

DISTRIBUTED ENERGY RESOURCES PROTECTION PHILOSOPHY CHECKLIST



This document is provided as a tool for proponents applying for the connection of distributed energy resources (DER) to the Welland Hydro's distribution system. Additional items and protection schemes may be required that are not outlined in this document.

1. Project Information

- ☐ Project Name;
- ☐ WHESC Project
- ☐ ID; Project
- ☐ Location; DER
- ☐ Type; Capacity;
- ☐ Supply; Station, Feeder Name.

2. Protection Requirements

- ☐ Breaker Fail Scheme and Timing;
- ☐ Phase and Ground Fault protection (internal and external);
- ☐ Open Phase Protection;
- ☐ Directional protection (current, power) (if applicable);
- ☐ Over/Under Frequency Protection;
- ☐ Over/Under Voltage Protection;
- ☐ Anti-Islanding Protection;
- ☐ Transfer-Trip (if applicable);
- ☐ Distributed Generator End Open (DGEO) (if applicable);
- ☐ Low Set Block Signal (LSBS) (if applicable);
- ☐ Protection Scheme Failure (if applicable);
- ☐ Disconnecting and Interrupting Device Details;
- ☐ Synchronization (if applicable);
- ☐ Automatic Reconnection of Generation and HV Ground Sources.

3. Tripping Matrix

Provide a tripping matrix in table format detailing which protection relays and associated circuit breakers trip for short circuits in all sections of the electrical system.

4. Distribution System Protection Coordination

Provide a description and details of protection coordination with the Welland Hydro's distribution system. Identify additional requirements for a protection coordination study with any upstream distribution protective devices and supply feeder breaker.

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5. Additional Documentation

Additional documentation may be required depending on the project type, application and protection scheme.

- ☐ Single Line Diagram;
- ☐ Overall description on how the protection will function;
- ☐ Description of failure modes;
- ☐ Detailed designs of the protection, control, teleprotection and telemetering schemes including equipment manufacturer and model number;
- ☐ Protection element settings (pickup, timers, etc.);
- ☐ Detail on backup supply to any critical equipment.

The DER Protection Philosophy will be examined during the construction stage of the project. Some protection requirement such as transfer trip may be identified at the Connection Impact Assessment stage of the project.