



# STATE OF CONNECTICUT

## PUBLIC UTILITIES REGULATORY AUTHORITY

### CONNECTICUT DISTRIBUTED GENERATION WORKING GROUP – NONRESIDENTIAL INTERCONNECTION GUIDELINES SUBCOMMITTEE

#### MEETING AGENDA

Tuesday, January 10, 2023  
9:00 AM – 10:00 AM

Location: Microsoft Teams

#### **Proposed Updates to Exhibit B – Generator Interconnection Technical Requirements**

- The meeting began with Zak going through the revisions to Exhibit B, which were proposed by Joe Debs and Joe Marranca of Eversource and UI, respectively.
- Section 2.5 was proposed to be moved to the Fast Track and Study guidelines because it is not technical in nature
- Section 3.2.3 needs to be updated because it was drafted in 2007 and needs to better reflect current IEEE-1547 standards
- Joe Debs mentioned that the voltage regulations need to be updated. MA TSRG is looking at standards. Goal is to allow projects to avoid upgrade through curtailment
- Mrinmayee Kale of New Leaf Energy stated that New York utilities currently have their own settings for volt var
- Jon Demay mentioned that California rule 21 could also provide a useful reference point
- Joe Debs stated that Eversource has some experience with this issue with respect to 20MW projects in their territory
- Mrinmayee stated that we need to be whichever state we look to for examples, we need to be sure that their DG profiles are similar. For example, MA has lots of community solar of 1-5MW; the California systems were too different for MA to adopt CA rules, whereas the NY utilities are more similar to MA (except maybe ConEd)
- Sections 3.2.3 – plan is to remove the table and instead refer to standard equipment ratings; also want to avoid conflict with service guidelines
- Section 3.5 needs to be expanded to include effective grounding requirements
- Section 4.8 is being made more generic to include more anti-islanding options than just direct transfer trip
  - Jon Demay requested that the utilities consider using a single machine equivalent for PSCAD purposes rather than requiring two models if the project utilizes two inverters, even if they're run under the same settings
- Mrinmayee asked whether the utilities are using Sandia 2012 screens
  - Joe Debs confirmed that Eversource is using them but just needs to update the guidelines to reflect that

- Mrinmayee also informed the group of the Sandia study in 2018, which the EDCs could use to update screens and potentially eliminate the need for PSCAD studies
  - Joe stated that Eversource uses those conclusions in its analysis
- Jon Demay explained that UL1741SB inverters have additional capabilities and that New York has granted certain exceptions for projects utilizing those inverters with respect to overvoltage, effective grounding, and anti-islanding
- Joe Debs stated that Eversource currently has the same ride-through standards as ISO/MA-TSRG but the guidelines need to be updated to reflect that fact
- Joe and Joe suggested that metering standards be removed from Exhibit B as they are more affected by tariff requirements
- Group will consider adding DERM requirement
- Appendix C is going to be moved to the web to allow for easier updating

### **Energy Storage Discussion**

- Chris Arpin gave background on some of the concerns raised in Docket 22-08-05, such as how storage projects are modeled (worst-case scenario vs. as operated)
- Pete Falcier of Endurant stated that he works primarily in NY but that Endurant is looking to expand their presence in NY and discussed whether there should be different treatment for FtM and BtM and whether there should be an additional hybrid category
- Joe Debs stated that it's important for developers to indicate to the EDCs how the project will be operated so that they can appropriately model the system. For example, a project that discharges during peak load and charges off-peak will have a different impact than a project with no restrictions
- Brian from Endurant stated that in Connecticut, most storage projects' operations tend to line up with the incentive programs
- Pete asked whether storage systems needed to be modeled to the full nameplate capacity of the inverter or whether there can be self-imposed limitations and whether those limitations can be software or hardware based. Pete stated that the guidelines should be updated to instruct developers on how the limitations can be achieved and how to submit that type of request
  - Joe Debs responded that we need to differentiate between thermal rating and voltage impacts. Hardware solutions may be required for some but not other types of issues. Hardware solutions could involve reverse power flow equipment rather than full transformer upgrades
  - Brian stated that NY is already starting to issue guidance on these issues
  - Joe replied that he will look at the NY language
- Ed Kranich asked whether the current studies are based on maximum output as well as timing
  - Joe confirmed that is the case; there may be load restrictions during certain times of the day
- Ed stated that hardware restrictions could help with managing output and timing of discharge could be likely be managed via software. We will also need to consider enforcement of voluntary curtailment. How to ensure the project is operated as studied?

- Pete described how NY rules have evolved over the past few years, trending towards allowing more inverter-based solutions.
  - Endurant is currently working on a demo project with ConEd, utilizing outboard inverters
- Pete also talked about how developers in New York have been reluctant to turn over dispatch strategy because it could give away their business strategy. He thinks this will be less of an issue in CT because so much of the project operation is determined by the tariff incentives
- Pete also discussed how NY is allowing storage projects to participate in state programs as well as the ISO market
- Mrinmayee discussed the challenges of operating in MA. Certain programs are targeting heavily loaded circuits but those circuits lack the charging capacity to support the project. Flexibility for developers is important
- The group then discussed protection and control schemes for battery storage
  - Joe Debs stated that the considerations are generally the same except that unlike other DERs, storage charges and discharges to the grid. Joe will examine what other states are doing but in the case that a project doesn't have any operational restrictions, it needs to be modeled for the worst-case scenario.
- Rob Windell of CPower stated that there are a number of factors that determine use cases but the time(s) a system will charge should be able to be fairly well documented due to the measurable financial impact of time of use rates
- Sergio Carrillo added that the incentives of the storage programs also dictate when a storage system is likely to discharge
- Pete asked about using the hosting capacity maps (HCMs) for determining locations for storage projects and whether ISO information is included on the HCMs
  - Joe Debs responded that the HCM is optimized for solar PV and will have to be updated/redesigned for storage
  - He also confirmed that the Eversource HCM provides info on the ASO studies at the substations
- Kavita stated that there aren't any other states that are currently handling storage perfectly so Connecticut shouldn't be afraid of taking a leadership role in the storage sector