

DISTRIBUTION CODE MODIFICATION PROPOSAL FORM

Modification Proposal submitted By:	DATE OF SUBMISSION OF PROPOSAL:	Modification Proposal Number: <i>(to be assigned by Review Panel Secretary)</i>
Tony Hearne	31.08.2021	#54

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

NAME: Tony Hearne	TELEPHONE NUMBER: 087 2238855
--------------------------	---

E-MAIL ADDRESS:	tony.hearne@esb.ie
------------------------	--------------------

MODIFICATION PROPOSAL TITLE:	Housekeeping and correction of transcription errors relating to Reactive Power requirements
-------------------------------------	---

DISTRIBUTION CODE SECTION(S) AFFECTED BY PROPOSAL

1. Table 9
2. Table 9x
3. DCC11.4.2.1
4. DC11.4.2 and DCC11.4.4
5. DCC11.5.1.1

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

In version 6, the rows shown below were under a common grouping called "Voltage".

Participation	DCC11.4	All	≥5 MW	N/A	N/A	N/A
VOLTAGE						
Voltage Control	DCC11.4 DCC11.5.2.3	All	≥5 MW	N/A	N/A	N/A
Voltage Range	DCC11.4.2.1	All	N/A	N/A	N/A	N/A
Power Factor	DCC11.4.3	N/A	<5 MW	All	All	All
Reactive Power Range	DCC11.4.5	All	≥5 MW	N/A	N/A	N/A
SIGNALS/COMMUNICATIONS/CONTROL						

In moving from V6 to V7, these were further split into two groupings of "Voltage and "Reactive Power". See this section of Table 9, as published in V7.

Mode ⁴	DCC11.4	All	≥5 MW	N/A	N/A	N/A
VOLTAGE						
Voltage Control	DCC11.4 DCC11.6.2.3	All	≥5 MW	N/A	N/A	N/A
Voltage Range	DCC11.4.2.1	All	N/A	N/A	N/A	N/A
Power Factor	DCC11.4.3	N/A	< 5MW	All	All	All
Reactive Power Range	DCC11.4.5	All	≥5 MW	N/A	N/A	N/A
REACTIVE POWER						
Power Factor Range	DCC11.5.1.1	N/A	< 5MW	All	All	All
Power Factor Range	DCC11.5.1.2	N/A	N/A	N/A	N/A	All
Reactive Power Range	DCC11.5.2	All	≥5 MW	N/A	N/A	N/A
Reactive Power Control Modes³	DCC11.5.3	≥5 MW	≥5 MW	≥5 MW	≥5 MW	≥5 MW
SIGNALS/COMMUNICATIONS/CONTROL						
Signal List 1	DCC11.6.1.1	All	≥1 MW	≥1 MW	N/A	N/A

However, the bottom two rows [highlighted above in red] of the Voltage section, should not be there at all, as they are a repeat of the corresponding rows in the section below, and with an out of date reference.

In addition, in Table 9x, this change was not made at all.

Therefore, in order to correct these errors, the relevant rows in both Tables 9 and Table 9X, should look like this;

VOLTAGE						
Voltage Control	DCC11.4	All	<u>≥5 MW</u>	N/A	N/A	N/A
	DCC11.6.2.3					
Voltage Range	DCC11.4.2.1	All	N/A	N/A	N/A	N/A
REACTIVE POWER						
Power Factor Range	DCC11.5.1.1	N/A	< 5MW	All	All	All
Power Factor Range	DCC11.5.1.2	N/A	N/A	N/A	N/A	All
Reactive Power Range	DCC11.5.2	All	<u>≥5 MW</u>	N/A	N/A	N/A
Reactive Power Control Modes ¹	DCC11.5.3	<u>≥5 MW</u>	<u>≥5 MW</u>	<u>≥5 MW</u>	<u>≥5 MW</u>	<u>≥5 MW</u>

In addition, upon review it has also been noticed that in DD11.4.2.1, there is an incorrect reference to *Figure 14*, which should actually be *Table 13*.

DCC11.4.2 Additional Requirements for Topology 1 Controllable PPM's

DCC11.4.2.1 DSO Topology 1 **Controllable PPM's** irrespective of **Maximum Capacity** shall remain continuously connected at maximum **Available Active Power** or **Controlled Active-Power** output for normal and disturbed system conditions and for **Step Changes** in voltage of up to 10%. The ranges that may arise during disturbances or following faults are given in Figure 14-Table 13

It has also been pointed out that there is a dis-continuity between DCC11.4.2 and DCC11.4.4.

The content of what had been DCC11.4.4, including subsections have now been re-labelled as DCC11.4.3, and so on.

DCC11.4.2 Additional Requirements for Topology 1 Controllable PPM's

DCC11.4.2.1 DSO Topology 1 Controllable PPM's irrespective of Maximum Capacity shall remain continuously connected at maximum Available Active Power or Controlled Active-Power output for normal and disturbed system conditions and for Step Changes in voltage of up to 10%. The ranges that may arise during disturbances or following faults are given in Figure 14, Table 13.

DCC11.4.34 Topology 1 Controllable PPM's 110kV Step-up Transformer

DCC11.4.34.1 The 110kV step-up transformer shall be designed such that the Reactive Power capability is possible over the full range of 110kV voltage specified in Figure 15.

DCC11.4.34.2 Each 110kV step-up transformer shall have on-load tap changing facilities. The tap step shall not alter the voltage ratio at the HV terminals by more than 2.5% or as agreed with the DSO.

DCC11.4.34.3 110kV step-up transformers shall be connected either:

- In delta on the Low Voltage side and in star (with the star point or neutral brought out) on the High Voltage side; or

DOC-270820-FWB

Page 62

Version 7.0 August 2020

- In star on both higher and Low Voltage sides with a delta tertiary winding provided.

DCC11.4.34.4 Provision should be made for the Earthing of the 110kV neutral of any transformer connected to the 110kV system by bringing out the neutral and ensuring that the insulation is such that the transformer can be operated unearthed.

DCC11.5 REACTIVE POWER REQUIREMENTS

It has also been pointed out that although it is clear from the Applicability Matrices, that the same requirements that apply to Topology 3, also apply to Topology 2A, in DCC11.5.1, explicit references to the Topologies is made. In the interests of consistency and clarity for the reader, it is also proposed therefore, to add reference to Topology 2A in the same text, as shown below.

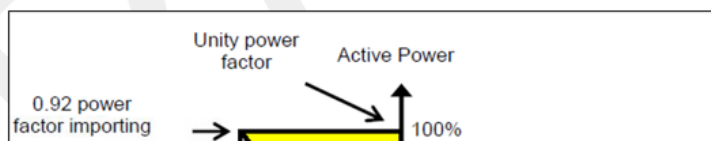
DCC11.5 REACTIVE POWER REQUIREMENTS

DCC11.5.1 Power Factor Range

For avoidance of doubt, at power levels of less than 12% of **Registered Capacity**, the **Reactive Power** at the **Connection Point** can vary up to a maximum of 12% of – the **Registered Capacity** value, expressed in MVAR [importing VARs]. This power factor range is illustrated in Figures 17 and 18.

DCC11.5.1.1 Topologies 2, 2A, 3 & 4

DSO topology 2A, 3 & 4 **Controllable PPM's** irrespective of **Registered Capacity** and **DSO** topology 2 **Controllable PPM's** with **Registered Capacity** <5MW, shall have a settable power factor in the range of 0.92, such that vars are absorbed by the **PPM** from the **Distribution System**, and unity, as measured at the **Connection Point**. This power factor range is illustrated in Figure 17. The setting shall be specified by the **DSO** at least 120 business days prior to the **PPM's** scheduled operational date. The **PPM** shall be responsible for implementing the appropriate settings during **Commissioning**. The power factor setting may be varied from time to time depending on system needs. The **DSO** shall give the **PPM** a minimum of two weeks' notice if a change is required or an agreed date for the change to be implemented by the **PPM**. The **PPM** shall formally confirm that any requested changes have been implemented within two weeks of receiving the **DSO's** formal request or on the date agreed with the **DSO**, as appropriate.



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

Some industry representatives have pointed to and asked for clarification of, some inconsistencies in the layout of requirements for reactive power / voltage control in both Tables 9 and 9x in Version 7. Upon review, transcription errors in the move from V6 to V7 have come to light, which give rise to these issues.

IMPLICATIONS OF NOT IMPLEMENTING THIS MODIFICATION

The confusion caused by the transcription errors among customers will continue.

PLEASE SUBMIT MODIFICATION PROPOSALS TO THE PANEL SECRETARY BY E-MAIL TO: DistCodePanel@mail.esb.ie

