

Affected System Operator (ASO) Studies – Level 3 ASO Projects

August Update

This is Eversource's monthly report to Level 3 customers who have ASO projects undergoing transmission studies that were announced on October 24, 2019. This update includes projects that are in the Level 3 ASO study that commenced on April 6, 2020. The table below provides the schedule for upcoming monthly reports for the Level 3 studies underway for the remainder of the year:

Report #	Date
1	04-24-20
2	05-29-20
3	06-26-20
4	07-31-20
5	08-28-20
6	09-25-20
7	10-30-20
8	11-20-20
9	12-18-20

In summary, the Level 3 ASO Study pool currently consists of 81 projects that have opted in, totaling approximately 350MW across MA. All technical data required for the modeling has been received and verified for use in Eversource's data consolidation process.

Customers impacted by these Level 3 ASO studies were notified via email of the need for a transmission study and their study level in November 2019, after there was mutual agreement on study levels by project between ISO-NE and Eversource.

These reports are emailed monthly and can be found on the ASO website:

<https://www.eversource.com/content/ema-c/about/about-us/doing-business-with-us/builders-contractors/interconnections/massachusetts/affected-system-operator-studies>

Throughout the study process, please direct questions to the ASO mailbox at ASOStudyInquiry@Eversource.com so that they may be directed to the appropriate party for response and if applicable added to the ASO Website's FAQ section for others to review.

1. What is the scope and process for projects in the ASO study?

ASO transmission studies are required when a DG applicant's project has the potential to impact existing saturation levels at a substation in Eversource's territory that may have implications to Eversource's transmission system or to other transmission companies or bulk power operators. The primary affected parties in Eversource's Massachusetts territories are: ISO-New England, National Grid, Until and various municipal light departments.

Level 0/1 Studies

From a process perspective, for projects that are not automatically triggering a Level 3 transmission study (projects \geq 5MW), Eversource's Transmission Planning and Transmission Interconnections teams submit pre-screening forms to ISO-NE for concurrence. ISO-NE reviews the screening technical justification and typically will provide a response on concurrence within 2-3 weeks; Eversource's Transmission team checks in for updates on ISO-NE's decision on a weekly basis. When concurrence is received from ISO-NE, Eversource Transmission submits the Level 0 I.3.9 proposed plan application (PPA) package to the New England Power Pool (NEPOOL) Reliability Committee (RC) for inclusion on the upcoming agenda. Some of these projects may necessitate transfer limit analysis to ensure no degradation of interface limits. If adverse impacts are found, a Level 3 transmission study will be required.

Level 3 Studies

For projects that trigger a Level 3 analysis, a two-step process is implemented. When concurrence is received from ISO-NE on the study level, Eversource Transmission Planning prepares the study scope and assumptions which are also reviewed by ISO-NE. Generally, Level 3 transmission study scopes include thermal and voltage steady state analysis, as well as short circuit and stability analyses. Once the study scope is finalized, the study is performed and the Eversource Transmission Interconnections team attaches the study results to the I.3.9 PPA package to the NEPOOL RC for inclusion on the upcoming agenda.

Once Eversource's Transmission Interconnections team receives the approval letter from ISO-NE, which is usually sent out prior to the next month's RC meeting, Account Executives notify the customer of final project approval.

2. What are the roles and responsibilities of all parties involved in executing the Level 3 ASO study?

Eversource Transmission Planning and Transmission Interconnections teams work closely with ISO-NE to ensure ASO studies are performed consistently with ISO-NE tariffs and planning procedures and study parameters agreed upon by ISO-NE and Eversource. Eversource is the electric distribution and transmission company providing ISO-NE with the applicant's project information and transmission analysis results for review and approval. ISO-NE is the bulk power system operator for New England that reviews and concurs or rejects Eversource Transmission Planning teams' proposed transmission study level and results. The NEPOOL Reliability Committee reviews the PPAs at their monthly meetings and provides an advisory recommendation (approve or reject) to ISO-NE on each application. The interconnecting

customer is required to provide inputs to Eversource, such as PSCAD models and project details like mechanical completion date, to complete the I.3.9 PPA package.

3. What are the standards and jurisdiction of this ASO study?

The ASO study is subject to tariffs and agreements under the jurisdiction of the Federal Energy Regulatory Commission. When required, transmission impact studies are governed primarily by ISO-NE tariff Section I.3.9 and ISO-NE Planning Procedures PP5-1 and PP5-3. Some of the reliability standards applicable to these studies, as referenced in PP5-3, are contained in ISO-NE Planning Procedure 3, but others exist as well. For example, elements of NERC’s PRC-006-NPCC-1 underfrequency protection criteria and IEEE 1547 are often used to model resources in stability analyses.

FERC certified The North American Electric Reliability Corporation (NERC) as the Electric Reliability Organization (ERO) in 2006. The ERO is responsible for developing and enforcing reliability standards within the United States. In executing part of its responsibilities, NERC delegates authority to Regional Entities to perform certain functions through delegation agreements. Ensuring the reliability of the bulk power system for New York and the six New England States was delegated from NERC to the Northeast Power Coordinating Council (NPCC). Using the reliability standards developed by these entities, the objective of the ASO studies is to demonstrate that the projects under study have no significant adverse effect on the transmission system.

Also, the New England Participating Transmission Owners (PTOs), including Eversource’s operating companies, executed a Transmission Operating Agreement with ISO-NE in 2005. TOA Section 3.03(b) establishes the obligation for the PTOs to notify ISO-NE when multiple distributed generators may have cumulative impacts affecting the transmission system and consult with ISO-NE in its performance of impact studies.

4. What are the estimated timelines for completion of the ASO study for Level 3 projects?

The Level 3 ASO study commenced on April 6th and is anticipated to be complete with ISO-NE Reliability Committee (RC) approval at the December 15, 2020 meeting.

The following is a milestone schedule that Eversource aims to provide additional detail on in its subsequent reports and progress updates:

Milestone	Target Completion	Status	Lead
Base Case Model Request to ISO-NE	4/2/2020	Complete	
Base Case Models Provided by ISO-NE	4/6/2020	Complete	
Level 3 Study Commencement	4/6/2020	Complete	

Project Model Validation	5/15/2020	Complete	
Progress Update to Developers & DPU	5/29/2020	Complete	Eversource
Updated Base Case Models Provided by ISO-NE	By 6/30/2020	Complete	ISO-NE
Study Assumption Review 1 st Meeting with ISO-NE Management	6/19/2020	Complete	Joint Eversource & ISO-NE
Study Assumption Review 2 nd Meeting with ISO-NE Management	7/2/2020	Complete	Joint Eversource & ISO-NE
Study Assumptions Concurrence with ISO-NE	7/2/2020	Complete	Joint Eversource & ISO-NE
Study Base Case Validation	7/10/2020	Complete	Eversource
Project Model Development – Steady State	7/17/2020	Complete	Eversource
Project Model Development – Stability	7/17/2020	Complete	Eversource
Create Steady State Peak Load Pre-Project Case	7/31/2020	Complete	Eversource
Create Steady State Peak Load Post-Project Case	8/7/2020	Complete	Eversource
Create Steady State Shoulder Load Pre-Project Case	8/18/2020	Complete	Eversource
Create Steady State Light Load Pre-Project Case	8/18/2020	Complete	Eversource
Create Steady State Minimum Load Pre-Project Case	8/21/2020	Complete	Eversource
Affected Party Scoping Meeting	8/31/2020	Scheduled	Eversource
Progress Update to Developers & DPU	9/1/2020	Not Started	Eversource
Create Steady State Shoulder Load Post-Project Case	9/4/2020	In Progress	Eversource
Create Steady State Light Load Post-Project Case	9/4/2020	In Progress	Eversource
Create Steady State Minimum Load Post-Project Case	9/4/2020	In Progress	Eversource
Complete Stability Light Load Base Case	9/11/2020	In Progress	Eversource
Complete Stability Peak Load Pre-Project Case	9/11/2020	In Progress	Eversource
PSCAD training	9/11/2020	In Progress	Eversource
Complete Stressed Steady State Peak Load Cases	9/25/2020	In Progress	Eversource
Complete Stressed Stability Cases	9/25/2020	In Progress	Eversource

The progress updates to Level 3 stakeholders will be in addition to the Interim Guidance reporting required by the Department of Public Utilities and the Company will continue to share ad-hoc updates as they become available. Factors that may impact this milestone schedule and associated activities are: base case modeling issues, DER stability model issues, solution development for potential adverse system impacts and/or significant project inverter model changes by customers.

5. What are the estimated necessary system modifications and associated costs?

As the Level 3 study is still underway, the final necessary system modifications and associated costs, if any, are not yet known at this time and will not be known for several months until the study is closer to completion. Eversource will continue to keep customers informed as study results are finalized throughout the rest of the year in accordance with the milestone schedule outlined in #4.

6. What prioritization system has the EDC developed to determine which of the affected DG applications would be eligible to interconnect first if capacity became available?

The EDC would prioritize applications to interconnect if the capacity became available in the order of the dates the applications were deemed complete e.g. first come, first served. It is unlikely that Eversource would allow applications to “jump” the queue in front of other projects, simply based on capacity differences, to ensure a fair methodical approach to all projects in the queue.

Separately, Eversource is continuing to proceed with distribution-level studies, including Group Studies authorized by D.P.U. 17-164, while the Level 3 ASO transmission-level studies are being conducted. This is being done to reduce the distribution-level study wait time and increase value to customers. Eversource is also continuing to perform distribution group studies where the same customer has multiple projects in sequence on a single circuit. The Group Study order in D.P.U. 17-164 issued on April 8, 2020 will allow Eversource to process distribution studies in groupings that will include different customers bundled together. More information can be found about this recently issued Order here:

<https://eeaonline.eea.state.ma.us/DPU/Fileroom/dockets/bynumber/17-164>

Projects that had ISAs prior to the larger ASO study announcement on Oct. 24, 2019 that required transmission studies have continued with their separate transmission studies outside of the five ASO group studies and have been completed. There were 54 post ISA projects in this category and all projects have received ISO-NE RC approval as of June 16, 2020.

7. Are there any proposed resolutions that the EDC is exploring to enable some affected DG applicants to proceed with the interconnection process prior to completion of the ASO study?

Eversource is continuing to proceed with distribution level studies while both post ISA ASO transmission studies and the Level 3 studies are being conducted. This is being done to reduce the distribution-level study wait time and increase value to customers. Eversource is also continuing to perform distribution group studies where the same customer has multiple projects in sequence on a single circuit and implementing group studies based on the recent April 8, 2020 Group Studies order in D.P.U. 17-164.

8. Are the study results available at this time for Level 3 ASO projects?

No, the Level 3 study results are not available at this time and are anticipated to become available in the November-December 2020 timeframe.

Regarding Interim Guidance 10, applicants should continue directing questions and correspondence to ASOStudyInquiry@eversource.com so that they can be directed in a timely manner to the appropriate party for a response. The Company also utilizes the questions that come in to the ASO mailbox to update its FAQs list on the ASO website.