**Large Generating Facility - Interconnection System Reliability Impact Study Scope**
**Queue # 1042: Fort Edward Solar Farm (NY53) Project**

## 1. Purpose

The purpose of this Interconnection System Reliability Impact Study ("SRIS" or "Study") is to evaluate the impact of the proposed interconnection of the Fort Edward Solar Farm Project ("Project"), which is being developed by Boralex US Development LLC ("Developer"), on the reliability of the New York State Transmission System ("NYSTS"). The Study will be performed in accordance with Attachment X of the NYISO Open Access Transmission Tariff ("OATT").

The proposed Point of Interconnection ("POI") will be on the Niagara Mohawk Power Corporation d/b/a National Grid ("National Grid") Mohican – Battenkill 115 kV Line #15. The POI is 5.27 miles from the Mohican Substation and 8.91 miles from the Battenkill Substation.

The Project will be located in Washington County, New York.

The Connecting Transmission Owner ("CTO") is **National Grid**.

The Project, as proposed, is a solar photovoltaic generation plant consisting of thirty-nine (39) Sungrow SG3150U inverters. The Project is expected to have a maximum[1] potential generating capacity of 100 MW during summer and winter periods.

The Project proposes an In-Service Date of October 2024, an Initial Synchronization Date of November 2024, and a Commercial Operation Date of December 2024.

The Study will assess the impact of the Project on the base case power system including New York State Electric and Gas Corporation ("NYSEG") as an Affected System. It will also provide a list of the facilities (*i.e.*, CTO Attachment Facilities and System Upgrade Facilities) required to reliably interconnect the Project, and non-binding good faith estimates of cost and time to construct those facilities.

[1] For temperature sensitive output projects, the MW values represent the Maximum Summer Peak Net Output that can be achieved between 85 and 95ºF, and the Maximum Winter Peak Net Output that can be achieved between 10 and 35ºF.

The Study will be conducted in accordance with the Applicable Reliability Standards.

## 2. Interconnection Plan

The Study will include a description of the proposed facilities and the conceptual design of the interconnection to the system. The description will include a breaker one-line diagram depicting the proposed facilities and their integration with the existing facilities.

## 3. Study Period

The Study will be based on the system representation in the 2024 power flow base cases from the NYISO Class Year 2019 ATBA (the Base Cases). The Study will be conducted using the power flow, stability, and short circuit Base Cases provided by the NYISO, and will include the representation of proposed projects that have already been cost allocated, up to and including Class Year 2017 (as listed in Appendix A of this scope).

## 4. Study Area

The Study will identify and evaluate the impact of the Project on the 115 kV and above portions of the NYSTS in New York Load **Zone F (Capital)** that is most likely to be affected by the Project. The Study will also evaluate the impact of the Project on the local (*i.e.,* below 115 kV, as applicable) system in the electrical proximity to the POI.

## 5. Base Case Conditions

The preliminary impact of the proposed Project will be evaluated for **summer peak** and **light** load for the following base case conditions, and as specified under the subsequent sections of this scope:

Case 1 – Base Case without the Project. The Base Cases will include the baseline system and the proposed projects listed in Appendix A of this scope. The short circuit Base Case will model all the projects as in-service. The steady state Base Case will normally model all projects as in-service and at full output, but may model some projects as out-of-service or at less than full output as necessary to establish a feasible base dispatch. Generation will be dispatched in accordance with the NYISO Minimum Interconnection Standard.[2]

[2] As defined in the NYISO Transmission Expansion and Interconnection Manual ("TEI Manual").

Case 2 – Case 1 with the Project modeled as in-service, at full output, and interconnecting at the proposed POI. Unit and facility reactive resources for the Project will be represented. Generation will be re-dispatched in the steady state case, as needed, in accordance with the NYISO Minimum Interconnection Standard.

Case 3 – Case 2 with other nearby proposed projects listed in Appendix B of this scope modeled as in service and at full output. Generation will be re-dispatched in the steady state case, as needed, in accordance with the NYISO Minimum Interconnection Standard.

## 6. Analysis

Limited **thermal**, **voltage**, **stability** and **short circuit** analyses will be conducted to assess the performance of the base system conditions within the Study Area, with and without the Project, in accordance with Applicable Reliability Standards, guidelines and study practices. Modifications to Base Cases, during analyses, will be documented in the Study Report.

### 6.1 Steady State Analyses: N-0 and N-1

Thermal and voltage steady state analyses, using PSS/E or a comparable load flow program, will be conducted for **summer peak** and **light** load cases, pre-contingency and also for relevant Design Criteria Contingencies conditions, and will be limited to the Study Area.

Thermal limits will be assessed under both Normal Criteria and Emergency Criteria, using normal ratings pre-contingency, and applicable post-contingency ratings (*e.g.*, Long-Term-Emergency, LTE, ratings or Short-Term-Emergency, STE, ratings).

Voltage limits will be assessed, pre- and post-contingency, using the applicable voltage limits.

### 6.2. Steady State Analyses: N-1-1

The Study will evaluate a limited selection of N-1-1 contingencies around the POI. Power flow (**summer peak** load) steady-state analyses will be performed based on the N-1-1 contingency descriptions provided by the CTO(s) and/or the NYISO.

### 6.3 Stability Analysis

Stability analysis, using PSS/E, will be performed for **summer peak** and **light** load conditions to determine the impact of the Project on system performance within the Study

Area. This analysis will evaluate the performance of the system for Design Criteria Contingencies and will address issues including, but not limited to, transient stability, dynamic stability (*i.e.*, damping), critical clearing time, coordination of protection and control systems, and performance of any Special Protection Systems that may be affected. These analyses will explicitly consider the voltage and frequency ride-through capabilities of the facility.

### 6.4 Short Circuit Analysis

Short circuit analysis will be performed, using ASPEN, to evaluate the impact of the Project on system protection and adequacy of existing circuit breakers, other fault current interrupting devices, and related equipment. All Project impacts of 100 A or more will be identified.

This analysis will be performed in accordance with the NYISO Guideline for Fault Current Assessment (Attachment I of the NYISO Transmission Expansion and Interconnection Manual), and in accordance with Connecting Transmission Owner and Affected System(s) criteria, to the extent such criteria are recognized as Applicable Reliability Standards.

## 7. Modeling Assumptions

**7.1** Phase angle regulators ("PARs"), switched shunts, and LTC transformers will be modeled as regulating pre-contingency and non-regulating post-contingency. The Study will use PAR schedules established by the NYISO in coordination with the neighboring ISOs through the NERC and NPCC base case development processes. PARs may be adjusted as necessary to relieve pre-contingency overloads.

**7.2** SVC and FACTS devices will be set to zero pre-contingency and allowed to operate to full range post-contingency.

## 8. Evaluation and Identification of Upgrades

If the Study results indicate that the Project, as proposed, would result in violations of Applicable Reliability Standards, analyses will be performed to identify any System Upgrade Facilities or Distribution Upgrades (if applicable) that would be required to meet the NYISO Minimum Interconnection Standard. When such upgrades are identified, sufficient re-assessments (among those identified in this scope) should be performed in order to assure that the upgrades do not cause any adverse reliability impact on the Study Area.

## 9. Cost Estimates of Facilities and Time to Construct

A description of facilities (*i.e.*, CTO Attachment Facilities and System Upgrade Facilities, if any) required to interconnect the Project to the NYSTS, or the Distribution System (if applicable), and non-binding good faith estimates of cost and time to construct those facilities, will be provided.

## 10. Report

The Study Report will document the summary of the results relevant to the project impacts, project description, project modeling, study assumptions, criteria and methodology, mitigation solutions and their impact assessment, and conclusions, for each of the analyses identified in this scope.

## Appendix A

### List of Other Proposed Projects to be Modeled in the Base Case
### Queue # 1042: Fort Edward Solar Farm (NY53) Project

| Queue Pos. | Owner / Project Name | MW (S\|W) |
|---|---|---|
| 349 | Taylor Biomass Energy, LLC / Taylor Biomass | 19.0 \| 22.5 |
| 387 | Cassadaga Wind, LLC / Cassadaga Wind | 126 \| 126 |
| 393 | NRG Energy, Inc. / Berrians East Repower | 508 \| 584 |
| 396 | Baron Winds, LLC / Baron Winds | 300 \| 300 |
| 421 | EDP Renewables NA / Arkwright Summit | 78.4 \| 78.4 |
| 422 | NextEra Energy Resources, LLC / Eight Point Wind Energy Center | 101.2 \| 101.2 |
| 505 | Ball Hill Wind Energy, LLC / Ball Hill Wind | 100 \| 100 |
| 545A | Empire State Line Alternative | N/A |
| 543 | Segment B Knickerbocker - Pleasant Valley 345 kV | N/A |
| 556 | Segment A Double Circuit | N/A |

## Appendix B

### List of Other Proposed Projects to be Modeled in Cases 3
### Queue # 1042: Fort Edward Solar Farm (NY53) Project

| Queue Pos. | Owner / Project Name | MW (S\|W) |
|---|---|---|
| 730 | Darby Solar, LLC / Darby Solar | 20 \| 20 |
| 731 | Branscomb Solar, LLC / Branscomb Solar | 20 \| 20 |
| 735 | ELP Stillwater Solar LLC / ELP Stillwater Solar | 20 \| 20 |
| 807 | SED NY Holdings LLC / Hilltop Solar | 20 \| 20 |
| 833 | Granada Solar, LLC / Dolan Solar | 20 \| 20 |
| 853 | Boralex US Development, LLC / NY16 Solar | 19.9 \| 19.9 |
| 855 | Boralex US Development, LLC / NY13 Solar | 19.9 \| 19.9 |