

BULLETIN

1. **Bulletin ID #:** B-04-DT-10-015.R3

2. **Reference Document:** “Distributed Generation Technical Interconnection Requirements (TIR) Interconnections at voltages 50 kV and below”, *DT-10-015 R3, March 2013*, and all preceding versions - The original document published as *DT-10-015 R0, in November 2009*, and revised as *DT-10-015 R1, in February 2010* and as revised as *DT-10-015 R2 in June 2011*.

3. **Type:** Modification of Section 2.3.5 Single Phase Generators and Section 2.3.6 Three Phase Generators and modification of tables in Section 2.3.10 Over Frequency/Under Frequency Protection and Section 2.3.11 Overvoltage/Undervoltage Protection

4. **Release date:** April 30, 2021

5. **Effective date:** April 30, 2021

6. **Affected Section of The TIR:**

Section 2.3.5 Single Phase Generators, Section 2.3.6 Three Phase Generators, Section 2.3.10 Over Frequency/Under Frequency Protection and Section 2.3.11 Overvoltage/Undervoltage Protection

7. **Existing Requirement**

Section 2.3.5 – SINGLE PHASE GENERATORS

ii) Inverter type generators shall be compliant with CSA Standards, C 22.2-107.1 “General use Power Supply” and CAN/CSA 22.2 No 257-06 “Interconnecting inverter based micro distributed resources to distribution system” and bear a certification mark recognized by the Ontario Electrical Safety Code.

Section 2.3.6 – THREE PHASE GENERATORS

ii) Inverter type generators shall be compliant with CSA Standards, C 22.2-107.1 “General use Power Supply” and CAN/CSA 22.2 No 257-06 “Interconnecting inverter based micro distributed resources to distribution system” and bear a certification mark recognized by the Ontario Electrical Safety Code.

Section 2.3.10 – OVER FREQUENCY/UNDER FREQUENCY PROTECTIONS

Table 11: Over/Under Frequency Protection Set Points and Clearing Times

Generator Size	Frequency Range (Hz)	Clearing Times(s)*
≤ 30 kW	> 60.5	0.16
	< 59.3	0.16
> 30 kW	> 60.5	0.16
	< (59.8 – 57.0) - adjustable	Adjustable 0.166 to 300
	< 57.0	0.16

* Generators ≤ 30kW – Maximum clearing time

Source: IEEE 1547

* Generators > 30kW – Default clearing time

Section 2.3.11 – OVERVOLTAGE/UNDERVOLTAGE PROTECTION

Table 12: Over/Under Voltage Protection Setting and Clearing Time

Voltage Range (% of base voltage)	Clearing Time(s)*
$V < 50$	0.16
$50 \leq V < 88$	2.00
$110 < V < 120$	1.00
$V \geq 120$	0.16

* DG \leq 30 kW – Maximum clearing time

* DG $>$ 30 kW – Normal clearing time

Source: IEEE 1547

8. Modified Requirement

Section 2.3.5 – SINGLE PHASE GENERATORS

ii) Inverter type generators shall be compliant with CSA Standards, CSA 22.2 No. 107.1 “General use Power Supply” **and** CSA 22.3 No. 9-2020 “Interconnection of distributed energy resources and electricity supply systems” **and** bear a certification mark recognized by the Ontario Electrical Safety Code.

(a) in lieu of compliance with CSA 22.3 No. 9-2020 the inverter will be deemed acceptable if it achieves UL 1741 SA (2016 or later) certification

Section 2.3.6 – THREE PHASE GENERATORS

ii) Inverter type generators shall be compliant with CSA Standards, CSA 22.2 No. 107.1 “General use Power Supply” **and** CSA 22.3 No. 9-2020 “Interconnection of distributed energy resources and electricity supply systems” **and** bear a certification mark recognized by the Ontario Electrical Safety Code.

(a) in lieu of compliance with CSA 22.3 No. 9-2020 the inverter will be deemed acceptable if it achieves UL 1741 SA (2016 or later) certification

Section 2.3.10 – OVER FREQUENCY/UNDER FREQUENCY PROTECTIONS

Table 11: Over/Under Frequency Protection Set Points and Clearing Times

Frequency Range (Hz)	Clearing Time(s)
$f > 62$	0.16
$f > 61.2$	299
$f < 58.8$	299
$f < 57$	0.16

Source: CSA C22.3 #9:2020

- Table 11 applies to all exporting and non-exporting DG, including Distributed Energy Resources (DER) such as load displacement generation and energy storage systems.
- Inverters will be required to demonstrate ride-through capability. This can be accomplished by adopting and being compliant with CSA 22.3 No. 9-2020 requirements or through UL 1741 SA (2016 or later) certification.

Section 2.3.11 – OVERVOLTAGE/UNDERVOLTAGE PROTECTION

Table 12: Over/Under Voltage Protection Settings and Clearing Times

Voltage Range (% of base voltage)	Clearing Time(s)
V < 50	0.16
V < 88	2.00
V > 110	1.00
V ≥ 120	0.16

Source: CSA C22.3 #9:2020.

- Table 12 applies to all exporting and non-exporting DG, including Distributed Energy Resources (DER) such as load displacement generation and energy storage systems.
- Inverters will be required to demonstrate ride-through capability. This can be accomplished by adopting and being compliant with CSA 22.3 No. 9-2020 requirements or through UL 1741 SA (2016 or later) certification.

9. Background and Reason:

Hydro One is modifying performance requirements for all exporting and non-exporting DG connected to the Distribution System to require ride-through for transmission disturbances. This is in line with new industry practice and as identified in updated standards CSA 22.3 No. 9-2020 and UL 1741 SA (2016 or later). This bulletin incorporates the performance requirements as reflected in the over/under frequency protection set points and clearing times as well as the over/under voltage protection settings and clearing times.

DGs that are already connected shall remain subject to the protection settings that were in effect at the time of their authorization to connect (the date the CIA or DTCA was issued). Those original protection settings shall prevail until the DG is replaced or substantially modified, at which time the DG shall be required to meet the new applicable performance requirements including the protection settings detailed in this bulletin.

If you have questions related to this bulletin, please contact:

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