

Massachusetts TSRG Meeting Notes

Date:	June 16 th 2022	Meeting held as part of the Massachusetts Technical Standards Review Group (TSRG) for discussion of industry topics and collaboration amongst utilities and the DG community. Meeting minutes are outlined below. If there are any corrections, additions, or omissions please notify the preparer.
Prepared by:	Claire Loe cloe@bluewavesolar.com	

Participants:

<u>First Name</u>	<u>Last Name</u>	<u>Company/Affiliation</u>	<u>Email</u>
Adam	Houghton	Control Point	ahoughton@cpteng.com
Amir	Mosaddegh	Eversource	amir.mosaddegh@eversource.com
Amit	Barnir	Kearsarge	abarnir@kearsargeenergy.com
Ariel	Maiorano		Ariel.Maiorano@nationalgrid.com
Brad	Marszalkowski	ISO-NE	bmarszalkowski@iso-ne.com
Brian	Lydic	IREC	brian@irecusa.org
Brian	Ritzinger	DPU	brian.ritzinger@state.ma.us
Daniel	Dabkowski	Eversource	daniel.dabkowski@eversource.com
David	Ferrante	Eversource	david.ferrante@eversource.com
Devon	Marcaurele	Eversource	devon.marcaurele@eversource.com
Doug	Pope	Pope Energy	doug.pope@PopeEnergy.com
Fritz	Octave	Eversource	fritz.octave@eversource.com
Ghebre	Daniel	DPU	ghebre.daniel@state.ma.us
Greg	Hunt	ZPE Energy	ghunt@zpeenergy.com
Jason Correia		Valta Energy	jcorreia@valtaenergy.com
Jeannie	Amber	Eversource	jeannie.amber@eversource.com
John	Bonazoli	Unitil	bonazoli@unitil.com
John	Drummond	Chint Power Systems	john.drummond@chintpower.com
Jon	Gay	RLC	jong@rlc-eng.com
Jonathan	Demay	Bloom Energy	Jonathan.Demay@bloomenergy.com
Joseph	Debs	Eversource	joseph.debs@eversource.com
Kavita	Ravi	Blue Wave Solar	kravi@bluewavesolar.com
Kyle	Bessette	STEM	Kyle.Bessette@stem.com
Maria	French	Zapotec Energy Inc.	french@zapotecenergy.com
Matt	Parlon	Ameresco	mparlon@ameresco.com
Michael	Wall	NexAmp	mwall@nexamp.com
Mike	Porcaro	National Grid	Michael.Porcaro@nationalgrid.com
Mina	Moawad	Eversource	mina.moawad@eversource.com
Nachum	Sadan	GridEdge Networks	nachum@gridedgenetworks.com
Nancy	Israel	National Grid	nancy.israel@nationalgrid.com
Nigam	Trivedi	Blue Wave Solar	ntrivedi@bluewavesolar.com
Paul	Krell	Unitil	krell@unitil.com
Richard	Labrecque	Eversource	richard.labrecque@eversource.com
Russ	Aney	Parallel Products	russa@parallelproducts.com
Ruvini	Kankanamalage	National Grid	Ruvini.Kankanamalage@nationalgrid.com
Sahir	Shakir	National Grid	Sahir.Shakir@nationalgrid.com
Shakir	Iqbal	Eversource	shakir.iqbal@eversource.com

Discussion Topics

Sub- group updates:

- IEEE 1547-2018 adoption
- Created a few years ago, Jon took it over last year, lot of effort was undergone prior to the creation of the other subgroups
- Main reason for this subgroup was to create clear criteria and settings for requirements and usage of function set forth in IEEE 1547
- Four main efforts: 1) creating a default settings requirement, 2) investigate usage in modes of operation for grid support (power factor, etc); 3) looking towards the future for remote monitoring and control of DER facility from EDCs, 4) in order to do this need to create requirements of communication with EDCS
- (2): looking at usage for various modes of operation for grid support, group worked with other utilities in the country to ask them what their experience was; this subgroup is not expecting to come up with any universal requirements, they will be individual to EDC; may do a little more investigation but have met with other utilities
- (1) big update, have finalized default settings document, ready for publication (purpose was to create New England utility required profile of settings), what has been decided is that all application submitted on or after Jan 1, 2023 will have to adhere to the new requirement; technical document has been presented a handful of times; in general:
 - Section 1: requirements for all DER (frequency trip and ride through, grid support default functions)
 - Section 2: requirements for UL 1741 SB certified inverters; tables in document describing voltage trip and ride through requirements, show comparisons to old IEEE settings, also goes into frequency droop functionality
 - Section 3: same thing but requirements for non-inverter based DER
- Need to give some thought as to how we publish document, as far as publication in TSRG it's not a document that fits well into the guideline, unless it's an appendix or something; some discussion needed as to how TSRG publicizes document
- Next up: focus on communication between facilities and EDC, looking to create a communications team within the subgroup comprised of communication experts
- Questions
 - Kavita: wondering how these requirements would be implemented, are they in inverter settings or PSCAD or...? JB: would be implemented in the inverter settings, we had a little bit of discussion about a year ago re: creating a template for documentation of settings but that's a good question as far as how the settings will be documented, but they would be within the inverter itself
 - Jeannie Amber: ride through is not just for inverters, if you have another device outside of inverter that would cause trip, that's something for developers to keep an eye on
 - Jon Gay: quick question on availability of UL 1741 SB, Jan 1 is ~6 months away and I haven't seen any inverters with that specification yet, is it expected that there will be a wave of compliant inverters and if not how will this be handled? JB: have received input from inverter manufacturers, our understanding is that by the end of the year a good number should be certified, at one point were saying we'd need compliance by fall (ISO NE had concerns about pushing it to the end of this year) but we thought Jan 1 was a good compromise; Brian Lydic: expect a lot of certifications to happen over the summer and end of year, IREC has done modeling based on surveys from manufacturers; have only seen 3-4 manufacturers at this point get certs, probably by next quarterly meeting will have better handle on how efforts are proceeding
 - Amit Barnir: wanted to build on Brian's comment, need to be cognizant that even though inverters will be getting certified within next 6 months, we need to consider how long it takes to get through interconnection; projects previously submitted face a threat of delay if these requirements are applied retroactively
 - JB: that's one of the reasons we switched from 'time of interconnection' to 'time of application', we want to reduce risk of study being done and inverter still not having the certification, causing need for restudy

Massachusetts TSRG Meeting Notes

- AB: you mentioned there will be a communications focus in this group, and sounded like it would be EDC members only, want to suggest that industry members are included as well, there might be opportunity to utilize existing communications frameworks
- JB: absolutely, just as first step wanted to get EDC communications experts together (cybersecurity is a big concern, each have own requirements), then we'd have the broader group involved in conversations
- BL: as a corollary to what Amit was saying, if a study does take 2 years, is it the case that the inverter equipment would already be purchased that was specified or would it be the case that 2 years later it would actually be SB certified; AB: would say a lot of them are procured, usually deploying on an annual basis, a lot of times equipment is procured before final IX done
- JB: do you know if inverter manufacturers, do they tend to change their inverter model name? will it be easy to determine and document a particular model that now has the updated certification; AB: in our experience, if it's just a matter of certification, they would not be changing the model name, usually what triggers a change in model number is changing certain output levels at different temperatures, as well as additional functionality or additional inputs
 - Greg Hunt: want to second that, a lot of times recertification does not trigger change to model number
- MP: can post document separately to website
- JB: this document, one of the purposes is to create a NE standard, reason being that it will help ISO NE, they will use this to work with other transmission owners in NE, also helps developers looking at inverters by having one standard across the region
- Brad Marszalkowski (ISO NE): saw inverters specifically coming out for ISO SRD, became an off-the-shelf thing where there would be a setting for ISO SRD, want to maintain a NE-wide standard, make it easier for developers to find equipment that meets the standards
- MP: is group going to be working on other IEEE items, and the communications team will just be broken off? JB: thought was the communications team would be under subgroup, which still has some ongoing efforts, Comm team won't be own subgroup

ESS ramp rates and schedules

- Ties into ESIRG, separate group related to process and tariff side of things
- Subgroup has gone through and reviewed challenges from utility side related to energy storage operating in unconstrained manner (full capacity charge/discharge at any time)
- There is much more capacity reservation on system that needs to be accounted for, which would require significant system modification (high upfront cost, hinders ability for utilities to do switching operations)
- Capacity could mean that control centers don't have readily available ability to switch as needed
- Planning efforts would go toward larger scale system upgrades than they have in the past, which increases scope and assets that need to go onto system
- If there's high upfront cost for system mods, makes it challenging for projects to get through; if scheduling restrictions are imposed, that might jeopardize a project's long-term ability to generate revenue
- In recent meeting talked through a study process that would have EDCs provide higher level of information at beginning of the SIS; would include what system upgrades are needed from thermal perspective from a scheduled and unscheduled perspective
 - Allows developer to know scale of upgrade that would be required and gives them opportunity to choose path forward
 - Would be beginning of impact study, path forward choice would also be made towards beginning of study (decision impacts projects later in queue, sets base case)
 - EDCs want to make sure things are happening in a more linear fashion, want to minimize delays at start to avoid downstream issues
 - Group is currently coming to an agreement about what the study process would look like in practice

Massachusetts TSRG Meeting Notes

- Amit Barnir: just a comment, know that you did send out proposal a few weeks ago, industry members are reviewing proposal for supplemental review and hope to have comments before the next meeting

Dynamic Modeling Group

- Looking for commonalities between utilities so that we can put on the TSRG website, incorporate into common guideline and technical standards
- Main focus on finding best practices for dynamic modeling of DER, improve efficiency of analysis
- This quarter have mainly discussed the PSCAD checklist, which we have developed
- Had NAYAK present PSCAD overview and importance of transient study, why inverter models are essential for studies
- Had an EDC only meeting to go over settings to be incorporated into checklist which was presented in the last meeting to developers
- Main objective to be finalized is the PSCAD item checklist and the setting checklist, tried to capture all requirements based on what has created issues in the past, near-ready to present to the wider TSRG group
- Asked developers and manufacturers to submit these checklists with their applications so that EDCs can start working on dynamic modeling faster than before
- PSCAD setting checklist makes sure key parameters are identified and required settings are implemented in inverter model, and that settings are easily identifiable in model and user guideline; believe that by submitting this package can reduce runtime of dynamic modeling and time spent getting models ready for analysis
- Suggest to make decisions contingent on receiving feedback from members, if any new concerns are raised in the future
- Kavita Ravi: Brian can you share this with your group to see if this is acceptable to them?
- KR: this is same model that is submitted for ASO studies, would be beneficial for developers to get this checklist approved by different manufacturers, then generic models could be used both in distribution and transmission studies
- MP: as group gets closer to having checklist ready to go, can send to me and I can send it to the members, don't need to wait until the next quarterly meeting

Area Networks group

- Group is still in learning stage on area network connections, since last meeting the group has also established a monthly EDC only group, trying to understand commonalities and differences of EDC members in group
- One objective going forward between EDC and developers is to host other utilities and learn from them regarding interconnection to area networks, next up is planning and identifying some recommendations
- Still in diagnosing stage, revising schedules for working groups (next milestone in November: identify areas of concern for current state processes)

Old Business items open floor:

- From last meeting: screening process adjustments (referencing some work that was done that TSRG with industry and utility input, had looked into what screening process was functionally and whether or not there could be some improvements there, screening process was written a long time ago and may need to be updated)
- Russ Aney
 - DPU has still not opened docket, said they are working on it
 - There's a second part of the screening process we came up with which is more of a planning process; one of the things we are recommending is that periodically the utilities are able to study feeder if X amount of projects or certain amount of MW have interconnected since most recent study was done, given chance to

Massachusetts TSRG Meeting Notes

review what has happened on feeder; want to get away from the straw that broke the camel's back with respect to secondary transformer costs (moving away from cost causation)

- Recalling what Kate Tohme said when we established ESIRG, mentioned DPU is working on collaborative language in tariff, will have order of notice to review interconnection standards to incorporate that language; hoping to move forward at least for simplified and expedited
- Would like to advance to DPU, have incorporated into next update to the interconnection tariff
- Expedited process: seems to have in effect dwindled away to nothing, seems like avoiding an impact study for non simplified project is becoming harder and harder to do, think we should review what is required for this; also will note that anyone that applies >25kW with ESS requires an impact study, which is difference between expedited and standard; a lot of projects are now being submitted with ESS, even those below 500kW are being required to have impact study and some are being pulled into group study; is there even an expedited track that still makes sense? Can we look at a threshold of 1 MWAC and below? Should try to get it as broad as possible, with certain constraints; once we have enabled large centers to accommodate more DG, would be good to explore options to expedite projects again
- KR: especially sensitive to this topic coming from Maine, allows level 2 projects to be expedited; what this is causing (since level 2 projects are not small) is significant MW moving ahead in queue
- RA: not suggesting them jumping ahead, but just having a shorter IX pathway, seems that the opportunity
- RA: trying to light the fire a little bit under the DPU to get the ESS tariff updates in
- Brian Ritzinger: encourage you to submit letter on this topic
- MP: don't think we need formal subgroup around this since we had done work on it in the past, can just let us know who want to be a part of this conversation, Russ to put time on calendar for interested parties to get together
- MP: want to talk about what are the technical challenges associated with expedited process, similar to what we did in the ESS discussion, conversation will probably lead into process steps
- Section 17 added to common guideline - significant versus moderate change
 - Reviewed in past meetings, will get posted to the website along with other clerical and administrative updates, couple of other comments coming from ESIRG
 - Individual EDCs to provide any company specific nuances on their respective website and or technical requirements

New Business – Grounding Bank sizing

- Ground Bank Sizing - Jonathan Demay (interconnection engineer at Bloom energy, has projects in both National Grid and Eversource)
- Problem statement: grounding transformer and equipment supply chain issues, coupled with uncertainty surrounding study scope and durations are leading to increased project risk (duration, cost, etc), particularly when partnering with commercial and industrial partners, when projects get sold/promises get made, uncertainty leads to increased risk
- Focus specifically on grounding banks, Bloom energy has several projects going on currently lumped into group study, the grounding lead time may delay
- Study completion timeline uncertainty driven by DG penetration levels, gating items are not allowing projects to order equipment in time to meet previous obligations; these factors are highly variable and having dramatic effect
- Asking for more flexibility in equipment ordering, with focus on grounding requirements and grounding banks and alternatives
- Technical background: utilities require effective grounding analysis to be performed as part of SIS, each have own technical references to follow
- National grid: anything over 500 kW requires effectively grounded system, part of initial review process as well as a requirement in the design; give a variety of different options that projects can go with

Massachusetts TSRG Meeting Notes

- Eversource: specifies DER over 1 MW, could also apply to projects with a smaller nameplate; criteria is specified in their technical requirements and similarly provides several options for projects
- One of the study outputs seen was utility gave frame size and %z, which leads to confusion; frame size should be considered as a function of longer-term continuous rating and unbalanced fault current, not as an input
- Biggest concern with going to a larger frame size is lead times
- Request to be able to use zig-zag transformers as well as larger frame size grounding banks to account for short term and long term ratings, flexibility to utilize neutral impedance with larger frame size
- Formal acceptance of these alternatives will help with flexibility given the current supply chain and utility study climate and assist with good equipment design practice
- MP: NG doesn't explicitly call out zigzag transformers as being acceptable, but it is seen as a valid method of grounding and can be used for projects
- JA: would it be helpful if we give impedance, impedance ratio, the nameplate you gave, and equivalent ohmic impedance? JG: yes that would be helpful, would help us mitigate equipment purchasing risk
- JA: has been a challenge, something P&C departments have to review in detail, from technical perspective its easiest to review when you're looking at all the settings but it's understandable when thinking of supply chains that you want the decision sooner; if we can say in a particular study that the ohms are acceptable, would be something that we could strive to do
- KR: when would you give this information? And when would it be most desirable? JG: as early as possible in the study process, know models have to be created first but would be good to know that there's an option for a formal approval so that we don't go ahead and order a transformer and then are told we can't use it, after we already order it
- JG: consensus here that as long as we can provide the calculations showing the equivalence, you (utilities) will approve the change?
- KR: worried about the timing aspect of this, by the time you finish the study there may not be equipment availability for what was spec'd
- JG: if you can design in a neutral impedance, can adjust it far easier than swapping the whole transformer out, as long as you design it in you can adjust it in the future, especially if you are phasing (?) the project
- MP: next steps, will take this back amongst EDCs and send out a follow up onto what the next path forward would be

Next meeting Sept 22nd 1pm-4pm.