# Massachusetts Technical Standards Review Group

## *Quarterly Meeting*

*March 18, 2024*

The Massachusetts Technical Standards Review Group

# Agenda

**1:00-1:30** **Administrative Items**

1. New Vice Chair appointment
2. Process overview

**1:30-2:00** **Sub-Committee Updates (10 min each)**

1. IEEE 1547 Sub-Group
2. System Impact Study Sub-Group
3. Flexible Connections Sub-Group

**2:00-2:15** **Group Study Status**

**2:15-2:30** **Technical Standards Update**

**2:30-3:15** **UL1741 SB Requirement for Bi-Directional Charging Stations**

- Steve Letendre - Fermata Energy Proposal

**3:15-3:55** **Underfrequency Response Related to PV Inverters**

- Griffin Anderson – Neo Virtus

**3:55-4:00** **Close Out & Final Discussion**

# Administrative Items

- Refer to TSRG Website for all information related to the group
  https://www.mass.gov/info-details/massachusetts-technical-standards-review-group
  - Membership
  - By-Laws
  - Reference Documents
  - Past Meeting Notes & Materials
  - Common Technical Guideline
  - Upcoming meeting info and registration link

- For any questions, suggestions, or to get on the mailing list email:
  - Chair Mike Porcaro - **Michael.Porcaro@nationalgrid.com**
  - Co-Chair, Tony Morreale - **tmorreale@ligconsultants.com**

# Procedures – Rules of Order

- Raise hand to be recognized by the Chair (right to speak)
  - Hand raises to be recognized in order
  - All welcome to speak at this point (members and non-members)
- You want to bring up a new idea before the group.
  - After recognition by the Chair, present your motion. A second is required for the motion to go to the floor for discussion, or consideration.
  - Making the motion is intended to be brief. Discussion/substance on the topic follows
  - Ex. Speaker states *"I make a motion to adjust the site MW size requiring reclosers from 500kW to 1MW in the Common Guideline";* Someone else says *"Second"*
- Chair states the motion on the floor and opens discussion for all
  - Only one motion will be discussed at a time
  - Ex. Chair states *"A motion has been made to adjust the site MW size where reclosers are required from 500kW to 1MW. Please proceed with discussion"*

# Procedures – Rules of Order

- No member can speak twice to the same issue until everyone else wishing to speak has spoken to it once.
- Members who *repeat* comments or arguments will be ruled out of order.
- When there has been enough discussion
  - Make a motion to close the debate. Also referred to as “calling the question”. This cuts off discussion and brings the assembly to a vote on the pending question/motion only.
  - Called naturally when Chair recognizes that all discussion has stopped
  - Ex. Speaker states *“I move to close the discussion”*
- Once discussion is closed, move to vote:
  - Ex. *“All those in favor of the motion on the floor, which is to adjust the site MW size where reclosers are required from 500kW to 1MW, please raise your hand”*
  - Requires a 2/3rds vote to pass

# Procedures – Topic Identification

- Each topic brought up must focus toward either:
  - Update Common Technical Standards (CTS), as repository of consensus items coming from TSRG discussion
  - Shorter term issue requiring resolution, not fundamental practice in CTS

- Pre-Meeting Topic Submission
  - Submit in writing to Chair & Co-Chair 3 weeks prior to quarterly meeting to appear on agenda
  - Submitter presents on the topic with clear:
    - Background on issue of concern
    - Ask for resolution/actions/next steps
  - Discussion amongst all present at TSRG (members and non-Members)
  - Vote by membership at conclusion of discussion for next steps/consensus

# Procedures – Sub Groups

- Where a topic has non-consensus, warranting additional investigation, subgroups may be formed
  - Following a non-consensus outcome after topic discussion, any person (member or non-member) may propose that the topic be taken to Sub-Group
    - Person proposing must state the proposed sub-group direction/purpose
  - Of those in attendance at the quarterly meeting, a minimum of 5 individuals (members or non-members) must volunteer to support the sub-group in order for it to proceed
    - If less than 5, then the topic is logged in a tracker as “unresolved”
  - Sub-Group lead(s) must be identified at the time of subgroup creation
- Sub Group scope must be achievable before next quarterly (~3 months)

# Procedures – Summaries

- Whether the topic comes from the quarterly meeting or from a sub-group, the discussion will be summarized in meeting minutes or in a separate summary document. Summarization to generally include:
  - Definition of topic discussed
  - Group activity in working through the topic
  - Group consensus items
  - Group non-consensus items, including stakeholder positions

- Summaries to be assembled by
  - Quarterly meeting topics: Chair/Vice Chair
  - Sub-Group topics: Sub-Group Lead

# Procedures – Summaries

- Summaries to be shared with TSRG membership at least 2 weeks prior to quarterly meeting
  - To be voted on by membership at quarterly (2/3 vote to pass)
  - “Approval” of summary signifies that TSRG is in agreement with it as written

- For Sub-Group summaries that may be of an urgent nature, warranting vote prior to the next scheduled quarterly:
  - Sub-Group lead(s) to notify Chair/Vice Chair
  - If expediting of the vote is warranted, Chair/Vice Chair to organize interim meeting and/or impromptu vote via email amongst membership

# TSRG
# 1547 Update
# SubGroup Update

*John Bonazoli*

The Massachusetts Technical Standards Review Group

# IEEE 1547 Sub-Group Update

## Mission Statement:

Establish clear criteria of requirements and default settings for usage of grid support functions set forth in IEEE standard 1547 - Standard for Interconnection and Interoperability of Distributed Energy Resources with Associate Electric Power Systems Interfaces.

## Expected Group Output:

(1) Default settings for requirements specified in IEEE 1547

(2) Investigate usage and concerns of various modes of operation for Grid Support

(3) Create guidelines for Grid Support Functions

(4) Create requirements for communications between Facility interface and EDC central monitoring system

| Team | | | |
|---|---|---|---|
| First Name | Last Name | Company | Affiliation |
| John | Bonazoli | Unitil | EDC Rep/Chair |
| Mrinmayee | Kale | New Leaf Energy | DER Rep/ Vice-Chair |
| Mauhammad | Khan | Eversource | EDC Rep |
| Paul | Krell | Unitil | EDC Rep |
| Nathan | Walsh | National Grid | EDC Rep |
| Mina | Moawad | Eversource | EDC alt rep |
| Ruvini | Kankanamalage | National Grid | EDC alt rep |
| Joseph | Debs | Eversource | EDC alt rep |
| David | Ferrante | Eversource | EDC alt rep |
| Devon | Marcaurele | Eversource | EDC alt rep |
| Jeremy | Kites | Unitil | EDC alt rep |
| Tony | Morreale | LIG Consultants | DER Rep |
| Mike | Wall | NexAmp | DER Rep |
| Brian | Lydic | IREC | Cust/Gov Rep |
| Brad | Marszalkowski | ISO-NE | ISO Rep |
| Aurora | Edington | DOER | Cust/Gov Rep |
| | | | |

| Summary of Major Accomplishments & Upcoming Activities | |
|---|---|
| **Completed Activities:** | |
| 5/9/2022 | Finalized Requirements document |
| 9/12/2022 | Presenation of NY Grid Support functions |
| 9/12/2022 | Presenation of impact of Grid Support functions on Risk of Islanding |
| 7/30/2022 | Created scope/mission of communications task force |
| 12/12/2022 | Revised deadlines for Default Setting Document |
| 1/15/2023 | Finalized membership of Communications Task Force |
| | |
| | |
| **Upcoming Activities:** | |
| 3/1/23 | Format Scope of EDC Requirements for Grid Support Functions |
| TBD | EDC's to study concerns of Volt/VAR |
| TBD | Finalize Grid support requirements and settings |

# TSRG
# System Impact Study SubGroup Update

*Michael Porcaro*

The Massachusetts Technical Standards Review Group

# System Impact Study Sub-Group Update

## Mission Statement:

Review the technical analyses, tools and procedures associated with SIS. Focus on optimization, automation, and efficiency, using existing utility standards, to reduce cost and timing of SIS. Consider utility standards as they relate to evaluation processes in the study as they drive SIS tasks. Consider alternative evaluations/considerations to still maintain safety/reliability.

## Expected Group Output:

Agreement on efficiencies that can be realized to reduce SIS cost and/or time, while still maintaining the safety/reliability of the grid and not challenging any requirements of the DG tariff (MDPU 1468).

Specific details of future state such as that of the ESMP, flexible interconnections, or other constructs that are not yet part of standard utility offerings for all customers are out of scope for the group.

**Team**

| First Name | Last Name | Company |
|---|---|---|
| Courtney | Feeley Karp | Klavens Law Group, P.C. |
| Brian | Lydic | IREC |
| Gerry | Bingham | DOER |
| Claire | Loe | Blue Wave Solar |
| Doug | Pope | Pope Energy |
| Greg | Hunt | ZPE Energy |
| Kavita | Ravi | Blue Wave Solar |
| Nachum | Saadan | Grid Edge Technology |
| Nigam | Trivedi | Blue Wave Solar |
| Richard | Labrecque | Agilitas |
| Russ | Aney | Parallel Products |
| Ryan | McGlothlin | Silo Electric |

| First Name | Last Name | Company |
|---|---|---|
| Daniel | Dabkowski | Eversource |
| David | Laplante | National Grid |
| Emily | Slack | National Grid |
| Jennifer | Chalifoux | National Grid |
| Nathan | Walsh | National Grid |
| Samer | Arafa | National Grid |
| Shakir | Iqbal | Eversource |
| Quinn | Perry | Control Point |

**Milestone Summary**

| **Completed Activities:** | |
|---|---|
| 5/25/2023 | Kick off meeting with SMEs |
| 6/30/2023 | EDC listing of study steps for PV and ESS and associated analyses |
| 8/1/2023 | Reviewed study assumptions, EDC differences, & representative solar curves |
| 9/11/2023 | Discussed flex connection approaches and study steps for typical SIS |
| 10/17/2023 | Discussed end to end study process in detail |
| 11/14/2023 | EDC details on 3V0 and Risk of Island analyses; Discussed adding recent/planned upgrade info to company maps (deferred to DOER meeting for January) |
| 12/12/2023 | Discussed threshold assumptions and alignment amongst EDC analyses |

**Summary**

Group agreed topics were addressed to extent possible in the group and therefore decided not to meet in January or February.

Consensus:
- DOER report data improvements, consistency and potential additional data undertaken in separate direct DOER/EDC coordination
- Flexible interconnection can provide certain opportunities to alleviate study challenges, to be explored further through individual EDC pilots/programs
- FERC 2023 Order discussed; determined better fit for IIRG
- Sub group to be closed

# TSRG
# Flexible Connections SubGroup Update

*Jon Beniers*

The Massachusetts Technical Standards Review Group

# Flexible Connections 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 | First Name | Last Name | Company |
|---|---|---|---|---|---|
| Gerry | Bingham | DOER | Jon | Beniers | National Grid |
| Russ | Aney | Parallel Products | Michael | Porcaro | National Grid |
| Nachum | Sadan | GridEdge Networks | Justin | Woodard | National Grid |
| Doug | Pope | Pope Energy | Daniel | McDonough | National Grid |
| Greg | Hunt | ZP Energy | Gerhard | Walker | Eversource |
| Richard | Labrecque | Agilitas | Ryan | West | Eversource |
| Nigam | Trivedi | BlueWave | Michael | Taniwha | Eversource |
| | | | Jacob | Dusling | 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. |
| 4/4/2024 | |
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**Upcoming Activities:**

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|---|---|
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# Group Study Status

The Massachusetts Technical Standards Review Group

# Group Study Status Update

- Eversource
  - https://www.eversource.com/content/docs/builders-contractors/tsrg-quartly-group-study-updates-march-2024.pdf?sfvrsn=ea9052e6_1

- National Grid
  - https://gridforce.my.site.com/s/article/MA-Distribution-Group-Studies

# Technical Standards

The Massachusetts Technical Standards Review Group

# EDC Technical Standards

- As needed, EDC technical standards may be updated
- Below is general discussion for awareness of major elements that may have been changed/amended/added within the last 12 months

## Eversource (April 27, 2023)

- No new updates

## Unitil (May 1, 2000)

- No new updates

## National Grid (January 2024 Edition Released)

- All references to UL1741SA have been removed; SB required.
- New Section 5.1.8: Defining Moderate vs Significant Change, as it relates to the Tariff.
- Updated Section 7.7.1: Lowered limit on PCC reclosers to 500 kW.
- Updated Section 7.7.2: New ESS reqm’ts and lowered limits on RTU requirements
- Updated Section 7.6.12.4: Thorough review of anti-islanding & visibility reqm’ts
  - Lowered upper limit of this section to 500 kW
  - Language simplified to reflect the requirements for visibility & control
- New Section 7.7.3: Requirements related to DER Gateways
- Updated Section 8.0: Added Note 7, related to EPRI’s Common File Format for inverter settings.



*Information provided for discussion purposes only, and subject to change. Additional modifications to the standards may be present beyond that specifically called out here. It is the responsibility of the customer to read and understand all utility standards.*

# National Grid Flexible Interconnections Program

- Website with full information:
  - https://gridforce.my.site.com/s/article/ACTIVE-RESOURCE-INTEGRATION-ARI-FLEXIBLE-INTERCONNECTIONS-PILOT

- Seeking interest from solar cases and storage cases, for both ARI and Local Power Controllers
  - **ARI**
    - Energy Storage ARI Pilot Criteria & Eligibility Requirements
    - Solar ARI Criteria & Eligibility Requirements
  - **Local Power Control**
    - Local Power Control Participation Guidance

- To submit a request for pilot consideration a customer must:
  1. Review pilot eligibility requirements to self-assess whether the application is a possible candidate
  2. Prior to ***9/1/2024*** send an email to NationalGridARI@nationalgrid.com to submit a request for consideration. Example requests language and content listed on the website.
  3. Once received, the application will be added to the possible candidate pool for consideration by National Grid. Requests received on or after ***9/1/2024*** will not be considered.
  4. National Grid will provide responses to all requests in as timely a manner as possible, indicating denial or acceptance into the pilot.

# UL1741 SB Requirements for Bi-Directional Charging Stations

Steve Letendre – Fermata Energy

The Massachusetts Technical Standards Review Group

# UL1741 SB Requirements for Bi-Directional Charging Stations

- Request for consideration received from Fermata Energy on 10/20/23
- Fermata to provide overview of issue and request of TSRG

- Motion:
  - Waiver for new applications through 7/1/2025 to allow bi-directional chargers for EV use to be SA listed (not SB) up to an aggregate of 500kW per distribution feeder (or greater if determined acceptable to the EDC). Requirements for inverters intended for PV and/or stationary energy storage systems interconnection are not subject to this waiver. This waiver may be revisited in 7/1/2025 with opportunity for a one time extension if warranted at that time out to 12/31/2025.

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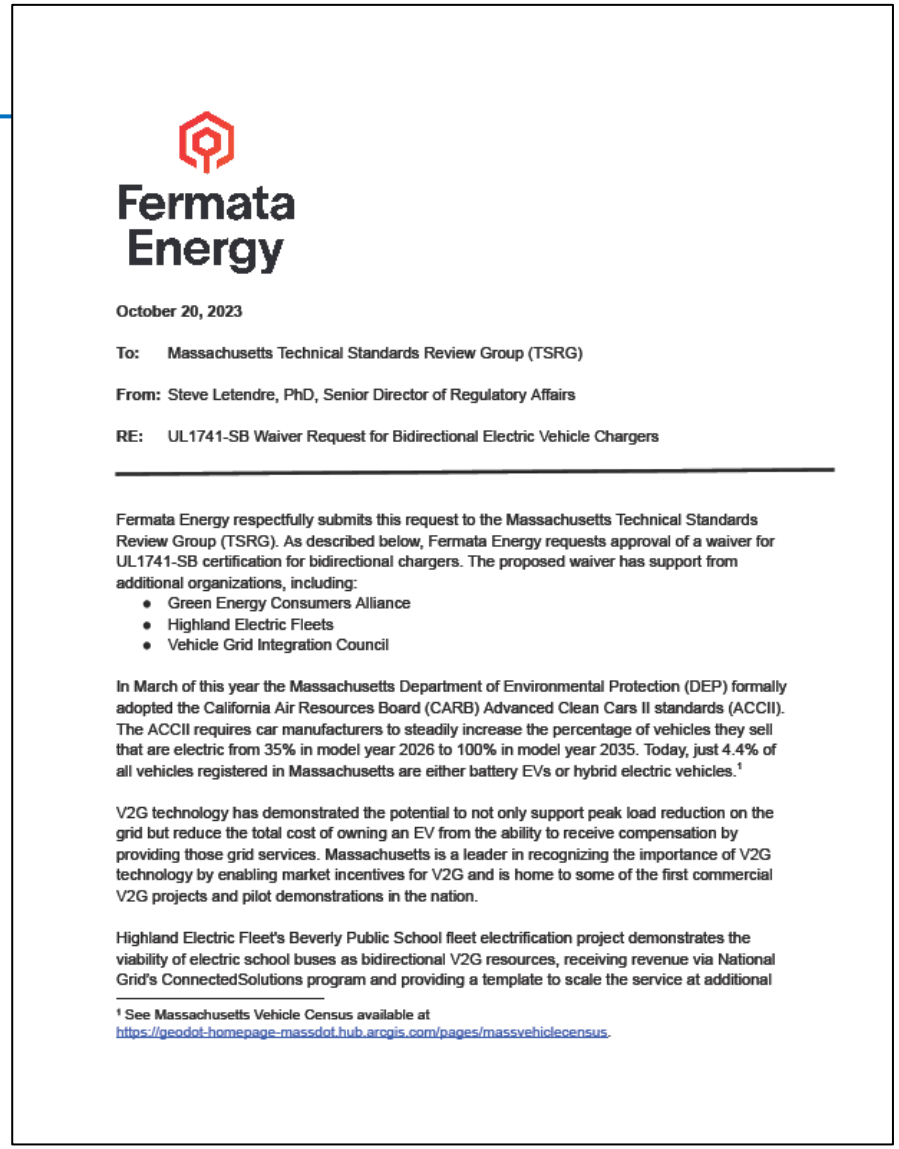

Fermata Energy

**October 20, 2023**

**To:** Massachusetts Technical Standards Review Group (TSRG)

**From:** Steve Letendre, PhD, Senior Director of Regulatory Affairs

**RE:** UL1741-SB Waiver Request for Bidirectional Electric Vehicle Chargers

Fermata Energy respectfully submits this request to the Massachusetts Technical Standards Review Group (TSRG). As described below, Fermata Energy requests approval of a waiver for UL1741-SB certification for bidirectional chargers. The proposed waiver has support from additional organizations, including:

- Green Energy Consumers Alliance
- Highland Electric Fleets
- Vehicle Grid Integration Council

In March of this year the Massachusetts Department of Environmental Protection (DEP) formally adopted the California Air Resources Board (CARB) Advanced Clean Cars II standards (ACCII). The ACCII requires car manufacturers to steadily increase the percentage of vehicles they sell that are electric from 35% in model year 2026 to 100% in model year 2035. Today, just 4.4% of all vehicles registered in Massachusetts are either battery EVs or hybrid electric vehicles.[1]

V2G technology has demonstrated the potential to not only support peak load reduction on the grid but reduce the total cost of owning an EV from the ability to receive compensation by providing those grid services. Massachusetts is a leader in recognizing the importance of V2G technology by enabling market incentives for V2G and is home to some of the first commercial V2G projects and pilot demonstrations in the nation.

Highland Electric Fleet's Beverly Public School fleet electrification project demonstrates the viability of electric school buses as bidirectional V2G resources, receiving revenue via National Grid's ConnectedSolutions program and providing a template to scale the service at additional

[1] See Massachusetts Vehicle Census available at https://geodot-homepage-massdot.hub.arcgis.com/pages/massvehiclecensus.

# Underfrequency Response Related to PV Inverters

Griffin Anderson – Neo Virtus

The Massachusetts Technical Standards Review Group

# Underfrequency Response Related to PV Inverters

- Request for consideration received from Neo Virtus on 1/22/24
- Neo Virtus to provide overview of issue and request of TSRG

- Time did not allow for discussion
  - To be deferred to next meeting

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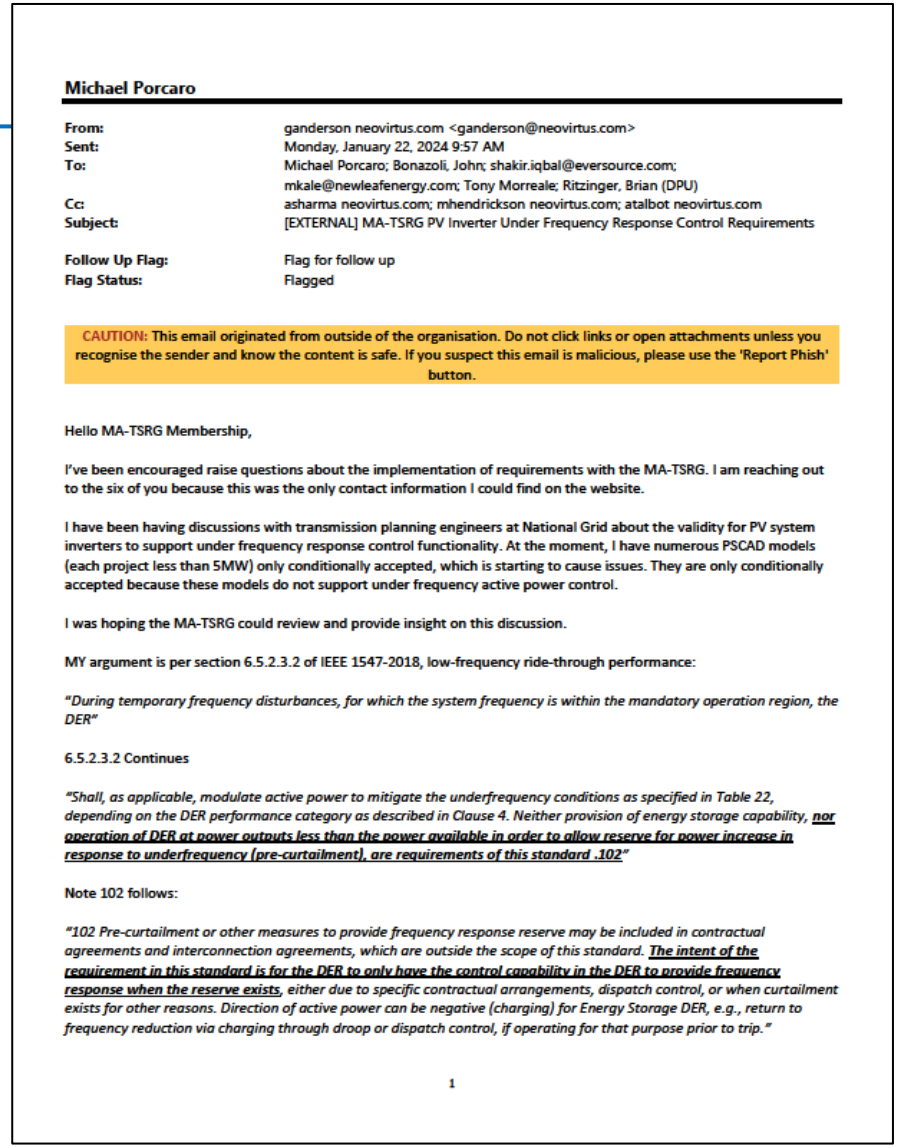

**Michael Porcaro**

**From:** ganderson neovirtus.com <ganderson@neovirtus.com>
**Sent:** Monday, January 22, 2024 9:57 AM
**To:** Michael Porcaro; Bonazoli, John; shakir.iqbal@eversource.com; mkale@newleafenergy.com; Tony Morreale; Ritzinger, Brian (DPU)
**Cc:** asharma neovirtus.com; mhendrickson neovirtus.com; atalbot neovirtus.com
**Subject:** [EXTERNAL] MA-TSRG PV Inverter Under Frequency Response Control Requirements

**Follow Up Flag:** Flag for follow up
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Hello MA-TSRG Membership,

I've been encouraged raise questions about the implementation of requirements with the MA-TSRG. I am reaching out to the six of you because this was the only contact information I could find on the website.

I have been having discussions with transmission planning engineers at National Grid about the validity for PV system inverters to support under frequency response control functionality. At the moment, I have numerous PSCAD models (each project less than 5MW) only conditionally accepted, which is starting to cause issues. They are only conditionally accepted because these models do not support under frequency active power control.

I was hoping the MA-TSRG could review and provide insight on this discussion.

MY argument is per section 6.5.2.3.2 of IEEE 1547-2018, low-frequency ride-through performance:

*"During temporary frequency disturbances, for which the system frequency is within the mandatory operation region, the DER"*

6.5.2.3.2 Continues

*"Shall, as applicable, modulate active power to mitigate the underfrequency conditions as specified in Table 22, depending on the DER performance category as described in Clause 4. Neither provision of energy storage capability, **nor operation of DER at power outputs less than the power available in order to allow reserve for power increase in response to underfrequency (pre-curtailment), are requirements of this standard .102**"*

Note 102 follows:

*"102 Pre-curtailment or other measures to provide frequency response reserve may be included in contractual agreements and interconnection agreements, which are outside the scope of this standard. **The intent of the requirement in this standard is for the DER to only have the control capability in the DER to provide frequency response when the reserve exists**, either due to specific contractual arrangements, dispatch control, or when curtailment exists for other reasons. Direction of active power can be negative (charging) for Energy Storage DER, e.g., return to frequency reduction via charging through droop or dispatch control, if operating for that purpose prior to trip."*

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# Closing

- **Next meetings**
  - June 20, 2024
  - Sept 26, 2024

- **Please send any topic requests for future meetings to Chair and/or Vice Chair**
  - **Michael.Porcaro@nationalgrid.com**
  - **tmorreale@ligconsultants.com**