Ameren Illinois Distributed Energy Resources | Bulletin 2023-1

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Microgrid Forming / Energy Storage System with Critical Loads / Backup Panel and Line (Supply) Side Taps

Ameren Illinois Company (AIC) has discovered recent DER applications that consist of line (supply) side taps with micro-grid forming and/or Energy Storage Systems (ESS) capabilities with a backed-up or "critical" loads panel separate from the main service panel. If not designed and installed in accordance with National Electrical Code (NEC) requirements, this configuration may overload the customer's electric service installation, Ameren metering equipment, and Ameren service conductors.

The supporting documentation for AIC allowing line side taps came from ***2020 NEC 230.82*** – *Equipment Connected to the Supply Side of Service Disconnect*. One of the categories listed in this article includes the following: *Solar photovoltaic systems, fuel systems, wind electric systems, energy storage systems, or interconnected electric power production sources.*

Most production sources listed eligible for line (supply) side taps will only reduce load seen on the service installation. However, line side taps for systems that incorporate a "critical" loads panel isolated from the main service panel potentially add load to the customer's service installation and AIC service conductors.

Transferring critical loads to a critical loads panel frees up available space in the existing main distribution panel and allows for new loads to be added. AIC does not have any ability (or visibility) to prevent the customer from adding loads within their load centers so long as it does not overload the main overcurrent device.

When adding a Line (Supply) Side Tap that has a critical loads panel as identified above, this will, in most cases, require the service installation ampacity to be upgraded. The incorporation of a critical loads panel means that the new service disconnect feeding the Renewables system is now a Main Service Disconnect, and it is therefore inappropriate to be labeled as the Lockable AC Generation Source Disconnect. Additionally, in accordance with ***NEC 230.72***, all disconnects of the same purpose shall be grouped together and on the same side of the wall (e.g.: main service disconnects). These shall be placarded as "EMERGENCY DISCONNECT / MAIN SERVICE DISCONNECT (1 OF 2)" and "EMERGENCY DISCONNECT / MAIN SERVICE DISCONNECT (2 OF 2)," etc.

The combined placard formerly calling out: "CAUTION: MULTIPLE SOURCES OF POWER – LOCKABLE AC GENERATION SOURCE DISCONNECT AVAILABLE FOR ISOLATION FROM UTILITY" shall be discontinued. This shall be replaced with separate placards, with one calling out "CAUTION: MULTIPLE SOURCES OF POWER" that will be required on each disconnect and adjacent to the utility revenue meter, if grouped separately. The other placard shall identify the type of disconnect. Examples include

EMERGENCY DISCONNECT / MAIN SERVICE DISCONNECT and EMERGENCY DISCONNECT / MAIN PV DISCONNECT for Line (Supply) Side connections. The letters on these placards must all be capitalized, with a minimum height of 3/8", and be white on a red background. All other power source disconnecting means (including standby generation) for the building or structure must be placarded with their proper name. If power source disconnecting means are more than 10 ft from the utility meter or the groupings of like type disconnects, there must be an aerial map placard denoting the location of each power source disconnecting means for the building or structure. The requirement for the map placard also applies to installations with groupings that are physically less than 10 ft apart but may not be visible from one standing location, such as opposite sides of the wall or around a corner.
For load side interconnections, the disconnecting means shall be placarded with the type of renewable source. Examples include PV SYSTEM DISCONNECT, WIND SYSTEM DISCONNECT, ENERGY STORAGE SYSTEM DISCONNECT, etc., leaving out references to MAIN, since these disconnects are interconnected on the load side.

If the Line (Supply) Side Tap serves only a Renewables source (e.g.: PV, Wind) without a critical loads panel, then the first disconnect after the Point of Interconnection will be placarded as "EMERGENCY DISCONNECT / MAIN PV DISCONNECT." Add (1 of 2) etc. when applicable.

If the Renewables system is using a Rapid Shutdown Device (RSD) that remotely controls both the renewables power source (such as PV, wind) and the ESS, then this device shall be placarded as "PV SYSTEM DISCONNECT – REMOTE CONTROL" or "ENERGY STORAGE SYSTEM DISCONNECT – REMOTE CONTROL" or "PV / ENERGY STORAGE SYSTEM DISCONNECT – REMOTE CONTROL".

Ensure that the Renewables configuration is in agreement with the NEC and Ameren Service Manual / interim DER Bulletin updates. Failure to adhere to these publications will prevent AIC from granting Permission to Operate (PTO) until corrections have been made. **Please contact renewablesillinois@ameren.com with questions.**

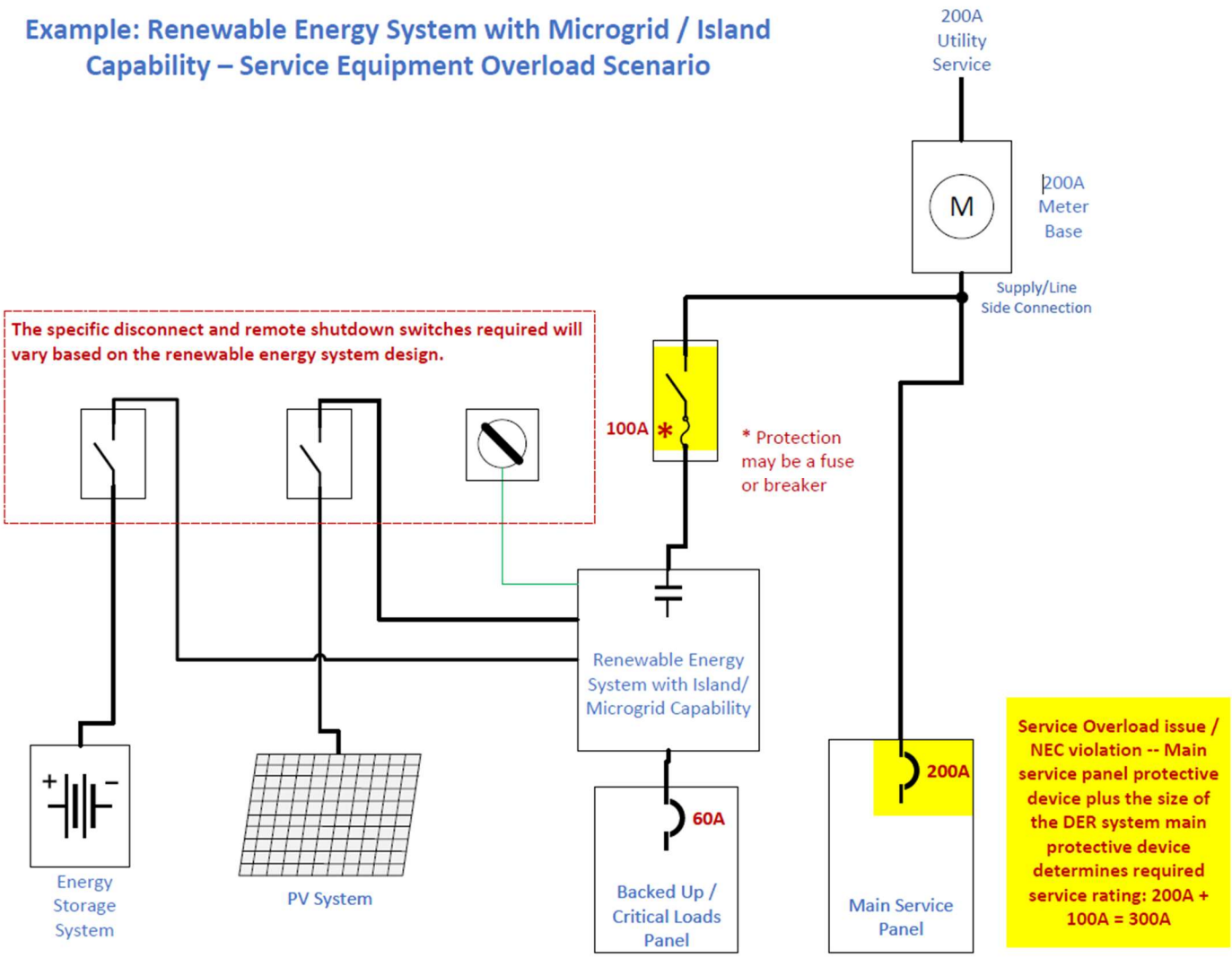

Figure 1: Depiction of a system that, if constructed as is, would be a violation of the NEC.

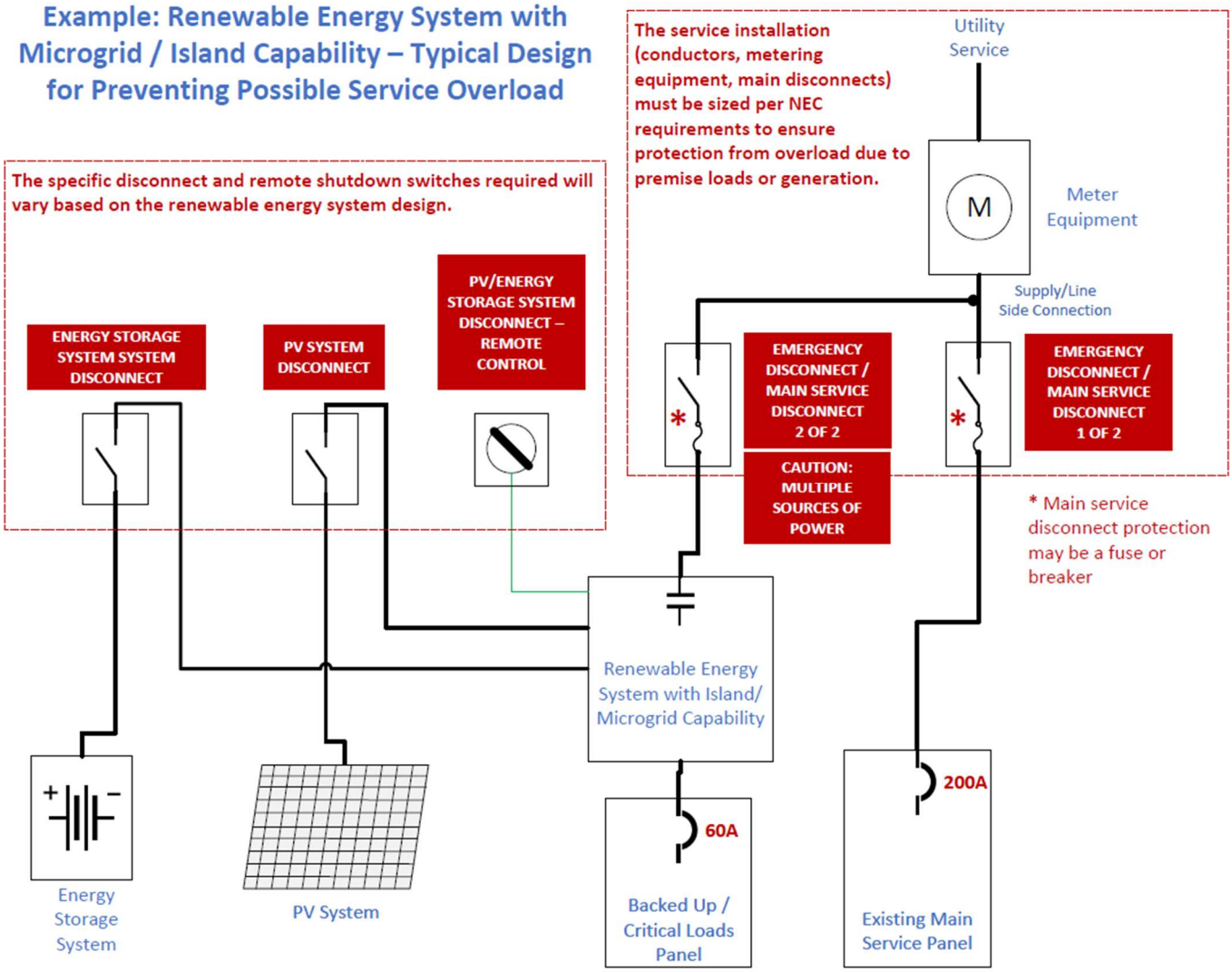

Figure 2: Depiction of a system that could fulfill NEC requirements and has the correct placarding, as is described above. Note: This is meant as an example, other options may exist.