Modification proposal:	**Grid Code GC0063: Power Available**		
Decision:	The Authority[1] directs that the proposed modification to the Grid Code[2] be made		
Target audience:	National Grid Electricity Transmission PLC (NGET), Grid Code users and other interested parties		
Date of publication:	08 January 2015	Implementation Date:	22 January 2015

Background to the modification proposal

National Grid Electricity Transmission plc (NGET) is the System Operator (SO) for the National Electricity Transmission System (NETS) in Great Britain. It is responsible for securely operating the NETS in an economic and efficient manner. It takes actions to ensure that electricity demand and supply is continuously balanced so that the NETS is operated at a constant and stable frequency. This includes contracting with generators to ensure there is enough reserve electricity to respond to any unexpected deviations in supply or demand in the necessary timescales.

In order to manage the system efficiently, NGET needs an accurate view of the available 'headroom' provided by generators. This is the difference between a generator's current output and its maximum potential output. Generators are required to submit this information, amongst other information, to NGET under the Grid Code. The relevant data items provided are:

- Physical Notifications (PNs): a generator's best estimate of its output for a half hour period. This is submitted prior to Gate Closure.[3]

- Maximum Export Limit (MEL): the maximum power a generator can export onto the NETS. This can be changed at any time.

Intermittent generators (predominantly wind generators) are unable to control their maximum output like conventional generators as it depends on external factors such as weather. Accurate MEL submissions would require frequent updates from wind generators to reflect changes in the prevailing conditions. However, this may not always be practical, and evidence suggests that most wind generators do not dynamically update MEL. Instead there are various approaches to MEL submissions across the wind industry. There is also more uncertainty around wind generators' PNs due to the variable nature of their output.

Consequently, the SO does not currently have a clear, consistent view of the headroom provided by wind generators. This means it is less able to call on these generators to

[1] The terms 'the Authority', 'Ofgem' and 'we' are used interchangeably in this document. Ofgem is the Office of the Gas and Electricity Markets Authority.
[2] This document is notice of the reasons for this decision as required by section 49A of the Electricity Act 1989.
[3] This is the point in time in which trading for each half hour is finalised, one hour before each half hour period.

provide frequency response[4] and other reserve services. Instead the SO relies on conventional sources of generation for these services, even though in some cases this may be more expensive than using wind generation. This can result in lost revenue for wind generators and higher balancing costs for consumers. This issue will become increasingly material over time as the amount of wind generation on the system increases and the need to use it to balance the system efficiently grows.

In July 2012, the Grid Code Review Panel (GCRP) established the Power Available Workgroup to further consider whether data requirements under the Grid Code could be amended to better enable the SO to instruct intermittent generation to provide frequency response and reserve services.[5] The Workgroup developed, considered and consulted on three core options to address this issue. The final conclusions of the workgroup were presented to the GCRP in November 2014. This included a recommendation to implement Option 3, 'the provision of a new Power Available signal'.[6]

The modification proposal

GC0063 was raised by NGET to propose the implementation of the Power Available Workgroup's conclusions.[7] The proposal aims to provide the SO with improved visibility of the headroom provided by wind generation so that it is better able to call on these generators to provide reserve or frequency response services. Under the proposed solution, wind generators would be required to provide a new periodic[8] signal of Power Available (PA) to NGET's control centre. This would be a measure of the prevailing maximum output that could be delivered by the wind farm based on the current wind conditions. MEL would be re-defined for wind farms to represent total connected capacity.

Under this solution, the PA signal would effectively replace MEL in the SO's calculation of available headroom from wind generators. NGET and the Workgroup considered that this is preferable to a standardised approach to MEL submissions. This is because a standardised MEL definition could apply to all wind generators, which has the potential for expensive retrofitting of equipment for existing generators. Under the proposal, any wind generation with a completion date from 1 April 2016 onwards will be required to provide a PA signal. Existing generators could enter into non-mandatory, bilateral agreements with NGET to provide a PA signal if a commercial or operational benefit is identified.

NGET's recommendation

NGET submitted its final report for the modification proposal to us on 20 November 2014. NGET supports the implementation of GC0063 on the basis that it better facilitates

[4] NGET can instruct generators to operate in a 'frequency responsive mode', where generators change their output in response to any deviation in system frequency to ensure it is maintained within specific limits. The SO needs an accurate view of a generator's headroom to be certain of its frequency response capability.
[5] This followed the completion of the C/11 workgroup which made a number of recommendations concerning the data flows from intermittent generators. For more information please see our decision on Grid Code modification C/11 (BM Unit Data from Intermittent Generation): http://www2.nationalgrid.com/WorkArea/DownloadAsset.aspx?id=14199
[6] Information about the workgroup's assessment of the Power Available issue is on National Grid's webpage for GC0063 here: http://www2.nationalgrid.com/UK/Industry-information/Electricity-codes/Grid-code/Modifications/GC0063/
[7] Specifically, Option 3 – 'the provision of a new Power Available signal', as set out in the legal text submitted to us contained in Annex 2 of the GC0063 final report (see footnote 6).
[8] NGET's analysis suggests that 10-15 minutes would be a good time interval, although the workgroup discussion suggested that an automatic refresh rate of 5 seconds could be easily achieved based on current technology and systems.

objectives (i), (ii) and (iii) of the Grid Code.[9] In NGET's view, GC0063 will lead to more efficient system balancing by enabling wind farms to increase their provision of balancing services and avoid the SO taking potentially more expensive alternatives. In addition, NGET considers that GC0063 would facilitate competition by supporting the participation of intermittent generation in the provision of balancing services, thereby increasing the range of balancing service providers available to the SO.

The Authority's decision

We have considered the issues raised by the modification proposal and the final report dated 20 November 2014. We have considered and taken into account the responses to NGET's consultation on the modification proposal which are included in the final report.[10] We have concluded that:

1. implementation of the modification proposal will better facilitate the achievement of the objectives of the Grid Code; and
2. approving the modification is consistent with the Authority's principal objective and statutory duties.[11]

Reasons for the Authority's decision

We have considered the modification proposal against the Grid Code objectives together with the views of respondents to the consultations. All respondents were broadly supportive of the need to improve the certainty surrounding the headroom provided by wind generators. Although there was no absolute consensus on the best solution, a majority preferred the solution recommended in the final report and put forward by NGET under GC0063.

We agree with NGET's view that the modification proposal better facilitates objectives (i), (ii) and (iii) for the reasons below. We also agree that there is a neutral impact in relation to Grid Code objective (iv).

Objective (i) 'To permit the development, maintenance and operation of an efficient, coordinated and economical system for the transmission of electricity'

We agree that the modification proposal would improve the certainty surrounding the headroom provided by wind generators, which should thereby increase the SO's ability to instruct these generators to provide balancing services. Increasing the pool of options available to the SO would allow NGET to manage the system more efficiently. This would particularly be the case during periods of high wind and low demand, when the use of balancing services from wind generation may be more economic than procuring services from other sources which may not normally operate under such conditions.

We note that a respondent questioned the justification for the new data item created under the recommended solution. However, feedback in the report suggests that the implementation of the PA signal will be relatively inexpensive and simple if applied only to new generators, particularly because it could use established communication systems

[9] As set out in Standard Condition C14(1)(b) of NGET's Transmission Licence, see: https://epr.ofgem.gov.uk//Content/Documents/Electricity%20transmission%20full%20set%20of%20consolidated%20standard%20licence%20conditions%20-%20Current%20Version.pdf

[10] Grid Code proposals, final reports and representations can be viewed on NGET's website at: http://www2.nationalgrid.com/UK/Industry-information/Electricity-codes/Grid-code/Modifications/

[11] The Authority's statutory duties are wider than matters which NGET must take into consideration and are detailed mainly in the Electricity Act 1989 as amended.

and turbine design. We therefore consider that the potential improvements to the efficiency of system balancing outweigh any implementation or ongoing costs.

Objective (ii) 'To facilitate competition in the generation and supply of electricity (and without limiting the foregoing, to facilitate the national electricity transmission system being made available to persons authorised to supply or generate electricity on terms which neither prevent nor restrict competition in the supply or generation of electricity)'

We also agree that enhancing the potential for wind generators to be instructed to provide balancing services should help facilitate competition in the electricity market. This would create greater competition in the provision of balancing services and also unlock additional revenues streams for wind generators where they are able to provide balancing services more economically than other sources, ultimately benefitting consumers.

A respondent to the GC0063 consultation believed that the proposal would not better facilitate this objective because the information submitted via the PA signal would not be visible to the market participants, limiting their ability to make an assessment of market conditions. The respondent also noted that it created an additional data requirement for wind generators but not for conventional generation. In its view, this would increase costs for wind generators and therefore reduce their ability to enter and participate in the market.

We consider that overall the proposal better facilitates this objective by enhancing the ability for wind generators to participate in balancing markets. The Power Available signal requirement only applies to new generators, for which the implementation and ongoing costs are likely to be minimal. This means that neither existing nor new wind generators will face significant new costs relative to other generators.

Nevertheless, we consider it important that NGET publishes any information that would ultimately help drive competition and efficiency in the market. We therefore encourage NGET to explore whether the publication of information submitted via the PA signal would further achieve these outcomes.

Objective (iii) 'Subject to the objectives above, to promote the security and efficiency of the electricity generation, transmission and distribution systems in the national electricity transmission system operator area taken as a whole'

We consider that GC0063 should help to promote the security and efficiency of the whole electricity system as it evolves over time, in particular because it should provide the SO with more options to balance the NETS, as discussed above. We therefore consider that the modification proposal also better facilitates this objective.

Related issue – BSC Settlement Accuracy

We note that the Power Available Workgroup also looked at the issue of Bid-Offer Acceptance (BOA)[12] settlement accuracy for intermittent generators and concluded that there is the potential to use the GC0063 solution to achieve greater accuracy in this area. This work would need to be progressed under the Balancing and Settlement Code (BSC) governance arrangements. While we agree that it is not necessary to wait for a solution in this area before implementing GC0063, if potential improvements have been identified,

[12] This is the instruction issued by the SO upon acceptance of a bid or offer from a generator in the Balancing Mechanism.

we encourage industry to progress these under the BSC in a timely fashion. This is particularly relevant as there are likely to be an increasing number of balancing actions taken on wind generation in the future.

Decision notice

In accordance with Standard Condition C14 of NGET's Transmission Licence, the Authority hereby directs that Grid Code modification proposal GC0063: *'Power Available'* be made.

Philippa Pickford
Associate Partner, Wholesale Markets Performance
Signed on behalf of the Authority and authorised for that purpose