Impacts of Updated Maine (ME) Interface Transfer Limits to Transmission Transfer Capabilities

Planning Advisory Committee

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Topics

- Review of updated ME interface transfer limits
- Review of interface transfer capabilities
  - Internal Interfaces
  - External Interfaces
- Review of updated NB-NE interface capacity import capability

REVIEW OF UPDATES TO ME INTERFACE TRANSFER LIMITS

Review of Updates to ME Interface Transfer Limits

- The ISO presented updates to the transfer limits for three ME interfaces and impacts on day-to-day operations and transmission planning studies at the June 2024 Planning Advisory Committee (PAC) meeting
- The updated transfer limits are due to changes to NPCC Document A-10, resulting in transfer limits that are now separated from NPCC Bulk Power System (BPS) testing
  - Interface transfer limits are now based solely on “design contingencies”

Review of Updates to ME Interface Transfer Limits (cont'd)

Interface	Current Transfer Limit (MW)	Updated Transfer Limit (MW)*	Difference (MW)
Orrington-South	1,325	1,650	+325
Surowiec-South	1,500	1,800	+300
ME-New Hampshire (NH)	1,900	2,000	+100

**No operating margin is required for the updated transfer limits.*

Implementation of Updated ME Interface Transfer Limits

- As discussed at the June 2024 PAC meeting, the ISO will implement the updated ME transfer limits in
  - Day-to-day operations, including the day-ahead and real-time energy markets
    - Currently in effect as of late June
  - Needs Assessments, Solutions Studies, and the competitive solutions process (for any pre-NECEC analysis), on a going forward basis
  - Proposed Plan Application studies for transmission projects with in-service dates before the in-service date of NECEC
  - Interconnection Studies, starting with the Transitional Cluster Study
    - Ongoing System Impact Studies (SISs) will be completed with the currently effective transfer limits to the extent possible, subject to an evaluation of impacts from the higher transfer limits

REVIEW OF INTERFACE TRANSFER CAPABILITIES

Internal Interfaces

Internal Interface Transfer Capabilities (MW)

Single-Value, Summer Peak, Non-Firm, Transmission Interface Limits for Use in Subarea Transportation Models [a]										
Interface	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Orrington-South	1650[b]	1650	1650	1650	1650	1650	1650	1650	1650	1650
Surowiec-South	1800[b]	1800	1800	1800	1800	1800	1800	1800	1800	1800
Maine-New Hampshire	2000[b]	2000	2000	2000	2000	2000	2000	2000	2000	2000
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	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400
West-East	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
Boston Import (N-1)	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250
Boston Import (N-1-1)	4850	4850	4850	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)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
SEMA/RI Import (N-1-1)	800	800	800	800	800	800	800	800	800	800
Southeast New England Import (N-1)	5250	5250	5250	5250	5250	5250	5250	5250	5250	5250
Southeast New England Import (N-1-1)	4850	4850	4850	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

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 Forward Capacity Market (FCM) horizon (CCP 2028-2029 and sooner), only accepted certified transmission projects are included when identifying transfer limits
   - For the years beyond the FCM horizon (CCP 2029-2030 and later), proposed plan approved transmission upgrades are included according to their expected in-service dates

b) The transfer capability was increased due to changes to NPCC Document A-10, resulting in transfer limits that are now separated from BPS testing

REVIEW OF INTERFACE TRANSFER CAPABILITIES

External Interfaces

External Interface Import Capability (MW)

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

Interface	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
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)[2]	980	980	980	980	980	980	980	980	980	980
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) interface is 1,000 MW, and updates to the transfer capabilities of interfaces in the ME Load Zone results in the ability to deliver 980 MW of capacity to the New England Control Area (an increase of 280 MW to the previous 700 MW limit)
   - Additional information on the adjustment to the import capacity capability of this interface is provided later in this presentation
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 NYISO
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)

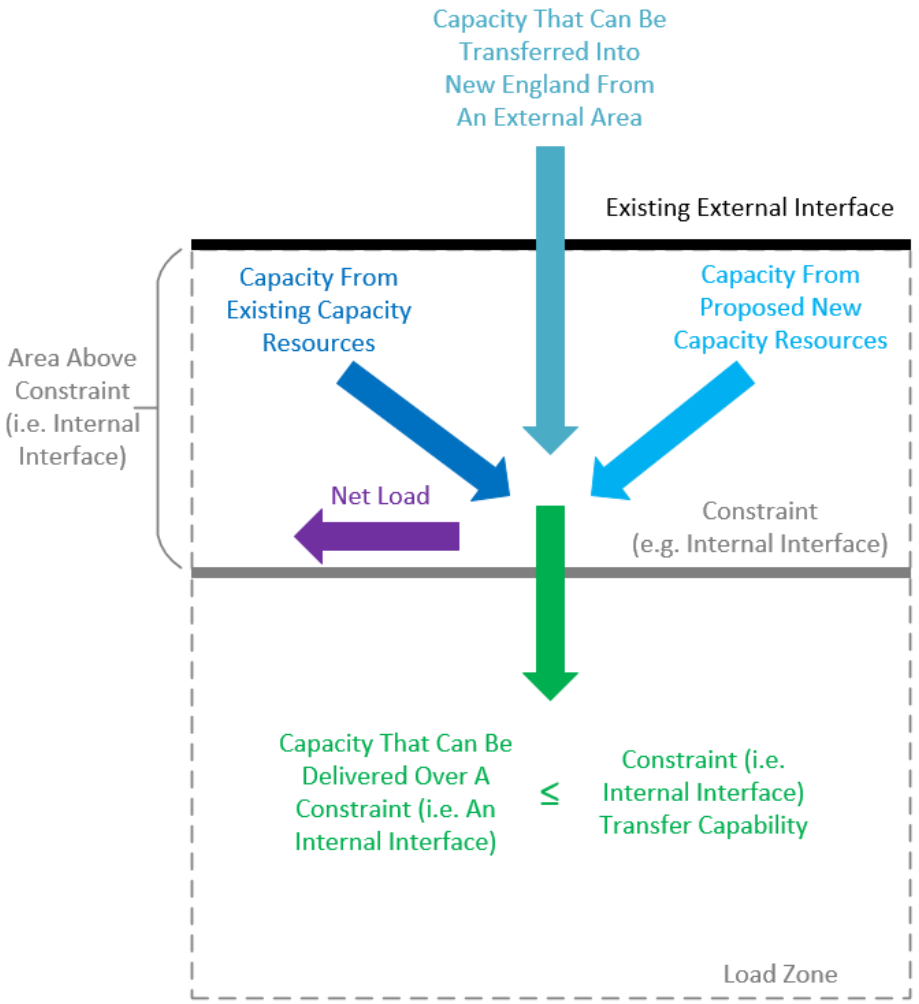
REVIEW OF UPDATED NB-NE INTERFACE CAPACITY IMPORT CAPABILITY

External Import Capability Determinations For Use in the Forward Capacity Market (FCM)

- From 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 Capacity Commitment Period:
    - Forecast 90/10 peak load conditions (includes behind the meter PV)
    - Existing Generating Capacity Resources at their Capacity Network Resource Capability (CNRC)
    - Existing Demand Capacity Resources reflecting their Capacity Supply Obligation (CSO)
    - 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

Analysis of the Delivery of Capacity

- The amount of capacity that can be delivered over a constraint (*i.e.*, an internal interface) within a Load Zone is the sum of capacity above the constraint minus net load above the constraint, and is limited by the transfer capability of the constraint
  - Capacity can come from Existing Capacity Resources, proposed New Capacity Resources, and capacity that can be transferred into New England over an existing external interface



Analysis of the Delivery of Capacity (cont'd)

- To analyze the potential for the delivery of capacity over an **existing external interface** into New England:
  - For the study year and load level:
    - Turn on New England Existing Generating Capacity Resources to their CNRC
    - Turn on Existing Demand Capacity Resources
    - Identify how much can be transferred into New England over the existing external interface before reaching a constraint (*i.e.*, an internal interface transfer limit)
  - In other words, the methodology to determine the potential delivery of capacity over an existing external interface compares the sum of Existing Capacity Resources above the applicable constraint, minus the net load above the applicable constraint, up to the applicable constraint's limit
- This is the analysis used by the ISO to determine the capacity import capability of the NB-NE interface

Analysis of the Delivery of Capacity (cont'd)

- To analyze the potential to qualify new capacity **within New England**:
  - For the study year and load level:
    - Turn on Existing Generating Capacity Resources to their CNRC
    - Turn on Existing Demand Capacity Resources
    - Increase imports up to their potential limit or until an internal interface constrains
    - Identify if there is any remaining headroom to qualify new internal capacity
  - In other words, the potential to qualify new capacity within New England above the applicable constraint depends on the availability of headroom for the applicable constraint after consideration of Existing Capacity Resources in New England and capacity delivered over external interfaces
- The ISO performs this overlapping interconnection impacts analysis as part of a Forward Capacity Auction (FCA) qualification process or an interim reconfiguration auction qualification process

Analysis of the Delivery of Capacity (cont'd)

- Consistent with Tariff Section III.12.9.2.4, the established methodology of the delivery of capacity considers Existing Capacity Resources in New England and increasing the capacity import capability of any upstream external interfaces when the transfer capability of an internal interface associated with constrained capacity increases
  - For example, in its answer to protests on its FCA 6 informational filing*, the ISO explained that the Orrington-South interface transfer limit increase from 1,200 MW to 1,325 MW as a result of the ME Power Reliability Program (MPRP) did not result in the qualification of any New Capacity Resources in New England north of the Orrington-South interface when considering Existing Capacity Resources, because there was no capability left to accommodate New Capacity Resources north of the interface after first considering the amount of Existing Capacity Resources and load above of the interface, and the potential capacity import capability of the NB-NE interface
    - In its order accepting the ISO's FCA 6 informational filing, FERC found that the ISO demonstrated that the MPRP did not increase the transfer capability of the Orrington-South interface sufficiently to qualify New Capacity Resources in New England**

*Submitted to FERC on February 13, 2012, Docket No. ER12-757-000.

**ISO New England Inc., 138 FERC ¶ 61,196 (2012) at P 44.

Constrained Capacity in ME

- Historically, capacity has been constrained in some areas of ME due to the transfer capabilities of the Orrington-South and Surowiec-South interfaces, and the amount of load and Existing Capacity Resources north of these interfaces
  - Proposed New Capacity Resources north of the Orrington-South interface have been unable to qualify for FCAs for many years
  - Proposed New Capacity Resources north of the Surowiec-South interface have been unable to qualify for FCAs starting with FCA 16
  - The amount of capacity than can be transferred over the NB-NE interface has been limited to 700 MW out of a possible 1,000 MW for many years

Increase to the NB–NE Interface Capacity Import Capability

- As a result of the 325 MW increase to the Orrington-South interface transfer limit, and the 300 MW increase to the Surowiec-South interface transfer limit, the capacity import capability of the NB-NE interface increases by 280 MW (*i.e.*, from 700 MW to 980 MW)
  - This increase to the capacity import capability of the NB-NE interface is based on:
    a) The Surowiec-South interface transfer limit of 1,800 MW (which saw a lower MW increase compared to the Orrington-South interface)
    b) 1,968 MW of Existing Generating Capacity Resources between the Surowiec-South and NB-NE interfaces (based on CNRC)
    c) 181 MW of Existing Demand Capacity Resources between the Surowiec-South and NB-NE interfaces (based on CSO in the most recent FCA (*i.e.,* FCA 18))
    d) 1,330 MW of net load between the Surowiec-South and NB-NE interfaces (based on the 90/10 summer peak load and PV forecasts for 2028 from the 2024 CELT, and including non-CELT load, BTM generation other than PV and transmission losses)
  - Capacity import capability for NB-NE interface = (a) – [(b) + (c) - (d)] = 1,800 – [1,968 + 181 – 1,330] = 980 (after accounting for rounding)
- This outcome is consistent with the previously discussed increase to the NB-NE interface capacity import capability when the Orrington-South transfer limit increased as a result of the MPRP project

Implementation of Interface Transfer Capabilities in the FCM

- The transfer capabilities listed in this presentation, including the updated transfer capabilities for the ME-NH, Surowiec-South, Orrington-South and NB-NE interfaces, will be used in FCM related activities going forward, including:
  - The overlapping interconnection impacts analysis performed for the 2024 interim reconfiguration auction qualification process
    - Through this analysis, the ISO will determine whether there is sufficient capacity capability to qualify any proposed New Capacity Resources
  - The calculation of the Installed Capacity Requirements (ICR) and related values for ARAs to be conducted in 2025
    - Tie benefits for 2025-2026 CCP ARA 3
    - Zonal demand curves

Questions