

**Grid Code
Modification
Recommendation Form**



Title of Recommended Proposal:

Clarification of PC.A8.2 and housekeeping of PC.A.5

MPID: MPID 284

Date: 11 August 2020

Recommended at GCRP Meeting No.: 02 July 2020

Grid Code Version: 8.0

Grid Code Section(s) Impacted by Recommended Proposal: PC.A8.2, PC.A8.5

The Reason for the Recommended Modification:

PC.A8.2 refers to dynamic model details that are captured in documents external to the Grid Code. These documents have always been external to the Grid Code. This proposed modification is intended to remove the ambiguity that these documents are specified in the Grid Code.

In addition, some commas have been removed from PC.A8.2, as they appeared to suggest more than one dynamic model is required.

There are also some typos in section PC.A8.5 that give incorrect references to other sections of the Grid Code. We propose that we remedy the incorrect references as part of this proposed modification.

Finally, as part of the implementation of the European Network Codes, the supplementary documentation has been reviewed and will be published on the relevant section of the EirGrid website.

History of Progression through GCRPs, Working Group and/or Consultation:

On the 2 July 2020 this modification proposal was presented to the GCRP members.

No objections were raised by the GCRP members in relation to the proposed modification.

It was recommended by the GCRP members that the TSO issue a modification recommendation paper to the CRU for their review and approval.

Summary Note of any Objections to the Recommended Change from GCRP Members or Consultation Responses:

No objections were raised by the GCRP members in relation to the recommended change.

Outcome of any GCRP Meeting Actions Relating to the Recommended Modification:

At the meeting the TSO took an action to circulate the following documents with the GCRP meeting minutes:

1. the supplementary document containing all modelling and simulation details; and
2. the supplementary paper on simulation compliance.

These documents were circulated with the 2 July 2020 GCRP meeting minutes and this action is now considered closed.

Red-line Version of Impacted Grid Code Section(s) - show recommended changes to text:

Deleted text in ~~strike-through red font~~ and new text highlighted in *blue font*

PC.A8.2 Model Capabilities

The **Users** shall supply **Models** that shall be capable of representing the behaviour of the **Plant** in balanced, root mean-square, positive phase-sequence, time-domain studies and where specified, electromagnetic transient and harmonic studies. ~~The detail to be represented in the Models shall be specified by the TSO in this Grid Code.~~ The balanced, root mean-square positive phase-sequence time-domain **Model** shall include all material elements that affect the **Active Power** and **Reactive Power** output of the **Plant** with respect to changes or excursions in **Voltage** and **Frequency** at the **Connection Point**. The **Model** shall include all electrical and mechanical phenomena, where applicable, that impact on the **Active Power** and **Reactive Power** output of the **Plant** for sub-transient, transient and synchronous dynamics up to and including **Primary Operating Reserve** and **Secondary Operating Reserve** timeframe.

The three-phase electromagnetic transient **Model** shall include all material aspects of the **Plant** that affect the symmetrical and asymmetrical voltage and current outputs from the **Plant**. The **Model** shall represent phenomena that materially affect the **Voltage** and **Frequency** at the **Connection Point** over timeframes of sub-cycles up to 500 cycles including but not limited to switching of power electronic devices, transformer saturation or equipment energisation.

PC.A8.5 Time to comply

The **User** shall provide a **Model** of the **User's Plant** in accordance with **PC.6.6.1**. Where a **User**

requires reasonable time to develop the necessary **Model** or **Models** so as to comply fully with all the provisions in this section, **PC.A8.2** and **PC.A8.3**, the **User** may apply to the **TSO** to be deemed compliant with the provisions of **PC.A8.2** and **PC.A8.3** on the basis of **GC.10.1.3** of the **General Conditions** of the **Grid Code**. The **TSO** shall consider any such application in accordance with **GC.10.1.3**, and if the **TSO** is satisfied as to the **User's** programme for developing and testing the necessary dynamic model, the **TSO** may, for so long as the **TSO** is so satisfied, treat the **User** as being in compliance with the provisions of this section. If the **TSO** decides, acting reasonably, that it is not satisfied as to the **User's** programme for developing and testing the necessary dynamic **Model** and that the **User** cannot be deemed to be in compliance with **PC.A8.2** and **PC.A8.3**, the provisions of **GC.10.1.4** shall apply and the **User** shall apply for a derogation under the terms of **GC.9**.

Green-line Version of Impacted Grid Code Section(s) - show recommended final text:

PC.A8.2 Model Capabilities

The **Users** shall supply **Models** that shall be capable of representing the behaviour of the **Plant** in balanced root mean-square positive phase-sequence time-domain studies and where specified, electromagnetic transient and harmonic studies.

The balanced, root mean-square positive phase-sequence time-domain **Model** shall include all material elements that affect the **Active Power** and **Reactive Power** output of the **Plant** with respect to changes or excursions in **Voltage** and **Frequency** at the **Connection Point**. The **Model** shall include all electrical and mechanical phenomena, where applicable, that impact on the **Active Power** and **Reactive Power** output of the **Plant** for sub-transient, transient and synchronous dynamics up to and including **Primary Operating Reserve** and **Secondary Operating Reserve** timeframe.

The three-phase electromagnetic transient **Model** shall include all material aspects of the **Plant** that affect the symmetrical and asymmetrical voltage and current outputs from the **Plant**. The **Model** shall represent phenomena that materially affect the **Voltage** and **Frequency** at the **Connection Point** over timeframes of sub-cycles up to 500 cycles including but not limited to switching of power electronic devices, transformer saturation or equipment energisation.

PC.A8.5 Time to comply

The **User** shall provide a **Model** of the **User's Plant** in accordance with **PC.6.6.1**. Where a **User** requires reasonable time to develop the necessary **Model** or **Models** so as to comply fully with all the provisions in this section, **PC.A8.2** and **PC.A8.3**, the **User** may apply to the **TSO** to be deemed compliant with the provisions of **PC.A8.2** and **PC.A8.3** on the basis of **GC.10.3** of the **General Conditions** of the **Grid Code**. The **TSO** shall consider any such application in accordance with

GC.10.3, and if the **TSO** is satisfied as to the **User's** programme for developing and testing the necessary dynamic model, the **TSO** may, for so long as the **TSO** is so satisfied, treat the **User** as being in compliance with the provisions of this section. If the **TSO** decides, acting reasonably, that it is not satisfied as to the **User's** programme for developing and testing the necessary dynamic **Model** and that the **User** cannot be deemed to be in compliance with **PC.A8.2** and **PC.A8.3**, the provisions of **GC.10.4** shall apply and the **User** shall apply for a derogation under the terms of **GC.9**.