



Zonal Modeling For FCA 13

Power Supply Planning Committee

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Summary

- This presentation provides the results of the Capacity Zone modeling calculations for the thirteenth Forward Capacity Auction (FCA 13 – for the 2022-2023 Capacity Commitment Period)



Capacity Zone Boundary Definitions: Objective Criteria Testing for FCA 13

- The following boundaries were evaluated using the import-constrained zonal modeling objective criteria
 - Connecticut import
 - Southeast New England import
- The following boundaries were evaluated using the export-constrained zonal modeling objective criteria
 - Northern New England export
 - Maine Export
- The remaining Load Zones were not evaluated using the zonal modeling objective criteria
 - These will be merged into the Rest-of-Pool Capacity Zone



Timeline

- Reliability Committee
 - Reviewed and voted on the zonal boundaries to be evaluated (March 2018)
- Power Supply Planning Committee
 - Conduct the calculations of the objective criteria using the latest available data (this presentation)
 - Identify zones that will be separately modeled in FCA 13
 - Installed Capacity Requirement (ICR) and related values will be calculated for separately modeled zones (July & August 2018)
- Reliability Committee
 - Review and vote on the zonal modeling and ICR and related values (September 2018)
- NEPOOL Participants Committee
 - Vote on the zonal modeling and ICR and related values (October 2018)
- File at FERC the modeled zones, ICR and related values (November 2018)

IMPORT CONSTRAINED ZONE MODELING CALCULATIONS

Market Rule 1, Section III.12.4(b)

- The ISO shall model in the Forward Capacity Auction, as separate import-constrained Capacity Zones, those zones identified in the most recent annual assessment of transmission transfer capability pursuant to ISO Tariff Section II, Attachment K, for which:
 - the second contingency transmission capability results in a line-line Transmission Security Analysis (TSA) requirement, calculated pursuant to Section III.12.2.1.2 and pursuant to ISO New England Planning Procedures, that is greater than the Existing Qualified Capacity in the zone, with the largest generating station in the zone modeled as out-of-service
- Each assessment will 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 this calculation) as well as rejected for reliability Static De-List Bids from the most recent previous Forward Capacity Auction and rejected for reliability Dynamic De-List Bids from the most recent previous Forward Capacity Auction



Objective Criteria Testing of Connecticut as an Import-Constrained Capacity Zone

FCA 13 TSA “Requirement” for Connecticut

2018 forecast Sub-area 90/10 Load (including BTM PV forecast)
“Reserves” (Loss of import capability: line-line calculation)
Sub-area Transmission Security Need
Existing Resources (not including Millstone Station)
Assumed Unavailable Capacity (see below)
Sub-area N-1 Import Limit
Sub-area Available Resources

Line-Line TSA Values
(Milestone 2&3 Out-of-Service) MW

7,842
1,200
9,042
8,147
-953
3,400
10,594

TSA “Requirement” with Millstone Station out-of-service*

6,389

Existing Capacity Details	2018 Derating Factors (%)	2022-2023 MW Amounts (Existing Capacity - Before Derating)
Regular Generation (not including Millstone Station)	10.999	5,606.713
Intermittent	0	92.536
Peaking	20	1,641.173
Active Demand Capacity Resources(ADCR)	5.4	141.786
Passive DR	0	664.644

TSA “Requirement” (6,389 MW) < Existing Capacity (8,147 MW) with Millstone Station out-of-service
Therefore, Connecticut will not be modeled as an import-constrained Capacity Zone and will be merged into the Rest-of-Pool Capacity Zone for FCA 13

*Note that this is not the actual TSA calculation for the Connecticut Zone. The above calculation is only relevant for the Capacity Zone formation objective criteria calculation.



Objective Criteria Testing of Southeast New England as an Import-Constrained Capacity Zone

FCA 13 TSA “Requirement” for Southeast New England

2018 Sub-area forecast 90/10 Load (including BTM PV forecast)
“Reserves” (Loss of import capability: line-line calculation)
Sub-area Transmission Security Need
Existing Resources (not including Mystic or Canal station)
Assumed Unavailable Capacity (see below)
Sub-area N-1 Import Limit
Sub-area Available Resources

Line-Line TSA Values (MW)
(Canal Station Out-of-Service)²
(Mystic Station Out-of-Service)¹

13,561
1,100
14,661
8,396
-418
5,700
13,678

TSA "Requirement" with Canal Station out-of-service*

9,431

Existing Capacity Details	2018 Derating Factors (%) ³	2022-2023 MW Amounts (Existing Capacity - Before Derating)
Regular Generation (not including Canal or Mystic Station)	<i>Redacted</i>	5968.320
Intermittent	<i>Redacted</i>	182.056
Peaking	<i>Redacted</i>	705.391
NEMA ADCR	<i>Redacted</i>	77.524
RI ADCR	<i>Redacted</i>	48.469
SEMA ADCR	<i>Redacted</i>	52.457
Passive DR	<i>Redacted</i>	1361.421

1. Mystic Station is modeled out-of-service because a retirement de-list bid was submitted for FCA-13
2. Canal Station is the next largest station in Southeast New England
3. Derating factors are redacted because they would reveal the derating factor of a specific resource

TSA “Requirement” (9,431 MW) > Existing Capacity (8,396 MW) with Canal Station out-of-service
Therefore, Southeast New England will be modeled as a separate import-constrained zone for FCA 13

*Note that this is not the actual TSA calculation for Southeast New England. The above calculation is only relevant for the Capacity Zone formation objective criteria calculation.



Import-Constrained Zones - Conclusions

- The Connecticut zone has more Existing Qualified Capacity than the line-line TSA with the largest station out of service
 - The Connecticut zone will not be modeled as an import-constrained Capacity Zone for FCA 13
 - This zone will be merged into the Rest-of-Pool Capacity Zone for FCA 13
- The Southeast New England zone has less Existing Qualified Capacity than the line-line TSA with the largest station out of service
 - This zone will be modeled as an import-constrained Capacity Zone for FCA 13



EXPORT CONSTRAINED ZONE CALCULATIONS

Market Rule 1, Section III.12.4(a)

- The ISO shall model in the Forward Capacity Auction, as separate export-constrained Capacity Zones, those zones identified in the most recent annual assessment of transmission transfer capability pursuant to ISO Tariff Section II, Attachment K, for which:
 - the Maximum Capacity Limit is less than the sum of the existing qualified capacity and proposed new capacity that could qualify to be procured in the export constrained Capacity Zone, including existing and proposed new Import Capacity Resources on the export-constrained side of the interface



Objective Criteria Testing of Northern New England as an Export-Constrained Capacity Zone

Northern New England	MW
FCA 12 Maximum Capacity Limit ¹	8,790

FCA 13 Northern New England	MW
Existing Resources	8,311
New Resources in Northern New England that could qualify	<i>Redacted</i>
Available import capability for new imports from New Brunswick and Highgate (after accounting for FCA 12 tie benefits)	245 ²
Total sum of the Existing Qualified Capacity and proposed new capacity that could qualify	> 8,790

1. FCA 12 value. The final MCL calculation for FCA 13 will be presented at an upcoming PSpC meeting.

2. [Capacity Import Transfer Capability – Tie Benefits – Existing Imports]: New Brunswick [700 – 506 – 0] + Highgate [200 – 143 – 6] : FCA 12 Values.



Objective Criteria Testing of Maine as an Export-Constrained Capacity Zone

Maine	MW
FCA 12 Maximum Capacity Limit ¹	4,030

FCA 13 Maine	MW
Existing Resources	3,461
New Resources in Maine that could qualify	<i>Redacted</i>
Available import capability for new imports from New Brunswick (after accounting for FCA 12 tie benefits)	194 ²
Total sum of the Existing Qualified Capacity and proposed new capacity that could qualify	< 4,030

1. Calculated using FCA 12 conditions.

2. [Capacity Import Transfer Capability – Tie Benefits – Existing Imports]: New Brunswick [700 – 506 – 0] : FCA 12 Values.



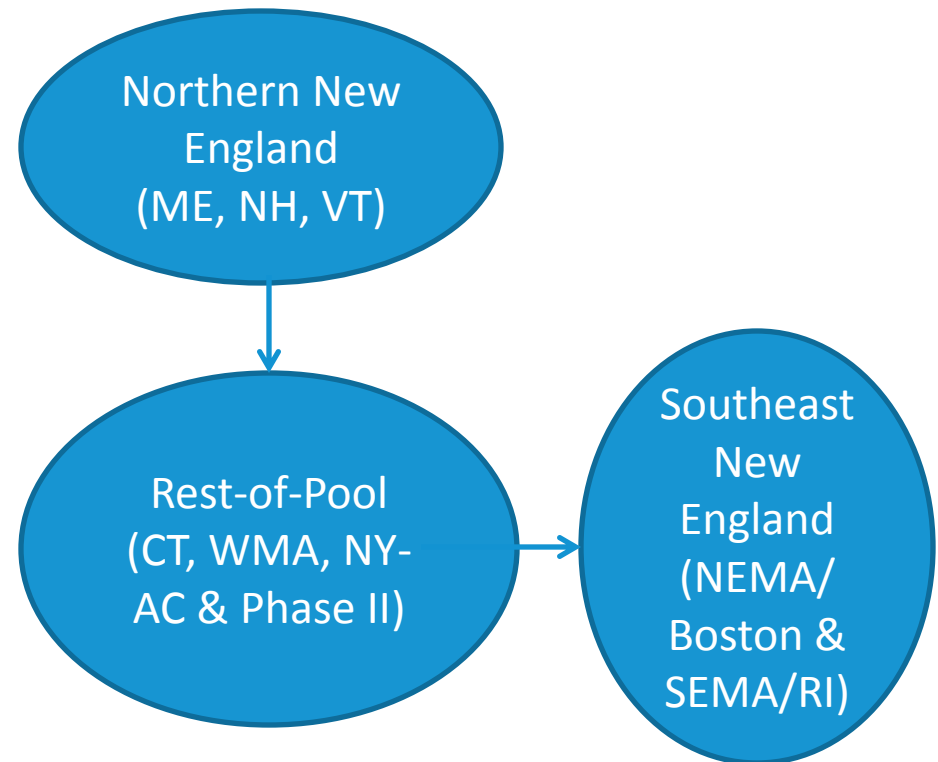
Export-Constrained Zones - Conclusions

- The indicative MCL for the Northern New England zone is less than the sum of the Existing Qualified Capacity and the proposed new capacity that could qualify for FCA 13
 - Northern New England will be modeled as an export-constrained Capacity Zone for FCA 13
- The indicative MCL for the Maine zone is greater than the sum of the Existing Qualified Capacity and the proposed new capacity that could qualify for FCA 13
 - Maine will not be modeled as an export-constrained Capacity Zone for FCA 13



Capacity Zones to be Modeled in FCA 13

- There will be three Capacity Zones modeled for FCA 13
 - Import-constrained Capacity Zone of Southeast New England (NEMA/Boston/SEMA/RI)
 - Export-constrained Capacity Zone of Northern New England (Maine/New Hampshire/Vermont)
 - Rest-of-Pool Capacity Zone (Connecticut and WMA)



Next Steps

- Power Supply Planning Committee
 - ICR and related values will be calculated for separately modeled zones (July & August 2018)
- Reliability Committee
 - Review and vote on the zonal modeling and ICR and related values (September 2018)
- NEPOOL Participants Committee
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Questions

