DISTRIBUTION CODE MODIFICATION PROPOSAL FORM

Modification Proposal submitted By:	**DATE OF SUBMISSION OF PROPOSAL:**	**Modification Proposal Number:** *(to be assigned by Review Panel Secretary)*
Stephen Walsh	Feb 2015	#34c

CONTACT DETAILS FOR MODIFICATION PROPOSAL ORIGINATOR: (IF NOT DISTRIBUTION CODE REVIEW PANEL

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MODIFICATION PROPOSAL TITLE:	Higher and Lower Voltage limits for fault ride-through for all generators.

DISTRIBUTION CODE SECTION(S) AFFECTED BY PROPOSAL

1. **DCC10.5 – Add 2 moved sections from 10.10.1.1 as (k) to (l)**
2. **DCC10.10.1.1 – Move section (f) and (h)**
3. **DCC10.10.1.1 f) – corrected to refer to Table 6A as well as being moved to 10.5 (k)**

MODIFICATION PROPOSAL DESCRIPTION *(Clearly state the desired amendment and all text changes. Attach further information if necessary)*

The requirement for generators to remain connected during system disturbances will apply to all generators at any connection level. This is to ensure overall system stability when a significant proportion of the total generation may be delivered by Embedded Generators. The existing connected embedded generation should be exempt from this as there are a large number of small customers that would find mandatory compliance onerous.

These requirements had previously been specified for 110kV connections >2MW. This requirement will be applied to all generators by moving those clauses from the 110kV section (10.10.1.1) to the common generator section 10.5.1 This will include small wind generators not covered by DCC11 and all non-wind below 2 MW 110kV connected generators except for generator less than 100kW, **Automatic Mains Failure Mode** or **Lopping Mode** connections in the fault ride through requirement.

The voltage step changes had referred to non-existent section 8.3.8.3.2 instead of table 6A and this has been corrected.

The voltage dip requirement has been changed to be consistent with the Grid Code requirements. although it should be noted that longer voltage dips will occur on the Distribution System due to slower fault clearing times than on the Transmission System.

Proposed new text;

DCC10.5 After Table 5 in 10.5.1 f)

k. Each Generation Unit shall, as a minimum, remain synchronised to the **Distribution System** at normal rated output at **Distribution System** voltages within the ranges in Table 6A for **Step Changes** in the **Distribution System** voltage of up to 10%. This requirement does not apply for generator less than 100kW, **Automatic Mains Failure Mode** or **Lopping Mode** connections;

l. Each Generation Unit shall, as a minimum, rremain synchronised during **Voltage Dips** at the **HV** terminals of the **Generator** transformer of 95% of nominal voltage (5% retained) for a duration of 150 milliseconds and remain synchronised during **Voltage Dips** at the **HV** terminals of the **Generator** transformer of 50% of nominal voltage (50% retained) for a duration of 450 milliseconds. This requirement does not apply for generators less than 100kW, **Automatic Mains Failure Mode** or **Lopping Mode** connections; ;

Proposed Deleted Text;

DCC10.10.1.1 Each Generation Unit shall, as a minimum, have the following capabilities:

f. Remain synchronised to the **Distribution System** at normal rated output at **Distribution System** voltages within the ranges in **DCC**8.3.8.3.2 for **Step Changes** in the **Distribution System** voltage of up to 10%.

g.

h. Remain synchronised during **Voltage Dips** at the **HV** terminals of the **Generator** transformer of 95% of nominal voltage (5% retained) for a duration of 0.6 seconds;

MODIFICATION PROPOSAL JUSTIFICATION *(Clearly state the reason for the modification. Attach further information if necessary)*

The purpose of this modification is to ensure that Users of the Distribution System have the capability to stay connected during faults where the Voltage may vary within a wide range. This will facilitate having greater amounts of embedded generation on the Network. To avoid cascade tripping Users must stay connected during a fault elsewhere on the system. The existing small embedded generation comprises of a large number of small customers that would find mandatory compliance onerous.

The Voltage Dip is being changed to be consistent with the Grid Code. This is to avoid cascade tripping as described above. However on the Distribution System voltage dips will last longer at 38kV and below due to slower fault clearing times. This means that generators on a particular node may trip during short circuit faults. The system planning rules allow for this.

IMPLICATIONS OF NOT IMPLEMENTING THIS MODIFICATION

The implication of not having Distribution Users compliant is that there will be limits on the amount of embedded generation to prevent cascade tripping during faults. Alternatively expensive constraints will have to be incurred keeping sufficient spinning reserve to replace generators which trip during a system disturbance.

PLEASE SUBMIT MODIFICATION PROPOSALS TO THE PANEL SECRETARY BY E-MAIL TO: DISTCODEPANEL@MAIL.ESB.IE