

Massachusetts Technical Standards Review Group (TSRG)

Quarterly Meeting- December 11th, 2025

Agenda

- DER Applications larger than 1 MW & its implications with ASO & ISO-NE Transitional Cluster Studies (~30 min)
- EDCs update on Ford Bi-Directional Chargers(~5 min)
- Eversource Demo on the new Hosting Capacity Maps (~30 min)
- Disconnect Switches- Guest Speaker (Sunrun) (~15 min)
- TSRG Sub-Committee Updates (~20 min)
  - Flexible Interconnections
  - DER Equipment Replacement
  - Meter Socket Adapters
- Tariff Revision Process update (~20 min)
  - IIRG process update and procedural schedule
    - IIRG ESS Subgroup
    - IIRG Flex IX Sub-Group
- Group Study Status Update (~15 min)
  - Eversource
  - National Grid
  - Unitil
- OPESS Tariff Update (~5 min)
- National Grid DLS Update (~10 min)
- Technical Standards Update from EDCs (~5 min)
- Common Technical Standards Document (~20 min)
- Close Out & Final Discussion (~5min)
    - Next scheduled quarterly meeting dates
      - March 26th 2026 1PM-4PM
      - June 18th 2026 1PM-4PM
      - September 17th 2026 1PM-4PM
      - December 10th 2026 1PM-4PM
    - Send topics for future meetings to:
      - Shakir Iqbal (shakir.Iqbal@eversource.com)
      - Tony Morreale (tmorreale@ligconsultants.com)

Projects larger than 1 MW & ASO Transitional Cluster Studies

OPEN DISCUSSION- PRESENTATION
BY EVERSOURCE ENERGY

Impacts from FERC Transitional Cluster Study

- Opt-in window for 2026 ASO is by end of 2025
- Some projects are directly impacted by the FERC TCS
  - All DER projects in the 2026 ASO study will use the TCS cases whether they are impacted or not
  - Increased efficiency to use same set of cases
  - ISO-NE plans to share the final steady-state, stability, and short circuit TCS library cases with the Transmission Owners on January 23,2026
- ASO study timeline will be aligned with TCS
  - ASO study for projects impacted by TCS cannot be finalized until completion of TCS (~1.5years)
  - Projects not impacted by TCS may complete ASO sooner (~1year)
  - New ASO studies (i.e. 2027 ASO) will not kick off until ISO-NE launches their next round of FERC Cluster studies to avoid risk of restudy (not enough time to finish before next FERC cluster study begins)

ISO-NE Study Level Determination Change

- Beginning with the First Cluster Study Opt-in window in 2027, 20MW calculation for ASO Level Determination will be reset
  - Only projects submitted in that window count towards 20 MW Level 3 threshold
  - Past projects at substation or electrically close stations will not be considered in determination
  - Result is single projects <5MW may be more likely to be determined as Level 0

FORD Bi-Directional Chargers Update

EDC'S UPDATE

Eversource Demo on Hosting Capacity Maps

EVERSOURCE ENERGY

Disconnect Switches

Guest Speaker- Sunrun

FLEXIBLE INTERCONNECTIONS

MARK BENTSON

TSRG SUB-GROUP

Flexible Interconnections Sub-Group Update

Mission Statement:

Center discussion on the use of technology, improved methods, and products that can enable dynamic management of DER assets on the grid.

As a SubGroup, our primary aim is to define and review Flexible Connections across industry. The goal being to enable DER projects in appropriate areas to interconnect to avoid significant distribution system upgrades, while reducing costs and timeframes associated with the standard interconnection process. This includes defining policy on how curtailment will work for DERs. Success may allow for faster and cheaper integration of DERs by increasing the hosting capacity of existing grid infrastructure and/or increased penetration of DERs to the grid.

Expected Group Output:

Deliverables and actionable next steps to be escalated/reported to the TSRG on the following:

- **Utility Controlled, Flexible Connections –** Use Cases, Thermal Constraints, Foundational technologies, scheduling, economics & markets, curtailment, studies, scaling.
- **Dynamic "Local" Control –** Enabling inverter functionality, Smart Inverter controls & Power Control systems, managing assets via Grid Services.

Bring/communicate any non-technical standard issues or topics to additional groups/DPU.

Team

First Name	Last Name	Company
Gerry	Bingham	DOER
Russ	Aney	Parallel Products
Nachum	Sadan	GridEdge Networks
Doug	Pope	Pope Energy
Greg	Hunt	ZeroPoint Energy
Richard	Labrecque	Agilitas
Mrinmayee	Kale	NewLeaf Energy
John	Mosher	Solect Energy
Prasanth	Gopalakrishnan	Applied Systems Engineering Inc.

First Name	Last Name	Company
Daniel	McDonough	National Grid
Michael	Porcaro	National Grid
Justin	Woodard	National Grid
Mark	Bentson	Eversource
Shakir	Iqbal	Eversource
Ryan	West	Eversource
Michael	Taniwha	Eversource
Jeannie	Amber	Eversource
Paul	Krell	Unitil
John	Bonazoli	Unitil

Summary of Major Accomplishments & Upcoming Activities

Completed Activities:

DATE	DESCRIPTION OF ACTIVITY
12/11/2023	Kick off meeting with SMEs
1/22/2024	Review Flexibility SubGroup Charter, Defining Flexible Interconnections, Developer Feedback on Reporting
3/7/2024	Confirmed working definition and listed out scope
4/12/2024	Alignment on Initial Constraint Criterion (Thermal) and Initial Foundational Technologies (software, hardware/equipment, communication protocols - DNP3/IEEE 2030.5)
5/21/2024	Transmission system capabilities, impacts, & benefits and how this impacts our Flex Connect discussions moving forward. Thermal Constraints Data / Reporting for Viable Circuits – Preliminary List for early scaling.
6/18/2024	Initial IIRG – Flex Connect / DERMS language and deliverable list established for UL 3141, Failsafe items, & Data points
7/22/2024	UL 3141 "Outline of Investigation for Power Control Systems" criteria for equipment standardization – Review of scope, requirements, testing & optional testing. Out for industry review and comment.
9/30/24	Group alignment on carrying over existing IEEE 1547 subgroup scope. As we can move these to Flex Connect, then we can close the 1547 group. – Communications Protocols (DNP3, 2030.5, SunSpec Modbus), Customer Comms, & Grid Support functions
10/21/24	Introduction to defining fail safe mode operation/countermeasures: Communications Failures & Data Points (DNP3)
11/25/24	Advanced/Smart Inverter Functionality Presentation: Brian Lydic (IREC), Nachum Sadan (GridEdge Networks), and Jeffrey Albus (Eos Energy Enterprises)
1/21/25	Eversource presentation / Q&A of their recent Flexible Interconnection activities
2/19/25	Established Curtailment Catch-All Doc – Work to define "Curtailment"?, Defining policy on how curtailment will work for DERs, Industry thoughts on ways of curtailing, Feasibility analysis and curtailment studies, collaborative discussion between Utility and Industry
3/19/25	Refined Curtailment Catch-All Doc – Discussed %s in curtailment estimates, CIP areas, Hosting Capacity Fee, and potential use-cases not limited to 1) Full flexibility with estimated figures 2) "Hybrid" Model that ensures a confirmed amount of capacity in addition to flex capacity where available & not to exceed nameplate 3) Firm with schedule and adherence to schedule
5/29/25	Continued discussion on the Curtailment Catch-All Doc Flex connect schedules and implementation
6/18/25	How we study, what it means for customers 8760 models in connection with studies Different types of DE profiles, flex connect schedules and implementation
7/31/25	8760 models in connection with studies Software packages; excel, Cyme, Synergi, Windmill, PSSE Data cleaning; net load vs gross load
8/27/25	When to offer flex connection in the process, which feeders/stations are most suitable for flex connect Thermal and voltage limits Use cases; PV only, PV + ESS, ESS Only
9/30/25	IIRG Updates Voltage Constraints and how it relates to flex connect
10/30/25	Smart Inverter Settings Volt/Var MW vs. MWH
11/25/25	Abnormal Circuit Configurations Volt/Watt
Upcoming Activities:	
	Establish deliverable document with scope list, decisions/outcomes, and highlighted differences of any EDCs / group members. Continue discussion on studies and 8760 modeling

DER EQUIPMENT REPLACEMENT

JOHN BONAZOLI/JEREMY KITES

TSRG SUB-GROUP

In-Service DER Equipment Replacement Subgroup

Mission:

To develop a comprehensive procedure to administer the replacement of in-service DER equipment.

Expected Group Output:

The recommended procedure from this group will be presented to the TSRG and the IIRG for potential inclusion of interconnection tariff changes.

Team

Fist Name	Last Name	Affiliation	Role
Shakir	Iqbal	Eversource	EDC Member
Brett	Jacobson	Eversource	EDC Member
Muhammad	Khan	Eversource	EDC Member
Kelly	Musto	Eversource	EDC Member
Ruvini	Kankanamalge	National Grid	EDC Member
Nathan	Walsh	National Grid	EDC Member
Jeremy	Kites	Unitil	EDC Member
Gerry	Bingham	MA DOER	Gov. Member
Courtney	Feeley Karp	MA DOER	Gov. Member
Tim	Snyder	ACT	Industry Member
Sam	Feigenbaum	Kearsage Energy	Industry Member
Mark	Durrenberger	New England Clean Energy	Industry Member
Claire	Chang	Solar Greensfield	Industry Member
Andrew	Hickok	Solect Energy	Industry Member
John	Mosher	Solect Energy	Industry Member
John	Bonazoli	Unitil	Lead

Summary of Major Accomplishments & Upcoming Activities	
Completed Activities:	
DATE	DESCRIPTION OF ACTIVITY
6/10/2025	Kick-off meeting with full subgroup with industry and government reps.
8/12/2025	Created Matrix of equipment replacement categories and requirements
11/2/2025	Consensus – a few replacement categories do not require Notification to EDC
Upcoming Activities/ Topics:	
	Bi-weekly meetings of subgroup and EDC only meetings every other week.
Jan, - Feb 2025	Goal: Present consensus / non-consensus to IIRG

In-Service DER Equipment Replacement Subgroup

- Because concerns are process oriented, this subgroup will continue under IIRG
- Consensus for a few categories where Notification is not required
- EDC and Industry group created proposals. Working out some clarification we may get more consensus.
- Expecting to present consensus / non-consensus at IIRG meeting early 2026

METER SOCKET ADAPTERS (MSA)

USMAN GAUHAR

TSRG SUB-GROUP

Meter Socket Adapter Sub-Group Update

Mission Statement:

Ensuring safe, reliable and standardized implementation of meter socket adapters technology across the Utility network through technical expertise, stakeholder collaboration and foster regulatory compliance per Chapter 231 Section 151 of the MA State Law & applicable safety standards.

Expected Group Output:

The goal of this subgroup is to ensure compliance with the MA State Law per Chapter 231 Section 151 by incorporating Meter Socket Adapters (MSA) for the Simplified Applicants and by ensuring that all safety & operational procedures of the EDCs are addressed. For clarifying purposes, it should be noted that this subgroup will not create guidelines for MSAs that do not support Distributed Generation such as EV Chargers.

Team		
First Name	**Last Name**	**Company/Affiliation**
Usman	Gauhar	National Grid
Shakir	Iqbal	Eversource
Patrick	Fam	Eversource
John	Bonazoli	Unitil
Brian	Canfield	National Grid
William	Nieman	National Grid
Gerry	Bingham	DOER
Courtney	Feeley-Karp	DOER
Carson	Bullock	DOER
Jonathan	Knauer	Connect DER
K	Munro	Connect DER
Tirzah	Shakespeare	Connect DER
Marc	Monbouquette	Enphase Energy
Marko	Rosenfeldt	Enphase Energy
Nathan	Charles	Enphase Energy
Beau	Millett	Tesla
Dominic	Gatti	Tesla
N	Caner	Tesla
Russ	Aney	Parallel Products

Summary of Major Accomplishments & Upcoming Activities	
Completed Activities:	
DATE	DESCRIPTION OF ACTIVITY
8/11/25	Kick off – Group expectation setting, mission statement and outcome development
9/11/25	Manufacturer presentation on product details including installation, equipment accuracy, included protections, etc
11/20/25	Device certification, evaluation, approval discussed. Field practices , impact on EDCs procedures. Liability and legal considerations.
Upcoming Activities:	
12/19/25	Discussion on next steps toward 3 main goals established in first group meeting: 1. Process for evaluating devices 2. Updates to utility field procedures 3. Installation practices and agreements

IIRG GROUP UPDATE

KATE TOHME/BRETT JACOBSON

IIRG GROUP

ENERGY STORAGE

MIKE PORCARO

IIRG SUB-GROUP

IIRG Energy Storage Sub-Group Update

Mission Statement:

Scope of the IIRG Energy Storage Sub-Group is limited to energy storage topics related to interconnection and processes overseen by the DPU. Topics discussed by the group may tangentially relate to other elements, however each substantive topic must be centrally focused on its relation to energy storage.

Expected Group Output:

Recommendations from the group shall focus on process recommendations to the DPU for processes under their purview. Technical topics may come up in natural course and will be discussed to the extent practical. This sub-group will develop recommendations on technical topics when appropriate, however detailed discussion and decisions on technical topics will be deferred to the Technical Standards Review Group (TSRG).

Team		
First Name	**Last Name**	**Company/Affiliation**
Michael	Porcaro	National Grid
Greg	Hunt	Zero Point Energy
John	Mosher	Agilitas Energy
Nathan	Walsh	National Grid
Shakir	Iqbal	Eversource
Mark	Bentson	Eversource
Jeremy	Kites	Unitil
John	Bonazoli	Unitil
Natalie	Treat	ACT
Sarah	Bresolin	ENGIE North America Inc.
Silas	Bauer	Seal Rock Energy
Mrinmayee	Kale	New Leaf Energy
Chris	Modlish	AGO
Tom	Ferguson	MA DOER
Ryan	McGlothlin	Silo Electric

Summary of Major Accomplishments & Upcoming Activities	
Completed Activities:	
DATE	DESCRIPTION OF ACTIVITY
9/23/25	Reviewed efforts progressing in other forums related to ESS. Developed list of substantive topics for the sub-group to address.
10/21/25	Reviewed dispatch limiting schedule feedback and info from Flex IX subgroup;
11/12/25	Further discussion on topics 3, 4, 5

Topic		Status
1.	ESS Metering	Complete, submitted to IIRG Co-Chairs
2.	Open Loop Response Time	Complete, submitted to IIRG Co-Chairs
3.	Trip settings for standalone ESS, when flexed to zero	In progress – Summary by Jan meeting
4.	Future load effects on curtailment where flexing	In progress – Further info for discussion in Jan meting
5.	Potential real power impacts from reactive power support	In progress – Further info on manufacturer and IEEE alignment in Jan meeting
6.	Estimated curtailment data for stand alone ESS flex	Not yet started

FLEX INTERCONNECTIONS

MIKE PORCARO

IIRG SUB-GROUP

IIRG Flexible Connections Sub-Group Update

Mission Statement:

Develop a comprehensive & standardized set of flexible interconnection options for DERs and EVs in an iterative manner based on system, customer and market needs

Expected Group Output:

Recommendations from the group shall focus on process recommendations to the DPU for processes under their purview. Technical topics may come up in natural course and will be discussed to the extent practical. This sub-group will develop recommendations on technical topics when appropriate, however detailed discussion and decisions on technical topics will be deferred to the Technical Standards Review Group (TSRG).

Team		
First Name	Last Name	Company/Affiliation
Michael	Porcaro	National Grid
Sean	Burke	Bluewave
Chris	Modlish	AGO
Nikhil	Balakumar	AGO (Facilitator)
Kayla	Burns	AGO
Carson	Bullock	DOER
Gerry	Bingham	DOER
Courtney	Feely-Karp	DOER
Kate	Tohme	New Leaf Energy
Joshua	Briggs	Lodestar Energy
Daniel	Passarello	Nexamp
Brian	Lydic	IREC
Brett	Jacobson	Eversource
Michael	Taniwha	Eversource
Mark	Bentson	Eversource
Jill	Duplessis	Eversource
Michael	Porcaro	National Grid
Sean	Burke	Bluewave

Summary of Major Accomplishments & Upcoming Activities	
Completed Activities:	
DATE	DESCRIPTION OF ACTIVITY
9/17/25	Meeting #1 Kick off – Group expectation setting, mission statement and outcome development. Seeking to define: • Flexible Interconnection program offerings • Clear definitions of terms and program constructs • Resulting advisory and/or filing to DPU as required by outcomes
9/30/25	Core leads working session for group steering, content development and next step planning
10/6 thru 10/10/25	Subgroup Chair working sessions and content development
10/14/25	Meeting #2 – Definitions and use case prioritization; definition of key scenarios for flex; near term priorities and roadmap
10/27 thru 10/31/25	Subgroup Chair working sessions and content development
11/3/25	Meeting #3: Flex IX definitions & objectives; dynamic Flex IX offering elements; planning for multi-day workshop
Upcoming Activities:	
Jan 2026	In person workshop (possibly multi-day) – agenda and logistics in development

GROUP STUDY STATUS UPDATES

UPDATE BY EDC'S

Group Study Status Update

- The EDCs have provided the below links for Group Study status updates
- Status is updated monthly
- Intended to be generally informative on Group Study timeline expectations
- Included here for reference and general discussion, however Group specific questions may need to be deferred to a separate Group specific forum

- **Eversource**
  - https://www.eversource.com/content/residential/about/doing-business-with-us/interconnections/massachusetts/distribution-group-studies
  - The Company has filed the following Group Study CIPs in June 2025:
    - Southwick-Granville Group Study CIP
    - New Bedford Group Study CIP
    - Dalton-Hinsdale Group Study CIP
    - Gill-Montague Group Study CIP
- **National Grid**
  - https://gridforce.my.site.com/s/article/MA-Distribution-Group-Study-Documents
- **Unitil**
  - N/A

OPERATIONAL PARAMETERS FOR ENERGY STORAGE SYSTEMS (OPESS) TARIFF

DOCKET UPDATE

DISPATCH LIMITING SCHEDULE UPDATE

Emily Slack

NATIONAL GRID

NG Dispatch Limiting Schedule (DLS) Investigation

Purpose: explore the implications of adopting a modified DLS with the following characteristics:

- Four seasonally varying time blocks, each allowing both **charge and discharge within available capacity**

Discharge Limit Schedule (DLS)	**07:00 - 12:00**	**12:00 - 15:00**	**15:00 - 19:00**	**19:00 - 07:00**
Charge Limit Schedule (CLS)	**06:00 - 11:00**	**11:00 - 15:00**	**15:00 - 22:00**	**22:00 - 06:00**

- Available capacity identified to avoid **thermal overload of the substation transformer**
- Curtailment in defined intervals (**25% nameplate** or comparable)

Timeline

Month(s)	Action
June	Develop alternative DLS and supporting deliverables with the above characteristics
July-September	Develop illustrative examples of the outcome of analysis in National Grid territory
September	Present alternative DLS and illustrative examples at September TSRG, and receive feedback on preferred approach
October	Internal review and determination of any changes that will be made
November-December	Prepare implementation materials as required
Early 2026	Implement DLS decision

Feedback and Evaluation

- Illustrative examples identified that the DLS structure did not substantially improve outcomes on capacity-constrained feeders, and substation curtailment did not address feeder-level constraints
- No written comments received prior to October Company decision
- Verbal comments received emphasized value of feeder-level curtailment
- **Based on the response to National Grid's September 2025 presentation to TSRG, industry's expressed preference for consideration of feeder constraints, and the planning and operational advantages to maintaining a consistent DLS, National Grid will not be adopting the alternative DLS at this time.**

	Advantages	Disadvantages
Existing DLS	**Considers feeder head limitations, providing greater transparency and flexibility for customers** Reduced dependency on shape of underlying load curve, and greater protection for future curve changes Operational and planning consistency with prior in queue ESS progressed under existing DLS Allows DLS to avoid all thermal constraints, not just at substation level	**Does not align to features emphasized by industry during 23-115 Technical Conferences** More frequent identification of no charge capability in capacity constrained areas
Alternative DLS	**Aligns to features emphasized by industry during 23-115 Technical Conferences** Unlocks some charge capability in capacity constrained areas (although often not enough, and accompanied by system modifications) Allows DLS to avoid substation-driven constraints	**Does not consider feeder head limitations – less transparency and more potential for high cost modifications at SIS complete** Greater dependency on load curve shape, with less room for curve changes Additional planning and operational complexity from introducing another DLS iteration

TECHNICAL STANDARDS UPDATE

EDC'S UPDATE

EDC Technical Standards

- As needed, EDC Technical Standards may be updated

- **National Grid**
  - NG to provide Updates

- **Unitil**
  - Unitil to provide Updates

- **Eversource**
  - No new updates to report.

TSRG COMMON TECHNICAL STANDARDS MANUAL UPDATE

EDC'S FEEDBACK


Wishing you
a season of gladness,
a season of cheer,
and to top it all off -
a wonderful year.
Season's Greetings
EVERSOURCE ENERGY, NATIONAL GRID & UNITIL CORPORATION

THANK YOU!

HAPPY HOLIDAYS
&
CHEERS TO 2026!

NEXT QUARTERLY MEETING: MARCH 26TH 2026 1 PM- 4 PM

2026 TSRG Quarterly Meeting Dates:

March 26th 2026 1PM-4PM

June 18th 2026 1PM-4PM

September 17th 2026 1PM-4PM

December 10th 2026 1PM-4PM