Quality Standard for Power Park Modules Available Active Power (AAP) Signal

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Rationale

Available Active Power (AAP) is defined within the Grid Code as the following;

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

PPM1.7.1.1, Signal list # 1 of the Grid Code makes provision for this AAP signal which is supplied by each Power Park Module (PPM). The Grid Code states that the signal is accurate at all times, however EirGrid acknowledges that there is variance in the calculation of this signal and MW output from each PPM. EirGrid monitors this signal using an applicable standard for the performance of the PPM. The AAP standard, calculation and consequences of failing the standard are outlined below.

AAP Standard

A PPM shall provide an AAP signal and the quality of this will be subject to the following test.

- A normalised root mean square error (NRSE $_{Ud}$) for a PPM, *U* for a given day *d* will be calculated. This will use the MW output and the average AAP recorded by EirGrid for that unit.
- Where a unit had not been dispatched down at any period under review and the *Ud NRSE* exceeds 6% for a day then the AAP signal is deemed to be in error for that day.

AAP Standard Calculation

For each 15-minute period MG_{Uh} is the MW Output recorded by EirGrid for a unit *U* in a period *h*. AP_{Uh} is the AAP profile recorded by EirGrid averaged over the period *h* for a unit *U*.

The daily Root Mean Square Error (RMS_{Ud})is calculated 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 ($NRMS_{Up}$) for a unit *U* over a period *p* is:

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

Where installed capacity is the MW capability of the PPM on site and MEC is the maximum export capacity as defined in the Connection Agreement.

Failed AAP Standard

- Where in a rolling contiguous period of 14 days there are two or more days that have AAP signals in error then the AAP signal is deemed to have failed the standard.
- Where the normalised root mean square error over the contiguous period of 14 days (Uf NRSE) exceeds 6% then the AAP signal is deemed to have failed the standard.
- Where in any quarter hour period the AAP signal exceeds the greater of the installed capacity on site or the Maximum Export Capacity (MEC) by more than 6% then AAP signal has failed the standard.

Issues arising from a Failed AAP Standard

When a unit fails the AAP standard, EirGrid will issue a formal non-performance report to the PPM. This will include a summary of the non-performance with the subsequent raw data for the monitoring period included. The PPM will be requested to address this non-performance providing details regarding mitigation measures adopted to correct the non-performance.

Continued non-performance of the PPM with the standard which is not corrected will result in the substitution of AAP data with the metered generation output and the PPM will move controllability categories. This has commercial consequences for a PPM in curtailment and constraint scenarios as applied by the Transmission System Operator (TSO).