

Generation Interconnection Protection Requirements

For generation greater than 40 kW connecting to 100 kV and below

Southern Illinois Power Cooperative (SIPC)

During a system disturbance, the Interconnection Customer's (IC's) generation protection shall isolate their generation from the SIPC system at the distribution voltage level. IC's generation shall not negatively impact SIPC's ability to serve other customers.

To ensure the continuity of the SIPC transmission system, the IC's protection may be required to detect and disconnect their generation from the SIPC system within 24 cycles of the initiation of any type of transmission fault or distribution voltage level fault. This will allow SIPC to properly attempt a timely reclose to restore power to SIPC load customers.

The following requirements apply to generation interconnecting to distribution (15 kV and below):

- SIPC will consider the installation of a Direct Transfer Trip (DTT) communication scheme to accomplish the disconnection of the IC's generation. In the DTT scheme, if the SIPC relays on either end of the transmission line operates, a DTT signal will be sent to the IC's protection scheme to disconnect generation from SIPC's system.
- The DTT scheme would be in addition to the IC's own protection. If communications are disabled, the IC should still be able to eventually disconnect from the SIPC system. At SIPC's discretion, 3V0 protection may be required to isolate for transmission faults for failed communications.
- IC generation equipment shall follow requirements from IEEE 1547-2018¹ regarding response to an abnormal condition to avoid unintentional islanding. Required responses to overvoltage could be required as fast as 0.16 seconds, based on the standard.
- Fiber communication will be required (alternate methods may be approved by SIPC in unique circumstances)

The following requirements apply to generation interconnecting to transmission (15 kV - 100 kV):

- Interconnect to switchyard and/or substation breaker or an on-site breaker station at a tap at the Point of Interconnection (POI)
- Required delta configuration on the transmission side of the interconnection transformation
- DTT will be required
- 3V0 may be required as determined during study process
- Fiber communication will be required
- IC generation equipment shall follow requirements from IEEE 2800-2022²

¹ Standard for Interconnection and Interoperability of Distributed Energy Resources with Associated Electric Power Systems Interfaces

² IEEE Standard for Interconnection and Interoperability of Inverter-Based Resources (IBRs) Interconnecting with Associated Transmission Electric Power Systems

- Transmission protection schemes outside of traditional overcurrent protection may be required.

The extent of the protection requirements will be evaluated on a case-by-case basis considering factors such as generation to load ratios, constructability, environmental issues, and economics. All costs associated with any of these requirements will be the responsibility of the IC. Additionally, all IC protection must be agreed upon and approved by SIPC and the associated distribution cooperative member.

As protection requirements are quickly and constantly evolving, SIPC reserves the right to change these specifications at any time in the future.