New York ISO
Independent System Operator

Manual 23

Transmission Expansion and Interconnection Manual

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Note: **On May 1, 2024, the NYISO filed with the Federal Energy Regulatory Commission (the "Commission") in its Docket No. ER24-1915 extensive revisions to its interconnection procedures in response to the Commission's Order No. 2023. The revisions establish new Standard Interconnection Procedures in Attachment HH of the NYISO OATT that replace the NYISO's Standard Large Facility Interconnection Procedures and Small Generator Interconnection Procedures set forth in Attachments S, X, and Z to the NYISO OATT. As indicated in its filing, the NYISO is implementing the new Standard Interconnection Procedures subject to any determination or modification by the Commission.**

The interconnection process requirements in this Section 3 of the TEI Manual and the related attachments to this manual do not apply for projects participating in the new Standard Interconnection Procedures. These requirements only continue to apply for the following limited purposes: (i) the requirements in this Section 3 continue to apply, as applicable, to ongoing projects that are completing their Class Year Study for Class Year 2023 or Small Generator facilities study pursuant to the transition rules in the Standard Interconnection Procedures, and (ii) the requirements in Section 3.5 continue to apply for Load projects seeking to interconnect.

The NYISO is currently revising the TEI Manual to incorporate the new requirements for its Standard Interconnection Procedures as set forth in Attachment HH and in the Technical Bulletins related to requirements of Attachment HH. In the coming months, NYISO will share its proposed TEI Manual revisions with Market Participants at TPAS for Market Participants' input and approval. Market Participants can refer to the Technical Bulletins at NYISO's Manuals, Technical Bulletins and Guides webpage.

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Prepared By: NYISO Interconnection Projects

New York Independent System Operator
10 Krey Boulevard
Rensselaer, NY 12144
(518) 356-6060
www.nyiso.com

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Table of Contents

Table of Figures

Revision History

Version	Effective Date	Revisions
1.0	09/01/1999	Initial Release
2.0	11/01/2012	Significant update and rewrite
2.1	10/30/2015	Additional updates are being made to this manual, including updates to reflect revisions to Attachments S, X and Z to the NYISO OATT effective February 18, 2013 (FERC Docket Nos. ER13-588-001 & ER13-588-002) and revisions to Attachments X and Z effective February 14, 2014 (FERC Docket No. ER14-627-000) Global ➢ Reformatted per new template to standardize presentation ➢ Standardized labeling and numbering of graphical and tabular material Section 2.4.2 ➢ Update the MW threshold for Requiring a Transmission System Impact Study (SIS) Section 2.4.3 ➢ Elimination of redundant language Attachment C ➢ Removed and updated all cross-references. Incorporated into the Transmission Congestion Contracts Manual Attachment D ➢ Corrected footnote cross-references
3.0	06/30/2017	Updates to conform with several tariff changes made between January 2013 through August 2016, including: ➢ Class Year process changes limits and rules re. Commercial Operation Dates (tariff changes effective February 2013) ➢ Threshold for material capacity (ERIS) increases requiring interconnection studies (tariff changes effective February 2014) ➢ FERC Order 792 changes re. Small Generator Interconnection Procedures (tariff changes effective December 2014 ➢ Generator outage states, e.g., rules for retired and mothballed generating facilities (tariff changes effective May 2015) ➢ Proposed Transmission Interconnection Procedures and changes to the NYISO Transmission Expansion process

		(tariff changes effective April 1, 2016, FERC order pending) ➢ BTM:NG filing (interconnection process-related tariff changes effective May 19, 2016) ➢ Class Year regulatory milestone changes (tariff changes effective July 5, 2016) ➢ Class Year regulatory milestone changes (tariff changes effective February 22, 2017) Additional updates and revisions, including: ➢ Global update of references (e.g., applicable NERC, NPCC and NYSRC reliability standards) ➢ Added review process for determining whether an SIS is required for proposed NYTO LTP or NYPA TP projects ➢ Global update of NYISO contact information ➢ Added details re. Minimum Interconnection Standard and Deliverability Interconnection Standard methodologies ➢ Added information regarding inter-ISO/RTO interconnection procedures ➢ Added information re. ways to request and obtain CRIS ➢ Other lesser, ministerial changes
4.0	08/02/2019	Updates to reflect revisions made as part of the 2017 comprehensive queue reform, as applicable • **Increased Efficiencies in the Interconnection Process** ➢ Reduced the number of study agreements ➢ Created deadlines for study reports to proceed through stakeholder process ➢ Clarified roles and responsibilities of parties in the interconnection process ➢ Made Feasibility Studies under Attachments X and Z options at Developer's election with two alternative levels of analyses ➢ Revised the Interconnection Request data forms and requirements ➢ Provided parties the option to narrow the scope of studies required or uprate projects ➢ Allowed certain projects with multiple voltage levels to submit a single Interconnection Request • **Improvements to the Class Year Study Process** ➢ Revised Class Year Start Dates ➢ Created the "Bifurcated Class Year" process ➢ Afforded additional opportunities for projects to withdraw from the Class Year Study

		➢ Specified how a project can finalize an Interconnection Agreement prior to completion of a Class Year Study and/or request Limited Operations prior to execution of an Interconnection Agreement • **Other Clarifications and Improvements to the Interconnection Process** ➢ Clarified base case inclusion rules ➢ Updated small Generating Facility deposits and application fee requirements ➢ Clarified clustering process for Small Generating Facilities ➢ Clarified process for evaluation of alternative Points of Interconnection in SGIP ➢ Added a requirements that certain Large Generating Facilities install phasor measurement units ➢ Improved the process for calculating CRIS values applicable to the Winter Capability Period ➢ Required stakeholder review of changes in Transmission Owner planning criteria ➢ Increased the frequency of required updates to proposed In-Service Dates, Initial Synchronization Dates and Commercial Operation Dates ➢ Clarified the withdrawal procedure ➢ Required outstanding invoices to be submitted by a date certain and only after such date, truing up the amounts to be refunded to a withdrawn project Updates to reflect revisions to Section 3.7 of the NYISO OATT, and Attachments P, S, X and Z to NYISO OATT as it related to the NYISO's Order No. 1000 compliance Updates to reflect rules regarding External-to-ROS Deliverability Rights Adding Attachment K to maintain, as a historical reference, the content of the Class Year 2001 Settlement Agreement Adding Attachment L to describe normal operating procedures Updates to the deliverability methodology as it relates to dispatch assumptions and as it relates to the Other Interface evaluation Additional clarification and editorial revisions throughout
4.1	11/11/2020	Updates to reflect revisions made as a part of the Class Year Redesign reforms, as applicable:

		➢ Clarified treatment of a deposit in lieu of Site Control for Large Facilities, ➢ Added requirement to perform preliminary, non-binding deliverability evaluation in SRIS and associated revisions, ➢ Modified analyses performed in the SRIS and Class Year Study stages to eliminate duplicative and unnecessary analysis, ➢ Modified the Class Year Study entry procedures, ➢ Redesigned the Additional SDU Studies and associated revisions, and ➢ Added Expedited Deliverability Studies for projects only seeking CRIS. Updates to reflect revisions made as a part of the Order No. 845 and Order No. 845-A compliance filings, as applicable: ➢ Summary of reporting metrics for the performance of studies under the Large Facility Interconnection Procedures, ➢ Requesting interconnection service below a Large Facility's full generating capacity, and ➢ Addition of a new Large Facility Modification Form (Appendix 3 of Section 30.14) and Permissible Technological Advancements for Large Facilities. Updates to reflect revisions made as a part of the Distributed Energy Resource and Energy Storage Resource (Order No. 841) reforms, as applicable, and Making additional clarification and editorial revisions throughout.
4.2	01/04/2023	Revisions to Attachment L Section B to specify how the NYISO models controllable and non-controllable transmission projects under the Minimum Interconnection Standard.
4.3	02/07/2025	Updates to Attachment L to clarify under what circumstances System Upgrade Facilities would be required, and PAR modeling study assumptions. Updates to Attachment L also include changes the Class Year Study Transmission Project terminology to be consistent with the new terminology, Cluster Study Transmission Project, per Attachment HH to NYISO OATT.

1. Introduction

1.1. Transmission Expansion and Interconnection Process Background

The New York Independent System Operator, Inc.'s (NYISO's) Open Access Transmission Tariff (OATT) includes processes for parties to pursue construction and interconnection of new and materially modified generation, transmission and load facilities to the New York State (NYS) Transmission System or Distribution System.[1] These are collectively referred to as the NYISO's transmission expansion and interconnection processes.

The purpose of this Transmission Expansion and Interconnection Manual ("TEI Manual") is to provide interested parties with a road map of the NYISO's transmission expansion and interconnection processes. The manual also describes the study criteria, guidelines, procedures and practices used in these processes.

The scope of this manual is limited to the processes and procedures pertaining to applications for, and performance of, studies related to the NYISO's transmission expansion and interconnection processes. In turn, the completed studies potentially lead to the construction, installation, and commercial operation of new generation, load, or transmission facilities that become part of, or connected to, the NYS Transmission System or Distribution System. Business topics related to commercial operation or rights that may pertain to transmission expansions or new interconnections are not covered in this manual, except by reference.

Expansions or reinforcements of the NYS Transmission System may be pursued by various entities in a number of ways. First, transmission expansions may be proposed and pursued through the NYISO Comprehensive System Planning Process (CSPP) outlined in Attachment Y to the NYISO OATT. Transmission Projects may be proposed, evaluated, and potentially selected to move forward under the CSPP. In addition to the CSPP, all such proposed transmission projects also are required to undergo the NYISO Transmission Interconnection Procedures (TIP) outlined in Attachment P to the NYISO OATT, which evaluates the need for and identifies any Network Upgrade Facilities that would be required to accommodate the proposed transmission project.

Second, certain transmission expansions may be pursued outside of the CSPP. TOs may pursue transmission projects as part of a Local Transmission Owner Plan (LTP) or NYPA transmission plan without undergoing a NYISO-administered study, other than possibly a System Impact Study (SIS), if required or requested. Also, Eligible Customers, including TOs, may request transmission service studies to

[1] Note that "Distribution System" is a defined term in Attachments X and Z to the NYISO OATT that refers to Federal Energy Regulatory Commission (FERC)-jurisdictional distribution, and does not include LIPA distribution facilities.

identify conceptual transmission options to create incremental transfer capability, or address a reliability or other operational concern, as requested by an Eligible Customer. If the Eligible Customer seeks to further pursue construction of transmission upgrades identified in a transmission service study, the Eligible Customer may request with a SIS under either Section 3.7 of the NYISO OATT or under the TIP, as applicable. The NYISO Transmission Expansion Process is further described in Section 2 of this manual.

Third, proposed Class Year Transmission Projects seeking Capacity Resource Interconnection Service (CRIS), subject to certain eligibility requirements, are a special category of "transmission expansion" that actually falls under the NYISO Large Facility Interconnection Procedures (LFIP) outlined in Attachment X to the NYISO OATT, and does not fall under the NYISO Transmission Expansion process.

NYISO's Interconnection Process consists of separate processes that pertain to: proposed interconnections of new or modified generation facilities, certain transmission projects (as described above), and certain transmission-connected load projects. The NYISO Interconnection Process is further described in Section 3 of this manual.

In some cases, new generation and transmission facilities that propose to interconnect to the NYS Transmission System or Distribution System under the NYISO OATT may impact the system of a neighboring ISO or RTO (*e.g.*, PJM or ISO-NE). Likewise, new generation or transmission facilities that propose to interconnect to the transmission system of a neighboring ISO or RTO under that ISO's or RTO's OATT may impact the NYS Transmission System. NYISO and the neighboring ISO/RTOs have implemented procedures for the coordination of studies pertaining to such interconnection projects and for coordination of any cross-border system upgrades that may be identified. These inter-ISO interconnection procedures are further described in Section 3 of this manual.

Also, Attachment S to the NYISO OATT provides various ways that entities may request and, if eligible, obtain CRIS for their facilities. With few exceptions, the process includes evaluation of the deliverability of the requested CRIS in a Class Year Deliverability Study. The various ways that entities may request and acquire CRIS for their facilities is summarized in Section 3 of this manual.

1.2. NYISO Interconnection Projects Community Portal

The NYISO uses the "Interconnection Projects Community Portal" to provide an online platform to access, submit and receive most forms, study agreements, and information.[2] The Interconnection Project

[2] The Small Generator Pre-Application Request Form and Instructions, the External CRIS Rights Request Form, and the Small Generator 10 kW Inverter Process Form are not located in the Interconnection Projects Community Portal but are available on the NYISO's website under "Planning" > "Interconnection Process" > "Additional Request Forms."

Community Portal is accessible through the NYISO's public website under the tab "Planning" > "Interconnection Process." Training is also available for Developers that are new to Interconnection Project Community Portal on the NYISO's website.

2. Transmission Expansion Process

2.1. Introduction

The NYISO transmission expansion process is described in Section 3.7 of and Attachment P to the NYISO OATT. This section of the manual walks through that process and cite references to the NYISO OATT and other documents that cover various topics related to the process.

The NYISO transmission expansion process includes studies to evaluate and identify the new facilities that would be included in the transmission expansion, and procedures for moving forward with construction, installation and operation of the new facilities from the standpoint of the NYISO and the applicable TOs. The NYISO process does not include licensing, permitting or other processes that may be required by governmental authorities or other entities outside the NYISO process.

2.2. What is a Transmission Expansion?

A transmission expansion is the addition or modification of facilities of the NYS Transmission System that may be proposed or initiated by an Eligible Customer, including a TO, under Section 3.7 of or Attachment P to the NYISO OATT.

Transmission expansions that may be proposed and pursued through the NYISO Comprehensive System Planning Process (CSPP) outlined in Attachment Y to the NYISO OATT. Transmission projects may be proposed, evaluated, and potentially selected to move forward under the CSPP. Any person or entity, including a TO, that is qualified under Attachment Y may sponsor or propose a transmission project under the CSPP. In addition to the CSPP, all such proposed transmission projects also are subject to the TIP, which evaluates the need for and identifies any Network Upgrade Facilities that would be required to accommodate the proposed transmission project.

Transmission expansions may be also pursued outside the CSPP; however, without going through the NYISO's competitive evaluation and selection process, they would not be eligible for potential cost allocation under the NYISO OATT. TOs may pursue transmission projects as part of an LTP or NYPA transmission plan without undergoing a NYISO study, other than possibly a SIS, if required or requested under Section 3.7.1 of the NYISO OATT. Also, Eligible Customers may request a transmission service study (either a Transmission Service Study under Section 3.7.1 of the NYISO OATT, or a Network Integration Transmission Service Study under Section 4.5.1 of the NYISO OATT) to identify conceptual transmission options to create incremental transfer capability, or to address reliability or other operational concerns, as requested by an Eligible Customer. If the Eligible Customer seeks to further pursue construction of transmission upgrades identified in a transmission service study, the Eligible Customer may request a SIS

under either Section 3.7.1 of the NYISO OATT or under the TIP, as applicable.

Proposed Class Year Transmission Projects seeking Capacity Resource Interconnection Service, subject to certain eligibility requirements, is a special category of "transmission expansion" that actually falls under the NYISO Large Facility Interconnection Procedures outlined in Attachment X to the NYISO OATT (*see* Section 3.3 of this manual), and does not fall under the NYISO Transmission Expansion process. The Transmission Expansion process does not apply to Attachment Facilities, System Upgrade Facilities (SUFs), or System Deliverability Upgrades (SDUs) identified in the interconnection process with the exception of upgrade facilities identify as a part of an Affected System study conducted by NYISO for a project to be located in a neighboring control area.

2.3. Transmission Interconnection Procedures (TIP)

2.3.1. Basic Information about the TIP

2.3.1.1. What projects are subject to the TIP?

All Transmission Projects proposed by Transmission Developers, as those terms are defined in Section 22.3.1 of Attachment P to the NYISO OATT, are subject to the TIP. Such Transmission Projects include all proposed transmission expansions of the NYS Transmission System, regardless of whether the Transmission Developer seeks cost allocation under the NYISO OATT or proposes a market-based project, other than: 1) a new transmission facility or upgrade to an existing transmission facility pursued by a TO as part of an LTP or NYPA transmission plan that is not subject to the NYISO's competitive selection process under Attachment Y and for which the TO is not seeking regional cost allocation under the NYISO OATT, and 2) Class Year Transmission Projects seeking CRIS that fall under the NYISO Large Facility Interconnection Procedures in Attachment X to the NYISO OATT.

The TIP also evaluates Affected System Upgrades (*i.e.*, transmission facilities or upgrades identified by the NYISO in its role as an Affected System Operator evaluating a project interconnecting to a neighboring Control Area that include equipment and facilities proposing to connect to facilities to the New York State Transmission System) that the NYISO has determined through an Affected System study are required to mitigate adverse impacts to reliability. However, since Affected System Upgrades are already identified and evaluated by the NYISO in a System Impact Study-level evaluation as part of the Affected System studies, the Affected System Upgrades may proceed directly from the Transmission Interconnection Application to the TIP Facilities Study.

Any person or entity may initiate the TIP by submitting a Transmission Interconnection Application in accordance with Section 22.4 of Attachment P to the NYISO OATT.

2.3.1.2. What costs are involved?

The costs involved in the NYISO TIP process include:

- $10,000 nonrefundable application fee;
- Various deposits that are applied toward study costs (see Figure 1 below);
- Actual study costs incurred by the NYISO, the Connecting Transmission Owner(s); and Affected System Operator(s).
- Cost (or cost allocation) of any Network Upgrade Facilities identified in the TIP studies.

Figure 1: Deposits Associated with the NYISO TIP

Process Step	Deposit Amount	When Required	Applied Toward
Optional Feasibility Study (1)	$60,000	On or before return of the signed Optional Feasibility Study Agreement	Optional Feasibility Study
System Impact Study (SIS)	$40,000 or $120,000 as applicable (2)	On or before return of the signed SIS Agreement	SIS costs incurred by the NYISO and CTO(s)
Facilities Study	$100,000	On or before return of the signed Facilities Study Agreement	Facilities Study

Notes:

(1) It is the Transmission Developer's option whether to perform or forego an Optional Feasibility Study.

(2) $120,000 deposit is required if NYISO is responsible for performing the entire study. $40,000 deposit is required if the Developer hires a consultant to perform the analytical portion of the study.

2.3.1.3. How long does it take?

The TIP study process is anticipated to take on the order of 1.5 to 3 years to complete, but the actual time is dependent upon several factors, including factors that may impact, but are existential to the TIP (e.g., parallel NYISO CSPP and/or governmental regulatory processes).

2.3.1.4. Who is involved in the process?

The Transmission Developer, NYISO and Connecting Transmission Owner(s) (CTO or CTOs, the Transmission project may involve more than one CTO) are the primary parties involved in the TIP study process. The studies also may involve Affected System Operators. In some cases, the Transmission Developer and CTO may be the same party. Also, each of the parties may hire consultants or other third parties to perform or assist in parts of the study for which the party is responsible. The NYISO Transmission Planning Advisory Subcommittee (TPAS) and Operating Committee (OC) are involved in the SIS step of the process. OC approval of the SIS scope and the SIS report are requirements of the process under the NYISO OATT and the ISO Agreement. TPAS reviews each of those items prior to submittal to the OC.

The Transmission Developer and CTO(s) are the parties that may be involved in an Engineering & Procurement ("E&P") Agreement (*see* Section 22.10 of Attachment P to the NYISO OATT). The

Transmission Developer, NYISO and CTO(s) are the parties that would be involved in a Transmission Project Interconnection Agreement, if such agreement is required (*see* Sections 22.11.1 – 22.11.3 of Attachment P to the NYISO OATT).

The Transmission Developer, CTOs, and Affected System Operators, if any, are the primary parties involved in the construction of any Network Upgrade Facilities identified in the TIP studies. NYISO is not involved in the construction of a Transmission Project or related Network Upgrade Facilities, except to approve certain related scheduled outages as may be required.

NYISO determines the award of incremental TCCs, if any, related to the transmission expansion.

2.3.2. Getting Started - Transmission Interconnection Application

A Transmission Developer proposing to interconnect a Transmission Project to the NYS Transmission System must submit to the NYISO a Transmission Interconnection Application (TIA) in the form of Appendix 1 of Attachment P to the NYISO OATT accompanied by a non-refundable application fee of $10,000. The expected In-Service Date of the Transmission Project provided in the TIA shall be no more than ten (10) years from the date the application is received by the NYISO (*see* Section 22.4 of Attachment P to the NYISO OATT).

The form for a TIA is available from the NYISO website. To fill out and submit a TIA, a Transmission Developer should use NYISO's "Interconnection Projects Community Portal," as discussed in Section 1.2 of this manual.

TIP projects that are submitted for a proposed project subject to the NYISO's competitive selection process outlined in Attachment Y to the NYISO OATT should refer to the requirements under Attachment Y in submitting its TIA, as well as the solicitation information posted by the NYISO, to ensure that the TIA meets the requirements of the specific competitive selection process.

TIP projects that are Affected System Upgrades (*i.e.*, transmission upgrades identified by the NYISO in its role as an Affected System Operator evaluating a project interconnecting to a neighboring Control Area that include equipment and facilities proposed to connect to facilities within the New York State Transmission System) that the NYISO has determined in a completed study are required to mitigate adverse impacts to reliability, may proceed directly from the TIA to the TIP Facilities Study.

2.3.3. Basic Steps of the TIP

The basic steps of the TIP are:

- Initial Processing of the TIA;
- Scoping Meeting;
- Optional Feasibility Study;

- System Impact Study;
- Facilities Study;
- Engineering & Procurement Agreement (optional)
- Transmission Project Interconnection Agreement; and
- Construction, installation, registration and operation.

These steps are further described in Attachment P to the NYISO OATT and summarized in the following sections.

2.3.3.1. Initial Processing of a New TIA

Upon receipt of a new TIA, NYISO assigns the TIA a Queue Position based on the date and sequence it was received in accordance with Section 22.5.1 of Attachment P to the NYISO OATT. Within five (5) Business Days of receipt of the TIA, NYISO sends an acknowledgement notice to the Developer and provides a copy of the TIA to the CTO(s) (*i.e.*, the TO(s) with whom system the Transmission Developer is proposing to connect); provided, however, that any TIA that is submitted or revised for a proposed project subject to the NYISO's competitive selection process outlined in Attachment Y to the NYISO OATT shall not be forwarded to the CTO(s) until the close of the applicable solicitation window.

NYISO performs an initial review of the TIA and determines whether it is valid (*i.e.*, satisfies the requirements of Section 22.4.2.1 of Attachment P to the NYISO OATT), or deficient in some way. If the TIA is determined to be deficient, NYISO sends a deficiency notice to the Transmission Developer and CTO(s) within five (5) Business Days of receipt of the TIA, giving the Transmission Developer an opportunity to cure the deficiency per Section 22.4.2.3 of Attachment P. If the deficiency is cured within the ten (10) Business Day cure period, the TIA is deemed valid by NYISO and proceeds through the Transmission Interconnection Procedures. If not, NYISO initiates withdrawal of the TIA under Section 22.4.5 of Attachment P to the NYISO OATT.

2.3.3.2. Scoping Meeting

Within ten (10) Business Days after receipt of a valid TIA, NYISO schedules and holds a Scoping Meeting with the Developer and CTO(s) per Section 22.4.2.4 of Attachment P to the NYISO OATT, which is the first formal meeting between the Parties (Transmission Developer, NYISO and CTO(s)) in the transmission interconnection process. In practice, Scoping Meetings generally are held via teleconference, as are most of the meetings in the process.

The main purpose of the Scoping Meeting is to discuss whether the Transmission Developer elects to pursue an Optional Feasibility Study or to proceed directly to an SIS for its Transmission Project. The Parties also discuss alternative interconnection options, exchange information, including any transmission data that would reasonably be expected to impact such interconnection options, analyze such information

and determine the potential feasible Point(s) of Interconnection. At the Scoping Meeting, the Transmission Developer shall specify for inclusion in the attachment to the Optional Feasibility Study Agreement the Point(s) of Interconnection and any reasonable alternative configurations, not to exceed two alternative configurations.

Within five (5) Business Days of the Scoping Meeting, the Transmission Developer shall inform the NYISO in writing of: (i) its election to pursue an Optional Feasibility Study or proceed to a SIS for its project, and (ii) designation of the Point(s) of Interconnection for its project. Upon receipt of the Transmission Developer's input, NYISO will begin preparation of the applicable study agreement for review and execution by the Parties.

2.3.3.3. Optional Feasibility Study (OFES)

Since the OFES is an option of the Transmission Developer, its purpose is to provide information to the Transmission Developer regarding the feasibility of the proposed interconnection in advance of embarking on a SIS.

The process for initiating and performing the OFES is outlined in Section 22.7 of Attachment P to the NYISO OATT. The basic steps are:

- Preparation, tender and execution of the OFES Agreement (OFESA);
- Performance of the study, including completion of all required tasks and review of the study report and documentation by the Parties and any Affected System Operators;
- The study report meeting.

As soon as practicable after receiving the Transmission Developer's election to pursue an OFES and designated Point(s) of Interconnection, NYISO prepares and tenders the OFESA to the Transmission Developer and the CTO(s) in accordance with Section 22.7.1 of Attachment P. With the OFESA, NYISO prepares the scope of work for the study ("OFES Scope") to address the technical analyses requested by the Transmission Developer consistent with Section 22.7.2 of Attachment P, which is included with the tendered OFESA. The Parties (Transmission Developer, NYISO and CTO(s)) are required to execute and deliver the OFESA to the NYISO within thirty (30) Calendar Days after NYISO tenders the OFESA. The Transmission Developer is required to provide a $60,000 study deposit and the technical data required by the OFESA to the NYISO on or before delivery of the executed OFESA. The procedures related to any failure of the Transmission Developer to meet the requirements related to execution of the OFESA are described in Section 22.7.1 of Attachment P.

After the OFESA has been fully executed by the Parties, the responsible Parties proceed to perform the OFES in accordance with the OFES Scope. NYISO serves as overall coordinator for the study. Other parties

involved in the study that need the steady state and/or short circuit base cases must request the base cases from the NYISO following the NYISO CEII request procedures. A CEII Request Form and NDA are available from the NYISO website and can be accessed via the Interconnection Projects portion of the website. As soon as practicable after completion of the initial draft of the OFES report, NYISO will provide the draft study report to the Transmission Developer, CTO(s) and any Affected System Operators for review and comment, and coordinates the review process. Upon completion of the review process, NYISO arranges and holds an OFES report meeting with the Transmission Developer, CTO(s) and any Affected System Operators to discuss the results of the OFES per Section 22.7.3 of Attachment P.

After completion of the OFES, NYISO initiates final accounting and settlement billing of the NYISO and CTO(s) actual study costs with the Transmission Developer in accordance with Section 22.7.1 of Attachment P and the OFESA.

2.3.3.4. System Impact Study (SIS)

Upon completion of the OFES (or if the Transmission Developer elects to forego an OFES), the next step is the SIS. Unlike the OFES, the NYISO committees (TPAS and OC) are involved in the SIS through the review and approval of the SIS Scope, and the review and approval of the SIS report. OC review and approval of the SIS satisfies the requirements of Section 18.02 of the ISO Agreement.

The purpose and objectives of the SIS are to: evaluate the feasibility of the proposed interconnection (consistent with Section 22.7.2 of Attachment P if feasibility was not evaluated or not fully evaluated in an OFES), evaluate the impact of the project on the pre-existing electric system and interface transfer capability, determine whether the project triggers the need for any Network Upgrade Facilities, and if so, develop a list of the Network Upgrade Facilities that would be required along with nonbinding good faith estimates of the cost responsibility and time to construct those facilities. The SIS evaluates the impact of the project in accordance with the NYISO Transmission Interconnection Standard per Section 22.6.4 of Attachment P, which involves conducting thermal, voltage, stability and short circuit analyses, as well as a transfer limit analysis to determine whether the Transmission Project degrades interface transfer capability by more than 25 MW (a degradation of interface transfer capability by more than 25 MW is considered unacceptable under the Transmission Interconnection Standard). The SIS also may include various “special studies” (e.g., Electro-Magnetic Transients (EMT) study, Sub-Synchronous Resonance (SSR) study, etc.) as considered appropriate for the type and circumstances of the Transmission Project and its interconnection to the system.

If one or more alternative Point(s) of Interconnection configurations were evaluated in the OFES, the Developer must designate which configuration is to be evaluated in the SIS. Only one Point(s) of Interconnection configuration may be evaluated in the SIS.

The process for performing the SIS is outlined in Section 22.8 of Attachment P to the NYISO OATT. The basic steps are:

- Preparation, tender and execution of the SIS Agreement (SISA);
- In conjunction with the SISA, preparation, review and OC approval of the study scope of work (SIS Scope);
- Performance of the study, including completion of all required tasks and review of the study report and documentation by the Parties and any Affected System Operators;
- The study report meeting between the Parties (NYISO, CTO(s), and Developer) and any Affected System Operators;
- Presentation of the SIS report to the TPAS for review, followed by presentation of the SIS report to the OC for approval.

As soon as practicable after receiving the Transmission Developer's election in the Scoping Meeting to proceed with an SIS, or simultaneously with the delivery of an OFES to the Transmission Developer, NYISO prepares and tenders the SISA to the Transmission Developer and the CTO(s) and provides a nonbinding good faith estimate of the cost and time to complete the SIS in accordance with Section 22.8.1 of Attachment P. In conjunction with the SISA, NYISO prepares the scope of work for the study ("SIS Scope") consistent with Section 22.8.3 of Attachment P. NYISO first issues a draft SIS Scope to the Parties and any Affected System Operators for review and comment. (During preparation of the SIS Scope, the Parties may discuss whether any "special studies" should be performed for the Transmission Project, and if so, whether to perform such studies as part of the SIS, or at a later step of the process – either in the Facilities Study, or included as part of the engineering studies that may be performed under the Transmission Project Interconnection Agreement. NYISO will seek to reach mutual agreement among the Parties on whether and what special studies to include in the SIS Scope. However, in the event of failure to reach mutual agreement among the Parties on this, or any aspect of the SIS Scope, may be brought up to TPAS and/or the OC as appropriate.)

After review by the Parties and any Affected System Operators, NYISO submits the SIS Scope to TPAS for review, then to the OC for approval.

The Transmission Developer, NYISO and CTO(s) are required to execute and deliver the SISA to NYISO within thirty (30) Calendar Days after NYISO tenders the SISA. The Transmission Developer is required to provide a study deposit of either $40,000 (if the Transmission Developer is hiring a third-party consultant to perform the analytical portions of the study) or $120,000 (if NYISO is responsible for performing the entire study) to the NYISO on or before return of the executed SISA. The Transmission Developer also must provide the technical data required by the SISA to the NYISO on or before return of the executed SISA. The procedures related to any failure of the Transmission Developer to meet the requirements related to

execution of the SISA are described in Section 22.8.2 of Attachment P.

After the SISA has been fully executed by the Parties and the OC has approved the SIS Scope, the responsible Parties proceed to perform the SIS in accordance with Section 22.8.4 of Attachment P, the SISA, and the approved SIS Scope. NYISO serves as the overall coordinator for the study, including coordination of review of the draft SIS report and associated documentation by the Parties and any Affected System Operators. NYISO prepares the initial steady state, short circuit and dynamic base cases to be used for the SIS following the requirements outlined in Section 22.6.1 of Attachment P and the SIS Scope. Other parties involved in the study that need the steady state, short circuit and/or dynamic base cases must request the base cases from the NYISO following the NYISO CEII request procedures. A CEII Request Form and NDA are available from the NYISO website and can be accessed via the Interconnection Projects portion of the NYISO website.

As soon as practicable after completion of the initial draft of the SIS report, NYISO will provide the draft study report to the Transmission Developer, CTO(s) and any Affected System Operators for review and comment, and coordinates the review process. Upon completion of the review process, NYISO arranges and holds a study report meeting with the Transmission Developer, CTO(s) and any Affected System Operators to discuss the results of the SIS per Section 22.8.5 of Attachment P.

Following the study report meeting, NYISO arranges for submittal of the SIS report to TPAS for review and consideration for recommendation for OC approval. If the SIS was not performed by NYISO staff, NYISO staff prepares and submits a "NYISO Review Report" to accompany the SIS report, to summarize NYISO staff's review and conclusions regarding the SIS. Following TPAS review, NYISO arranges for submittal of the SIS report to the OC for consideration for approval. Upon OC approval of the SIS, the SIS for that project is considered to be completed.

After OC approval of the SIS, NYISO initiates final accounting and settlement billing of the NYISO and CTO(s) actual study costs with the Transmission Developer in accordance with Section 22.8.1 of Attachment P and the SISA.

2.3.3.5. Facilities Study

At any time following OC approval of the SIS, the Transmission Developer may initiate the next step of the TIP by requesting the NYISO to tender a Facilities Study Agreement for its Transmission project. The NYISO committees (TPAS and the OC) are not involved in the Facilities Study.

The purpose of the Facilities Study, per Section 22.9.3 of Attachment P to the NYISO OATT, is to update and refine the description of Network Upgrade Facilities identified in the SIS, including the equipment, work and related cost and time estimates necessary to construct the required Network Upgrade Facilities.

If not performed in the SIS, the Facilities Study may include various "special studies" (*e.g.*, Electro-Magnetic Transients (EMT) study, Sub-Synchronous Resonance (SSR) study, etc.) as considered appropriate for the type and circumstances of the Transmission Project and its interconnection to the system. To the extent the NYISO or Connecting Transmission Owner determine, in accordance with Good Utility Practice, that such studies need to be performed after the Facilities Study, the Transmission Developer will be responsible for the study costs for such studies and any upgrade costs resulting from such studies, to the extent consistent with Attachment P. The Facilities Study also will provide a nonbinding estimate as to the feasible TCCs resulting from the construction of the new facilities, as applicable. Transmission Developer will be responsible for posting Security in the amount of the cost estimates for the Network Upgrade Facilities documented in the final Facilities Study report pursuant to Section 22.11.1 of Attachment P.

The process for performing the Facilities Study is outlined in Section 22.9 of Attachment P. The basic steps are:

- Preparation and execution of the Facilities Study Agreement (FSA);
- In conjunction with the FSA, preparation and review of the study scope of work by the Parties and any Affected System Operators;
- Performance of the study, including completion of all required tasks and review of the study report and documentation by the Parties and any Affected System Operators; and
- The study report meeting between the Parties (NYISO, CTO(s), and Developer) and any Affected System Operators.

As soon as practicable after receiving the Transmission Developer's request to proceed with a Facilities Study, NYISO prepares and tenders the FSA to the Transmission Developer and the CTO(s) and provides a nonbinding good faith estimate of the cost and time to complete the study in accordance with Section 22.9.1 of Attachment P. In conjunction with the FSA, NYISO prepares the scope of work for the study ("FS Scope") consistent with Section 22.9.3 of Attachment P (and, if applicable, including any special studies as described above). NYISO first issues a draft FS Scope to the Parties and any Affected System Operators for review and comment, then issues the final FS Scope to those parties.

The Transmission Developer, NYISO and CTO(s) are required to execute and deliver the FSA to the NYISO within thirty (30) Calendar Days after NYISO tenders the FSA. The Transmission Developer is required to provide a study deposit of $100,000 to the NYISO on or before return of the executed FSA. The Transmission Developer also must provide the technical data required by the FSA to the NYISO on or before return of the executed FSA. The procedures related to any failure of the Transmission Developer to meet the requirements related to execution of the FSA are described in Section 22.9.2 of Attachment P.

After the FSA has been fully executed by the Parties, the responsible Parties proceed to perform the

Facilities Study in accordance with Section 22.9.4 of Attachment P, the FSA, and the approved FS Scope. NYISO serves as the overall coordinator for the study, including coordination of review of the draft Facilities Study report and associated documentation by the Parties and any Affected System Operators.

As soon as practicable after completion of the initial draft of the Facilities Study report, NYISO will provide the draft study report to the Transmission Developer, CTO(s) and any Affected System Operators for review and comment, and coordinates the review process. Upon completion of the review process, NYISO arranges and holds a study report meeting with the Transmission Developer, CTO(s) and any Affected System Operators to discuss the results of the Facilities Study per Section 22.9.5 of Attachment P.

Billing of study costs for the Facilities Study is performed in accordance with Section 22.9.1 of Attachment P and the FSA, and works differently than for an OFES or SIS. During the course of the Facilities Study, NYISO holds the $100,000 study deposit on account and invoices the Transmission Developer on a monthly basis for NYISO and CTO(s) study costs. After completion of the Facilities Study and after all outstanding invoices for study work for the project have been received by NYISO, NYISO initiates final accounting and settlement billing of NYISO and CTO(s) actual study costs with the Transmission Developer and refunds the study deposit, or any unspent portion thereof, as part of the final billing.

2.3.3.6. Engineering & Procurement ("E&P") Agreement

Prior to executing a Transmission Project Interconnection Agreement, a Transmission Developer may request and the CTO(s) shall offer the Transmission Developer, an E&P Agreement that authorizes the CTO(s) to begin engineering and procurement of long lead-time items necessary for the establishment of the interconnection per Section 22.10 of Attachment P to the NYISO OATT. E&P Agreements are optional. NYISO is not a party to such agreements.

2.3.3.7. Transmission Project Interconnection Agreement

After completion of the Facilities Study, the next step of the TIP is to develop, negotiate, and execute a Transmission Project Interconnection Agreement (TPIA) in accordance with Section 22.11 of Attachment P to the NYISO OATT. However, a TPIA is not required if a Transmission Developer's proposed Transmission Project is only interconnecting to its own, existing facilities.

Attachment P contains provisions regarding the TPIA as follows:

- Section 22.11.1 Tender
- Section 22.11.2 Negotiation
- Section 22.11.3 Execution and Filing
- Section 22.11.4 Commencement of Interconnection Activities
- Section 22.11.5 Termination of the TPIA

After completion of the Facilities Study, the Transmission Developer may request NYISO to tender a draft TPIA, with draft appendices completed to the extent practicable. In fact, under Section 22.11.2 of Attachment P, the Transmission Developer may request to begin negotiations concerning the TPIA and its appendices at any time after the Transmission Developer completes the FSA (before completion of the Facilities Study). After tender of the draft TPIA, the Transmission Developer must execute the TPIA (or take other appropriate action under Section 22.11.2 of Attachment P) within six (6) months, or the TIA will be deemed withdrawn.

2.3.3.8. Construction, Installation, Registration and Operation

After execution of the TPIA, the next and final major step of the TIP is to proceed with detailed engineering, construction, installation, registration, testing, and operation of the project, as applicable, in accordance with the TPIA. Provisions pertaining to the construction of the CTO(s)' Network Upgrade Facilities, and any other required upgrade facilities, are covered in Section 2.12 of Attachment P to the NYISO OATT.

2.3.3.9. Additional Information regarding the TIP

Entering Service Early to Maintain System Reliability - Under Section 22.3.2 of Attachment P to the NYISO OATT, a Transmission Developer may request its Transmission Project to enter into service early (before completion of all Transmission Interconnection Studies and before completion of any required Network Upgrade Facilities) subject to meeting certain requirements and conditions.

Modifications – Provisions regarding modifications to TIAs are covered under Section 22.5.4 of Attachment P to the NYISO OATT. Transmission Developers must submit any modifications to information provided in their TIA(s) in writing to NYISO via the NYISO's "Interconnection Projects Community Portal," as discussed in Section 1.2 of this manual. Modifications to the Transmission Project made early (before execution of the SISA) or determined (by NYISO) to be non-material are permissible without consequences in the process, but modifications made after execution of the SISA and determined to be material would require a new SIS, subject to a new SISA and required study deposit. Modifications permitted under the TIP might not be permitted under the separate requirements of the CSPP per Attachment Y to the NYISO OATT, and the Transmission Developer should refer to the requirements under the specific CSPP process.

Clustering – Under Section 22.5.2 of Attachment P to the NYISO OATT, NYISO has the option to study Transmission Projects serially or in clusters for the purpose of the SIS or Facilities Study. In addition, under Section 22.8.4 of Attachment P, NYISO may evaluate Transmission Projects moving forward in the same timeframe that both contribute to a shared Network Upgrade Facilities to determine their *pro rata* cost responsibility for such Network Upgrade Facilities. Pursuant to these provisions of Attachment P, to

the extent NYISO determines that one or more Transmission Projects have the ability to impact each other or have the potential to trigger shared Network Upgrades, NYISO has the discretion to cluster the Transmission Projects in a single SIS and/or a single Facilities Study, as appropriate, to determine the collective impact of the projects and each project's share of the respective Network Upgrade Facilities required for the projects to reliably interconnect. As required by Section 22.13.3 of Attachment P, if a number of Transmission Interconnection Studies are conducted concurrently as a combined study, each Transmission Developer shall pay an equal share of the actual cost of the combined study.

Withdrawal – Under Section 22.4.5 of Attachment P, a Transmission Developer may withdraw its TIA at any time by written notice of such withdrawal to NYISO. Section 22.4.5 of Attachment P also describes conditions under which NYISO would deem a TIA to be withdrawn.

2.4. Procedures Applicable to Transmission Owner Proposed Upgrades and Expansions That Are Not Subject to the TIP

2.4.1. Introduction

Transmission projects proposed by the TOs that are not subject to the TIP may be subject to the study procedures outlined in Section 3.7 of the NYISO OATT. For these projects, two studies potentially apply: an SIS and a Facilities Study. These studies are similar in nature to the SIS and Facilities Study of the TIP process, but have some differences. For these projects proposed by a TO under Section 3.7 of the NYISO OATT, NYISO has lead responsibility for the SIS, but is not a party to the Facilities Study and may have only a supporting role, if any, in that study. Not all such TO projects are subject to these studies as further described below.

2.4.2. System Impact Study (SIS)

Reference: Sections 3.7.1 through 3.7.3 of the OATT; and Sections 18.01 and 18.02 of the ISO Agreement.

2.4.2.1. Purpose of the SIS

The purpose of the SIS is to evaluate the impact of the proposed transmission project on the reliability of the NYS Transmission System and if study results indicate that the project, as proposed, would result in any adverse impact on reliability or violations of reliability standards and identify any Network Upgrades that would be required to mitigate any such adverse impact(s) or violation(s). As similar to the SIS under the TIP, the NYISO committees (TPAS and the OC) are involved in the SIS: in review and approval of the SIS Scope, and review and approval of the SIS report. OC review and approval of the SIS satisfies the requirements of Section 18.02 of the ISO Agreement.

2.4.2.2. What projects require an SIS?

A TO may request a NYISO SIS for a transmission project whether or not an SIS is required. However, SISs are required for TO projects under certain circumstances as described below.

In accordance with Section 3.7.1 of the NYISO OATT, transmission projects identified in a LTP or NYPA transmission plan that are not subject to the TIP require an SIS pursuant to Section 3.7 of the NYISO OATT 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 facilities.

Generally, but not always, an SIS would be required for transmission projects that involve additions, upgrades, or reconfigurations of transmission facilities at voltage levels of 115 kV or above. Also, an SIS generally would be required for projects that involve the addition of non-generation devices or equipment to the transmission system at voltage levels of 115 kV or above for the purpose of increasing transfer capability, or addressing reliability or other operational concerns. Such devices and equipment include, but are not limited to: capacitors, reactors, Static VAr Compensators (SVCs), Static Compensators (STATCOMs), and Special Protection Systems (SPSs). The SIS is NYISO's mechanism for conducting an (NPCC) Area assessment for a proposed new or modified SPS in advance or as part of the NPCC SPS review process *(see* NPCC Directory #7 Special Protection Systems).

2.4.2.3. Procedure for Determining Whether an SIS Is Required

Oftentimes, it is obvious to the TO and the NYISO that a transmission project either does or does not require an SIS in accordance with the above criteria. However, for some transmission projects, it may not be obvious whether an SIS should be required, in which case it may be necessary for NYISO to perform an evaluation and make a determination as to whether an SIS is required under the criteria. The procedure for making such determination is as follows:

- If unsure whether a project is required to undergo an SIS, the TO shall submit a request to the NYISO to make the determination. Such a request must be submitted in writing, preferably in the form of a letter (although an email is acceptable), and should be sent to:

  New York Independent System Operator
  10 Krey Boulevard
  Rensselaer, New York 12144
  c/o Interconnection Projects
  Email: InterconnectionSupport@nyiso.com

- NYISO may either perform analysis, or request the TO to provide analysis, relative to the criteria for requiring an SIS. Such analysis would include a transfer limit analysis for the closest potentially impacted NYISO interface(s) (usually only a thermal analysis should be needed in most cases) and,

if deemed necessary, NPCC A-10 testing of the classification of non-BPS buses that may be affected by the project. This analysis will be based on an appropriate NYISO summer peak load base case.

- An SIS will be required if the project either (i) reduces the transfer capability of a NYISO interface by greater than 10 MW or increases the transfer capability of a NYISO interface by greater than 25 MW; or (ii) changes the classification of affected facilities to NPCC BPS facilities.
- NYISO will notify the TO of its determination in a timely manner, normally between 7 and 30 Calendar Days after receipt of the completed required information provided by the TO for its request.
- If NYISO determines that the request does not meet the thresholds described above and in Section 3.7.1 of the NYISO OATT, and that an SIS is therefore not required, the NYISO will notify TPAS following a determination that an SIS is not required for a project.

2.4.2.4. Getting Started – System Impact Study Request

The TO proposing the project (*i.e.*, the Eligible Customer) initiates the SIS process by submitting a SIS Request ("Study Request") to the NYISO in accordance with Section 3.7.1 of the NYISO OATT. The Study Request must be in writing – usually in the form of a letter, but an email is acceptable, and should be sent to:

New York Independent System Operator
10 Krey Boulevard
Rensselaer, New York 12144
c/o Interconnection Projects
Email: InterconnectionSupport@nyiso.com

When a TO submits a Study Request, it also must give NYISO written notice of whether it intends to conduct all or part of the SIS itself. The TO is not required to provide a fee or deposit with the Study Request, but the TO will be required to execute a study agreement that includes reimbursing the NYISO for study costs.

Upon receiving a Study Request, NYISO reviews the request and contacts the Eligible Customer to acknowledge the request and to request clarification or additional information as necessary. NYISO also provides a copy of the Study Request to the affected TO(s), if other than the Eligible Customer. NYISO adds the request to its list of Interconnection Requests and Transmission Projects (also known as the "NYISO Interconnection Queue") with a queue position based on the date of receipt of the Study Request.

2.4.2.5. System Impact Study Procedures

The basic steps of the SIS process are:

1. Preparation of a draft Scope for the SIS

If it wishes, the Customer may submit an initial draft Scope for the SIS to the NYISO for review and comment. Otherwise, the NYISO usually prepares the initial draft Scope using a standard form. In any case, NYISO's standard procedure is to first coordinates a review of the draft scope among the parties (Customer,

NYISO and affected TO(s)), then TPAS. The review process for the Scope is often iterative, and usually takes about a month to complete.

If necessary, the NYISO may hold a Scoping Meeting with the other parties to discuss and resolve any questions or issues regarding the Study Request or the draft Scope. NYISO normally seeks to obtain agreement among the parties on the draft Scope before submitting it to TPAS.

2. OC approval of the SIS Scope

Following TPAS review, NYISO submits the proposed SIS Scope to the OC for consideration for approval.

If the OC was to not approve the proposed Scope, and the Customer wishes to continue to pursue their Study Request, NYISO would coordinate with the parties and TPAS to revise and resubmit the Scope to the OC.

3. NYISO Prepares and Tenders a System Impact Study Agreement (SISA) to the Customer

Upon OC approval of the Study Scope, NYISO prepares and tenders a SISA to the Customer. NYISO uses a standard form of the study agreement (*see* Attachment B of this manual), with information provided by the Customer included in the agreement as applicable (*see* Section 3.7.2 of the NYISO OATT regarding the Study Agreement and Cost Reimbursement).

Normally either NYISO or Customer is designated as being responsible for conducting the entire SIS and preparing the initial draft study report and supporting documentation, but it's possible for NYISO and Customer to each take responsibility for portions of the study. These arrangements must be specified in the SISA.

4. Customer Executes the Study Agreement

After NYISO has tendered the SISA to the Customer, the Customer must execute the SISA and return it to the NYISO within fifteen (15) days. Otherwise, the Study Request shall be deemed withdrawn (see Section 3.7.1 of the NYISO OATT).

5. Designated Party(ies) Performs Study

If NYISO is designated to perform all or portions of the study, NYISO may contract a TO or consultant to perform all or part of the study on NYISO's behalf. Such arrangements normally require a separate agreement or contract between NYISO and the TO or consultant. If multiple parties are involved in performing the study, normally one of the parties is designated as the lead party for the study.

Regardless of who performs the SIS, NYISO normally provides the starting base cases (steady state, dynamic, and short circuit base cases) to be used for the study. NYISO develops and maintains "standard" base cases that are used as the starting point for various transmission and interconnection studies, such as an SIS.

In some cases, an SIS (or portion thereof) may use a base case developed by a TO or a consultant. In such cases, any base cases and related documentation must be provided to the NYISO as part of the documentation for the study.

Generally, base cases and related documentation pertaining to an SIS may be exchanged between the NYISO and the applicable affected New York TOs (NYTOs)s without special arrangements.

If the Customer or their consultant requires one or more base cases from the NYISO in order to perform all or part of the study, the Customer or their consultant must submit a "CEII Request Form" to the NYISO, which must include an executed Non-Disclosure Agreement ("NDA"). A CEII Request Form and Non-Disclosure Agreement is available from the NYISO website and can be accessed via the Interconnection Projects portion of the website.

Special arrangements would be required if the Customer or their consultant were to require one or more base cases developed by a TO to perform all or part of the study.

The party(ies) performing the study must do so in accordance the approved SIS Scope and Section 10 of the NYISO OATT (Attachment D - Methodology for Completing a System Impact Study). Additional information regarding the criteria, procedures and guidelines that pertain to the performance of NYISO transmission and interconnection studies, such as a SIS, is provided in Section 4 of this manual and related Attachments.

Upon completion of the study, the responsible party(ies) must prepare an initial draft report and related documentation for the study. If multiple, parties perform the study, the lead party is responsible for compiling the various parts into a single draft study report. If the lead party is other than the NYISO, the lead party shall submit the initial draft study report and related documentation to the NYISO.

6. Review and Revision of Study as Necessary

Review of an SIS normally proceeds in two steps: review by the parties (Customer, NYISO, and Affected TO(s)), then review by the TPAS. NYISO, or the lead party on behalf of NYISO, provides copies of the draft study report (and related documentation as appropriate) to the other parties (Customer and affected TO(s)) for review. NYISO coordinates the review process, including resolution of any issues that may arise

between the parties. Normally the lead party is responsible for incorporating agreed upon revisions to the study report.

Upon completion of the first step of review by the parties and NYISO issues a final draft study report to the parties, the Customer must proceed with the study report to the TPAS within three months, otherwise the study request will be withdrawn. During its review, TPAS considers whether to recommend the study to the OC and TPAS members may raise substantive issues or request additional information or analyses. If revisions or supplementary information are recommended by TPAS, the Customer must proceed to the next TPAS following completion of such revisions.

7. OC Approval of the SIS

Following completion of TPAS review, the Customer is required to proceed to the next OC otherwise the study request will be withdrawn. If the Customer desires to proceed, NYISO will submit the draft study report to the OC for consideration for approval in accordance with NYISO committee procedures. If the OC approves the SIS, the study is considered to be completed. However, if the SIS is not approved by the OC, the parties may consider extending the study to address the issues raised by the OC. Ultimately, the Customer must decide whether or not to continue the study at this juncture. If the Customer wishes to dispute the OC's decision, the Customer may do so through the NYISO dispute resolution process.

8. Settlement of the System Impact Study Costs

Upon completion of the SIS, or termination of the study by the Customer, NYISO prepares and issues an invoice to the Customer for settlement of the NYISO's study costs in accordance with the SISA. If NYISO contracted a TO and/or consultant to perform all or parts of the study on NYISO's behalf, those costs would be included as part of the NYISO's study costs.

2.4.3. Facilities Study

Reference: Section 3.7.4 of the NYISO OATT.

After completion of the SIS, the Eligible Customer (if other than the affected TO) may elect to proceed with the next major step of the process, the Facilities Study. The Facilities Study for a TO transmission project primarily involves the Customer and the affected TO(s). Unlike an Interconnection Facilities Study, 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.

2.4.3.1. Purpose of the Facilities Study

The main purpose and objective of the Facilities Study is to provide to the Customer good faith estimates of the cost and time to construct the new facilities identified in the SIS. If applicable, the Facilities

Study also may provide a nonbinding estimate of the feasible TCCs that may result from the construction of the new facilities.

2.4.3.2. Facilities Study Procedures

See Section 3.7.4 of the NYISO OATT.

2.4.3.3. Facilities Study Modifications

See Section 3.7.5 of the NYISO OATT.

2.4.4. Construction

Reference Section 3.7.4 of the NYISO OATT (last paragraph).

After completion of the Facilities Study, the Customer may elect to proceed with the construction of the Facilities described in the Facilities Study by: 1) entering into a construction contract with the affected TO(s), and with the entity that will construct the facilities, if other than the affected TO(s), and 2) provide each affected TO security acceptable to the TO for the cost of the new facilities or upgrades.

2.5. Transmission Service Study Procedures

2.5.1. Introduction

Section 3.7.1 of the NYISO OATT states that Firm Transmission Service is available to an Eligible Customer, including a TO, willing to pay Congestion Rent as described in (the OATT), and further states that a request for Firm Point-to-Point Transmission Service does not require a SIS or Transmission Service Study. However, Section 3.7.1 provides Eligible Customers (including TOs) the option to request the NYISO to conduct a Transmission Service Study for the purpose of identifying conceptual transmission options to create incremental transfer capability, or to address reliability or other operational concerns, as requested by an Eligible Customer. (Section 4.5.1 of the NYISO OATT makes similar statements regarding Network Integration Transmission Service, and similarly provides Eligible Customers the option to request a Network Integration Transmission Service Study.)

A Transmission Service Study involves the same parties as SIS (*i.e.*, Eligible Customer, NYISO, affected TOs, TPAS and the OC). The procedures for a Transmission Service Study also are basically the same as those of a SIS. However, the purpose and objectives of a Transmission Service Study are fundamentally different from those of a SIS. While the purpose of an SIS is to evaluate the impact of a specified proposed transmission project on the system and determine whether and what additional transmission upgrades would be required to maintain reliability, the purpose of a Transmission Service Study is to identify conceptual transmission options to achieve some objective(s) specified by the Eligible Customer. Thus, after completion of a Transmission Service Study, if the Eligible Customer seeks to pursue construction of transmission upgrades, the Eligible Customer would need to submit a TIA pursuant to Attachment P to the

NYISO OATT. (Note that, under the OATT, an Eligible Customer may proceed directly to Attachment P to the NYISO OATT without first submitting a Transmission Service Request or completing a Transmission Service Study or Network Integration Transmission Service Study.)

2.5.2. Getting Started – Transmission Service Study Request

An Eligible Customer initiates the study process by submitting a Transmission Service Study Request or Network Integration Transmission Service Study Request ("Study Request") to the NYISO in accordance with Section 3.7.1 or Section 4.5.1 of the NYISO OATT. The Study Request must be in writing – usually in the form of a letter, but an email is acceptable, and should be sent to:

New York Independent System Operator
10 Krey Boulevard
Rensselaer, New York 12144
c/o Interconnection Projects
Email: InterconnectionSupport@nyiso.com

When an Eligible Customer ("Customer") submits a Study Request, it also must give the NYISO written notice of whether it intends to conduct all or part of the Study itself. The Customer is not required to provide a fee or deposit with the Study Request, but the Customer will be required to execute a study agreement that includes agreement to pay NYISO its actual study costs and advance payment of a deposit equal to NYISO's estimated study costs to be provided with the executed study agreement.

Upon receiving a Study Request, NYISO reviews the request and contacts the Customer to acknowledge the request and to request clarification or additional information as necessary. NYISO also provides a copy of the Study Request to the affected TO(s), if other than the Customer. NYISO adds the request to its list of the NYISO Interconnection Queue with a queue position based on the date of receipt of the Study Request.

2.5.3. Transmission Service Study Procedures

The procedures for a Transmission Service Study or a Network Integration Transmission Service Study (collectively "TSS") are similar those of an SIS. The basic steps of the TSS process are as follows:

1. Preparation of a draft Scope for the Study

Since the objectives of a TSS are largely specified by the Customer and therefore unique for each study, NYISO arranges and holds a Scoping Meeting with the parties to discuss the study objectives and scope. As soon as practicable after the Scoping Meeting, NYISO prepares the initial draft Scope and issues it to the parties to begin the review process. NYISO first coordinates a review of the draft scope among the parties, then TPAS. The review process for the Scope is often iterative, and usually takes about a month to complete. NYISO normally seeks to obtain agreement among the parties on the draft Scope before submitting it to TPAS.

2. OC approval of the Study Scope

Following TPAS review, NYISO submits the proposed Study Scope to the OC for consideration for approval.

3. NYISO Prepares and Tenders a Study Agreement to the Customer

Upon OC approval of the Study Scope, NYISO prepares and tenders a Study Agreement to the Customer. NYISO uses a standard form of the study agreement (see Attachment B of this manual), with information provided by the Customer included in the agreement as applicable. (See Section 3.7.2 of the NYISO OATT regarding the Study Agreement and Cost Reimbursement.)

Normally either the NYISO or Customer is designated as being responsible for conducting the entire study and preparing the initial draft study report and supporting documentation, but it's possible for the NYISO and Customer to each take responsibility for portions of the study. These arrangements must be specified in the Study Agreement. The Study Agreement includes arrangements for a study deposit equal to NYISO's estimated study costs and settlement of actual study costs.

4. Customer Executes the Study Agreement

After NYISO has tendered the Study Agreement to the Customer, the Customer must execute the Study Agreement and return it along with the deposit to the NYISO within fifteen (15) days. Otherwise, the Study Request shall be deemed withdrawn (*see* Section 3.7.1 of the NYISO OATT).

5. Designated Party(ies) Performs Study

If NYISO is designated to perform all or portions of the study, NYISO may contract a TO or consultant to perform all or part of the study on NYISO's behalf. Such arrangements normally require a separate agreement or contract between NYISO and the TO or consultant. If multiple parties are involved in performing the study, normally one of the parties is designated as the lead party for the study.

Regardless of who performs the Study, NYISO normally provides the starting base cases (steady state, dynamic, and short circuit base cases) to be used for the study. NYISO develops and maintains "standard" base cases that are used as the starting point for various transmission and interconnection studies.

In some cases, a TSS (or portion thereof) may use a base case developed by a TO or a consultant. In such cases, any base cases and related documentation must be provided to the NYISO as part of the documentation for the study.

Generally, base cases and related documentation pertaining to a TSS may be exchanged between the NYISO and the applicable affected NYTOs without special arrangements.

If the Customer or their consultant requires one or more base cases from the NYISO in order to perform all or part of the study, the Customer or their consultant must submit a "CEII Request Form" to the NYISO, which must include an executed Non-Disclosure Agreement. A CEII Request Form and Non-Disclosure Agreement is available from the NYISO website and that can be accessed via the Interconnection Projects portion of the website.

Special arrangements would be required if the Customer or their consultant were to require one or more base cases developed by a TO to perform all or part of the study.

The party(ies) performing the study must do so in accordance the approved Study Scope and Attachment D to the NYISO OATT. Additional information regarding the criteria, procedures and guidelines that pertain to the performance of NYISO transmission and interconnection studies is provided in Section 4 of this manual and related Attachments.

Upon completion of the study, the responsible party(ies) must prepare an initial draft report and related documentation for the study. If multiple, parties perform the study, the lead party is responsible for compiling the various parts into a single draft study report. If the lead party is other than the NYISO, the lead party shall submit the initial draft study report and related documentation to the NYISO.

6. Review and Revision of Study as Necessary

Review of a TSS normally proceeds in two steps: review by the parties (Customer, NYISO, and Affected TO(s)), then review by the TPAS. NYISO, or the lead party on behalf of NYISO, provides copies of the draft study report (and related documentation as appropriate) to the other parties (Customer and Affected TO(s)) for review. NYISO coordinates the review process, including resolution of any issues that may arise between the parties. Normally the lead party is responsible for incorporating agreed upon revisions to the study report.

Upon completion of the first step of review by the parties and NYISO issues a final draft study report to the parties, the Customer must proceed with the study report to the TPAS within three months, otherwise the study request will be withdrawn. During its review, TPAS considers whether to recommend the study to the OC and TPAS members may raise substantive issues or request additional information or analyses. If revisions or supplementary information are recommended by TPAS, the Customer must proceed to the next TPAS following completion of such revisions.

7. OC Approval of the TSS

Following completion of TPAS review, the Customer is required to proceed to the next OC, otherwise the study request will be withdrawn. If the Customer desires to proceed, NYISO will submit the draft study

report to the OC for consideration for approval in accordance with NYISO committee procedures. If the OC approves the TSS, the study is considered to be completed. However, if the TSS is not approved by the OC, the parties may consider extending the study to address the issues raised by the OC. Ultimately, the Customer must decide whether or not to continue the study at this juncture. If the Customer wishes to dispute the OC's decision, the Customer may do so through the NYISO dispute resolution process.

8. Settlement of the Transmission Service Study Costs

Upon completion of the TSS, or termination of the study by the Customer, NYISO prepares and issues an invoice to the Customer for settlement of the NYISO's study costs in accordance with the Study Agreement. If NYISO contracted a TO and/or consultant to perform all or parts of the study on NYISO's behalf, those costs would be included as part of the NYISO's study costs.

2.5.4. Moving Forward After Completion of the Transmission Service Study

After completion of a TSS, if the Customer seeks to pursue construction of transmission upgrades, the Customer may do so by submitting a TIA to the NYISO pursuant to Attachment P to the NYISO OATT. (Note that, under the OATT, an Eligible Customer may proceed directly to Attachment P to the NYISO OATT without first submitting a Transmission Service Request or completing a Transmission Service Study or Network Integration Transmission Service Study.)

2.6. Award of Incremental TCCs

If applicable, an award of incremental TCCs for a transmission expansion would be determined in accordance with the guidelines specified in the Transmission Congestion Contracts Manual, and in accordance with Attachment M to the NYISO OATT. The Transmission Congestion Contracts Manual is available from the NYISO web site at the link below.

https://www.nyiso.com/manuals-tech-bulletins-user-guides

3. Interconnection Process

3.1. Introduction

Excluding the NYISO's transmission expansion process (*e.g.*, Section 3.7 of the OATT and the Transmission Interconnection Procedures) described in Section 2 of this manual, the NYISO's "Interconnection process" refers to three processes that evaluate proposed interconnections of Large Facilities, Small Generators, and Load, respectively. Large Facilities include Large Generating Facilities (generating facilities that have a Generating Facility Capacity of more than 20 MW) and Class Year Transmission Projects. Small Generators are generating facilities no larger than 20 MW, including a multi-unit facility comprised of multiple technologies behind a single facility meter (*i.e.*, Distributed Energy Resource). The provisions of the NYISO OATT that pertain to each of these types of proposed interconnection are summarized in Figure 2 below.

Figure 2: Sections of the NYISO OATT Related to the Interconnection Process

Type of Proposed Facility	Pertinent Sections of the NYISO OATT
Large Facility (larger than 20 MW) (*i.e.*, Large Generating Facility or Class Year Transmission Project)	Sections 3.9 and 4.5.8 Section 30 (Attachment X) Section 25 (Attachment S)
Small Generating Facility (20 MW or less)	Sections 3.11 and 4.5.9 Section 32 (Attachment Z) Section 25 (Attachment S)
Load	Sections 3.9 and 4.5.8

This section of the manual walks through each of these processes and cites references to the OATT and other documents that cover various topics related to the interconnection processes.

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 small generation projects, but can be an issue for large generation projects as well. The applicability of the NYISO's interconnection procedures as defined in various sections of the NYISO OATT is described in this Section 3 of this manual. Also, Attachment A of this manual provides a flow chart summarizing the process for determining jurisdiction for proposed interconnections. Prior to submitting an Interconnection Request, a Developer may ask the NYISO whether its proposed interconnection falls under the NYISO's interconnection procedures, and the NYISO will coordinate with the applicable Transmission Owner(s) to provide the requested information.

Besides identification and cost allocation of interconnection facilities for proposed interconnections, the interconnection process is also the mechanism for facility owners or developers to request and obtain Capacity Resource Interconnection Service (CRIS) for facilities that meet other eligibility requirements, but are required to undergo evaluation of deliverability. This is process is further described in this Section 3 of the manual. Also, Attachment C of this manual provides a summary on acquisition of CRIS Rights.

3.2. What is an Interconnection?

In the context of this manual, an interconnection refers to the connection of a new Generating Facility, Class Year Transmission Project, or Load to the NYS Transmission System; or to materially increase the capacity of, or make a material modification to the operating characteristics of, an existing Generating Facility (including a BTM:NG Resource) or Class Year Transmission Project that is interconnected to the NYS Transmission System or Distribution System (*see* definition of "Interconnection Request" and related capitalized terms in Attachment X and Attachment Z to the NYISO OATT).

Note that the OATT contains a definition of a term, Interconnection or Interconnection Points ("IP") that refers to NYCA tie lines, which is different than the term used in the above OATT references and this manual.

3.3. Large Facility Interconnection Procedures (LFIP)

3.3.1. Basic Information about the LFIP

3.3.1.1. What projects are subject to the LFIP?

All new Large Generating Facilities and Class Year Transmission Projects that are proposed to interconnect to the NYS Transmission System or Distribution System are subject to the LFIP. Also, projects that materially increase the capacity of an existing Large Generating Facility or Class Year Transmission Project that is interconnected to the NYS Transmission System or Distribution System, or to make a material modification to the operating characteristics of such Large Facilities, also are subject to the LFIP (*see* Section 30.3.1 of Attachment X to the NYISO OATT).

In addition to the above general requirement, there are additional rules for determining when a Large Facility Interconnection Request or a separate Large Facility Interconnection Request is required under certain circumstances as follows (*see also* Section 3.3.4 of this manual, re: Materiality Determinations):

- Material capacity increase to an existing Large Facility – The threshold for a material increase in the capacity of a Large Facility is the greater of 10 MW or 5% of the Large Facility's existing ERIS level. In determining whether an increase in capacity falls under the Large Facility or Small Generator procedures, the NYISO reviews the total capacity of the generating facility after the increase. If the resultant capacity is greater than 20 MW, the capacity increase falls under the LFIP. If the resultant capacity is 20 MW or less, the capacity increase does not fall

under the LFIP but may fall under the Small Generator procedures (*see* Sections 3.3.4 and 3.4 of this manual).

- Material modification to an existing Large Facility (*see* Section 3.3.4 of this manual)
- Reactivation of a Retired Facility (*see* Section 3.3.4 of this manual and Section 30.3.1 of Attachment X)
- Modifications to an existing Interconnection Request (*see* Section 3.3.4 of this manual)
- Multiple sites, Points of Interconnection, and different voltage levels.

When a Developer proposes multiple sites for a project, Section 30.3.1 of Attachment X requires the Developer to submit a separate Interconnection request for each site. "Site," as the term is used in Section 30.3.1 of Attachment X, refers to the property where a proposed new Large Facility will be constructed, or the location of an existing Large Facility proposed to be modified. "Point of Interconnection," as defined in Section 30.1 of Attachment X, means "the point . . . where the Attachment Facilities [associated with a proposed Large Facility] connect to the New York State Transmission System or to the Distribution System." A Developer may submit multiple Interconnection Requests for a single site; however, Developers must specify whether the Interconnection Requests are alternative projects of each other.

A Developer proposing to interconnect a Large Generating Facility located at two or more different voltage levels at one site would need to submit a separate Interconnection Request for each different voltage level unless the Large Generating Facility, as it proposes to interconnect, includes either (1) a 3-winding transformer with the potential to connect to two different voltage level lines simultaneously, or (2) a combined cycle with a generator turbine and steam turbine connected at two different voltage levels.

A new Large Generating Facility with multiple Points of Interconnection (POIs) may be evaluated under one Interconnection Request provided that the proposed POIs are in reasonable proximity to each other. New Class Year Transmission Projects are more likely to have multiple POIs at different voltage levels and, therefore, may be evaluated under one Interconnection Request as long as the Interconnection Request involves a single defined project. Interconnection to separate bus sections of the same substation, or interconnection to both circuits of a double circuit line, are examples of multiple POIs allowed to be evaluated under a single Interconnection Request.

Alternative POIs are different than multiple POIs. Alternative POIs are mutually exclusive alternative interconnection proposals for the same project. A Developer may identify a reasonable number of alternative POI(s) to be evaluated under a single Interconnection Request, provided that they are consistent with the project site specified in the LFIR (*see* Sections 30.6.1 and 30.10 of Attachment X). However, the Developer can ultimately choose only one alternative to proceed to an interconnection

Facilities Study. A Developer may also submit separate Interconnection Requests to evaluate alternative POIs for the same project.

3.3.1.2. Types of Interconnection Service

Per Section 30.3.2 of Attachment X, NYISO offers two types of interconnection service:

- Energy Resource Interconnection Service (ERIS)
- Capacity Resource Interconnection Service (CRIS)

Developers of proposed interconnection projects must elect ERIS at a minimum to proceed with the evaluation of their projects, but have the option to take CRIS, partial CRIS, or no CRIS. ERIS allows projects to interconnect and participate in the NYISO energy and ancillary services markets, but not the capacity market. CRIS (or partial CRIS) allows projects to participate in the NYISO capacity market.

To receive ERIS, a proposed Large Facility must go through the required interconnection studies, including the Class Year Facilities Study, accept its Project Cost Allocation for System Upgrade Facilities (SUFs), and pay cash or post Security for those costs. The proposed facility will be evaluated at the Large Facilities' full output (*i.e.*, maximum net injection at the POI), unless the Developer requests ERIS below the full capability of the Large Facility. When the ERIS is below the full capability of the Large Facility due to the use of a control system, power relays, or other similar device settings or adjustments, the Developer must obtain NYISO's and Connecting Transmission Owners' agreement that the manner in which the capability of the Large Facility will be limited will not adversely affect the safety and reliability of the New York State Transmission System (or Distribution System as applicable) (*see* Section 30.3.2.3 of Attachment X). Nevertheless, under certain circumstances, NYISO and/or CTO(s) can require the Interconnection Request to be studied at the facility's full capability (*see* Section 30.3.2.3 of Attachment X).

To receive CRIS, a Large Facility must additionally go through the Class Year Deliverability Study or an Expedited Deliverability Study, accept its determined Deliverable MWs and/or accept its Project Cost Allocation for System Deliverability Upgrades (SDUs), and pay cash or post Security for those costs, as applicable (*see* Attachment S to the NYISO OATT). Details on the maximum amount CRIS that a Developer can request is set forth in Section 25.8.1 of Attachment S to the NYISO OATT.

3.3.1.3. What costs are involved?

The costs involved in the NYISO LFIP process include:

- $10,000 nonrefundable application fee;
- Various deposits that are applied toward study costs (*see* Figure 2 below);
- The NYISO's and the CTO's actual study costs for each of the interconnection studies, including the cost allocation for the Class Year Facilities Study costs (typically around $300,000 in total per project, but can vary widely for individual projects);

- Project Cost Allocation for SUFs and allocated Headroom payments for SUFs, as applicable (if project goes forward with ERIS);
- Project Cost Allocation for SDUs and Headroom payments for SDUs, as applicable (if project goes forward with CRIS).

Figure 3: Fees/Deposits Associated with the NYISO LFIP

Process Step	Fees/Deposits	When Required	Applied Toward
Interconnection Request	$10,000 application fee; $10,000 optional deposit in lieu of Site Control (2)	With the IR	Optional Feasibility Study or SRIS
Optional Feasibility Study (1)	$10,000 or $60,000 deposit as applicable (3)	Within fifteen (15) Business Days after Developer's receipt of the NYISO's good faith estimate of the study costs	Optional Feasibility Study
SRIS (1)	$40,000 or $120,000, as applicable (4)	Within fifteen (15) Business Days after Developer's receipt of the NYISO's good faith estimate of the study costs	SRIS
Class Year Facilities Study	$100,000 or $50,000 as applicable; deposit in lieu of regulatory milestones, as applicable (5)	With return of the completed, but unsigned, Class Year Study Agreement	Facilities Study

Notes:

(1) Developer shall advise NYISO whether it elects to proceed with the SRIS within five (5) Business Days after either the delivery of the final Optional Feasibility Study report to the Developer or the Scoping Meeting, if the Developer opts to forego the Optional Feasibility Study.

(2) Developer may opt to pay an additional $10,000 deposit with the IR in lieu of demonstration of Site Control. This deposit is applied toward the Optional Feasibility Study or toward the SRIS if the Optional Feasibility Study is foregone.

(3) A $10,000 study deposit is required for limited analyses, while a $60,000 study deposit is required for detailed analyses.

(4) A $120,000 study deposit is required if NYISO is responsible for performing the entire study. A $40,000 study deposit is required if the Developer hires a consultant to perform the analytical portion of the study.

(5) A $100,000 study deposit is required if Developer seeks evaluation of ERIS only, or ERIS and CRIS, for its Class Year Project. A $50,000 study deposit is required if the Developer is seeking evaluation of CRIS only for its Class Year Project. For a Developer that wishes to enter a Class Year Study, but that has not yet met an applicable regulatory milestone or obtained a qualifying contract, an additional 2-part deposit in lieu of a regulatory milestone is required: $100,000 (at risk) deposit plus $3,000/MW (fully refundable deposit).

3.3.1.4. How long does it take?

The time frames for NYISO to meet its obligations under the LFIP are outlined in Attachments X and S to the NYISO OATT, and summarized in the table in Attachment D of this manual. The overall time to complete the interconnection studies and execute an Interconnection Agreement can vary significantly

based on the unique circumstances of individual projects and the Developer will receive a good faith estimated timeframe for completion of the study.

The NYISO also posts quarterly study metrics on its publicly accessible website (www.nyiso.com) under "Interconnection Process" > "Quarterly Reports" consistent with the requirements under Order No. 845 and Order No. 845-A and Section 30.3.4.4 of Attachment X to the NYISO OATT. Developers can review those postings to inform their expectations about how long an interconnection study may take based on the NYISO's completion of past studies.

3.3.1.5. Who is involved in the process?

The Developer, NYISO and CTO(s) are the primary parties involved throughout the interconnection process. Each of the parties may hire consultants or other third parties to perform or assist in parts of the studies for which the party is responsible. The NYISO TPAS and OC are involved in the System Reliability Impact Study (SRIS) and Class Year Facilities Study steps of the process. SRIS scopes and SRIS reports must be approved by the OC. OC approval also is required for (a) the Class Year Facilities Studies, which include the Annual Transmission Baseline Assessment (ATBA), Annual Transmission Reliability Assessment (ATRA), and the Deliverability Study (ATBA-D and ATRA-D) for each Class Year Study, and (b) the Expedited Deliverability Studies. TPAS reviews each of those items prior to submittal to the OC. The Interconnection Projects Facilities Study Working Group (IPFSWG) is involved in the Class Year Study process.

The Developer and CTO(s) are the primary parties involved in the construction phase of the process. If applicable, Affected System Operators also may be involved in the construction phase. NYISO is not involved in the construction of interconnection facilities, except to approve extensions of the Commercial Operation Date, as permitted by Section 32.1.3.2 of Attachment Z to the OATT and Section 30.4.4.5 of Attachment X to the OATT; coordinate revisions to the Interconnection Agreement, as needed; and approve certain related scheduled outages as may be required.

Developers must register any new facilities with NYISO in advance of going in service, even for testing. The registration process should be initiated at least 6 months in advance of the anticipated in-service date by contacting Customer_Registration@nyiso.com. The Developer, NYISO and applicable TO(s) must coordinate arrangements for initial operation of the new facilities.

3.3.2. Large Facility Interconnection Request

A Developer proposing to interconnect a new Large Facility to the NYS Transmission System or Distribution System, or materially increase the capacity of, or make a material modification to an existing Large Facility, must submit an Interconnection Request to the NYISO in the form of Appendix 1 of the LFIP,

along with the required $10,000 non-refundable application fee and either demonstration of Site Control, or an additional $10,000 deposit in lieu of demonstration of Site Control. See Section 30.3 of Attachment X to the NYISO OATT regarding Interconnection Requests. The $10,000 deposit in lieu of a demonstration of Site Control is refundable if the Developer demonstrates Site Control to the satisfaction of the NYISO within the ten (10) Business Day cure period; otherwise, such deposit is non-refundable. If the deposit is non-refundable, the Developer still must adequately demonstrate Site Control before the commencement of the SRIS consistent with Section 30.7.2 of Attachment X to the NYISO OATT; however, the $10,000 deposit in lieu of demonstration of Site Control is not refundable if the Developer demonstrates Site Control after the ten (10) Business Day cure period during the Interconnection Request validation process.

Section 30.3.3.1 lists the basic requirements for a valid Interconnection Request. Note that the proposed Commercial Operation Date (COD) provided with the Interconnection Request cannot be more than ten (10) years beyond the date the Interconnection Request is received by the NYISO. However, extensions of the COD may be allowed later in the process per Section 30.4.4.5 of Attachment X.

The form for a Large Facility Interconnection Request is available from the NYISO website. To fill out and submit a Large Facility Interconnection Request, a Developer should use NYISO's "Interconnection Projects Community Portal," as discussed in Section 1.2 of this manual.

3.3.3. Basic Steps of the LFIP

The steps of the LFIP are described in Attachment X to the NYISO OATT and summarized in the table in Attachment K of this manual. The steps of the process are described in more detail in the following sections.

3.3.3.1. Initial Processing of a New Interconnection Request

Upon receipt of a new Large Facility Interconnection Request (LFIR), NYISO performs the following initial processing steps within the first ten (10) Business Days after receipt of the LFIR. Within five (5) Business Days of receipt of the LFIR, NYISO sends an acknowledgement notice to the Developer and provides a copy of the LFIR to the CTO—*i.e.*, the TO with whose system the project is proposed to interconnect; provided, however, that NYISO will not forward an LFIR that was submitted for a proposed project subject to the NYISO's competitive selection process under Attachment Y until the close of the applicable solicitation window. In some cases, the NYISO will identify on a preliminary basis which TO will be the CTO if it is unclear from the LFIR, subject to later confirmation or correction. NYISO assigns the new LFIR a Queue Position based on the date and sequence it was received per Section 30.4.1 of Attachment X to the NYISO OATT.

Within ten (10) Business Days of receipt of the LFIR, NYISO performs an initial review of the LFIR and determines whether it is valid (*i.e.*, satisfies the requirements of an LFIR per Sections 30.3.1 and 30.3.3.1 of Attachment X). If the LFIR is determined to be deficient, NYISO sends a deficiency notice to the Developer, giving the Developer an opportunity to cure the deficiency per Section 30.3.3.3 of Attachment X. If the deficiency is cured within the ten (10) Business Days cure period, the LFIR is deemed valid by NYISO and proceeds through the interconnection process. If not, NYISO may initiate withdrawal of the LFIR under Section 30.3.6 of Attachment X.

After NYISO has determined an LFIR to be valid, NYISO provides an acknowledgement of this determination to the Developer and CTO(s), and schedules a Scoping Meeting with the Developer and CTO(s), which will normally be held within 30 Calendar Days of receipt of the LFIR.

3.3.3.2. Scoping Meeting

After the initial processing has been completed, NYISO holds a Scoping Meeting with the Developer and CTO per Section 30.3.3.4 of Attachment X to the NYISO OATT, which is the first formal meeting between the Parties in the interconnection process. In practice, Scoping Meetings generally are held via teleconference, as are most of the meetings in the process. The purpose of the Scoping Meeting is to reinforce the roles and responsibilities of all parties in the interconnection process, to discuss the interconnection options for the proposed project, to exchange information regarding the project and the local transmission system to which the project may interconnect, to identify the potential feasible Points of Interconnection (POIs), and to discuss whether the Developer wishes to proceed with an Optional Feasibility Study.

With respect to the roles and responsibilities of the parties, throughout the interconnection process, the Developer must provide required technical data and cure any deficiencies in such data identified by the NYISO, CTO(s) or Affected System Operator(s). The Developer must also be responsive to requests for information from the NYISO, CTO(s) and Affected System Operator(s) related to the interconnection studies.

In order to expedite the interconnection studies, the Developer should submit a CEII Request Form to the NYISO and execute a CEII NDA prior to the Scoping Meeting. These documents are available from the NYISO website and can be accessed via the Interconnection Projects portion of the website. Certain CTO(s) or Affected System Operators may also require NDAs, and the Developer should also execute any NDAs required by the CTO(s) or Affected System Operators. For projects whose CTO is ConEd, the Developer should contact ConEd immediately after validation of its Interconnection Request to request the necessary NDA documents.

Coordination with the CTO(s) and Affected System Operators is critical and requires input and analyses at each study stage. At the Scoping Meeting, the CTO(s) and Affected System Operators need to be prepared to provide the following information:

- Relevant Transmission Information/Technical Data and Issues,
- General Facility Loadings,
- General Stability Issues,
- General Short Circuit Issues,
- General Voltage Issues,
- General Reliability Issues, and
- General System Protection Issues.

The above information is necessary to have available at the Scoping Meeting in order to discuss the following issues related to the project's proposed interconnection:

- POI station configuration;
- Known POI physical constraints including potential access points for Project feed;
- CTO's design standards for the POI—*e.g.*, three breaker ring will be required or the project will have to build a whole new breaker-and-a-half bay if an existing one is not available;
- Line and substation equipment ratings;
- Typical line loading levels near POI;
- Existing protection at POI, if known;
- Known issues related to system reliability and deliverability—thermal, voltage, short circuit, etc.;
- Discussion of other possible POIs that the Developer did not identify but the CTO believes would be advantageous to the project; and
- Design requirements for developers equipment—*e.g.*, transformer configuration.

By discussing the above information at the Scoping Meeting, the Developer can gain an understanding of which POIs are worth studying further and, therefore, can avoid costly and unnecessary detailed studies

Upon conclusion of the Scoping Meeting, the Developer must advise (within five (5) Business Days after the Scoping Meeting) whether it elects to forego the Optional Feasibility Study and proceed directly to a SRIS. The NYISO will determine which party or parties will perform the study, or various portions of the study and will tender any required study work agreements. However, if the Developer elects to forego the Optional Feasibility Study, certain evaluations that would have been required in the Optional Feasibility Study will need to be addressed in the SRIS. The Developer electing to evaluate alternative Point(s) of Interconnection must proceed through an Optional Feasibility Study.

NYISO has overall responsibility for the performance of all interconnection studies under the LFIP, and may elect to perform all or portions of any given study. However, Section 30.13.4 of Attachment X gives NYISO discretion to request the CTO(s) to perform all or portions of a study, or to utilize a third party (*e.g.*,

an engineering consultant) to perform all or portions of a study. In considering using a third party, either NYISO or the Developer may enter into the third party contract, at the NYISO's discretion. The various options for performing the interconnection study for a new LFIR are discussed at the Scoping Meeting.

The Parties may reach agreement on some or all options required to proceed forward with the interconnection study at the Scoping Meeting. However, if agreement has not been reached on all options, the Developer must provide their decisions or proposals on any outstanding issues to the NYISO within five (5) Business Days following the Scoping Meeting. Upon receipt of the Developer's input, NYISO will begin preparation of the applicable study.

3.3.3.3. Optional Interconnection Feasibility Study (Optional Feasibility Study or OFES)

The purpose and objectives of the OFES are to: develop a conceptual design for the proposed interconnection, evaluate the impact of the project on the pre-existing electric system at and in electrical proximity to the POI, preliminarily identify the CTO Attachment Facilities (CTOAFs) and any SUFs that would be required to interconnect the project to the system in a reliable manner, and develop nonbinding good faith estimates of the cost and time to construct the required facilities. The Developer may request evaluation of one or a limited number of alternative POIs in the same OFES but that must be specified within five (5) Business Days following the Scoping Meeting via email to icpc@nyiso.com.

The process for performing the OFES is outlined in Section 30.6 of Attachment X to the NYISO OATT. The basic steps are:

- Preparation of scope and CTO(s) signature;
- Performance of the study, including completion of all required tasks and review of the study report and documentation by the Parties; and
- The study report meeting.

Under Section 30.6.2 of Attachment X, the OFES is a preliminary evaluation of the impact of the project and its proposed interconnection on the pre-existing electric power system. The OFES evaluates ERIS only and does not evaluate CRIS. However, the Developer may opt for NYISO to perform a preliminary deliverability evaluation of CRIS in the SRIS step (*see* Section 3.3.3.4 below), but normally CRIS is evaluated at the Facilities Study step only (*see* Section 3.3.3.6 below). The OFES includes steady state analysis and short-circuit analysis, but does not include stability analysis. (Stability analysis is performed at the SRIS and Facilities Study steps described in more detail below.)

In accordance to Section 30.6.1 of Attachment X, within five (5) Business Days after the Scoping Meeting, the Developer advises NYISO whether it elects to proceed with an OFES. The Developer shall specify the Point(s) of Interconnection and any reasonable alternative Point(s) of Interconnection. The Developer is responsible for the actual cost of the OFES and must provide a $10,000 or $60,000 study

deposit, depending on the scope of analyses requested, to NYISO no later than fifteen (15) Business Days after the Developer's receipt of the NYISO's good faith estimate of the study costs. Otherwise, NYISO shall initiate withdrawal of the LFIR under Section 30.3.6 of Attachment X. The OFES scope of work ("OFES Scope") is initially prepared by NYISO following a standard template consistent with Section 30.6.2 of Attachment X. The OFES Scope is reviewed by the Parties. After the OFES Scope is finalized, NYISO will provide the final scope to the Developer and CTO. The CTO shall indicate its agreement to the OFES Scope by signing it and promptly returning it to NYISO, such agreement not to be unreasonably withheld.

After NYISO receives CTO's signature on the OFES Scope and the required modeling data and study deposit from the Developer, NYISO notifies the Parties that the OFES has commenced and the responsible Parties proceed to perform the OFES in accordance with Sections 30.6.2 and 30.6.3 of Attachment X and the OFES Scope. NYISO serves as overall coordinator for the study, including coordination of review of the draft OFES report and associated documentation by the Parties. If applicable, NYISO prepares the initial steady state and short circuit base cases to be used for the OFES following the requirements outlined in Section 30.6.2 of Attachment X and the OFES Scope. Other parties involved in the study that need the steady state and/or short circuit base cases must request the base cases from NYISO following the NYISO CEII request procedures. A CEII Request Form and NDA are available from the NYISO website Upon completion of all the study tasks contained in the OFES Scope, including review of the draft study report and supporting documentation, NYISO provides the final OFES report to Developer and CTO and schedules a study report meeting with the Developer and CTO per Section 30.6.3.1 of Attachment X. The study report meeting serves the dual purpose of reviewing the final OFES results and discussion of the scope and arrangements for the SRIS. If any electric system(s) other than the CTO's system may be affected by the proposed interconnection (*i.e.*, Affected Systems), NYISO invites the Affected System Operator(s) to the OFES report meeting to participate in the discussion of the SRIS. It is normally this point of the NYISO interconnection process that Affected System Operators, if any, are identified and NYISO shall involve the Affected System Operators as required by the Large Facility Interconnect Procedures.

3.3.3.4. Interconnection System Reliability Impact Study (SRIS)

The purpose and objectives of the SRIS are to evaluate the reliability impact of the specific project under study (unless it is part of a clustered study) on the pre-existing electric system. If the OFES was performed, the SRIS will re-evaluate and revise as necessary the list of CTOAFs and any SUFs identified in the OFES, and re-evaluate and revise as necessary the non-binding good faith estimates of the cost and time to construct the required facilities. If the OFES was not performed, the SRIS would be the first study for the project and would include the development of the conceptual design for the proposed interconnection if such design was not previously specified by the Developer, as well as identifying necessary CTOAFs and

SUFs and providing the non-binding good faith estimates of the cost and time to construct the required facilities.

The process for performing the SRIS is outlined in Section 30.7 of Attachment X. The basic steps are:

- Preparation, review and OC approval of the study scope of work ("SRIS Scope");
- Performance of the study, including completion of all required tasks and review of the study report and documentation by the Parties and any Affected System Operators;
- The study report meeting between the Parties (NYISO, CTO, and Developer) and any Affected System Operators;
- Presentation of the SRIS report to the TPAS for review, followed by presentation of the SRIS report to the OC for approval.

Within five (5) Business Days after either the delivery of the final OFES report to the Developer or the Scoping Meeting, if the Developer opts to forego the OFES, the Developer must advise NYISO that it wishes to proceed to the SRIS. Unlike the OFES in which usually the three Parties are involved, the SRIS also involves any Affected System Operators and the NYISO committees (TPAS and the OC).[3] OC review and approval of the SRIS satisfies the requirements of Section 18.02 of the ISO Agreement.

Only one POI may be evaluated in the SRIS. If one or more alternative POI(s) were evaluated in the OFES, the Developer must specify which POI is to be evaluated in the SRIS. If the Developer wishes to evaluate alternative POI(s) at the SRIS step of the interconnection process, the Developer may request a reasonable number of Optional Interconnection System Reliability Impact Studies (OSRISs) to be performed concurrently with the SRIS per Section 30.10 of Attachment X (*see* Section 3.3.3.5 below).

Under Section 30.7.3 of Attachment X, the SRIS is an evaluation of the impact of the project and its proposed interconnection on the pre-existing electric power system. The assessments performed in the SRIS are more extensive than the OFES. The SRIS includes short-circuit analysis, local steady state analysis (similar to, but generally more extensive than the OFES), and local stability analysis (not included in the OFES). If there is a reasonable potential that additional analysis could identify System Upgrade Facilities, the NYISO will perform limited thermal transfer, voltage transfer or stability transfer analysis for internal interfaces.

[3] Identified Affected Transmission Owner(s) of facilities electrically adjacent to the Point of Interconnection and that have design criteria, operational criteria or other local planning criteria applicable to either (1) the substation to which the Developer proposes to interconnect; or (2) the substation that will be required to be built to accommodate the interconnection, are provided with the opportunity to review and provide comments on all study scopes, study reports and drafts thereof for the project, and will be included on communications regarding the project and meetings discussing the project or any of its studies, where such communications or meetings involve NYISO, Developer and CTO.

Like the OFES, the SRIS focuses on the evaluation of ERIS. However, for interconnection requests that request CRIS for the Large Facility, the SRIS will also include a preliminary, non-binding deliverability evaluation of CRIS that evaluates the project under the NYISO's Deliverability Interconnection Standard and that feeds the full deliverability evaluation in the Class Year Study (*see* Section 3.3.3.6 below). In the SRIS preliminary, non-binding deliverability evaluation, NYISO will state the assumptions underlying the result, as well as a conceptual System Deliverability Upgrade ("SDU") and associated preliminary, non-binding cost estimate for the SDU, if the facility is not deliverable for its full amount of requested CRIS.

The Developer is responsible for the actual cost of the SRIS and must provide a $120,000 study deposit to NYISO no later than fifteen (15) Business Days after Developer's receipt of the NYISO's good faith estimate of the study costs. Otherwise, NYISO initiates withdrawal of the LFIR under Section 30.3.6 of Attachment X. NYISO reviews the documentation of Site Control (if not previously provided) and required technical data provided by the Developer and may initiate withdrawal of the LFIR if the documentation or required technical data is not adequate.

The SRIS Scope is initially prepared by NYISO following a standard template consistent with Section 30.7.3 of Attachment X, and reviewed by the Parties (NYISO, Developer, CTO(s) and any Affected System Operators). After the SRIS scope is finalized, NYISO will provide the final scope to the CTO(s). The CTO(s) shall indicate its agreement to the scope of the SRIS by signing it and promptly returning it to NYISO, such agreement not to be unreasonably withheld. After NYISO receives the CTO's signature, indicating its agreement, the SRIS scope is reviewed by TPAS, and reviewed and approved by the OC.

After NYISO receives CTO's signature and the OC approves the SRIS Scope and the NYISO confirms receipt of the required technical data, Site Control (if not previously provided), and study deposit from the Developer, NYISO notifies the Parties that the SRIS has commenced and the responsible Parties proceed to perform the SRIS in accordance with Sections 30.7.3 and 30.7.4 of Attachment X and the approved SRIS Scope. NYISO serves as the overall coordinator for the study, including coordination of review of the draft SRIS report and associated documentation provided by the Parties and any Affected System Operators. NYISO prepares the initial steady state, short circuit and dynamic base cases to be used for the SRIS following the requirements outlined in Section 30.7.3 of Attachment X and the SRIS Scope. Other parties involved in the study that need the steady state, short circuit and/or dynamic base cases must request the base cases from NYISO following the NYISO CEII request procedures. A CEII Request Form and NDA are available from the NYISO's website and can be accessed via the Interconnection Projects portion of the NYISO website. Upon completion of all the study tasks, including initial review of the draft study report and

documentation, NYISO provides the draft SRIS report to the Developer and CTO and schedules a study report meeting with the Developer and CTO per Section 30.7.5 of Attachment X.

Following the study report meeting, NYISO arranges for submittal of the SRIS report to TPAS for review and consideration for recommendation for OC approval. Submittal of the final draft SRIS report to TPAS must occur within three months of the NYISO's issuance of the final draft, otherwise the Interconnection Request will be withdrawn. If the SRIS was not performed by NYISO staff, NYISO staff prepares and submits a "NYISO Review Report" to accompany the SRIS report, to summarize NYISO staff's review and conclusions regarding the SRIS. If one or more OSRISs were performed concurrently with the SRIS, the Developer must designate which of the SRIS and/or OSRIS(s) to submit to TPAS, and TPAS will review and consider each submitted SRIS or OSRIS separately on its own merit.

Following TPAS review, NYISO arranges for submittal of the SRIS report to the next OC for consideration for approval. If one or more OSRISs were performed concurrently with the SRIS, the Developer must designate which study (SRIS or OSRIS) to submit to the OC as "the SRIS" that the Developer wishes to have reviewed—the OC does not approve alternative interconnection studies for the same project. Upon OC approval of the SRIS, the SRIS for that project is considered to be completed.

3.3.3.5. Optional Interconnection System Reliability Impact Study (if requested)

As indicated above, a Developer may request an OSRIS (or a reasonable number of OSRISs) to be performed concurrently with the Developer's SRIS in accordance with Section 30.10 of Attachment X. The concept of an OSRIS is to provide a mechanism for the Developer to continue to consider and evaluate an alternative POI during the SRIS stage of the interconnection process.

The Developer may submit an OSRIS request on or before the later of OC approval of the SRIS scope or NYISO's receipt of agreement from the CTO(s) of the SRIS scope. NYISO will not accept an OSRIS request after the SRIS has begun.

Each OSRIS is considered a separate study, scope, and deposit. The OSRIS is performed in conjunction with, and as a sensitivity to, the SRIS. The OSRIS essentially follows the same procedural steps as the SRIS up to submittal of the study report to the OC for approval. As stated above, following TPAS review of the SRIS and/or OSRIS(s) performed for a project, the Developer must designate which study (SRIS or OSRIS) to submit to the OC as "the SRIS" that the Developer wishes to have reviewed.

3.3.3.6. Interconnection Facilities Study (Class Year Study)

After completion of the SRIS, the next step is the Facilities Study, which is performed under the umbrella of the NYISO Class Year Interconnection Facilities Study (Class Year Study) process described in Section 30.8 of Attachment X and Attachment S to the NYISO OATT. The Class Year Study is conducted for a

set of projects that have met the eligibility requirements for entry into a Class Year, as discussed in more details in Section 3.3.3.6.2 below. As a result, NYISO conducts only one Class Year Study at a time and will commence on a Class Year Start Date, as further discussed in Section 3.3.3.6.1 of this manual.

Prior to the start of a new Class Year Study, the NYISO will provide notice of an upcoming Class Year Start Date. Developers seeking to enter their projects into the Class Year Study will need to provide notice to the NYISO and satisfy certain eligibility requirements, as discussed in more details in Section 3.3.3.6.2 below. Following the NYISO's confirmation that a project satisfies the required eligibility requirements, the NYISO will tender a Class Year Study Agreement to the Developer to complete and return unexecuted (*i.e.*, without signatures) to the NYISO within ten (10) Business Days, together with the required deposit(s), required technical data, and a demonstration of a qualifying contract, if applicable. Following confirmation that the Class Year Study Agreement, the required technical data, the required deposits, and a qualifying contract (if applicable) are complete, the parties will then be notified to execute the Class Year Study Agreement, which must accomplished within ten (10) Business Days.

Even before the Class Year Start Date, a project that has met the eligibility requirements above may request a Class Year Study Agreement and start its Part 1 study prior to the commencement of the Class Year Study. Commencing the Part 1 study prior to the Class Year Start Date will afford a Developer insight into the potential costs of its Attachment Facilities and System Upgrade Facilities. Upon completion of the Part 1 study, a project may proceed with negotiating its interconnection agreement at its election.

The Class Year process includes the Class Year Deliverability Study (CYDS) and an Additional SDU Study (if applicable) that evaluates the deliverability of requested Capacity Resource Interconnection Service (CRIS) for Class Year Projects. Besides projects going through the full Interconnection study process, other CRIS requests may be evaluated in the CYDS that otherwise are not required to undergo interconnection studies. These projects are commonly referred to as "CRIS only" projects. Such CRIS requests include:

- Evaluation of deliverability of projects that previously received ERIS but not CRIS (reference various Sections of Attachment S to the NYISO OATT, *e.g.*, Section 25.8.2.3 of Attachment S);
- Retest of deliverability of projects that previously accepted their cost allocation for a Highway SDU, but wish re-evaluation of the need for the SDU if construction has not started pursuant to Section 25.7.12.4 of Attachment S;
- Evaluation of proposed transfers of deliverability rights between different locations pursuant to Section 25.9.5 of Attachment S;
- Evaluation of requested External CRIS Rights pursuant to Section 25.7.11.1.4 of Attachment S;
- Facilities greater than 2 MW that seek to obtain or increase CRIS beyond the levels permitted by Attachment S, Section 30.3.2.6 of Attachment X and Section 32.4.10.1 of Attachment Z, as applicable (*see also* Section 25.1.1 of Attachment S).

Additional SDU Studies are deliverability studies for Class Year Projects that require a new SDU requiring additional study. While they are considered to be a part of the Class Year Study process, an Additional SDU Study is separate and apart from a Class Year Deliverability Study. A new SDU is one that has not previously been identified and cost allocated in a Class Year Study and not substantially similar to a SDU previously identified and cost allocated in a Class Year Study. Additional SDU Studies are discussed in Section 3.3.3.7 below.

3.3.3.6.1. Class Year Study Cycles

Unlike Optional Feasibility Studies and SRISs that are normally performed for projects individually as described above, Class Year Studies are performed in cycles for a group of projects (Class Year Projects) in accordance with Attachment S to the NYISO OATT. Under Attachment S, a new Class Year Study begins on the first eligible Class Year Start Date after the previous Class Year Study has concluded. The eligible Class Year Start Date will be the first Business Day after thirty (30) Calendar Days following the completion of the prior Class Year Study. Thus, the Class Year Study process does not follow a calendar-year schedule, but rather proceeds on a schedule that includes uncertainties related to circumstances and decision points that are part of the process as described in Attachment S and below.

A given Class Year Study is expected to take about twelve (12) months from the Class Year Start Date to present the Class Year Study to the OC. Then, it normally takes two (2) months after OC approval of the Class Year Study to complete the final decision and settlement step of the process, but the timing depends on the number of iterations that occur to finalize this step, the timing of which is driven by Developers' decisions (and compliance with Security posting requirements) in the Class Year Study decision rounds. A given Class Year Study is considered completed when all of the Class Year Projects (or remaining Class Year Projects) have accepted their respective cost allocations and either paid for or posted security for their SUF and SDU cost allocations, as applicable, in accordance with the requirements of Attachment S. Including the final decision and settlement step, the expected timeframe to complete the Class Year Study process is about 14 months. These timeframes are expectations based on the Reasonable Efforts of the NYISO and the other parties involved in performing various aspects of the Class Year Study.

Therefore, for any given project, the expected timeframe for completion of its facilities study depends on a number of factors including, but not limited to: its expectation to satisfy the eligibility requirements to enter a Class Year, the status of the current Class Year Study at the time the project expects to satisfy the Class Year eligibility requirements, the circumstances of the particular Class Year Study that the project expects to enter, whether the requested level of CRIS for a project requires a new SDU that necessitates an Additional SDU Study, and whether the project enters and completes (accepts its cost allocation(s)) the first

Class Year Study for which it is eligible, or elects to undergo a later Class Year Study as permitted under Attachment S.

3.3.3.6.2. Class Year Eligibility Requirements

The Class Year eligibility requirements for Large Facilities are defined in Section 25.6.2.3 (and associated subsections) of Attachment S.

Large Facility projects must meet two milestones to be eligible to be included in a Class Year Study: (i) OC approval of its SRIS and (ii) satisfaction of an applicable regulatory milestone in accordance with Section 25.6.2.3.1 of Attachment S. In lieu of demonstrating that a Large Facility project has satisfied a regulatory milestone by the Class Year Start Date, the Developer can provide a qualifying contract set forth in Section 25.6.2.3.1.1 of Attachment S or submit two-part deposit in lieu of satisfying an applicable regulatory milestone, consisting of $100,000 (at risk deposit, only refundable if project satisfies its regulatory milestone within 12 months of the Class Year Start Date or the OC's approval of the Class Year Study, whichever occurs first) and $3,000/MW (fully refundable deposit as set forth in Section 25.6.2.3.1 of Attachment S). Importantly, use of a qualifying contract or a deposit in lieu of satisfying a regulatory milestone is not considered satisfaction of the requirement for future steps in the LFIP.

Under Attachment S, a Large Facility may enter up to two of the next three Class Years following OC approval of its SRIS subject to the additional requirement that, for any of these Class Years that the project wishes to enter, the applicable regulatory milestone (if any) has been satisfied or the project has a qualifying contract under Section 25.6.2.3.1.1 of Attachment S or pays a two-part deposit in lieu of satisfying the regulatory milestone requirement. A Large Facility project that fails to enter and complete one of the three Class Years after OC approval of its SRIS is subject to withdrawal of its Interconnection Request in accordance with Section 30.3.6 of Attachment X to the NYISO OATT (*see* Section 25.6.2.3 and associated subsections of Attachment S for additional details and requirements related to the regulatory milestones and required notices to NYISO once a project has an SRIS approved by the OC). If a Developer elects to enter its Large Facility project in a Class Year Study but retracts it election prior to the NYISO's tender of a Class Year Study Agreement for the Developer to complete, the Large Facility project will not become a member of the Class Year Study but will have two remaining opportunities to enter a future Class Year Study. If the Developer retracts its election or fails to complete the Class Year Study Agreement or provide any of the required deposits or technical data after the Class Year Study Agreement is provided to the Developer to complete, the Large Facility project will not become a member of the Class Year Study and such retraction will count as its one of two Class Year Studies that the Large Facility project is permitted to enter.

3.3.3.6.3. Basic Steps of the Facilities Study

For each project in the Class Year Study, the basic steps of the Class Year Study process, as outlined in Section 30.8 of Attachment X, are as follows:

- Preparation and execution of the Class Year Study Agreement (CYSA);[4]
- Performance of the Class Year Study by NYISO and other parties as coordinated by NYISO in accordance with Section 30.8.3 of Attachment X and the procedures set forth in Attachment S;
- Presentation of preliminary Class Year Deliverability Study results to TPAS/IPFSWG;
- Presentation of preliminary Class Year Deliverability Study results to Operating Committee for approval;
- Notice of SDUs Requiring Additional Study and elections by the affected Class Year Projects (if applicable);
- Study report meetings among NYISO, CTO(s), Affected Transmission Owner(s), Affected System Operator(s), and the Developer to review the study results for each Class Year Project;
- Presentation of the full Class Year Study report to the TPAS and IPFSWG for review, followed by presentation of the Class Year Study report to the OC for approval;
-
- Class Year decision and settlement process;
- Confirmation of Developers' payments or Security postings for accepted system upgrade cost allocations.

Relying in part on the results of the individual SRIS performed for each of the Class Year Projects, the Class Year Study is a more detailed evaluation and identification of all CTOAFs and SUFs that would be required for the reliable interconnection of the Class Year Projects, along with estimates of the cost and time for procurement, construction, and installation of those facilities. And, beginning with Class Year 2007, the Class Year Study includes evaluation of the deliverability of proposed capacity for those Class Year Projects requesting CRIS and any SDUs that would be required to make that proposed capacity fully deliverable. If not performed in the SRIS, the Class Year Study shall include required "special studies" (*e.g.*, Electro-Magnetic Transients (EMT) study, Sub-Synchronous Resonance (SSR) study, etc.) as considered appropriate at the Class Year Study stage for the type and circumstances of the Class Year Project and its interconnection to the system. To the extent the NYISO or CTO(s) determine, in accordance with Good Utility Practice, that such studies need to be performed after the Class Year Study, the Developer will be

[4] Following tender of the Class Year Study Agreement (FSA), the Developer has ten (10) Calendar Days to complete it and return it unexecuted to NYISO along with the required technical data, deposits, and any qualifying contracts (if applicable); otherwise, the Large Facility project may not be eligible to enter that Class Year. However, for an Interconnection Request seeking CRIS only for a small generator with a pending Interconnection Request in the SGIP, such Developer's failure to execute the Facilities Study Agreement within thirty (30) Calendar Days will not result in withdrawal of the small generator's Interconnection Request under the SGIP. However, the Interconnection Customer will be required to request tendering of a Facilities Study Agreement for CRIS only in accordance with the procedures under the LFIP.

responsible for the study costs for such studies and any upgrade costs resulting from such studies, to the extent consistent with Attachment S to the NYISO OATT.

The Class Year Study actually consists of several separate studies grouped into two general "Parts" as follows:

"**Part 1 Studies**": The Class Year Study includes a Part 1 study for each project participating in the Class Year for ERIS to identify the CTOAFs and Local SUFs involved in the direct connection of the Project to the pre-existing electric system. The Local SUFs addressed in a Part 1 Study include new transmission facilities that may be required, such as a new 3-breaker ring bus to connect into an existing line, and system protection and communication SUFs. These Part 1 studies are generally performed independently of each other. Each study is specific to the Class Year Project and includes a design and preliminary engineering of the identified CTOAFs and Local SUFs and estimates of the cost and time to construct those facilities.

NYISO seeks the assistance of the CTO(s) for much of the Part 1 studies. Consultants may be used for some or all of the work as well.

"**Part 2 Studies**": The Class Year Study Part 2 studies include the Annual Transmission Baseline Assessment (ATBA), the Annual Transmission Reliability Assessment (ATRA), and the Class Year Deliverability Study. The ATBA evaluates the pre-existing baseline system before the Class Year Projects are included and identifies any SUFs and associated cost estimates for that system. The ATRA evaluates the condition with the Class Year Projects added to the baseline system, identifies the SUFs required for the Class Year Projects collectively, and then performs a design, preliminary engineering, and estimation of cost and time to construct for each SUF. The ATRA addresses all SUFs required for the Class Year Projects, including SUFs identified in the Part 1 studies. The ATBA and ATRA determine the "cost allocation" of the SUFs between the TOs and the Class Year Project Developers, and the ATRA determines the cost allocation among the Class Year Developers in accordance with Attachment S (these assessments are performed under the Minimum Interconnection Standard).

The Class Year Deliverability Study (CYDS) evaluates the deliverability of CRIS requested by the Developers for the Class Year Projects (including any CRIS only projects), determines the amount of requested CRIS that would be deliverable without SDUs, if any, and identifies the SDUs that would be required to make the requested CRIS fully deliverable. If the NYISO identifies a SDU for a Class Year Project or group of Class Year Projects that is "new"—*i.e.*, not previously studied and cost allocated in a Class Year Study and not substantially similar to a SDU previously studied and cost allocated in a Class Year Study, the NYISO will separately notify the TPAS/IPFSWG and the individual Developers of the affected Class Year Projects that an Additional SDU Study is required (*see* Section 25.7.7.1 of Attachment S to the NYISO OATT).

Developers not electing to pursue further study of the identified SDU in an Additional SDU Study can continue in the Class Year Study but will be limited to accepting or rejecting their Project Cost Allocations for SUFs and the number of Deliverable MWs, if any, that were determined to be deliverable through the CYDS without the need for an SDU.

For each SDU identified that does not require an Additional SDU Study, the deliverability evaluation in the Class Year Study is performed to finalize a design and cost estimate for the SDU . Similar to the ATBA and ATRA performed to determine the cost allocation for SUFs, the CYDS includes an ATBA-D and ATRA-D that are used to determine the cost allocation for SDUs to and among the Class Year Projects in accordance with Attachment S (these assessments are performed under the Deliverability Interconnection Standard). Section 3.6.5 below and Section 25.7 of Attachment S to the NYISO OATT provide further information on the deliverability study methodology.

NYISO conducts most of the analyses for the Part 2 studies, but may use one or more consultants to perform portions of those studies. NYISO will also review and incorporate the results of additional studies performed by CTOs, Affected Transmission Owners, and Affected System Operators when such studies are appropriate to evaluate the Class Year Projects' potential impacts. For studies conducted by Affected System Operators, the Part 2 studies will include the results to the extent they are available.

The major steps of the Class Year Study include:

1. Preparation of Base Cases for the ATBA and ATRA – NYISO requests updates of information from the TOs, neighboring ISOs/RTOs, and Developers and prepares steady state, dynamic, and short circuit base cases for the ATBA and ATRA. In doing so, NYISO prepares data for modeling each of the Class Year Projects to be used in the studies.

2. Part 1 Studies – NYISO identifies, designs and preliminary engineers the CTOAFs and Local SUFs and their integration with the Developer's proposed facilities and with the existing system for each Class Year Project. NYISO also estimates the cost and time to construct the CTOAFs and Local SUFs for each project. As discussed above, the Part 1 study for an individual project may begin in advance of the Class Year Start Date.

3. Re-evaluation and Identification of SUFs (ATBA, ATRA) under MIS – This step involves reviewing the individual SRISs for the Class Year Projects and conducting thermal, voltage, stability, and short circuit analyses, as necessary and appropriate, to re-evaluate the collective impact of the Class Year Projects, to re-evaluate the need and adequacy of any previously identified SUFs, and

to make any necessary adjustments for the final identification and specification of SUFs needed for the Class Year Projects.

4. Development of cost allocation and time estimates for SUFs – This task entails engineering and estimations of the cost and time to construct each of the SUFs identified in the previous steps. NYISO uses information from the Part 1 studies as applicable.

5. Deliverability Study and Notice of SDUs Requiring Additional Study (if required) – NYISO identifies SDUs under DIS as described in Section 3.6.4 below. If NYISO determines that an identified SDU for a Class Year Project or group of Class Year Projects is "new," NYISO will issue a Notice of SDUs Requiring Additional Study to stakeholders of the IPGSWG and a separate notice to the Developers of the Class Year Project(s) that require the SDU(s) necessitating Additional SDU Study(ies) as soon as practical after identifying the SDU(s). Each Developer of a Class Year Project that receives a notice must respond to NYISO within ten (10) calendar days to elect, among other things, to proceed or not proceed with an Additional SDU Study. If a Developer does not elect to proceed with an Additional SDU Study, then it can continue with the Class Year Study but will be limited to accepting its CRIS based on the deliverable MWs, if any, from the Class Year Deliverability Study. If a Developer elects to proceed with the Additional SDU Study, the study would proceed separate and apart from the Class Year Study as described in Section 3.3.3.7 below. A Developer that fails to notify NYISO within ten (10) calendar days will be deemed to have elected not to proceed with an Additional SDU Study and can remain in the Class Year Study for purposes of accepting its SUF cost allocation and deliverable MWs from the Class Year Deliverability Study, if any.

6. Compilation of study results and preparation of draft Class Year Study Report – NYISO has overall responsibility for the Class Year Study Report and provision of the report to the Developers of Class Year Projects and other parties as appropriate. NYISO expects the CTOs or consultants to prepare reports or portions of the Class Year Study Report for which they had contractual responsibility. The SUFs identified via ATRA and ATBA and the SUFs summary from the individual Part 1 studies are documented in a "Class Year Study Report." The SDUs identified via ATRA-D and ATBA-D are documented in the final Class Year Study Report. If an Additional SDU Study completes prior to OC approval of the draft Class Year Study Report, the results of the Additional SDU Study will be incorporated into the final Class Year Study Report (or prepared as an addendum). Both reports, along with the supporting appendices or addendums, will be reviewed and approved through the TPAS/IPFSWG and OC review and approval process.

7. Review and Approval – This step includes the following sub-steps:

   a. NYISO schedules a Report Meeting with the IPFSWG (group formed at the beginning of each class, by invitation sent to TPAS and OC members, comprised of Class Developers, CTOs, and other interested parties), to be held within ten (10) Business Days (approximately 2 weeks) of distribution of the applicable draft Class Year Study reports.

   b. After the Report Meeting, NYISO submits the draft Class Year Study reports to TPAS/IPFSWG for review and action at its next meeting.

   c. As soon as possible after the TPAS meeting, NYISO submits the draft Class Year Study reports to the OC for approval.

8. Decision Period and Cost Settlement – After the OC approval of the Class Year Study Report, the process enters a 30 calendar day initial decision period during which the Class Year Developers are given the choice to accept or reject their respective cost allocation for SUFs and separately, cost responsibility for any SDUs as summarized in the Class Year Study Report or applicable addendum. Developers that accept their cost allocation for SUFs must provide a confirmed In-Service Date and Commercial Operation Date for their project to NYISO subject to the limitations set forth in Section 30.4.4.5 of Attachment X to the NYISO OATT. If any Developers reject their cost allocation for SUFs, the associated projects are removed from the Class Year. Any Developers that accept their cost allocation for SUFs but reject their cost responsibility for SDUs, remain in the Class Year but would be only eligible for partial CRIS up to the amount determined to be deliverable, if any. If necessary, NYISO re-evaluates the SUFs (and re-evaluates deliverability and associated SDUs as necessary) for the remaining Class Year Projects, makes any necessary adjustments, and issues a revised Class Year Study Round "n" Addendum Report (where "n" is the number of iterations until all remaining Class Developers accept SUF cost allocation) following the schedule set forth in Attachment S.

The Class Year Study is considered complete once (i) the Class Year Study Report has been completed, (ii) all Developers (or remaining Developers) have accepted their respective cost allocations for SUFs and SDUs, as applicable, or deferred making a decision on their respective cost allocations for SUFs due to a pending Additional SDU Study as presented in the OC-approved Class Year Study report or subsequent Round Addendum Reports, and (iii) paid for or posted security for SUFs and SDUs as applicable.

3.3.3.7. Additional SDU Studies

The evaluation of "new" SDUs requiring Additional SDU Studies is performed separate and apart from the ongoing Class Year Study. Each new SDU that the NYISO identifies will be studied in the Additional SDU

Study(ies). Where multiple projects contribute to the need for an SDU for which an Additional SDU Study is required, the NYISO will study the projects collectively in the Additional SDU Study and will allocate the costs among the projects requiring the SDU through the Class Year Study process.

Because the Additional SDU Study is performed separate from the Class Year Study, there are a number of options for a Developer of a Class Year Project undergoing an Additional SDU Study. For example, if a Developer that has a Class Year Project that requires an Additional SDU Study for an identified SDU elects to not to proceed with the Additional SDU Study, then the Developer can continue in the Class Year Study but would be limited to accepting or rejecting CRIS up to the amount determined to be deliverable, if any, for its project, provided that the Developer accepts its SUF Project Cost Allocation for ERIS or already has the requisite amount of ERIS to correspond with the CRIS.

Conversely, if one or more Developers elect to proceed with an Additional SDU Study for their projects, the Class Year Study will proceed to the decision and settlement phase for the remaining projects. The Additional SDU Study will proceed on a separate track from the remaining Class Year Study work, and the Developer's options for the decision and settlement concerning any SUFs and SDUs associated with the project are as follows:

1. Additional SDU Study Completes Prior to Completion of the Class Year Study – If an Additional SDU Study completes prior to the OC's approval of the Class Year Study Report, the Class Year Project that undertook the Additional SDU Study can participate in the normal decision and settlement phase for both SUFs and SDUs as other Class Year Projects.

2. Additional SDU Study Does Not Complete Prior to the Completion of the Class Year Study – If an Additional SDU Study does not complete prior to the OC's approval of the Class Year Study Report, a Developer has the option to continue with the decision and settlement phase to accept its SUF cost allocation and CRIS up to the amount determined to be deliverable, if any. This election is solely at the Developer's option, and would allow the Developer to settle its SUFs, while continuing with the Additional SDU Study in order to obtain the full amount of requested CRIS. However, a Developer may elect to defer accepting or rejecting its SUF Cost Allocation or CRIS up to the amount determined to be deliverable, if any, until after the Additional SDU Study is complete.

    a) Additional SDU Study Completes After the Completion of the Class Year Study But Before the Lockdown Date for Subsequent Class Year Study's ATBA – If an Additional SDU Study completes after the OC's approval of the Class Year Study but before the lockdown date for the ATBA in the subsequent Class Year Study, the

project participating in the Additional SDU Study will have a decision and settlement process, which could include could be iterative if multiple projects are participating. If a project deferred accepting or rejecting its SUF Cost Allocation until the completion of the Additional SDU Study, the SUF Project Cost Allocation will be based on a post-Class Year base case reflecting the decisions from the previous Class Year Study.

b) Additional SDU Study Does Not Complete Until After the Lockdown Date for Subsequent Class Year Study's ATBA – If the Additional SDU Study does not complete until after the lockdown date for the ATBA in the subsequent Class Year Study, the project participating in the Additional SDU Study can either continue with the Additional SDU Study in the next Class Year Study or enter a later Class Year Study in which it will begin a new CYDS. In either case, the Developer would need to satisfy the entry requirements to enter a new Class Year Study; however, the Developer's entrance into the subsequent Class Year Study will not be considered as one of the two opportunities for a project to enter a Class Year Study. Continuing with the Additional SDU Study will result in base cases being updated with the Class Year's deliverability base cases. If the subsequent CYDS finds that the project does not require the SDU necessitating the Additional SDU Study, the Developer would not be required to complete the Additional SDU Study.

3.3.3.8. Expedited Deliverability Studies

Another avenue that a Developer can seek to obtain CRIS for an existing or proposed project, outside of the Class Year Study process, is an Expedited Deliverability Study. This study is entirely separate from the Class Year Study process and is conducted on a more a frequent basis. Expedited Deliverability Studies evaluate a group of existing facilities or proposed projects that meet the eligibility requirements under the NYISO's DIS to determine the projects' deliverability without the need for SDUs. If a project is not deliverable or is not deliverable at the full amount of requested CRIS in the Interconnection Request, a Developer may enter a subsequent Expedited Deliverability Study for a new determination based on changes to the system or the next open Class Year Study. However, a Developer's project may not be simultaneously evaluated in both the Class Year Study and an Expedited Deliverability Study. If a proposed project is in the ATRA-D for a specific Class Year Study, then it will not be permitted to participate in an Expedited Deliverability Study until the completion of that Class Year Study.

3.3.3.8.1. Expedited Deliverability Study Cycles

Each Expedited Deliverability Study is estimated to take four (4) months to complete using Reasonable Efforts. An Expedited Deliverability will commence the first Business Day after 30 calendar days following the conclusion of the previous Expedited Deliverability Study. However, NYISO will not commence an Expedited Deliverability Study during the decision and settlement window of an ongoing Class Year Study (*i.e.*, the period between the posting of the Class Year Study Report for OC approval and the commencement of the following Class Year Study). Additionally, NYISO will not post an Expedited Deliverability Study for OC review and approval during the decision and settlement window of an ongoing Class Year Study, and must wait until ten days following the completion of the Class Year Study.

3.3.3.8.2. Expedited Deliverability Study Eligibility

A project is eligible to enter an Expedited Deliverability Study if it is requesting only CRIS for a project that is larger than 2 MW; requests enter by the start date of the Expedited Deliverability Study; and is either in service or has completed either (i) a Class Year Study for ERIS, (ii) a System Impact Study under the SGIP; or (iii) a utility interconnection study if the facility is not subject to the NYISO's interconnection procedures. Additionally, a Developer that seeks to have its proposed evaluated in an Expedited Deliverability Study must also satisfy the data submission requirement for Class Year Projects requesting CRIS in Mitigated Capacity Zones and have such data submission deemed complete by NYISO by the study start date in accordance with Section 25.5.9.2.1 of Attachment S of the NYISO OATT.

To enter an Expedited Deliverability Study, a Developer of a qualifying project must request entry, and NYISO will provide an Expedited Deliverability Study Agreement for the Developer to complete upon confirmation of the project's eligibility. The Developer then must return a completed, but unsigned, Expedited Deliverability Study Agreement, the required deposit in the amount of $30,000, and the required technical data within ten (10) Business Days of receiving the agreement from NYISO. The parties will then have ten (10) Business Days after NYISO confirms receipt of the completed agreement, required technical data, and the deposit.

3.3.3.8.3. Expedited Deliverability Study Procedures

An Expedited Deliverability Study generally has the same requirements as performing a CYDS. NYISO has overall control over the study and can use existing studies, including a preliminary, non-binding deliverability analysis from an SRIS, to the extent practicable to complete the studies. An Expedited Deliverability Study will not grant prioritization to any project or projects studied together, and each project will share in the then currently available functional or electrical capability of the New York State Transmission System available in the applicable base case.

The base cases for the Expedited Deliverability Study will be built using the same inclusion rules as the CYDS; however, the they will include CRIS requests for projects in an ongoing Class Year Study. NYISO will make applicable revisions to the Expedited Deliverability Study base cases in the event that a Class Year Study completes during an ongoing Expedited Deliverability Study and a Class Year Project rejects its deliverable MWs or SDUs that NYISO determines may impact the deliverability of a project under study.

Similar to the Class Year Study, NYISO provides status reports and materials to the stakeholders of the TPAS and OC on the Expedited Deliverability Studies and invites feedback from those stakeholders, as well as the Developers, CTO(s), and Affected System Operator(s). The completed Expedited Deliverability Study report will be reviewed and approved by the OC. Within five (5) Business Days after the OC's approval, each Developer will be provide notice to NYISO via email stating whether or not it accepts the deliverable MW reported in the Expedited Deliverability Study report. Failure for a Developer to notify NYISO is considered to be a non-acceptance of the deliverability MW for its project. There is no iterative decision process for an Expedited Deliverability Study, and NYISO will update the study results in the event that a Developer does not accept the deliverable MWs identified through the Expedited Deliverability Study for its project.

3.3.3.9. Large Facility Interconnection Agreement

After completion of the requisite interconnection studies, the next step of the interconnection process is to develop, negotiate, and execute an Interconnection Agreement and, as applicable, engineering, procurement and construction agreements (EPCs) for Affected System upgrades. The form of the NYISO Standard Large Generator Interconnection Agreement (LGIA) is contained in Appendix 4 of Section 30.14 of Attachment X to the NYISO OATT. The LGIA is a three-party agreement between the Developer, NYISO and CTO(s). Interconnection Agreements are developed from the LGIA with any nonconforming modifications subject to filing with and acceptance by FERC. EPCs are also subject to filing with and acceptance by FERC.

Procedures pertaining to the LGIA are covered in Section 30.11 of Attachment X. Normally, NYISO and CTO tender the LGIA to the Developer following completion of the Developer decision process described in Section 25.8 of Attachment S. However, the Developer may request to begin development and negotiation of the LGIA at any time after execution of the Facilities Study Agreement. Execution of the LGIA prior to completion of the Class Year Facilities Study process may be possible if the Part 1 Class Year Study for the project has been completed, but if so, certain commitments from the Developer would be required in the LGIA through the process described in Section 30.11.4 of Attachment X.

Prior to executing an LGIA, a Developer may request an Engineering & Procurement ("E&P") Agreement with the applicable CTO(s) in accordance with Section 30.9 of Attachment X.

3.3.3.10. Construction, Installation, Registration and Operation

After execution of the Interconnection Agreement, the next and final major step of the interconnection process is to proceed with detailed engineering, construction, installation, registration, testing, and operation of the project in accordance with the Interconnection Agreement. Procedures pertaining to the construction of the CTO's Attachment Facilities and System Upgrades are covered in Section 30.12 of Attachment X.

Prior to testing and operation of a new generating facility or Class Year Transmission Project, the Developer (owner/operator) of the new facility must register the new facility with NYISO through the NYISO Customer Registration process. The Developer should initiate the registration process at least six (6) months prior to the anticipated date of initial interconnection and energization of the new facility to the NYCA electric system. Information and material regarding NYISO Customer Registration is available from the NYISO website.

3.3.4. Materiality Determinations

This section of the manual provides an overview of the criteria and procedures for making materiality determinations.

3.3.4.1. Background

Under the NYISO Large Facility Interconnection Procedures (LFIP), in Attachment X to the NYISO OATT, there are two circumstances that require NYISO to make a materiality determination (*i.e.*, whether a modification is material):

1. **Changes to an Existing Large Facility**: When a Developer proposes change(s) to an existing Large Facility, NYISO must determine whether the change(s) are material modifications to the operating characteristics of the existing Large Facility such that the Facility owner is required to submit a new Interconnection Request and undergo Interconnection Studies under the LFIP. Change(s) determined to be non-material do not require a Developer to submit a new Interconnection Request or undergo NYISO Interconnection Studies.

2. **Changes to a Project Currently in the Interconnection Process**: When a Developer of a Large Facility project (*i.e.*, a project with an Interconnection Request pending in the NYISO interconnection process) reports changes or contemplated changes to any information provided in the project's Interconnection Request, NYISO must determine whether the proposed change(s) is a Material Modification if the change does not fall within a permissible modification enumerated under Section 30.4.4 of Attachment X to the NYISO OATT. If the proposed change(s) is determined to be a Material Modification and the Developer elects to proceed forward with the change, the project would lose its

Queue Position and be required to submit a new Interconnection Request to pursue the modified project. Conversely, changes determined to be non-material can be accommodated under the existing Interconnection Request and the modified project may continue through the NYISO Interconnection process under its current queue position.

3.3.4.2. Details

3.3.4.2.1. Materiality Evaluation of Changes to Existing Large Facilities

Existing Large Facilities must provide NYISO with prior notice of any changes to the facility including differences from what was studied in the interconnection process or reflected in an interconnection agreement (*see* Articles 5.19, 24.3, 24.4 of *pro forma* Large Generator Interconnection Agreement contained in Appendix 3 to Attachment X).

NYISO will review the changes to determine whether such changes would require the facility owner to submit a new Interconnection Request. Under Attachment X of the NYISO OATT, an Interconnection Request is required if a facility owner seeks "to materially increase the capacity of, or make a material modification to the operating characteristics of, an existing Large Generating Facility or Class Year Transmission Project that is interconnected with the New York State Transmission System or with the Distribution System" (*see* Section 30.1 of Attachment X (definition of "Interconnection Request") and Section 30.3.1 of Attachment X). The Developer shall be responsible for the cost of any such changes to the facility, including the cost of studying the potential impact of the proposed change.

Proposed changes to a project while the project is in the interconnection process will be reviewed as discussed in Section 3.3.4.2.2, *infra.*

1. Increase in Capacity to an Existing Large Facility

   Under the LFIP, any material increase in capacity to an existing Large Facility requires a submission of new Interconnection Request. The LFIP does not provide for a materiality review of such increases, but rather establishes threshold criteria for a material capacity increase as the greater of ten (10) MW or 5% of the baseline ERIS level of the Large Facility per Section 30.3.1 of Attachment X.

2. Modifications to the Operating Characteristics of an Existing Large Facility

   Modifications to existing facilities interconnected with the NYS Transmission System or Distribution System, other than material increases in capacity discussed above, must be reviewed by NYISO to determine whether the change constitutes a material modification to the facility's operating characteristics.

Material modifications refer to changes to the equipment, the configuration of equipment, or the Point of Interconnection of an existing Large Facility that result in a material difference in the defining electrical characteristics of the Large Facility in a manner adverse to system reliability. Material adverse difference in electrical characteristics is defined in terms of: Stability Impact, Voltage Impact, Thermal Impact, or Short Circuit Impact. Modifications that would result in an adverse reliability impact that is at least a *de minimus* impact (as defined in Section 25.6.2.6.1 of Attachment S) are considered material. Modifications that would not cause any adverse reliability impacts that are at least *de minimus* are non-material.

In considering a materiality request, the change(s) shall be presumed to be a material and require a new Interconnection Request. The facility owner can rebut this presumption by providing information and/or analysis with its request to support a finding that the change(s) are non-material.

Like-and-kind replacements or refurbishments of existing equipment that is worn or damaged (*e.g.*, maintenance) are not material modifications and do not require materiality determinations.

3. Reactivated Units

Under Section 30.3.1 of Attachment X to the NYISO OATT, a Developer seeking to return a Large Generating Facility to Commercial Operations after it is Retired must submit a new Interconnection Request as a new facility. A Developer returning a Large Generating Facility to service prior to the expiration or termination of its Mothball Outage or ICAP Ineligible Forced Outage need not submit a new Interconnection Request unless the Large Generating Facility is materially increasing its capacity or making material modifications to the Large Generating Facility as described above.

4. Process for Reviewing Modifications to an Existing Large Facility

When an owner (or Developer) reports a change to an existing Large Facility, NYISO will make a determination as to whether the change is material that would require the submission of a new Interconnection Request. In addition, an owner/Developer considering a change(s) to an existing Large Facility may submit a request to NYISO to make a determination as to whether the proposed change(s) is material or non-material (a "materiality request"). A materiality request must be submitted in writing, preferably in the form of a letter (although an email is acceptable), and should be sent to:

New York Independent System Operator

10 Krey Boulevard
Rensselaer, New York 12144

c/o Interconnection Projects
Email: InterconnectionSupport@nyiso.com

- NYISO may request additional information or analysis from the owner/Developer to assist in NYISO's materiality evaluation. Such additional information and analysis is usually required for change(s)/proposed change(s) of equipment, configuration of equipment, or Point of Interconnection.
- NYISO will notify the CTO of the change(s)/proposed change(s) and solicit the CTO's input regarding the materiality of the change(s). NYISO will review the information provided by the owner/Developer and the input from the CTO, and will evaluate whether the change(s)/proposed change(s) will result in a material difference in the defining electrical characteristics of the Large Facility in a manner adverse to system reliability. Based on this evaluation, NYISO will make its determination regarding the materiality of the change(s)/proposed change(s).
- NYISO will notify the owner/Developer of its materiality determination and will advise the owner/Developer of the next scheduled Transmission Planning Advisory Subcommittee (TPAS) meeting. If the change(s) are proposed change(s), the owner/Developer may withdraw the proposed change(s) at this point. If the owner/Developer wishes to proceed, NYISO Staff will report its determination to TPAS for discussion, review and confirmation.
- NYISO Staff or TPAS will report the results of this process to the OC.
- If the change(s) are proposed change(s) and are determined to be material, the owner/Developer must submit an Interconnection Request in accordance with Attachment X to pursue the change. If the change(s) are determined to be non-material, the owner/Developer need not submit an Interconnection Request nor undergo NYISO Interconnection Studies with respect to the change(s).

3.3.4.2.2. Evaluation of Changes to a Proposed Large Facility Being Evaluated in the Interconnection Process

This section applies to proposed Large Facilities that meet the following criteria: (1) they have not completed all required Interconnection Studies under the LFIP; or (2) they have completed all required Interconnection Studies under the LFIP but do not have an executed Interconnection Agreement.

Section 30.4.4 of Attachment X to the NYISO OATT requires Large Facilities in the NYISO interconnection queue to provide to NYISO written notice of any modification to information provided in the Interconnection Request. Developers must, therefore, provide NYISO with notice of actual changes to the project and are urged to also provide the NYISO with notice of contemplated changes for review prior to pursuing such changes. Indeed, Section 30.4.4.3 of Attachment X specifically allows a Developer to request NYISO to make a materiality determination for project change(s) under consideration in advance of such change being pursued, scoped and/or implemented. Such request can be accomplished by submitting a Large Facility Modification Request contained in Appendix 3 of Section 30.14 of Attachment X. The NYISO will review these modifications to determine whether such changes constitute Material Modification under Attachment X that would require the Developer to submit a new Interconnection Request. If the NYISO

determines that the change constitutes a Material Modification, it will notify the Developer and ask whether the Developer wishes to proceed with the change, which will require a new Interconnection Request.

Attachment X defines Material Modification as "those modifications that have a material impact on the cost or timing of any Interconnection Request with a later queue priority date" (*see* Section 30.1 of Attachment X). Attachment X further provides, in Section 30.4.4, guidance regarding the materiality of certain modifications. Under Section 30.4.4, there are specific changes to a proposed Large Facility in the interconnection process that are permitted without loss of Queue Position and, in certain cases, without a materiality evaluation. These automatically permitted changes include certain extensions of Commercial Operation Dates, certain Permissible Technological Changes (*e.g.*, changes to the turbines, inverter, plant supervisory controls), and certain changes made early in the study process (*see* Sections 30.4.4.1, 30.4.4.2, 30.4.4.5, 30.4.4.6, or 30.4.4.7 of Attachment X).

If the proposed change does not meet a permissible change enumerated under Section 30.4.4 of Attachment X, NYISO must review the changes and determine whether they constitute Material Modifications. Below are some examples of project changes subject to a materiality evaluation:

- Increases in maximum MW output for ERIS. Increases in proposed ERIS values generally are not permitted. However, an increase of no more than 2 MW in the proposed ERIS value of a project based upon a clarification of the project data submitted in the Interconnection Request would not be considered an impermissible plant increase under Section 30.4.4.1 of Attachment X;
- Changes in technical parameters associated with the Large Facility or related equipment that are not expressly permitted by Sections 30.4.4.1 or 30.4.4.2 of Attachment X;
- Change in the technology of the Large Facility or related equipment that is not expressly permitted under Section 30.4.4.7 of Attachment X;
- Change in interconnection configuration that are not expressly permitted by Section 30.4.4.1 of Attachment X; and
- Extensions in the Commercial Operation Date beyond the expressly permitted extensions set forth in Section 30.4.4.5 of Attachment X.

For purposes of considering a materiality request for a change to a proposed Large Facility in the interconnection process, NYISO will consider whether the proposed change(s) adversely impact the cost or timing of projects with a later queue priority date. If the NYISO's evaluation indicates that the change(s)/proposed change(s) do have such an adverse impact, the change(s)/proposed change(s) will be found to be Material Modification(s). Conversely, change(s)/proposed change(s) are not material if such change(s) do not adversely impact cost or timing of projects with a later queue priority date.

In this context, "cost" refers to a project's cost allocation for interconnection facilities (*i.e.*, SUFs or SDUs). "Timing" refers to a project's scheduled In-Service Date—*i.e.*, whether the proposed change

adversely affects the schedule of a project with a later queue priority date. "Impact" is based on a comparison of the circumstances of the previously proposed project with and without the change(s)/proposed change(s). "Later queue priority date" generally means projects that are lower in the queue, but NYISO also considers projects' Class Year status.

The process for reviewing change(s) to a proposed Large Facility in the NYISO Interconnection Queue is as follows:

- The Developer notifies NYISO of a proposed actual or contemplated change(s) to its Large Facility. The notice must be submitted in accordance with the instructions on the NYISO's public website and can be accessed via the Interconnection Projects portion of the website.
- Such notice should be accompanied by a revised Interconnection Request form *(see* Appendix 1 of Section 30.14 of Attachment X).
- The Developer will be responsible for the actual costs incurred by NYISO and CTO(s) in performing the materiality review.
- NYISO may request additional information or analysis from the Developer to assist in NYISO's materiality determination. NYISO will notify the CTO of the change(s)/proposed change(s) and will solicit the CTO's input regarding the materiality of the change(s). NYISO will review the information provided by the Developer and will evaluate the input provided by the CTO, and will evaluates whether the change(s)/proposed change(s) could have an adverse impact on the cost or timing of any project with a later queue priority date (per above criteria). Based on this evaluation, NYISO will make its determination regarding the materiality of the change(s)/ proposed change(s).
- NYISO will notify the Developer of its determination. Within thirty (30) Calendar Days after issuance of the determination, the Developer must advise NYISO whether it withdraws the proposed modification or elects to proceed with the modification. If the Developer wishes to proceed, NYISO Staff will report its materiality determination to TPAS for information. NYISO Staff or TPAS will report the results of the determination to the OC. The materiality request will be deemed to be withdrawn if a Developer does not advise the NYISO to proceed within thirty (30) Calendar Days after the determination.
- If the change(s)/proposed change(s) are determined to be a Material Modification, the Developer may elect to either withdraw the changes, or submit a new Interconnection Request in accordance with Attachment X to pursue the changes further. For a material increase in size, the Developer may retain the current Interconnection Request at the current size, and submit a new Interconnection Request for the increase.
- Changes determined to be non-material can be accommodated under the existing Interconnection Request and the modified project will continue through the NYISO Interconnection process under its current queue position.

The process for reviewing technological changes to the Large Facility will begin upon receipt of a Large Facility Modification Request (Appendix 3 of Section 30.14 of Attachment X), a study deposit in the amount of $10,000, and any support that the Developer relies on to show that the technological change meets the definition of Permissible Technological Advancement or is not a Material Modification. If NYISO, after review with the CTO(s), determines that the change meets the definition of Permissible Technological

Advancement, then no additional study is required. If additional study is required, NYISO will identify and perform additional studies at the expense of the Developer to determine whether the electrical performance is equal to or better than the electrical performance prior to the technological change and it does not result in adverse reliability concerns. In the event that the NYISO does not find that the technological meets the definition of Permissible Technological Advancement or that it is otherwise permissible after study, NYISO will conduct a review to determine whether it is a Material Modification under Section 30.4.4.3 of Attachment X. Given the short time frame to conduct the studies (*i.e.*, 30 calendar days of receiving a Large Facility Modification Request and the required study deposit), NYISO will reject the requested technological changes if the Developer does not submit all the necessary information for the NYISO to conduct the study. The Developer may resubmit a Large Facility Modification Request with the necessary information.

3.4. Small Generator Interconnection Procedures (SGIP)

3.4.1. Basic Information about the SGIP

3.4.1.1. What projects are subject to the SGIP?

The SGIP is contained in Attachment Z to the NYISO OATT. The SGIP apply to Small Generating Facilities proposing to interconnect to the NYS Transmission System or Distribution System, or materially increasing the capacity of, or making a material modification to the operating characteristics of, an existing Small Generating Facility that is interconnected to the NYS Transmission System or to the Distribution System. These procedures do not apply to interconnections made simply to receive power from the NYS Transmission System and/or the Distribution System, nor to interconnections made solely for the purpose of generation with no wholesale sale for resale nor to net metering. These procedures do not apply to interconnections to LIPA's distribution facilities. LIPA administers the interconnection process for generators connecting to its distribution facilities and performs all required studies on its distribution system under its own tariffs and procedures.

From the standpoint of size, the SGIP applies to proposed generating facilities 20 MW or less in size. For purposes of the SGIP, a "generating facility" includes all resources behind the same Point of Interconnection included in the Interconnection Request. The SGIP applies to a proposed material increase in the capacity of an existing generating facility if the resultant size of the facility is 20 MW or less. However, a proposal to increase the capacity of an existing generating facility would fall under the LFIP if the resultant size of the facility, with its proposed increase in capacity, is more than 20 MW, even though the incremental increase in capacity may be less than 20 MW. For an existing small generating facility, a capacity increase of more than 2 MW above the facility's baseline ERIS level is a material increase.

An Interconnection Customer seeking to return a Small Generating Facility to service after it is Retired must submit a new Interconnection Request as a new facility. An Interconnection Customer returning a Small Generating Facility to service prior to the expiration or termination of its Mothball Outage or ICAP Ineligible Forced Outage need not submit a new Interconnection Request, unless the Small Generating Facility is materially increasing its capacity or making material modifications to the Small Generating Facility.

The SGIP covers three separate processes for three categories of small generator projects:

- Fast Track Process – for certified small generating facilities 2 MW or less (5 MW or less for qualified inverter-based systems) proposing to interconnect to a TO's Distribution System subject to meeting certain eligibility requirements (*see* Section 32.2.1 of Attachment Z).
- Study Process – for proposed generating facilities greater than 2 MW up to 20 MW that do not meet the eligibility requirements for the Fast Track Process or did not pass the Fast Track Process or the 10 kW Inverter Process (*see* Section 32.3 of Attachment Z).
- Inverter-Based Generating Facility no larger than 10 kW (*see* Appendix 5 of Section 32.5 of Attachment Z).

Proposed small generating facilities 2 MW or less typically do not fall under the SGIP because usually such projects either interconnect to non-FERC jurisdictional distribution, or would only serve local load on a non-wholesale basis. Most small generator projects that are subject to the SGIP fall under the Study Process.

Small Generating Facilities greater than 2 MW that seek to obtain or increase CRIS beyond the levels permitted by Attachment S, Section 30.3.2.6 of Attachment X, and Section 32.4.10.1 of Attachment Z, as applicable (*see also* Section 25.1.1 of Attachment S), must request to enter and complete a Class Year Deliverability Study or an Expedited Deliverability Study even if the proposed facility may not otherwise fall under the SGIP.

3.4.1.2. Types of Interconnection Service

Similar to Large Facilities, a proposed Small Generating Facility must elect and be evaluated for ERIS, and may elect and be evaluated for CRIS per Section 32.1.1.7 of Attachment Z. Small Generation Facilities of 2 MW or less are not required to undergo a deliverability evaluation to receive CRIS.

3.4.1.3. What Costs are involved?

The costs involved in the NYISO SGIP process include:

- For Interconnection Requests submitted under the Fast Track Process (for eligible projects), a $500 nonrefundable processing fee is required. For Interconnection Requests submitted under the Study Process (for projects ineligible for the Fast Track Process), a $1,000 deposit toward the cost of the feasibility study is required (*see* Appendix 2 of Section 32.5 of Attachment Z);

- NYISO's and CTO's actual study costs for each of the interconnection studies performed. (The actual study costs vary significantly for individual projects);
- The cost (or cost allocation) of any CTO Attachment Facilities, System Upgrade Facilities, and/or System Deliverability Upgrades identified in the interconnection studies, as applicable.

3.4.1.4. How long does it take?

The time frames for NYISO to meet its obligations regarding the SGIP are outlined in Attachments Z and S, and summarized in the table in Attachment E of this manual. The overall time to complete the interconnection studies and Interconnection Agreement is typically one to two years (not including the Class Year Study, if applicable, *see* Section 3.3.3.6.1 of the manual above), but can vary for individual projects.

3.4.1.5. Who is involved in the process?

The Developer (referred to as the "Interconnection Customer" in Attachment Z), NYISO and CTO are the primary parties involved throughout the SGIP. One or more Affected System Operators may be involved if necessary (*see* Section 32.4.9 of Attachment Z).

NYISO committees and working groups generally are not involved in small generator interconnection studies. By exception, if a small generator project is required to undergo a Class Year Study, or requests to undergo a Class Year Deliverability Study or Expedited Deliverability Study in order to be evaluated for CRIS, the IPFSWG, TPAS, and/or OC, as applicable, are involved in those studies (*see* Sections 32.1.1.7 and 32.3.5.3.2 of Attachment Z, and Sections 3.3.3.6, 3.3.3.7, and 3.3.3.8 of this manual).

3.4.2. Small Generator Interconnection Request

A Developer proposing to interconnect a new Small Generating Facility to the NYS Transmission System or the FERC-jurisdictional Distribution System, or increase the capacity of, or make a material modification to the operating characteristics of, an existing Small Generating Facility, must submit an Interconnection Request to the NYISO in the form of Appendix 2 of the SGIP, along with the required processing fee or study deposit, and demonstration of Site Control (*see* Attachment Z – Appendix 1 regarding definitions of terms, Section 32.1.3 of regarding Interconnection Requests, and Section 32.1.5 regarding Site Control).

While an Inverter-Based Small Generating Facility no larger than 10 kW generally does not fall under the SGIP, entities seeking to develop such a facility are encouraged to refer to Appendix 5 of Section 32.5. of Attachment Z.

The Small Generator Interconnection Request forms are available from the NYISO website, and Interconnection Customers should use NYISO's "Interconnection Projects Community Portal," as discussed in Section 1.2 of this manual.

3.4.2.1. Small Generator Pre-Application Request

Under Section 32.1.2 of Attachment Z to the NYISO OATT, potential small generator Interconnection Customers may request information from the NYISO and the potential CTO(s) regarding the local transmission and distribution system in the area that potential Interconnection Customer is considering interconnecting a small generator project before submitting a Small Generator Interconnection Request. The Interconnection Customer may make an informal inquiry under Section 32.1.2.1 of Attachment Z at no cost. The Interconnection Customer also may submit a formal Small Generator Pre-Application Request (SGPR) to NYISO under Sections 32.1.2.2 and 32.1.2.3 of Attachment Z. A $1,000 application fee is required with a formal SGPR to offset NYISO's and CTO's costs to research and compile the specific information expected for such requests. Per Attachment Z, the $1,000 fee is allocated with 1/3 going to the NYISO and 2/3 going to the CTO. A Small Generating Facility Pre-Application Report Request Form (SGPR Form) and a Pre-Application Report template are available from the NYISO website and can be accessed via the Interconnection Projects portion of the website.

The SGPR Form includes instructions and information, including NYISO contact information. Upon receipt of a properly completed SGPR Form and the required fee, NYISO coordinates with the CTO to compile the information for the Pre-Application Report and provides the completed report to the Interconnection Customer within twenty (20) Business Days from NYISO's receipt of the completed form and fee. The pre-application report is non-binding and does not confer any rights.

Pre-application inquiries or requests, formal and informal, are optional for potential Interconnection Customers. Such inquiries or requests are not required prior to submittal of a Small Generator Interconnection Request.

3.4.3. Basic Steps of the SGIP

The steps of the SGIP are described in Attachment Z and summarized in the table in Attachment E of this manual.

3.4.4. Small Generator Interconnection Studies

The interconnection studies for small generators are described in Section 32.3 of Attachment Z. The small generation interconnection studies may include an optional feasibility study, a system impact study, and/or a facilities study. At the facilities study step, a small generator project may be required to undergo either a small generator facilities study or a Class Year Study (*see* Section 32.3.5.3.2 of Attachment Z). Which, if any, of these studies will depend on the specific circumstances of the proposed small generator project and the transmission or distribution facility to which the small generator is proposed to interconnect. Depending on the specific circumstances, a small generator project may require one, two,

three, or no interconnection studies. Small generator projects may also be studied in clusters for the purpose of the SIS or Facilities Study. If multiple Small generator projects that are interconnecting in close proximity and are moving forward in the same timeframe under Attachment Z to the NYISO OATT, the NYISO may evaluate them in a clustered SIS and/or clustered Facilities Study, as appropriate. If the clustered studies indicate that non-Local System Upgrade Facilities are required for the clustered projects, Section 32.3.5.3.2 of Attachment Z to the NYISO OATT requires that all projects that trigger such non-Local System Upgrade Facilities must proceed to a Class Year Study under Attachment S for refinement and cost allocation of the required System Upgrade Facilities. If the NYISO performs a clustered SIS or Facilities Study under Attachment Z to the NYISO OATT, each Interconnection Customer shall pay an equal share of the actual cost of the combined study.

Plans for the first interconnection study to be performed for a project are discussed at the Scoping Meeting (*see* Section 32.3.2 of Attachment Z). Thereafter, plans for any subsequent interconnection study are discussed among the parties upon conclusion of the interconnection study in progress. The applicable facilities study agreement must be prepared and executed for each facilities study to be performed.

If an Interconnection Customer wishes to investigate its proposed facility based upon alternative Points of Interconnection, such may only be accomplished during the optional feasibility study (*see* Section 32.3.2.2. of Attachment Z to the NYISO OATT). However, prior to the start of the next interconnection study, the Interconnection Customer must select the definitive Point of Interconnection for the facility.

3.4.5. Small Generator Interconnection Agreement

After completion of the requisite interconnection studies, the next step of the small generator interconnection process is to develop, negotiate, and execute a Small Generator Interconnection Agreement (SGIA). The SGIA is a three-party agreement between the NYISO, CTO(s) and the Interconnection Customer. The procedures pertaining to the SGIA are covered in Section 32.4.8 of Attachment Z to the NYISO OATT. The form of the SGIA is contained in Appendix 9 of Attachment Z.

3.4.6. Construction, Installation, Registration, and Operation

After execution of the Interconnection Agreement, the next and final major step of the interconnection process is to proceed with detailed engineering, construction, installation, registration, testing, and operation of the project in accordance with the Interconnection Agreement.

Prior to testing and operation of a new small generating facility, the Interconnection Customer (owner/operator) of the new facility must register the new facility with NYISO through the NYISO Customer Registration process. The Interconnection Customer should initiate the registration process at least six (6) months prior to the anticipated date of initial interconnection and energization of the new

facility to the NYCA electric system. Information and material regarding NYISO Customer Registration is available from the NYISO website.

3.4.7. Modification of the Interconnection Request

Section 32.1.4 of Attachment Z of the NYISO OATT addresses an Interconnection Customer's modification of a small generator Interconnection Request.

3.5. Load Interconnection Procedures

The procedures regarding proposed Load interconnections are covered in Sections 3.9 and 4.5.8 of the NYISO OATT.

Applicability – Under procedures approved by the NYISO OC,[5] the NYISO Load interconnection procedures apply to Load interconnections that are either: a) greater than 10 MW connecting at a voltage level of 115 kV or above, or b) 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.

The basic steps of the NYISO procedures regarding a proposed Load interconnection are as follows:

1. Request for Interconnection Study (*see* Sections 3.9.1 or 4.5.8.1 of the NYISO OATT) – An Eligible Customer submits its Load interconnection proposal to NYISO. Oftentimes the Transmission Owner to whose system the customer wishes to interconnect submits the interconnection proposal to NYISO on behalf of the customer. The Load interconnection proposal must be submitted pursuant to the instructions contained on the Interconnection Projects portion of the NYISO website.

2. Performance of Technical Studies – NYISO performs a system impact study in cooperation with the CTO. The procedures and requirements for the system impact study for a proposed Load interconnection are similar to those of a SIS for a TO transmission upgrade or expansion project that is not subject to the TIP (see Section 2.4.2 of this manual). Following NYISO's issuance of the final draft SIS report, the Eligible Customer must proceed with the study to the TPAS within three months and then to the next OC. If the TPAS recommends revisions, the Eligible Customer must proceed to the next TPAS following completion of such revisions and then to the next OC.

[5] From New York Independent System Operator System Reliability Impact Study Criteria and Procedures, Revision 1, approved May 23, 2001. Portions of those criteria and procedures have been incorporated in this manual as applicable.

3. Interconnection Agreement – After receiving approval of the proposed interconnection and making payment to the NYISO and Transmission Owner for the cost of the technical studies, the Eligible Customer may elect to continue with the proposed interconnection by entering into an interconnection agreement with the CTO. NYISO is not a party to interconnection agreements for Load interconnections (*see* Sections 3.9.3 and 4.5.8.3 of the OATT).

3.6. Interconnection Study Methodology

3.6.1. Minimum Interconnection Standard Technical Assumptions[6]

The technical assumptions used when conducting an SRIS, SIS, or other Interconnection Study under the Minimum Interconnection Standard (MIS) are as follows:

1. The objective of an Interconnection is to provide access to the transmission system, and does not necessarily include or require providing service across the transmission system. The Customer proposing the Interconnection may separately request a SIS under Sections 3.7 or 4.5 of the OATT to evaluate a transmission expansion or upgrade, but this would not be considered part of the Interconnection Study. As a part of its ongoing transmission system review process, including its Locational Capacity Requirements Studies, NYISO will review and update local capacity requirements.
2. Any potential adverse reliability impact identified by the Interconnection Study that can be managed through the normal operating procedures of the NYISO and/or CTO will not be identified as a degradation of system reliability or noncompliance with the NERC, NPCC, or NYSRC reliability standards. It is assumed that the owners and operators of the proposed facilities will be subject to, and shall abide by, the applicable NYISO and/or CTO's operating procedures.
3. Any potential adverse reliability impact identified by the Interconnection Study that cannot be managed through the normal operating procedures of the NYISO and/or CTO will be identified as a degradation of system reliability or noncompliance with the NERC, NPCC, or NYSRC reliability standards. For example, (1) any projects interconnected to the neighbor system that collectively or individually degrade any NYISO's interface transfer capability by more than 25 MW or (2) any projects interconnected to the NYS Transmission System that collectively or individually degrade any NYISO's inter-tie transfer limit by more than 25 MW will be considered unacceptable under MIS. Therefore, SUFs shall be required for these projects.

[6] *Id.*

Additional details regarding the NYISO normal operating procedures are set forth in Attachment L.

4. It is assumed that the proposed facilities will not directly result in the retirement or decommissioning of any existing facilities other than those that may be specifically identified as part of the project. Any subsequent retirement or decommissioning of existing facilities shall be considered a separate matter.

3.6.2. Cost Allocation Procedures (Pursuant to Class Year 2001 Settlement Agreement)

The NYISO's Cost Allocation Procedures were developed in compliance with the Non-Financial Settlement Agreement in Docket Nos. EL02-125-000 and EL02-125-001. Such procedures are reproduced in Attachment K in their original form, as approved by the NYISO OC on May 26, 2005. The procedures set forth below reflect subsequent revisions accepted by the Commission that were developed through the NYISO's governance process and filed under Section 205 of the Federal Power Act or that were made through compliance filings as directed by the Commission.

3.6.2.1. Introduction

These Cost Allocation Procedures implement the terms of a FERC settlement[7] involving members of the Class Years 2001 and 2002. These Procedures will apply to the Catch Up Class Year and future class years, unless amended. They provide detail regarding the models, data bases, study processes, and analytical methods utilized by the NYISO in the administration of the Attachment S to the NYISO OATT. They also establish mechanisms to increase the transparency of the cost allocation process.

3.6.2.2. Models, Data Bases and Analytical Methods

3.6.2.2.1. Models and Data Bases

Attachment S requires the NYISO to use in its cost allocation studies models, data bases, and analytical methods that have been developed through North American Electric Reliability Council (NERC), Northeast Power Coordinating Council (NPCC), New York State Reliability Council (NYSRC), inter-ISO, or NYISO stakeholder processes.

The Existing System Representation is the foundation for both the ATBA and the ATRA. It is intended to provide an accurate description of the facilities that will constitute the power system for the next five-year period. The NYISO develops the Existing System Representation by making certain changes to its planning models and data bases (*i.e.,* steady state, dynamic, short circuit, and Multi-Area Reliability Simulation or MARS) to comply with Attachment S. The result of these changes is that the Existing System

[7] These Procedures are developed in compliance with the Non-Financial Settlement Agreement in Docket Nos. EL02-125-000 and EL02-125-001. Approved by the NYISO Operating Committee on May 26, 2005.

Representation includes facilities included in the NYISO's most-recent Load and Capacity Data Report: (i) all generation identified as existing and all transmission facilities identified as existing and/or firm, excluding those facilities that are subject to Class Year cost allocation but for which Class Year cost allocations have not been accepted; (ii) all proposed generation and Class Year Transmission Projects, together with their associated System Upgrade Facilities and System Deliverability Upgrades, that have accepted their cost allocation in a prior Class Year cost allocation process; provided, however, that System Deliverability Upgrades where construction has been deferred pursuant to Sections 25.7.12.2 and 25.7.12.3 of Attachment S will only be included if construction of the System Deliverability Upgrades has been triggered under Section 25.7.12.3 of Attachment S; (iii) all generation and transmission retirements and derates identified in the most recent Load and Capacity Data Report as scheduled to occur during the five-year cost allocation study planning period; (iv) Transmission Projects that are proposed under Attachment Y of the ISO OATT and have met the following milestones: (1) have been triggered under the reliability planning process, selected under the Public Policy Transmission Planning Process, or approved by beneficiaries under the economic planning process; and (2) have a completed System Impact Study; (3) have a determination pursuant to Article VII that the Article VII application filed for the facility is in compliance with Public Service Law Section 122 (*i.e.*, "deemed complete") (if applicable); and (4) are making reasonable progress under the applicable OATT Attachment Y planning process; (v) Transmission Projects that are not proposed under Attachment Y to the ISO OATT that have completed a Facilities Study and posted Security for Network Upgrade Facilities as required in Section 22.9.10 of Attachment P to the ISO OATT and have a determination pursuant to Article VII that the Article VII application filed for the facility is in compliance with Public Service Law §122 (*i.e.*, "deemed complete") (if applicable); (vi) transmission projects not subject to the Transmission Interconnection Procedures or the Attachment X and S interconnection procedures (*i.e.*, new transmission facilities or upgrades proposed by a Transmission Owner in its Local Transmission Owner Plan or NYPA transmission plan) identified as "firm" by the Connecting Transmission Owner and either (1) have commenced a Facilities Study (if applicable) and have an Article VII application deemed complete (if applicable); or (2) are under construction and scheduled to be in-service within 12 months after the Class Year Start Date; and (vii) all other changes to existing facilities, other than changes that are subject to Class Year cost allocation but that have not accepted their Class Year cost allocation, that are identified in the Load and Capacity Data Report or reported by Market Participants to NYISO as scheduled to occur during the five-year cost allocation study planning period. Facilities in a Mothball Outage, an ICAP Ineligible Forced Outage, or Inactive Reserves will be modeled as in, and not removed from, the Existing System Representation.

System Upgrade Facilities ("SUFs") for which cost allocation have been accepted in a prior Class Year cost allocation process are represented in the Existing System Representation in the year of their anticipated In-Service Date. In addition, the SUFs listed on the Appendix A to the Non-Financial Settlement Agreement in Docket Nos. EL02-125-000 and EL02-125-001 will be included in the Existing System Representation and will be shown as in service in the first year of the cost allocation study planning period and in each subsequent year. NYISO will continue to represent these facilities in this way unless they are cancelled or otherwise not in service by January 1, 2010 or subsequently deactivated. Beginning with the Class Year 2010, if some or all of these SUFs are not yet in service, NYISO will determine the date when the facilities will be in service and represent them according to its determination.

3.6.2.2.2. Process for Updating Models and Data Bases

Attachment S requires NYISO to utilize the most current versions of the data bases and models that are available at the time NYISO is first required to use such data to perform the cost allocation studies for a given Class Year. During the fourth quarter of each year, NYISO sends Annual Generator Surveys and notices to Transmission Owners, generation owners, and other suppliers seeking updates to information regarding their facilities, including steady state, dynamic and short circuit data to update NYISO models and databases and to provide information for the FERC Form No. 715 report and the Load and Capacity Data Report. NYISO also contacts the neighboring Control Area Operators/ISOs/RTOs to obtain information to update the planning models of their respective systems. NYISO uses the information received in response to its requests to update its planning models (*i.e.*, steady state, dynamic, short circuit, and MARS) and create the Existing System Representation. Note that, since a steady state base case must balance generation and load, at least some generation included in the Existing System Representation is generally required to be modeled off-line in the steady state base case. However, all generation and transmission facilities included in the Existing System Representation are modeled as in service in the short circuit base case. Base cases based on the Existing System Representation, which reflects the data collection referenced above will be available to Class Year member and members of the IPFSWG and/or TPAS upon request, subject to submission of a "CEII Request Form" and executed Non-Disclosure Agreement. A CEII Request Form and Non-Disclosure Agreement is available from the NYISO website and can be accessed via the Interconnection Projects portion of the website.

NYISO will start the cost allocation studies for a Class Year following preparation of the Existing System Representation and the initial Class Year "kick off" presentation.

NYISO will not modify the selected version of the data bases and models during the course of the cost allocation studies for a Class Year except: (1) as may be required by Attachment S, the NYISO Tariffs, an

order of the Commission, or to address an emergency interconnection not subject to the cost allocation process in a prior year and determined by NYISO to be necessary to satisfy Applicable Reliability Requirements in the first year of the five year cost allocation study planning period, or (2) to correct material errors in the data bases and models. An error will be considered material if it has the potential to impact the identification of System Upgrade Facilities and associated costs determined during the cost allocation process. For example, an error in the representation of the bulk power system will likely be considered material and will require correction.

3.6.2.2.3. Study Processes and Analytical Methods

These NYISO-established study processes and analytical methods include:

1. Thermal Analysis

Thermal analysis is an analytical method used to evaluate and compute the transfer limits of the transmission system for a given base case condition from the stand point of the thermal criteria described in rule B.1(R1) of the NYSRC Reliability Rules & Compliance Manual. Starting with a steady state base case, NYISO uses a standard linear power flow analysis program to evaluate and determine the normal and emergency transfer limits of the transmission system from the stand point of the thermal criteria. The thermal transfer limit of an interface is the maximum power transfer achievable without causing either a pre-contingency or post-contingency overload of any transmission facility. For the cost allocation, NYISO performs this thermal analysis for two steady state base cases, for the ATBA and ATRA, respectively.

2. Voltage Analysis

Voltage analysis is an analytical method used to evaluate system voltage performance and to compute the transfer limits of the transmission system for a given base case condition from the stand point of the voltage criteria described in rule B.1(R1) of the NYSRC Reliability Rules & Compliance Manual. Starting with a steady state base case, NYISO uses a standard power flow analysis program to evaluate and determine the transfer limits of the transmission system from the stand point of the voltage criteria. The methodology used by NYISO in this analysis is described in NYISO Transmission Planning Guideline #2-0, *Guideline for Voltage Analysis and Determination of Voltage-Based Transfer Limits*. For the cost allocation, NYISO performs this voltage analysis for the two steady state base cases, for the ATBA and ATRA, respectively.

3. Stability Analysis

Stability analysis is an analytical method used to evaluate system stability performance and compute the transfer limits of the transmission system for a given base case condition from the stand point of the

stability criteria described in rule B.1(R1) of the NYSRC Reliability Rules & Compliance Manual. Starting with a dynamic base case, which essentially is a steady state base case with dynamics models added, NYISO creates several transfer "test" cases and uses the PTI PSS/E Stability program to evaluate the stability performance of the system for various potentially limiting design criteria contingencies at the various transfer levels in order to determine the transfer limits of the transmission system from the stand point of the stability criteria. The methodology used by NYISO for this analysis is described in NYISO Transmission Planning Guideline #3-0, *Guideline for Stability Analysis and Determination of Stability-Based Transfer Limits*. For the cost allocation, NYISO performs this stability analysis for the two dynamic base cases for the ATBA and ATRA, respectively.

The results of the above described thermal, voltage and stability analyses are combined to determine the overall transfer limits of the transmission system based on the most limiting or the thermal, voltage, or stability criteria.

4. Short Circuit Analysis

Short circuit analysis is an analytical method used to evaluate fault current levels at various buses across the system and to determine whether any equipment (*e.g.*, circuit breakers) may be overdutied for the modeled system representation in violation of rule B.1(R4) of the NYSRC Reliability Rules & Compliance Manual. Unlike a steady state base case that must balance generation and load, thereby generally requiring at least some generation to be modeled off-line, a short circuit base case typically models all generation and transmission facilities represented in the case as in-service. The methodology used by NYISO for this analysis is described in NYISO G*uideline for Fault Current Assessment*. The TO's criteria are used to determine whether or not a specific piece of equipment is overdutied. For the cost allocation, NYISO performs this short circuit analysis for the two short circuit base cases, for the ATBA and ATRA, respectively. In the event that this analysis indicates that the ATBA or ATRA base case does not meet the applicable criteria, additional analysis is performed to evaluate and determine the SUFs needed to meet the criteria.

3.6.2.3. NYISO Obligations to Facilitate Communications

3.6.2.3.1. Posting of TPAS Meeting Minutes

The NYISO will post the minutes of TPAS meetings on the NYISO website. These minutes will be posted under TPAS meeting materials on the secured password-protected portion of the NYISO's website.

3.6.2.3.2. Electronic Work Room

The NYISO will maintain a secure portion of its website for TPAS and IPFSWG materials (i.e., an electronic "work room") on which items subject to TPAS review will be posted. The electronic work room

and meeting minutes for TPAS and IPFSWG will allow Market Participant comments and NYISO responses thereto to be posted.

3.6.2.3.3. Submission of Market Participant Comments

As described in Section 3.6.2.4 below, TPAS and the IPFSWG will review various aspects of the cost allocation process for a Class Year. Market Participants shall submit their comments and information to NYISO which will be posted with TPAS and IPFSWG materials on the secure password-protected portion of the NYISO's website.

NYISO will not rely on or utilize any information not made available to TPAS, or IPFSWG for the Class Year, at least three (3) Business Days in advance of any TPAS or IPFSWG meeting at which review of a matter permitted in Section 3.6.2.4 occurs. Market Participants can make their comments or information available to TPAS or IPFSWG by submitting them through the electronic work room in accordance with the requirements specified herein. However, NYISO may consider or utilize information that qualifies as Confidential Information under the NYISO's tariffs or that constitutes CEII pursuant to any law or regulation without first making it available to TPAS or IPFSWG.

3.6.2.3.4. Establishment of TPAS Working Group

NYISO will work with TPAS to establish and facilitate an IPFSWG – a Market Participant Working Group within TPAS to focus on each Class Year cost allocation. IPFSWG will consist of those stakeholders with significant interest in the cost allocation process for the given Class Year, such as developers with Class Year Projects and impacted Transmission Owners.

3.6.2.4. TPAS Involvement in Study Process

3.6.2.4.1. TPAS Review of Study Inputs

NYISO will present to TPAS for TPAS review all study inputs prior to the NYISO beginning any cost allocation study. The study inputs presented to TPAS will include a description of the adjacent control area system representation that the NYISO proposes to adopt.

3.6.2.4.2. TPAS Review of Completed Studies

Upon completion of a study, the NYISO will present the results of the study to TPAS and TPAS will have the opportunity to review those results. The studies included in this review are the ATBA and the ATRA.

3.6.2.4.3. TPAS Involvement in Selection of Generic Facilities

In certain circumstances, NYISO must develop generic facilities to complete the ATBA (*see* Section 25.6.1.2 of Attachment S of the NYISO OATT). This will occur if the existing transmission and generation

facilities, combined with previously approved and accepted SUFs, are insufficient to meet the Applicable Reliability Requirements on a year by year basis.

Under Section 25.6.1.2.6 of Attachment S, NYISO must submit proposed generic solutions to an independent expert for review. TPAS will identify the qualifications necessary for independent experts that will be selected. Prior to selecting an independent expert, NYISO will present the candidates' credentials to TPAS for its review.

NYISO will submit to TPAS for its review the NYISO's generic solutions (generation and/or transmission), including any options considered and rejected by the NYISO, as well as proposals made by any Market Participant, as permitted under Attachment S.

TPAS and/or IPFSWG will review the comments of the independent expert reviewer retained pursuant to Attachment S. To facilitate this process, NYISO will post the comments of the independent expert to the electronic work room, including all drafts of the expert reviewer's reports provided to NYISO.

3.6.2.4.4. TPAS Working Group Review of Estimates

NYISO will present to IPFSWG for its review all cost information and all other data used or relied upon in developing cost estimates required under Attachment S. These estimates include the costs of the SUFs identified in the ATBA (Section 25.6.1.1) and those identified in the ATRA (Section 25.6.2).

3.6.2.4.5. TPAS Review of Draft and Final Cost Allocation Reports

NYISO will present to TPAS for its review all draft and final cost allocation reports.

3.6.2.5. Information Presented to Operating Committee

NYISO will compile the record of IPFSWG and TPAS members' comments submitted during the cost allocation process for the Class Year and the NYISO's responses to these comments. NYISO will make these comments available to the OC with the cost allocation report for each Class Year allocation.

3.6.3. Modeling of Dual Yard Units at the Astoria East and West 138 kV Station in Interconnection Studies

This section of the manual describes the modeling of dual yard units at the Astoria East and West 138 kV Station in interconnection studies.

3.6.3.1. Background

Attachments S, X, and Z of the NYISO's OATT establish the interconnection studies required for proposed generation and Class Year Transmission Projects. Existing facilities, including generation, must be modeled in the base cases used for these interconnection studies according to applicable requirements. Astoria Generating Company L.P. ("AGC") owns steam units Astoria 3 and 5 (the "Dual Yard Units"). AGC has two distinct Points of Interconnection for each of the Dual Yard Units. Specifically, these units can

connect to either the Astoria East 138 kV substation or the Astoria West 138 kV substation. Each unit can be connected to only one of these substations at a time. The connection point for each of these units in operations changes from time to time in response to the system conditions at that time. This document describes how these units will be modeled in the base cases used for interconnection studies.

3.6.3.2. Details

For purposes of all interconnection studies, the two dual yard units (Astoria 3 and 5) will be modeled in a single, normal configuration. Under this configuration, Astoria 3 and 5 will be modeled at the Astoria West 138 kV substation. This configuration will be modeled in all base cases used for interconnection studies, including steady state, short circuit and dynamic base cases. All interconnection facilities required for a proposed project, including SUFs and SDUs, will be determined based upon this single configuration of Astoria 3 and 5. The use of this single configuration in interconnection studies will be revisited if AGC proposes, through the interconnection process as applicable, any changes to the Dual Yard Units which affects any of their dual yard capability.

The configuration of these units in operations may change based on system conditions and consistent with any applicable operating protocol.

3.6.4. Deliverability Study Methodology

3.6.4.1. Overview

The methodology for the Class Year Deliverability Study and cost allocation for CRIS is defined in Section 25.7 of Attachment S to the NYISO OATT. The Class Year Deliverability Study procedures are outlined in Section 25.7.7 of Attachment S. A brief summary of the Deliverability methodology follows.

The Deliverability rules and tests are applied to NYCA transmission facilities in three categories: Byways, Highways, and Other Interfaces. (Per Att. S Section 25.7.2)

- Highways are the upstate inter-zonal interfaces, namely: Dysinger East, West Central, Volney East, Moses South, Central East/Total East, and UPNY-ConEd (and in series Bulk Power System facilities).
- Other Interfaces – Interfaces into New York Capacity Regions, Lower Hudson Valley, New York City (Zone J) and Long Island (Zone K), and external ties into the New York Control Area.
- Byways – Facilities that are not Highways or Other Interfaces (i.e., all other transmission facilities within the NYCA).

The Deliverability Study includes three types of deliverability tests: 1) deliverability test for Highways and Byways, 2) “no harms” test for Highways, and 3) “no-harms” test for Other Interfaces.

- Deliverability test for Highways and Byways – Evaluates whether CRIS (current and requested) is deliverable within each of the four Capacity Regions (ROS-Rest of State, LHV-Lower Hudson

Valley, NYC-New York City, and LI-Long Island), or results in Highway and/or Byway overloads (*i.e.*, bottled capacity). (Per Att. S Section 25.7.8 except 25.7.8.2.14)

- No-harms test for Highways – evaluates whether requested CRIS degrades transfer capability (i.e., emergency transfer limit) of a Highway interface by more than a de minimus level (lesser of 25 MW or 2% of base transfer capability identified in the ATBA) and results in an increase of NYCA LOLE (determined in ATBA) of .01 or more. (Per Att. S Section 25.7.8.2.14)
- Deliverability test (i.e., no harms test) for Other Interfaces – Evaluates whether requested CRIS degrades transfer capability (i.e., emergency transfer limit) of any Other Interface by more than a de minimus level (lesser of 25 MW or 2% of base transfer capability identified in the ATBA). (Per Att. S Section 25.7.9)

Base case assumptions, modeling and conditioning steps for deliverability testing are described in Section 25.7.8.2 of Attachment S.

For deliverability testing, Emergency transfer criteria and testing is performed in conformance with NYSRC rules consistent with that used in the NYISO Comprehensive Reliability Planning Process and Area Transmission Review transfer limit calculation methodology. (Per Att. S Section 25.7.8.2.5)

3.6.4.2. Deliverability Testing in Capacity Regions

Background

The Class Year ATBA and ATRA cases are "conditioned" to create the $ATBA_D$ and $ATRA_D$ cases (*i.e.*, "deliverability base case conditioning"). Evaluation of capacity deliverability occurs under the NYISO Class Year Facilities Study process, as part of the Class Year Deliverability Study.

The Class Year Deliverability Study consists of:

- $ATBA_D$ – Evaluation of deliverability of Existing System (without Class Year Projects)
- $ATRA_D$ – Evaluation of deliverability of system with Class Year Projects added ($ATBA_D$ with Class Year Projects). Class Year Projects requesting CRIS will be dispatched at maximum Unforced Capacity (UCAP) values in $ATRA_D$.
- If necessary, evaluation and identification of SDUs to mitigate the incremental impact of Class Year Projects on deliverability.

Base case assumptions, modeling and conditioning steps for deliverability testing are described in Section 25.7.8.2 of Attachment S.

For deliverability testing, Emergency transfer criteria and testing is performed in conformance with NYSRC rules consistent with that used in the NYISO Comprehensive Reliability Planning Process studies (*e.g.*, RNA). (Per Att. S Section 25.7.8.2.5)

With the deliverability assumptions and testing rules in the above section, the following provides a discussion of deliverability testing in the four Capacity Regions.

- Deliverability testing in ROS-Rest of State and LHV-Lower Hudson Valley – four types of deliverability testing are applied in ROS and LHV capacity regions: Deliverability tests for Highways and Byways, No-harms tests for Highways and Other Interfaces.
- Deliverability tests for Highways and Byways:

  For these assessments, CRIS is evaluated as "deliverable" when the increment capacity transfer limit is greater than the net available capacity from the exporting source otherwise it is evaluated as "bottled". The Deliverability Test is performed on the $ATBA_D$ and $ATRA_D$ cases. If the $ATRA_D$ case is found as "bottled", the incremental impact of the Class Year Project(s) is determined by the difference between the two cases.

  Figure 4 provided below presents the exporting and importing zones for ROS and LHV Highways.

  For ROS and LHV Byways Deliverability test, the exporting zone is the Class Year Project plus the existing CRIS at the Class Year Project's point of interconnection, if any, and the importing zone is the rest of ROS or LHV capacity region. No *de minimus* applied and the proposed projects are responsible for restoring the degraded transfer capability.

  If negative incremental impact is observed, potential SDU will be proposed to mitigate CY project's incremental impact.
- No-harms tests for Highways and Other Interfaces:

  Figures 4 and 5 below present the exporting and importing zones for ROS and LHV Highways and Other Interfaces.

  Capacity transfer from exporting zone to importing zone using Figure 4, the Highways "No Harm" tests is evaluated whether requested CRIS degrades the Highways total transfer capability (i.e., emergency total transfer limit) of a Highway interface by more than a *de minimus* level (lesser of 25 MW or 2% of base total transfer capability identified in the $ATBA_D$) and results in an increase of NYCA LOLE (determined in $ATBA_D$) of .01 or more.

  Capacity transfer from exporting zone to importing zone using Figure 5, the Other Interface "No Harm" tests is evaluated whether requested CRIS degrades the Other Interface total transfer capability (i.e., emergency total transfer limit) of a Highway interface by more than a de minimus level (lesser of 25 MW or 2% of base total transfer capability identified in the $ATBA_D$).

  If total transfer degradation is observed, potential SDU will be proposed to mitigate CY project's incremental impact.

Figure 4: Exporting and Importing Regions for Highways

Interface	Exporting Zone(s) or Region	Importing Zone(s) or Region
Dysinger-East	A	BCDEF
West Central	AB	CDEF
Volney-East	ABC	DEF
Moses-South	D	ABCEF
Total East	ABCDE	F
UPNY-ConEd	G	HI

Figure 5: Exporting and Importing Regions for Other Interfaces

Interface	Exporting Zone(s) or Region	Importing Zone(s) or Region
UPNY-SENY	ABCDEF	GHI
LHV to J	GHI	J
LHV to K	GHI	K
PJM to NYISO	PJM-Classic	A – G 90% I – J 10%
IESO-NYISO	Ontario	Central (C) 60% Capital (F) 25% Hudson (G) 5% NYC (J) 10%
ISO-NE to NYISO	NE_SOUTH 50% NE_NORTH 50%	Capital (F) 35% NYC (J) 65%
HQ to NYISO (MSC-7040)	Hydro-Quebec	NYCA
NNC	New England	NYCA

- Deliverability testing in NYC-New York City

  Deliverability assessment within NYC is for Byways only.

  The exporting zone is the subzone where the Class Year Project(s) is located plus the existing CRIS located at the same subzone, if any, and the importing zone is the rest of NYC capacity region.

  For these assessments, CRIS is evaluated as "deliverable" when the increment capacity transfer limit is greater than the net available capacity from the exporting source otherwise it is evaluated as "bottled". The NYC Byways Test is performed on the $ATBA_D$ and $ATRA_D$ cases. If the $ATRA_D$ case is found as "bottled", the incremental impact of the Class Year Project(s) is determined by the difference between the two cases.

  If negative incremental impact is observed, potential SDU will be proposed to mitigate CY project's incremental impact.

- Deliverability testing in LI-Long Island

  Deliverability assessment within LI is for Byways only.

  The exporting zone is the subzone where the Class Year Project(s) is located plus the existing CRIS located at the same subzone, if any, and the importing zone is the rest of LI capacity region. LI capacity region is divided by three subzones: LI-West, LI-Central and LI-East.

  For these assessments, CRIS is evaluated as "deliverable" when the increment capacity transfer limit is greater than the net available capacity from the exporting source otherwise it is

evaluated as "bottled". The LI Byways Test is performed on the $ATBA_D$ and $ATRA_D$ cases. If the $ATRA_D$ case is found as "bottled", the incremental impact of the Class Year Project(s) is determined by the difference between the two cases.

If negative incremental impact is observed, potential SDU will be proposed to mitigate CY project's incremental impact.

3.6.4.3. Evaluation of Transfers of Deliverability Rights

Proposed transfers of CRIS between different locations are required to be evaluated in a Class Year Deliverability Study in accordance with Section 25.9.5 of Attachment S. The methodology for evaluation of CRIS transfers is as follows.[8]

Background

Evaluation of CRIS transfers at different location occurs under the NYISO Class Year Study process, as part of the Class Year Deliverability Study. Evaluation of CRIS transfers at the same electrical location are not evaluated under the Class Year Study process. Same location CRIS transfers are subject to Section 25.9.4 of Attachment S, which provides that if a facility deactivates an existing unit within the NYCA and commissions a new one at the same electrical location, the CRIS status of the deactivated facility and its deliverable capacity level may be transferred to that same electrical location, provided that the new facility becomes operational within three years from the deactivation of the original facility. The new facility will only acquire the assigned capacity deliverability rights once the new facility becomes operational.

For both "same location" and "different location" CRIS transfers:

- The facility receiving the transfer of CRIS must become operational within three years from the deactivation of the original facility (*see* Section 25.9.3.1 of Attachment S). The term "operational" in this context requires the new facility to return to service and participate in NYISO capacity auctions or bilateral transactions.
- The CRIS transfer transaction must be finalized prior to the date upon which the CRIS expires.

The Class Year Deliverability Study consists of:

- $ATBA_D$ – Evaluation of deliverability of Existing System (without Class Year Projects)
- $ATRA_D$ – Evaluation of deliverability of system with Class Year Projects added
- If necessary, evaluation and identification of SDUs to mitigate the incremental impact of Class Year Projects on deliverability.

CRIS transfers at a different location are evaluated at the $ATRA_D$ step.

[8] Source: Evaluation of Transfers of Deliverability Rights, a presentation to the NYISO Interconnection Issues Task Force, March 12, 2010.

Process for Evaluating Deliverability for a Proposed Transfer of CRIS:

Example: The parties submit a proposed transfer of 100 MW of CRIS from Existing Facility "Unit A" to New Facility "Unit B"

- "Unit B" must be in the Class Year.
- The $ATBA_D$ case includes Unit A, including the 100 MW of CRIS proposed to be transferred ($CRIS_T$). The $ATBA_D$ case does not include Unit B or any Class Year Projects.
- The Deliverability Test is performed on the $ATBA_D$ case, which may or may not find deliverability issues.
- Step 1 – Create the $ATRA_{D1}$ case and evaluate deliverability for that case.
  - The $ATRA_{D1}$ case models Unit A with the $CRIS_T$, and models all Class Year Projects, including Unit B, with their proposed capacity.
  - This step evaluates the deliverability of the Class Year Projects without the proposed transfer.
  - If Unit B is found deliverable for this test, the transfer is allowable.
  - Otherwise, proceed to Step 2.
- Step 2 – Create $ATRA_{D2}$ case and evaluate deliverability for that case.
  - The $ATRA_{D2}$ case is created from $ATRA_{D1}$ by removing $CRIS_T$ from Unit A.
  - This step re-evaluates the deliverability of the Class Year Projects, this time <u>with</u> the proposed transfer.
  - If Unit B is found deliverable for this test, the transfer is allowable.
- Otherwise, proceed to Step 3.
- Step 3 – Create $ATRA_{D3}$ case, evaluate deliverability for that case, and compare the relative deliverability of $ATRA_{D3}$ vs. $ATRA_{D2}$.
  - The $ATRA_{D3}$ case is created from $ATRA_{D1}$ by removing the amount of capacity requested from Unit B (New Facility). Note that $CRIS_T$ is modeled on Unit A (Old Facility) in this case.
  - Comparing $ATRA_{D3}$ to $ATRA_{D2}$ evaluates the effect of the transfer on deliverability.
  - If deliverability is not degraded (going from $ATRA_{D3}$ to $ATRA_{D2}$), the transfer is <u>allowable</u>.
  - If deliverability is fractionally degraded, NYISO will evaluate whether a transfer of a partial amount of $CRIS_T$ may be allowed with no degradation to deliverability compared to case $ATRA_{D3}$.
  - If no amount of $CRIS_T$ is transferable without causing a degradation of deliverability, the transfer is <u>not allowable</u>.

Figure 6: Review of Cases to Evaluate Transfer

Case	Unit A $CRIS_T$	Unit B CAP_T	
$ATRA_{D1}$	100	100	Evaluates deliverability of Class Year Projects w/o transfer
$ATRA_{D2}$	0	100	Evaluates deliverability of Class Year Projects with transfer
$ATRA_{D3}$	100	0	Comparing $ATRA_{D2}$ to $ATRA_{D3}$ evaluates the impact of the transfer on deliverability.

If the deliverability test conducted pursuant to Section 25.9.5 of Attachment S shows that the CRIS transfer is deliverable, the transferee is given five (5) business days to notify the NYISO as to whether the particular transaction is final or not. The CRIS transfer transaction must be finalized prior to the date upon which the CRIS expires.

3.7. Inter-ISO Interconnection Procedures

The NYISO and two neighboring ISO/RTOs, ISO New England Inc. (ISO-NE) and PJM Interconnection, L.L.C. (PJM), developed and adopted a document called the, "Amended and Restated Northeastern ISO/RTO Planning Coordination Protocol." This document is available from the NYISO website and can be accessed via the Interconnection Projects portion of the website.

Each of the ISO/RTOs have interconnection procedures in their respective FERC-approved OATTs that apply to proposed interconnections of generation and merchant transmission facilities to their respective transmission systems. These ISO/RTO interconnection procedures are generally similar, but each has regional differences from the others. A common feature of these interconnection procedures is that they each include provisions for an ISO/RTO to coordinate with a neighboring ISO/RTO as a potentially Affected System when a proposed interconnection to the first ISO/RTO may adversely impact the reliability of the neighboring ISO/RTO.

The Northeastern ISO/RTO Planning Coordination Protocol ("ISO/RTO PCC") was developed as supplemental coordination procedures between and among the participating ISO/RTOs on planning matters such as exchange of data and information required for system planning analysis.

Section 4 of the ISO/RTO PCC entitled, "Analysis of Interconnection Queue Requests," provides supplemental procedures for conducting coordinated studies for interconnection projects in one ISO/RTO (the "direct connect region") an a potentially impacted neighboring ISO/RTO (the "potentially impacted region"). These supplemental coordination procedures are consistent with the separate interconnection procedures of the participating ISO/RTOs, and are intended to help in the implementation of those procedures. In the event that transmission network upgrades in the potentially impacted region are identified as needed to mitigate the impact of an interconnection project in the direct connect region, the ISO/RTO PCC states that, "Requirements for the construction of such transmission network upgrades shall be under the terms and conditions of the potentially impacted region and consistent with applicable federal or provincial regulatory policy."

For proposed projects in the NYISO Interconnection Queue that potentially impact a neighboring ISO/RTO (PJM or ISO-NE), NYISO coordinates the interconnection studies with the potentially impacted neighboring ISO/RTO as an Affected System in accordance with the applicable interconnection procedures of the NYISO OATT and following the ISO/RTO PCC. Also, for proposed projects in PJM or ISO-NE's interconnection queues that potentially impact the reliability of the New York system, NYISO participates as an Affected System in the interconnection studies for those projects as necessary, following the ISO/RTO PCC.

4. Transmission Planning Criteria and Guidelines

4.1. Introduction

NYISO recognizes and applies the applicable reliability criteria and standards of NERC, NPCC, NYSRC and the local Transmission District(s) for transmission expansion and interconnection studies. In addition, NYISO has developed and implemented various procedures and methods used in the performance of such studies. All of these criteria, standards, practices and procedures constitute applicable reliability criteria used to evaluate projects in the transmission and interconnection study process. This section will summarize the criteria, procedures, and methods used by the NYISO in conducting transmission and interconnection studies.

A critical element of transmission and interconnection studies are the base cases and data that are input to the studies. NYISO transmission and interconnection studies rely on the data collection and base case update procedures outlined in the NYISO Reliability Analysis Data (RAD) Manual. The RAD Manual is available from the NYISO website at https://www.nyiso.com/manuals-tech-bulletins-user-guides.

4.2. Applicable Reliability Criteria and Standards

The reliability criteria and standards used by the NYISO for transmission and interconnection studies are documented in Part 4 the NYISO *Annual Transmission Planning and Evaluation Report (FERC Form No. 715 or FERC 715)*, which is updated and filed on April 1 each year, and in this Manual. The reliability criteria listed in the NYISO 2016 FERC 715 Report (the most recent as of the date of this manual) are as follows:

- NERC Reliability Standards – specifically Standard TPL-001-4 - *Transmission System Planning Performance Requirements*, and Standard FAC-013-2 – *Assessment of Transfer Capability for the Near-Term Transmission Planning Horizon*;
- NPCC Regional Reliability Reference Directory #1 *Design and Operation of the Bulk Power System (Directory #1)* and Regional Reliability Reference Directory #12 *Under frequency Load Shedding Program Requirements (Directory #12)*;
- NYSRC Reliability Rules & Compliance Manual for Planning and Operating the New York State Power System;
- NYTO documents pertaining to transmission planning criteria and/or guidelines;
- NYTO documents pertaining to interconnection requirements and procedures.

The most recent NYISO FERC 715 report and related documents are available from the NYISO web site at the following link: https://www.nyiso.com/ny-power-system-information-outlook

In general, transmission and interconnection studies apply the applicable reliability criteria and standards that are in effect at the time of the start of the study.

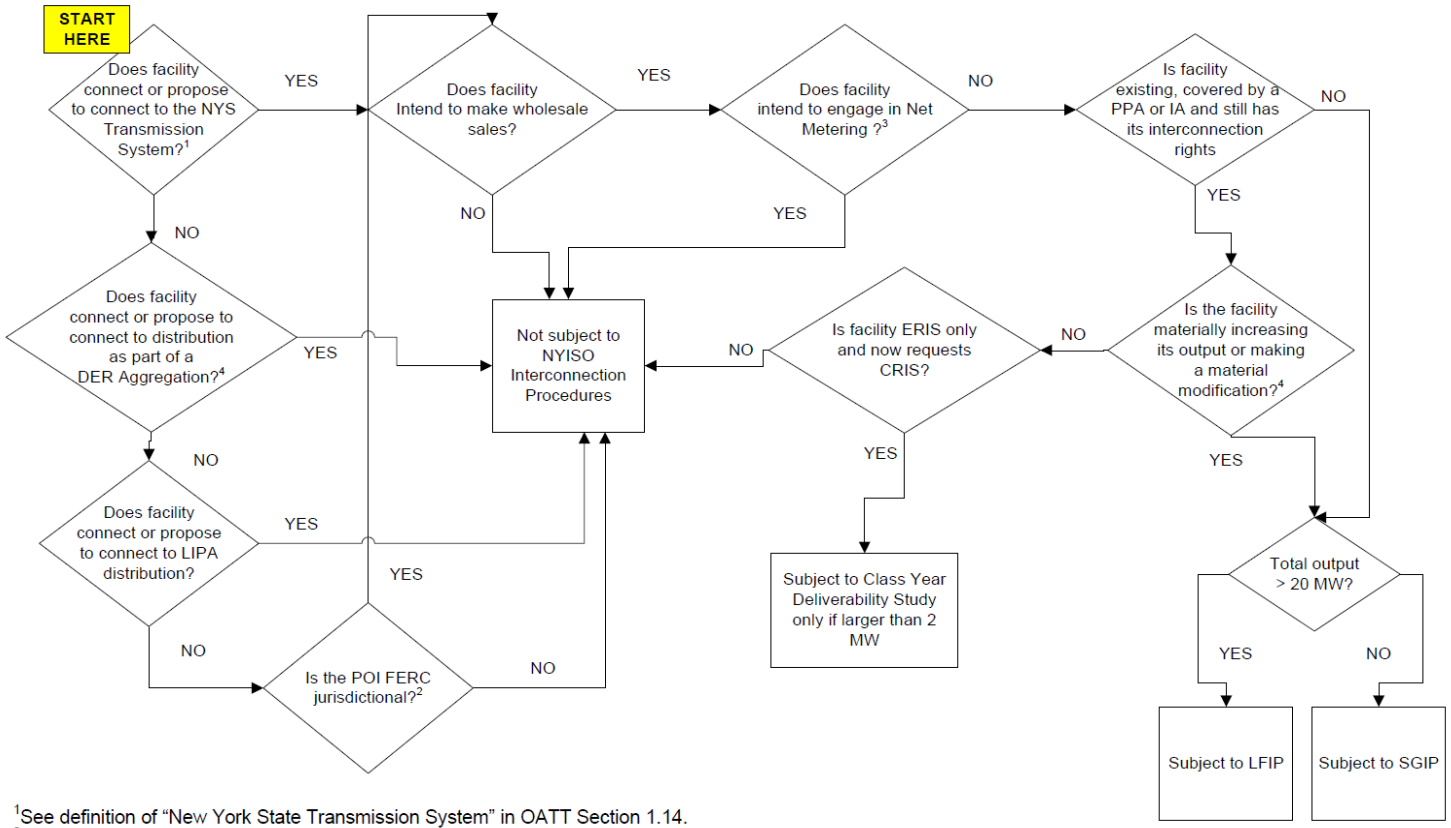
4.3. NYISO Transmission Planning Guidelines

NYISO has developed and implemented a number of guidelines related to and used in NYISO transmission and interconnection studies. These guidelines were developed and implemented as standalone documents, but included as attachments to the TEI Manual. These attachments are considered part of the TEI Manual, and therefore subject to approval along with approval of the manual, but also may be revised and approved as separate documents.

The guidelines attached to this TEI Manual are as follows:

1. **NYISO Transmission Planning Guideline #1-1, Guideline for System Reliability Impact Studies** (included as Attachment F. This is a revision of NYISO Transmission Planning Guideline #1-0, September, 28, 1999, that was included as Attachment D in the original TEI Manual.)
2. **NYISO Transmission Planning Guideline #2-1, Guideline for Voltage Analysis and Determination of Voltage-Based Transfer Limits** (included as Attachment G. This is a revision of NYISO Transmission Planning Guideline #2-0, September 28, 1999, that was included as Attachment E in the original TEI Manual.)
3. **NYISO Transmission Planning Guideline #3-1, Guideline for Stability Analysis and Determination of Stability-Based Transfer Limits** (included as Attachment H. This is a revision of NYISO Transmission Planning Guideline #3-0, September 28, 1999, that was included as Attachment F in the original TEI Manual.)
4. **NYISO Guideline for Fault Current Assessment #4-1**, revised June 8, 2009 (included as Attachment I. This is a revision of the original NYISO Guideline for Fault Current Assessment, January 30, 2003.)
5. **NYISO Transmission Planning Guideline #5-0, Guideline for Application of High-Speed Autoreclosing**, July 25, 2002 (included as Attachment J).

Attachment A Jurisdictional Flow Chart



[1]See definition of "New York State Transmission System" in OATT Section 1.14.
[2]See definition of "Distribution System" in OATT Sections 25.1, 30.1 and 32.5, Appx. 1. This includes primarily distribution lines on which there already exists a generator that is making wholesale sales for resale pursuant to the "first use" test (see note 4 regarding Order No. 2222 guidance on the "first use" test as applied to generators participating exclusively as part of a DER Aggregation). A facility certified as a QF that proposes to interconnect to a distribution line is subject to the NYISO's interconnection procedures even if there is not already a wholesale generator on that distribution facility (See Order 2003-A, n168; see also *PJM Interconnection, L.L.C.*, 123 FERC ¶ 61,087 (2008), Docket No. ER07-1205-002; and *Standardization of Generator Interconnection Agreements and Procedures*, Order No. 2003-A, FERC Stats. & Regs. ¶ 31,160, at P 735 n.168 (2004)).
[3]Net Metering is an arrangement in which facility receives a credit against its retail power purchases from the selling utility if facility produces more electricity than it can use and sends excess back onto the transmission system. If facility produces more energy than it needs and makes a net sale to the utility over the applicable netting period, it becomes FERC-jurisdictional. (See Order 2003-A at P 747).
[4]Pursuant to Order No. 2222, effective 90 days after publication in the Federal Register, the interconnection of a distribution resource for the purpose of participating in exclusively through a DER Aggregation is not subject to the standard interconnection procedures in Attachments X and Z to the OATT and does not constitute a first interconnection for the purpose of making wholesale sales under the "first use" test. (Order No. 2222 at P 97).
[5]An increase in the capacity of an existing facility is a material increase unless it falls within the exception set forth in Sections 30.3.1 of Attachment X or Section 32.1.3 of Attachment Z. Other material modifications are described in Section 30.4 of Attachment X. Pre-existing QF that previously sold all output under a PPA does not trigger an Interconnection Request if it represents that the proposed output is substantially the same as before. (See Order No. 2006 at P 558)

Attachment B General Form of NYISO Study Agreement

Section 3 of OATT
System Impact Study Agreement
_____Project

1. This Study Agreement ("Agreement"), dated as of _____, 20__, is entered into, by and between the New York Independent System Operator, Inc. ("NYISO"), and ("Customer") pursuant to Section 3 of the NYISO Open Access Transmission Tariff ("OATT"). Customer and NYISO each may be referred to as a "Party," or collectively as the "Parties."

2. The NYISO has determined that the Customer is an Eligible Customer as defined in Section 3 of the OATT and that the Customer has submitted request for a System Impact Study ("Study").

3. The draft scope of work for the Study ("Study Scope") is attached hereto as Exhibit 1. This draft Study Scope is subject to the approval of the NYISO's Operating Committee.

4. Study Participants, Estimated Cost and Time for Completion of the Study.

4.1. The Customer or its consultant will perform the Study pursuant to the Study Scope approved by the NYISO's Operating Committee and will provide to the NYISO a draft Study report. The NYISO will review the draft Study report. The NYISO shall also coordinate with and obtain input from the Transmission Owners within the New York Control Area ("Transmission Owners") as necessary and appropriate.

4.2. The Customer will provide the draft Study report to the NYISO within 60 Calendar Days from the later of (1) Operating Committee approval of the Study Scope, or (2) the date both parties have executed this Agreement. Failure of the Customer to provide the draft Study report by this date will result in the removal of the project from the NYISO queue and the termination of this Agreement.

4.3. The NYISO estimates that the total cost for NYISO and Transmission Owner Study work under Agreement will not exceed $50,000. The NYISO estimates that it will complete its review of the draft Study report within 30 days from its receipt from the Customer.

5. Customer Obligations and Rights

5.1. The Customer agrees to pay to the NYISO the actual costs incurred by the NYISO and Transmission Owners in the performance and review of the Study.

5.2. The Customer agrees to make arrangements for any non-New York transmission owner(s) that may ultimately affect the outcome of the Study or subsequent project proposal, to participate in the Study. If requested by the Customer, the NYISO shall undertake reasonable efforts to assist the Customer in making such arrangements in accordance with Section 3.14 of the OATT. Should the Customer fail to make such arrangements, the NYISO shall proceed with the Study based on the information and data it has regarding the system(s) of non-New York transmission owner(s), but neither the NYISO nor the New York Transmission Owners shall be held liable for any erroneous or inaccurate results due to incomplete or inaccurate information and data pertaining to the system(s) of non-New York transmission owner(s).

5.3. The Customer has the right to terminate the Study and this Agreement at any time. In such case, the Customer shall promptly notify the NYISO of such termination and is liable to pay any actual Study costs incurred by the NYISO or Transmission Owner as of the date of such notification. Also, in such case, the NYISO shall not be required to provide a report of any partial Study results to the Customer.

6. NYISO Obligations

6.1. The NYISO agrees to assign the appropriate priority to the Study and enter it into the NYISO Queue in accordance with Section 3.10 of the OATT.

6.2. Upon initiation of the Study, the NYISO agrees to use due diligence to review the draft Study report within the time estimated. If the NYISO is unable to complete the review of the draft Study report within that period, the NYISO shall notify the Customer of such delay and the reason(s) why additional time is needed, and shall provide an estimate of when the review can be completed.

6.3. If requested, the NYISO agrees to provide reasonable assistance to the Customer in making arrangements for the participation of non-New York Transmission Owner(s) that may impact the outcome of the Study in accordance with Section 3.14 of the OATT.

7. Confidentiality

The Customer acknowledges that the Study will be listed on the NYISO's Study Queue, which is available to the public. Unless otherwise required by applicable law, rule, or regulation, the NYISO agrees to maintain the confidentiality of any and all information and data provided by the Customer for the Study, for as long as the Customer maintains such confidentiality. However, the Study Scope and the final Study Report will be made available to the NYISO's Transmission Planning Advisory Subcommittee and Operating Committee and posted on the NYISO's website. The Customer acknowledges that the NYISO has a responsibility to provide, or make available, system modeling data associated with approved transmission and generation projects to neighboring Control Areas and NPCC and to provide modeling data of proposed projects to other parties pursuant to the requirements of the NYISO OATT.

8. Any notice or request made to or by either Party regarding this Agreement shall be made to the representative of the other Party as indicated below.

NYISO: _____
_____
_____
_____

Customer: _____
_____
_____
_____

9. Miscellaneous

9.1. Accuracy of Information. Except as Customer may otherwise specify in writing when providing information to the NYISO under this Agreement, Customer represents and warrants that the information it provides to NYISO shall be accurate and complete as of the date the information is provided. Customer shall promptly provide NYISO with any additional information needed to update information previously provided.

9.2. Disclaimer of Warranty. In preparing the Study, the Party preparing such study and any subcontractor consultants employed by it shall have to rely on information provided by the other Parties, and possibly by third parties, and may not have control over the accuracy of such information. Accordingly, neither the Party preparing the Study nor any subcontractor consultant employed by that Party makes any warranties, express or implied, whether arising by operation of law, course of performance or dealing, custom, usage in the trade or profession, or otherwise, including without limitation implied warranties of merchantability and fitness for a particular purpose, with regard to the accuracy, content, or conclusions of the Study. Customer acknowledges that it has not relied on any representations or warranties not specifically set forth herein and that no such representations or warranties have formed the basis of its bargain hereunder.

9.3. Limitation of Liability. In no event shall any Party or its subcontractor consultants be liable for indirect, special, incidental, punitive, or consequential damages of any kind including loss of profits, arising under or in connection with this Agreement or the Study or any reliance on the Study by any Party or third parties, even if one or more of the Parties or its subcontractor consultants have been advised of the possibility of such damages. Nor shall any Party or its subcontractor consultants be liable for any delay in delivery or for the non-performance or delay in performance of its obligations under this Agreement.

9.4. Term and Termination. This Agreement shall be effective from the date hereof and unless earlier terminated in accordance this Agreement, shall continue in effect for a term of one year or until the Study is approved by the NYISO Operating Committee, whichever event occurs first Customer or NYISO may terminate this Agreement upon the withdrawal of Customer's request for a System Impact Study.

9.5. Governing Law. This Agreement shall be governed by and construed in accordance with the laws of the State of New York, without regard to any choice of laws provisions.

9.6. Severability. In the event that any part of this Agreement is deemed as a matter of law to be unenforceable or null and void, such unenforceable or void part shall be deemed severable from this Agreement and the Agreement shall continue in full force and effect as if each part was not contained herein.

9.7. Counterparts. This Agreement may be executed in counterparts, and each counterpart shall have the same force and effect as the original instrument.

9.8. Amendment. No amendment, modification or waiver of any term hereof shall be effective unless set forth in writing signed by the Parties hereto.

9.9. Survival. All warranties, limitations of liability and confidentiality provisions provided herein shall survive the expiration or termination hereof.

9.10. Independent Contractor. NYISO shall at all times be deemed to be an independent contractor and none of its employees or the employees of its subcontractors shall be considered to be employees of Customer as a result of this Agreement.

9.11. No Implied Waivers. The failure of a Party to insist upon or enforce strict performance of any of the provisions of this Agreement shall not be construed as a waiver or relinquishment to any extent of such party's right to insist or rely on any such provision, rights and remedies in that or any other instances; rather, the same shall be and remain in full force and effect.

9.12. Successors and Assigns. This Agreement, and each and every term and condition hereof, shall be binding upon and inure to the benefit of the Parties hereto and their respective successors and assigns.

IN WITNESS WHEREOF, NYISO and Customer have caused this Agreement to be duly executed by their respective officers as of the day and year designated below.

New York Independent System Operator, Inc.

By: _____

Name: _____

Title: _____

Date: _____

_____

By: _____

Name: _____

Title: _____

Date: _____

Exhibit 1
Draft System Impact Study Scope

Attachment C Acquisition of CRIS Rights

	Scenario	Applicable Rule	CRIS Level	NYISO Interconnection Studie
1	New or existing facility connecting to non-FERC jurisdictional distribution	Unless eligible for grandfathered or "transition rule" CRIS under Att. S Section 25.9.3.3 (which required facility to have requested CRIS by July 18, 2016), all such facilities larger than 2 MW must enter Class Year Deliverability Study or Expedited Deliverability Study to request CRIS (Att. Sections 25.1.1, 25.3.1, 25.5.5.9)	MW level found deliverable or for which it commits to fund SDUs (not to exceed MW level requested, up to the maximum level permitted by Section 25.8.1 of Attachment S)	Class Year Deliverability Study or Expedited Deliverability Study
2	New or existing facility ≤ 2 MW (regardless of whether interconnection is FERC-jurisdictional)	Not subject to Deliverability (Att. Z Section 32.1.1.7)	MW level requested, up to 2 MW	Subject to interconnection study process under Attachment Z if connecting to FERC-jurisdictional Point of Interconnection
3	New facility or existing facility > 2 MW with no CRIS (regardless of whether interconnection is FERC-jurisdictional)	Can only obtain CRIS through a Class Year Deliverability Study or Expedited Deliverability Study (Att. X Section 30.3.2.1, Att. Z Section 32.1.1.7)	MW level requested in CY that is found deliverable or for which is commits to fund SDUs , up to the maximum level permitted by Section 25.8.1 of Attachment S	Subject to interconnection study process under Attachment X (> 20 MW) or Attachment Z (≤ 20 MW) if connecting to FERC-jurisdictional Point of Interconnection
4	Existing facility > 2 MW previously evaluated for ERIS but that does not have CRIS	Can only obtain CRIS through Class Year Deliverability Study or Expedited Deliverability Study (Att. S Section 25.8.2.3)	MW level found deliverable or for which it commits to fund SDUs (not to exceed MW level requested, up to the maximum level permitted by Section 25.8.1 of Attachment S)	Subject to full interconnection study process only if material modification or material increase[9]
5	Existing facility seeking to increase existing CRIS	If the facility already has CRIS, it may increase CRIS by up to 2 MW per lifetime of the unit without being subject to a deliverability study; otherwise, CRIS increases are subject to Class Year	Existing CRIS plus approved increase	Subject to full interconnection study process only if material modification or material increase

[9] Material increases are defined in Section 30.3.1 of Attachment X (Large Facilities > 20 MW) and Section 32.1.3 of Attachment Z (Small Facilities ≤ 20 MW).

		Deliverability Study or Expedited Deliverability Study(Att. X Section 30.3.2.6, Att. Z Section 32.4.11.1)		
6	Existing facility pre-dating 10/5/2008 with GF CRIS	Retain their Grandfathered CRIS rights unless deactivated for more than 3 years (Att. S Section 25.9.3.1)	Maximum DMNC level during the 5 Summer Capability Periods prior to 10/5/2008	Subject to full interconnection study process only if material modification or material increase
7	Existing facility pre-dating 10/5/2008 without GF CRIS	Eligible for Grandfathered CRIS if existed prior to 10/5/2008, was not been deactivated more than 3 years, and requested CRIS before the expiration of the "transition window" set forth in Section 25.9.3.3.3, which ended on July 18, 2016(Att. S Section 25.9.3.1)	Nameplate, then set and reset to the maximum DMNC level achieved during 5 successive Summer Capability Periods	Subject to full interconnection study process only if material modification or material increase
8	Transfer of CRIS	Subject to Class Year Deliverability Study if different location (Att. S Section 25.9.5); otherwise, transferring facility must deactivate if same location (Att. S Section 25.9.4)	Same location – MWs transferred; Different location – MW level found deliverable or for which requestor commits to fund SDUs	Subject to Class Year Deliverability Study if transfer to a different location

Attachment D Steps in the NYISO Large Facility Interconnection Process[10]

(Applicable to Generating Facilities above 20 MW and Class Year Transmission Projects)

(Revised __/__/2020)

Step	Description / Action	By Whom	By When
A.	**Interconnection Request (IR)**		
1.	Submittal of Interconnection Request to NYISO with $10,000 application fee and demonstration of Site Control or additional $10,000 deposit in lieu of Site Control (Sections 30.3.1 & 30.3.3.1 of Attachment X)	Developer	N/A
2.	Acknowledgment of IR and notification of Connecting Transmission Owner (CTO) (Section 30.3.3.2 of Attachment X)	NYISO	Within 5 Business Days of receipt of IR
2.	Determine validity or deficiencies of IR (Section 30.3.3.2 of Attachment X)	NYISO	Within 10 Business Days of receipt of IR
3.	If notified of deficiencies, provide additional required information to NYISO (Section 30.3.3.3 of Attachment X)	Developer	Within 10 Business Days of receipt of notice[11]
B.	**Optional Feasibility Study (OFES)**		
4.	Schedule Scoping Meeting with Developer and CTO (Section 30.3.3.4 of Attachment X)	NYISO	Within 10 Business Days of receipt of validation of IR
5.	Hold Scoping Meeting (Section 30.3.3.4 of Attachment X)	NYISO, CTO & Developer	Within 30 Calendar Days of receipt of validation of IR
	Advise NYISO of election to proceed or forego OFES, or proceed directly to the System Reliability Impact Study if Developer opts to forego an OFES (Section 30.6.1 of Attachment X)	Developer	Within 5 Business Days of Scoping Meeting

[10] Summary of the basic steps described in Attachment X - NYISO Standard Large Facility Interconnection Procedures. *See* Attachment X for specific requirements and permissible exceptions to these requirements, if any.

[11] Failure to provide required items to the NYISO within the allotted time shall be considered withdrawal of the Interconnection Request.

Step	Description / Action	By Whom	By When
6.	Designation of Point of Interconnection (POI), including reasonable alternative POIs (Section 30.6.1 of Attachment X)	Developer	Within 5 Business Days of Scoping Meeting
7.	If Developer elects to proceed with an OFES, provide a good faith estimate of study costs (Section 30.6.1 of Attachment X)	NYISO	Following notice of Developer's election to proceed with an OFES
8.	Provide deposit of $10,000 or $60,000 (depending on the scope of the study work elected pursuant to Section 30.6.2 of Attachment X) and required technical data to NYISO (Section 30.6.1)	Developer	Within 15 Business Days of receipt of good faith estimate of study costs
15.	If Developer fails to provide required technical data, notify Developer of deficiency (Section 30.6.1 of Attachment X)	NYISO	Following election to proceed with an OFES
16.	If notified of a deficiency, provide additional required information to the NYISO (Section 30.6.1 of Attachment X)	Developer	Within 10 Business Days of receipt of deficiency notice[12]
17.	Conduct study and provide draft OFES report to Developer, CTO, and any Affected System Operators (Section 30.6.3.1 of Attachment X)	NYISO	Within 45 or 90 Calendar Days (depending on the scope of the study work elected) of receipt of study deposit, required technical data, and signed scope
18.	Provide comments to NYISO on draft OFES report	Developer, CTO, and any Affected System Operators	Within 15 Business Days of receipt of the draft OFES
19.	Schedule and hold final draft OFES report meeting with Developer and CTO. Invite Affected System Operators, as applicable (Section 30.6.3.1 of Attachment X)	NYISO	Within 10 Business Days of providing the final draft OFES report to Developer

Step	Description / Action	By Whom	By When
C.	**System Reliability Impact Study (SRIS)**		
20.	Elect to proceed with an SRIS (Section 30.7.1 of Attachment X)	Developer	Within 5 Business Days of delivery of final OFES report (*see* step 11) or the scoping meeting if Developer opts to forego an OFES (*see* step 5)
21.	Provide cost and timeframe estimates for completion of the SRIS to Developer (Section 30.7.1 of Attachment X)	NYISO	As soon as practicable after receipt of Developer's election to proceed (*see* step 12)
22.	Deliver demonstration of site control (if not previously provided), the required study deposit to NYISO, and technical data required by NYISO (Section 30.7.2 of Attachment X)	Developer	Within 15 Business Days of receipt of cost and timeframe estimate for SRIS[12]
23.	If Developer fails to provide required technical data, notify Developer of deficiency (Section 30.7.2.2 of Attachment X)	NYISO	Following election to proceed with an SRIS
24.	If notified of a deficiency, provide additional required information to the NYISO (Section 30.7.2 of Attachment X)	Developer	Within 10 Business Days of receipt of deficiency notice[12]
25.	Prepare an SRIS Scope with the Developer, CTO, and Affected System Operators, as applicable. Submit the Scope to Developer and CTO for review and comment, CTO for signature, TPAS for review and the OC for approval (Section 30.7.3 of Attachment X)	NYISO	As soon as practicable after receipt of required deposit and technical data
26.	Conduct study in coordination with the CTO and Affected System Operators, as applicable, and provide SRIS report to Developer, CTO, and any Affected System Operator (Sections 30.7.3 & 30.7.4 of Attachment X)	NYISO	Within 90 Calendar Days of receipt of required deposit, technical data, site control (if not previously provided), and signed and OC-approved scope

[12] Failure to provide required items to the NYISO within the allotted time shall be considered withdrawal of the Interconnection Request.

Step	Description / Action	By Whom	By When
26a.	Optional Interconnection System Reliability Impact Study (OSRIS) – If requested by Developer, provide a good faith cost and timeframe estimate to the Developer, which OSRIS to be conducted concurrently with the SRIS. (Section 30.10 of Attachment X)	NYISO	Within 5 Business Days of receipt of request for OSRIS
26b.	Provide requested technical data and a $10,000 deposit (Section 30.10 of Attachment X)	Developer	Within 15 Business Days of receipt of receipt of cost and timeframe estimate for OSRIS
27.	Schedule and hold SRIS report meeting with Developer and CTO. Invite Affected System Operators, as applicable. (Section 30.7.5 of Attachment X)	NYISO	Within 10 Business Days of provision of study report to Developer
28.	Advise NYISO to proceed with the SRIS and/or OSRIS report(s) to TPAS for review and to the next OC for approval. (Section 30.7.4 of Attachment X)	Developer	Within three months of receipt of final draft SRIS and/or OSRIS report(s)
D.	**Class Year Interconnection Facilities Study (Class Year Study) and Cost Allocation**		
29.	Notice of a Class Year Start Date	NYISO	Prior to Class Year Start Date
30.	Provide notice to the NYISO electing to enter the Class Year Study and addressing the regulatory requirement by (i) demonstrating satisfaction of an applicable regulatory milestone or (ii) advising that within 10 Business Days of NYISO's tendering of a Class Year Study Agreement (CYSA), Developer will submit a two-part deposit or qualifying contract in lieu of satisfying a regulatory milestone (Section 25.5.5.9.1 of Attachment S)	Developer	Within 5 Business Days of the Notice of a Class Year Start Date
31.	Tender CYSA to Eligible Developer and CTO (Section 30.8.1 of Attachment X)	NYISO	As soon as practicable after receipt of Developer's complete notice seeking entry in to the Class Year

Step	Description / Action	By Whom	By When
32.	Complete information in CYSA and deliver completed, but unsigned, CYSA, required technical data, updated proposed In-Service Date, Initial Synchronization Date, and Commercial Operation Date, as applicable, and study deposit (greater of $100,000 or estimated monthly cost for ERIS only or ERIS and CRIS, or $50,000 for CRIS only, and a two-part deposit: $100,000 at risk deposit and $3,000/MW fully refundable deposit) to the NYISO or a qualifying contract, if applicable. Also deliver completed CYSA and technical data to CTO (Section 30.8.1 of Attachment X)	Developer	Within 10 Business Days of NYISO tendering the CYSA to Developer
33.	Execute CYSA	NYISO, CTO & Developer	Within 10 calendar days of NYISO confirming receipt of the CYSA, required technical data, required deposits, and qualifying contracts, if applicable
	After execution of the CYSA, the Developer may request negotiation of the terms of the draft Interconnection Agreement (LGIA) and appendices (Section 30.11.2 of Attachment X)	NYISO, CTO & Developer	Not more than 60 Calendar Days after tender of the final Class Year Study report
	Submit updated proposed In-Service Date, Initial Synchronization Date, and Commercial Operations Date (Section 30.8.2.1 of Attachment X)	Developer	Every 90 Calendar Days following execution of the CYSA
34.	Conduct Class Year Study in coordination with the CTO and Affected System Operators and provide Class Year Study report to Class Year Developers (Sections 30.8.2 & 30.8.3 of Attachment X)	NYISO	Within the timeframe per Attachment S (or by the ECD[13])
34a.	Provide notice of Class Year Study ATBA base case assumption lockdown date	NYISO	Within the timeframe per Attachment S (or by the ECD)

[13] ECD = Estimated Completion Date

Step	Description / Action	By Whom	By When
34b.	Presentation of preliminary Class Year Deliverability Study results to TPAS/IPFSWG and then Operating Committee for approval	NYISO	Within the timeframe per Attachment S (or by the ECD)
34c.	Notice of SDUs Requiring Additional Studies, if applicable (Section 25.5.10.1 of Attachment S)	NYISO	As soon as practicable after the Operating Committee approves the preliminary Class Year Deliverability Study results
34d.	Notice of election whether to proceed with Additional SDU Study, if applicable, and commencement of Additional Study(ies) separate and apart from the Class Year Study (Section 25.5.10.1 of Attachment S)	Each Class Year Developer for which a new SDU has been identified requiring additional study	Within 10 calendar days of NYISO issuing Notice of SDUs Requiring Additional Studies
35.	Schedule and hold study report meeting with Class Year Developers and CTOs. Invite Affected System Operators, as applicable (Section 30.8.4 of Attachment X)	NYISO	Within 10 Business Days of providing draft study report to Class Year Developers
36.	Submit the Class Year Study results to TPAS/IPFSWG for review and to the OC for approval (Section 25.5.10.1 of Attachment S)	NYISO	Upon completion of the Class Year Study report
37.	Proceed with the Class Year Study decision and settlement process		
37a.	Notice to NYISO regarding Acceptance or Non-Acceptance of Project Cost Allocation (Section 25.8.2 of Attachment S)	Each Class Year Developer	Within 30 Calendar Days of OC approval of Class Year Study Addendum report
37b.	If one or more Class Year Developers do not accept their cost allocation, perform rounds of re-study and Decision Periods as necessary (Sections 25.8.2–25.8.4 of Attachment S)	NYISO and Remaining Class Year Developers	In accordance with the procedures in Attachment S
	Engineering & Procurement (E&P) Agreement (Optional) (Section 30.9)	Developer and CTO	Prior to execution of an Interconnection Agreement

Step	Description / Action	By Whom	By When
E.	**Interconnection Agreement**		
38.	Tender a form Interconnection Agreement (LGIA) with draft appendices to each Developer that accepted their Project Cost Allocation (Section 30.11.1 of Attachment X)	NYISO and CTO	As soon as practicable upon completion of the Attachment S Developer decision process or prior to completion of the Attachment S Developer decision process subject to requirements described in Section 30.11.4
39.	Execute and return completed draft LGIA appendices to the NYISO and CTO (Section 30.11.1 of Attachment X)	Developer	Within 30 Calendar Days of tender by NYISO and CTO
	If negotiations of the LGIA fail, Developer has options to request filing an unexecuted LGIA or Dispute Resolution (Section 30.11.2 of Attachment X)		
40.	Provide final LGIA to Developer (Section 30.11.2 of Attachment X)	NYISO and CTO	Within 15 Business Days of completion of negotiation process
41.	Provide to NYISO and CTO: (a) evidence of continued Site Control, or post $250,000, non-refundable additional security, and (b) evidence of achievement of development milestones (Section 30.11.3 of Attachment X)	Developer	Within 15 Business Days of receipt of the final LGIA from the NYISO and CTO.
42.	File the LGIA with the FERC (Section 30.11.3 of Attachment X)	NYISO and CTO	Within 10 Business Days of receipt of executed LGIA or request to file unexecuted LGIA
F.	**Commencement of Interconnection Activities - Construction**		
43.	Proceed in accordance with the terms of the LGIA subject to modification by the FERC (Section 30.11.4 of Attachment X)	NYISO, CTO and Developer	Upon filing of the LGIA with the FERC
44.	Proceed with construction of facilities in accordance with Section 30.12 of Attachment X	CTO and Developer	As set forth in the LGIA milestone schedule

Attachment E Steps in the NYISO Small Generator Interconnection Process[14]

(Applicable to Generating Facilities up to 20 MW)

(Revised __/__/2020)

Step	Description / Action (Relevant Section of NYISO OATT Attachment Z)	By Whom	By When
	Pre-Application – respond to informal and formal requests for information from prospective Interconnection Customers, as appropriate. *(Section 32.1.2)*	NYISO & Connecting Transmission Owner (CTO)	N/A
A.	**Interconnection Request (IR) (Section 32.1.3)**		
1.	Submittal of IR (or Application) to NYISO with the applicable fee or deposit and documentation evidencing Site Control *(Sections 32.1.3 & 32.1.5).*	Interconnection Customer (IC)	N/A
2.	Date and time-stamp and send copy to the Connecting Transmission Owner (CTO).	NYISO	Upon receipt of IR.
3.	If IR is to interconnect to distribution facilities, consult with CTO to determine whether the NYISO SGIP applies. Notify the IC if the SGIP do not apply. *(Section 32.1.3.1)*	NYISO	It is the NYISO's policy that this action will be taken as soon as practically possible after receipt of IR.
4.	Notify IC of receipt of the IR.	NYISO	Within 3 Business Days of receipt of IR.
5.	Consult with the CTO, and determine whether the IR is complete or incomplete. Notify IC of result. If incomplete, list additional information required.	NYISO	Within 10 Business Days of receipt of IR.
6.	If notified that IR is incomplete, provide required additional information to the NYISO or request an extension of time.	IC	Within 10 Business Days of receipt of notice of incomplete IR.[15]
7.	If IC provides additional information for an initially incomplete IR, review information and notify IC whether IR is now complete or incomplete.	NYISO	Upon completion of review of additional information.

[14] Summary of the basic steps described in the NYISO Small Generator Interconnection Procedures contained in Attachment Z to the NYISO's Open Access Transmission Tariff ("OATT"). These procedures were originally accepted by FERC Orders issued on February 20, 2007, and June 29, 2007. This attachment only provides a high-level summary of the SGIP. It is not intended as a substitute for the Attachment Z. For complete information, you should consult Attachment Z, which is available for review on the NYISO's website.

[15] Failure to provide required items to the NYISO within the allotted time shall be considered withdrawal of the Interconnection Request.

Step	Description / Action (Relevant Section of NYISO OATT Attachment Z)	By Whom	By When
8.	Upon NYISO's determination that IR is complete, then proceed to the following steps. If IR is for: • Generator meets the Fast Track eligibility requirements (e.g., MW limits, connecting to distribution, etc., and not an inverter <= 10 kW), **go to Step B – Fast Track Process** • Generator > Fast Track MW limits and/or connecting to transmission, **go to Step C – Study Process** • An invert-based facility <= 10 kW, go to **Step D – 10 kW Inverter Process**		
B.	**Fast Track Process (Section 32.2)**		
9.	In consultation with the CTO, and using the screens set forth in Section 32.2.2.1, perform an Initial Review of the project as follows and notify the IC of the results. *(Section 32.2.2)*	NYISO	Within 15 Business Days of notice of complete IR.
10.	If the proposed interconnection passes the screens, provide an executable interconnection agreement (IA) to the IC and CTO. *(Section 32.2.2.2)*	NYISO	Within 5 Business Days of completion of initial review.
11.	If the proposed interconnection fails the screens, consult with the CTO and Affected System Operators as appropriate, and determine whether the project may nevertheless be interconnected consistent with applicable SGIP standards. *(Section 32.2.2.3)*	NYISO	During the initial review.
12.	If NYISO determines that the project may be interconnected consistent with applicable SGIP standards, even if the interconnection fails the screens, provide an executable IA to the IC and CTO. *(Section 32.2.2.3)*	NYISO	Within 5 Business Days of determination.
13.	If the proposed interconnection fails the screens and NYISO determines that the IR cannot be approved without modifications or further study, notify and provide documentation to the IC. *(Section 32.2.3)*	NYISO	Within 5 Business Days of determination.
14..	If determined that the IR cannot be approved without modifications or further study, as noted in Step 13 above, offer to hold a Customer Options Meeting with the IC and CTO to determine what further steps are needed for the project to interconnect. *(Section 32.2.3)*	NYISO	Within 10 Business Days of determination that the IR cannot be approved.
15.	At the Customer Options Meeting, one of the following items may be pursued: a) CTO offer to modify their facilities/system; or b) NYISO offer to perform supplemental review; or c) NYISO offer to continue evaluation of the IR under the Study Process. *(Section 32.2.3.1 – 32.2.3.3)*	CTO or NYISO	With NYISO notice of determination, or at the Customer Options Meeting, as applicable.

Step	Description / Action (Relevant Section of NYISO OATT Attachment Z)	By Whom	By When
16.	If IC agrees to a Supplemental Review, IC provides written agreement and study deposit[16] for estimated NYISO & CTO costs to the NYISO. *(Section 32.2.4)*	IC	Within 15 Business Days of NYISO's offer.
17.	NYISO performs supplemental review in consultation with the CTO and determines whether the project can be interconnected safely and reliably (with or without modifications) or not. *(Section 32.2.4)*	NYISO	Within 10 Business Days of receipt of deposit.
18.	If NYISO determines that the project can be interconnected either: a) without modifications, or b) with modifications to the Small Generating Facility, or c) with modifications to the CTO's system, NYISO provides an executable IA to the IC and CTO. *(Section 32.2.4.1.1 – 32.2.4.1.3)*	NYISO	Either: a) within 5 Business Days of determination, or b) within 5 Business Days of receiving IC's written agreement, or c) within 10 Business Days.
19.	If NYISO determines that the project cannot be interconnected safely and reliably even with modifications, then evaluation of the IR continues under the Study Process (Step C below). *(Section 32.2.4.1.4)*		
C.	**Study Process (Section 32.3)**		
20.	NYISO first contacts the IC, and then the CTO, to determine if there is mutual agreement to omit the Scoping Meeting and proceed directly to a FES. If the Parties agree to omit the Scoping Meeting, go to Step 23. *(Section 32.3.2.3)*	NYISO	Upon determination that IR is complete, or Project fails the Fast Track evaluation, as applicable.
21.	Hold a Scoping Meeting *(Section 32.3.2.1)*	NYISO	Within 10 Business Days, or as otherwise mutually agreed to by the Parties, after the IR has been deemed complete
22.	Hold Scoping Meeting. The Parties discuss whether NYISO should: a. perform an optional feasibility study (OFES), or b. proceed to a system impact study (SIS), or c. proceed to a facilities study (FS), or d. proceed to an IA. *(Section 32.3.2.2)*	NYISO, CTO & IC	As scheduled by the Parties (*see* Step 21, above).
	If IC provides notice that it elects to forego the OFES and proceed directly to an SIS, ***go to Step 28****.* *If Parties agree to proceed directly to a FS,* ***go to Step 34****.* *If Parties agree to proceed directly with an IA,* ***go to Step 40****.* *Otherwise, proceed with an OFES.*		

[16] In accordance with Section 32.2.4, IC must pay any costs in excess of the study deposit within 20 Business Days. If the study deposit exceeds the invoiced costs, NYISO will return that excess within 20 Business Days of the invoice without interest.

Step	Description / Action (Relevant Section of NYISO OATT Attachment Z)	By Whom	By When
23.	If an OFES will be conducted, provide a good faith estimate of cost and timeframe to IC and CTO. *(Section 32.3.2.2)*	NYISO	As soon as possible after IC notifies NYISO that it elects to proceed with OFES
24.	Provide deposit of $10,000 or $30,000 (depending on the scope of analysis requested by the IC) and required technical data to NYISO. *(Sections 32.3.2.3, 32.3.3.2)*	IC	Within 15 Business Days of receipt of good faith estimate of study cost and timeframe.[16]
25.	Commence OFES.. *(Section 32.3.3.5)*	NYISO	Upon receipt of study deposit, required technical data, and signed OFES scope.
26.	Provide review and comments on draft OFES report to NYISO	IC, CTO, and any Affecting CTOs	Within 15 Business Days of receipt of draft OFES report
27a.	*If the OFES identifies any potential adverse system impacts due to the project, proceed with a SIS.* ***Go to Step 28****. (Section 32.3.3.5)*		
27b.	If the OFES shows no potential for adverse system impacts, contact the IC and CTO to discuss whether to waive the SIS. Also, if no additional facilities are required, the Parties can discuss whether to proceed with an IA. *(Section 32.3.3.4)*	NYISO	Within 5 Business Days of completion of the OFES.
	If Parties agree to waive the SIS and agree to proceed to a FS, ***go to Step 34****.* *If Parties agree no additional facilities are required and agree to proceed with an IA,* ***go to Step 40****.* *Otherwise, proceed with a SIS.*		
28.	Notification of election to proceed with SIS. *(Section 32.3.4)*	IC	Within 5 Business Days of scoping meeting or completion of the OFES in most cases.
29.	Provide a good faith cost and timeframe estimate for completion of SIS to IC and CTO. *(Section 32.3.4)*	NYISO	As soon as practicable after receipt of IC's election to proceed with SIS.
30.	Provide deposit of $50,000 and technical data for the estimated cost of the SIS to NYISO. *(Sections 32.3.4.3 & 32.3.4.4)*	IC	Within 15 Business Days of receipt of good faith cost and timeframe estimate.[17]
31.	Conduct the SIS in coordination with the CTO, and any Affected System Operators, as applicable, and transmit the draft SIS report to the IC, CTO, and any Affected System Operators. *(Section 32.3.4.7)*	NYISO	Following receipt of study deposit, required technical data, and signed SIS scope.
32.	Provide review and comments on draft SIS report to NYISO. *(Section 32.3.4.8)*	IC and CTO	Within 15 Business Days of receipt of draft SIS report.

[17] Failure to provide required items to the NYISO within the allotted time shall be considered withdrawal of the Interconnection Request.

Step	Description / Action (Relevant Section of NYISO OATT Attachment Z)	By Whom	By When
33.	Prepare and issue final SIS report to the IC and CTO. *(Section 32.3.5.1)*	NYISO	Following receipt of review and comments on draft SIS report.
34.	Tender a facilities study agreement (FSA), together with outline of scope and good faith cost estimate, to IC and CTO.[18] *(Sections 32.3.2.2, 32.3.3.4, 32.3.5.1)*	NYISO	Within 5 Business Days of the scoping meeting or completion of the OFES, or as soon as reasonably practicable after completion of the SIS, as applicable.
35.	Return the executed FSA, requested technical data, and deposit for the estimated costs of the FS to the NYISO. *(Section 32.3.5.2)*	IC	Within 30 Calendar Days of receipt of FSA.[17]
35a.	Execute and provide copies of executed FSA to IC and CTO. *(Section 32.3.5.2)*.	NYISO and CTO	Within 10 Business Days of receipt of the executed FSA, deposit, and required technical data from IC.
35b.	Provide updated proposed In-Service Date, Initial Synchronization Date, and Commercial Operation Date. *(Section 32.5.8)*	IC	Every 90 Calendar Days following execution of the FSA.
36.	Conduct FS (non-Class Year) in coordination with the CTO(s) and Affected System Operator(s), as applicable, and provide draft FS report the IC, CTO(s), and any Affected System Operators. *(Section 32.3.5.3)*	NYISO	Within 30 Business Days w/o Upgrades, within 45 Business Days with Upgrades.
37.	Provide review and comments on draft FS report to NYISO. *(Section 32.3.5.3)*	IC and CTO	Within 15 Business Days of receipt of draft FS report.
38.	If an Interconnection Study determines that the Project requires or contributes toward the need for non-Local System Upgrade Facilities (SUFs), include the Project in the next Class Year to determine the IC's cost responsibility under Attachment S. *(Section 32.3.5.3.2)*	NYISO	Per the applicable Class Year schedule.
39.	If the IC of a project larger than 2 MW elects Capacity Resource Interconnection Service (CRIS), the project must proceed to a Class Year Deliverability Study to determine the IC's cost responsibility for System Deliverability Upgrades (SDUs) under Attachment S. *(Section 32.3.5.3.2)*	NYISO	Per the applicable Class Year schedule.
	The IC may elect to proceed forward with an IA pending the outcome of the Class Year cost allocation process. *(Sections 32.3.5.3.3 & 32.3.5.3.4)*		
40.	Tender an IA to the IC and CTO. *(Section 32s.2.2.2, 32.2.2.3, 32.2.4.1.1-32.2.4.1.3, 32.3.2.2, 32.3.3.4, & 32.3.5.7)*	NYISO	Within 5 Business Days of completion of the FS and IC agreement to pay for required Facilities, or various earlier points in the process as applicable.

[18] For small generators that require a non-Local SUF, they must proceed through a Class Year Interconnection Facilities Study.

Step	Description / Action (Relevant Section of NYISO OATT Attachment Z)	By Whom	By When
41.	Sign and return the IA to the NYISO, or request the NYISO to file an unexecuted IA with the FERC. *(Section 32.4.8)*	IC	Within 30 Business Days of receipt of the executable IA, or other mutually agreeable timeframe.[19]
42.	File IA with FERC, if required.	NYISO and CTO	Upon execution or upon request to file unexecuted IA with FERC.
D.	**10 kW Inverter Process** (Appendix 5 of Attachment Z to the NYISO OATT)		

[19] Failure to provide required items to the NYISO within the allotted time shall be considered withdrawal of the Interconnection Request.

Attachment F NYISO Transmission Planning Guideline #1-1

SUBJECT: Guideline for System Reliability Impact Studies

REFERENCES:

- *NYSRC Reliability Rules & Compliance Manual for Planning and Operating the New York State Power System*
- *NYISO Transmission Expansion and Interconnection Manual*

PURPOSE: To provide guidelines for conducting System Reliability Impact Studies for proposed transmission and generation projects, and presenting the results of such studies to the Operating Committee for their review and confirmation that all applicable reliability criteria would be met.

1. INTRODUCTION

This guideline is to be followed by NYISO Staff, Transmission Owners, or Third-Parties in order to provide a complete analysis for review by the Operating Committee. All proposed transmission and generation projects that could significantly impact the Interface Transfer Capability of the NYS Transmission System, or could significantly impact the reliability of the New York Bulk Power System, shall receive this thorough analysis. Proposed transmission and generation projects that would have local impact only (would only impact the system of the local Transmission Owner) are generally the responsibility of the affected Transmission Owner, and would not normally be reviewed by the Operating Committee.

2. REPORT OUTLINE

The report presented to the Operating Committee for review shall include:

2.1 Introduction

A brief description of the background, purpose, and objectives of the study.

2.2 Description of Project

A description of the proposed project and any alternatives that may be under consideration. A detailed description of proposed generation and/or transmission facilities and associated equipment, and discussion of the rationale for the chosen design and specifications of such facilities and equipment. Maps and one-line diagrams depicting the new and modified facilities and their connections to the existing system.

2.3 Criteria, Methodology, and Assumptions

A detailed statement of criteria used, including any exceptions or supplements to the NYSRC Reliability Rules & Compliance Manual. The study scope and a description of how the study was conducted, including the cases, scenarios, critical assumptions, and modeling of the new or modified facilities. (Normally the study scope is prepared prior to conducting the study.)

2.4 Analysis Results

2.4.1 Impact on Base System Conditions

A summary of the significant impacts of the proposed project on base system conditions (generation dispatch, power flows, voltage, equipment loadings, etc.) based on the pre- and post-project steady state cases.

2.4.2 Impact on System Performance and Transfer limits

a) Thermal Analysis Results

A summary of the thermal analyses conducted and the impact of the project on normal and emergency thermal transfer limits. Provide analysis output from which the transfer limits were determined.

b) Voltage Analysis Results

A summary of the voltage analyses conducted, impact of the project on system voltage performance and voltage-based transfer limits if more limiting than the emergency thermal transfer limits. Provide analysis output from which the voltage-based transfer limits were determined, or that alternatively demonstrate that the voltage limits are not more limiting than the emergency thermal limits.

c) Stability Analysis Results

A summary of the stability analyses conducted, impact of the project on system stability performance and stability-based transfer limits if more limiting than the emergency thermal transfer limits or voltage-based transfer limits. Provide analysis output from which the stability-based transfer limits were determined, or that alternatively demonstrate that the stability limits are not more limiting than the emergency thermal or voltage-based transfer limits.

d) Overall Impact on Transfer limits

A summary of the overall impact of the project on transfer limits based on the more limiting of the thermal, voltage, or stability-based transfer limits.

2.4.3 Impact on Fault Duties

2.5 Conclusions

The conclusion(s) of the study, particularly as they pertain to the stated objectives of the study.

3. RESPONSIBILITIES

3.1 The project proponent(s) are responsible for the cost of the study.

3.2 The NYISO Staff, Transmission Owner(s), or other entity commissioned to conduct the study shall be responsible for conducting the required analyses and submitting a detailed report (following the above guidelines) to the NYISO and other Study Participants (generally the affected Transmission Owners and Neighboring Control Areas) for review.

3.3 The NYISO Staff (if they did not conduct the study) and the other Study Participants shall review the report and provide comments, if any, to the party that conducted the study. All reasonable efforts will be made to address or otherwise resolve the comments.

3.4 The NYISO Staff shall submit the study report, along with any comments and recommendations, to the Operating Committee.

4. PERIODIC REVIEW

This guideline shall be reviewed triennially to determine whether revisions are required.

Reviewed by the Operating Committee

on 06/15/2017

Attachment G NYISO Transmission Planning Guideline #2-1

SUBJECT: Guideline for Voltage Analysis and Determination of Voltage-Based Transfer Limits

REFERENCES:

- *NYSRC Reliability Rules & Compliance Manual for Planning and Operating the New York State Power System*
- *NYISO Transmission Expansion and Interconnection Manual*
- *NYISO Emergency Operations Manual*

PURPOSE: This guideline defines the procedure required for the determination, approval and implementation of voltage-based transfer limits used in transmission planning studies of the New York State bulk power system.

1. INTRODUCTION

1.1 The determination of interface transfer limits requires the consideration of thermal, voltage and stability limitations. When voltage conditions establish the controlling transfer limit, the specification of allowable pre-contingency and post-contingency voltage ranges at a substation does not necessarily ensure that the bulk power system is in a state in which voltage collapse cannot occur for a small increase in power transfer level; therefore, a test procedure is required to establish a margin of safety in planning the bulk power system when voltage-based transfer limits are being determined. The limits determined by this procedure are to be used as a guideline for planning study purposes to prevent those conditions indicative of a system voltage collapse.

1.2 It is the intent that this guideline be used in conjunction with or as part of criteria to be developed for maintaining adequate reactive reserve in planning the NYS bulk power system.

1.3 This guideline may not be applicable when establishing voltage-based transfer levels across the NYS bulk power system for studies to be utilized by external systems in planning their future requirements.

2. PROCEDURE

2.1 Unless specified otherwise for a particular study, the post-contingency voltage limits contained in Table A.2 of the NYISO Emergency Operations Manual shall be used.

2.2 For those interfaces where interface power transfer levels may be constrained by voltage considerations, "Voltage versus Interface Transfer Level" curves shall be developed. In the development of these curves, due consideration shall be given to active and reactive generation dispatch, appropriate contingencies, status of reactive devices, generating unit and transmission line maintenance outage conditions and load modeling.

2.3 After examination of the relevant curves, a determination of the point identifying the "tip of the nose curve" shall be made. This point is the theoretical maximum transfer level achievable before sustaining voltage instability or collapse. In steady state analysis, this point is the highest transfer level for which a solution can be achieved.

2.4 Once the "tip of the nose curve" point has been identified, the resultant transfer level at that point shall be reduced by five percent. This reduced transfer level is then compared to that transfer level obtained by applying the applicable post-contingency low voltage limit. To ensure that a voltage-based transfer limit is determined with a safe margin, the lower of the two power transfer levels from the foregoing comparison is to be selected as the interface transfer limit.

2.5 Exhibit I depicts a condition in which the allowable transfer level is controlled by the location of the "tip of the nose curve" rather than the post-contingency voltage limit.

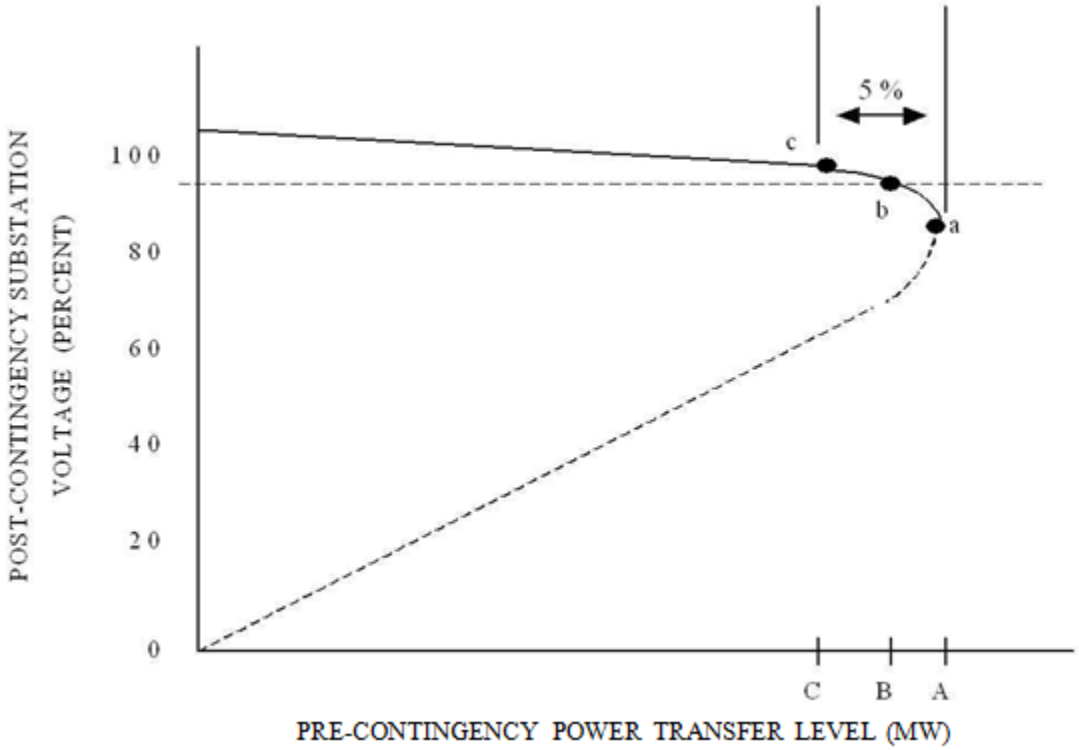
3. PERIODIC REVIEW

This guideline shall be reviewed triennially to determine whether revisions are required.

Reviewed by the Operating Committee

on 06/15/2017

Figure 7: Exhibit I - Voltage-Limited Power Transfer



(1) Small letters **a**, **b** & **c** denote points on the curve where:

- **a** is the point referred to as the "tip of the nose curve", or the "critical point" on the edge voltage instability or collapse;
- **b** is the point where the curve crosses the post-contingency low voltage limit, 95% in this example;
- **c** is the point where the transfer is 5% below the tip of the nose curve.

(2) Capital letters **A**, **B** & **C** denote power transfer levels corresponding to points **a**, **b** & **c** on the curve.

(3) In this example, **C** would be the voltage-based transfer limit of the transmission interface. In general, the voltage-based transfer limit is the lower of points **B** and **C**.

Attachment H NYISO Transmission Planning Guideline #3-1

SUBJECT: Guideline for Stability Analysis and Determination of Stability-Based Transfer Limits

REFERENCES:

- *NYSRC Reliability Rules & Compliance Manual for Planning and Operating the New York State Power System*
- *NYISO Transmission Expansion and Interconnection Manual*
- *NYISO Transmission Planning Guideline #2-1, Guideline for Voltage Analysis and Determination of Voltage-Based Transfer Limits*

PURPOSE: This guideline is used in the evaluation of stability simulation analysis results and the determination of stability-based transfer limits ("stability limits") for New York State transmission interfaces.

1. INTRODUCTION

1.1 This guideline is provided to promote a common understanding when evaluating the results of stability simulations. In determination of stability limits, all significant assumptions used in the analysis shall be reported along with the study results.

1.2 The NYISO shall be responsible for determining the appropriate transfer levels for NYS transmission interfaces to be utilized by external systems in planning their future requirements.

1.3 The fundamental concept of power system stability is really a single characteristic of bulk power system performance and any subdivisions are designated because of the application of appropriate analytical methods to be employed for the relevant time frame under review. For purposes of analysis, overall power system stability can be subdivided into three major classifications:

a) A power system is "steady-state stable" for a particular steady-state operating condition if, following any small disturbance, it reaches a steady-state operating condition which is identical or close to its initial operating condition. For such a condition, a small disturbance is defined as a gradual disturbance thereby allowing the equations that describe the dynamics of the power system to be linearized;

b) A power system is "transiently stable" for a particular sudden disturbance if, following that disturbance, it reaches an acceptable steady-state operating condition; and

c) "Long-term stability" is related to the long-term behavior of the bulk power system and, in particular, of its overall response as evidenced by its mean frequency.

The evaluation of stability results requires consideration of:

- transfer level;
- relay systems; and
- load modeling.

2. TRANSFER LEVEL

The determination of interface transfer limits requires the consideration of thermal, voltage and stability limitations. When determining a stability limit, a margin also shall be applied to the power transfer level to allow for uncertainties associated with system modeling. This margin shall be the larger of ten percent of the highest stable transfer level simulated or 200 MW. The margin also shall be applied in establishing a stability limit for faults remote from the interface for which the power transfer limit is being determined.

To confirm that power transfer levels will not be restricted by a stability constraint, the stability simulation shall be initially conducted at a value of at least ten percent above the controlling thermal or voltage-based transfer limit. The voltage-based transfer limit ("voltage transfer limit") shall be determined in accordance with NYISO Transmission Planning Guideline #2, "Guideline for Voltage Analysis and Determination of Voltage-Based Transfer Limits." If a converged steady state case cannot be achieved at this higher transfer level, then the stability simulation shall be conducted at the highest achievable transfer level above the voltage transfer limit. If the stability simulation at that level is deemed to be stable, then voltage control facilities in the form of capacitive compensation shall be artificially added to the steady state case to achieve a convergence at a transfer level equal to the voltage transfer limit divided by 0.90. This procedure ensures that the application of the margin does not result in the determination of a "stability limit" that is lower than the voltage transfer limit when the restriction is actually due to voltage. The amount and location of any such artificially added capacitive compensation shall be reported in the study results.

Stability limits shall be determined for interfaces on an independent basis. In doing so, it is recognized that interfaces for which the stability limit is not being determined may exceed their thermal, voltage or stability transfer capabilities.

To assess the stability performance of the bulk power system, system stability and generator unit stability shall be considered.

2.1 System Stability

Overall power system stability is that property of a power system which ensures that it will remain in operating equilibrium through normal and abnormal conditions. The bulk power system shall be deemed unstable if, following a disturbance, the stability analysis indicates increasing angular displacement between various groups of machines characterizing system separation. Further, a power system exhibits "oscillatory instability" (sustained or cumulative oscillations) for a particular steady-state operating condition if, following a disturbance, its instability is caused by insufficient damping torque.

For a stability simulation to be deemed stable, oscillations in angle and voltage must exhibit positive damping within ten seconds after initiation of the disturbance. If a secondary mode of oscillation exists within the initial ten seconds, then the simulation time shall be increased sufficiently to demonstrate that successive modes of oscillation exhibit positive damping before the simulation may be deemed stable.

2.2 Generator Unit Stability

A generator is in synchronous operation with the network to which it is connected if its average electrical speed (the product of its rotor angular velocity and the number of pole pairs) is equal to the angular frequency of the alternating current network voltage.

For those cases where the stability simulation indicates generator unit instability, the NYISO shall determine whether a power transfer limit shall be invoked or whether the unit instability shall be considered to be acceptable. To determine whether the generator unit instability may be deemed acceptable, the stability simulation shall be re-run with either the generator unit in question tripped due to relay action or modeled unstable to assess such impact on overall bulk power system performance. The result of this latter simulation shall determine whether a stability-based transfer limit shall be applied at the simulated power transfer level.

3. RELAY SYSTEMS

3.1 Representation

As many relays as possible should be modeled in stability simulations to ensure adequate system representation. Due to possible computer program limitations, priority should be given to the higher voltage levels. If there is not enough capability to represent protective devices down to the 115-kV level, cases which show the potential of relay action at the higher voltage level should be re-run with the protective devices modeled down to the 115-kV level in the vicinity of the potential trip.

Power swing relays should be monitored especially when there is a fault of long duration or a major loss of generation or load.

3.2 Relay Margin

In evaluating the relay actions of a stability simulation, margins shall be incorporated in relay characteristics to help determine possible trips that may lead to instability or cascading system outages. A ten percent margin should be added to the relay impedance characteristics for modeling in stability studies.

3.3 Performance

To assist in the evaluation of stability simulations, the following terminology for a relay performance index ("RPI") shall be used.

a) Safe (RPI = 1)

The apparent impedance trajectory, after fault clearing, remains outside all expanded zones of protection

b) Possible Relay Trip (RPI = 2)

The apparent impedance trajectory, after fault clearing, enters the expanded second or third zone for more than two thirds of their respective time delays; and

c) Likely Relay Trip (RPI = 3)

The apparent impedance trajectory, after fault clearing:

- enters the expanded zone 1; or

- enters the expanded zone 2 and times-out to trip signal; or
- enters the expanded zone 2 or 3 of both terminals simultaneously on a permissive trip relay scheme

For those cases where there is a "possible" or "likely" relay trip, the stability simulation shall be re-run to simulate the loss of the facility caused by the relay actuation and the system performance shall be evaluated based on these results. Simulations may not need to be re-run if the actual relay systems under consideration apply blinders or directional units to block tripping.

When a stability simulation would be classified stable by machine rotor angle swings but marginal or unstable due to relay action, the individual study participants shall notify their respective system protection organizations for further evaluation of the potential for this line tripping.

4. LOAD MODELING

It is recognized that the load model can have a significant impact on the stability performance of the bulk power system. Until more definitive information is obtained, a primary load model comprised of 100% constant impedance for both active and reactive power load shall be used for the New York Control Area (NYCA). For systems outside the NYCA, the load model deemed appropriate by those systems shall be used. Since there is uncertainty regarding the dynamic load characteristics of the NYCA, marginal stability simulations shall be re-run using an alternate NYCA load model comprised of 50% constant impedance and 50% constant current for the active power component and 100% constant impedance for the reactive power component. If the results are still marginal or unstable the simulation shall be deemed unstable.

5. PERIODIC REVIEW

This guideline shall be reviewed triennially to determine whether revisions are required.

Reviewed by the Operating Committee

on 06/15/2017

Attachment I NYISO Transmission Planning Guideline #4-1

NYISO Guideline for Fault Current Assessment

Introduction

This document outlines a recommended approach for fault current assessment using the ASPEN OneLinerTM and ASPEN Batch Short-CircuitTM programs with the NYISO State-wide short circuit representation. Use of programs other than ASPEN OneLinerTM is not recommended at this time as the NYISO representation uses equipment short-circuit models in ASPEN format that are not readily available in other programs. Fault current assessment is necessary in several areas of power system analysis, including:

- Evaluation of circuit breaker interrupting capabilities
- Dynamics analysis
- Fault levels to assess reclosing cycles and impact of the reclosing on circuit breaker duty.

Operation of circuit breakers within specified fault interruption capabilities is essential for safe and reliable production, transmission, and delivery of electrical energy within the NYISO Interconnected transmission system.

Breaker adequacy assessments involve two complementary evaluations:

i that of fault interrupting duties expected to exist due to planned system changes, and

ii appraisal of present operating capabilities of the circuit breakers, including associated relay times.

Both evaluations involve judgment and, therefore, are guided by long-standing industry practices and standards[20].

The NYISO State-wide short circuit representation base case was developed with the assistance and cooperation of the transmission owner representatives on the NYISO System Protection Advisory Subcommittee (SPAS), and is maintained by the NYISO Transmission Studies Staff in accordance with the "Procedure for Developing and Maintaining the NYISO Short Circuit Representation" and the NYISO "Manual for System Analysis Data". The State-wide base case representation is maintained in ASPEN One Liner™ format and provides a uniform representation to perform fault current analysis of the NYISO transmission system as required for various NYISO operations and planning studies.

[20] This guideline should serve a screening tool in determining whether interrupting devices would experience short circuit currents in excess of their interrupting ratings. The final determination of interrupting equipment short circuit duty is the responsibility of the equipment owner, and it is recommended their analysis be performed based on applicable ANSI/IEEE standards.

Fault Current Calculations

The NYISO shall employ the methodology detailed below, consistent with the system conditions being studied, when evaluating short circuit currents on New York State transmission system facilities.

A. The following system-wide assumptions shall normally be applied to the base case representation for NYISO analysis[21]:

- All generating units are in service. Synchronous machines (e.g., generators, synchronous condensers, and large motor groups) are modeled using subtransient saturated reactance (X_{dv}"). Machine zero-sequence reactance (X_{0v}) generally is not required in short-circuit studies because the GSU transformer HV/LV windings are normally specified with YG/Δ connections, blocking the flow of machine zero-sequence currents during system faults; if not readily available, generator X_{0v} may be omitted for generators connected to YG/Δ GSUs.
- Transmission line models include positive- and zero-sequence inductive impedances. Negative-sequence impedance is equal to the positive-sequence impedance and hence not entered separately. Zero-sequence mutual impedances between mutually-coupled line sections, such as those on common rights-of-way, are also included. Positive-sequence mutuals are normally ignored, but can be combined with line impedance in some situations, if needed. Capacitive admittances of lines (line charging), both positive- and zero-sequence, are omitted.
- Initially, fault levels will be determined with all transmission lines that are normally in service represented as such, and those transmission lines that are normally open (e.g. a "normally open" bus tie) shall be represented as such. However, all reasonably realizable system configurations that yield the highest fault current shall be considered, consistent with local operating practice and procedure as determined by the NYISO. System facilities represented in the studies reflect information obtained from equipment vendors, design records, and operating data (or best estimates) processed into suitable models using proven tools and techniques. Since resistance values are generally more difficult to secure than reactance values, although both are important in breaker duty assessments, References 1-4 can be used to estimate typical X/R ratios for principal system components.
- All transformers are modeled using leakage reactance and load-loss based resistances corresponding to the present or planned operating no-load tap positions (NLTCs), as appropriate. Tap ratios for load-tap changers (LTCs) are assumed to be 1:1 (or center tap); phase-angle regulating transformers are assumed on the lowest impedance setting (typically center tap and / or 0-degree shift), and magnetizing branches are omitted. Impedances of mismatched, single-phase transformers operating in a common bank are averaged. Transformer positive- and negative-sequence impedances are identical, and zero-sequence impedances are assumed identical to positive-sequence impedances unless test data indicate otherwise. All windings are modeled with proper winding/grounding connections, keeping in mind that some GSU transformers operate with ungrounded neutrals to reduce fault duties. Fixed tap and GSU transformers should be represented on the no load tap ratio consistent with the connecting transmission owner practice, or the normal operating condition if tap and impedance data are readily available; otherwise they shall be represented on nominal.
- Fault levels will be determined with all fault current limiting series reactors that are normally in service represented as such, and those series reactors that are normally by-passed shall be represented as such. Load current-limiting series reactors are represented only if switched permanently into service. Series capacitors are bypassed during close-in faults that exceed the

[21] All generating units shall be in service, unless they are retired or are not commercially viable (e.g. stand-by diesel generators reserved for system restoration).

capacitor normal rating (consistent with the series element protection); otherwise, they remain in service.

- All loads, shunt capacitors, and shunt reactors are ignored except those shunts used in the representation of three winding transformers. Static VAr Compensators, Static Shunt or Series Compensators (FACTs devices), traditional HVdc converters, and other power-electronic devices are normally omitted, except that any transformers integrating these facilities into a power system are included. Voltage Source Converter HVdc is represented as an equivalent generator source, where appropriate.
- Each equipment owner may use their own engineering judgment in selection of the applied pre-fault voltages based on their experience, and reference these selections in their resulting analysis. It is, however, NYISO practice that all generator internal voltages be set at 1.0 p.u. and no phase displacement due to load (i.e., "Linear Network Solution" pre-fault starting conditions assumed[22]).

B. The following types of faults shall be considered:

- Three Line to Ground
- Double Line to Ground
- Single Line to Ground

All faults are assumed to be a zero-impedance (bolted) fault with no current limiting effect due to the fault itself.

C. Fault currents through each interrupting device shall be analyzed for the following fault conditions under all normal system and single contingency system configurations:

- Bus Fault
- Close-in Line-end Open Fault

Individual breaker analysis will be performed consistent with the station breaker arrangement.

References

[1] ANSI/IEEE C37.5-1979, "IEEE Guide for Calculation of Fault Currents for Application of AC High-Voltage Circuit Breakers Rated on a Total Current Basis."

[2] ANSI/IEEE C37.04-1979, "IEEE Standard Rating Structure for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis."

[3] ANSI/IEEE C37.010-1979 and -1999, "IEEE Application Guide for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis."

[4] IEEE 399-1997IEEE Recommended Practice for Industrial and Commercial Power Systems Analysis

Reviewed by the Operating Committee

on 06/15/2017

[22] ASPEN OneLiner Linear Network Solution starting conditions (f.k.a. "Flat Generator" are defined as all generator internal voltages at unity (1.0 p.u.), and all transformer taps set per this Guideline.

Attachment J NYISO Transmission Planning Guideline #5-0

SUBJECT: NYISO Guideline on Application of High-Speed Autoreclosing

REFERENCES: *NPCC Guideline for the Application of Autoreclosing to the Bulk Power System (B-1)*

PURPOSE: The purpose of this document is to establish a consistent guideline for the proper application of autoreclosing, particularly high-speed autoreclosing, on the New York Bulk Power Transmission System. This guideline applies to overhead transmission facilities. It does not apply to underground transmission facilities. The various considerations and issues that need to be addressed in selecting high-speed (20 to 44 cycles) versus delayed (ranging from 1.5 to 30 seconds) autoreclosing, are discussed.

1. INTRODUCTION

Autoreclosing may be applied to quickly restore transmission lines to service subsequent to automatic tripping of their associated circuit breakers due to electrical faults. Experience dictates that many faults on the bulk power overhead transmission system are temporary in nature. Thus, the judicious use of autoreclosing can greatly reduce the duration of outages. Automatic restoration of outaged lines minimizes the need to redispatch the power system and/or declare system emergencies. Successful autoreclosing can enhance stability margins and overall system reliability. However, unsuccessful autoreclosing into a permanent fault may adversely affect system stability and careful consideration must be given to its application on a case by case basis.

2. DISCUSSION

The following key issues should be evaluated before implementing high-speed autoclosing:

- Special attention must be given to applications on lines in close proximity to generators. Unrestricted usage of high-speed autoreclosing may risk major generator shaft fatigue damage; therefore high-speed autoreclosing should not be applied without specific study to assure its safety. Different autoreclosing relay methods are available, such as delayed autoreclosing of 10 seconds or more.
- Not all transmission lines terminate in substations owned by the same party; therefore coordination is imperative since installing high-speed autoreclosing on only one end provides no benefit. In cases where high-speed autoreclosing exists on one end only with delayed reclosing or no autoreclosing on the other terminus and analysis supports that no adverse system impact exists as a result of unsuccessful high-speed autoreclosing, a coordinated implementation of autoreclosing at both line termini should be employed. In cases such as this, breakers may need to be evaluated also.

- In all new and/or modified applications of high-speed autoreclosing, each case should be evaluated on an individual basis to determine that no adverse effect to system stability is introduced.
- In cases where unsuccessful high-speed autoreclosing results in an unstable or undamped system condition, thus becoming the most limiting contingency and requiring a reduction in transfer capability, high-speed autoreclosing benefits should be carefully evaluated.
- The application of high-speed autoreclosing may be more appropriate than delayed autoreclosing for those locations where facility outage(s) results in large angle system separation.
- In transmission corridors where multiple transmission circuits are subjected to known/ documented high isokeraunic levels or intense storm/lightning activity, the application of high-speed autoreclosing needs to be assessed differently. In this case, the benefits of decreasing multiple concurrent outages due to the temporary nature of the faults and maintaining system integrity must be weighed against the probability of autoreclosing into a permanent fault. If for the application postulated, studies determine that no ill effect from unsuccessful high-speed autoreclosing is demonstrated, then the use of high-speed autoreclosing may be deemed to be beneficial.
- With the advent of new technology, the use of selective autoreclosing, in which high-speed autoreclosing is blocked for multi-phase faults, may be available.

3. PERIODIC REVIEW

This guideline will be reviewed triennially by TPAS to determine whether revisions are required.

Reviewed by the Operating Committee

on 06/15/2017

Attachment K Cost Allocation Procedures Pursuant Class Year 2001 Settlement Agreement

1. Cost Allocation Procedures (Per Class 2001 Settlement Agreement)

The Cost Allocation Procedures set forth in this Section 3.6.2 of the Manual were developed in compliance with the Non-Financial Settlement Agreement in Docket Nos. EL02-125-000 and EL02-125-001. They are reproduced here in their entirety, in the form approved by the NYISO OC on May 26, 2005.

1.1 Introduction

These Cost Allocation Procedures implement the terms of a recent FERC settlement involving members of the Class Years 2001 and 2002. These Procedures will apply to the Catch Up Class Year and future class years, unless amended. They provide detail regarding the models, data bases, study processes, and analytical methods utilized by the NYISO in the administration of the Attachment S to the NYISO OATT. They also establish mechanisms to increase the transparency of the cost allocation process.

1.2 Models, Data Bases and Analytical Methods

1.2.1 Models and Data Bases

Attachment S requires the NYISO to use in its cost allocation studies models, data bases, and analytical methods that have been developed through North American Electric Reliability Council (NERC), Northeast Power Coordinating Council (NPCC), New York State Reliability Council (NYSRC), inter-ISO, or NYISO stakeholder processes.

The Existing System Representation is the foundation for both the ATBA and the ATRA. It is intended to provide an accurate description of the facilities that will constitute the power system for the next five-year period. The NYISO develops the Existing System Representation by making certain changes to its planning models and data bases (i.e. steady state, dynamic, short circuit, and Multi-Area Reliability Simulation or MARS) to comply with Attachment S. The result of these changes is that the Existing System Representation includes (i) all generation and transmission facilities identified in the NYISO's most recent Load and Capacity Data Report as existing as of January 1 of that year, excluding those facilities that are subject to Class Year cost allocation but for which Class Year cost allocations have not been accepted; (ii) all planned generation and merchant transmission projects that have accepted their cost allocation in a prior Class Year cost allocation process and System Upgrade Facilities and System Deliverability Upgrades associated with those projects except that System Deliverability Upgrades where construction has been deferred pursuant to Section 25.7.12.2 and 25.7.12.3 of Attachment S will only included if construction of the System Deliverability Upgrades has been triggered under Section 25.7.12.3 of Attachment S; (iii) all generation and transmission retirements and derates identified in the most recent Load and Capacity Data

Report as scheduled to occur during the five-year cost allocation study planning period; (iv) Transmission Projects that have met the following milestones: (1) have been triggered (if subject to the reliability planning process), selected (if subject to the Public Policy Transmission Planning Process), or approved by beneficiaries (if subject to the CARIS process); (2) have a completed System Impact Study (if applicable); (3) have a determination pursuant to Article VII that the Article VII application filed for the facility is in compliance with Public Service Law Section 122 (*i.e.*, "deemed complete") (if applicable); and (4) are making reasonable progress under the applicable OATT Attachment Y planning process (if applicable); (v) transmission projects identified as "firm" by the Connecting Transmission Owner and either (1) have commenced a Facilities Study (if applicable) and have an Article VII application deemed complete (if applicable); or (2) are under construction and scheduled to be in-service within 12 months after the Class Year Start Date; and (vi) all other changes to existing facilities, other than changes that are subject to Class Year cost allocation but that have not accepted their Class Year cost allocation, that are identified in the Load and Capacity Data Report or reported by Market Participants to the NYISO as scheduled to occur during the five-year cost allocation study planning period. Facilities in a Mothball Outage, an ICAP Ineligible Forced Outage, or Inactive Reserves will be modeled as in, and not removed from, the Existing System Representation.

System Upgrade Facilities ("SUFs") for which cost allocation have been accepted in a prior Class Year cost allocation process are represented in the Existing System Representation in the year of their anticipated in-service date. In addition, the SUFs listed on the attached Appendix A will be included in the Existing System Representation, and will be shown as in-service in the first year of the cost allocation study planning period and in each subsequent year. The NYISO will continue to represent these facilities in this way unless they are cancelled or otherwise not in service by January 1, 2010. Beginning with the Class Year 2010, if some or all of these SUFs are not yet in service, the NYISO will determine the date when the facilities will be in service and represent them according to its determination.

1.2.2 Process for Updating Models and Data Bases

Attachment S requires the NYISO to utilize the most current versions of the data bases and models that are available at the time the NYISO is first required to use such data to perform the cost allocation studies for a given Class Year. Beginning on January 1 of the Class Year, the NYISO sends notices to Transmission Owners, generation owners, and other suppliers seeking information to update the data reported in the Load and Capacity Data Report. The NYISO also contacts the neighboring Control Area Operators/ISOs/RTOs to obtain information to update the planning models of their respective systems. The NYISO uses the information received in response to its requests to update its planning models (i.e. steady state, dynamic, short circuit, and MARS) and create the Existing System Representation. Note that, since a steady state base case must balance generation and load, at least some generation included in the

Existing System Representation is generally required to be modeled off-line in the steady state base case. However, all generation and transmission facilities included in the Existing System Representation are modeled as in-service in the short circuit base case. The NYISO will complete the data collection phase of the process in time to present the results to TPAS at its regularly scheduled meeting in March. The NYISO will start the cost allocation studies for a Class Year following that presentation.

The NYISO will not modify the selected version of the data bases and models during the course of the cost allocation studies for a Class Year except: (1) as may be required by Attachment S, the NYISO Tariffs, an order of the Commission, or to address an emergency interconnection not subject to the cost allocation process in a prior year and determined by the NYISO to be necessary to satisfy Applicable Reliability Requirements in the first year of the five year cost allocation study planning period, or (2) to correct material errors in the data bases and models. An error will be considered material if it has the potential to impact the identification of System Upgrade Facilities and associated costs determined during the cost allocation process. For example, an error in the representation of the bulk power system will likely be considered material and will require correction.

1.2.3 Study Processes and Analytical Methods

These NYISO-established study processes and analytical methods include:

1. Thermal Analysis

Thermal analysis is an analytical method used to evaluate and compute the transfer limits of the transmission system for a given base case condition from the stand point of the thermal criteria described in rule B.1(R1) of the NYSRC Reliability Rules & Compliance Manual. Starting with a steady state base case, the NYISO uses a standard linear power flow analysis program to evaluate and determine the normal and emergency transfer limits of the transmission system from the stand point of the thermal criteria. The thermal transfer limit of an interface is the maximum power transfer achievable without causing either a pre-contingency or post-contingency overload of any transmission facility. For the cost allocation, the NYISO performs this thermal analysis for two steady state base cases, for the ATBA and ATRA, respectively.

2. **Voltage Analysis**

Voltage analysis is an analytical method used to evaluate system voltage performance and to compute the transfer limits of the transmission system for a given base case condition from the stand point of the voltage criteria described in rule B.1(R1) of the NYSRC Reliability Rules & Compliance Manual. Starting with a steady state base case, the NYISO uses a standard power flow analysis program to evaluate and determine the transfer limits of the transmission system from the stand point of the voltage criteria. The methodology used by the NYISO in this analysis is described in NYISO Transmission Planning Guideline #2-0, *Guideline for Voltage Analysis and Determination of Voltage-Based Transfer Limits*. For the cost allocation,

the NYISO performs this voltage analysis for the two steady state base cases, for the ATBA and ATRA, respectively.

3. **Stability Analysis**

Stability analysis is an analytical method used to evaluate system stability performance and compute the transfer limits of the transmission system for a given base case condition from the stand point of the stability criteria described in rule B.1(R1) of the NYSRC Reliability Rules & Compliance Manual. Starting with a dynamic base case, which essentially is a steady state base case with dynamics models added, the NYISO creates several transfer "test" cases and uses the PTI PSS/E Stability program to evaluate the stability performance of the system for various potentially limiting design criteria contingencies at the various transfer levels in order to determine the transfer limits of the transmission system from the stand point of the stability criteria. The methodology used by the NYISO for this analysis is described in NYISO Transmission Planning Guideline #3-0, *Guideline for Stability Analysis and Determination of Stability-Based Transfer Limits*. For the cost allocation, the NYISO performs this stability analysis for the two dynamic base cases for the ATBA and ATRA, respectively.

The results of the above described thermal, voltage and stability analyses are combined to determine the overall transfer limits of the transmission system based on the most limiting or the thermal, voltage, or stability criteria.

4. **Resource Adequacy Analysis**

Resource adequacy analysis, or "resource reliability analysis" as it is called in Attachment S, is an analytical method used to evaluate the loss of load expectation (LOLE) of one or more areas of the power system, and thereby determine the adequacy of generation, transmission and demand-side resources within or available to the area (or areas) from the stand point of the Resource Adequacy Design Criteria described in Section 3.0 Criteria (R4) of the NPCC *Reliability Reference Directory # 1 Design and Operation of the Bulk Power System*. The NYISO uses the GE Multi-Area Reliability Simulation (MARS) program for this analysis. For the cost allocation, and specifically the ATBA, the NYISO develops a MARS model of the New York State based on the Existing System Representation, and uses the MARS program evaluate the adequacy of resources within each of the various areas (or zones) within New York State relative to the NPCC resource adequacy criteria. In the event that this analysis indicates that the Existing System does not meet the resource adequacy criteria, additional analysis is performed to evaluate the adequacy of possible feasible generic solutions to meet the criteria. This type of analysis is not used in the ATRA.

5. **Short Circuit Analysis**

Short circuit analysis is an analytical method used to evaluate fault current levels at various buses across the system and to determine whether any equipment (e.g. circuit breakers) may be overdutied for

the modeled system representation in violation of rule B.1(R4) of the NYSRC Reliability Rules & Compliance Manual. Unlike a steady state base case that must balance generation and load, thereby generally requiring at least some generation to be modeled off-line, a short circuit base case typically models all generation and transmission facilities represented in the case as in-service. The methodology used by the NYISO for this analysis is described in NYISO G*uideline for Fault Current Assessment*. The TO's criteria are used to determine whether or not a specific piece of equipment is overdutied. For the cost allocation, the NYISO performs this short circuit analysis for the two short circuit base cases, for the ATBA and ATRA, respectively. In the event that this analysis indicates that the ATBA or ATRA base case does not meet the applicable criteria, additional analysis is performed to evaluate and determine the SUFs needed to meet the criteria.

1.3 NYISO Obligations to Facilitate Communications

1.3.1 Posting of TPAS Meeting Minutes

The NYISO will post the minutes of TPAS meetings on the NYISO website. These minutes will be posted under TPAS meeting materials on the NYISO's web site.

1.3.2 Electronic Work Room

The NYISO will maintain a secure web posting platform (i.e., an electronic "work room") on which items subject to TPAS review will be posted. The electronic work room will allow Market Participant comments and NYISO responses thereto to be posted.

1.3.3 Submission of Market Participant Comments

As described in Section 1.4 below, TPAS and the TPAS Working Group will review various aspects of the cost allocation process for a Class Year. Market Participants shall submit their comments and information to the NYISO by utilizing the electronic work room.

The NYISO will not rely on or utilize any information not made available to TPAS, or the TPAS Working Group for the Class Year, at least three (3) Business Days in advance of any TPAS, or TPAS Working Group, meeting at which review of a matter permitted in Section 1.4 occurs. Market Participants can make their comments or information available to TPAS or the TPAS Working Group by submitting them through the electronic work room in accordance with the requirements specified herein. However, the NYISO may consider or utilize information that qualifies as Confidential Information under the NYISO's tariffs or that constitutes Critical Energy Infrastructure Information pursuant to any law or regulation without first making it available to TPAS or the TPAS Working Group.

1.3.4 Establishment of TPAS Working Group

The NYISO will work with TPAS to establish and facilitate a Market Participant Working Group within TPAS to focus on each Class Year cost allocation. The Working Group will consist of those stakeholders

with significant interest in the cost allocation process for the given Class Year, such as developers with Class Year Projects and impacted Transmission Owners.

1.4 TPAS Involvement in Study Process

1.4.1 TPAS Review of Study Inputs

The NYISO will present to TPAS for TPAS review all study inputs prior to the NYISO beginning any cost allocation study. The study inputs presented to TPAS will include a description of the adjacent control area system representation that the NYISO proposes to adopt.

1.4.2 TPAS Review of Completed Studies

Upon completion of a study, the NYISO will present the results of the study to TPAS and TPAS will have the opportunity to review those results. The studies included in this review are the ATBA and the ATRA.

1.4.3 TPAS Involvement in Selection of Generic Facilities

In certain circumstances, the NYISO must develop generic facilities to complete the ATBA. See Attachment S of the NYISO's OATT, Section 25.6.1.2. This will occur if the existing transmission and generation facilities, combined with previously approved and accepted SUFs, are insufficient to meet the Applicable Reliability Requirements on a year by year basis.

Under Section 25.6.1.2.6 of Attachment S, the NYISO must submit proposed generic solutions to an independent expert for review. TPAS will identify the qualifications necessary for independent experts that will be selected. Prior to selecting an independent expert, the NYISO will present the candidates' credentials to TPAS for its review.

The NYISO will submit to TPAS for its review the NYISO's generic solutions (generation and/or transmission), including any options considered and rejected by the NYISO, as well as proposals made by any Market Participant, as permitted under Attachment S.

The TPAS Working Group will review the comments of the independent expert reviewer retained pursuant to Attachment S. To facilitate this process, the NYISO will post the Comments of the independent expert to the electronic work room, including all drafts of the expert reviewer's reports provided to the NYISO.

1.4.4 TPAS Working Group Review of Estimates

The NYISO will present to the TPAS Working Group for its review all cost information and all other data used or relied upon in developing cost estimates required under Attachment S. These estimates include the costs of the SUFs identified in the ATBA (Section 25.6.1.1) and those identified in the ATRA (Section 25.6.2).

1.4.5 TPAS Review of Draft and Final Cost Allocation Reports

The NYISO will present to TPAS for its review all draft and final cost allocation reports.

1.5 Information Presented to Operating Committee

The NYISO will compile the record of TPAS Working Group and TPAS members' comments submitted during the cost allocation process for the Class Year and the NYISO's responses to these comments. The NYISO will make these comments available to the OC with the cost allocation report for each Class Year allocation.

Attachment L Normal ISO Operating Procedures

Introduction

Normal operating procedures are those set of procedures that are normally employed by the ISO and/or the Connecting Transmission Owner (CTO) in the day-to-day operational control of the New York Control Area Power System. Additional details regarding ISO operating procedures described in the NYISO Transmission and Dispatching Operations Manual and in the NYISO Emergency Operations Manual.

Any potential adverse reliability impact identified by the ISO under the Minimum Interconnection Standard (MIS) (Adverse Reliability Impact) that can be managed through the normal operating procedures of the ISO and/or CTO will not be identified as a degradation of system reliability or noncompliance with the NERC Planning Standards, NPCC Basic Design and Operating Criteria, NYSRC Reliability Rules, ISO rules, practices and procedures, and applicable Transmission Owner Criteria (Applicable Reliability Requirements), and therefore will not require System Upgrade Facilities (SUFs). It is assumed that the owners and operators of the proposed facilities will be subject to, and shall abide by, the applicable ISO and/or CTO's operating procedures.

Any potential adverse reliability impact identified by the ISO under the MIS that cannot be managed through the normal operating procedures of the ISO and/or CTO will be identified as a degradation of system reliability or noncompliance with Applicable Reliability Requirements. Under the MIS, SUFs shall be required for projects that result in a degradation of system reliability or noncompliance with Applicable Reliability Requirements.

This Attachment L is intended to provide additional detail regarding normal operating procedures; however, this is not an exhaustive list of normal operating procedures.

A. Normal ISO Operating Procedures

1. System Operating Limits (SOLs) for Thermal Constraints

1.1 The ISO uses NERC SOLs to secure thermal constraints for Bulk Electric System (BES) transmission facilities within the New York Control Area (NYCA) that are the responsibility of the ISO. BES facilities are those facilities normally operated at voltages of 100kV or greater. Operating criteria includes maintaining transmission facility power flows to within pre-contingency normal and post-contingency emergency thermal ratings.

1.2 The ISO will use the Security Constrained Unit Commitment (SCUC), Real-Time Commitment (RTC) and Real-Time Dispatch (RTD) processes to secure those BES facilities identified as business management system secure (BMS Secure) in Attachment A of the NYISO Outage Scheduling Manual.

1.3 Additional BES transmission facilities that meet the criteria outlined in the NYISO Transmission and Dispatching Manual may be considered as BMS Secure following concurrence with ISO Operations and the local Transmission Owner (TO). The applicable criteria may include the capability to accurately represent the constraints in the BMS market model, ensuring that there are no market power concerns associated with the modeled constraints, and that there are available supply resources that have a greater than 5% shift factor to secure the modeled constraints.

1.4 For BES or non-BES facilities that are not BMS Secure, the ISO will normally allow limited redispatch by the local Transmission Operator to secure such facility thermal constraints through the Day-Ahead Reliability Unit (DARU), Supplemental Resource Evaluation (SRE) or Out-of-Merit (OOM) actions.

2. System Operating Limits (SOLs) for Voltage Constraints

2.1 The ISO uses NERC SOLs to secure voltage constraints for BES transmission facilities within the NYCA that are the responsibility of the ISO. Operating criteria includes maintaining transmission facility flows to within pre-contingency normal and post-contingency emergency voltage ratings.

2.2 The ISO will use available reactive resources and, if necessary, generation redispatch, to secure pre-contingency or post contingency voltage constraints on BES facilities that are the responsibility of the ISO.

2.3 In order to address pre-contingency or post contingency voltage constraints on BES or non-BES facilities that are not the responsibility of the ISO, the ISO will normally allow the local Transmission Operator to secure such facility voltage constraints through the DARU/SRE/OOM operation of one unit and less than 300 MW of expected generation redispatch.

3. Interconnection Reliability Operating Limits (IROLs)

3.1 The ISO uses NERC IROLs to address four types of reliability operating limits (e.g. thermal, voltage, stability, voltage transfer) between the NYCA and External Control Areas.

3.2 The ISO uses NERC IROLs to address transient stability and voltage (collapse) transfer operating limits internal to the NYCA.

3.3 The ISO will use the SCUC/RTC/RTD processes to secure those established NYISO IROL Interfaces that are identified in the NYISO Emergency Operating Manual Table A.6.

4. Phase Angle Regulators – Normal Operating Practice

4.1 All Phase Angle Regulator (PAR) controlled lines are expected to operate to maintain a certain pre-contingency MW flow value subject to normal ratings. The post-contingency PAR MW flow value will be allowed to reflect N-1 contingency flow response subject to post-contingency emergency ratings.

4.2 Power flows on internal PAR controlled lines internal to the NYCA may be adjusted up to 75% to avoid the need for generation redispatch if BMS Secured transmission constraints can be secured by such PAR adjustments.

4.2.1 One exception to this expectation is the ConEd-LIPA 901/903 facilities for which adjustments are defined by the LIPA/Con Ed wheeling agreement.

4.3 Power flows on PAR controlled lines between the NYCA and External Control Areas will normally be maintained as defined below:

4.3.1 IESO-NYISO L33P/L34P facilities: 0MW pre-contingency operation

4.3.2 PJM-NYISO 5018, E, F, O, A, B, C facilities: 0MW pre-contingency operation with additional interchange percentages as defined in the NYISO/PJM JOA (Joint Operating Agreement)

4.3.3 ISONE-NYISO PV20 and K7 facility: 0MW pre-contingency operation

4.3.4 ISONE-NYISO NNC facility: 200MW pre-contingency operation with assumed flow direction consistent with ISONE-NYISO interface flow direction for interface impacts being studied. Otherwise 0MW for NNC pre-contingency operation for all other interface impacts being studied.

4.3.5 PARs studied under Section B8 of this Attachment that are not yet in-service will be modeled in interconnection studies as they are expected to be operated. The study modeling assumption of such PARs will be documented in the study assumptions for applicable studies.

B. Application of Normal Operating Procedures to Specific Resource-Types in the ISO Interconnection Study Process

1. Cluster Study Transmission Projects (subject to the Standard Interconnection Procedures in OATT Attachment HH)

1.1 A Cluster Study Transmission Project proposing to interconnect the NYCA and an External Control Area is expected to be scheduled independently from the existing scheduling interfaces (*i.e.*, its Energy schedule may be in the same or a different flow direction than other interfaces) and therefore will not be included in existing external interface definitions. In the interconnection studies in which a Cluster Study Transmission Project is evaluated, the project will be evaluated for pre-contingency and post-contingency criteria consistent with the Minimum Interconnection Standard (*i.e.*, at full project capability, with redispatch of existing generation resources if such redispatch can be performed under Normal Operating Procedures to mitigate Adverse Reliability Impacts). Consistent with Attachment HH to the OATT, the ISO will identify SUFs required to mitigate a degradation in Total Transfer Capability (TTC) to impacted, existing NYCA IROLs or impacted internal NYCA SOLs greater than 25 MW.

1.2 A Cluster Study Transmission Project proposing to interconnect at points internal to the NYCA is expected to be scheduled independently from the existing scheduling interfaces (*i.e.*, its Energy schedule may be in the same or a different flow direction than other interfaces) and therefore will not be included in existing internal NYCA interface definitions. In the interconnection studies in which a Cluster Study Transmission Project is evaluated, the project will be evaluated for pre-contingency and post-contingency criteria, consistent with the Minimum Interconnection Standard (*i.e.*, at less than full project capability if redispatch under Normal Operating Procedures can mitigate Adverse Reliability Impacts). Consistent with

Attachment HH to the OATT, the ISO will identify SUFs required to mitigate a degradation in TTC to impacted existing NYCA IROLs or impacted internal NYCA SOLs greater than 25 MW.

2. Controllable Transmission Projects (subject to the Transmission Interconnection Procedures in OATT Attachment P)

2.1 A Controllable Transmission project proposing to interconnect the NYCA and an External Control Area is expected to be scheduled independently from the existing scheduling interfaces (*i.e.*, its Energy schedule may be in the same or a different flow direction than other interfaces) and therefore will not be included in existing external interface definitions. In the interconnection studies in which a Controllable Transmission project is evaluated, the project will be evaluated for pre-contingency and post-contingency criteria, consistent with the Transmission Interconnection Standard (*i.e.*, at full project capability, with redispatch of existing generation resources if such redispatch can be performed under Normal Operating Procedures to mitigate Adverse Reliability Impacts). Consistent with Attachment P to the OATT, the ISO will identify NUFs required to mitigate a degradation in TTC to impacted existing NYCA IROLs or impacted internal NYCA SOLs greater than 25 MW.

2.2 A Controllable Transmission project proposing to interconnect at points internal to the NYCA is expected to be scheduled independently from the existing scheduling interfaces (*i.e.*, its Energy schedule may be in the same or a different flow direction than other interfaces) and therefore will not be included in existing internal NYCA interface definitions. In the interconnection studies in which a Controllable Transmission project is evaluated, the project will be evaluated for pre-contingency and post-contingency criteria, consistent with the Transmission Interconnection Standard (*i.e.*, at less than full project capability if redispatch under Normal Operating Procedures can mitigate Adverse Reliability Impacts). Consistent with Attachment P to the OATT, the ISO will identify NUFs required to mitigate a degradation in TTC to impacted existing NYCA IROLs or impacted internal NYCA SOLs greater than 25 MW.

3. Controllable Transmission Projects (subject to the Transmission Service Study procedures in OATT Section 3.7)

3.1 A Controllable Transmission project proposing to interconnect the NYCA and an External Control Area is expected to be scheduled independently from the existing scheduling interfaces (*i.e.*, its Energy schedule may be in the same or a different flow direction than other interfaces) and therefore will not be included in existing external interface definitions. In the interconnection studies in which a Controllable Transmission project is evaluated, the project will be evaluated for pre-contingency and post-contingency criteria, consistent with the requirements of OATT Section 3.7 (*i.e.*, at full project capability, with redispatch of existing generation resources, if such redispatch can be performed under Normal Operating Procedures to mitigate Adverse Reliability Impacts). Consistent with OATT Section 3.7, the ISO will identify Network Upgrades required to mitigate a degradation in TTC to impacted existing NYCA IROLs or impacted internal NYCA SOLs greater than 25 MW.

3.2 A Controllable Transmission project proposing to interconnect at points internal to the NYCA is expected to be scheduled independently from the existing scheduling interfaces (*i.e.*, its Energy schedule may be in the same or a different flow direction than other interfaces) and therefore

will not be included in existing internal NYCA interface definitions. In the interconnection studies in which a Controllable Transmission project is evaluated, the project will be evaluated as such for pre-contingency and post-contingency criteria, consistent with the requirements of OATT Section 3.7 (*i.e.*, at less than full project capability if redispatch under Normal Operating Procedures can mitigate Adverse Reliability Impacts). Consistent with OATT Section 3.7 to the OATT, the ISO will identify Network Upgrades required to mitigate a degradation in TTC to impacted existing NYCA IROLs or impacted internal NYCA SOLs greater than 25 MW.

4. Non–Controllable Transmission Projects (subject to the Transmission Interconnection Procedures in OATT Attachment P)

4.1 A Transmission -Project that is not Controllable Transmission interconnecting the NYCA and an External Area is not expected to be scheduled independently from the existing scheduling interfaces (*i.e.*, its Energy flow will be based on the physics of the power system) and therefore will be included in existing external interface definitions. In the interconnection studies in which a new non-controllable Transmission Project is evaluated, the project will be evaluated as such for pre-contingency and post-contingency criteria, consistent with the Transmission Interconnection Standard (*i.e.*, at less than full project capability if redispatch under Normal Operating Procedures can mitigate Adverse Reliability Impacts). Consistent with Attachment P to the OATT, the ISO will identify NUFs required to mitigate a degradation in TTC to impacted existing NYCA IROLs or impacted internal NYCA SOLs greater than 25 MW.

4.2 A Transmission Project that is not Controllable Transmission interconnecting at points internal to the NYCA is not expected to be scheduled independently from the existing scheduling interfaces (*i.e.*, its Energy flow will be based on the physics of the power system) and therefore will be included in existing internal interface definitions. In the interconnection studies in which a new non-controllable Transmission Project is evaluated, the project will be evaluated for pre-contingency and post- contingency criteria, consistent with the Transmission Interconnection Standard (*i.e.*, at less than full project capability if redispatch under Normal Operating Procedures can mitigate Adverse Reliability Impacts). Consistent with Attachment P to the OATT, the ISO will identify NUFs required to mitigate a degradation in TTC to impacted existing NYCA IROLs or impacted internal NYCA SOLs greater than 25 MW.

5. Non–Controllable Transmission Projects (subject to the Transmission Service Study procedures in OATT Section 3.7)

5.1 A transmission project that is not Controllable Transmission interconnecting the NYCA and an External Area is not expected to be scheduled independently from the existing scheduling interfaces (*i.e.*, its Energy flow will be based on the physics of the power system) and therefore will be included in existing external interface definitions. In the interconnection studies in which a new non-controllable Transmission project is evaluated, the project will be evaluated for pre-contingency and post-contingency criteria, consistent with the requirements of OATT Section 3.7 (*i.e.*, at less than full project capability if redispatch under Normal Operating Procedures can mitigate Adverse Reliability Impacts). Consistent with OATT Section 3.7 to the OATT, the ISO will identify NUFs required to mitigate a degradation in TTC to impacted existing NYCA IROLs or impacted internal NYCA SOLs greater than 25 MW.

5.2 A transmission project that is not Controllable Transmission interconnecting at points internal to the NYCA is not expected to be scheduled independently from the existing scheduling interfaces (*i.e.*, its Energy flow will be based on the physics of the power system) and therefore will be included in existing internal interface definitions. In the interconnection studies in which a new non-controllable Transmission Project is evaluated, the project will be evaluated for pre-contingency and post- contingency criteria, consistent with the Transmission Interconnection Standard (*i.e.*, at less than full project capability if redispatch under Normal Operating Procedures can mitigate Adverse Reliability Impacts). Consistent with Attachment P to the OATT, the ISO will identify NUFs required to mitigate a degradation in TTC to impacted existing NYCA IROLs or impacted internal NYCA SOLs greater than 25 MW.

6. Internal New York Control Area Generation Projects

6.1 New generation projects that are internal to the NYCA are expected to be under ISO operational control. New internal generation projects can impact existing IROL transfer capabilities between the NYCA and External Control Areas.

6.2 Under the MIS, new internal generation projects will be evaluated at full MW capability for pre-contingency and post- contingency criteria. If necessary, the ISO will identify SUFs to address any degradation (1) in TTC beyond the 25 MW threshold to impacted existing SOLs within NYCA and IROLs between the NYCA and External Control Areas or (2) of system reliability or noncompliance with Applicable Reliability Requirements; provided however, for generation projects, the ISO and local TOs may agree that any overloaded transmission facilities identified in an interconnection study will be evaluated to determine if they redispatch in studies under the NYISO Minimum Interconnection Standard is possible – i.e., whether the transmission facilities can be secured in the NYISO's Business Management System ("BMS"). Generation projects that overload transmission facilities that are not able to be secured in the NYISO's BMS will be evaluated at full MW capability for pre-contingency and post-contingency criteria.

6.3 A new NYCA generating project will not result in the need for new IROL Interface definitions under applicable planning criteria. If necessary, the ISO will identify SUFs to address the local generating unit instability and/or local voltage collapse issues.

7. External Control Area Generation Projects

7.1 New generation projects for which the Point of Interconnection is external to the NYCA (external generation projects) are not expected to be under ISO operational control. New external generation projects can impact the NYCA system and the NYCA is treated an Affected System. In the ISO Affected System studies, such projects will be evaluated at full MW capability for normal and for N-1 contingency criteria. If necessary, the ISO will identify upgrades to address any degradation in TTC beyond the 25 MW threshold to impacted existing NYCA IROLs or impacted internal NYCA SOLs.

7.2 A new External Control Area generating project will not result in the need for new IROL Interface definitions under applicable planning criteria. If necessary, the ISO will identify upgrades to address the local generating unit instability and/or local voltage collapse issues.

8. Phase Angle Regulators

8.1 Upgrades that include new PAR controlled facilities ***internal to the NYCA*** will normally have PAR power flows modeled at 25-75% of thermal rating of the PAR or series device to allow for expected constraint mitigation and for flexible operation of the PAR in real-time operations. In addition, modeled power flows using PAR controlled facilities can be adjusted as necessary to address the following considerations:

8.1.1 Upgrades that include new PAR controlled facilities can allow the PAR to be modeled at a MW level to mitigate transfer capability impact associated with new interconnection projects. The MW level of modeled PAR flow to mitigate any specific interface transfer capability impact under N-1 reliability criteria is not expected to be more than the greater of +/-100MW or +/-25% of the PAR MW rating relative to the normal 50% loading level to provide for continued operating flexibility.

8.1.2 Upgrades that include new PAR controlled facilities can allow the PAR to be modeled at a MW level to address N-1-1 reliability criteria associated with new interconnection projects. The MW level and direction of flow to meet N-1-1 reliability criteria is not expected to be more than 90% of the PAR MW rating.

8.2 Upgrades that include new PAR controlled facilities ***between the NYCA and External Control Areas*** will normally have PAR power flows modeled at 0MW to minimize the impact of unscheduled power flows on each region's system. In addition, the modeling of PAR controlled facilities can be adjusted as necessary to address the following considerations:

8.2.1 Upgrades that include new PAR controlled facilities allow for the PAR to be modeled at a MW level to mitigate transfer capability impact associated with new interconnection projects. The MW level and direction of flow to mitigate transfer capability impact can be different for the NYCA and the impacted External Control Area respective studies. The MW level of modeled PAR flow to mitigate any specific interface transfer capability impact is not expected to be more than the greater of +/-100MW or +/-25% of the PAR MW rating relative to the normal 50% loading level to provide for continued operating flexibility.

Upgrades that include new PAR controlled facilities allow for the PAR to be modeled at a MW level to address N-1-1 reliability criteria associated with new interconnection projects. The MW level and direction of flow to meet N-1-1 reliability criteria may be different for the NYCA and the impacted External Control Area respective studies. The MW level and direction of flow to meet N-1-1 reliability criteria is not expected to be more than 90% of the PAR MW rating.

Attachment M Steps in an Expedited Deliverability Study[23]

(Applicable to Generating Facilities Seeking CRIS Based on its Deliverability MWs)

(Added __/__/2020)

Step	Description / Action	By Whom	By When
1.	Notice of the Expedited Deliverability Study (EDS) start date	NYISO	Prior to an EDS start date as detailed in Section 25.5.9.2.1 of Attachment S
2.	Provide notice to NYISO electing to enter the EDS and satisfy other entry requirements (Section 25.5.9.2.1 of Attachment S)	Developer	Prior to an EDS start date as detailed in Section 25.5.9.2.1 of Attachment S
3.	Determine eligibility to enter EDS and provide a good faith cost estimate and time frame and tender an Expedited Deliverability Study Agreement (EDSA) to eligible Developers and applicable CTO(s)	NYISO	As soon as practicable after a Developer's notice of election to enter EDS
3.	Complete information in EDSA and deliver completed, but unsigned, EDSA, required technical data, and $30,000 study deposit (Section 25.5.9.2.2 of Attachment S)	Developer	Within 10 Business Days of NYISO tendering the EDSA to an eligible EDS Developer
5.	Execute EDSA	NYISO, CTO(s) & Developer	Within 10 calendar days of NYISO confirming receipt of the completed, but unsigned, EDSA, required technical data, and required deposits
6.	Conduct EDS in coordination with the CTO(s) and Affected System Operator(s) and provide EDS report to EDS Developers	NYISO	Within the timeframe per Attachment S

[23] Summary of the basic steps described in the NYISO Expedited Deliverability Study contained in Attachment S to the NYISO's Open Access Transmission Tariff ("OATT"). These procedures were originally accepted by FERC on February 18, 2020. This attachment only provides a high-level summary of the Expedited Deliverability Study. It is not intended as a substitute for the Attachment S. For complete information, you should consult Attachment S, which is available for review on the NYISO's website.

Step	Description / Action	By Whom	By When
7.	Schedule and hold study report meeting with EDS Developers and CTO(s). Invite Affected System Operator(s), as applicable (Section 25.5.9.2.3 of Attachment S)	NYISO	Within 10 Business Days of providing draft EDS report to participating EDS Developers
8.	Submit the EDS results to TPAS for review and to the OC for approval (Section 25.5.9.2.3 of Attachment S)	NYISO	Upon completion of the EDS report, unless a Class Year Study report has been approved by the OC and the next Class Year Study has not commenced
9.	Proceed with Expedited Deliverability Study Initial Decision Period (Section 25.5.9.2.4 of Attachment S)		Following OC approval of EDS report
10.	Provide Expedited Deliverability Study Acceptance Notice or Expedited Deliverability Non-Acceptance Notice (Section 25.5.9.2.4 of Attachment S)	Developer	Within 5 Business Days following approval of EDS report by the OC
11.	Provide revised EDS report based on notices from participating EDS Developers (Section 25.5.9.2.4 of Attachment S)	NYISO	Within 10 Business Days following receipt of an Expedited Deliverability Non-Acceptance Notice
12.	Report decisions from the EDS	NYISO	As soon as practicable following completion of EDS