

BMU Data from Intermittent Generation

Presentation to Grid Code Review Panel 18th November 2010

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- The Grid Code obliges Generators to provide data predicting the expected and maximum MW output.
 - This obligation is more onerous for Generating Units powered by intermittent sources of energy due to the unpredictability.
 - A Working Group was set up in Sept 2009 to determine
 - Compatibility of current obligations with the unpredictability of intermittent generation
 - Develop any changes necessary to improve compatibility

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- Output Useable (OU); The expected level of output submitted 5 years ahead down to 2 days ahead
 - Physical Notifications (PN); Expected output submitted 11.00 day ahead up to Gate Closure
 - Maximum Export Limit (MEL); Maximum level which the BM may be exporting submitted day ahead and updated as conditions change.

Output Useable

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- Clarification required on how OU should be determined
 - Assuming wind speed at the expected level ie turbine output ~35% of the optimal speed. On expected output from each turbine ie ~35%
 - Or
 - Assuming wind speed is at the optimal level
 - The optimal level is the wind speed which would enable the power park module to generate at Registered Capacity
 - The Working Group agreed that the OU should be based on the wind speed being at the optimal level.
 - Definition has been amended accordingly.
 - The (daily or weekly) forecast value (in MW), at the time of the (daily or weekly) peak demand, of the maximum level at which the **Genset** can export to the **Grid Entry Point**, or in the case of **Embedded Power Stations**, to the **User System Entry Point**. In addition, for a Genset powered by an Intermittent Power Source the forecast value is based upon the Intermittent Power Source being at a level which would enable the Genset to generate at Registered Capacity

Physical Notification

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- Focus on 3 issues
 - Accuracy to which PNs should be provided
 - Use of PNs to determine payments for Bid Offer acceptance
 - Obligation to follow PN

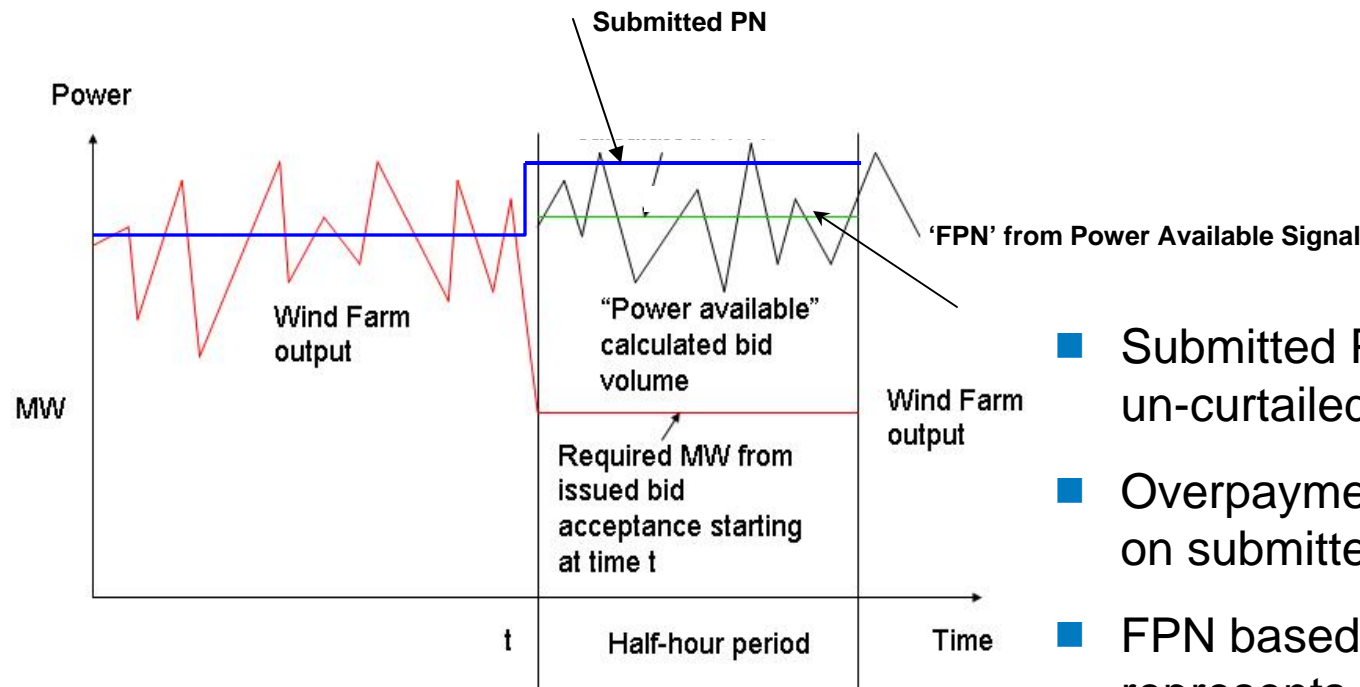
Physical Notification (Accuracy)

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- NGET proposed that there should be an obligation to meet a defined accuracy
 - a driver toward improved accuracy
 - a common objective for all Generators
 - guidance for procuring and developing tools for predicting output.
 - However the level of accuracy would have to be low enough to enable compliance by all windfarms and this could lead to a reduction in overall accuracy.
 - In addition to GC obligations, strong commercial needs are driving Generators to procure accurate forecasting tools
 - This will enable a benchmark for accuracy against which PNs can be compared ie establish the meaning of Good Industry Practice.
 - Definition of PN will refer to the provision being in accordance with GIP

Physical Notification (Payments for Bid Offer Acceptance)

- For wind generation payment for BOA based on submitted PN
- PN unlikely to represent the non BOA'd output of the machine
- Will result in erroneous payments for BOAs
- Proposal is to set up a Working Group to review payments for BOAs
- Use of prevailing speed top determine non BOA'd output (Power Available Signal) will be considered

Physical Notification Payments for Bid Offer Acceptance



- Submitted PN exaggerates un-curtailed output
- Overpayment for BOA based on submitted PN
- FPN based on PAS represents un-curtailed output

Physical Notification (Obligation to follow PN)

- BC 2.5.1 obliges PNs to be followed
- For wind generation if the wind speed is higher than predicted can the PPM is generate above the PN.
- BC 2.5.1 allows output not to follow PN for unavoidable events.
- BC 2.5.1 will be amended to include unpredictable changes in wind speed as an unavoidable event.
- Improving accuracy of PNs will reduce occurrences of not following PN.

Maximum Export Limit

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- Used by NGET to determine margin above expected/actual output.
 - The use of the term 'may be exporting' in the definition causes ambiguity.
 - For wind generation this could be the output assuming wind speed is the optimal level or predicted level
 - Use of optimal level causes an overestimate of margin
 - MEL needs to be re-declared as the availability of plant and the energy source changes
 - For intermittent generation an automated system is required to handle changes in MEL due to variations in the availability of the energy source.
 - IS development may be required

Maximum Export Limit

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- The Working Group set up review payments for Bid Offer acceptances will also investigate the provision of MEL
 - The Power Available Signal could be used to determine MEL within Gate.

Conclusion

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- Definition of Output Useable to be amended
 - Unpredictable changes in wind speed to be included in BC 2.5.1 as an 'unavoidable event' which clarifies obligation to follow PN.
 - Working Group to be set up to review provision MEL and the calculation of payments for Bid Offer Acceptance.