

30 Attachment X – Standard Large Facility Interconnection Procedures (Applicable to Generating Facilities that exceed 20 MWs and to Class Year Transmission Facilities)

30.14 Appendices

APPENDIX 1 TO LFIP - INTERCONNECTION REQUEST

1. The undersigned Developer submits this request to interconnect its Large Generating Facility or Class Year Transmission Project with the New York State Transmission System or Distribution System pursuant to the Standard Large Facility Interconnection Procedures in the ISO OATT (“LFIP”).

2. This Interconnection Request is for [insert project name]: _____

_____, which

is (check one of the following):

A proposed new Large Generating Facility

A proposed ~~multi-unit Large Generating Facility seeking to participate~~Co-locate Storage Resource;

~~A proposed Hybrid Storage Resource;~~

A proposed new BTM:NG Resource

A proposed new Class Year Transmission Project

A material modification to a proposed or existing facility (e.g., an increase in the capacity of an existing facility beyond the permissible de minimis increases permitted under Section 30.3.1 of Attachment X to the ISO OATT)

3. Legal Name of the Developer (or, if an individual, individual’s name) (must be a single individual or entity):

Name of Developer: _____

Contact Person: _____

Title: _____

Address: _____

Email: _____

Telephone: _____

Address or location of the proposed new Large Facility site (to the extent known) or, in the case of an existing Generating Facility or Class Year Transmission Project, the name and

specific location of that existing facility: _____

4. Approximate location, and, if available, address, coordinates, of the proposed Point(s) of Interconnection: _____

5. MW nameplate rating: _____ at _____ degrees F

6. Requested Interconnection Service:

MW of requested ERIS at the POI (maximum summer or winter net MW, whichever is greater): _____

(NOTE: A Developer may request ERIS below the Generating Facility Capability for Large Generating Facilities and the full facility capacity for Class Year Transmission Projects subject to the requirements and limitations set forth in Section 30.3.2.3 of Attachment X to the ISO OATT).

- If requesting ERIS for a -multi-unit facility, specify the allocation of requested ERIS among such units: _____
- Maximum summer net (net MW = gross MW minus auxiliary loads total MW) which can be achieved at 90 degrees F: _____
Maximum winter net (net MW = gross MW minus auxiliary loads total MW) which can be achieved at 10 degrees F : _____
- MW of requested increase in ERIS of an existing facility, as calculated from the baseline ERIS (as defined in Section 30.3.1 of Attachment X – for temperature-sensitive machines, provide the summer and winter MW vs. temperature curves for both gross MW and net MW corresponding to the requested net MW values provided above): _____

MW of requested CRIS: _____

- If requesting CRIS for a multi-unit facility, specify the allocation of requested CRIS among such units: _____

7. If a Class Year Transmission Project, which of the following forms of CRIS does the Developer intend to request:

Unforced Capacity Deliverability Rights
External-to-Rest of State Deliverability Rights

8. General description of the proposed Project (e.g.: describe type/size/number/general configuration of the proposed generator units, transmission, transformers, feeders, lines leading to the proposed point of

interconnection(s), breakers, etc): _____

9. Attach a conceptual breaker one-line diagram and a project location geo map.
10. Proposed In-Service Date (Month/Year): _____
Proposed Initial Synchronization Date (Month/Year): _____
Proposed Commercial Operation Date (Month/Year): _____
11. Project power flow, short circuit, transient stability modeling data and supporting documentation (as set forth in Attachment A) (optional). Modeling data will be required during the scoping and applicable study agreement process, as coordinated by the ISO.
12. \$10,000 non-refundable application fee must be submitted with this Interconnection Request form.
13. Evidence of Site Control as specified in the LFIP (check one):
 Is attached to this Interconnection Request and provides site control for the following number of acres: _____; or
 Will be provided at a later date in accordance with the LFIP, in which case a non-refundable \$10,000 deposit in lieu of site control must be provided with this Interconnection Request form
14. This Interconnection Request shall be submitted to the ISO through the interconnection portal on the NYISO website.
15. This Interconnection Request is submitted by:
Signature: _____
Name (type or print): _____
Title: _____
Company: _____
Date: _____

LARGE GENERATING FACILITY PRELIMINARY DATA

(Additional data will be required at subsequent stages of the interconnection study process)

1. Describe the composition of assets (including MW level) within the Large Generating Facility, including load reduction assets (e.g., 50 MW wind facility, 20 MW Energy Storage Resource and a load reduction resource with a maximum of 1 MW of load reduction): _____
2. Maximum Injection Capability of entire Large Generating Facility over 1 hour: _____
3. If the facility includes a Resource with Energy Duration Limitations-, indicate the maximum injection capability for the entire Large Generating Facility over the selected duration (e.g., 100 MW over 4 hours): _____
4. Provide the following information for each unit within the Large Generating Facility:

Note: A completed Siemens PTI PSSE power-flow and dynamics models or other compatible formats, such as IEEE and PTIPSLF power flow models, and Aspen short circuit model must be supplied at a later stage of the interconnection study process.

Note: A completed Siemens PTI PSSE power-flow and dynamics models General Electric Company Power Systems Load Flow (PSLF) data sheet or other compatible formats, such as IEEE and PTIPSLF power flow models, and Aspen short circuit model must be supplied at a later stage of the interconnection study process.

Energy Source/Resource/Fuel type:

___ Solar

___ Wind

___ Hydro _____ Hydro Type (e.g. Run-of-River): _____

___ Energy Storage

___ Diesel

___ Natural Gas

___ Fuel Oil

____ Other (state type) _____

Generator Nameplate Rating: _____ MW (Typical)

MVA _____ °F _____ Voltage (kV) _____

Maximum Reactive Power at Rated Power Leading ~~and~~

~~Lagging~~ (MVAR): _____

Minimum Reactive Power at Rated Power Lagging (MVAR):

Connection (e.g. Wye, Delta or Wye-grounded) _____

Reactance data per unit, Subtransient – unsaturated (X''_{di}): _____

Customer-Site Load: _____ MW

Existing load? Yes ___ No ___

If existing load with metered load data, provide coincident Summer peak load: _____

If new load or existing load without metered load data, provide estimated coincident Summer peak load, together with supporting documentation for such estimated value:

Typical Reactive Load (if known):

Generator ~~(or solar collector)~~ manufacturer, model name & number:

Inverter manufacturer, model name, number, and version:

~~Note: A completed General Electric Company Power Systems Load Flow (PSLF) data sheet or other compatible formats, such as IEEE and PTI power flow models, must be supplied at a later stage of the interconnection study process.~~

Nameplate Output Power Rating in MW: (Summer) _____ (Winter) _____

Nameplate Output Power Rating in MVA: (Summer) _____

(Winter)

If solar, total number of solar panels in solar farm to be interconnected pursuant to this Interconnection Request: _____

Inverter manufacturer, model name, number, and version: _____

If wind, total number of generators in wind farm to be interconnected pursuant to this Interconnection Request: _____

Generator Height: Single phase _____ Three Phase _____

If an Energy Storage Resource or a Resource with Energy Duration Limitations:

Inverter manufacturer, model name, number, and version: _____

Energy storage capability (MWh): _____

Minimum Duration for full discharge (i.e., injection) (Hours): ____

Minimum Duration for full charge (i.e., withdrawal) (Hours): ____

Maximum withdrawal from the system (i.e., when charging) (MW): ____

Maximum sustained four-hour injection in MW hours: ____

Primary frequency response operating range for electric storage resource: _____

Minimum State of Charge: _____(%)_—Maximum State of Charge: _____

_____ (%)

If a Resource with Energy Duration Limitations

Energy storage capability (MWh): _____

Minimum Duration for full discharge (i.e., injection) (Hours): _____

Minimum Duration for full charge (i.e., withdrawal) (Hours): _____

Maximum withdrawal from the system (i.e., when charging) (MW): _____

Inverter manufacturer, model name, number, and version: _____

~~Primary frequency response operating range for electric storage resource:~~

~~Minimum State of Charge: _____ (%) Maximum State of Charge: _____
(%)~~

GENERATOR STEP-UP TRANSFORMER DATA

RATINGS

Capacity Self-cooled/Maximum Nameplate
_____ / _____ MVA

Voltage Ratio (Generator Side/System Side/Tertiary)
_____ / _____ / _____ kV

Winding Connections (Generator Side/System Side/Tertiary (Delta or Wye))
_____ / _____ / _____

Fixed Taps Available _____

Present Tap Setting _____

IMPEDANCE

Positive Z1 (on self-cooled MVA rating) _____ % _____ X/R

Zero Z0 (on self-cooled MVA rating) _____ % _____ X/R

**ADDITIONAL INFORMATION REQUESTED FOR CLASS YEAR TRANSMISSION
PROJECTS**

Description of proposed project:

- a. General description of the equipment configuration and kV level:

- b. Transmission technology and manufacturer (e.g., HVDC VSC):

**ADDITIONAL INFORMATION REQUESTED FOR FACILITIES
SEEKING ERIS BELOW FULL OUTPUT**

Describe any injection-limiting equipment if the facility is requesting ERIS below its full output:

Commercial Operation

Date: _____

4. Additional Information Required as Part of this Data Form:

Additional Information:

Nameplate MW: _____

Nameplate MVA: _____

Auxiliary Load MW: _____

Auxiliary Load MVAR: _____

For temperature sensitive units, provide MW vs. temp curves and indicate maximum summer and winter net capability below:

- Maximum summer net (net MW = gross MW minus auxiliary loads total MW) which can be achieved at 90 degrees F: _____
- Maximum winter net (net MW = gross MW minus auxiliary loads total MW) which can be achieved at 10 degrees F : _____

1. One set of metering is required for each generation connection to the new ring bus or existing Connecting Transmission Owner station. Number of generation connections: _____

 2. On the one-line indicate the generation capacity attached at each metering location. (Maximum load on CT/PT)
 3. On the one-line indicate the location of auxiliary power. (Minimum load on CT/PT)
Amps
 4. Will an alternate source of auxiliary power be available during CT/PT maintenance?
_____ Yes _____ No
 5. Will a transfer bus on the generation side of the metering require that each meter set be designed for the total plant generation? _____ Yes _____ No

(If yes, indicate on one-line diagram).
 6. What type of control system or PLC will be located at the Developer's facility?
-

7. What protocol does the control system or PLC use?

8. Please provide a 7.5-minute quadrangle of the site. Sketch the plant, station, transmission line, and property line.

9. Physical dimensions of the proposed interconnection station:

10. Bus length from generation to interconnection station:

11. Line length from interconnection station to Connecting Transmission Owner's transmission line.

12. Tower number observed in the field. (Painted on tower leg):

13. Number of third-party easements required for transmission lines, if known:

14. Describe any injection-limiting equipment if the facility is requesting ERIS below its full output:

BTM:NG Resources

15. In addition to the above information, as applicable, for BTM:NG Resources, please also provide the following information:

Developer or Customer-Site Load: _____ kW (if none, so state)

Existing load? Yes ___ No ___

If existing load with metered load data, provide coincident Summer peak load: _____

If new load or existing load without metered load data, provide estimated coincident Summer peak load: _____

Is the new or existing load in the Transmission Owner's service area?

_____ Yes _____ No Local provider: _____

Resources with Energy Duration Limitations

In addition to the above information, as applicable, for Resources with Energy Duration Limitations, please also provide the following information:

Energy storage capability (MWh): _____

Minimum Duration for full discharge (i.e., injection) (Hours): _____

Minimum Duration for full charge (i.e., withdrawal) (Hours): _____

Maximum withdrawal from the system (i.e., when charging) (MW): _____

Inverter manufacturer, model name, number, and version: _____

Maximum sustained injection (in MW) over the Developer-selected duration;

Primary frequency response operating range for electric storage resource:

Minimum State of Charge: _____ (%) Maximum State of Charge: _____ (%)

If requesting CRIS, indicate the maximum injection capability over the selected duration (e.g., 2.5 MW over 4 hours for a total of 10 MWh): _____

APPENDIX 2-A TO LFIP – FACILITIES STUDY AGREEMENT FOR EXTERNAL CRIS RIGHTS

THIS AGREEMENT is made and entered into this _____ day of _____, 20__ by and between _____, a _____ organized and existing under the laws of the State of _____ (“Requestor”), the New York Independent System Operator, Inc., a not-for-profit corporation organized and existing under the laws of the State of New York (“NYISO”), and _____ a _____ organized and existing under the laws of the State of New York (“Connecting Transmission Owner”). Requestor, NYISO and Connecting Transmission Owner each may be referred to as a “Party,” or collectively as the “Parties.”

RECITALS

WHEREAS, Requestor has, pursuant to Section 25.7.11 of Attachment S to the ISO

OATT, requested External CRIS Rights for a specified number of MW of External CRIS; and

WHEREAS, NYISO has determined that Requestor has submitted a complete External CRIS Rights Request, in accordance with the applicable requirements of the NYISO Tariffs and ISO Procedures; and

WHEREAS, Requestor has requested NYISO and Connecting Transmission Owner to evaluate the specified number of MW of External ICAP in the currently Open Class Year Deliverability Study to specify the Deliverable MW for its External ICAP, and also to specify and estimate the cost of the equipment, engineering, procurement and construction work needed to implement the System Deliverability Upgrades required for External CRIS Rights.

NOW, THEREFORE, in consideration of and subject to the mutual covenants contained herein, the Parties agree as follows:

- 1.0 When used in this Agreement, with initial capitalization, the terms specified shall have the meaning indicated herein, or in Attachment S or Attachment X to the ISO OATT, or in Article Z of the NYISO Services Tariff.
- 2.0 Requestor requests that NYISO and Connecting Transmission Owner evaluate the deliverability of Requestor's External CRIS Rights in accordance with Section 25.7.11 of Attachment S to the ISO OATT. Requestor's External CRIS Rights are not subject to, and shall not be evaluated by applying, the NYISO Minimum Interconnection Standard.
- 3.0 Requestor shall provide a deposit of \$50,000 for the performance of the Class Year Study for its External CRIS Rights. The time for completion of the Class Year Deliverability Study is specified in Attachment A to this Agreement.

NYISO shall invoice Requestor on a monthly basis for the expenses incurred by NYISO and Connecting Transmission Owner on the Class Year Deliverability Study for Requestor each month, as computed on a time and materials basis in accordance with the rates attached hereto. Requestor shall pay invoiced amount to NYISO within thirty (30) Calendar Days of receipt of invoice. NYISO shall continue to hold Requestor's deposit until settlement of the final invoice.

4.0 Miscellaneous

- 4.1 **Accuracy of Information.** Except as Requestor or Connecting Transmission Owner may otherwise specify in writing when they provide information to NYISO under this Agreement, Requestor and Connecting Transmission Owner each represent and warrant that the information it provides to NYISO shall be accurate and complete as of the date the information is provided. Requestor and Connecting Transmission Owner shall each promptly provide NYISO with any additional information needed to update information previously provided.
- 4.2 **Disclaimer of Warranty.** In preparing the Class Year Deliverability 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 such 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 Class Year Deliverability Study for External ICAP. Requestor 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.

- 4.3 **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 Class Year Deliverability Study for External ICAP, or any reliance on the Class Year Deliverability 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.
- 4.4 **Third-Party Beneficiaries.** Without limitation of Sections 4.2 and 4.3 of this Agreement, Requestor and Connecting Transmission Owner further agree that subcontractor consultants hired by NYISO to conduct or review, or to assist in the conducting or reviewing, a Class Year Deliverability Study shall be deemed third party beneficiaries of these Sections 4.2 and 4.3.
- 4.5 **Terms and Termination.** This Agreement shall be effective from the date hereof and unless earlier terminated in accordance with this Section 30.4.5, shall continue in effect until the Class Year Deliverability Study for Requestor's External CRIS Rights is completed and approved by the NYISO Operating Committee. Requestor or NYISO may terminate this Agreement upon the withdrawal of Requestor's External CRIS Rights Request under Section 25.7.11 of Attachment S to the ISO OATT or upon Developer's withdrawal from the Class Year Study pursuant to Section 25.7.7.1 of Attachment S.
- 4.6 **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.
- 4.7 **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.

- 4.8 Counterparts. This Agreement may be executed in counterparts, and each counterpart shall have the same force and effect as the original instrument.
- 4.9 Amendment. No amendment, modification or waiver of any term hereof shall be effective unless set forth in writing signed by the Parties hereto.
- 4.10 Survival. All warranties, limitations of liability and confidentiality provisions provided herein shall survive the expiration or termination hereof.
- 4.11 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 Requestor as a result of this Agreement.
- 4.12 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.
- 4.13 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, the Parties have caused this Agreement to be duly executed by their duly authorized officers or agents on the day and year first above written.

New York Independent System Operator, Inc.

By: _____

Title: _____

Date: _____

[Insert name of Connecting Transmission Owner]

By: _____

Title: _____

Date: _____

[Insert name of Requestor]

By: _____

Title: _____

Date: _____

Attachment A To Facilities Study Agreement for External CRIS Rights

**SCHEDULE FOR CONDUCTING THE
FACILITIES STUDY FOR EXTERNAL CRIS Rights**

NYISO and Connecting Transmission Owner shall use Reasonable Efforts to complete the study and issue a Class Year Deliverability Study report to Requestor within the following number of days after or receipt of an executed copy of this Agreement:

Estimated completion date for Class Year 20__ Deliverability Study required by Section 25.7.11 Attachment S to the ISO OATT: ___/___/_____, assuming no additional detailed studies are required to evaluate System Deliverability Upgrades.

**DATA FORM TO BE PROVIDED BY REQUESTOR
WITH THE FACILITIES STUDY AGREEMENT FOR EXTERNAL ICAP**

a. _____ MW of External ICAP certified to be supplied for each month of Summer Capability Period. The same number of MW must be supplied for all months of each Summer Capability Period throughout the Award Period

b. _____ MW of External ICAP certified to be supplied for each month of Winter Capability Period (cannot exceed MW committed for Summer Capability Period). None required, but if Requestor does commit MW to any month of Winter Capability Period, Requestor must specify months covered by commitment.

c. The External Interface(s) proposed to be used for the External ICAP.

OTHER ASSUMPTIONS

Appendix 3 to LFIP – LARGE FACILITY MODIFICATION REQUEST

Large Facility Modification Request

1. The undersigned Developer submits this request to modify an Interconnection Request for a Large ~~Facility~~ Generating Facility or Class Year Transmission Project currently with an Interconnection Request in the NYISO’s Interconnection Queue or an existing Large Facility.

2. Queue No. (if in the Interconnection Queue~~applicable~~): _____ Project Name:

PTID (if existing): _____ Project Name: _____

3. Nature of proposed modification (check all that apply):

___ Change in ~~total Electric Output (MW)~~ERIS (MW) of the Large Facility

___ Change in ERIS (MW) allocation among Resources in a multi-unit Large Facility

___ Change in CRIS (MW) allocation among Resources in a multi-unit Large Facility

___ Modification of ~~t~~TTechnical ~~p~~Parameters of Large Facility’s ~~T~~Technology and ~~T~~Transformer Impedances

___ Modification to ~~I~~Interconnection ~~C~~Configuration

___ Technological change proposed as a Permissible Technological Advancement~~Change or Advancement~~

___ Other technological change

___ Extension of Commercial Operation Date

___ Other Modification Not Listed Above

4. Description of proposed modification:

5. Attach a revised conceptual breaker one-line diagram and a project location geo map, as

applicable.

6. If the modification is a decrease in the facility capacity or requested interconnection service, provide an explanation for the decrease, including a description of the injection-limiting equipment with all the necessary parameters of such equipment, as applicable, provided however, if the modification is an increase in the facility capacity or requested interconnection service, provide an explanation for the increase, including a description of any corresponding modifications to the facility:

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-
7. Proposed modification to an Interconnection Request due to a technological advancement, which includes advancements to turbines, inverters, or plant supervisory controls or other similar advancements to the existing technology proposed in the Interconnection Request (NOTE: a technological advancement will be evaluated under Section 30.4.4.7 of Attachment X to the OATT, which requires a \$10,000 study deposit be submitted with this form).

- a. If the modification is due to a technological advancement to the technology originally proposed, detail the proposed configuration of the technological advancement and the manner of installation:

- b. Provide the parameters associated with the proposed technological advancement:

Parameter	Before Application of Proposed Technological Advancement	After Application of Proposed Technological Advancement
Total Project MVA		
MVA/Unit		
Subtransient Impedance ($R'' + jX''$) or equivalent fault current limit for inverter-based technology		
Total Project MW		
MW/Unit		

Total Project Mvar Capability		
Mvar Capability/Unit		
Unit kV		
Total Project Power Factor		
Unit Power Factor		
Unit Dynamic Model		
Associated Device(s) Dynamic Model		
Any applicable parameter that will change		
Total Project Single Line Diagram		

- c. If any of the above parameters would change due to the proposed technological advancement, demonstrate that the proposed incorporation of the technological advancement would result in electrical performance that is equal to or better than the electrical performance expected prior to the technology change and not cause any reliability concerns (*i.e.*, not have a material adverse impact on the transmission system with regard to short circuit capability limits, steady-state thermal and voltage limits, or dynamic system stability and response). Provide support, including any completed studies, that demonstrate that the technological advancement is permissible and/or non-material under Section 30.4.4.7 of Attachment X to the OATT.

8. For a change to the Commercial Operation Date (COD) of the proposed Large Facility, provide the following:
- a. Original Proposed Commercial Operation Date (Month/Year): _____
 - b. Revised Proposed Commercial Operation Date (Month/Year): _____
 - c. For a proposed change four (4) years or more beyond the date that the Developer and all other Developers remaining in the Class Year posted Security as a part of a Class Year Interconnection Facilities Study (*i.e.*, completion of the Class Year), attach an Officer certification and supporting documentation demonstrating that the Developer has made reasonable progress against milestones set forth in the Interconnection Agreement (refer to Section 30.4.4.5.2 of Attachment X to the OATT for specific details for requesting such a change).

9. As it relates to the requested modification of an Interconnection Request, provide any updates to data required in Attachment A to the Interconnection Request – “Large Generating Facility Preliminary Data” or provided during completed stages of the interconnection study process.

10. The NYISO, in consultation with the Connecting Transmission Owner(s), may request additional information, if necessary, to further assess the proposed modification.