Eversource 2023 Level 3 ASO Study
Customer Kickoff Meeting
Western Massachusetts & Greater Boston Areas

May 24, 2023

Outline

- Study Area and Project Overview
- Level 0 ASO Study Update
- Level 3 ASO Study Objectives
- Level 3 ASO Study Update
- Next Steps

Study Area and Project Lists

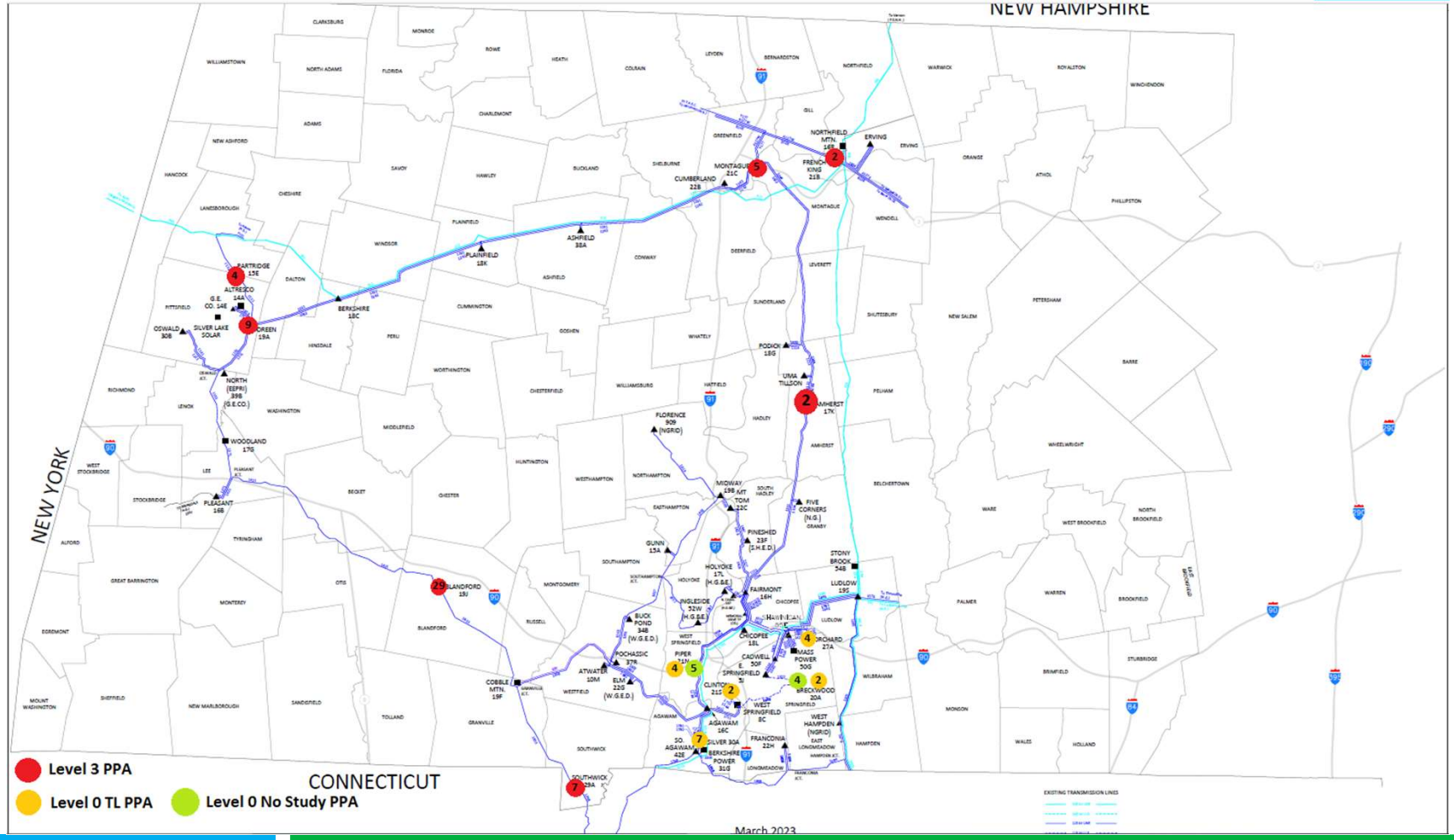
ASO Overview – Western Massachusetts

Station Capacity (MW)	Level 0 - No Study	Level 0 - Transfer Limit Analysis	Level 3 - Transmission Study	Grand Total(MW)
PITTSFIELD AREA	**0**	**0**	**22**	**22**
AMHERST 17K			2	2
DOREEN 19A			9	9
FRENCH KING 21B			2	2
MONTAGUE 21C			5	5
PARTRIDGE 15E			4	4
SPRINGFIELD AREA	**9**	**19**	**36**	**64**
BLANDFORD 19J			29	29
BRECKWOOD 20A	4	2		6
CLINTON 21S		2		2
ORCHARD 27A		4		4
PIPER 21N	5	4		9
SILVER 30A		7		7
SOUTHWICK 29A			7	7
Grand Total	**9**	**19**	**58**	**86**

Number of Applications	Level 0 - No Study	Level 0 - Transfer Limit Analysis	Level 3 - Transmission Study	Grand Total
PITTSFIELD AREA	**0**	**0**	**6**	**6**
AMHERST 17K			1	1
DOREEN 19A			2	2
FRENCH KING 21B			1	1
MONTAGUE 21C			1	1
PARTRIDGE 15E			1	1
SPRINGFIELD AREA	**2**	**7**	**9**	**18**
BLANDFORD 19J			7	7
BRECKWOOD 20A	1	1		2
CLINTON 21S		1		1
ORCHARD 27A		2		2
PIPER 21N	1	1		2
SILVER 30A		2		2
SOUTHWICK 29A			2	2
Grand Total	**2**	**7**	**15**	**24**

- 12 substations impacted
- Level 0 - No Study
  - 9MW
  - 2 applications
- Level 0 – Transfer Limit Analysis
  - 19 MW
  - 7 applications
- Level 3 – Transmission Study
  - 58 MW
  - 15 applications

ES Level 3 ASO Projects In Queue – WMA



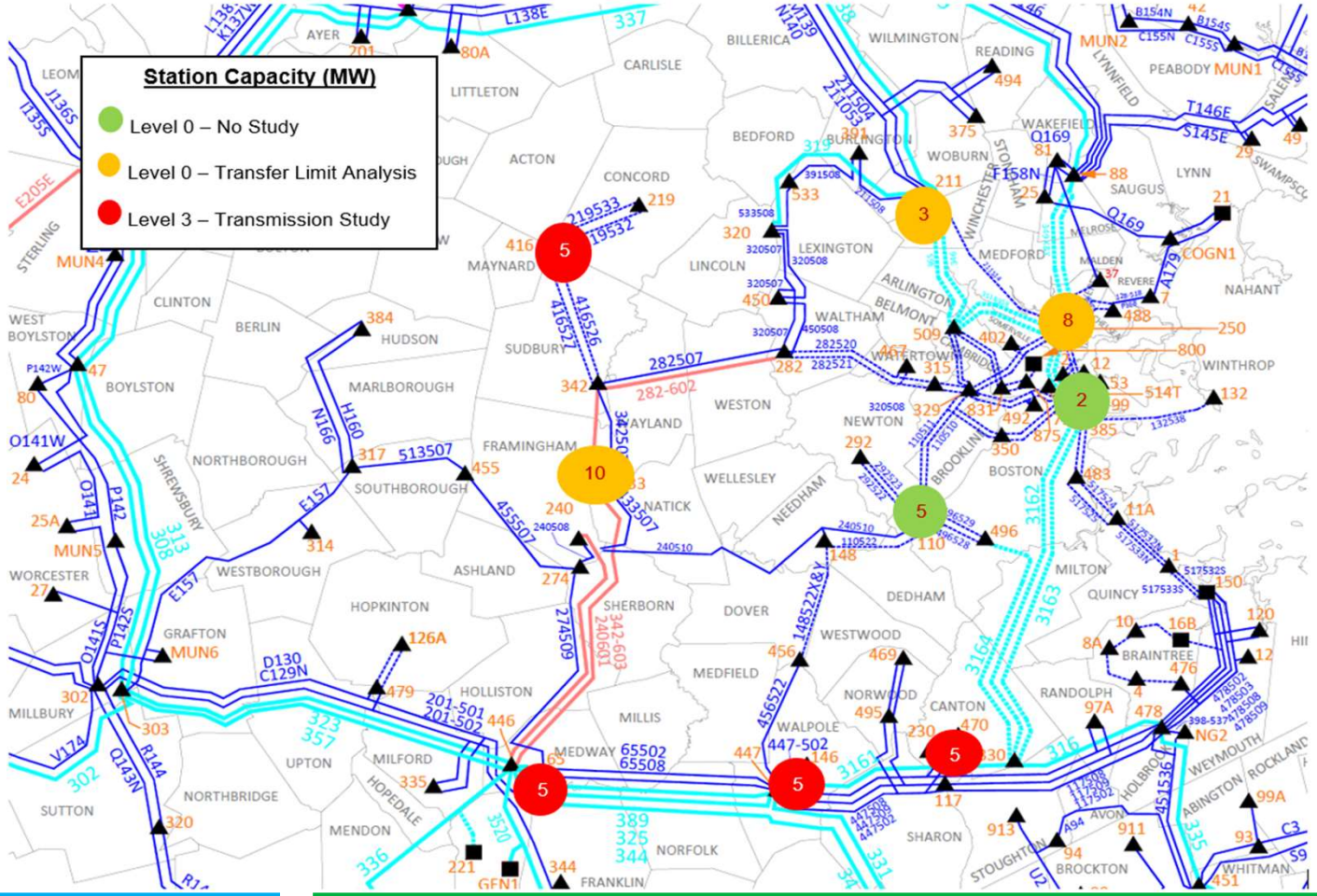
ASO Overview – Greater Boston

Station Capacity (MW)	Level 0 - No Study	Level 0 - Transfer Limit Analysis	Level 3 - Transmission Study	Grand Total(MW)
Baker St 110	5			5
Canton 470			5	5
MAYNARD 416			5	5
MEDWAY 65			5	5
MYSTIC 250		8		8
NO. WOBURN 375		3		3
SEAFOOD WAY 99	2			2
SPEEN ST 433		10		10
Walpole 146			5	5
Grand Total	**7**	**21**	**20**	**48**

Number of Applications	Level 0 - No Study	Level 0 - Transfer Limit Analysis	Level 3 - Transmission Study	Grand Total
Baker St 110	1			1
Canton 470			1	1
MAYNARD 416			1	1
MEDWAY 65			1	1
MYSTIC 250		2		2
NO. WOBURN 375		2		2
SEAFOOD WAY 99	1			1
SPEEN ST 433		2		2
Walpole 146			1	1
Grand Total	**2**	**6**	**4**	**12**

- 8 substations impacted
- Level 0 - No Study
  - 7 MW
  - 2 applications
- Level 0 – Transfer Limit Analysis
  - 21 MW
  - 6 applications
- Level 3 – Transmission Study
  - 25 MW
  - 4 applications

ES ASO Projects In Queue – GB



Level 0 ASO Study Update

Level 0 ASO Study Update – WMA

- ES has successfully tested and validated technical data and PSCAD models for all Level 0 ASO Study participants by April 2023.
- Technical data and PSCAD model validation was performed in parallel with the transfer limit analysis to increase study efficiency.
- ES accommodated flexibility for the technical data and PSCAD model submission to the extent the overall study schedule was not impacted.
- Level 0 Transfer Limit Analysis (TLA) findings/results:
  - No thermal or voltage violations identified in the Level 0 Transfer Limit Analysis.
  - No application was moved from Level 0 to Level 3.
  - ISO-NE reviewed and approved the results of the Transfer Limit Analysis.

- Proposed Plan Applications (PPA) Submission and Approvals:
  - 2 projects totaling 8.55 MW with Level 0 No Study PPA level obtained PPA approval in the April and May Reliability Committee (RC) Meetings
  - 1 project totaling 2.231 MW with Level 0 TLA PPA level obtained PPA approval in the May RC Meeting
  - 6 projects totaling 17.13 MW with Level 0 TLA PPA level are expected to obtain PPA approval in the June RC Meeting
  - Level 0 PPA study to be completed on schedule and all PPA approvals for projects with acceptable models are expected in June.

Level 0 ASO Study Update – GB

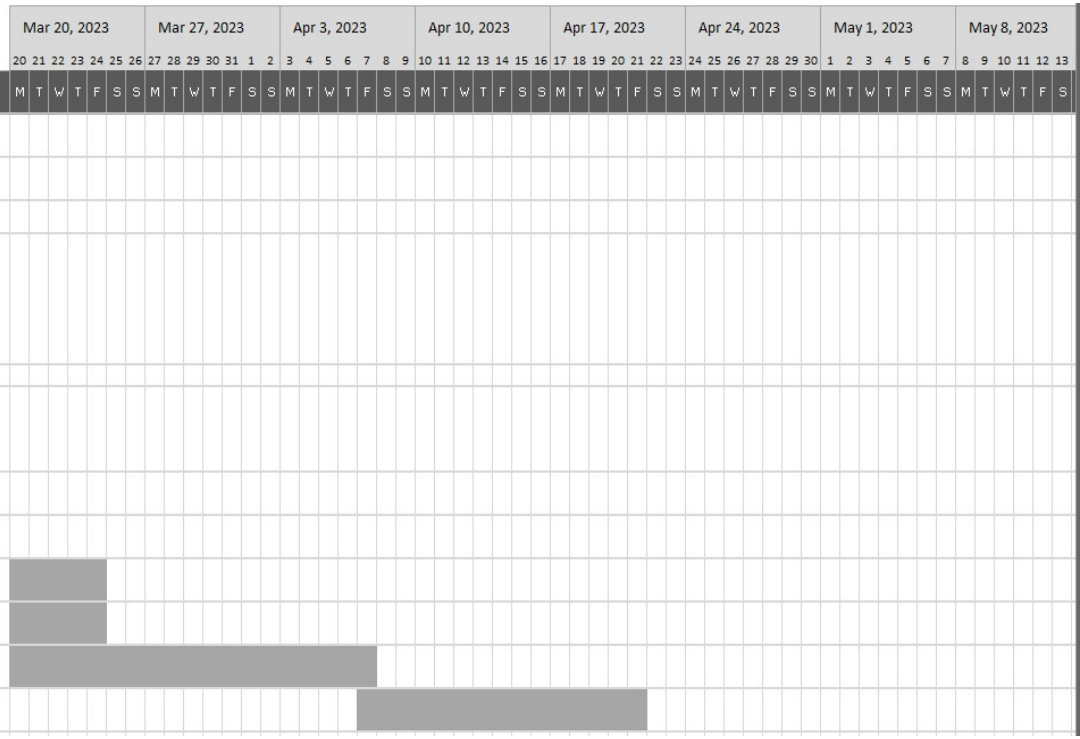
- ES has successfully tested and validated technical data and PSCAD models for all Level 0 Study participants by April 2023.
- Technical data and PSCAD model validation was performed in parallel with the transfer limit analysis to increase study efficiency.
- ES accommodated flexibility for the technical data and PSCAD model submission to the extent the overall study schedule was not impacted.

- Level 0 Transfer Limit Analysis findings/results:
  - No thermal or voltage violations identified in the Level 0 Transfer Limit Analysis.
  - No application was moved from Level 0 to Level 3.
  - ISO-NE reviewed and approved the results of the Transfer Limit Analysis.

- Proposed Plan Applications (PPA) Submission and Approvals:
  - 2 projects totaling 8.3 MW with Level 0 TLA PPA level obtained PPA approval in the May RC Meeting
  - 4 projects totaling 13.2 MW with Level 0 TLA PPA level are expected to obtain PPA approval in the June RC Meeting
  - Level 0 PPA study completed on schedule and all PPA approvals for projects with acceptable models expected in June.

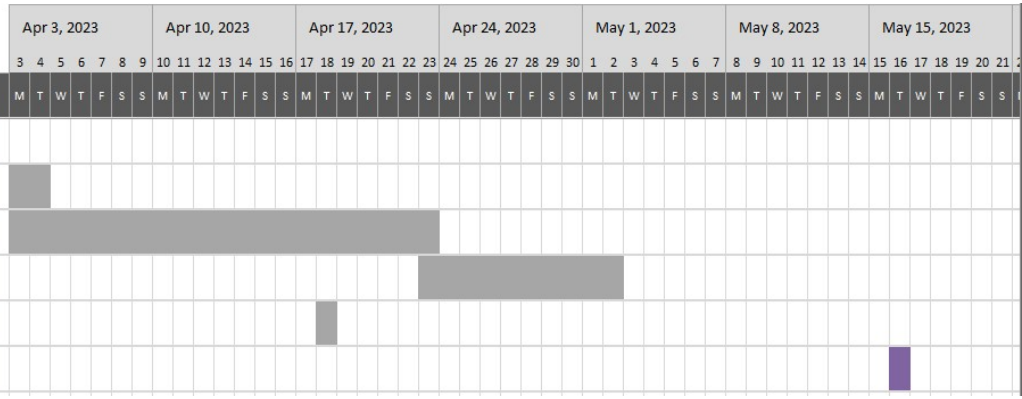
Level 0 ASO Study Update – WMA & GB

TASK	RESPONSIBLE ENTITY	PROGRESS	DUE DATE	COMPLETION DATE
Phase 1: Study Kickoff and Technical Data Collection				
Study Kickoff Call	ES	100%	1/31/23	1/31/23
Powerclerk opt in/out emails sent to customers	ES	100%	2/3/23	2/3/23
Customers to opt in/out in 5 business days (BD) **upon receipt of powerclerk email to opt in/out.** Customer **payment period starts** Project technical data and **model submission period starts** No response will be considered as an opt-out.	Customers	100%	2/10/23	Extended to 2/24/23
Level 3 PPA study costs conveyed to Level 3 PPA customers	ES	100%	2/17/23	2/17/23
Deadline for payment period is 10 business days (BD) after opt-in period Project technical data and model submission deadline	Customers	100%	2/24/23	Extended to 3/10/23
ES to provide model review feedback for Level 0 PPA's	ES	100%	3/3/23	Extended to 3/17/23. Completed 3/17/23
Level 0 PPA Technical Data Deficiency Cure Period	Customers	100%	3/17/23	Extended to 3/31/23
Level 0 PPA Model Acceptance/Rejection notice	ES	100%	3/24/23	Extended to 4/7/23
ES to provide model review feedback for Level 3 PPA's	ES	100%	3/24/23	Extended to 4/7/23
Level 3 PPA Technical Data Deficiency Cure Period	Customers	100%	4/7/23	4/7/23
Level 3 PPA Model Acceptance/Rejection notice	ES	100%	4/21/23	4/21/23



Level 0 ASO Study Phase 2 Schedule – WMA

TASK	RESPONSIBLE ENTITY	PROGRESS	DUE DATE	COMPLETION DATE
Phase 2: Level 0 PPA ASO Study Commences				
Submit Level 0 - No Study PPA's to ISO-NE w/model acceptance	ES	100%	4/4/23	3/6/23, 5/1/23
Perform Level 0 - Transfer Limit Analysis (TLA)	ES	100%	4/23/23	4/23/23
Submit Level 0 - TLA PPA's to ISO-NE w/model acceptance	ES	100%	5/2/23	5/11/23
Level 0 - No Study Projects PPA Approval at RC Meeting	ISO-NE	100%	4/18/23	4/18/23, 5/16/23
Level 0 - TLA Projects PPA Approval at RC Meeting	ISO-NE	23%	5/16/23	5/16/23, 6/13/23



Level 3 ASO Study

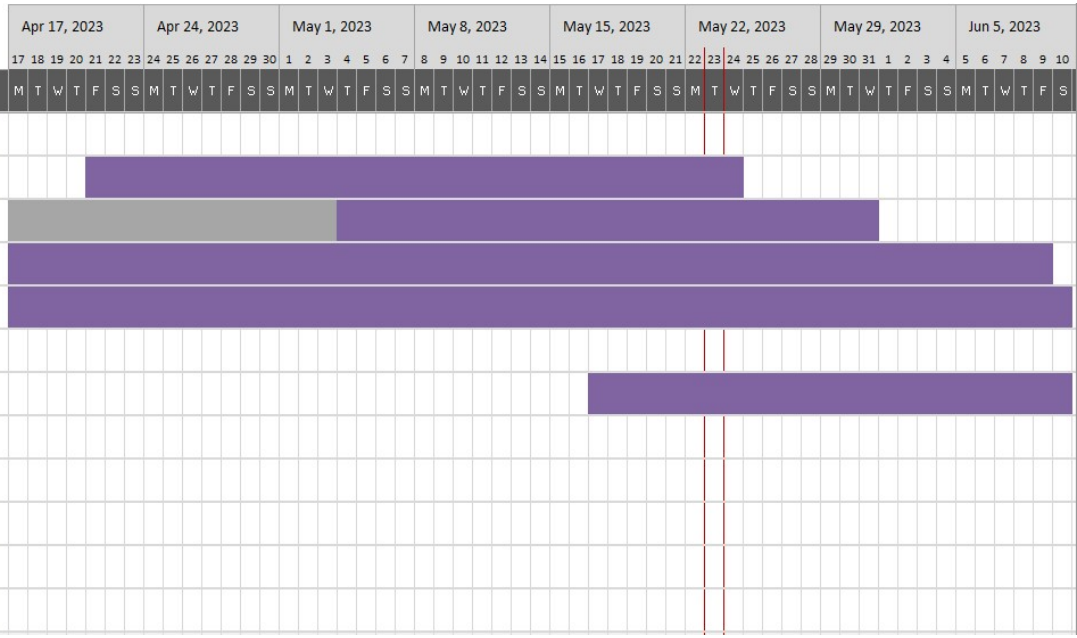
Level 3 ASO Study Objective

- Steady-state analysis to assess thermal overloads and voltage limit violations resulting from the DER interconnections,
- Stability analysis to verify acceptable model performance and, to identify any violations of stability acceptability criteria following system disturbances resulting from the interconnection,
- Short-circuit analyses to assess if circuit breaker short-circuit capability limits are exceeded as a result of the interconnection;
- PSCAD evaluation to verify acceptable control stability and interactions between inverter-based technologies connected to Distribution and Transmission, and acceptable DER ride-through capabilities;
- Determine any upgrades that are required to eliminate any thermal or voltage violation, system dynamic and transient stability and, degradation to transfer capability.

Level 3 ASO Study Schedule

- Project schedule from project kickoff to Level 3 project PPA approval

TASK	RESPONSIBLE ENTITY	PROGRESS	DUE DATE	COMPLETION DATE
Phase 3: Level 3 PPA ASO Study Commences				
Hold kickoff meeting with Level 3 ASO customers	ES Transmission Planning	0%	5/24/23	
Finalize study assumptions with ISO-NE	ES Transmission Planning	50%	5/31/23	
Send study scope document to ISO-NE	ES Transmission Planning	0%	6/9/23	
ISO-NE Study Scope Approval	ISO-NE	0%	6/16/23	
Perform steady state analysis	ES Transmission Planning	0%	8/28/23	
Perform short circuit analysis	ES	0%	8/28/23	
Perform stability analysis	ES Transmission Planning	0%	10/31/23	
Perform PSCAD Analysis	ES Transmission Planning	0%	12/31/23	
ISO-NE Study Review	ISO-NE	0%	1/30/24	
Submit Level 3 PPA's to ISO-NE	ES Interconnections	0%	2/2/24	
Level 3 PPA Approval	ISO-NE	0%	2/29/24	



Next Steps

- Working with ISO-NE to develop Level 3 ASO study scopes
- Study assumptions have been finalized with ISO-NE
- Provide updates on preliminary study results after completion of the steady state and stability analyses
- Stay up to date with study schedule and progress updates via biweekly reports.

OPEN Q&A

Thank You!

Level 3 ASO Study Overview

EVERSOURCE

- PSCAD Model Validation
  - Detailed technical data was requested from all Level 3 projects and is required to start studies
  - Collection and validation of PSCAD models for each project has been performed for all projects.
- Level 3 study
  - Study Assumptions and study scope of work will be finalized with ISO-NE.
  - Conduct thermal and voltage steady state, short circuit, stability and electromagnetic transient (EMT) analysis.
- Eversource will review each of the steady state, stability, short circuit and EMT results with ISO-NE before proceeding to the next stage of the study.
- ASO Study Participants will be informed if their project triggers a transmission system upgrade at the end of the steady state and stability analysis.
- ISO-NE will approve the proposed plan application (a.k.a I-39) after all studies have been completed.