

ESB GT response to EirGrid SCU Grid Code Modification

7 February 2025

ESB GT welcomes the opportunity to provide the following feedback to the latest draft of the EirGrid Synchronous Condenser Unit (SCU) modification to the Grid Code (18th December 2024 draft) following the meeting between EirGrid and ESB GT & EMP on the 27th of January 2025.

Voltage Regulation

Following the meeting, ESB GT committed to summarising three of the key points of the discussion on Voltage regulation for EirGrid that should be helpful when considering the final version of the Grid Code Modification. These are:

1. Automatic Voltage Regulation (AVR) and tap change sequence.

The correct and optimal sequencing of AVR and tap change voltage regulation (i.e. which comes first) depends on scenario at the time of the need. For example, if it is from an EDIL instruction this should be a slower response and thus the tap change should come first followed by the AVR on the generator terminals. If the adjustment is as a result of a transient (i.e. fast voltage) change in the grid, then the AVR should respond first. Details of operation should be agreed by the synchronous condenser operator and the TSO for each unit separately.

2. SDC2.B.4 text on 1kV tap change for Generators.

SDC2.B.4

“Dispatch Instructions in relation to Reactive Power may include target voltage levels to be achieved by the CDGU on the Transmission System at Grid Connection Point (or on the User System at the User System Entry Point in the case of an Embedded Generator, namely on the higher voltage side of the Generator step-up transformer).

*Where a CDGU is Instructed to a specified target voltage, the Generator shall achieve that target **within a tolerance of 1 kV by tap changing on the Generator step-up transformer unless otherwise agreed with the TSO.** Under normal operating conditions, once this target voltage level has been achieved, the Generator shall not tap change again without prior consultation with and agreement of the TSO.”*

The value of 1kV cannot be achieved on the Low Voltage side. This section of the Grid Code should be considered with this in mind and should specifically mention that the 1kV is on the high voltage side of the Generator Step Up Transformer. The tap change is based on a percentage of the high voltage, typically between 1.2% and 1.5% per tap (e.g., for a 400kV system this equates to a 5kV change per tap).

3. Measurement of MVar on the LV side.

For all generating units and SCUs, MVar cannot be measured on the High Voltage Side. For example, the protection settings (limiters) are based on the Low Voltage side, so measurement has to be on the Low Voltage side.