

# WPD ANM Curtailment Report Background Assumptions

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## Overview

The curtailment report is produced using bespoke software known as the “Desktop Curtailment Analysis Tool” (DCAT). Estimated curtailment per half hour is calculated using a PSS/E network model, the Last In First Off (LIFO) stack (including all applications from enquiry stage) and half hourly data for all primaries and 33kV & above generators. A list of identified constraint points is determined and where overloads are detected generators with notable contribution are curtailed, in line with the LIFO stack, until the overload is removed. The total MW per half hour is collated to calculate the MWh value, from which a percentage capacity factor is calculated.

## Input data

### Demand Data

For each 33/11kV substation within the ANM zone MW and MVAR values are calculated from metered data for every half hour.

### Generation Data

All conventional and ANM generators are categorised into Solar, Wind or Other, dependant on their fuel type. The data used for each of these is collated from different sources:

- 1) Solar – The Per Unit (p.u.) output of a number of solar sites was collated to form a normalised output curve. This makes it possible to represent a standard solar site by removing localised dips in output, while maintaining the observed time and seasonal fluctuations.
- 2) Wind – the half hourly output of a large wind generation site from within the relevant licence area was recorded. This is applied to all wind generators to maintain a level of pessimism and avoid misleading diversity of wind generation for the purposes of forecasting.
- 3) Other – all other fuel types have a 1.0 p.u. output. As the likely diversity that would be observed cannot be guaranteed this approach has been taken to ensure the level of curtailment realised upon connection will not exceed that within the curtailment report.

## Generator priority order

Any accepted or connected generator at the time of curtailment study will be considered ahead of an ANM generator. The LIFO stack will be compiled based on the “minimum information date” upon submission of a connection application. The stated curtailment within a generator’s report will take into account any connected, accepted, offered or enquired generators ahead of that generator at the time of analysis.

### **Pre-event curtailment**

In order to protect WPD's network pre-event load limits are used so that a short term overload will not occur following a fault or outage. For an abnormal running arrangement, beyond those designed for within the ANM zone's system upon its deployment, all ANM generation will be curtailed until the network is restored.

### **Multi-capacity applications**

In the event that multiple applications are received for the same site at different capacities each capacity will be treated as a unique generator in the LIFO stack, which will therefore impede the subsequent capacity application's curtailment.