

MICROGRID KNOWLEDGE™

2023 CONFERENCE

LIGHTS ON!

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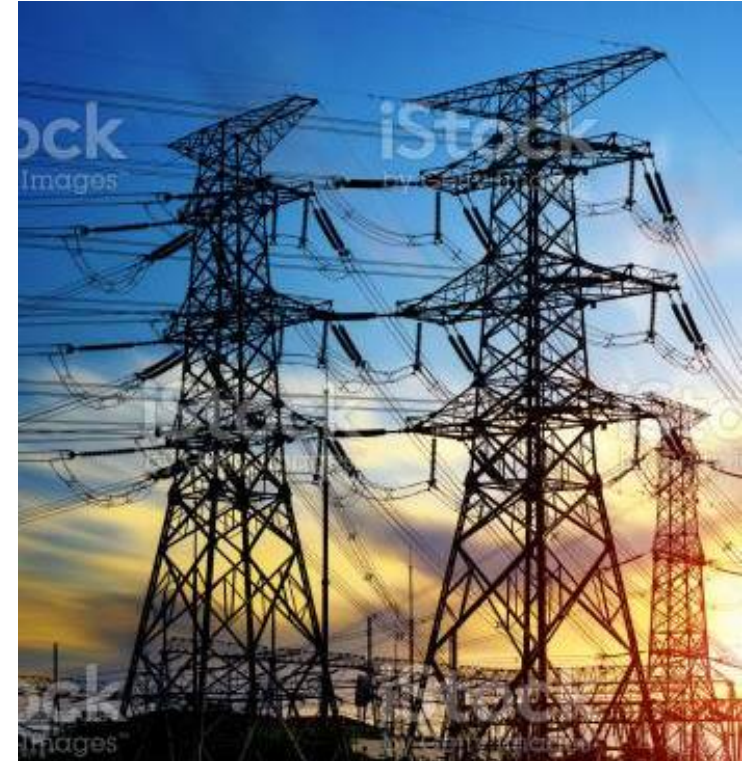
Microgrid – Component Level Safety Requirements

- PV
 - UL 1703 or UL 61730
- Energy Storage Systems
 - UL 9540 and UL 9540A
- Energy Conversion
 - UL 1741 and C22.2 No. 107.1
- DC EV Charger
 - UL 2202 and C22.2 No. 107.1
- AC EV Charger
 - UL 2594
- Energy Management Equipment
 - UL 916



Microgrid – System Level Safety and Interconnection Requirements

- Lack of standard addressing system level safety of entire microgrid
- Standards in development on Distributed Energy Resources (DER), related loads, and interaction with Electric Power System (EPS)
- UL 1741 SA main interconnection requirement used in combination with CA Rule 21 or another Source Requirement Document (SRD)
- States transitioning to UL 1741 SB for interconnection which references IEEE 1547.1:2020 as main SRD
- Timing has been adjusted for some states (CA delayed to August 2023)



Microgrid – V2G EV Charging Requirements

- UL 9741 developed to address bidirectional EV chargers
 - Combines requirements of UL 2202 and UL 1741
- Not currently referenced by utility interconnection requirements
- EV DC V2G would need to meet grid requirements of UL 1741 and IEEE 1547.1 for inverter part
- EV AC V2G has some current requirements and evolving regulations
 - SAE J3072 – Interconnection Requirements for Onboard, Grid Support Inverter Systems
 - UL 1741 Supplement C (SC) being developed to incorporate AC V2G

