Massachusetts Technical Standards Review Group (MTSRG)
Chair: Babak Enayati, National Grid
Vice-Chair: Michael Conway, Borrego Solar Systems
MTSRG Regular Meeting
Date: September 7, 2016
Time: 7:30AM-1PM
Location: National Grid office in Worcester, MA
939 Southbridge St.
Worcester, MA 01610
Room: Auditorium

**Roll Call**
Babak Enayati, Ngrid
Mike Conway, Borrego Solar
Reid Sprite, SourceOne
Nancy Stevens, DPU
Brian Ritzinger, DPU
Ghebre Daniel, DPU
Mike Porcaro, Ngrid
Jeannie Piekarz, Ngrid
Richard Gross
Mike Brigandi, Eversource (East)
Chris Riffle, Unitil
Cindy Janke, Eversource (West)
Tim Roughan, Ngrid
Laura Bickel, NGRid
Nachum Sadan, GridEdge

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Agenda
1) The meeting kick off by Babak and introduction 7:30AM-7:40AM

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2) IEEE 1547 full revision updates 7:40AM-8:40AM
We also need to start talking about how utilities are going to adopt the new version of the IEEE1547 standard.

Babak presentation on changes to power quality and ridethrough sections

- Language added regarding inter-harmonics (5Hz bin around integer harmonic)
- Harmonics are not currently being monitored by existing utility metering. If the utility has a suspicion that harmonics may be an issue.
- Utilities may perform harmonic spot-checks at certain points of the system based on the PV penetration
- Indicators of harmonics: cap-bank fusing blowing, one phase at a time. Excessive transformer heating when below 100% loading (moved to K-rated xfmrs). Customer complaints from users with motor loads and/or VFDs

- V-LG(faulted) / V-LL(nominal) = grounding coefficient, if the grounding coefficient is .8 or less, the system is effectively grounded

- New 1547 says that all DER must have the capability to regulate voltage, and utilities will decide whether they want to enable the functionality
- Language added - 44% Var generation at 20% of the Watt capability OR some other Watt level (designated by vendor), at which they can meet 44% var generation. Some vendors raised that at lower Watt levels, producing 44% VARs creates significant losses in the power electronics of the inverter, and decreases the life of the unit. Therefore, language was added to accommodate those vendors.
- 44% ~ 0.9 pf
- For rotating gen, will utilities look at the rating of the generator, or genset? **Genset.**

How utilities will adopt the 1547 standards

- 3 big changes: ride-through, voltage regulation, and power quality
    - Ride-through; capability and performance are mandatory
    - Voltage regulation; capability is mandatory, performance is at utility discretion
    - Power quality; impacts on the system, not a single generator. Utilities to apply as required

- Current modeling tools cannot capture ride-through. Can capture very limited voltage regulation (Cym)
- IEEE1547 live date ~ End of 2016, Feb 2017 for std to go out to ballot. Comment period is 3 months. Sept/Oct 2017 for final standard to be published

- When will UL1741 adopt the new 1547 testing standards?
    - 1741 is in a full revision to address Rule21/CA SIWG changes. October 2016 revision will address the Rule21 changes (voltage regulation) for inverters

- Will the new ride-through requirements, and the fact that ride-through is mandatory, impact interconnection costs because additional anti-islanding mitigation is needed?

- To what extent does the TSRG have authority to make decisions on adopting IEEE1547?
- Standard is not retro-active, so active projects do not need to comply with new ride-through capabilities.

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3) Eversource's PCC recloser requirements (500kW vs 1MW) 8:40AM to 9:00AM

Eversrouce focus group working on a two-year look-ahead

- DG on the network
- Flicker

PCC recloser threshold not being addressed right now
500kWac recloser is required regardless of the voltage class (500kWac for 4kV and also 500kWac for 23kV)
Operations input is driving the installation of more reclosers
Adjacent sites - some are changing hands later in the process, so Eversource West is apprehensive about using a single recloser to control multiple adjacent sites.

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4) NREL's presentation at the NY ITWG meeting regarding 9:00AM-9:30AM
anti-islanding protection and DTT requirements
http://www3.dps.ny.gov/W/PSCWeb.nsf/All/DEF2BF0A236B946F85257F71006AC98E?OpenDocument
click
on: Unintentional Islands in Power Systems Presentation

Can inverter vendors and/or IEEE1547 standardize on a single islanding detection methodology?

- This is the case in the Japan, but in the US, vendors use their own proprietary anti-islanding methodology
- Ngrid working with Solectria and Enphase to get Matlab Simulink modules for their inverters

3:1 ratio originated from an IEEE paper on synchronous and induction generators. Is not applicable to PV generation.
Eversource West is currently using this standard for mixed generation, and a 2:1 load:gen ratio for PV-online

Eversource is exploring this with their DG task force.
**Action Item: Eversource to deliver periodic updates of their company-wide DG task force.**

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5) Break 9:30AM-9:45AM

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6) Status update on National Grid's Solar Phase II program 9:45M-10:15AM
and schedule a smart inverter solar facility tour

One more site energized, 670kW in Attleboro
Coordinating with EPRI to develop test plan for volt/var functions
Test types

- Making sure functions work, and their impacts on the grid
- Resolve interconnection questions and concerns

How is Ngrid going to test islanding/protection? Fault Simulation?

- MIT Lincoln Lab has a Hardware in the Loop facility to test actual inverter controllers

Ngrid interesting in hosting a TSRG tour of one of the Phase 2 sites.

- TSRG members are interested
- **10/6** at 100 Groton Rd, Shirley, MA

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7) Discuss the TSRG bylaws, the 2017 members, and the 10:15AM-11:15AM
leadership team

2017 Chair, Mike Brigandi
2017 Vice Chair, Reid Sprite

Do we want to add more members? Wind? Continue as-is?
DPU - industry side to discuss adding members

- Add a position for the past Chair on the leadership team to maintain continuity.
- A one-year position for transition with the new Chair

Additional edits
- Bylaw says semi-annual, not quarterly (in the document twice)
- Adding other industry membership
    - Hydro, biomass, anaerobic digesters a possibility?
    - Energy storage

Process
- Redline of bylaw needs to be posted one week in advance of next meeting
- Eversource to keep 2 representatives
- Eversource encouraged to bring more representatives (system planning, etc)

**Action items:**
Babak to request ability to deliver IEEE1547 updates and attend meetings for the next near.
Subgroup - Mike C, Reid, Babak and Mike B to work on bylaw edits. Target 10/1
- Mike to step up a webex for subgroup

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8) Break 11:15AM-11:25AM

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9) GridEdge DTT status/technology update 11:25AM-12:10PM

Presentation by Nachum Sadan of GridEdge

WMECO - preferred solution for DTT applications
NSTAR - piloting
National Grid - piloting
Unitil - piloting

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10) Open technical discussions 12:10PM-12:40PM

EPRI tool evaluates the value of storage under different scenarios
- Peak shaving, ancillary benefits, etc
- Enter rates, feeder load data - tool evaluates amount of storage you can put on storage or substation
- Presentation of the tool at next meeting?

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11) Discuss the December 2016 meeting agenda and the date 12:40PM-1PM

12/2/16, 7:30am - 1pm, Worcester NGrid
- Bylaw review
- Energy Storage DOER report
- Ngrid Solar Phase II test plan