

Quality Standard for Windfarm Active Power Availability Signal

Background

Section **WFPS1.7.1.1** of the Grid Code makes provision for an **Available Active Power** signal. The Grid Code describes this signal as follows:

“The amount of **Active Power** that the **Controllable WFPS** could produce based on current wind conditions. The **Available Active Power** shall only differ from the actual **Active Power** if the **Controllable WFPS** has been curtailed, constrained or is operating in a restrictive **Frequency Response** mode.”

The Grid Code implicitly states that the signal is accurate at all times. However EirGrid recognise that this is not achievable in practice. Therefore following a review of windfarm availability signals following standard has been developed.

Standard

For a windfarm which is obliged to provide an availability signal the quality of this will be subject to the following test.

- A normalised root mean square error ($NRSE_{Ud}$) for a windfarm unit U for a given day d will be calculated. This will use the quarter hourly metered generation quantities and the average availability recorded in the National Control Centre (NCC) for that unit.
- Where a unit had not been dispatched down at any period under review and the $NRSE_{Ud}$ exceeds 10% for a day then the availability signal is deemed to be in error for that day.

Failed Standard

- Where in a rolling contiguous period of 14 days there are three or more days that have availability signals in error then the availability signal is deemed to have failed the standard.
- Where the normalised root mean square error over the contiguous period of 14 days ($NRSE_{Uf}$) exceeds 10% then the availability signal is deemed to have failed the standard.
- Where in any quarter hour period the availability signal exceeds the greater of the installed capacity of turbines on site or the Maximum Export Capacity (MEC) by more than 10% then availability signal has failed the standard.

Issues arising from a Failed Standard

When a unit fails the availability standard EirGrid will as soon as practical issue a formal non-compliance notice to the windfarm. This note will detail the degree of non-compliance and request information as how and when it will be corrected. Until there is satisfactory evidence to support that the signal has been corrected EirGrid will substitute availability data with the metered generation output. This has commercial consequences for a windfarm particularly when it is constrained down by the Transmission System Operator (TSO).

Definitions

For each 30 minute period determine

MG_{Uh} is the non-transmission loss factored metered generation quantity used for settlement purposes for unit U in period h.

AP_{Uh} is the Availability profile recorded in the National Control Centre averaged over the period h for unit U.

Calculate the daily Root Mean Square Error as follows for Unit U on day d as

$$RMS_{Ud} = \sqrt{\frac{\sum_{h=1}^{h=p} (AP_{Uh} - MG_{Uh})^2}{p}}$$

The Normalised Root Mean Square Error for a unit U over a period p is

$$NRMS_{Up} = \frac{RMS_{Up}}{\max(\text{Installed capacity}, MEC)}$$

Where installed capacity is the MW capability of the turbines installed on site and MEC is the maximum export capacity as defined in the connection offer.