DISTRIBUTED ENERGY RESOURCES SYSTEM

PROTECTION REQUIREMENT SAMPLE

When submitting the Connection Impact Assessment form, Distributed Energy Resource (DER) customer is required to provide a detailed description in writing for the following system protection philosophy and schemes.

Relay Protection Scheme:

1. Breaker Fail Scheme and Timing
2. Phase and Ground Fault Protection
    - All internal faults, three phases and single phase to ground, within the DG Facility
    - All external faults, three phases and single phase to ground, on the interconnected feeder including single phase lateral taps
    - List detail relay protection Setting info, including but not limited to pickup vale, time dial (time delay) and protection curve selected
3. Open Phase Protection (3ph)
    - Method for detecting loss of voltage in one or more phases of Hydro One's distribution system and automatically cease to energize all phases from the interconnected system
    - Method for maintaining balanced 3-phase output under all operating conditions
4. Over Frequency/Under Frequency Protection per Table #1

Table #1 - Over/Under Frequency Protection Settings & Clearing Times

Frequency Range (Hz)	Clearing Time (s)
f > 62	0.16
f > 61.2	299.00
f < 58.8	299.00
f < 57	0.16

Source: CSA C22.3 #9-2020

5. Overvoltage/Undervoltage Protection per Table #2

Table #2 - Over/Under Voltage Protection Settings & Clearing Times

Voltage Range (% of Base Voltage)	Clearing Time (s)
V < 50	0.16
V < 88	2.00
V > 110	2.00
V ≥ 120	0.16

Source: CSA C22.3 #9-2020

6. Generator Reverse Power

   No back feed is allowed to Bluewater Power's system

7. Transfer Trip (> 500 kW, If applicable)
8. Protection Scheme Failures (If applicable)
9. Distributed Generator End Open (DGEO) (If applicable)
10. Low Set Block Signal (LSBS) (If applicable)
11. Anti-Islanding Protection
12. Disconnecting and Interrupting Device Details
13. Synchronization (If applicable)
14. Five (5) minutes time delay for connecting to Bluewater Power's distribution system
15. Control And Monitoring Requirements
    - Control Facilities
    - Operating Data, Telemetry and Monitoring
    - Telemetry Reporting Rates

Tripping Matrix:

Please include 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.

Protection Function	ANSI Code #	Equipment to be Tripped	Other Nots

Distribution System Protection Coordination:

Provide a description and details of protection coordination with the Bluewater Power distribution system. Identify additional requirements for a protection coordination study with any upstream distribution protective devices and supply feeder breaker, if requires.