



Hydro One DER Transfer Trip Requirement Update

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Historical Transfer Trip Requirements

- **DER < 250kW** – does not require Transfer Trip
- **DER < 1MW** – Transfer Trip may be required if generation (without transfer trip) to min-load ratio exceeds 50% on the feeder
- **DER ≥ 1MW** – requires Transfer Trip
- Typical telecom design is using unlicensed radio or analog leased S4T4 (phone) line to communicate to the DER to meet the reliability and speed requirement (<200 ms trip).
- Typically Transfer Trip adds about 12 months to the DER interconnection timeline.

New transfer trip requirements

- After two pilot projects that were successful and have gone into service, Hydro One is ready to offer the new alternative to transfer trip for certain projects.
- Non-exporting inverter-based projects between 250 kW and 10 MW will not require traditional transfer trip if they are low penetration (total generation without transfer trip to load ratio below the SANDIA criteria based on CIA review) and including the following additional requirements are implemented (other requirements may apply):
 - Use a CSA 22.3 No. 9-2020 or UL 1741 SA (or greater) certified inverter
 - Provide ability for HONI to trip the DER's HVI/LVI & a DER Permit Service signal from DMS using standard SCADA communication. DGEO & LSBS are not required.
 - Increased protection requirements at the DER interface including faster fault clearing & instantaneous overvoltage protection
 - Additional protection requirements on the upstream Dx/Tx system: increased reclose time, voltage supervised reclosing (may require protection upgrades)
 - More stringent DER inter-tie protection review
 - Keep the existing requirement to have reverse power protection to ensure no real & reactive export
 - Provision for transfer trip is still required and it may be imposed in the future to ensure power system reliability

Rationale

- ✓ Transfer trip is still a reliable and trusted method to address TOV and islanding concerns, particularly for exporting projects and synchronous machines & may be imposed in certain cases
- ✓ The new additional requirements are intended to manage the risk and consequences of islanding and TOV with simpler to implement technical requirements
- ✓ The non-exporting inverter-based use case presents less risk of islanding than exporting DER as the certified inverter has active anti-islanding designed to detect an island in under 2 seconds & exporting power is not permitted.
 - ✓ Extending the upstream protection reclosing time to over 2 seconds and enabling voltage-supervised reclosing will reduce the risk of reclosing into an island out of sync.
 - ✓ The SCADA trip signal will only be used in power system contingencies (such as a persistent island) to allow the DMS Operator to take the DER offline safely
- ✓ The TOV risk is generally less for non-exporting inverters and by keeping the generation to load ratio low, the TOV risk is reduced.
 - ✓ If there still is a TOV condition, the new instantaneous over-voltage protection requirement will provide fast tripping to prevent equipment damage.

Next steps

- Pending final approval, Hydro One will offer the new transfer trip option to new applicants, DER applicants in the CIA stage and DER applicants that have not signed a connection agreement yet
- Hydro One will finalize and publish the new transfer trip requirements in a TIR bulletin to be released this year
- The new Hydro One TIR will include the revised transfer trip criteria among other improvements