



NYISO Review of the System Reliability Impact Study for Astoria Energy Storage 2 Project Interconnection Queue #830

For

November 2, 2020 TPAS Recommendation
November 12, 2020 OC Approval

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Introduction

The purpose of this System Reliability Impact Study (“SRIS” or “Study”) is to evaluate the impact of the proposed interconnection of the Astoria Energy Storage 2 Project (“Project”), which is being proposed by NRG Astoria Storage, LLC (“Developer”), on the reliability of the New York State Transmission System.

The proposed Point of Interconnection (“POI”) will be on the Consolidated Edison Company of New York (“Con Edison”) Astoria West 138 kV substation. The Project will be located in Queens, New York. The Connecting Transmission Owner (“CTO”) is Con Edison, and the Affected Systems are New York Power Authority (“NYPA”) and Long Island Power Authority (“LIPA”).

The Project, as proposed, is a battery energy storage systems (“BESS”). The Project Developer opted to reduce the size of the Project¹ such that the net injection at the POI is around 79.9 MW with four (4) hours charging and discharging duration during summer and winter periods.

The Project proposes an In-Service Date of January 2024, a Synchronization Date of April 2024 and a Commercial Operation Date of June 2024.

The New York Independent System Operator, Inc. (“NYISO”) performed the Study in accordance with the Applicable Reliability Standards set forth under Attachment X of the NYISO Open Access Transmission Tariff (“OATT”). The Study was also conducted in accordance with the applicable NERC, NPCC, NYSRC, and Affected System(s) reliability and design standards; and in accordance with applicable NYISO, Con Edison and Affected System(s) study guidelines, procedures and practices. The NYISO commissioned ABB Power Consulting to conduct this SRIS.

The Study was based on the NYISO Class Year 2019 ATBA cases (“Base Cases”) that have the 2024 system representation.

¹ As per the SRIS Study Scope, the Project will have a maximum potential generating capacity of 100 MW (summer and winter).

Study Findings

Steady State Analysis (N-0 and N-1)

Steady-state analysis was performed to determine the Project's impact on thermal loadings and bus voltages in the Study Area for summer and winter peak periods. The results show that the Project does not adversely impact thermal loadings or bus voltages in the Study Area.

Steady State Analysis (N-1-1)

N-1-1 contingency analysis was performed for summer and winter peak load conditions. The results show that the Project has no adverse impact on facility loadings and bus voltages in the Study Area.

Stability Analysis

The Study showed that the system remained positively damped under normal design criteria and local fault contingencies. The Study also did not identify any adverse impact on the critical clearing time of the tested 138 kV buses at Astoria West, Hell Gate and Queensbridge.

PAR Impact Analysis

The Project's impact on the Y49, 901L/M, 903 PAR schedule and control ranges was assessed based on the pre- and post-Project summer peak cases. The analysis shows that each of the PARs is able to regulate MW flows within their controlled ranges and their phase shift angles are within the specified angle limits.

Short Circuit Analysis

Short circuit analysis was performed in accordance with the NYISO guidelines for fault current assessment. For substation buses with known minimum breaker ratings, the calculated short-circuit currents are within their respective lowest breaker ratings.

NPCC A-10 Testing

A review of the NPCC Bulk Power System (BPS) classification of existing and proposed new stations for interconnection of the Project was performed. The selected non-BPS buses in the vicinity of the Project were evaluated; these included the following 138 kV buses: Astoria West (North and South), Hell Gate 2, Hell Gate 3 and Queensbridge. The results indicate that these buses are not required to be classified as BPS based on transient stability and steady state tests resulting from the Project.

Bus Flow Analysis

Bus Flow Analysis for the Project was performed by Con Edison and concluded that the Astoria Energy Storage 2 Project does not cause any thermal impact to the existing equipment at Astoria West 138 kV substation.

Interconnection Physical Feasibility Study

Interconnection Physical Feasibility Study was performed by Con Edison. Based on the one-line diagram provided by the Developer, station drawings, and a field walk, the Project proposed interconnection at the POI is physically feasible in the Con Edison property surrounding the Astoria West 138 kV substation.

Cost Estimates and Time to Construct

System Upgrade Facilities (“SUFs”) and Connecting Transmission Owner Attachment Facilities (“CTOAFs”) are required to accommodate the Project. The total good faith, non-binding cost estimate of the facilities, as provided by ABB, is approximately \$605,000. The estimated construction time is 12 to 18 months, including engineering and procurement.

Con Edison will provide cost estimates at the Facilities Study stage of the interconnection process.

Conclusions

The results presented in the report indicate that the proposed Project, along with the identified attachment facilities and SUFs, will not adversely impact the reliability of the New York State Transmission System. This conclusion is based on the following understandings and assumptions:

- The Project will be operated in accordance with all NYISO requirements, including all applicable NYISO and Transmission Owner day ahead and real time operational procedures and limits. The NYISO will operate the Project in a manner that does not negatively impact the New York State Transmission System.
- The Project and associated interconnection facilities will be designed in accordance with all the Applicable Reliability Standards.
- The SRIS results and conclusions are based on the studied scenarios and various assumptions related with the study methodologies, system, and Project modeling information provided by the Developer; any Project modeling change can result in different results and possible re-study.

Subject to the above, NYISO Staff is satisfied that the Study was performed in accordance with the approved scope and in conformance with the existing Applicable Reliability Standards. Therefore, the NYISO Staff recommends approval of this SRIS.