New York ISO
Independent System Operator

UG-21

Transmission Expansion and Interconnection User's Guide

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Revision History

Version	Effective Date	Revisions
1.0	12/18/2020	Initial Release
2.0	07/31/2024	Revised to incorporate the Cluster Study Process under the Standard Interconnection Procedures in Attachment HH to the NYISO OATT
3.0	07/18/2025	Recertified Section 9 ➢ Added Figure 1 - NYISO Cluster Study Process Overview

Relation of this Guide to NYISO's Tariffs, Agreements and Manuals

To the extent that information in this Guide is inconsistent with the NYISO's tariffs, agreements, or the Transmission and Transmission Expansion and Interconnection Manual (Manual), the NYISO's tariffs, agreements, and the Manual shall control. This guide is intended solely for informational purposes and is subject to change.

1. Purpose

The purpose of this guide is to:

- Provide interconnection customers with an introduction to and a high-level summary of various NYISO interconnection procedures

2. Overview of the NYISO Transmission Expansion & Interconnection Process

The purpose of the NYISO Transmission Expansion & Interconnection process is to:

- Evaluate impacts of proposed generation, transmission and load projects on the New York State Transmission System and distribution system, as applicable
- Identify and cost allocate upgrade facilities required to meet reliability requirements (*i.e.*, System Upgrade Facilities or Network Upgrade Facilities) and, for projects requesting Capacity Resource Interconnection Service (CRIS), System Deliverability Upgrades required to meet deliverability requirements

Applicable Manual and Tariff Provisions:

- OATT Section 3.7 and 4.6 – Transmission Expansion Procedures
- OATT Attachment P – Transmission Interconnection Procedures
- OATT Attachment HH – Standard Interconnection Procedures for Generating Facilities, Cluster Study Transmission Projects and projects requesting CRIS
- OATT Section 3.9 – Load Interconnection Procedures
- Transmission Expansion & Interconnection Manual

3. Who are the parties involved in the Transmission Expansion & Interconnection Process?

- NYISO
- Connecting Transmission Owner(s) (CTO)
- Affected System(s) with the New York Control Area (*e.g.*, potentially impacted Transmission Owners (also referred to as Affected Transmission Owners), generation owners)
- External Affected System(s) outside of the New York Control Area (i.e., neighboring control areas)
- Transmission Developers, Load Eligible Customers, and Interconnection Customers[1]

4. How does an Interconnection Customer submit an Interconnection Request?

The NYISO provides an "Interconnection Projects Portal" – an online platform to access, submit and receive most forms, study agreements, and information that needs to be exchanged in the interconnection

[1] In certain tariff provisions, the NYISO may use the term "Developer" in place of the term "Interconnection Customer."

process. The Interconnection Project Portal is accessible through the NYISO's public website under the tab "Planning" > "Interconnection Process."

5. What is the NYISO email to contact for additional information?

For additional information re: NYISO TEI process, please send an email to NYISO Stakeholder Services IP Support team at Stakeholder_Services_IPsupport@nyiso.com

6. What is the study process for generation interconnection projects?

The NYISO's interconnection process include two processes that evaluate proposed interconnections of Generating Facilities (and Cluster Study Transmission Projects) and Load, respectively.

Not all proposed interconnections fall under the NYISO's interconnection procedures or under FERC's jurisdiction. Some proposed interconnections instead fall under the procedures of the local TO and/or under State jurisdiction. Jurisdiction is often a threshold issue for proposed projects.

- Standard Interconnection Procedures (SIP):
  - Applicable to:
    - Generating Facilities that intend to participate in the NYISO wholesale sales.
    - Cluster Study Transmission Projects – transmission projects seeking CRIS and transmission projects over which power flow can be directly controlled by power flow control devices directly connected to the Cluster Study Transmission Project
    - Material modifications to existing Facilities.
  - An Interconnection Request can be submitted via the online platform and requires:
    - Non-refundable Application Fee of $10,000 (cash only) or $5,000 for CRIS-Only projects
    - Study Deposit (cash, letter of credit or surety bond)

Size of Proposed Generating Facility Associated with Interconnection Request	Amount of Deposit
< 80 MW	$100,000
≥ 80 MW < 200 MW	$150,000
≥ 200 MW	$250,000

$50,000 for a CRIS-Only Request

    - Conceptual one-line diagram that includes:
      - The Project name, and the Interconnection Customer name on the diagram;
      - The facility address (specific location – coordinates or closest street address);
      - The number of inverters or generator units (type, nameplate rating MW and MVA), and configuration of the facility;

- The facility's electrical components (i.e., generation, transformers (GSU, PSU, current transformer, and potential transformers), breakers, switches, cables/lines/feeders, compensation, FACTs, auxiliary load, buses, etc.) as described in the modeling data form;
- The capability and voltage levels of the electrical components, their connection to each other and to the New York State Transmission System or Distribution System;
- The Point of Interconnection (name of the substation name (specify the bus) or transmission/distribution line name and number);
- References to other diagram sheets if there is more than one diagram sheet (i.e., use references to indicate how the diagrams are interconnected).
- Acronyms used in the conceptual breaker one-line diagram should follow ANSI Standard Device Numbers & Common Acronyms.

▪ Completed Interconnection Request must also include a project layout that shows general project layout and location of project in relation to proposed POI, including specific POI

▪ Workable individual projects models (e.g., short circuit, steady-state, and stability)

▪ Attestations (for Generating Facilities greater than 20 MW) required by the final, approved NYSRC Reliability Rule B.5 (RR 151) establishing minimum interconnection standards for Inverter Based Resource (IBR) Generating Facilities based on IEEE Standard 2800-2022

▪ Demonstration of Site Control[2]

▪ Interconnection Customers are required to pay the actual study costs under the requirements of the NYISO's SIP in Attachment HH to the NYISO OATT and ISO Procedures including any study costs that are incurred prior to the full execution of the Cluster Study Agreement for the Interconnection Request or the CRIS-Only Request.

- The basic steps of the SIP are:
  - Pre-Application Process (optional)
  - Cluster Study Process (see additional detail below)
  - Engineering & Procurement Agreement (optional)
  - Provisional Standard Interconnection Agreement (optional)
  - Standard Interconnection Agreement

[2] For more information regarding Site Control requirements, please see the Site Control Technical Bulletin No. 260 posted on NYISO's website: https://www.nyiso.com/documents/20142/2931465/TB260-SiteControl-v20240611-Final.pdf/e8a7bf3c-adf9-e5db-3a08-07fe258f4be4

7. What is the study process for transmission projects?

The NYISO's transmission expansion process is described in Section 3.7, Section 4.5, and Attachment P to the NYISO OATT. In addition, Attachment HH to the NYISO OATT describe the study process applicable to transmission projects meeting the definition of Cluster Study Transmission Projects.[3]

- OATT Section 3.7 Transmission Expansion Process
  - Applicable to new transmission facilities and upgrades to existing transmission facilities pursued by a Transmission Owner (TO) as part of its local transmission plan (an LTP or NYPA transmission plan) that is not subject to the NYISO's competitive transmission selection process under Attachment Y and for which the TO is not seeking regional cost allocation under the NYISO OATT
  - A request under Section 3.7 can be submitted to the NYISO via Interconnection Projects Portal.
  - This process includes two interconnection study phases:
    - System Impact Study – only required if the project either (i) reduces the transfer capability of a NYISO interface by greater than 10 MW or increase the transfer capability of a NYISO interface by greater than 25 MW; or (ii) change the classification of affected facilities to NPCC BPS (Bulk Power System) facilities.
    - Facilities Study – the Facilities Study for a TO transmission project primarily involves the Customer and the affected TO(s). NYISO is not a party to the Facilities Study agreement for a TO transmission project, and has only a supporting role to cooperate with the affected TO(s) in performing Facilities Study.
  - Interconnection Customers are required to pay the actual study costs.
- Standard Interconnection Procedures (SIP)
  - A subset of transmission projects are subject to the Standard Interconnection Procedures described in OATT Attachment HH, which include:
    - Transmission projects eligible for and requesting CRIS in the form of Unforced Capacity Deliverability Rights or External-to-ROS Deliverability Rights, as applicable
    - Transmission projects for which power flow can be directly controlled by power flow control devices directly connected to the Cluster Study Transmission Project without having to re-dispatch generation.
  - The study process for such transmission projects is the same as that for other Generating Facilities and is described below.
- Transmission Interconnection Procedures (TIP)
  - Applicable to transmission projects proposed by Transmission Developers that are not subject to OATT Section 3.7 or the SIP

[3] These would be (1) transmission projects seeking CRIS and (2) transmission projects seeking only ERIS for which power flow can be directly controlled by power flow control devices directly connected to the Cluster Study Transmission Project without having to re-dispatch generation.

- A TIP Interconnection Request can be submitted via the online platform and requires a $10,000 non-refundable application fee and study data
- The TIP includes three interconnection study phases:
  - Optional Feasibility Study (OFES) - $60,000 study deposit
  - System Impact Study (SIS) - $120,000 study deposit
  - Facilities Study - $100,000 study deposit
- Transmission Developers are required to pay the actual study costs.
- The basic steps of the TIP are:
  - Initial Processing of the TIP Application
  - Scoping Meeting
  - Optional Feasibility Study
  - System Impact Study
  - Facilities Study
  - Engineering & Procurement Agreement (optional)
  - Transmission Project Interconnection Agreement

8. What is the study process for load interconnection projects?

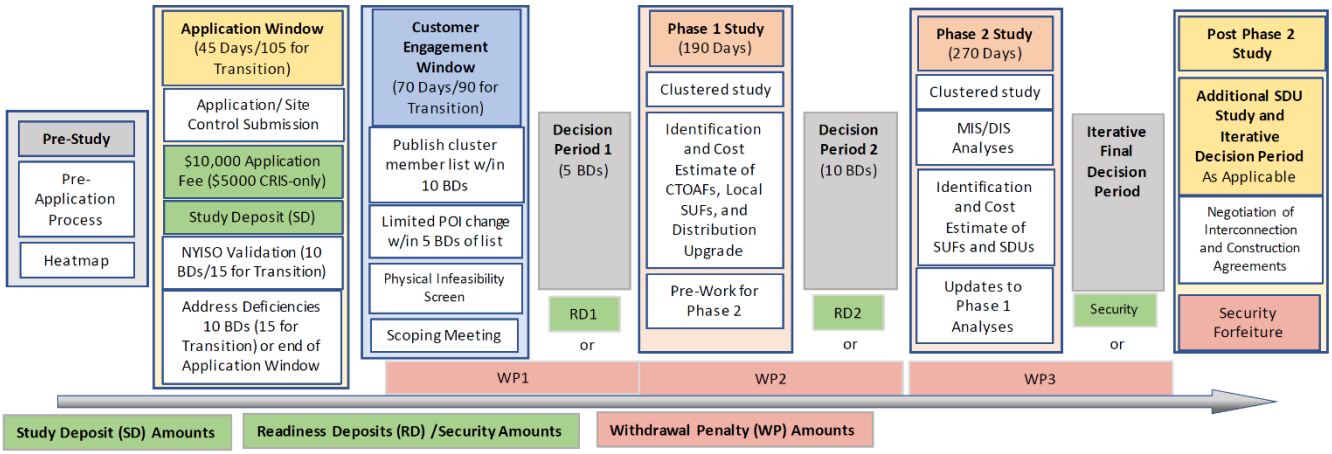
- NYISO's Load Interconnection Procedures apply to the following proposed Load interconnections:
  - Load facilities that are greater than 10 MW connecting at a voltage level of 115 kV or above
  - Load facilities that are 80 MW or more connecting at a voltage level below 115 kV
- Proposed Load interconnections that fall outside these criteria are not subject to the NYISO procedures, but instead fall under the Transmission Owner's procedures.
- A Load Interconnection Request can be submitted via Interconnection Projects Portal
- The study deposit will typically be $150,000.
- Customers are required to pay the actual study costs.
- The basic steps of the Load Interconnection Process are:
  - Initial Processing of the Interconnection Request
  - Scoping Meeting
  - System Impact Study
  - Load Interconnection Agreement - Customer may elect to continue with the proposed interconnection by entering into an interconnection agreement with the CTO. NYISO is not a party to the interconnection agreement.

9. What is the Cluster Study Process?

- Applicable to:
  - All Generating Facilities
  - Cluster Study Transmission Projects
  - All facilities larger than 2 MW requesting CRIS[4]
- The Cluster Study performs a detailed study of the collective reliability impact of a group of projects, as well as a deliverability evaluation for projects requesting CRIS, and identifies and provides binding cost estimates for required attachment facilities and upgrades.
- The Cluster Study (Figure 1) consists of:
  - Application Window: 45 Calendar Days (75 Calendar Days for the Transition Cluster Study)
  - Customer Engagement Window: 70 Calendar Days (90 Calendar Days for the Transition Cluster Study)
  - Phase 1 Entry Decision Period: 5 Business Days
  - Cluster Study Phase 1: 190 Calendar Days
    - This study is performed individually for each project in the Cluster Study (unless the project is CRIS-Only). This study identifies the required CTO Attachment Facilities, Distribution Upgrades and Local System Upgrade Facilities involved in the direct connection of the Project. This study also includes design, preliminary engineering, and estimation of cost and time to construct these facilities.
  - Phase 2 Entry Decision Period: 10 Business Days
  - Cluster Study Phase 2: 270 Calendar Days
    - This study is performed collectively for all of the Cluster Study Projects. It involves an evaluation of the transmission system with and without the Cluster Study Projects to identify the upgrades required by the Cluster Study Projects collectively. This study then involves design, preliminary engineering, and estimation of cost and time to construct each upgrade, together with an allocation of the upgrade costs among contributing projects.
  - Final Decision Period: iterative decision rounds
    - Interconnection Customers must elect whether or not to accept the Project Cost Allocation for the attachment facilities and upgrades identified for their projects and to pay cash or post Security in this amount.

[4] For a facility with an established CRIS value, a request for up to 2 MW of CRIS during the operating life of a facility is not subject to a deliverability evaluation in a Cluster Study or Expedited Deliverability Study; provided, however, such request is subject to the limitations on permissible CRIS MW levels set forth in Section 40.5.6.5 of Attachment HH, and, for facilities comprised of multiple Generators, this CRIS request is permitted only at the facility level, not at the individual Generator level.

Figure 1: NYISO Cluster Study Process Overview



Study Deposit (SD) Amounts

Size	Amount
< 80 MW	$100,000
≥ 80 < 200 MW	$150,000
≥ 200 MW	$250,000
CRIS Only	$50,000

Readiness Deposits (RD) /Security Amounts

Deposit	Amount
RD1*	$4,000/MW
RD2*	The greater of (i) RD1, and (ii) 20% of cost estimate determined in Phase 1 for Local SUF and CTOAF
Security	100% of cost estimate of SUFs, SDUs, and CTOAFs identified in Phase 1 and Phase 2

* N/A to CRIS only projects

Withdrawal Penalty (WP) Amounts

Penalty	Amount
	If a project withdraws during the Application Window or up to within 5 Business Days of the NYISO publishing the cluster member list in the Customer Engagement Window, there is no withdrawal penalty. Also. no withdrawal penalty for contingent projects and projects that withdraw due to physical infeasibility
WP1	25% of SD, except if withdrawal is of a contingent project or due to physical infeasibility
WP2	50% of SD + 10% of RD1, except if withdrawal is due to physical infeasibility
WP3	100% of SD +20% of RD2, except if withdrawal is due to physical infeasibility or if there has been a 50% cost increase between Phase 1 and Phase 2 (non SDU) costs.
Security Forfeiture	Up to 100% of Security subject to forfeiture if other projects relying on the upgrades identified for its project