

New Capacity Zone (NCZ) Study: Inputs and Assumptions

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Agenda

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- NYISO Obligation and NCZ Schedule
- Methodology
- Inputs and Assumptions
- NCZ Study Base Case
- Balancing Generation and Load
- Study Results
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Background

Background

- **The New Capacity Zone (NCZ) Study is performed to determine whether any Highway interface(s) are constrained, which would require establishment of new capacity zone(s)**
 - NCZ Study is conducted in conjunction with each quadrennial ICAP Demand Curve reset (DCR). The 2025-2029 DCR is currently underway and will result in filing proposed results with FERC on or before November 30, 2024
- **NCZ is a single Load Zone or group of Load Zones that is proposed as a new Locality; an Installed Capacity Demand Curve is also developed for each NCZ.**

Background

- The NCZ Study is a deliverability study primarily utilizing the Deliverability test methodology (Attachment S of the OATT)
- Deliverability tests are performed for each of the five Highway interfaces: Dysinger East, West Central, Volney East, Moses South, Central East/Total East, and UPNY-ConEd
- NCZ Study obligations/requirements are set in Section 5.16 of the Market Administration and Control Area Services Tariff (MST)
- Past two studies did not identify a need to create a New Capacity Zone

NYISO Obligation and NCZ Schedule

NYISO Obligation and NCZ Schedule

- On or before October 1, 2023, the NYISO must review the inputs and assumptions for the NCZ Study with stakeholders
- The NYISO must conduct the NCZ Study and provide a written report of the results to stakeholders on or before January 15, 2024
- If the NCZ Study determines a need for a New Capacity Zone, the NYISO must determine an Indicative NCZ Locational Minimum Installed Capacity Requirement on or before March 1, 2024

NYISO Obligation and NCZ Schedule

- **On or before March 31, 2024:**
 - If the NCZ Study identifies a constrained Highway interface, the NYISO must file proposed tariff revisions necessary to establish and recognize a New Capacity Zone(s) for FERC review.
 - If the NCZ Study does not identify any constrained Highway interfaces, the NYISO must submit an informational filing to inform FERC of such outcome
- **The NYISO is also required to provide an opportunity for the Market Monitoring Unit to review and comment on the NCZ Study and, if applicable, any proposed tariff revisions to establish New Capacity Zone(s)**

Methodology

Methodology

- The NCZ Study is conducted by testing the transfer capability across the Highway interfaces within the Rest of State (ROS) Capacity Region and across the UPNY-ConEd Highway interface located within Load Zones G through I
- For the ROS, generation-to-generation shifts are simulated for combinations of Load Zones within the region by increasing generation “upstream” of an interface and reducing generation “downstream” of that interface

Methodology

- **The concept of “first contingency incremental transfer capability” (FCITC) is used in the determination of deliverable capacity across Highway interfaces**
 - The FCITC measures the amount of generation in the exporting zone that can be increased to load the interface to its transmission limit. It is a measure of the additional generation capacity that could be exported from a given zone(s) above the base case dispatch level
 - The FCITC and Highway transmission constraint(s) for the exporting zone(s) are noted for each export/import combination

Methodology

- For any defined exporting zone:

$$\text{Net generation available} = \sum_{\text{all zonal generators}} P_{max} - \sum_{\text{all zonal generators}} \text{Actual MW output}$$

- If Net generation available upstream $>$ FCITC,
The difference is an indication of constrained or “bottled” capacity and may not be fully deliverable under all conditions.
- If Net generation available upstream $<$ FCITC,
The difference is an indication of the available “transfer capability” to accommodate additional generation resources in the upstream area

Methodology

- **The study involves three major steps:**
 - Finalizing inputs and assumptions
 - Base case creation
 - Balancing generation and load

Inputs and Assumptions

Inputs and Assumptions

- **NCZ Study inputs and assumptions are in accordance with Section 5.16.1 of the MST**
- **Inputs and Assumptions outlined herein are specific to the 2023-2024 NCZ Study**

Inputs and Assumptions Matrix

#	Parameter	Description	Reference
1	Installed Capacity Requirement	NYCA Minimum Installed Capacity Requirement to achieve LOLE less than 0.1 day per year, which is based on the NYCA Installed Reserve Margin (IRM) identified by the New York State Reliability Council (NYSRC) and accepted by New York Public Service Commission	2023 NYSRC IRM report (for the 2023-2024 Capability Year)
2	Emergency Transfer Limits	Emergency transfer limits on interfaces corresponding to 2022 RNA study	Transfer limits from the 2022 RNA report
3	Locational Capacity Requirements	The Locational Minimum Installed Capacity Requirements (LCR) for the NYC (Load Zone J) and Long Island (Load Zone K) Capacity Regions and for the G-J Locality	2023 NYISO LCR report (for the 2023-2024 Capability Year; approved by Operating Committee on January 23, 2023)
Load model			
4	Peak Load Forecast	NCZ Study Capability Period peak demand forecast contained in the most recent Load and Capacity Data report (i.e., "Gold Book")	2028 Summer peak load forecast from 2023 Gold Book
5	Load Forecast Uncertainty	The impact to IRM due to uncertainty relative to forecasting NYCA loads	2023 NYSRC IRM report
Generator model			
6	Existing CRIS generators, and all projects with Unforced Capacity Deliverability Rights	Generators with Capacity Resource Interconnection Service ("CRIS"), as well as transmission facilities with Unforced Capacity Deliverability Rights (UDRs) and External-to-ROS Deliverability Rights (EDRs) in-service on the date of the most recent Load and Capacity Data report	2023 Gold Book
7	Planned generation projects or Merchant Transmission Facilities	Projects that have accepted either (a) Deliverable MW or (b) a System Deliverability Upgrade ("SDU") cost allocation (and provided cash or posted required security for the SDU cost allocation)	

Inputs and Assumptions Matrix

#	Parameter	Description	Reference
8	UCAP Deration Factor (UCDF)	Factor used to convert ICAP to Unforced Capacity (UCAP) based on derated generator capacity incorporating historic performance on a Capacity Region basis	2023 NYSRC IRM report and 2023 NYISO LCR report
9	Deactivated CRIS units	Units retaining CRIS rights for three years after being considered “deactivated” unless the ability to transfer those rights has been exercised or expired	OATT Attachment S
Transmission model			
10	Existing transmission facilities	Identified as existing in the most recent Load and Capacity Data report	2023 Gold Book
11	Firm plans for changes to transmission facilities by TOs	Planned changes of facilities in the most recent Load and Capacity Data report that are scheduled to be in-service prior to the 2028 Summer Capability Period	2023 Gold Book
12	System Upgrade Facilities and System Deliverability Upgrades	SUFs and SDUs for which planned projects have accepted cost allocations and paid cash or posted security, except that ROS Highway SDUs will only be modeled if the construction is triggered	2023 Gold Book
Import/Export model			
13	External System Import/Export	NYCA scheduled imports from HQ/PJM/ISO-NE/IESO	OATT Attachment S

NCZ Study Base Case

NCZ Study Base Case

- **The NCZ Study base case is a five-year look-ahead**
- **The base case utilizes the NYISO's 2023 FERC 715 2028 Summer peak load case, adjusted, as necessary, to meet the specific requirements of Section 5.16.1 of the MST**

NCZ Study Base Case

- **The conditioning steps are applied to:**
 - Modeling of load
 - NYCA generation
 - External system import/export
- **Further details regarding development of the base case is available in the Appendix**

Balancing Generation and Load

Balancing Generation and Load

- This step balances the supply of resources and demand of loads and losses
- All CRIS generation within each Capacity Region is placed in-service and each resource is scaled proportionally to the ratio of its P_{\max} to the sum of the P_{\max} of all CRIS generation located in the respective exporting or importing zone(s) or Capacity Region
- Actual generation is proportionally scaled (up or down) to match the demand*

* Demand is load including load forecast uncertainty, transmission losses, and external schedule commitments

Study Results

Study Results

- The level of deliverability across each Highway interface is measured as either “Additional Transmission Capacity” (*i.e.*, deliverability “headroom”), or “Bottled Generation Capacity” (*i.e.*, constrained interface), which is calculated as:

FCITC of the interface minus the amount of net available capacity in the exporting zone(s)

Study Results

- **If all the Highway interfaces were found to have positive Additional Transmission Capacity, then there is no need to establish a New Capacity Zone**
- **If a constrained Highway interface into one or more Load Zones were identified, a New Capacity Zone is required and the NYISO must identify the boundary thereof**
 - The boundary of the New Capacity Zone may encompass a single constrained Load Zone or group of Load Zones including one or more constrained Load Zones on the constrained side of the Highway

Questions?

Appendix

Highways and Byways

- **Highways: 115 kV and higher transmission facilities that comprise the following NYCA interfaces:**

- Dysinger East, West Central, Volney East, Moses South, Central East/Total East, and UPNY-ConEd, and their immediately connected, in series, Bulk Power System facilities in New York State.

- **Byways: All transmission facilities comprising the New York State Transmission System that are neither Highways nor Other Interfaces.**

- All transmission facilities in Zone J and Zone K are Byways.

Detailed Base Case Creation

Load Modeling

The Load forecast used in the NCZ Study base case is the coincident 2028 Summer firm peak load before reductions for the Emergency Demand Response Program. Certain factors for “load forecast uncertainty” (LFU) are applied to each of the 4 Capacity Regions

E.g.: 2028 NYCA Summer Peak Load Forecast Assumptions (MW) {2023 Gold Book}

Capacity Region	Baseline	LFU	Total
NYCA	32,310	1,681	33,992

Detailed Base Case Creation

Transmission System

- Existing transmission facilities in the 2023 Gold Book
- All firm transmission plans in the 2023 Gold Book scheduled to be in service by 2028

Generation and Class Year Transmission

- Existing generators with CRIS rights
- Existing Class Year transmission facilities with Unforced Capacity Deliverability Rights or External-to-ROS Deliverability Rights
- Deactivated resources with unexpired CRIS as per Attachment S section 25.9.3.1
- Previous Class Year projects that accepted Deliverability MW or a System Deliverability Upgrade cost allocation (and paid cash or posted required security)
- CRIS Expiration: The CRIS for a facility is modeled in the NCZ Study base case unless that CRIS will expire prior to the NCZ Study Start Date (*i.e.*, September 1, 2023 for the 2023-2024 NCZ Study)

Detailed Base Case Creation

External System Imports Modeling Limits

The total external system import modeling limits for 2023-2024 Capability Year →

PJM	ISO-NE	Quebec	Ontario	Total
1,138	75	1,121	80	2,414

Appendix- Detailed Base Case Creation

- Unforced Capacity Deliverability Rights and External-to-ROS Deliverability Rights

Transmission projects with UDRs and External-to-ROS Deliverability Rights (EDRs) are represented at their respective UDR and EDR capacity from the external area into the respective NYCA Capacity Region

- *E.g.:* Linden VFT to New York City: 315 MW; Neptune to Long Island: 660 MW
CSC to Long Island: 330 MW; HQ-US (EDR): 20 MW;
Cedar Rapids Transmission (EDR): 80 MW.

Our Mission & Vision



Mission

Ensure power system reliability and competitive markets for New York in a clean energy future



Vision

Working together with stakeholders to build the cleanest, most reliable electric system in the nation