMA1	Demand	8506	Southeast New England	MA	SEMA	Existing	1.517	1.517	1.517	1.517	1.517	1.517	1.517	1.517	1.517	1.517	1.517	1.517
12799	CSG Aggregation of DG and 24 hr lighting EE - WCMA1	Demand	8500	Rest-of-Pool	MA	WCMA	Existing	2.106	2.106	2.106	2.106	2.106	2.106	2.106	2.106	2.106	2.106	2.106	2.106
12801	UES CORE Energy Efficiency Programs	Demand	8505	Northern New England	NH	NH	Existing	7.855	7.855	7.855	7.855	7.855	7.855	7.855	7.855	7.855	7.855	7.855	7.855
12802	University of Massachusetts Central Heating Plant-3	Demand	8500	Rest-of-Pool	MA	WCMA	Existing	10.260	10.260	10.260	10.260	10.260	10.260	10.260	10.260	10.260	10.260	10.260	10.260
12806	WMECO - Conservation & Load Management (CL&M) - Energy E	Demand	8500	Rest-of-Pool	MA	WCMA	Existing	18.003	18.003	18.003	18.003	18.003	18.003	18.003	18.003	18.003	18.003	18.003	18.003
12822	Burlington Electric Department - On-Peak Efficiency	Demand	8505	Northern New England	VT	VT	Existing	5.149	5.149	5.149	5.149	5.149	4.773	4.773	4.773	4.773	4.773	5.149	5.149
12832	CPLN MA NEMA DP	Demand	8506	Southeast New England	MA	NEMA	Existing	6.561	6.561	6.561	6.561	6.561	6.561	6.561	6.561	6.561	6.561	6.561	6.561
12835	CPLN MA SEMA OP	Demand	8506	Southeast New England	MA	SEMA	Existing	0.608	0.608	0.608	0.608	0.608	0.608	0.608	0.608	0.608	0.608	0.608	0.608
12838	CPLN MA WC OP	Demand	8500	Rest-of-Pool	MA	WCMA	Existing	7.491	7.491	7.491	7.491	7.491	7.491	7.491	7.491	7.491	7.491	7.491	7.491
12843	CPLN RI DP	Demand	8506	Southeast New England	RI	RI	Existing	0.280	0.280	0.280	0.280	0.280	0.280	0.280	0.280	0.280	0.280	0.280	0.280
12849	Vermont Efficiency Portfolio-1	Demand	8505	Northern New England	VT	VT	Existing	83.881	83.881	83.881	83.881	83.881	83.881	75.073	75.073	75.073	75.073	83.881	83.881
12865	Manchester Methane LLC East Windsor Facility	Generator	8500	Rest-of-Pool	CT	CT	Existing	0.635	0.635	0.635	0.635	0.511	0.511	0.511	0.511	0.511	0.511	0.511	0.511
13673	MATEP (DIESEL)	Generator	8506	Southeast New England	MA	NEMA	Existing	8.120	8.120	8.120	8.120	8.120	8.120	8.120	8.120	8.120	8.120	8.120	8.120
13675	MATEP (COMBINED CYCLE)	Generator	8506	Southeast New England	MA	NEMA	Existing	52.000	52.000	52.000	52.000	52.000	52.000	52.000	52.000	52.000	52.000	52.000	52.000
13703	Verso VCG1	Generator	8505	Northern New England	ME	ME	Existing	42.606	42.606	42.606	42.606	42.606	50.250	50.250	50.250	50.250	42.606	42.606	42.606
13704	Verso VCG2	Generator	8505	Northern New England	ME	ME	Existing	44.473	44.473	44.473	44.473	44.473	52.473	52.473	52.473	52.473	44.473	44.473	44.473
13705	Verso VCG3	Generator	8505	Northern New England	ME	ME	Existing	42.452	42.452	42.452	42.452	42.452	50.452	50.452	50.452	50.452	42.452	42.452	42.452
13975	Corniveau Hydroelectric LLC	Generator	8505	Northern New England	ME	ME	Existing	0.046	0.046										

ID	Name	Type	Capacity Zone ID	Capacity Zone Name	State	Load Zone	Status	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	May-22
16642	Railroad Street Revere PV	Generator	8506	Southeast New England	MA	NEMA	Existing	0.245	0.245	0.245	0.245	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
16643	Rover Street Everett PV	Generator	8506	Southeast New England	MA	NEMA	Existing	0.168	0.168	0.168	0.168	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
16644	Main Street Whitinsville PV	Generator	8506	Southeast New England	MA	SEMA	Existing	0.280	0.280	0.280	0.280	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
16651	Efficiency Maine Trust Efficient Products	Demand	8505	Northern New England	ME	ME	Existing	30.351	30.351	30.351	30.351	0.000	0.000	0.000	0.000	0.000	0.000	30.351	30.351
16653	Berlin Biopower	Generator	8505	Northern New England	NH	NH	Existing	65.380	65.380	65.380	65.380	0.000	0.000	65.380	65.380	65.380	65.380	65.380	65.380
16659	Ipewich Wind Farm 1	Generator	8506	Southeast New England	MA	NEMA	Existing	0.174	0.174	0.174	0.174	0.303	0.303	0.303	0.303	0.303	0.303	0.303	0.303
16688	Nori	Generator	8500	Rest-of-Pool	CT	CT	Existing	1.789	1.789	1.789	1.789	1.789	1.789	1.789	1.789	1.789	1.789	1.789	1.789
16700	Ri CoolSentry	Demand	8506	Southeast New England	RI	RI	Existing	3.338	3.338	3.338	3.338	3.338	3.338	3.338	3.338	3.338	3.338	3.338	3.338
16713	Comerge CoolSentry 2	Demand	8500	Rest-of-Pool	CT	CT	Existing	21.592	21.592	21.592	21.592	21.592	21.592	21.592	21.592	21.592	21.592	21.592	21.592
16718	Comerge CoolSentry 4	Demand	8500	Rest-of-Pool	CT	CT	Existing	0.947	0.947	0.947	0.947	0.947	0.947	0.947	0.947	0.947	0.947	0.947	0.947
16737	DFC-ERG Hybrid Fuel Cell (3)	Generator	8500	Rest-of-Pool	CT	CT	Existing	2.500	2.500	2.500	2.500	2.500	2.500	2.500	2.500	2.500	2.500	2.500	2.500
16738	BFCP Fuel Cell	Generator	8500	Rest-of-Pool	CT	CT	Existing	13.054	13.054	13.054	13.054	13.054	13.054	13.054	13.054	13.054	13.054	13.054	13.054
16750	Norden #2	Generator	8500	Rest-of-Pool	CT	CT	Existing	1.790	1.790	1.790	1.790	1.790	1.790	1.790	1.790	1.790	1.790	1.790	1.790
16752	Norden #3	Generator	8500	Rest-of-Pool	CT	CT	Existing	1.777	1.777	1.777	1.777	1.777	1.777	1.777	1.777	1.777	1.777	1.777	1.777
16790	WCMA Project E	Demand	8500	Rest-of-Pool	MA	WCMA	Existing	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400
17359	Sugar River 2	Generator	8505	Northern New England	NH	NH	Existing	0.014	0.014	0.014	0.014	0.115	0.115	0.115	0.115	0.115	0.115	0.115	0.115
35442	Seaman Energy	Generator	8500	Rest-of-Pool	MA	WCMA	Existing	0.247	0.247	0.247	0.247	0.270	0.270	0.270	0.270	0.270	0.270	0.270	0.270
35453	Efficiency Maine Trust	Demand	8505	Northern New England	ME	ME	Existing	9.239	9.239	9.239	9.239	9.239	9.239	0.666	0.666	0.666	0.666	9.239	9.239
35485	Fitchburg-FCA-5	Generator	8500	Rest-of-Pool	MA	WCMA	Existing	3.093	3.093	3.093	3.093	3.093	3.093	3.093	3.093	3.093	3.093	3.093	3.093
35555	GMCW	Generator	8505	Northern New England	VT	VT	Existing	0.848	0.848	0.848	0.848	2.958	2.958	2.958	2.958	2.958	2.958	2.958	2.958
35594	Spaulding Pond Hydro	Generator	8505	Northern New England	NH	NH	Existing	0.020	0.020	0.020	0.020	0.172	0.172	0.172	0.172	0.172	0.172	0.172	0.172
35656	Rainbow 2	Generator	8500	Rest-of-Pool	CT	CT	Existing	4.100	4.100	4.100	4.100	4.100	4.100	4.100	4.100	4.100	4.100	4.100	4.100
35657	Shrewsbury Diesels	Generator	8500	Rest-of-Pool	MA	WCMA	Existing	13.650	13.650	13.650	13.650	13.650	13.650	13.650	13.650	13.650	13.650	13.650	13.650
35658	Rainbow 1	Generator	8500	Rest-of-Pool	CT	CT	Existing	4.100	4.100	4.100	4.100	4.100	4.100	4.100	4.100	4.100	4.100	4.100	4.100
35693	Spruce Mountain Wind	Generator	8505	Northern New England	ME	ME	Existing	2.481	2.481	2.481	2.481	6.666	6.666	6.666	6.666	6.666	6.666	6.666	6.666
35728	Moretown LG	Generator	8505	Northern New England	VT	VT	Existing	2.457	2.457	2.457	2.457	2.457	2.457	2.457	2.457	2.457	2.457	2.457	2.457
35979	Kingdom Community Wind	Generator	8505	Northern New England	VT	VT	Existing	9.448	9.448	9.448	9.448	19.428	19.428	19.428	19.428	19.428	19.428	19.428	19.428
37040	KENDALL STEAM	Generator	8506	Southeast New England	MA	NEMA	Existing	24.000	24.000	24.000	24.000	24.000	24.000	24.000	24.000	24.000	24.000	24.000	24.000
37050	Groton Wind Project	Generator	8505	Northern New England	NH	NH	Existing	5.234	5.234	5.234	5.234	11.149	11.149	11.149	11.149	11.149	11.149	11.149	11.149
37072	Beaver Ridge Wind	Generator	8505	Northern New England	ME	ME	Existing	0.464	0.464	0.464	0.464	1.182	1.182	1.182	1.182	1.182	1.182	1.182	1.182
37077	Woronoco Hydro LLC	Generator	8500	Rest-of-Pool	MA	WCMA	Existing	0.232	0.232	0.232	0.232	1.034	1.034	1.034	1.034	1.034	1.034	1.034	1.034
37105	Blue Sky West	Generator	8505	Northern New England	ME	ME	Existing	32.900	32.900	32.900	32.900	66.210	66.210	66.210	66.210	66.210	66.210	66.210	66.210
37112	Efficiency Maine Trust FCA6	Demand	8505	Northern New England	ME	ME	Existing	1.890	1.890	1.890	1.890	1.890	1.890	1.890	1.890	1.890	1.890	1.890	1.890
37220	Thundermist Hydropower	Generator	8506	Southeast New England	RI	RI	Existing	0.000	0.000	0.000	0.000	0.711	0.711	0.711	0.711	0.711	0.711	0.711	0.711
37245	Hess DR North West 2015-16	Demand	8505	Northern New England	VT	VT	Existing	1.200	1.200	1.200	1.200	1.200	1.200	1.200	1.200	1.200	1.200	1.200	1.200
37257	RTDR_50744_Boston (7507) - Grp C	Demand	8506	Southeast New England	MA	NEMA	Existing	15.686	15.686	15.686	15.686	15.686	15.686	15.686	15.686	15.686	15.686	15.686	15.686
37918	RTDR_50744_Central MA (7515) - Grp A	Demand	8500	Rest-of-Pool	MA	WCMA	Existing	2.280	2.280	2.280	2.280	2.280	2.280	2.280	2.280	2.280	2.280	2.280	2.280
37919	RTDR_50744_Lower SEMA (7511) - Grp C	Demand	8506	Southeast New England	MA	SEMA	Existing	0.939	0.939	0.939	0.939	0.939	0.939	0.939	0.939	0.939	0.939	0.939	0.939
37920	RTDR_50744_North Shore (7508) - Grp C	Demand	8506	Southeast New England	MA	NEMA	Existing	1.599	1.599	1.599	1.599	1.599	1.599	1.599	1.599	1.599	1.599	1.599	1.599
37922	RTDR_50744_Northern CT (7501) - Grp B	Demand	8500	Rest-of-Pool	CT	CT	Existing	10.331	10.331	10.331	10.331	10.331	10.331	10.331	10.331	10.331	10.331	10.331	10.331
37924	RTDR_50744_SEMA (7512) - Grp C	Demand	8506	Southeast New England	MA	SEMA	Existing	5.684	5.684	5.684	5.684	5.684	5.684	5.684	5.684	5.684	5.684	5.684	5.684
37925	RTDR_50744_Springfield MA (7516) - Grp A	Demand	8500	Rest-of-Pool	MA	WCMA	Existing	1.380	1.380	1.380	1.380	1.380	1.380	1.380	1.380	1.380	1.380	1.380	1.380
37927	RTDR_50744_Western CT (7503) - Grp B	Demand	8500	Rest-of-Pool	CT	CT	Existing	5.297	5.297	5.297	5.297	5.297	5.297	5.297	5.297	5.297	5.297	5.297	5.297
37928	RTDR_50786_Boston (7507)	Demand	8506	Southeast New England	MA	NEMA	Existing	2.231	2.231	2.231	2.231	2.231	2.231	2.231	2.231	2.231	2.231	2.231	2.231
37929	RTDR_50786_Central MA (7515)	Demand	8500	Rest-of-Pool	MA	WCMA	Existing	1.436	1.436	1.436	1.436	1.436	1.436	1.436	1.436	1.436	1.436	1.436	1.436
37930	RTDR_50786_Eastern CT (7509)	Demand	8500	Rest-of-Pool	CT	CT	Existing	0.249	0.249	0.249	0.249	0.249	0.249	0.249	0.249	0.249	0.249	0.249	0.249
37931	RTDR_50786_Lower SEMA (7511)	Demand	8506	Southeast New England	MA	SEMA	Existing	1.392	1.392	1.392	1.392	1.392	1.392	1.392	1.392	1.392	1.392	1.392	1.392
37933	RTDR_50786_New Hampshire (7509)	Demand	8505	Northern New England	NH	NH	Existing	0.219	0.219	0.219	0.219	0.219	0.219	0.219	0.219	0.219	0.219	0.219	0.219
37934	RTDR_50786_North Shore (7508)	Demand	8506	Southeast New England	MA	NEMA	Existing	1.488	1.488	1.488	1.488	1.488	1.488	1.488	1.488	1.488	1.488	1.488	1.488
37935	RTDR_50786_Northern CT (7501)	Demand	8500	Rest-of-Pool	CT	CT	Existing	2.789	2.789	2.789	2.789	2.789	2.789	2.789	2.789	2.789	2.789	2.789	2.789
37936	RTDR_50786_Norwalk - Stamford (7502)	Demand	8500	Rest-of-Pool	CT	CT	Existing	0.108	0.108	0.108	0.108	0.108	0.108	0.108	0.108	0.108	0.108	0.108	0.108
37937	RTDR_50786_Portland Maine (7506)	Demand	8505	Northern New England	ME	ME	Existing	0.145	0.145	0.145	0.145	0.145	0.145	0.145	0.145	0.145	0.145	0.145	0.145
37938	RTDR_50786_Rhode Island (7518)	Demand	8506	Southeast New England	RI	RI	Existing	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000
37939	RTDR_50786_SEMA (7512)	Demand	8506	Southeast New England	MA	SEMA	Existing	0.759	0.759	0.759	0.759	0.759	0.759	0.759	0.759	0.759	0.759	0.759	0.759
37940	RTDR_50786_Seacoast (7510)	Demand	8505	Northern New England	NH	NH	Existing	0.208	0.208	0.208	0.208	0.208	0.208	0.208	0.208	0.208	0.208	0.208	0.208
37941	RTDR_50786_Springfield MA (7516)	Demand	8500	Rest-of-Pool	MA	WCMA	Existing	1.473	1.473	1.473	1.473	1.473	1.473	1.473	1.473	1.473	1.473	1.473	1.473
37942	RTDR_50786_Vermont (7514)	Demand	8505	Northern New England	VT	VT	Existing	0.491	0.491	0.491	0.491	0.491	0.491	0.491	0.491	0.491	0.491	0.491	0.491
37943	RTDR_50786_Western CT (7503)	Demand	8500	Rest-of-Pool	CT	CT	Existing	4.559	4.559	4.559	4.559	4.559	4.559	4.559	4.559	4.559	4.559	4.559	4.559
37944	RTDR_50786_Western MA (7517)	Demand	8500	Rest-of-Pool	MA	WCMA	Existing	2.436	2.436	2.436	2.436	2.436	2.436	2.436	2.436	2.436	2.436	2.436	2.436
38057	Efficiency Maine Trust FCA6 B	Demand	8505	Northern New England	ME	ME	Existing	86.368	86.368	86.368	86.368	86.368	86.368	128.393	128.393	128.393	128.393	86.368	86.368
38078	NFM Solar Power, LLC	Generator	8500	Rest-of-Pool	MA	WCMA	Existing	0.507	0.507	0.507	0.507	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
38089	Footprint Combined Cycle	Generator	8506	Southeast New England	MA	NEMA	Existing	674.000	674.000	674.000	674.000	674.000	674.000	674.000	674.000	674.000	674.000	674.000	674.000
38114	East Bridgewater Solar Energy Project	Generator	8506	Southeast New England	MA	SEMA	Existing	0.850	0.850										

ID	Name	Type	Capacity Zone ID	Capacity Zone Name	State	Load Zone	Status	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	May-22
38655	Barrett Distribution - Franklin Solar	Generator	8506	Southeast New England	MA	SEMA	Existing	0.230	0.230	0.230	0.230	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
38669	Future Gen Wind	Generator	8506	Southeast New England	MA	SEMA	Existing	2.700	2.700	2.700	2.700	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800
38684	Bloom Energy SOFC	Demand	8506	Southeast New England	MA	NEMA	Existing	9.180	9.180	9.180	9.180	9.180	9.180	9.180	9.180	9.180	9.180	9.180	9.180
38689	Bloom Energy CT SOFC	Demand	8500	Rest-of-Pool	CT	CT	Existing	9.180	9.180	9.180	9.180	9.180	9.180	9.180	9.180	9.180	9.180	9.180	9.180
38803	NEMA ActivELM	Demand	8506	Southeast New England	MA	NEMA	Existing	1.620	1.620	1.620	1.620	1.620	1.620	1.620	1.620	1.620	1.620	1.620	1.620
38694	RTDR_Maine	Demand	8505	Northern New England	ME	ME	Existing	2.798	2.798	2.798	2.798	2.798	2.798	2.798	2.798	2.798	2.798	2.798	2.798
38695	NEHC - Hanover Pond Hydro	Generator	8500	Rest-of-Pool	CT	CT	Existing	0.066	0.066	0.066	0.066	0.129	0.129	0.129	0.129	0.129	0.129	0.129	0.129
38696	Blossom Rd 1 Fall River PV	Generator	8506	Southeast New England	MA	SEMA	Existing	0.414	0.414	0.414	0.414	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
38698	Blossom Rd 2 Fall River PV	Generator	8506	Southeast New England	MA	SEMA	Existing	0.417	0.417	0.417	0.417	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
38699	Groveland St Abington PV	Generator	8506	Southeast New England	MA	SEMA	Existing	0.390	0.390	0.390	0.390	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
38700	Stafford St Leicester PV 2	Generator	8500	Rest-of-Pool	MA	WCMA	Existing	0.228	0.228	0.228	0.228	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
38701	Onset East	Generator	8506	Southeast New England	MA	SEMA	Existing	0.289	0.289	0.289	0.289	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
38702	Onset West	Generator	8506	Southeast New England	MA	SEMA	Existing	0.290	0.290	0.290	0.290	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
38704	Richardson Ave Attleboro PV 2	Generator	8506	Southeast New England	MA	SEMA	Existing	0.418	0.418	0.418	0.418	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
38706	Old Upton Rd Grafton PV 2	Generator	8500	Rest-of-Pool	MA	WCMA	Existing	0.228	0.228	0.228	0.228	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
38708	Groton School Rd Ayer PV 2	Generator	8500	Rest-of-Pool	MA	WCMA	Existing	0.359	0.359	0.359	0.359	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
38709	Frank Mossberg Dr Attleboro PV	Generator	8506	Southeast New England	MA	SEMA	Existing	0.244	0.244	0.244	0.244	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
38738	Canton Mountain Wind Project	Generator	8505	Northern New England	ME	ME	Existing	3.600	3.600	3.600	3.600	7.200	7.200	7.200	7.200	7.200	7.200	7.200	7.200
38757	WOODBIDGE FUEL CELL	Generator	8500	Rest-of-Pool	CT	CT	Existing	2.100	2.100	2.100	2.100	2.100	2.100	2.100	2.100	2.100	2.100	2.100	2.100
38758	CT Small Gen	Demand	8500	Rest-of-Pool	CT	CT	Existing	1.944	1.944	1.944	1.944	1.944	1.944	1.944	1.944	1.944	1.944	1.944	1.944
38760	Norwich WWT	Generator	8500	Rest-of-Pool	CT	CT	Existing	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
38761	NEMA Small Gen	Demand	8506	Southeast New England	MA	NEMA	Existing	1.944	1.944	1.944	1.944	1.944	1.944	1.944	1.944	1.944	1.944	1.944	1.944
38789	NEMA ActivELM	Demand	8506	Southeast New England	MA	NEMA	Existing	1.080	1.080	1.080	1.080	1.080	1.080	1.080	1.080	1.080	1.080	1.080	1.080
38791	Branch Solar	Generator	8506	Southeast New England	MA	SEMA	Existing	0.633	0.633	0.633	0.633	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
38800	DRCR_Western MA_2016	Demand	8500	Rest-of-Pool	MA	WCMA	Existing	14.000	14.000	14.000	14.000	14.000	14.000	14.000	14.000	14.000	14.000	14.000	14.000
38803	DRCR_Springfield MA_2016	Demand	8500	Rest-of-Pool	MA	WCMA	Existing	5.300	5.300	5.300	5.300	5.300	5.300	5.300	5.300	5.300	5.300	5.300	5.300
38813	DRCR_New Hampshire_2016	Demand	8505	Northern New England	NH	NH	Existing	9.000	9.000	9.000	9.000	9.000	9.000	9.000	9.000	9.000	9.000	9.000	9.000
359	J. COCKWELL 1	Generator	8500	Rest-of-Pool	MA	WCMA	New	40.938	40.938	40.938	40.938	39.225	39.225	39.225	39.225	39.225	39.225	39.225	39.225
360	J. COCKWELL 2	Generator	8500	Rest-of-Pool	MA	WCMA	New	39.423	39.423	39.423	39.423	39.387	39.387	39.387	39.387	39.387	39.387	39.387	39.387
496	MOORE	Generator	8505	Northern New England	NH	NH	New	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
12581	CL&P - Conservation & Load Management (CL&M) - Energy Effi	Demand	8500	Rest-of-Pool	CT	CT	New	84.725	84.725	84.725	84.725	84.725	100.817	100.817	100.817	100.817	84.725	84.725	84.725
12600	UI Conservation and Load Management Programs	Demand	8500	Rest-of-Pool	CT	CT	New	22.542	22.542	22.542	22.542	22.542	21.600	21.600	21.600	21.600	22.542	22.542	22.542
12657	Unitil CORE Energy Efficiency Programs-2	Demand	8500	Rest-of-Pool	MA	WCMA	New	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948
12670	ngrid_nema_fcsl_eoedr	Demand	8506	Southeast New England	MA	NEMA	New	11.308	11.308	11.308	11.308	11.308	13.011	13.011	13.011	13.011	11.308	11.308	11.308
12671	ngrid_nh_fcsl_eoedr	Demand	8505	Northern New England	NH	NH	New	3.702	3.702	3.702	3.702	3.702	3.702	3.702	3.702	3.702	3.702	3.702	3.702
12672	ngrid_ni_fcsl_eoedr	Demand	8506	Southeast New England	NH	NH	New	25.861	25.861	25.861	25.861	25.861	31.641	31.641	31.641	31.641	25.861	25.861	25.861
12673	ngrid_nema_fcsl_eoedr	Demand	8506	Southeast New England	MA	SEMA	New	52.472	52.472	52.472	52.472	52.472	56.086	56.086	56.086	56.086	52.472	52.472	52.472
12674	ngrid_wcma_fcsl_eoedr	Demand	8500	Rest-of-Pool	MA	WCMA	New	64.517	64.517	64.517	64.517	64.517	66.337	66.337	66.337	66.337	64.517	64.517	64.517
12684	NSTAR EE NEMA	Demand	8506	Southeast New England	MA	NEMA	New	18.187	18.187	18.187	18.187	18.187	18.187	18.187	18.187	18.187	18.187	18.187	18.187
12685	NSTAR EE SEMA	Demand	8506	Southeast New England	MA	SEMA	New	3.838	3.838	3.838	3.838	3.838	3.838	3.838	3.838	3.838	3.838	3.838	3.838
12693	PSNH CORE Energy Efficiency Programs	Demand	8505	Northern New England	NH	NH	New	1.045	1.045	1.045	1.045	1.045	1.045	1.045	1.045	1.045	1.045	1.045	1.045
12705	Cape Light Compact Energy Efficiency Portfolio	Demand	8506	Southeast New England	MA	SEMA	New	6.463	6.463	6.463	6.463	6.463	6.463	6.463	6.463	6.463	6.463	6.463	6.463
12757	NHEC Energy Efficiency Programs	Demand	8505	Northern New England	NH	NH	New	0.585	0.585	0.585	0.585	0.585	0.585	0.585	0.585	0.585	0.585	0.585	0.585
12779	CPLN CT On-Peak	Demand	8500	Rest-of-Pool	CT	CT	New	0.259	0.259	0.259	0.259	0.259	0.259	0.259	0.259	0.259	0.259	0.259	0.259
12801	UES CORE Energy Efficiency Programs	Demand	8505	Northern New England	NH	NH	New	0.569	0.569	0.569	0.569	0.569	0.569	0.569	0.569	0.569	0.569	0.569	0.569
12822	Burlington Electric Department - On-Peak Efficiency	Demand	8505	Northern New England	VT	VT	New	2.290	2.290	2.290	2.290	2.290	2.290	2.290	2.290	2.290	2.290	2.290	2.290
12832	CPLN MA NEMA OP	Demand	8506	Southeast New England	MA	NEMA	New	2.160	2.160	2.160	2.160	2.160	2.160	2.160	2.160	2.160	2.160	2.160	2.160
12835	CPLN MA SEMA OP	Demand	8506	Southeast New England	MA	SEMA	New	3.240	3.240	3.240	3.240	3.240	3.240	3.240	3.240	3.240	3.240	3.240	3.240
12838	CPLN MA WC OP	Demand	8500	Rest-of-Pool	MA	WCMA	New	0.648	0.648	0.648	0.648	0.648	0.648	0.648	0.648	0.648	0.648	0.648	0.648
12843	CPLN RI OP	Demand	8506	Southeast New England	RI	RI	New	2.160	2.160	2.160	2.160	2.160	2.160	2.160	2.160	2.160	2.160	2.160	2.160
12845	Vermont Efficiency Portfolio-1	Demand	8505	Northern New England	VT	VT	New	28.047	28.047	28.047	28.047	28.047	36.855	36.855	36.855	36.855	28.047	28.047	28.047
37855	Hess DR Northwest VT 2015-16	Demand	8505	Northern New England	VT	VT	New	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
37917	RTDR_50744_Boston (7507) - Grp C	Demand	8506	Southeast New England	MA	NEMA	New	0.563	0.563	0.563	0.563	0.563	0.563	0.563	0.563	0.563	0.563	0.563	0.563
37919	RTDR_50744_Lower SEMA (7511) - Grp C	Demand	8506	Southeast New England	MA	SEMA	New	3.445	3.445	3.445	3.445	3.445	3.445	3.445	3.445	3.445	3.445	3.445	3.445
37928	RTDR_50786_Boston (7507)	Demand	8506	Southeast New England	MA	NEMA	New	2.031	2.031	2.031	2.031	2.031	2.031	2.031	2.031	2.031	2.031	2.031	2.031
37929	RTDR_50786_Central MA (7515)	Demand	8500	Rest-of-Pool	MA	WCMA	New	0.864	0.864	0.864	0.864	0.864	0.864	0.864	0.864	0.864	0.864	0.864	0.864
37930	RTDR_50786_Eastern CT (7500)	Demand	8500	Rest-of-Pool	CT	CT	New	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088
37931	RTDR_50786_Lower SEMA (7511)	Demand	8506	Southeast New England	MA	SEMA	New	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090
37933	RTDR_50786_New Hampshire (7509)	Demand	8505	Northern New England	NH	NH	New	1.900	1.900	1.900	1.900	1.900	1.900	1.900	1.900	1.900	1.900	1.900	1.900
37934	RTDR_50786_North Shore (7508)	Demand	8506	Southeast New England	MA	NEMA	New	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
37936	RTDR_50786_Norwalk - Stamford (7502)	Demand	8500	Rest-of-Pool	CT	CT	New	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088
37937	RTDR_50786_Portland Maine (7506)	Demand	8505	Northern New England	ME	ME	New	0.853	0.853	0.853	0.853	0.853	0.853	0.853	0.853	0.853	0.853	0.853	0.853
37939	RTDR_50786_SEMA (7512)	Demand	8506	Southeast New England	MA	SEMA	New	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
37940	RTDR_50786_Seacoast (7510)	Demand																	

Attachment B

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

ISO New England Inc.

)

Docket No. ER18-___-000

TESTIMONY OF STEPHEN J. ROURKE

1 **Q: PLEASE STATE YOUR NAME, TITLE AND BUSINESS ADDRESS.**

2 A: My name is Stephen J. Rourke. I am Vice President of System Planning with ISO
3 New England Inc. (the “ISO”). My business address is One Sullivan Road,
4 Holyoke, Massachusetts 01040.

5

6 **Q: PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND**
7 **WORK EXPERIENCE.**

8 A: I have a B.S. in Electrical Engineering from Worcester Polytechnic Institute and a
9 M.B.A. from Western New England University. In my current position as Vice
10 President of System Planning, I am responsible for planning for a reliable New
11 England bulk power system according to prescribed reliability standards and
12 guidelines of the Northeast Power Coordinating Council (“NPCC”) and the North
13 American Electric Reliability Corporation (“NERC”); overseeing development of
14 the annual Regional System Plan; analysis and approval of new transmission and
15 generation interconnection projects, including the approval of qualification of
16 generating capacity resources, demand resources, and import capacity resources
17 to participate in the Forward Capacity Auction¹ (“FCA”); implementing the

¹ Capitalized terms used but not otherwise defined in this testimony have the meanings ascribed thereto in the ISO’s Transmission, Markets and Services Tariff (the “Tariff”). Section III of the Tariff is Market Rule 1.

1 Federal Energy Regulatory Commission (“Commission” or “FERC”) approved
2 generator interconnection process; developing the ISO’s findings for
3 Transmission Cost Allocation; and supporting the capacity market in New
4 England.

5
6 Previously, I served as the ISO’s Director, Reliability and Operations Services. I
7 was also a former manager of the Rhode Island—Eastern Massachusetts—
8 Vermont Energy Control (“REMVEC”) center in Westborough, Massachusetts
9 and former manager of marketing operations for Northeast Utilities/Select Energy
10 Inc. in Berlin, Connecticut. I have over 35 years of experience in the operations
11 and planning of the New England bulk power system.

12

13 **Q: WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

14 A: The first purpose of my testimony is to certify that resources participating in the
15 twelfth FCA, which was held on February 5-6, 2018, were properly qualified in
16 accordance with Section III.13.1 of the Tariff. Section III.13.8.2 (b) of the Tariff
17 requires that documentation regarding the competitiveness of the FCA be filed
18 with the Commission. Section III.13.8.2 (b) states that such documentation may
19 include a certification from the ISO that all entities offering and bidding in the
20 FCA were properly qualified in accordance with Section III.13.1 of the Tariff.
21 My testimony provides such certification.

22

1 Second, in accordance with Section III.13.8.2(a) of the Tariff, my testimony fully
2 addresses the Dynamic De-List Bids rejected for reliability reasons. Section
3 III.13.8.2(a) of the Tariff requires the ISO to enumerate bids rejected for
4 reliability reasons pursuant to Section III.13.2.5.2.5, and the reasons for those
5 rejections. The rejected Dynamic De-List Bids were submitted by Lead Market
6 Participants for resources located in the Southeast New England Capacity Zone.
7 My testimony explains why allowing these resources to de-list as capacity
8 resources would jeopardize the reliable operation of the bulk power system and
9 would result in violations of NERC, NPCC, and/or ISO criteria, specifically
10 NPCC Directory #1; ISO New England Planning Procedure No. 3; and ISO New
11 England Planning Procedure No. 10, Section 7 (“PP-10”).²

12
13 **Q: WERE ALL RESOURCES OFFERING AND BIDDING IN THE**
14 **TWELFTH FCA HELD ON FEBRUARY 5-8, 2018 PROPERLY**
15 **QUALIFIED IN ACCORDANCE WITH TARIFF SECTION III.13.1?**

16 **A:** Yes. Section III.13.1 of the Tariff sets forth the process for qualification in the
17 FCA. In my role as Vice President of System Planning, I was responsible for
18 overseeing the qualification of all resources in the twelfth FCA held on February
19 5-6, 2018. I certify that all resources offering and bidding in the twelfth FCA
20 were properly qualified in accordance with Section III.13.1 of the Tariff. In a
21 November 7, 2017 informational filing with the Commission, the ISO provided

² PP-10 is posted on the ISO’s website at the following link: https://www.iso-ne.com/static-assets/documents/rules_proceeds/isone_plan/pp10/pp10.pdf

1 resources qualified to participate in the twelfth FCA.³ The Commission approved
2 the Informational Filing on January 19, 2018.⁴

3

4 **Q: WHAT WAS YOUR ROLE IN THE RELIABILITY REVIEW OF THE**
5 **VARIOUS DE-LIST BIDS?**

6 A: As the Vice President of System Planning, I oversaw the reliability review of all
7 submitted de-list bids.

8

9 **Q: WHAT TYPES OF DE-LIST BIDS DID THE ISO REVIEW?**

10 A: There are five different types of de-list bids that are reviewed for reliability,
11 Permanent, Retirement, Static, Export, and Dynamic De-list Bids. With the
12 exception of Dynamic De-list Bids,⁵ all de-list bids are submitted and reviewed
13 for reliability in advance of the FCA.

14

15 **Q: PLEASE DESCRIBE THE ISO'S REVIEW OF DE-LIST BIDS.**

16 A: Under the Tariff, all Existing Capacity Resources participate in the FCA, unless
17 the resource submits a de-list bid.⁶ There are two types of review performed by
18 the ISO on the de-list bids.

³ *ISO New England Inc.*, Informational Filing for Qualification in the Forward Capacity Market, Docket No. ER18-264-000 (filed November 7, 2017) (“Informational Filing”).

⁴ *Order Accepting Informational Filing*, 162 FERC ¶ 61,052 (2018) (“Informational Filing Order”).

⁵ Dynamic De-list Bids are reviewed for reliability as a part of the real-time auction process. See Sections III.13.2.3.2(d) and 13.2.5.2.5 of the Tariff.

⁶ Section III.13.2.3.2(c) of the Tariff.

1

2 **Q: WHAT IS THE FIRST TYPE OF REVIEW?**

3 A: Pursuant to Section III.13.1.2.3.2 of the Tariff, prior to the auction, the ISO's
4 Internal Market Monitor ("IMM") reviews Export De-List Bids and Static De-List
5 Bids submitted above the Dynamic De-List Bid threshold, which was set at
6 \$5.50/kW-month for the twelfth FCA, to determine whether the bids are
7 consistent with the resource's net risk-adjusted going forward and opportunity
8 costs. This review is not performed for Dynamic De-List Bids, which are
9 submitted during the auction itself, if the price drops below the Dynamic De-List
10 Bid threshold (\$5.50/kW-month for the twelfth FCA).

11

12 In addition, prior to the auction, the IMM reviews all submitted Permanent and
13 Retirement De-list Bids regardless of price, and a filing was made on July 19,
14 2017 (ER17-2110-000) indicating, on a confidential basis: (i) the IMM's
15 determination with respect to each Permanent De-List Bid and Retirement De-List
16 Bid, (ii) supporting documentation for each determination, (iii) the capacity that
17 will permanently de-list or retire prior to the Forward Capacity Auction, and (iv)
18 whether capacity suppliers that submitted the bids have elected to conditionally or
19 unconditionally retire the capacity pursuant to Section III.13.1.2.4.1.⁷

20

21 **Q: WHAT IS THE OTHER TYPE OF REVIEW THAT THE ISO PERFORMS**
22 **WITH REGARD TO DE-LIST BIDS?**

⁷ The Commission approved the filing on August 23, 2017.

1 A: Pursuant to Section III.13.2.5.2.5 of the Tariff and PP-10, the ISO reviews each
2 Retirement De-List Bid, Permanent De-List Bid, Export De-List Bid,
3 Administrative Export De-List Bid, and Static De-List Bid to determine if the
4 capacity associated with the bid is needed for local reliability during the Capacity
5 Commitment Period associated with the FCA. The Tariff provides that capacity
6 will be needed for local reliability if the absence of that capacity would result in
7 violation of any NERC, NPCC, or ISO criteria.⁸ If the capacity associated with
8 the de-list bid is determined not to be needed for local reliability, and the auction
9 price falls below the de-list bid price, the capacity associated with the bid is
10 removed from the auction.

11

12 **Q: FOR THE TWELFTH FCA, HOW MANY DE-LIST BIDS DID THE ISO**
13 **REVIEW FOR RELIABILITY?**

14 A: The ISO reviewed one Permanent De-list Bid totaling approximately 2 MW and
15 23 Retirement De-list Bids totaling approximately 519 MW.⁹ A total of 2,309
16 MW of pre-auction Static De-List Bids were submitted. However, pursuant to
17 Tariff Section III.13.1.2.3.1.1, prior to the auction, participants elected to
18 withdraw approximately 2,280 MW of their submitted Static De-list Bids. As a
19 result the ISO reviewed 29 MW of Static De-List Bids. Finally, no Export De-list
20 Bids were submitted for the twelfth FCA.

⁸ Section III.13.2.5.2.5 of the Tariff.

⁹ This value and all subsequent values include Transmission & Distribution gross-up factors for de-lists from Demand Response Resources.

1 During the first round of the auction where the price fell below \$5.50/kW-month
2 (*i.e.*, the threshold for review of Dynamic De-List Bids prescribed for the twelfth
3 FCA), 84 Dynamic De-List Bids were submitted, seeking to delist approximately
4 4,266 MW. However, during the course of the auction, the auction closing price
5 was estimated to be \$4.63/kW-month, and as a result approximately 36 Dynamic
6 De-List Bids above the anticipated closing price, totaling 2,772 MW, were
7 reviewed for reliability.

8

9 **Q: DID THE ISO UTILIZE THE SAME ANALYSIS TO DETERMINE THE**
10 **RELIABILITY NEED FOR DE-LIST BIDS IN THE TWELFTH FCA AS**
11 **APPROVED BY THE COMMISSION IN PREVIOUS AUCTIONS?**

12 A: Yes. Similar to other FCAs, the ISO reviewed the reliability need for all
13 resources seeking to de-list based on the results of a detailed transmission
14 operability analysis set forth in PP-10.

15

16 **Q: WHAT IS THE TRANSMISSION OPERABILITY ANALYSIS?**

17 A: All resources requesting to de-list were reviewed by the ISO under the
18 transmission operability analysis. A key aspect of this analysis involves the
19 consideration of “contingency” events wherein critical generation and/or
20 transmission facilities are assumed to trip out-of-service or be unavailable. A
21 “contingency” is an unintentional event that involves the loss of one or more
22 system elements. To evaluate compliance with planning criteria, contingencies

1 are simulated on computer models developed to represent future system
2 conditions.

3
4 The ISO conducted a transmission operability analysis using power system
5 software to perform detailed load flow analyses of the entire New England
6 system. Under the transmission operability analysis, the ISO determines if the
7 capacity associated with a de-list bid is needed to maintain system reliability so
8 that the system is able to withstand the unplanned loss of system elements, even
9 when the system is serving peak loads and is under stress.

10
11 Accordingly, the transmission operability analysis modeled in detail expected
12 peak system conditions for the 2021-2022 Capacity Commitment Period for both
13 the first contingency (N-1) and second contingency (N-1-1). The first
14 contingency analysis (N-1) includes the loss of a critical generator or transmission
15 element. The second contingency analysis (N-1-1) includes the loss of the most
16 critical transmission element followed by loss of the next most critical generator
17 or transmission element.

18

19 **RELIABILITY REVIEWS**

20 **Q: WHAT WAS THE OUTCOME OF THE ISO'S RELIABILITY REVIEW**
21 **OF DE-LIST BIDS?**

22 **A:** As noted above, prior to the FCA, the ISO reviewed one Permanent De-List Bid,
23 totaling approximately 2 MW, and 9 Static De-List Bids, totaling approximately

1 29 MW. During the FCA, these Permanent and Static De-list Bids were accepted
2 and an additional 36 Dynamic De-List Bids, totaling approximately 2,772 MW,
3 were submitted and reviewed by the ISO for reliability impacts. Of the 36
4 Dynamic De-list Bids submitted, 34 were accepted - meaning the resource was
5 able to delist. These 34 accepted delists totaled 1,494 MW.¹⁰
6

7 The ISO reviewed and rejected two Dynamic De-List Bids totaling approximately
8 1,278 MW, all located within the SENE Capacity Zone and more specifically the
9 NEMA/Boston Load Zone, for local reliability reasons. Allowing these resources
10 to leave the market would result in unreliable system conditions which I will
11 describe later in this testimony.¹¹
12

13 **Q: WHAT ARE DYNAMIC DE-LIST BIDS?**

14 A: Dynamic De-List Bids allow an Existing Capacity Resource to request removal of
15 capacity from the capacity market during a single Capacity Commitment Period
16 (*i.e.*, for a 12 month period). This is in contrast to a Permanent De-List Bid which
17 removes the resource from all future auctions and Capacity Commitment Periods.
18 Any Existing Generating Capacity Resource, Existing Import Resource, or
19 Existing Demand Resource (other than those designated as a Self-Supply FCA
20 Resource) may submit a de-list bid. All de-list bids are also subject to a reliability
21 review pursuant to Section III.13.2.5.2.5 of the Tariff. If the capacity associated

¹⁰ Subsequent to the clearing of the auction, this amount was rationed down to 1,431 MW.

¹¹ See Tariff Section III.13.2.5.2.5.

1 with the de-list bid is determined not to be needed for reliability, the capacity is
2 removed from the auction when the descending clock auction price falls below the
3 de-list bid price. If the reliability review determines that the resource is needed
4 for local reliability, the bid is rejected and the resource will be retained.

5
6 A Dynamic De-List Bid is submitted during the auction and must be at a price
7 below the Dynamic De-List Bid Threshold. Dynamic De-List Bids are for a
8 period of one year. The capacity from the Existing Capacity Resource associated
9 with the Dynamic De-List Bid is included in the next auction, and the resource
10 must submit another de-list bid if it does not want to assume a Capacity Supply
11 Obligation in the subsequent Capacity Commitment Period.

12
13 **Q: WHAT IS THE SENE CAPACITY ZONE?**

14 A: The SENE Capacity Zone is one of the three Capacity Zones that were modeled in
15 the twelfth FCA. The SENE Capacity Zone includes the Southeastern
16 Massachusetts, Rhode Island, and Northeastern Massachusetts/Boston
17 (“NEMA/Boston”) Load Zones and was modeled as an import-constrained
18 Capacity Zone in the auction.

19
20 **Q: WHAT IS THE NEMA/BOSTON LOAD ZONE?**

21 A: The NEMA/Boston Load Zone is one of the eight Load Zones that comprise the
22 New England Control Area as set forth in the ISO New England Regional System
23 Plan (“RSP”). The other Load Zones are Maine, New Hampshire, Vermont,

1 Connecticut, Rhode Island, Southeast Massachusetts, and Western/Central
2 Massachusetts. The NEMA/ Boston Load Zone includes the Greater Boston and
3 the North Shore regions of Massachusetts and is one of the Load Zones that
4 comprise the SENE Capacity Zone.

5
6 **Q: DESCRIBE THE THREE DYNAMIC DE-LIST BIDS REVIEWED BY**
7 **THE ISO AT THE MYSTIC STATION.**

8 A: The ISO reviewed the Dynamic De-List Bids submitted by Exelon Generation
9 Company, LLC. (“Exelon”) for the Mystic 7, 8 and 9 generating facilities.
10 Mystic 7 is a steam unit, fueled by either oil or natural gas, depending on market
11 conditions and fuel availability, and has a Summer Qualified Capacity for the
12 twelfth FCA of 574.547 MW. Mystic 8 is a natural gas-fired combined cycle
13 plant and has a Summer Qualified Capacity for the twelfth FCA of 703.324 MW.
14 Mystic 9 is a natural gas-fired combined cycle plant and has a Summer Qualified
15 Capacity for the twelfth FCA of 709.676 MW. All three resources are part of the
16 Mystic Generating Station located in Everett, Massachusetts, and are among the
17 four largest resources in the NEMA/Boston Load Zone.

18
19 Exelon submitted full Dynamic De-List Bids for Mystic 8 and 9 at \$5.499/kW-
20 month and Mystic 7 at \$5.000/kW-month.

21
22 **Q: DESCRIBE THE OUTCOME OF THE ISO’S RELIABILITY REVIEW.**

1 A: The Dynamic De-List Bid for Mystic 9 was approved (*i.e.*, not retained for
2 reliability), while the Dynamic De-List Bids for Mystic 7 and 8 were rejected for
3 local reliability reasons as described below.

4

5 **Q: IN WHAT ORDER DID THE ISO REVIEW THESE DYNAMIC DELIST**
6 **BIDS?**

7 A: In accordance with Section III.13.2.5.2.5(a) of the Tariff, the ISO conducts the
8 reliability review of de-list bids in descending price order. Since the Mystic 7
9 Dynamic De-List Bid was submitted at \$5.000/kW-month, it was reviewed after
10 the Mystic 8 and 9 Dynamic De-List Bids.

11

12 **Q: WHY DID THE ISO ACCEPT THE DE-LIST BID FOR MYSTIC 9**
13 **INSTEAD OF THE DE-LIST BID FOR MYSTIC 8?**

14 A: Pursuant to Section III.13.2.5.2.5(a) of the Tariff, “[i]f de-lists bids with the same
15 price are from a single generating station, they will be reviewed in an order that
16 seeks to provide (1) the least-cost solution under Section III.13.2.5.2.5.1(d) and
17 (2) the minimum aggregate quantity required for reliability from the generating
18 station.” Therefore, while, the Mystic 8 and 9 Dynamic De-List Bids were
19 submitted at the same price, because Mystic 9 is larger than Mystic 8, pursuant to
20 Section III.13.2.5.2.5(a), the ISO accepted the larger unit first.

21

1 **Q: PLEASE DESCRIBE THE TRANSMISSION OPERABILITY ANALYSIS**
2 **THAT DEMONSTRATED THE NEED TO RETAIN MYSTIC 7 AND**
3 **MYSTIC 8.**

4 A: In accordance with PP-10, the ISO performed a transmission operability analysis
5 to determine the reliability of the New England system for the 2021-2022
6 Capacity Commitment Period. Both first and second contingency analyses were
7 applied where dispatch scenarios were evaluated for reliability criteria violations.
8 This transmission operability analysis was limited to steady state thermal analysis
9 of the system. No additional voltage, stability or short circuit assessments were
10 performed.

11
12 **Q: WHAT ASSUMPTION WAS USED FOR THE PEAK LOAD FORECAST?**

13 A: In accordance with PP-10, the transmission operability analysis was performed
14 using the New England Control Area 2021 90/10 summer peak load of
15 approximately 31,964 MW¹² as projected in the 2017 Capacity, Energy, Loads,
16 and Transmission (“CELT”) report.

17
18 **Q: WHAT ASSUMPTIONS WERE USED WITH RESPECT TO AVAILABLE**
19 **RESOURCES?**

20 A: In accordance with PP-10, all Existing Capacity Resources were modeled at their
21 Summer Qualified Capacity as set forth in the twelfth FCA Informational Filing,
22 with adjustments for forced outage assumptions as described in PP-10, including

¹² This figure is reported as the “Reference with reduction for BTM PV” load forecast in the 2017 CELT report.

1 the modeling as out-of-service of one critical resource in the electrical vicinity of
2 the Dynamic De-List Bid.

3

4 **Q: WHAT WAS THE CRITICAL RESOURCE MODELED OUT-OF-**
5 **SERVICE FOR EACH DYNAMIC DE-LIST BID?**

6 A: In the transmission operability analysis for the Mystic 8 Dynamic De-List Bid, the
7 ISO modeled Mystic 7 as the critical resource out-of-service. In the transmission
8 operability analysis for the Mystic 7 Dynamic De-List Bid, Mystic 8 was the
9 critical resource modeled as out-of-service.

10

11 **Q: WHAT WAS THE RESULT OF THE FIRST CONTINGENCY (N-1)**
12 **TRANSMISSION OPERABILITY ANALYSIS?**

13 A: The result of the thermal analysis shows no reliability need for either of the
14 retained resources for the first contingency (N-1) evaluation. In other words, for
15 the Mystic 8 Dynamic De-List Bid, without Mystic 9 (prior accepted Dynamic
16 De-List), and assuming an outage of the next most critical resource in the area
17 (which would be Mystic 7), 80% of peaking generation units in the
18 NEMA/Boston Load Zone available, the additional loss of a transmission element
19 does not result in any overload violations. Likewise, for the Mystic 7 Dynamic
20 De-List Bid, without Mystic 9, and assuming an outage of the next most critical
21 resource in the area (which would be Mystic 8), 80% of peaking generation units
22 in the NEMA/Boston Load Zone available, the additional loss of a transmission
23 element does not result in any overload violations.

1

2 **Q: PLEASE PROVIDE THE INITIAL LINE-OUT CONDITIONS FOR THE**
3 **SECOND CONTINGENCY (N-1-1) ANALYSIS.**

4 A: Table 1 below summarizes the four initial line-out conditions evaluated as part of
5 the transmission operability analyses for the Mystic resources:

6

Table 1

7

Four Line-out Conditions Considered for the Mystic Second Contingency Analyses

Line Name	Description
3162	Stoughton - K Street 345 kV
338	Tewksbury-Woburn 345 kV
339	Tewksbury-Wakefield Junction 345 kV
349	Wakefield Junction - Golden Hills 345 kV

8

9 **Q: WHAT WAS THE OUTCOME OF THE SECOND CONTINGENCY (N-1-**
10 **1) TRANSMISSION OPERABILITY ANALYSIS?**

11 A: With the accepted Dynamic De-List Bid from Mystic 9, the results of the second
12 contingency transmission operability analysis for Mystic 7 or Mystic 8 shows that
13 there are line-plus-line transmission contingencies that result in local overloads of
14 transmission facilities in the immediate Boston area. In other words, analyzing the
15 Dynamic De-List Bid of Mystic 8 under the study conditions that call for the most
16 critical line out, an outage of the next most critical resource in the area (which

1 would be Mystic 7), 80% of peaking generation units in the NEMA/Boston Load
2 Zone available, the additional contingent loss of a transmission element for N-1-1
3 results in Long Term Emergency ("LTE") overload violations.

4
5 Similarly, analyzing the Dynamic De-List Bid of Mystic 7 under the study conditions
6 that call for the most critical line out, an outage of the next most critical resource in
7 the area (which would be Mystic 8), 80% of peaking generation units in the
8 NEMA/Boston Load Zone available, the additional contingent loss of a
9 transmission element for N-1-1 results in LTE overload violations.

10
11 Specifically, the results of the second contingency transmission operability analysis
12 demonstrate that there is a local reliability need for Mystic 7 and Mystic 8 to mitigate
13 LTE overload violations on 345 kV cables that supply Boston load.

14

15 **Q: DID THE ISO DISCUSS ITS FINDINGS WITH THE AFFECTED**
16 **TRANSMISSION OWNER?**

17 A: Yes. As part of the de-list bid review process, the results of the ISO's analyses
18 were discussed with Eversource, the affected Transmission Owner.

19

20 **Q: DID THE AFFECTED TRANSMISSION OWNER AGREE WITH THE**
21 **ISO'S FINDINGS?**

22 A: Yes.

23

24 **Q: DID ISO OPERATIONS AGREE WITH THE ISO FINDINGS?**

1 A: Yes.

2

3 **Q: DOES THIS CONCLUDE YOUR TESTIMONY?**

4 A: Yes.

1 I declare that the foregoing is true and correct.

2

3

4

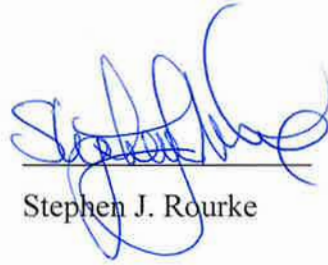
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8

February 28, 2018



Stephen J. Rourke

Attachment C

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

ISO New England Inc.

)

Docket No. ER18-___-000

**TESTIMONY OF ROBERT G. ETHIER
ON BEHALF OF ISO NEW ENGLAND INC.**

1 **Q: PLEASE STATE YOUR NAME, TITLE AND BUSINESS ADDRESS.**

2 A: My name is Robert G. Ethier. I am employed by ISO New England Inc. (the
3 “ISO”) as Vice President of Market Operations. My business address is One
4 Sullivan Road, Holyoke, Massachusetts 01040.

5

6 **Q: PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND**
7 **WORK EXPERIENCE.**

8 A: I have a Bachelor of Arts degree in Economics from Yale University, a Masters in
9 Resource Economics from Cornell University, and a Ph.D. in Resource
10 Economics from Cornell University. Since 2000, I have worked at the ISO in
11 various roles. I was responsible for Market Monitoring for nearly four years and
12 Resource Adequacy for more than two years before becoming Vice President of
13 Market Development in July 2008. In July 2014, I took on my current role as
14 Vice President of Market Operations. Before 2000, I was a Senior Associate at
15 Stratus Consulting with responsibility for energy market modeling.

16

17 **Q: WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

18 A: My testimony explains the auction prices resulting from the recently conducted

1 twelfth Forward Capacity Auction (“FCA”). The twelfth FCA was held on
2 February 5-6, 2018.

3
4 **Q: WHAT WAS YOUR ROLE IN THE DEVELOPMENT OF THE LIST OF**
5 **RESOURCES THAT RECEIVED CAPACITY SUPPLY OBLIGATIONS**
6 **IN THE TWELFTH FCA?**

7 A: Section III.13.8.2 (a) of the ISO’s Transmission, Markets and Services Tariff
8 (“Tariff”), requires the ISO to provide a list of resources that received Capacity
9 Supply Obligations in each Capacity Zone and the size of the Capacity Supply
10 Obligations. The ISO has provided this information in Attachment A to this
11 filing. As the Vice President of Market Operations, Attachment A was developed
12 under my supervision and direction.

13

14 **Q: WHAT CAPACITY ZONES WERE MODELED IN THE TWELFTH FCA?**

15 A: The ISO modeled three Capacity Zones in the twelfth FCA: The Southeastern
16 New England (“SENE”) Capacity Zone, the Northern New England (“NNE”) Capacity
17 Zone and the Rest-of-Pool Capacity Zone. The SENE Capacity Zone
18 includes Northeastern Massachusetts/Boston, Southeastern Massachusetts, and
19 Rhode Island. The NNE Capacity Zone includes Maine, New Hampshire and
20 Vermont. The Rest-of-Pool Capacity Zone includes Connecticut and
21 Western/Central Massachusetts. As detailed in the ISO’s Informational Filing for
22 the twelfth FCA, the Local Sourcing Requirement for the import-constrained
23 SENE Capacity Zone is 10,018 MW.¹ For the export-constrained NNE Capacity

¹ Informational Filing for Qualification in the Forward Capacity Market at page 9, filed on November 7, 2017 in Docket No. ER18-264-000.

(continued...)

1 Zone, the Maximum Capacity Limit is 8,790 MW.² Under Section III.13.2.2 of
2 the Tariff, the total amount of capacity cleared in the auction is determined using
3 the System-Wide Capacity Demand Curve and Capacity Zone Demand Curves.
4

5 **Q: PLEASE DESCRIBE THE METHODOLOGY USED FOR**
6 **CALCULATING THE MRI CURVES FOR THE TWELFTH FCA.**

7 A: Pursuant to Sections III.13.2.2.1, III.13.2.2.2 and III.13.2.2.3 of the Tariff, to
8 calculate the System-Wide Capacity Demand Curve, the Import-Constrained
9 Capacity Zone Demand Curve for SENE, and the Export-Constrained Capacity
10 Zone Demand Curve for NNE for the twelfth FCA, the ISO used the marginal
11 reliability impacts (i.e., the MRI) methodology. The MRI methodology measures
12 the change in “expected energy not served” (or “EENS”, which measures
13 unserved load and is used as a performance metric) with another 1 MW of
14 capacity, associated with various capacity levels for the system and the Capacity
15 Zones.

16
17 EENS is measured in MWh per year and can be calculated for any set of system
18 and zonal installed capacity levels. The EENS values for system capacity levels
19 are produced by the GE MARS model,³ in 10 MW increments and by applying

(...continued)

² *Id.*

³ The GE MARS model is the same simulation system that is already used to develop the
Installed Capacity Requirement and other values that specify how much capacity is required for
resource adequacy purposes from a system planning perspective. For the development of the
MRI Curves, the GE MARS model is used to calculate reliability values using 10 MW additions
(continued...)

1 the same assumptions used in determining the Installed Capacity Requirement.
2 These system EENS values are translated into MRI values by estimating how a 1
3 MW incremental change in capacity impacts EENS at various capacity levels. An
4 MRI curve is developed from these MRI values with capacity represented on the
5 X-axis and the corresponding MRI values on the Y-axis.

6
7 MRI values at various capacity levels are also calculated for the SENE import-
8 constrained Capacity Zone and the NNE export-constrained Capacity Zone using
9 the same modeling assumptions and methodology as those used to determine the
10 Local Resource Adequacy Requirement and the Maximum Capacity Limit for
11 those Capacity Zones, with the exception of the modification of the transmission
12 transfer capability for the SENE import-constrained Capacity Zone as described
13 in more detail below. These MRI values are calculated to reflect the change in
14 system reliability associated with transferring incremental capacity from the Rest-
15 of-Pool Capacity Zone into the constrained capacity zone.

16

17 **Q: PLEASE EXPLAIN THE TRANSITION METHODOLOGY USED TO**
18 **DEVELOP THE SYSTEM-WIDE CAPACITY DEMAND CURVE FOR**
19 **THE TWELFTH FCA.**

20 A: The MRI transition period aims to provide a transition from the linear system-
21 wide capacity demand curve methodology used in the ninth and tenth FCAs to the
22 MRI-based system-wide capacity demand curve methodology. This transition

(...continued)

above and 10 MW deductions below the calculated requirements until a sufficient set of values that covers the full range necessary to produce the MRI-based Demand Curves is determined.

1 seeks to provide a relatively stable and consistent market signal and balance
2 stakeholder interests while moving to a curve that more accurately reflects
3 efficient trade-offs between costs and reliability. The transition period began with
4 the eleventh FCA and may last no longer than three FCAs. If certain conditions
5 relating to net Installed Capacity Requirement growth are met, the transition
6 period will end earlier, pursuant to Section III.13.2.2.1 of the Tariff. During the
7 MRI transition period, the System-Wide Capacity Demand Curve is represented
8 as a hybrid of the previous linear demand curve design and the MRI-based
9 demand curve design.

10

11 During the MRI transition period, the System-Wide Capacity Demand Curve for
12 the twelfth FCA shall consist of the following three sections:

- 13 (1) at prices above \$7.03/kW-month and at or below the Forward Capacity
14 Auction Starting Price, the System-Wide Capacity Demand Curve shall
15 specify a price for system capacity quantities based on the product of the
16 system-wide Marginal Reliability Impact value, calculated pursuant to Section
17 III.12.1.1, and the scaling factor specified in Section III.13.2.2.4 of the Tariff;
- 18 (2) for prices below \$7.03/kw-month, the System-Wide Capacity Demand Curve
19 is represented by a linear segment that runs from a price of \$7.03 and a
20 capacity quantity of 34,276 MW to a price of \$0 and a capacity quantity of
21 35,892 MW; and

1 (3) a horizontal line at a price of \$7.03/kw-month which connects segments (1)
2 and (2) specified above.⁴

3
4 **Q: PLEASE PROVIDE ADDITIONAL DETAILS REGARDING THE**
5 **DEVELOPMENT OF THE IMPORT-CONSTRAINED CAPACITY ZONE**
6 **DEMAND CURVE FOR THE SENE CAPACITY ZONE.**

7 A: For import-constrained Capacity Zones, the Local Resource Adequacy
8 Requirement and Transmission Security Analysis Requirement values both play a
9 role in defining the MRI-based demand curves, just as they do in setting the Local
10 Sourcing Requirement. Under III.12.2.1.3 of the Tariff, prior to each FCA, the
11 ISO must determine the MRI value at various capacity levels for each import-
12 constrained Capacity Zone. For purposes of these calculations, the ISO applies
13 the same modeling assumptions and methodology used to determine the Local
14 Resource Adequacy Requirement, except that the capacity transfer capability
15 between the Capacity Zone under study and the rest of the New England Control
16 Area is reduced by the greater of: (i) the Transmission Security Analysis
17 Requirement minus the Local Resource Adequacy Requirement, and; (ii) zero.
18 By using a transfer capability that accounts for both the Transmission Security
19 Analysis and the Local Resource Adequacy Requirements, the ISO applies the
20 same “higher of” logic used in the Local Sourcing Requirement to the derivation
21 of sloped zonal demand curves. Using the values calculated pursuant to Section
22 III.12.2.1.3 and the scaling factor specified in Section III.13.2.2.4 of the Tariff, the
23 ISO must determine each Import-Constrained Capacity Zone’s Demand Curve

⁴ Section III.13.2.2.1 of the Tariff.

1 pursuant to Section III.13.2.2.2 of the Tariff. For the twelfth FCA, the only
2 import-constrained Capacity Zone is SENE and, therefore, there is only one
3 Import-Constrained Capacity Zone Demand Curve.

4

5 **Q: PLEASE PROVIDE ADDITIONAL DETAILS REGARDING THE**
6 **DEVELOPMENT OF THE EXPORT-CONSTRAINED CAPACITY ZONE**
7 **DEMAND CURVE FOR THE NNE CAPACITY ZONE.**

8 A: Under Section III.12.2.1.3 of the Tariff, prior to each FCA, the Export-
9 Constrained Capacity Zone Demand Curve is calculated using the same modeling
10 assumptions and methodology used to determine the export-constrained Capacity
11 Zone's Maximum Capacity Limit. Using the values calculated pursuant to
12 Section III.12.2.2.1 and the scaling factor specified in Section III.13.2.2.4 of the
13 Tariff, the ISO must determine each Export-Constrained Capacity Zone's
14 Demand Curve pursuant to Section III.13.2.2.3 of the Tariff. For the twelfth
15 FCA, the only export-constrained Capacity Zone is NNE and, therefore, there is
16 only one Export-Constrained Capacity Zone Demand Curve.

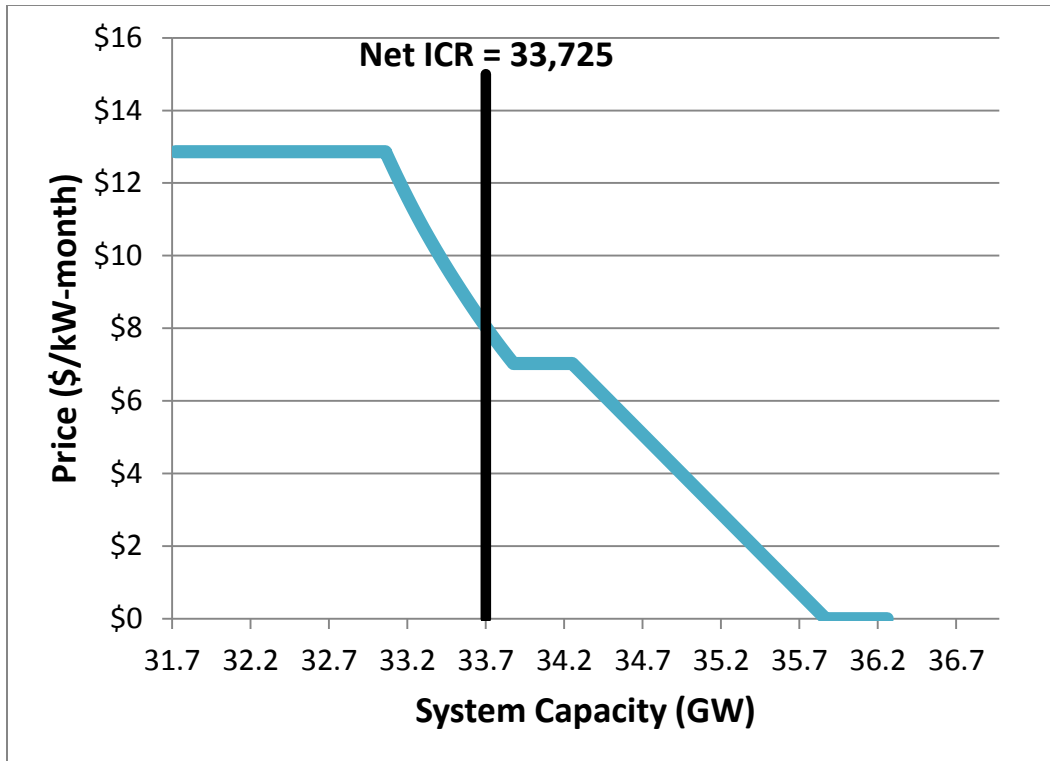
17

18 **Q: WHAT DEMAND CURVES HAS THE ISO CALCULATED FOR THE**
19 **TWELFTH FCA?**

20 A: As required under Section III.12 of the Tariff, the ISO calculated the following
21 Demand Curves for the twelfth FCA:

22

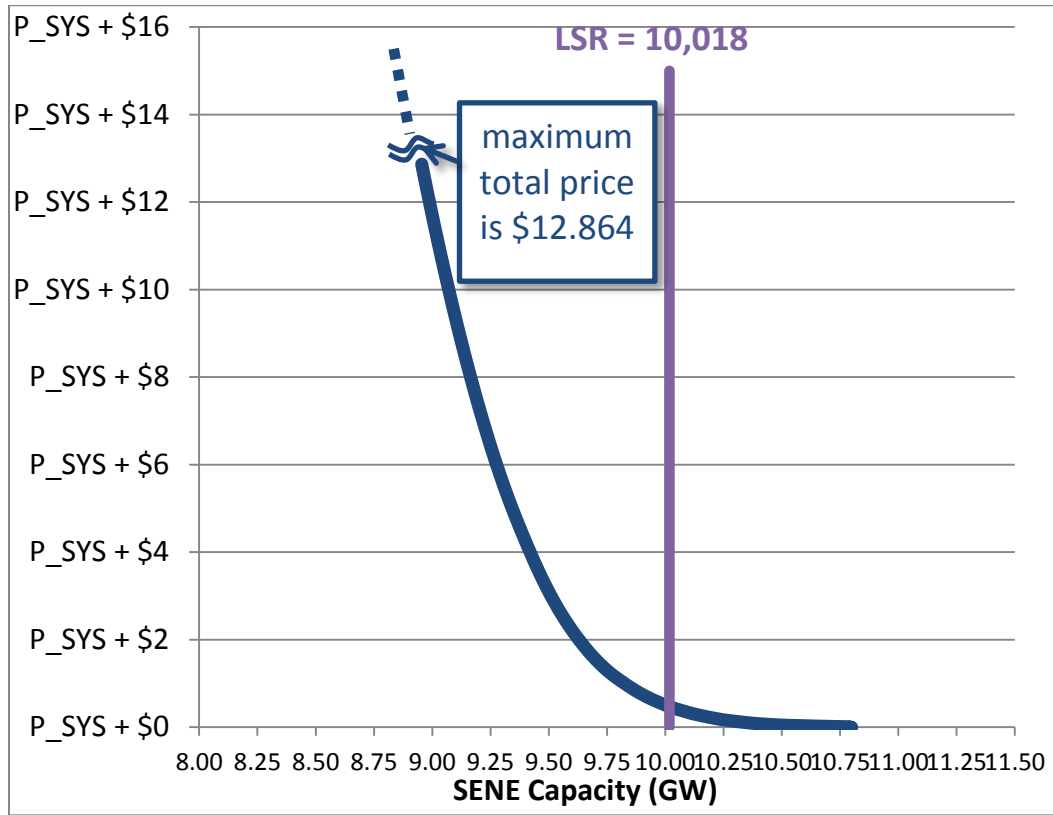
23 1. System-Wide Capacity Demand Curve



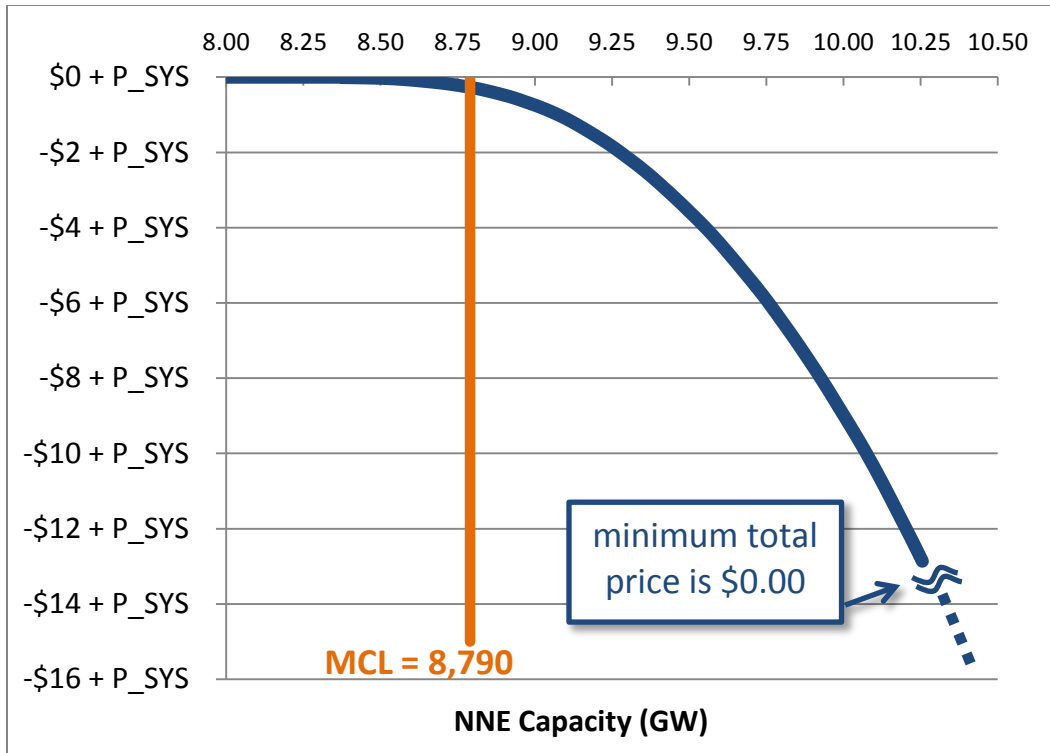
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1 2. Import-Constrained Capacity Zone Demand Curve for the SENE Capacity
2 Zone



3
4
5 3. Export-Constrained Capacity Zone Demand Curve for the NNE Capacity Zone

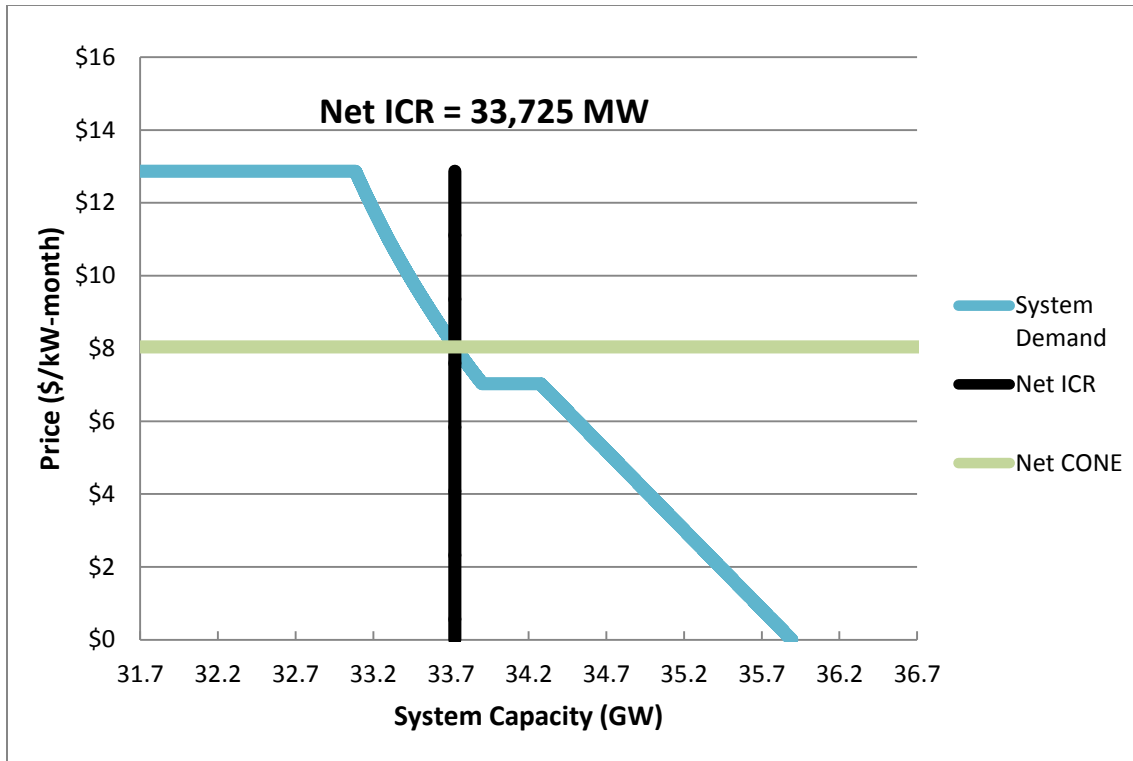


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2

3 **Q: CAN YOU PROVIDE A GRAPH OF THE SYSTEM-WIDE SLOPED**
 4 **DEMAND CURVE ALONG WITH THE NET ICR AND NET CONE FOR**
 5 **THE TWELFTH FCA?**

6 A: Yes. Below is a graph of the system-wide sloped demand curve, Net CONE, and
 7 NICR beginning at 31,700 MW:



1

2

3 **Q: WHAT CAUSED THE DESCENDING CLOCK AUCTION TO CLOSE?**

4 A: The auction bound system-wide in the fourth round of the auction and at a price
 5 below the Dynamic De-List Bid Threshold when Dynamic De-List Bids resulted
 6 in system-wide supply falling short of system-wide demand. One additional
 7 round was conducted for the New Brunswick external interface and the Phase I/II
 8 HQ Excess external interface because at the \$3.750/kW-month end-of-round price
 9 of the fourth round, supply over these external interfaces continued to exceed
 10 their respective Capacity Transfer Limits.

11

12 **Q: WERE ANY OF THE SUBMITTED DE-LIST BIDS DEEMED TO**
 13 **JEOPARDIZE LOCAL RELIABILITY?**

1 A: Yes, as explained in the testimony of Mr. Rourke, there were two Dynamic De-
2 List Bids submitted by Exelon Generation Company, LLC for the Mystic 7 and 8
3 generating facilities, totaling approximately 1,278 MW that, should the capacity
4 withdrawals have been allowed, were deemed to jeopardize local reliability. As a
5 result of this determination, the Dynamic De-List Bids were rejected in the
6 reliability review pursuant to Section III.13.2.5.2.5, and the associated resources
7 received Capacity Supply Obligations totaling approximately 1,278 MW.

8

9 **Q: WHAT WERE THE PRICES FOR THE CAPACITY ZONES?**

10 A: The auction commenced with a starting price of \$12.864/kW-month and
11 concluded for the SENE, NNE and Rest-of-Pool Capacity Zones after four
12 rounds. Resources in those Capacity Zones will be paid at the Capacity Clearing
13 Price set pursuant to the system-wide sloped demand curve, which was
14 \$4.631/kW-month.⁵

15

16 **Q: WHY WAS THE CAPACITY CLEARING PRICE \$4.631/KW-MONTH IN**
17 **THE SENE, NNE AND REST-OF-POOL CAPACITY ZONES?**

18 A: Under the rules for the FCA, a de-list bid represents the price at which a resource
19 wishes to withdraw from the auction; so to award a Capacity Supply Obligation to
20 a resource with a submitted delist bid, the auction price must be strictly above the
21 bid price. In the twelfth FCA, multiple Dynamic De-List Bids were submitted for
22 Existing Capacity Resources at \$4.630/kW-month. At prices above \$4.630/kW-

⁵ Existing resources with multi-year obligations from previous auctions will be paid based on the Capacity Clearing Price in the auction in which they originally cleared. Self-supplied resources will not be paid through the FCM.

1 month, this capacity was offered and would be included in the capacity procured
2 by the auction. Above \$4.630/kW-month, system-wide supply exceeded system-
3 wide demand. However, at prices at and below \$4.630/kW-month, the capacity
4 withdrawn by the Existing Capacity Resources with the Dynamic De-List Bids
5 was not offered and system-wide supply was less than system-wide demand.
6 Therefore, the Dynamic De-List Bids were marginal and set the price of
7 \$4.631/kW-month. However, the entire quantity of the Dynamic De-List Bids
8 were not needed to meet the quantity demanded at the price which cleared the
9 FCA. Dynamic De-List Bids are able to be rationed, which means that they can
10 be taken all or in part. To allow supply to precisely match demand, the price-
11 setting de-list bids in the twelfth FCA were rationed to a withdrawal quantity that
12 resulted in system-wide supply meeting system-wide demand at \$4.631/kW-
13 month. This quantity maximizes social surplus. The Existing Capacity Resources
14 received a Capacity Supply Obligation for the quantities necessary to meet
15 system-wide demand. The Capacity Clearing Price was \$4.631/kW-month
16 because this was the lowest price at which the Existing Capacity Resources were
17 willing to accept a Capacity Supply Obligation. These marginal Dynamic De-List
18 bids set the Capacity Clearing Prices in the SENE, NNE and Rest-of-Pool
19 Capacity Zones at \$4.631/kW-month.

20

21 **Q: WHY WERE THE PRICES FOR THE SENE AND NNE CAPACITY**
22 **ZONES THE SAME AS THE PRICE FOR THE REST-OF-POOL**
23 **CAPACITY ZONE?**

1 A: Although the SENE Capacity Zone was modeled as an import-constrained zone,
2 at the Capacity Clearing Price for the Rest-of-Pool Capacity Zone of \$4.631/kW-
3 month, there were sufficient resources to meet the zone's demand. An import-
4 constrained zone's demand curve is the *minimum* amount of capacity that must be
5 electrically located within the zone and is binding at all prices at which zonal
6 supply *is less than or equal* to zonal demand. It is specified at price *premiums* to
7 the Capacity Clearing Price for the Rest-of-Pool Capacity Zone and the quantity
8 demanded is greatest when the price premium is \$0.000. The Capacity Clearing
9 Price in the SENE Capacity Zone is the same as that in the Rest-of-Pool Capacity
10 Zone because at the Capacity Clearing Price for the Rest-of-Pool Capacity Zone,
11 the import-constrained zone's demand was not binding. This corresponds to
12 \$0.000 on the import-constrained zone's demand curve. Although the NNE
13 Capacity Zone was modeled as an export-constrained zone, at the Capacity
14 Clearing Price for the Rest-of-Pool Capacity Zone of \$4.631/kW-month, zonal
15 supply did not exceed zonal demand. An export-constrained zone's demand
16 curve is the *maximum* amount of capacity that can be electrically transferred from
17 the export-constrained zone to the Rest-of-Pool Capacity zone and is binding at
18 all prices at which zonal supply *exceeds* zonal demand. It is specified at price
19 *discounts* to the Capacity Clearing Price for the Rest-of-Pool Capacity Zone
20 where the discounts are expressed as non-positive values and the quantity
21 demanded is least when the price discount is \$0.000. The Capacity Clearing Price
22 in the NNE Capacity Zone is the same as that in the Rest-of-Pool Capacity Zone
23 because at the Capacity Clearing Price for the Rest-of-Pool Capacity Zone, the

1 export-constrained zone's demand was not binding. This corresponds to \$0.000
2 on the export-constrained zone's demand curve.

3

4 **Q: WHAT WERE THE PRICES ON THE EXTERNAL INTERFACES?**

5 A: Imports over the New York AC Ties external interface, totaling 524 MW, and
6 imports over the Hydro-Quebec Highgate external interface, totaling 57 MW, will
7 receive \$4.631/kW-month. Imports over the New Brunswick external interface,
8 totaling 194 MW, will receive \$3.155/kW-month. Imports over the Phase I/II HQ
9 Excess external interface, totaling 442 MW, will receive \$3.701/kW-month.

10

11 **Q: WHY WERE THE CAPACITY CLEARING PRICES FOR THE NEW**
12 **BRUNSWICK EXTERNAL INTERFACE AND THE PHASE I/II HQ**
13 **EXCESS EXTERNAL INTERFACE LOWER THAN THE OTHER**
14 **CAPACITY CLEARING PRICES?**

15 A: The associated Capacity Zone for the New Brunswick external interface in the
16 twelfth FCA was the NNE Capacity Zone. At the \$4.631/kW-month Capacity
17 Clearing Price for the NNE Capacity Zone, the New Brunswick external interface
18 had a greater amount of capacity offered than the interface's capacity transfer
19 limit allowed. Accordingly, pursuant to Section III.13.2.3.3 (d) of the Tariff, this
20 external interface was treated in the auction as if it comprised a separately
21 modeled export-constrained capacity zone. Therefore, a fifth round of bidding
22 was required and a separate Capacity Clearing Price was determined for the New
23 Brunswick external interface.

1 The associated Capacity Zone for the Phase I/II HQ Excess external interface in
2 the twelfth FCA was the Rest-of-Pool Capacity Zone. At the \$4.631/kW-month
3 Capacity Clearing Price for the Rest-of-Pool Capacity Zone, the Phase I/II HQ
4 Excess external interface had a greater amount of capacity offered than the
5 interface's capacity transfer limit allowed. Accordingly, pursuant to Section
6 III.13.2.3.3 (d) of the Tariff, this external interface was treated in the auction as if
7 it comprised a separately modeled export-constrained capacity zone. Therefore, a
8 fifth round of bidding was required and a separate Capacity Clearing Price was
9 determined for the Phase I/II HQ Excess external interface.

10

11 **Q: DOES THIS CONCLUDE YOUR TESTIMONY?**

12 **A: Yes.**

1 I declare that the foregoing is true and correct.

2

3

4

A handwritten signature in blue ink, appearing to read 'R. Ethier', is written over a horizontal line. The signature is stylized and extends to the right with a long, sweeping tail.

5

Robert G. Ethier

6

7 February 28, 2018

Attachment D

1 **Q: WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

2 A: The purpose of my testimony is to certify that all offers and bids in the twelfth
3 Forward Capacity Auction (“FCA”)¹ that were required by the applicable
4 provisions of the Tariff to be reviewed by the IMM were in fact properly
5 reviewed and whether the outcome of the twelfth FCA was the result of a
6 competitive auction. Section III.13.8.2 (b) of the Tariff requires that, after each
7 FCA, documentation regarding the competitiveness of the FCA be filed with the
8 Commission.

9
10 **Q: WERE ALL DE-LIST BIDS FROM EXISTING RESOURCES AND**
11 **OFFERS FROM NEW RESOURCES PROPERLY REVIEWED BY THE**
12 **IMM AND QUALIFIED IN ACCORDANCE WITH THE TARIFF PRIOR**
13 **TO THE TWELFTH FCA CONDUCTED ON FEBRUARY 5-6, 2018?**

14 A: Yes. Section III.13.1 of the Tariff sets forth the process for qualifying resources
15 to participate in the FCA. Section III.13.1.2.3.2 of the Tariff requires that the
16 IMM review each Static De-List Bid, Export De-List Bid and Permanent De-List
17 Bid above \$5.50/kW-month to determine whether the bid is consistent with the
18 resource’s net risk-adjusted going forward costs and opportunity costs.
19 Additionally, pursuant to Section III.A.21.2 of the Tariff, the IMM reviews
20 requests submitted by each New Capacity Resource to offer in the FCA below the
21 Offer Review Trigger Price for the applicable resource type. If the IMM
22 determines that the requested offer price is inconsistent with the IMM’s capacity
23 price estimate, then the resource’s New Resource Offer Floor Price is set to a
24 level that is consistent with the capacity price estimate, as determined by the
25 IMM.

26
27 As Vice President of Market Monitoring, I am responsible for overseeing the
28 review of all of these bids and offers, and I certify that such review was
29 performed in accordance with the provisions of Section III.13.1 and Section

¹ Capitalized terms used but not defined in this testimony have the meanings ascribed to them in the ISO New England Transmission, Markets and Services Tariff (the “Tariff”).

1 III.A.21.2 of the Tariff. The IMM’s determinations with respect to these bids and
2 offers were filed with the Commission in Docket No. ER18-264-000, and were
3 accepted by the Commission on January 19, 2018.²
4

5 **Q: WERE THE CAPACITY CLEARING PRICES FOR THE TWELFTH FCA**
6 **CONDUCTED FOR THE 2021-2022 CAPACITY COMMITMENT**
7 **PERIOD THE RESULT OF A COMPETITIVE AUCTION?**

8 **A:** The auction cleared within the “dynamic range” – *i.e.*, below the Dynamic De-
9 List Bid Threshold (“DDBT”) – which means the bids in this range were not
10 reviewed by the IMM as part of the market power mitigation process prior to the
11 auction. However, sufficient surplus remained in the auction at the start of the
12 dynamic range so that no single participant would have been in a position to
13 effectively exercise market power at the system or zonal level, thereby incenting
14 participants to offer at a competitive price. Therefore, the clearing prices for the
15 twelfth FCA were the result of a competitive auction.
16

17 In providing this determination, it is important to underscore several features of
18 the auction and conditions in the auction. The twelfth FCA cleared capacity in all
19 three internal zones and on two import interfaces in the fourth round—the first
20 round in which suppliers were able to submit Dynamic De-List Bids because
21 clearing proceeded below the DDBT. The auction clearing price for these
22 locations was \$4.63/kW-month. As in previous auctions, prior to each round
23 participants in the twelfth FCA were provided information that indicated the
24 amount of excess system capacity remaining in the auction. There was roughly
25 2,670 MW of excess capacity system-wide and roughly 2,590 MW of excess
26 capacity in the SENE zone at the start of the fourth round of the auction.

27 Participants could bid in the dynamic fourth round at any price of their choosing.

² *Order Accepting Informational Filing*, 162 FERC ¶ 61,052 (2018). In addition, the IMM’s determinations with respect to Permanent De-List Bids and Retirement De-List Bids that were submitted prior to the Existing Capacity Qualification Deadline were detailed in a confidential filing to the Commission on July 19, 2017. The Commission accepted the filing in a Letter Order issued in Docket No. ER17-2110-000 on August 23, 2017.

1 Furthermore, because bids submitted below the DDBT were not reviewed as part
2 of the market power mitigation process that takes place during the pre-auction
3 qualification period, there is no visibility into the cost basis of those bids. While
4 it is not possible to verify via the mitigation process that bids submitted in the
5 dynamic range reflected the participant's cost of providing capacity, the large
6 surplus at the start of the fourth round: (1) means that no single participant would
7 have been in a position to effectively exercise market power at the system or
8 zonal level to benefit their portfolio, and (2) gave participants competing to
9 provide capacity to meet system and zonal resource adequacy needs the incentive
10 to offer at a competitive price.

11
12 Finally, the two import interfaces that cleared in the fifth round of the auction
13 cleared at prices below \$4.63/kW-month and are in the range of competitive
14 prices given the process that produced the \$4.63/kW-month price for internal
15 zones, the cost of taking on an obligation, and the expected competing
16 opportunities for that capacity in neighboring markets.

17
18 **Q: DOES THIS CONCLUDE YOUR TESTIMONY?**

19 **A:** Yes.
20
21

1 I declare that the foregoing is true and correct.

2

3

4

5



Jeffrey McDonald.

6

7 February 28, 2018

8

Attachment E

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

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ISO New England Inc.

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Docket No. ER18-____-000

TESTIMONY OF LAWRENCE M. AUSUBEL

Q. PLEASE STATE YOUR NAME, TITLE AND BUSINESS ADDRESS.

A. My name is Lawrence M. Ausubel. I am the Founder and Chairman of Power Auctions LLC, the company that has helped to design, implement, and administer the Forward Capacity Auction (“FCA”) for ISO New England Inc. (the “ISO”). I am also a Professor of Economics at the University of Maryland. My business address is 3333 K St. NW Suite 425, Washington, DC 20007.

Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND WORK EXPERIENCE.

A. I have an A.B. in Mathematics from Princeton University, an M.S. in Mathematics from Stanford University, an M.L.S. in Legal Studies from Stanford University, and a Ph.D. in Economics from Stanford University. I am the Chairman of Power Auctions LLC, a provider of auction implementation services and software worldwide. I was also the President of Market Design Inc., an economics consultancy that (until its dissolution in 2016) offered services in the design of auction markets. In recent years, I have played a lead role in the design and implementation of: electricity auctions in France, Germany, Spain,

1 Belgium and the US; gas auctions in Germany, France, Hungary and Denmark;
2 the world's first auction for greenhouse gas emission reductions in the UK; and a
3 prototype airport slot auction in the US. I have advised the US Federal
4 Communications Commission, Innovation Science and Economic Development
5 Canada, and the Australian Communications and Media Authority on spectrum
6 auctions. I have also advised BOEM (the US Bureau of Ocean Energy
7 Management) and ICANN (the Internet Corporation for Assigned Names and
8 Numbers) on auction design. I hold 22 U.S. patents related to auction technology
9 and I have published numerous articles on auction design, bargaining, industrial
10 organization and financial markets. My curriculum vitae, which includes a list of
11 publications and other experience, is attached.

12

13 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

14 A. The purpose of this testimony is to certify that the recently concluded FCA was
15 conducted in accordance with the relevant filed market rules. Section
16 III.13.8.2(b) of the ISO New England Transmission, Markets and Services Tariff
17 (the "Tariff") requires that after each FCA, documentation regarding the
18 competitiveness of the FCA be filed with the Federal Energy Regulatory
19 Commission ("Commission"). Section III.13.8.2(b) states that such
20 documentation may include certification from the auctioneer that the FCA was
21 conducted in accordance with the provisions of Section III.13 of the Tariff.
22 Section III.13.2 of the Tariff provides the rules relating to the mechanics of the
23 FCA. My testimony certifies that the FCA was conducted in accordance with

1 Section III.13.2.

2

3 **Q. PLEASE DESCRIBE POWER AUCTIONS LLC**

4 A. Power Auctions LLC designs, implements and conducts high-stakes electronic
5 auctions utilizing proprietary software, processes, and other intellectual property.

6 The PowerAuctions software platform designed by Power Auctions LLC has been
7 used to implement over 250 auctions worldwide in the electricity, gas and
8 resource sectors. In the electricity sector, the software platform was used to
9 operate 42 quarterly EDF Generation Capacity Auctions in France. It was also
10 used for the Endesa-Iberdola Virtual Power Plant Auctions in Spain, the
11 Electrabel Virtual Power Plant Auctions in Belgium and the E.ON Virtual Power
12 Plant Auction in Germany. Currently, our software platform is also used for
13 implementing the UK's Capacity Market auctions and for implementing the
14 US Department of Interior's auctions of offshore wind energy tracts. Further,
15 Power Auctions LLC was part of the team that the US Federal Communications
16 Commission assembled to design and implement the FCC Incentive Auction
17 (2016–17), and it is prime contractor to the Governments of Australia, Canada
18 and the US for the ongoing implementation of spectrum auctions.

19 Power Auctions LLC worked with the ISO to design and implement (on the
20 PowerAuctions platform) the previous FCAs held on February 4-6, 2008;
21 December 8-10, 2008; October 5-6, 2009; August 2-3, 2010; June 6-7, 2011;
22 April 2-3, 2012; February 4-5, 2013; February 3, 2014; February 2, 2015;
23 February 8, 2016; and February 6, 2017.

24

1 Q. WHAT WAS POWER AUCTIONS LLC'S ROLE IN THE FORWARD
2 CAPACITY AUCTION HELD ON FEBRUARY 5-6, 2018?

3 A. The ISO retained Power Auctions LLC as the independent auction manager
4 ("Auction Manager") for the twelfth FCA. As the Auction Manager, Power
5 Auctions LLC worked with the ISO to design and implement the FCA in
6 conformance with the Tariff. By design, the Auction Manager conducted the
7 auction independently, with limited involvement by the ISO. The auction was
8 implemented using the PowerAuctions software platform.

9

10 Q. WAS THE FCA HELD ON FEBRUARY 5-6, 2018 CONDUCTED IN
11 ACCORDANCE WITH SECTION III.13.2 OF THE TARIFF?

12 A. Yes. In accordance with Section III.13.8.2 (b) of the Tariff, I certify that, to the
13 best of my knowledge, the FCA of February 5-6, 2018 was conducted in
14 conformance with the provisions of Section III.13.2 of the Tariff.

15

16 Q. DOES THIS CONCLUDE YOUR TESTIMONY?

17 A. Yes.

18

19 I declare that the foregoing is true and correct.

20

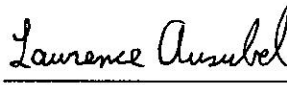
21 Executed on February 14, 2018

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Lawrence M. Ausubel
Lawrence M. Ausubel

Curriculum Vitae

LAWRENCE M. AUSUBEL

Address

Department of Economics
University of Maryland
Tydings Hall, Room 3114
College Park, MD 20742
301.405.3495 TEL 202.318.0863 FAX
ausubel@econ.umd.edu
www.ausubel.com

Power Auctions LLC
3333 K St. NW, Suite 425
Washington, DC 20007-3591
ausubel@powerauctions.com
www.powerauctions.com

2744 32nd Street, NW
Washington, DC 20008

Personal

Year of Birth: 1959
Place of Birth: New York City

Education

Ph.D. (1984) Stanford University, Economics
M.L.S. (1984) Stanford Law School, Legal Studies
M.S. (1982) Stanford University, Mathematics
A.B. (1980) Princeton University, Mathematics

Honors: Fellow of the Econometric Society
Phi Beta Kappa
Sigma Xi
Magna cum laude in mathematics
Stanford University Economics Department, graduate fellowship, 1982
Stanford Law School, fellowship in law and economics, 1983

Fields of Concentration

Microeconomic Theory and Game Theory
Auctions and Bargaining
Market Design
Credit Cards, Bankruptcy and Banking
Industrial Organization
Law and Economics

Professional Experience

Professor of Economics, University of Maryland (August 1992 – present).

Chairman and Founder, Power Auctions LLC (2003 – present).

Power Auctions LLC has been a technology provider of auction design, auction software, implementation services and intellectual property since 2003. The PowerAuctions™ software platform has been used for more than 250 high-stakes auctions on six continents, with total transaction values approaching \$100 billion.

President, Market Design Inc. (2003 – 2016).

Until its dissolution in 2016, Market Design Inc. was a consultancy of leading economists and game theorists (Al Roth, Peter Cramton, R. Preston McAfee, Paul Milgrom, Robert Wilson, et al) that worked with governments and companies worldwide to design and implement state-of-the-art auctions and markets.

Assistant Professor of Managerial Economics and Decision Sciences, Kellogg School, Northwestern University (September 1984 – August 1992).

Visiting Assistant Professor, New York University (January 1990 – May 1990).

Recent Consulting Experience

Provided expert bidding advice to bidders in more than a dozen large spectrum auctions, including Bharti Airtel in India's 900/1800 MHz auction, Orange in Slovakia's Multi-Band spectrum auction, Three (Hutchison) in the UK 4G auction, Eircom in Ireland's 800/900/1800 MHz auction, Aircel in India's 3G/BWA auctions, Spain's Telefónica in the UK, German, Italian and Austrian UMTS/3G spectrum auctions, Ericsson in the US PCS spectrum auctions, MTN in the Nigerian spectrum auctions, MCI in the US Direct Broadcast Satellite auction, US Airwaves in the US C-Block Auction, Mobile Media in the US Narrowband Auction, and other confidential clients.

Advised the Secretaría de Energía (SENER) by preparing an expert report on Mexico's first two capacity auctions and by providing advice for future auctions, 2016.

Provided expert bidding advice to a confidential client in India's 500 MW solar auction, 2015.

Advisor to the US government (Federal Communications Commission) on the design and implementation of the FCC Incentive Auction and ongoing spectrum auctions, 2011 – present.

Advisor to the Canadian government (Innovation, Science and Economic Development Canada) on the design and implementation of the 600 MHz, 700 MHz and 2.5 GHz spectrum auctions, 2010 – present.

Advisor to the Australian government (ACMA) on the design and implementation of the Australian Digital Dividend auction and future spectrum auctions, 2011 – present.

Provided auction design advice to the IDA Singapore on their Auction of Public Cellular Mobile Telecommunication Services Spectrum Rights, 2007 – 2008.

Design and implementation of the Trinidad and Tobago GSM auction, 2005.

Design and implementation of the UK Capacity Market auction (electricity, 2014 – present).

Design and implementation of auctions for offshore wind energy tracts for the Bureau of Ocean Energy Management (BOEM), US Department of Interior (2010 – present).

Design and implementation of the Forward Capacity Auction for ISO New England (electricity, 2007 – present).

Design and implementation of the quarterly Electricité de France generation capacity auctions (2001 – 2011) and Long-Term Contract auctions (2008 – 2009).

Design and implementation of the quarterly Spanish Virtual Power Plant (VPP) auctions (electricity, 2007 – 2009).

Design and implementation of the E.ON VPP auction in Germany (2007).

Design and implementation of the quarterly Electrabel Virtual Power Plant (VPP) auctions in Belgium (2003 – 2005).

Design and implementation of auctions for new gTLDs for ICANN (Internet Corporation for Assigned Names and Numbers (2008 – present).

Design and implementation of rough diamond auctions for Okavango Diamond Company, Botswana (2013 – present).

Design and implementation of rough diamond auctions for BHP Billiton/Dominion Diamonds (2007 – 2014).

Design and implementation of the annual E.ON Földgáz Trading gas release programme auction in Hungary (2006 – 2013).

Design and implementation of the annual Danish Oil and Natural Gas (DONG Energy) gas release programme auction (2006 – 2011).

Design and implementation of the annual E.ON Ruhrgas gas release programme auction in Germany (2003 – 2008, 2010).

Design and implementation of the Gaz de France gas storage auction (2006).

Design and implementation of the Gaz de France gas release programme auction (2004).

Design and implementation of the Total gas release programme auction (2004).

Design and implementation of the UK Emissions Trading Scheme auction to procure greenhouse gas emission reductions for the UK Government (2002).

Design and implementation of a demonstration auction of landing and takeoff slots for LaGuardia Airport, for the US Federal Aviation Administration (2005, 2008).

Teaching

Econ 456	Law and Economics (Undergraduate; Maryland)
Econ 603	Microeconomic Analysis (Ph.D.; Maryland)
Econ 661	Industrial Organization (Ph.D.; Maryland)
Econ 704	Advanced Microeconomics: Market Design (Ph.D.; Maryland)
Mngl Econ D30	Intermediate Microeconomics (M.B.A.; Northwestern)
Mngl Econ D45	Regulation and Deregulation (M.B.A.; Northwestern)

Publications

“An Experiment on Auctions with Endogenous Budget Constraints” (with Justin E. Burkett and Emel Filiz-Ozbay), *Experimental Economics*, Vol. 20, No. 4, pp. 973-1006, December 2017.

“A Practical Guide to the Combinatorial Clock Auction” (with Oleg V. Baranov), *Economic Journal*, Vol. 127, No. 605 (Feature Issue), pp. F334-F350, October 2017.

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“Sequential Kidney Exchange” (with Thayer Morrill), *American Economic Journal: Microeconomics*, Vol. 6, No. 3, pp. 265-285, August 2014.

“Market Design and the Evolution of the Combinatorial Clock Auction” (with Oleg V. Baranov), *American Economic Review: Papers & Proceedings*, Vol. 104, No. 5, pp. 456-451, May 2014.

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- “Non-Judicial Debt Collection and the Consumer’s Choice among Repayment, Bankruptcy and Informal Bankruptcy” (with Amanda E. Dawsey and Richard M. Hynes), *American Bankruptcy Law Journal*, Vol. 87, pp. 1-26 [lead article], March 2013.
- “Virtual Power Plant Auctions” (with Peter Cramton), *Utilities Policy*, Vol. 18, No. 4, pp. 201-208, December 2010.
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- “An Efficient Ascending-Bid Auction for Multiple Objects,” *American Economic Review*, Vol. 94, No. 5, pp. 1452-1475, December 2004.
- “Dynamic Auctions in Procurement” (with Peter Cramton), Chapter 9 of *Handbook of Procurement* (N. Dimitri, G. Piga, and G. Spagnolo, eds.), pp. 220-245, Cambridge: Cambridge University Press, 2006.
- “The Lovely but Lonely Vickrey Auction” (with Paul Milgrom), Chapter 1 of *Combinatorial Auctions* (P. Cramton, Y. Shoham, and R. Steinberg, eds.), pp. 17-40, Cambridge: MIT Press, 2006.
- “Ascending Proxy Auctions” (with Paul Milgrom), Chapter 3 of *Combinatorial Auctions* (P. Cramton, Y. Shoham, and R. Steinberg, eds.), pp. 79-98, Cambridge: MIT Press, 2006.
- “The Clock-Proxy Auction: A Practical Combinatorial Auction Design” (with Peter Cramton and Paul Milgrom), Chapter 5 of *Combinatorial Auctions* (P. Cramton, Y. Shoham, and R. Steinberg, eds.), pp. 115-138, Cambridge: MIT Press, 2006.
- “Auctioning Many Divisible Goods” (with Peter C. Cramton), *Journal of the European Economics Association*, Vol. 2, Nos. 2-3, pp. 480-493, April-May 2004.
- “Vickrey Auctions with Reserve Pricing” (with Peter C. Cramton), *Economic Theory*, 23, pp. 493-505, April 2004. Reprinted in Charalambos Aliprantis, et al. (eds.), *Assets, Beliefs, and Equilibria in Economic Dynamics*, Berlin: Springer-Verlag, 355-368, 2003.
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- “Ascending Auctions with Package Bidding” (with Paul Milgrom), *Frontiers of Theoretical Economics*, Vol. 1, No. 1, Article 1, August 2002.
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Patents

“System and Method for an Auction of Multiple Types of Items” (with Peter Cramton and Wynne P. Jones), U.S. Patent Number 8,762,222, issued June 24, 2014.

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“Computer Implemented Methods and Apparatus for Auctions,” U.S. Patent Number 7,249,027, issued July 24, 2007.

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“System and Method for an Efficient Dynamic Auction for Multiple Objects,” U.S. Patent Number 6,026,383, issued February 15, 2000.

“Computer Implemented Methods and Apparatus for Auctions,” U.S. Patent Number 6,021,398, issued February 1, 2000.

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- “Penalty Interest Rates, Universal Default, and the Common Pool Problem of Credit Card Debt” (with Oleg V. Baranov and Amanda E. Dawsey), mimeo, University of Maryland, June 2010.
- “A Troubled Asset Reverse Auction” (with Peter Cramton), working paper, University of Maryland, October 2008.
- “Time Inconsistency in the Credit Card Market” (with Haiyan Shui), mimeo, University of Maryland, January 2005.
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- “Bidder Participation and Information in Currency Auctions” (with Rafael Romeu), Working Paper WP/05/157, International Monetary Fund, 2005.
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- “Sequential Recontracting Under Incomplete Information” (with Arijit Sen), mimeo, University of Maryland, June 1995.
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- “A Model of Managerial Discretion and Corporate Takeovers,” mimeo, University of Maryland, March 1993.
- “Rigidity and Asymmetric Adjustment of Bank Interest Rates,” mimeo, University of Maryland, August 1992.
- “Oligopoly When Market Share Matters,” mimeo, Stanford University, May 1984.
- “Partially-Revealing Equilibria,” Stanford University, Department of Economics, August 1984. Dissertation committee: Mordecai Kurz (principal advisor); Peter J. Hammond; Kenneth J. Arrow.

Works in Progress

“The Hungarian Auction” (with T. Morrill)

“Bargaining and Forward Induction” (with R. Deneckere)

Op-Eds

“Making Sense of the Aggregator Bank” (with Peter Cramton), *Economists’ Voice*, Vol. 6, Issue 3, Article 2, February 2009.

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Research Grants

Principal Investigator, “Common-Value Auctions with Liquidity Needs” (with P. Cramton, E. Filiz-Ozbay and E. Ozbay), National Science Foundation Grant SES-09-24773, September 1, 2009 – August 31, 2013.

Principal Investigator, “Dynamic Matching Mechanisms” (with P. Cramton), National Science Foundation Grant SES-05-31254, August 15, 2005 – July 31, 2008.

Co-Principal Investigator, “Slot Auctions for U.S. Airports” (with M. Ball, P. Cramton and D. Lovell), Federal Aviation Administration, September 1, 2004 – August 31, 2005.

Co-Principal Investigator, “Rapid Response Electronic Markets for Time-Sensitive Goods” (with G. Anandalingam, P. Cramton, H. Lucas, M. Ball and V. Subrahmanian), National Science Foundation Grant IIS-02-05489, Aug 1, 2002 – July 31, 2005.

Principal Investigator, “Multiple Item Auctions” (with P. Cramton), National Science Foundation Grant SES-01-12906, July 15, 2001 – June 30, 2004.

Principal Investigator, “Auctions for Multiple Items” (with P. Cramton), National Science Foundation Grant SBR-97-31025, April 1, 1998 – March 31, 2001.

Co-Principal Investigator, “Auctions and Infrastructure Conference” (with P. Cramton), National Science Foundation, April 1, 1998 – March 31, 1999.

Principal Investigator, “Bargaining Power, Sequential Recontracting, and the Principal-Agent Problem” (with A. Sen), National Science Foundation Grant SBR-94-10545, October 15, 1994 – September 30, 1997.

Principal Investigator, “Insider Trading and Economic Efficiency,” The Lynde and Harry Bradley Foundation, May 15, 1989 – May 14, 1992.

Principal Investigator, “Bargaining with One- and Two-Sided Incomplete Information” (with R. Deneckere), National Science Foundation Grant SES-86-19012, June 1, 1987 – May 31, 1989.

Principal Investigator, “Information Transmission in Bargaining and Markets” (with R. Deneckere), National Science Foundation Grant IST-86-09129, July 1, 1986 – June 30, 1987.

Conference Presentations

“On Generalizing the English Auction,” Econometric Society Winter Meetings, Chicago, January 1998.

“The Optimality of Being Efficient,” Maryland Auction Conference, Wye River, May 1998.

“Adverse Selection in the Credit Card Market,” Western Finance Association, Monterey, June 1998.

“The Optimality of Being Efficient,” Econometric Society Summer Meetings, Montreal, June 1998.

“Bargaining and Forward Induction,” Northwestern Summer Microeconomics Conference, Evanston, IL, July 1998.

“Predicting Personal Bankruptcies,” National Conference of Bankruptcy Judges, Dallas, October 1998.

“Adverse Selection in the Credit Card Market,” NBER Behavioral Macroeconomics Conference, Boston, December 1998.

“The Ascending Auction Paradox,” Econometric Society Summer Meetings, Madison, June 1999.

“Adverse Selection in the Credit Card Market,” Econometric Society Summer Meetings, Madison, June 1999.

“Predicting Personal Bankruptcies,” Meeting of the National Association of Chapter Thirteen Trustees, New York, July 1999.

“The Ascending Auction Paradox,” Southeast Economic Theory Conference, Washington DC, November 1999.

“Adverse Selection in the Credit Card Market,” Utah Winter Finance Conference, Salt Lake City, February 2000.

- “An Efficient Dynamic Auction for Heterogeneous Commodities,” Conference on Auctions and Market Structure, Heidelberg, Germany, July 2000.
- “An Efficient Dynamic Auction for Heterogeneous Commodities,” Conference on Multiunit Auctions, Stony Brook, NY, July 2000.
- “A Mechanism Generalizing the Vickrey Auction,” Econometric Society World Congress, Seattle, August 2000.
- “Auctions for Financial E-Commerce,” New York Federal Reserve Bank Conference on Financial E-Commerce, New York, February 2001.
- “An Efficient Dynamic Auction for Heterogeneous Commodities,” NSF General Equilibrium Conference, Providence, RI, April 2001.
- “An Efficient Dynamic Auction for Heterogeneous Commodities,” NSF/NBER Decentralization Conference, Evanston, IL, April 2001.
- “Informal Bankruptcy,” Association of American Law Schools Workshop on Bankruptcy, St. Louis, MO, May 2001.
- “An Efficient Dynamic Auction for Heterogeneous Commodities,” Econometric Society Summer Meetings, College Park, MD, June 2001.
- “Ascending Auctions with Package Bidding,” FCC, SIEPR and NSF Conference on Combinatorial Auctions, Wye River, MD, October 2001.
- “The Electricité de France Generation Capacity Auctions,” CORE-ECARES-LEA Workshop on Auctions, Brussels, Belgium, November 2001.
- “Informal Bankruptcy,” Utah Winter Finance Conference, Salt Lake City, February 2002.
- “Defictionalizing the Walrasian Auctioneer,” Conference on Market Design in Honor of Robert Wilson, Stanford, CA, May 2002.
- “Adverse Selection in the Credit Card Market,” Conference on the Economics of Payment Networks, Toulouse, France, June 2002.
- “Ascending Auctions with Package Bidding,” Econometric Society Summer Meetings, Los Angeles, June 2002.
- “An Efficient Dynamic Auction for Heterogeneous Commodities,” Conference in Honor of Mordecai Kurz, Stanford, CA, August 2002.
- “Adverse Selection in the Credit Card Market,” Conference on Credit, Trust and Calculation, San Diego, November 2002.
- “Package Bidding for Spectrum Auctions,” American Economic Association Meetings, Washington, DC, January 2003.

- “Auctioning Many Divisible Goods,” invited session, European Economic Association Meetings, Stockholm, August 2003.
- “Spectrum Auctions with Package Bidding,” TPRC Research Conference on Communication, Information and Internet Policy, Arlington, VA, September 2003.
- “Defictionalizing the Walrasian Auctioneer,” invited lecture, Conference on Auctions and Market Design: Theory, Evidence and Applications, Fondazione Eni Enrico Mattei, Milan, September 2003.
- “Clock Auctions, Proxy Auctions, and Possible Hybrids,” Workshop on Auction Theory and Practice, Pittsburgh, PA, November 2003.
- “Clock Auctions, Proxy Auctions, and Possible Hybrids,” FCC Combinatorial Bidding Conference, Wye River, MD, November 2003.
- “Time Inconsistency in the Credit Card Market,” Utah Winter Finance Conference, Salt Lake City, February 2004.
- “The Clock-Proxy Auction: A Practical Combinatorial Auction Design,” Conference on Auctions and Market Design: Theory, Evidence and Applications, Consip, Rome, Italy, September 2004.
- “Bidder Participation and Information in Currency Auctions,” Conference on Auctions and Market Design: Theory, Evidence and Applications, Consip, Rome, Italy, September 2004.
- “The Clock-Proxy Auction: A Practical Combinatorial Auction Design,” Market Design Conference, Stanford University, December 2004.
- “Dynamic Matching Mechanisms,” Econometric Society World Congress, London, August 2005.
- “The Clock-Proxy Auction, with Recent Applications,” SISL Workshop, Caltech, October 2005.
- “Dynamic Matching Mechanisms,” Conference on Matching and Two-Sided Markets, University of Bonn, May 2006.
- “The Hungarian Auction,” DIMACS Workshop on Auctions with Transaction Costs, Rutgers University, March 2007.
- “The Hungarian Auction,” PSE Lecture at the Paris School of Economics, June 2007.
- “Time Inconsistency in the Credit Card Market,” John M. Olin Conference on Law and Economics of Consumer Credit, University of Virginia, February 2008.

- “The Hungarian Auction,” 6th Annual International Industrial Organization Conference, Arlington, VA, May 2008.
- “The Hungarian Auction,” Frontiers of Microeconomic Theory and Policy, Symposium in Honour of Ray Rees, University of Munich, July 2008.
- “Common-Value Auctions with Liquidity Needs: An Experimental Test of a Troubled Assets Reverse Auction,” 2009 CAPCP Conference on Auctions and Procurement, Penn State University, March 2009.
- “Market Design for Troubled Assets,” NBER Workshop on Market Design, Cambridge, MA, May 2009.
- “Market Design for Troubled Assets,” Madrid Summer Workshop on Economic Theory, Universidad Carlos III de Madrid, June 2009.
- “Virtual Power Plant Auctions,” (with Peter Cramton), Workshop: Designing Electricity Auctions, Research Institute of Industrial Economics, Stockholm, Sweden, September 2009.
- “Using Forward Markets to Improve Electricity Market Design,” (with Peter Cramton), Workshop: Designing Electricity Auctions, Research Institute of Industrial Economics, Stockholm, Sweden, September 2009.
- “Virtual Power Plant Auctions,” (with Peter Cramton), Market Design 2009 Conference, Stockholm, Sweden, September 2009.
- “Using Forward Markets to Improve Electricity Market Design,” (with Peter Cramton), Market Design 2009 Conference, Stockholm, Sweden, September 2009.
- “Auctions with Multiple Objects,” 2009 Erwin Plein Nemmers Prize in Economics, Conference in Honor of Paul Milgrom, Northwestern University, November 2009.
- “Penalty Interest Rates, Universal Default, and the Common Pool Problem of Credit Card Debt” (with Oleg V. Baranov and Amanda E. Dawsey), Credit, Default and Bankruptcy Conference, University of California - Santa Barbara, June 2010.
- “Core-Selecting Auctions with Incomplete Information” (with Oleg V. Baranov), World Congress of the Econometric Society, Shanghai, China, August 2010.
- “Core-Selecting Auctions with Incomplete Information” (with Oleg V. Baranov), NBER Workshop on Market Design, Cambridge, MA, October 2010.
- “Core-Selecting Auctions with Incomplete Information” (with Oleg V. Baranov), NSF/CEME Decentralization Conference, Ohio State University, April 2011
- “Penalty Interest Rates, Universal Default, and the Common Pool Problem of Credit Card Debt” (with Oleg V. Baranov and Amanda E. Dawsey), Centre for Financial Analysis

- & Policy Conference on Consumer Credit and Bankruptcy, University of Cambridge, UK, April 2011.
- “Core-Selecting Auctions with Incomplete Information” (with Oleg V. Baranov), Center for the Study of Auctions, Procurements and Competition Policy Conference, Penn State University, April 2011.
- “Design Issues for Combinatorial Clock Auctions” (with Oleg V. Baranov), Annual Meeting of the Institute for Operations Research and the Management Sciences (INFORMS), Phoenix AZ, October 2012.
- “An Enhanced Combinatorial Clock Auction” (with Oleg V. Baranov), SIEPR Conference on the FCC Incentive Auctions, Stanford University, February 2013.
- “Enhancing the Combinatorial Clock Auction” (with Oleg V. Baranov), Ofcom Conference, Combinatorial Auctions for Spectrum, London School of Economics, September 2013.
- “The Combinatorial Clock Auction, Revealed Preference and Iterative Pricing” (with Oleg V. Baranov), NBER Workshop on Market Design, Stanford University, October 2013.
- “Market Design and the Evolution of the Combinatorial Clock Auction” (with Oleg V. Baranov), invited session in honor of the Nobel Prize in Economics awarded to Market Design, American Economic Association meetings, Philadelphia, January 2014.
- “Revealed Preference in Bidding: Empirical Evidence from Recent Spectrum Auctions” (with Oleg V. Baranov), NBER Market Design Conference, Palo Alto, CA, June 2014.
- “Enhancing the Combinatorial Clock Auction” (with Oleg V. Baranov), Industry Canada Retrospective on the Canadian 700 MHz Spectrum Auction, Ottawa, Canada, November 2014.
- “Efficient Procurement Auctions with Increasing Returns” (with Oleg V. Baranov, Christina Aperjis and Thayer Morrill), Annual Meeting of the Institute for Operations Research and the Management Sciences (INFORMS), Philadelphia PA, November 2015.
- “Efficient Procurement Auctions with Increasing Returns” (with Oleg V. Baranov, Christina Aperjis and Thayer Morrill), Workshop on Auction Design, University of Vienna, August 2016.
- “Vickrey-Based Pricing in Iterative First-Price Auctions” (with Oleg V. Baranov), Workshop on Auction Design, University of Vienna, August 2016.
- “Efficient Procurement Auctions with Increasing Returns” (with Oleg V. Baranov, Christina Aperjis and Thayer Morrill), NBER Market Design Conference, Palo Alto, CA, October 2016.
- “Market Design and the FCC Incentive Auction” (with Christina Aperjis and Oleg V. Baranov), Tenth Biannual Conference on Economic Design, York, UK, June 2017.

“Market Design and the FCC Incentive Auction” (with Christina Aperjis and Oleg V. Baranov), NBER Market Design Conference, Cambridge, MA, October 2017.

Professional Service

Mentored the National Winner of the 2017-18 Siemens Competition in Math, Science and Technology (Andrew Komo of Bethesda, MD).

Member of working group for the design and implementation of the FCC Incentive Auction for the US Federal Communications Commission, 2011 – 2017.

Advisor to Innovation, Science and Economic Development Canada for the design and implementation of 600 MHz, 700 MHz and 2.5 GHz spectrum auctions, 2011 – present.

Advisor to the Australian Communications and Media Authority for the design and implementation of the Australian Digital Dividend Auction and future spectrum auctions, 2011 – present.

Congressional Briefing on “How Fundamental Economic Research Improves People’s Lives,” Rayburn House Office Building, March 2010.

Testified before the Committee on Banking, Housing and Urban Affairs of the US Senate, Hearing on “Modernizing Consumer Protection in the Financial Regulatory System: Strengthening Credit Card Protections,” February 12, 2009.

Testified before the Subcommittee on Financial Institutions and Consumer Credit of the US House of Representatives, Hearing on “The Credit Cardholders’ Bill of Rights: Providing New Protections for Consumers,” March 13, 2008.

Member, National Science Foundation Economics Panel, 2004 – 2005.

Associate Editor, *Berkeley Electronic Journals of Theoretical Economics*, 2004 – present.

Guest Associate Editor, *Management Science*, issue on Electronic Auctions, 2003.

Program Chair of the 2001 North American Summer Meeting of the Econometric Society (with Peter Cramton), University of Maryland, June 21–24, 2001.

Program Committee of the North American Summer Meeting of the Econometric Society, UCLA, June 2002, and University of Pennsylvania, June 1991.

Organized Maryland Auction Conference (with Peter Cramton), Wye River Conference Center, May 1998, sponsored by the National Science Foundation, the World Bank, and the University of Maryland.

Spoke at a Forum on Bankruptcy of the Financial Services Committee of the United States House of Representatives, February 28, 2001.

Testified before the Subcommittee on Commercial and Administrative Law of the United States House of Representatives, Hearing on the Consumer Bankruptcy Issues in the Bankruptcy Reform Act of 1998, March 10, 1998.

Testified before the Subcommittee on Financial Institutions and Regulatory Relief of the United States Senate, Hearing on Bankruptcy Reform, February 11, 1998.

Testified before the National Bankruptcy Review Commission, January 1997.

Referee for: *American Economic Review*, *Econometrica*, *European Economic Review*, *Games and Economic Behavior*, *International Journal of Game Theory*, *International Journal of Industrial Organization*, *Journal of Banking and Finance*, *Journal of Business*, *Journal of Economic Theory*, *Journal of Financial Intermediation*, *Journal of Political Economy*, *Quarterly Journal of Economics*, *Rand Journal of Economics*, *Review of Economic Studies*, and the National Science Foundation.

Professional Organizations

American Economic Association
Econometric Society

Attachment F

New England Governors, State Utility Regulators and Related Agencies*

Connecticut

The Honorable Dannel P. Malloy
Office of the Governor
State Capitol
210 Capitol Ave.
Hartford, CT 06106
Liz.Donohue@ct.gov

Connecticut Public Utilities Regulatory
Authority
10 Franklin Square
New Britain, CT 06051-2605
robert.luysterborghs@ct.gov
michael.coyle@ct.gov
clare.kindall@ct.gov
steven.cadwallader@ct.gov

Maine

The Honorable Paul LePage
One State House Station
Office of the Governor
Augusta, ME 04333-0001
Kathleen.Newman@maine.gov

Maine Public Utilities Commission
18 State House Station
Augusta, ME 04333-0018
Maine.puc@maine.gov

Massachusetts

Massachusetts Attorney General Office
One Ashburton Place
Boston, MA 02108
rebecca.tepper@state.ma.us

Massachusetts Department of Public Utilities
One South Station
Boston, MA 02110
Nancy.Stevens@state.ma.us
morgane.treanton@state.ma.us

New Hampshire

The Honorable Chris Sununu
Office of the Governor
26 Capital Street
Concord NH 03301
Jared.chicoine@nh.gov

New Hampshire Public Utilities Commission
21 South Fruit Street, Ste. 10
Concord, NH 03301-2429
tom.frantz@puc.nh.gov
george.mccluskey@puc.nh.gov
F.Ross@puc.nh.gov
David.goyette@puc.nh.gov
RegionalEnergy@puc.nh.gov
kate.bailey@puc.nh.gov
amanda.noonan@puc.nh.gov

Rhode Island

The Honorable Gina Raimondo
Office of the Governor
82 Smith Street
Providence, RI 02903
eric.beane@governor.ri.gov
carol.grant@energy.ri.gov
christopher.kearns@energy.ri.gov
Danny.Musher@energy.ri.gov
nicholas.ucci@energy.ri.gov

Rhode Island Public Utilities Commission
89 Jefferson Blvd.
Warwick, RI 02888
Margaret.curran@puc.ri.gov
todd.bianco@puc.ri.gov
Marion.Gold@puc.ri.gov

Vermont

The Honorable Phil Scott
Office of the Governor
109 State Street, Pavilion
Montpelier, VT 05609
jgibbs@vermont.gov

New England Governors, State Utility Regulators and Related Agencies*

Vermont Public Utility Commission
112 State Street
Montpelier, VT 05620-2701
mary-jo.krolewski@vermont.gov
sarah.hofmann@vermont.gov

Vermont Department of Public Service
112 State Street, Drawer 20
Montpelier, VT 05620-2601
bill.jordan@vermont.gov
june.tierney@vermont.gov
Ed.McNamara@vermont.gov

New England Governors, Utility Regulatory and Related Agencies

Jay Lucey
Coalition of Northeastern Governors
400 North Capitol Street, NW
Washington, DC 20001
coneg@sso.org

Heather Hunt, Executive Director
New England States Committee on Electricity
655 Longmeadow Street
Longmeadow, MA 01106
HeatherHunt@nescoe.com
JasonMarshall@nescoe.com

Rachel Goldwasser, Executive Director
New England Conference of Public Utilities
Commissioners
72 N. Main Street
Concord, NH 03301
rgoldwasser@necpuc.org

Martin Honigberg, President
New England Conference of Public Utilities
Commissioners
21 S. Fruit Street, Suite 10
Concord, NH 03301-2429
martin.honigberg@puc.nh.gov