

DER Report

03/13/20

NY ITWG – Interconnection Technical Working Group

The ITWG hosted 2 smart inverter technical webinars:

- **Part 1 was held on 2/26/20**
 - A planned presentation by NREL was postponed to a future date.
 - A presentation by Power Electronics (Major international supplier)
 - Located in Phoenix – biggest US company
 - Review of IEEE 1547 evolution
 - 2003 – shall not regulate voltage
 - 2008 – may regulate voltage and provide freq response as well as may ride through
 - 2018 - shall do above plus may provide inertial response
 - Inverter evolution
 - NEC 2005-2011 - 2 generations ranging from 500 KW to 2 MW
 - NEC 2017 – adoption of 1500 Vdc systems from 2 to 3.5 MW
 - Detailed presentation of smart inverter functions
 - Volt/VAR
 - Volt/watt
 - Voltage ride through
 - Frequency ride through
 - Discussion of autonomous vs coordinated response via SCADA controller
 - Website for Power Electronics – “ power-electronics.com”
- **Part 2 was held on 3/4/20** – this was recorded
 - **Presentation by National Grid** – Samar Arafa - overview and experience gained with their solar programs
 - 2009 received Mass DPU approval to own and operate solar
 - 6 sites ranging from 225 kW to 1250 kW
 - 2012 upgraded inverters to advanced – field upgrades not easy
 - Phase I – explored functions: volt/var, pf control, connect/disconnect, power curtailment volt-watt and voltage ride through
 - Phase II – research labs invited, closed loop control functions, energy storage included
 - Volt/var control good for regulating voltage , constant pf control not
 - The good:
 - Advanced functions will improve PQ
 - Only need a handful of functions – more is not better

- The bad:
 - Obtaining short circuit models has been a struggle
 - Example – how does model respond to single phase faults?
 - Not all PSCAD models have been validated
 - If plant level control, be sure and include integration testing
 - Expect communication issues
 - 1 minute data sampling too slow
 - Field upgrades difficult, consider DVAR (STATCOM) for circuit voltage regulation
- **Presentation by EPRI** – Tom Key, Devin Van Zandt
 - The focus is providing answers to question list developed by NY TOs and ITWG participants
 - What are smart inverter functions?
 - How do utilities evaluate and use smart inverters?
 - How do smart inverter functions impact developers?
 - The presentation provides detailed answers to all questions raised by the TOs. The presentation (available on ITWG website) provides some excellent reference information:
 - Comparison of existing standards, state/PUC rules/ and listing of IEEE certification standards
 - How California and Hawaii standardized their settings over entire service territory
 - Common misinterpretations of IEEE 1547-2018
 - Reactive power functions support all utility needs – utility may need to add reactive resources to maintain substation power factor
 - All voltage related functions can be enabled simultaneously
 - NY utilities are not yet using any advanced functions – a lot of coordination between regulators, the NYISO and the TO's will be required in the future – this webinar series is a good step in that direction!

NPCC – DER Forum 2/13

- Materials on NPCC.org
- Excellent presentation on NERC activities regarding inverter based resources by Ryan Quint

NERC

- Final Version Reliability Guideline: Bulk Power System reliability Perspectives on the Adoption of IEEE 1547-2018
- Draft Reliability Guideline: DER Data Collection
- Next SPIDER WG meeting May 12,13 at NERC

