

Forward Capacity Auction 17 Transmission Transfer Capabilities & Capacity Zone Development

Planning Advisory Committee



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Topics

- Review of interface transfer capabilities
- Proposed Capacity Zone construct for Forward Capacity Auction (FCA) 17, which is associated with the 2026-2027 Capacity Commitment Period (CCP)



FCA 17 – Capacity Zone Development: Steps So Far

- ISO presented the [FCA 17 Capacity Zone Development Preview](#) at the November 2021 Planning Advisory Committee (PAC) meeting
- ISO presented the [2022 Forward Capacity Market Transmission Certifications](#) at the January 2022 Reliability Committee (RC) meeting



REVIEW OF INTERFACE TRANSFER CAPABILITIES

Internal Interfaces

A Note on the Boston/Southeast New England (SENE) Import Transfer Limits

- Several system changes have affected the Boston/SENE import transfer limits

System Change	Boston/SENE N-1 Import Transfer Capability (MW)
Greater Boston Upgrades	5,700
Delay of the Wakefield-Woburn 345 kV line¹	5,400
Updated load assumptions, updated Northern New England (NNE)-Scobie transfer capability and retirement of Mystic 7, 8 & 9²	5,150
Boston Area Optimized Solution²	5,250

1. A portion of the Greater Boston Upgrades

2. Accounts for all of the Greater Boston Upgrades, including the Wakefield-Woburn 345 kV line



A Note on the Boston/SENE Import Transfer Limits, cont'd

- Opening of the K Street breaker increases the Boston Import and SENE Import N-1-1 transfer limits
 - The N-1 Boston/SENE Import transfer limits are not impacted because constraints on those limits are outside of the K Street vicinity
 - The project is expected to be in-service in time for the start of the 2023-2024 CCP and certified once it is included on the June 2022 Regional System Plan project list update
 - The zonal analysis calculations begin in earnest in June

System Change	Boston/SENE N-1-1 Import Transfer Capability (MW)
Boston Area Optimized Solution¹	4,550
Opening of the K Street Breaker	4,850

1. Accounts for all of the Greater Boston Upgrades and the retirement of the Mystic units



FCA 17 Internal Interface Transfer Capabilities (MW)

Single-Value, Summer Peak, Non-Firm, Transmission Interface Limits for Use in Subarea Transportation Models ^a

Interface	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Orrington South Export	1325	1325	1325	1325	1325	1325	1325	1325	1325	1325
Surowiec South	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
Maine-New Hampshire	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Northern New England-Scobie + 394	3450	3450	3450	3450	3450	3450	3450	3450	3450	3450
North-South	2725	2725	2725	2725	2725	2725	2725	2725	2725	2725
East-West	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500
West-East	2200	3000 ^b	3000	3000	3000	3000	3000	3000	3000	3000
Boston Import (N-1)	5400	5700 ^c	5250 ^d	5250	5250	5250	5250	5250	5250	5250
Boston Import (N-1-1)	4500	4600 ^c	4850 ^d	4850	4850	4850	4850	4850	4850	4850
SEMA/RI Export	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400
SEMA/RI Import (N-1)	1280	1800 ^b	1800	1800	1800	1800	1800	1800	1800	1800
SEMA/RI Import (N-1-1)	720	800 ^b	800	800	800	800	800	800	800	800
Southeast New England Import (N-1)	5400	5700 ^c	5250 ^d	5250	5250	5250	5250	5250	5250	5250
Southeast New England Import (N-1-1)	4500	4600 ^c	4850 ^d	4850	4850	4850	4850	4850	4850	4850
Connecticut Import (N-1)	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400
Connecticut Import (N-1-1)	2200	2200	2200	2200	2200	2200	2200	2200	2200	2200
SW Connecticut Import (N-1)	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800
SW Connecticut Import (N-1-1)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900

Notes are discussed on the following page



FCA 17 Internal Interface Transfer Capabilities (Notes)

- a) Limits are for the summer period, except where noted to be winter
 - The limits may not include possible simultaneous impacts, and should not be considered as “firm”
 - For the years within the FCM horizon (CCP 2026-2027 and sooner), only accepted certified transmission projects are included when identifying transfer limits
 - For the years beyond the FCM horizon (CCP 2027-2028 and later), proposed plan approved transmission upgrades are included according to their expected in-service dates
- b) Increase associated with the Southeast Massachusetts/Rhode Island (SEMA/RI) Reliability project upgrades
- c) Increase associated with the Greater Boston upgrades, with the Wakefield – Woburn 345 kV line in service (CCP 2023-2024 and later)
- d) The transfer capability was decreased by updated load assumptions, updated Northern New England (NNE)-Scobie transfer capability and retirement of Mystic 7, 8 & 9, and then increased by the inclusion of the Boston Area Optimized Solution, and increased by the inclusion of the opening of the K Street breaker for only the N-1-1 transfer limits



REVIEW OF INTERFACE TRANSFER CAPABILITIES

External Interfaces

FCA 17 External Interface Import Capability (MW)

Single-Value, Summer Peak, Non-Firm, Transmission Interface Limits for Use in Subarea Transportation Models ¹

Interface	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
New Brunswick-New England (energy import capability) ²	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
New Brunswick-New England (capacity import capability)	700	700	700	700	700	700	700	700	700	700
HQ-New England (Highgate) (energy import capability) ³	217	217	217	217	217	217	217	217	217	217
HQ-New England (Highgate) (capacity import capability)	200	200	200	200	200	200	200	200	200	200
HQ-New England (Phase II) (energy import capability) ⁴	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
HQ-New England (Phase II) (capacity import capability)	1400	1400	1400	1400	1400	1400	1400	1400	1400	1400
Cross-Sound Cable (CSC) (energy import capability) ⁵	330	330	330	330	330	330	330	330	330	330
Cross-Sound Cable (CSC) (capacity import capability)	0	0	0	0	0	0	0	0	0	0
New York-New England (energy import capability) ⁶	1400	1400	1400	1400	1400	1400	1400	1400	1400	1400
New York-New England (capacity import capability)	1400	1400	1400	1400	1400	1400	1400	1400	1400	1400

Notes are discussed on the following pages

Notes on External Interface Import Capability

1. Limits are for the summer period
 - The limits may not include possible simultaneous impacts, and should not be considered as “firm” (the bases for these limits are subject to more detailed review in the future)
2. The limit on scheduled energy transactions over the New Brunswick (NB)-New England (NE) Tie is 1,000 MW
 - When adjusted for the ability to deliver capacity to the greater New England Control area, the NB-NE transfer capability is 700 MW
 - This is because of downstream constraints; in particular Orrington South
3. The capability for the Highgate facility is listed at the New England AC side of the Highgate terminal



Notes on External Interface Import Capability, cont'd

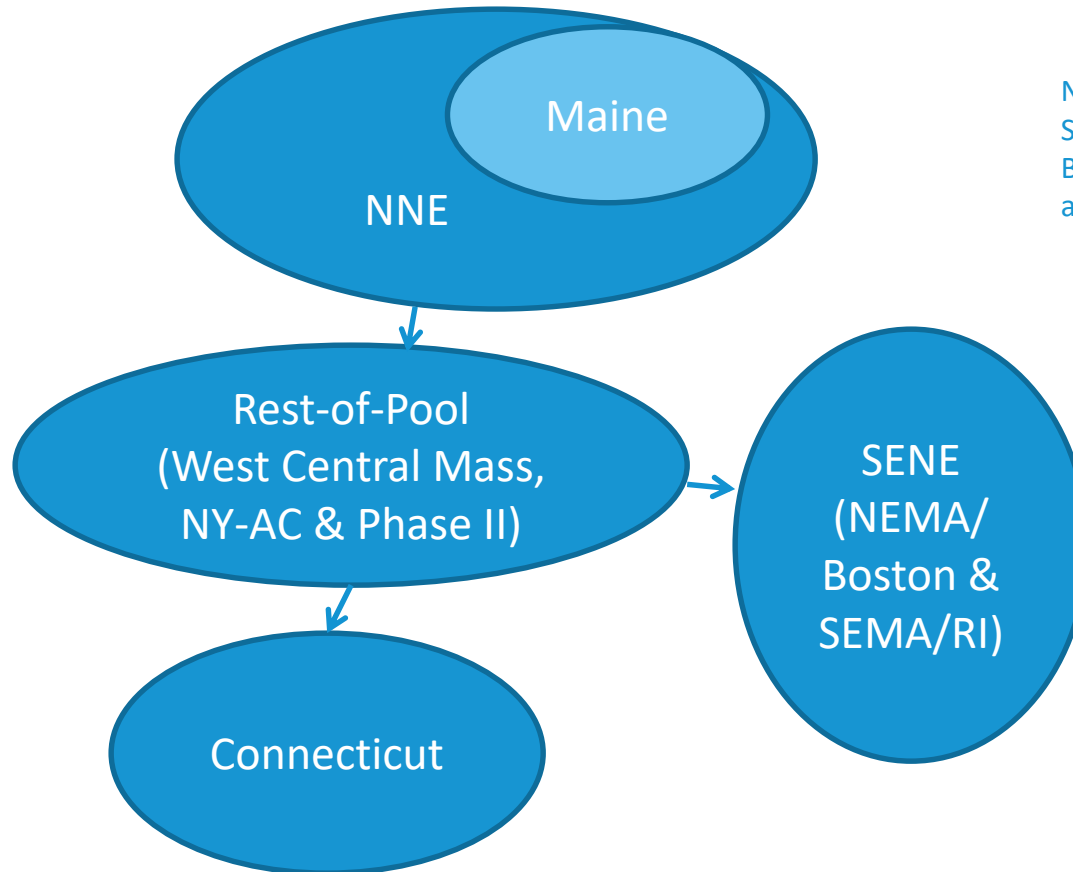
4. The Hydro-Quebec Phase II interconnection is a DC tie with equipment ratings of 2,000 MW. Due to the need to protect for the loss of this line at full import level in the PJM and New York (NY) Control Areas' systems, ISO-NE has assumed its transfer capability for capacity and reliability calculation purposes to be 1,400 MW
 - This assumption is based on the results of loss-of-source analyses conducted by PJM and NY
5. Import capability on the Cross Sound Cable (CSC) is dependent on the level of local generation
6. NY interface limits
 - These are without CSC and with the Northport Norwalk Cable at 0 MW flow
 - Simultaneously importing into NE and SWCT or Connecticut can lower the NY-NE capability (very rough decrease = 200 MW)

PROPOSED POTENTIAL ZONAL CONSTRUCT FOR FCA 17

Proposed Potential Zonal Construct for FCA 17

- For FCA 17, the following potential zones (unchanged from FCA 16) will be evaluated using the Capacity Zone modeling objective criteria triggers in Section III.12.4 of the Tariff
 - Potential export-constrained zones:
 - Northern New England (“NNE” - Vermont, New Hampshire & Maine)
 - Maine - nested within NNE
 - Potential import-constrained zones:
 - Southern New England (“SENE” - Northeast Massachusetts/Boston & SEMA/RI)
 - Connecticut
- Pursuant to Section III.12.4 (b) of the Tariff, the ISO must model out-of-service all Retirement De-List Bids and Permanent De-List Bids (including any received for the current FCA at the time of the calculation)
 - The window for submitting these bids for FCA 17 is April 29 - May 6, 2022
 - Submissions are based on the FCA Starting Price (which is dependent on the Cost of New Entry (CONE)) and the Capacity Performance Payment Rate (CPPR)

Potential Capacity Zone Construct for FCA 17



Note:
Supply from New
Brunswick is modeled
as connected to Maine

Note that zones are modeled in the FCA only if the objective criteria in Section III.12 of the Tariff is triggered

Interface Transfer Capabilities for Potential Capacity Zone Boundaries

FCA 16 Transfer Capabilities (MW)		FCA 17 Transfer Capabilities (MW)	
SENE Import N-1	5,250	SENE Import N-1 ¹	5,250
SENE Import N-1-1	4,550	SENE Import N-1-1 ¹	4,850
Connecticut Import N-1	3,400	Connecticut Import N-1	3,400
Connecticut Import N-1-1	2,200	Connecticut Import N-1-1	2,200
North-South (NNE Boundary) N-1	2,725	North-South (NNE Boundary) N-1	2,725
Maine-New Hampshire (Maine Boundary) N-1	1,900	Maine-New Hampshire (Maine Boundary) N-1	1,900

1. Includes the opening of the K Street breaker



A Note on Dispatch Zones (Active Demand Capacity Resources)

- Tariff Section III.12.4A. Dispatch Zones
 - The ISO shall establish Dispatch Zones that reflect potential transmission constraints within a Load Zone that are expected to exist during each Capacity Commitment Period. Dispatch Zones shall be used to establish the geographic location of Active Demand Capacity Resources. For each Capacity Commitment Period, the ISO shall establish and publish Dispatch Zones by the beginning of the New Capacity Show of Interest Submission Window of the applicable Forward Capacity Auction, and those Dispatch Zones shall remain in place through the end of the Capacity Commitment Period for which they were established. The ISO will review proposed Dispatch Zones with Market Participants prior to establishing and publishing final Dispatch Zones.
- The ISO is proposing no change for FCA 17 to [the existing Dispatch Zones](#)

Next Steps

- The potential Capacity Zone boundaries will be tested using the Step 2 objective criteria trigger calculations
 - Results scheduled to be presented at the June 1, 2022 Power Supply Planning Committee
- Zones that trigger the objective criteria will be modeled in FCA 17 and associated reconfiguration auctions
- Whether any of the modeled zones bind in FCA 17 and experience price-separation will be determined during the auction itself

Questions



APPENDIX

Methodology for Modeling Capacity Zones in FCM



Developing Zonal Boundaries for the FCM

- Included in section 14 of Attachment K of the ISO New England Open Access Transmission Tariff (OATT):*
 - Annual Assessment of transmission transfer capability
 - Each year, the ISO shall issue the results of the annual assessment of transmission transfer capability, conducted pursuant to applicable NERC, NPCC and ISO New England standards and criteria and the identification of potential future transmission system weaknesses and limiting facilities that could impact the transmission system's ability to reliably transfer energy in the planning horizon.
 - Each annual assessment will identify those portions of the New England system, along with the associated interface boundaries, that should be considered in the assessment of Capacity Zones to be modeled in the FCM pursuant to ISO Tariff Section III.12.

* The OATT is Section II of the ISO Tariff

Zone Formation: A Two Step Process

Step ONE	Step TWO
Identify the potential zonal boundaries and associated transfer limits to be tested for modeling in the FCM	Use objective criteria* to conduct the test determining whether or not the zone meets the trigger to be modeled for the Capacity Commitment Period
	<p>Import-constrained zone Trigger to model the zone is based on the quantity of surplus resources in the zone above the zonal requirement</p> <p>Export-constrained zone Trigger to model the zone is based on the quantity of existing and proposed new resources compared with the maximum capacity capability in the zone</p> <p>Adjacent load zones that aren't import- or export-constrained are modeled together in the rest-of-pool zone</p>

*Objective criteria are contained in Section III.12.4 of the ISO Tariff

Typical Zonal Modeling Timeline*

Transmission Certifications

Preview boundary expectations for upcoming FCA cycle

Pursuant to Attachment K:

- Conduct transfer analysis
- Identify zones & boundaries to be evaluated in FCM preparation
- Discuss with PAC
- Present to RC

File new Capacity Zone boundary at FERC – if proposed

* The zonal modeling timeline for FCA 17 will be atypical given the changes to the FCA schedule for FCA 17

Pursuant to Tariff Section III.12:

- Calculate whether the zones identified pursuant to Attachment K should be modeled using the objective criteria
- ICR, LSR, MCL & tie benefits calculations and demand curves
- Discuss with PSPC
- Present to RC for vote

Retirement / Permanent De-List Bids that are received in this timeframe would be captured in the zone-modeling calculations

SOI for FCA

File modeled Capacity Zones at FERC as part of the FCA Informational Filing

FCA



External Import Capability Determinations

For Use in FCM (Tariff Section III.12.9.2.4)

- The import capability of all external interconnections with New England will be determined using studies of system conditions expected during the CCP:
 - Forecast 90/10 peak load
 - Existing Generating Capacity Resources at their CNR Capability
 - Existing Demand Resources reflecting their Capacity Supply Obligation
 - Stressed Transfers
- The system will be modeled in a manner that reflects the design of the interconnection
 - If an interconnection and its supporting system upgrades were designed to provide incremental capacity into the New England Control Area, simulations will assume imports up to the level that the interconnection was designed to support
 - If the interconnection was not designed to be comparably integrated, simulations will determine the amount of power that can be delivered into New England over the interconnection