

### Champlain Hudson Power Express (CHPE): 2026-2027 IRM Study Modeling Assumptions

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### Background

- CHPE is a 1,250 MW high-voltage direct current (HVDC) transmission project connecting Hydro Quebec to Load Zone J
- Construction began in November 2022, with publicly available information currently indicating an in-service date of May 2026<sup>1</sup>
- Inclusion of new resources in the installed reserve margin (IRM) base case is based on publicly available information and standardized screening criteria
  - CHPE inclusion may warrant additional considerations due to findings identified in NYISO's 2024 Reliability Needs Assessment (RNA) and Short-Term Assessment of Reliability (STAR) studies
- Assumptions related to CHPE modeling for the 2026-2027 IRM study are important to facilitate timely sensitivities and assess impacts to system reliability

<sup>1</sup><u>https://chpexpress.com/construction-progress/</u>



### **Previous ICS and Executive Committee Discussions**

- At the 4/29/2025 ICS and 5/9/2025 Executive Committee meetings, the NYISO provided a background on the CHPE modeling considerations:
- 1. Discussed previous results on CHPE modeling testing based on the 2024-2025 IRM Final Base Case
- 2. Reviewed modeling assumptions for the CHPE project based on the NYISO's 2024 RNA model (see Appendix)
- 3. Provided an overview of the NYISO's previously identified Near-Term Reliability Need for New York City (Load Zone J) beginning in summer 2025
- 4. Expected statuses of the Gowanus 2 & 3, Narrows 1 & 2 barges<sup>1</sup>
- The ICS and Executive Committee expressed interest in: (1) further refining the CHPE modeling assumptions for line unavailability, generator unavailability, winter season capacity and emergency assistance, and (2) further discussing the modeling assumptions for the Gowanus 2 & 3 and Narrows 1 & 2 barges

<sup>1</sup> NYISO's Quarter 1 2025 STAR affirmed that the operation of the barges continues to be necessary until CHPE demonstrates dependable capacity supply during summer peak load conditions. Additionally, Con Edison's local analysis identified that the barges would need to remain in service until the Gowanus-Greenwood 345/138kV phase angle regulator (PAR) controlled feeder is placed into service.



### **Objective of today's meeting**

- The purpose of today's presentation is to further review and discuss the modeling assumptions for the CHPE project in the 2026-2027 IRM study model
  - Assumptions for CHPE modeling should be finalized prior to the inclusion of the project in the base case
- The NYISO has reviewed the modeling framework and other available data sources to inform potential improvements to the CHPE modeling assumptions
- Discussions should continue at ICS and Executive Committee meetings on the inclusion of CHPE for the 2026-2027 IRM study model, as well as the modeling assumptions for the Gowanus 2 & 3 and Narrows 1 & 2 barges



# CHPE Modeling Assumptions



### **CHPE Inclusion Considerations**

- The ICS is expected to finalize assumptions regarding the inclusion of CHPE and status of the Gowanus 2 & 3 and Narrows 1 & 2 barges for the 2026-2027 IRM Preliminary Base Case (PBC) at the 7/10/2025 ICS meeting
  - This will allow for the most up to date information to be reviewed prior to ICS approving the assumptions matrix for the 2026-2027 IRM PBC
- Regardless of the NYSRC's assumption decisions for the 2026-2027 IRM PBC, the NYISO recommends performing a Tan45 sensitivity analysis modeling the alternative assumptions
  - For example, if CHPE is included in the PBC, a sensitivity analysis excluding CHPE should be performed to assess the impacts of both scenarios



### **CHPE Line Unavailability Considerations**

- Modeling of outage rates for UDR lines/controllable ties are typically based on forced outages rates and capacity states over the prior 10 years of operation
- Since CHPE will be a new facility, such historical information does not yet exist
- The NYISO recommends applying a cable outage rate for the CHPE line that is based on the class average of existing cables that are modeled within the IRM study
  - For the 2026-2027 IRM PBC, the 10-year average cable outage rate is 5.80% based upon the 2015-2024 data (see Attachment E4 of IRM Assumptions Matrix)
- This value can serve as a reasonable proxy for the CHPE line until operational data for the line is reported and rolled into the dataset



### **CHPE Generator Unavailability Considerations**

- The NYISO anticipates that capacity supplied using CHPE UDRs is likely to be supported by the control area system resources of Hydro Quebec. As a result, a "curtailable contract" construct from Hydro Quebec to Load Zone J is likely a reasonable assumption to represent the capacity supply from CHPE UDRs
- The "curtailable contract" functionality in the GE Multi-Area Reliability Simulation software program (MARS) allows the contract to flow from Hydro Quebec to Load Zone J only when there is excess capacity in the Hydro Quebec control area, and limits flow based on the amount of excess capacity
  - Thus, the contract will flow only to the extent it does not introduce a loss of load risk in the source area (Hydro Quebec)
  - The contract will also be curtailed if the CHPE interface between Hydro Quebec and Load Zone J is on outage
- If the Hydro Quebec control area is capacity deficient, then the contract will be curtailed to the level that would prevent a shortfall
  - For example, if the Hydro Quebec control area is 200 MW deficient in a given hour, the "CHPE contract" of 1,250 MW would be curtailed by 200 MW, resulting in a reduced flow of 1,050 MW to Load Zone J
- The NYISO recommends use of a 1,250 MW "curtailable contract" from Hydro Quebec to Load Zone J to represent CHPE UDRs for summer months (May-October)
  - Availability of the CHPE UDRs will be based upon the excess capacity in the Hydro Quebec control area for a given hour



### **CHPE Winter Availability Considerations**

- The previously developed modeling assumed 0 MW of transfer capability from Hydro Quebec to Load Zone J related to CHPE during the entire winter season (November - April)
  - This initial assumption was based on the modeling assumptions for CHPE in the NYISO's 2022 RNA
  - This initial modeling assumption also prevents any emergency assistance over the CHPE line during winter months
- The NPCC Reliability Assessment for Winter 2024-2025<sup>1</sup> identified tight winter operating margins in Hydro Quebec
  - Operating Capacity margin of 1,975 MW under 50/50 load forecast conditions, after utilization of 4,201 MW of interruptible load
  - Operating Capacity deficiency of 331 MW under a 90/10 load forecast conditions
- The Tier 4 Renewable Energy Certificate (REC) contract between NYSERDA and H.Q. Energy Services (U.S.) Inc.<sup>2</sup> identifies a 0 MW estimated capacity supply for CHPE UDRs during winter months
- The NYISO recommends maintaining the 0 MW winter transfer capability assumption related to CHPE during winter months to align with expected operating conditions and available Emergency Assistance from Hydro Quebec (see slide 12)



<sup>&</sup>lt;sup>1</sup> NPCC Reliability Assessment for 2024-2025 Winter <sup>2</sup> CHPE Tier 4 REC Contract - NYSERDA and H.Q. U.S.

### **NYISO Recommendation: CHPE Modeling Assumptions**

- Recommend updating the CHPE modeling to use a "curtailable contract" to represent the CHPE UDRs capacity supply to Load Zone J during the summer period (May-October)
  - Up to 1,250 MW of capacity flows from Hydro Quebec to Load Zone J depending on interface outages and/or capacity surplus in the Hydro Quebec control area
- Recommend updating CHPE line unavailability to 5.80% based upon NYCA class average cable outage rates
- Recommend maintaining 0 MW winter rating for the CHPE line and 0 MW capacity supply to Load Zone J using the CHPE UDRs in the winter season (November – April)

Interface	Positive Line Rating (MW)	Negative Line Rating (MW)	EFORd	Emergency Assistance Available
HQ_TO_J6	1,250	0	0%	Y1
J6_T0_J (Summer)	1,250	0	5.80%	Y1
J6_T0_J (Winter)	0	0	5.80%	Ν



<sup>1</sup> Based on the NYISO's recommended modeling, emergency assistance would not flow from Hydro Quebec to Load Zone J because the interface is being fully utilized by the "curtailable contract" representing capacity supply using the CHPE UDRs

New York ISO

## **Emergency Assistance**



### Hydro Quebec Emergency Assistance Considerations

- Based on forward projections identified in the NPCC Reliability Assessment for Winter 2024-2025, the Hydro Quebec control area may experience capacity shortages during peak winter periods
  - As a result, availability of capacity to import to New York from Hydro Quebec (both to Load Zone D via Chateauguay and Cedars and Load Zone J via CHPE) would likely be severely limited during simulated NYCA loss of load events in the winter season
- The NYISO recommends updating the transfer capability across all Hydro Quebec interfaces (Chateauguay, Cedars, and CHPE) to 0 MW during winter months (November-April)
  - This update would prevent the model from flowing emergency assistance to Load Zone D from Chateauguay and Cedars beyond the flows associated with External CRIS rights and Wheel to ISO-NE (further described below)
  - In the IRM study model, the average 308 MW winter season quantity associated with the External CRIS rights from the Chateauguay
    area are added to capacity supply in Load Zone D, and 300 MW wheel from Hydro Quebec through the NYCA to ISO-NE are added to the
    ISO-NE capacity pool
- This aligns the assumptions across the Hydro Quebec interfaces<sup>1</sup> with expected operating conditions during the winter period

<sup>1</sup> The Chateauguay and Cedars interfaces are represented in the IRM study model as one interface between Hydro Quebec and Load Zone D at a total transfer capability (TTC) of 1,770 MW (1,500 MW Chateauguay, 270 MW Cedars). The modeled TTC deducts the External CRIS rights, Wheel-through MW to ISO-NE, and Cedars (summer) External-to-ROS Deliverability Rights (EDRs)



## NYISO Recommendation: Emergency Assistance Interface Group Limits

 The Emergency Assistance interface group limits reflecting the NYISO's recommended updates for Hydro Quebec would be as follows:

2026-2027 IRM Dynamic Emergency Assistance (EA) Interface Group Limits (MW)								
Area	Bin 1	Bin 2	Bin 3	Bin 4	Bin 5	Bin 6	Bin 7	
IESO	550	660	750	860	Maximum EA (1,950)			
ISONE	50	540	1,000	1,530	Maximum EA (1,804)			
PJM*	580	1,110	Maximum EA (1,415)					
HQ	Maximum EA (280 in Summer, 0 in Winter)							
Total EA**	1,470	2,600	Maximum EA (3,500)					



# Appendix



### **Previously Discussed CHPE Modeling Assumptions** (Presented

#### at the 4/29/2025 ICS Meeting)

 The following CHPE modeling assumptions were developed during 2024 Tan45 Whitepaper consistent with assumptions in the NYISO's reliability planning studies

Interface	Positive Line Rating (MW)	Negative Line Rating (MW)	EFORd	Emergency Assistance Available			
HQ_TO_J6	9,999	9,999	0%	Y1			
J6_T0_J (Summer)	1,250	0	5%	Y <sup>1</sup>			
J6_T0_J (Winter)	0	0	5%	Ν			
Resource	Zone	Summer Capacity (MW)	Winter Capacity (MW	/) EFORd			
CHPE UDR	J6 <sup>2</sup>	1,250	0	4.54%*			
+ NERC class average for hydro resources, be updated with new NERC data							

<sup>1</sup> Emergency assistance can be provided across the interface if the Unforced Capacity Deliverability Rights (UDRs) are on forced outage or if the UDR holder elects to not utilize all or a portion of the UDRs for capacity supply for a particular Capability Year

<sup>2</sup> MW associated with the CHPE UDRs are added to the supply in Load Zone J

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## **Our Mission and Vision**

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#### **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



