

Participants:

John Bonazoli - Unitil	Brian Conroy – RLC Engineering	Mike Porcaro – National Grid
David Ferrante – National Grid	Will Kern – National Grid	Mat Biron
Russ Aney – Avid Solar	David Lovelady – National Grid	David Laplante – National Grid
Tim Roughan – National Grid	Nancy Israel – National Grid	Anas Alrifai – National Grid
Doug Denny Brown – Path Zero Energy	Brad Marszalkowski – ISO NE	Paul Krell - Unitil
Benjamin Piiru - Nexamp	Courtney Feeley Karp – Kalvens Law Group	Gerry Bingham – DOER
Eric Lorenze – Distributed Solar Development, LLC	Daniel Ghabre	Jeannie Amber - Eversource
Jens – Nexamp	Jeremy Kites – Until	Kavita Ravi – Bluewave Solar
Kat Cox-Arsalan – Borrego Energy	Noel Augustin - Eversource	Nachum Sadan – Grid Edge Networks
Nigam Trivedi – Bluewave Solar	Kyle Wallace - Sunrun	Lavelle Freeman Eversource
Mark Durrenberger – NE Clean Energy	Radha Soorya - Longroad Energy	Ruvini – National Grid
Shakir - Eversource	Steven Rymsha - Sunrun	Tony Morreale – LIG consultants
Sean Diamond – National Grid	Adam Houghton – Control Point	Robel Arega - Nexamp
Sanae Matsuki	Brian Lydic - IREC	

IEEE 1547 adoption subgroup

- Bulk system support requirements complete. Jeannie led the charge.
- Next is addressing implementation of Autonomous Grid support functions. Concentrating on the implementation of some reactive power functions. Plan for phase 2 in place. Several stakeholders are engaged. Interested in collecting the perspectives of TOs, other utilities in the country, Developer community, Inverter manufacturers, R&D labs like NREL and EPRI, other State working groups, Modeling.
- Kavita Ravi – What does Bulk system support mean? It is about trip and ride through settings. Applicable to DERs connected to DG. The impact to DG DERs is insignificant. Direct impact is to have uniform trip and ride through for all DERs in the ISO-NE territory. Working with EPRI to form an ISO-NE profile for these settings. The idea is that you can download a set of requirements and make it easy to implement to a device.
- Samer rather have a SMART inverter on the system than a dumb inverter.
- Inverter certifications may be delayed. UL1741sb is expected to be published in Sept. April is too early for inverters to be certified by. Subgroup will further consult with FIGII on the dates.

National Grid solar phase 2 – Volt/VAR function’s performance evaluation

- Two topics: 1) Tailoring IEEE 1547 recommended Smart inverter setting based on modeled Grid Performance
- Methodology – run load flows in CYME using 171 different curves. Score each curve for different violation categories. Implemented on two feeders. For first feeder, only National Grid sites

implement Volt-VAR. Study result showed that fixed power factor cannot be used. The only option was to install a regulator. With a SMART inverter the voltage regulator upgrade can be avoided. Second feeder: All sites implement the Volt-VAR same curves.

- Challenges – Computational power. 8 days of simulation for evaluating 171 curves. Computational user skill level. Current goal is to develop a more efficient algorithm for cutting down computational power and time. NGrid working with EPRI.
- Second topic – Voltage oscillations caused by Volt/VAR – EPRI is trying to develop a tool to help guide utilities on how to set the curves to avoid voltage oscillations. Faster open loop response times can help in damping oscillations.
- Will the same Volt/VAR curve be implemented system wide? National Grid is trying to answer this question.
- National Grid is working with EPRI on finding a speedier tool to determine site/feeder specific Volt/VAR curve.

Contingency planning for DERs connecting to DG

- *Eversource- N-1 planning criteria. Studying substations for N-1. Load and generation treated the same. All customers can be connected to the grid during a long lead time outages. DSS lines are designed for N-1 as well.*
- *National Grid – For DG studies for protections substation studies N-1 criteria. N-1 is applied at the feeder level.*
- *Unitil - Unitil does not use N-1 criteria for distribution planning. Planning criteria the same for loads and DERs. Unitil uses N-1 for 69kV.*
- Borrego – Was this standard changed recently? Eversource – The planning criteria has changed. It's driven by high DER penetration. It is based on the distribution planning criteria.
- Is this supposed to benefit the specific DG projects? Eversource -Both loads and generation have always studied for N-1 contingencies. Is the N-1 contingencies being provided for a very low probabilistic outage or seasonal switching? This is an important factor for DER.
- Borrego – Would each utility be able to identify the document/bulletin where the criteria to meet the N-1 planning standard for distribution is identified? – Unitil – The planning criteria is documented and presented to DPU. Unitil does not use N-1 criteria for distribution planning. Planning criteria the same for loads and DERs. Is the planning criteria available for the public to view? Unitil believes it is public information. As part of annual reliability reports it is provided to the DPU. Unitil uses N-1 for 69kV.
- Have the EDCs implemented or considered alternatively technology options to additional N-1 driven system modifications? (for load and/or DER) – Eversource – dynamic curtailment – not feasible due to complete curtailment of DER.
- Does the DPU have oversight over distribution planning criteria? How come two utilities have different standards? Each utility has to demonstrate how they meet reliability standards.
- DG is essentially different than load.
- Historically DG has asked for N-0.
- Does ISO-NE dictate reliability requirements for DER? – Requirements such as ride-through. They can impose performance standards for compliance of FERC orders and ensuring bulk system reliability.

DER interconnection to Area networks.

- Can new technology help allow more Der penetration on the Area networks?
- Survey for topics is sent to the TSRG participants.
- Frequency of TSRG meetings – most participants happy with this
- Topics by rank – 1) Area networks, 2) Update of technical requirements of tariff screens, Dynamic modeling
- Separate subgroup for Area networks being suggested. National Grid and DOER would like to be included in the sub-group. Russ Aney to represent the developer community.
- Mike Porcaro will co-ordinate with Samer to figure out if a separate subgroup is required for Dynamic modeling
- Interconnection process improvements – To be tackled in a policy focused group similar to the TSRG. First meeting next week. First couple of meetings will be used to try to put together agenda.

Next topics:

SMART updates- DOER will not be presenting at the TSRG on this topic.

Group did not have any suggestions. TSRG will take suggestions over email.