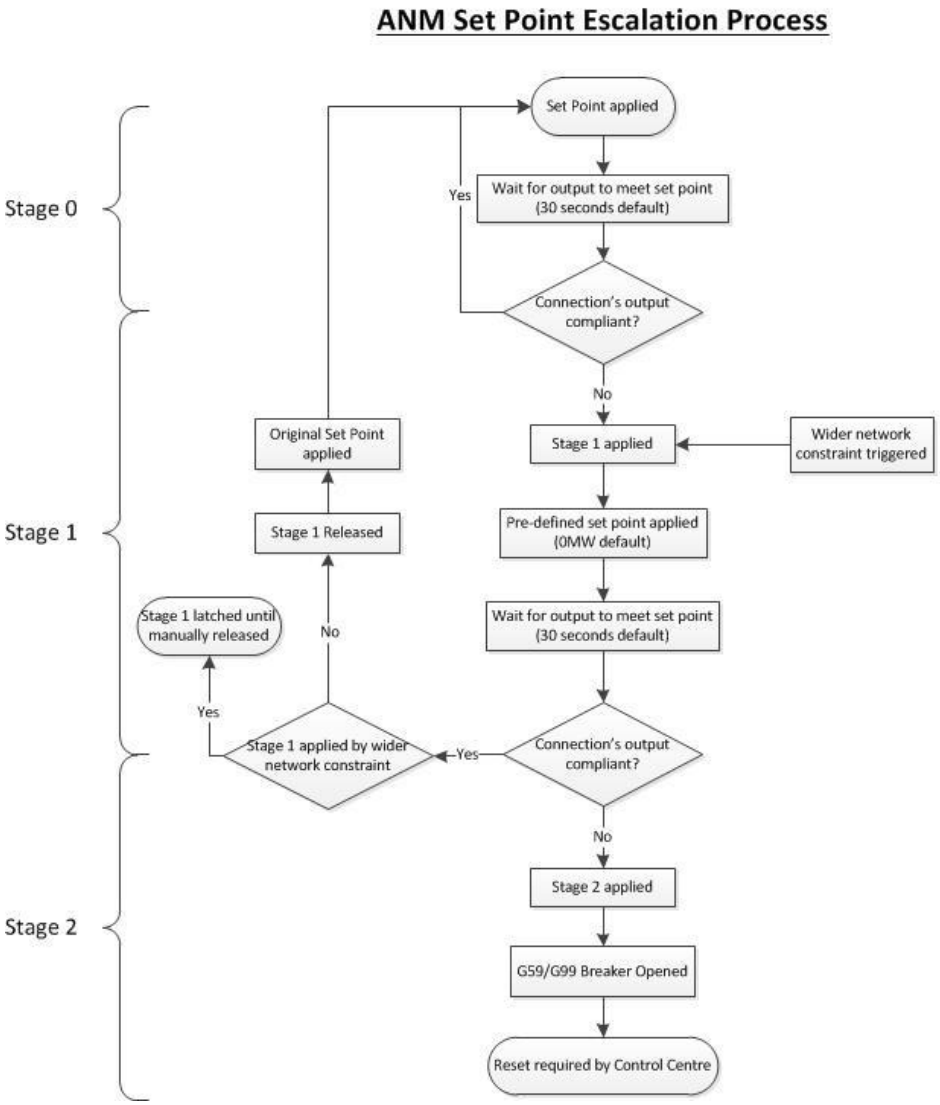
WPD ANM Commissioning Process

Introduction

To enable a site to connect to the ANM system it must be able to receive an analogue set point, Stage 1 & 2 signals. Under normal conditions a maximum export set point will be presented using a 4-20mA analogue signal, which will normally be the site's maximum export but will reduce to a calculated value if required by network constraints. This is also known as Stage 0. If the site's export does not follow this set point a Stage 1 will be issue to curtail the site to a fixed lower limit, usually 0MW, using a digital signal. If this again is not adhered to a Stage 2 signal will be sent, which is a digital signal to open the sites G59/G99 circuit breaker. The Stage 1 & 2 signals may also be used under extenuating circumstances, such as loss of communication to the site or a wide area National Grid constraint. This escalation process is further detailed in the following flow chart:



As part of the site's commissioning process the relevant wiring and confirmation of transmitted signals will be carried out.

Stage 0

Two cores will be made available at the Customer Interface Panel for the MW export limit set point by WPD, pin 25 & 26 “REAL POWER LOWER BOUND” within the CCP schematic (AGND & Iout1 respectively from the analogue module card). These must be wired into the site Power Plant Controller (PCC), or the relevant on site equipment that can control the site’s real time export.

Within the 4 – 20mA analogue signal sent over this connection WPD have 3 scaling bands of 5MW, 20MW & 100MW, to enable suitable granularity. The site’s export will determine which band will be used by taking the lowest band that it is below. This approach has been taken to enable the use of templates across all of WPD’s areas. An example of this approach for a 4.2MW site would be that 4mA = 5MW (export of the generator), 12mA = 0MW & 5.28mA = 4.2MW.

Once installed static set point signals will be sent through by WPD to check correct scaling, the generator’s ability to follow a set point, maintain a fixed output and its ramp rates.

Stage 1

A digital enable signal will be provided to trigger Stage 1 and a confirmation signal must be returned by the customer’s control system (see CCP schematic for wiring arrangement). The generator’s output must be reduced to a predefined value (the default is 0MW) when this signal is enabled, within a predetermined time frame or usually 30 seconds.

During commissioning this will be tested by sending a signal on site and from WPD’s control room to verify the output goes to the predefined value. The signal will be reset, removing the enable signal, and it would be expected that the site would start to export again.

Stage 2

A digital enable signal will be provided to trigger Stage 2 and a confirmation signal must be returned by the customer’s control system (see CCP schematic for wiring arrangement). The site’s G59/G99 circuit breaker must be hardwired to open upon enabling of this signal.

During commissioning this will be tested on site and from WPD’s control room to verify the circuit breaker opens and the site is no longer exporting. The signal will be reset, removing the enable signal, and it would be expected that the site would start to export again.