

Grid Code Review Panel
GC0070: Clarification of Interpretation of BC2.7.3

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Summary

Clarification of interpretation of BC 2.7.3(a)

Bid-Offer Acceptances may only be rejected by a **BM Participant** :

(a) on safety grounds (relating to personnel or plant) as soon as reasonably possible and in any event within five minutes;

Users Impacted

High

System Operators, Transmission Owners & Renewable Generators,

Medium

Generators, including BELLA connected generators

Low

User and Customers

Description & Background

The majority of hydro electric power comes from the North and West of Scotland which have been in operation since the 1930s, through the formation of the North of Scotland Hydro Electric Board in 1943, through the privatisation period and through new BETTA trading arrangements in 2005.

Hydro electric operators have a duty of care to the environments and locations they operate in as well as having to comply with all of (i) environmental obligations (EA/SEPA), (ii) technical obligations (Grid Code) and (iii) with significant recognition of the impact on the general public including neighbours and other river users (mainly anglers and water sports).

Management of water through reservoir storage levels, control of flows and working around plant breakdown requires staff operating in all weather conditions in remote, difficult and dangerous terrains and make up the daily work activity for the hydro businesses.

Recent activity, such as through the growth in other renewables and projects to upgrade key elements of the networks, has seen a number of hydro generators being constrained through the Balancing Mechanism to a point where compliance with all of our obligations and the safety of members of the public and our staff has been put at risk.

The intention of this paper is to highlight to the panel the potential for hydro generators to use BC 2.7.3(a) of the Grid Code in relation to rejection of Bid Offer Acceptance on the

grounds of safety.

Hydro BMUs offer flexible dynamics to the System Operator to assist the management of the system. The dynamics offered generally allow generation to be turned down for short periods based on the available storage in the reservoir and the impacts on the water management through the acceptance of a short term turn down. During periods of wet weather or snow melt the duration of time that storage is available in the reservoir becomes shorter. Hydro reservoirs vary considerably in their storage capacity ranging from a few minutes in a run of river station to several weeks for a few large reservoirs at the top end of cascade systems and again the time to utilise the storage varies from season to season.

In the event of repeated and continued BOA instructions to reduce generation there comes a point where the management of the water flowing into the reservoir has to include physical steps to divert water from the reservoir. This takes various forms including (i) the automatic operation of floodgates when a trigger level in the reservoir is achieved or (ii) dispatching staff to reduce inflows into a hydro scheme by turning out catchment. While these actions are the norm in very high run off conditions, they normally take place with the generators running at full output before additional flow through a floodgate enters the river downstream. On the contrary, it is not possible for the hydro operator to foresee the end of a BOA constraint period which could extend for hours or even days as has been recently experienced. As the period of turndown continues, hydro operators have to continually assess the risk to personnel, general public and staff by continuing to accept BOAs to reduce generation. There comes a point when the safest course of action from a hydro operator perspective is to reject the BOA as per BC2.7.3.(a)

An action to divert water out of the catchment requires the hydro operator to put staff to remote and challenging environments, such as for example Glendoe Dam catchment at over 600m above sea level. In order to turn water flows away from the schemes it takes time to organise the working party, including risk assessment and work preparation to carry out the action safely. Failure to take action will result in excessive water entering the scheme, going into a spill condition, and putting downstream neighbours at further risk. It is our view that this constitutes reasonable grounds to reject an instruction on safety grounds albeit the safety issue may not be immediate. The time to organise staff to react to such instructions could be of the order of 24 hours during which an otherwise avoidable spill event could occur.

The loss of water through turning out catchment or spilling is considerable and in many cases has to be notified to the relevant authorities, neighbours and others (e.g. the railway industry, farmers, canal users, and local police). All would expect safe and prudent operation from the neighbouring hydro operators as has been the case since scheme construction.

BC 2.5.1 recognises that Statutory Water Management or safety are reasonable reasons to not following PN , Statutory conditions generally relate to low flow conditions where there is a duty on hydro operators to maintain a minimum amount of water in their schemes, they do not specifically relate to high water conditions.

Proposed Solution

An understanding and acknowledgement by the NETSO that safety related actions in the case of hydro operations may be required through the rejection of a BOA instruction. In addition the understanding that the rejection of a BOA on safety grounds may extend to non immediate safety issues but rather resultant safety related actions that should be

avoided and which do not represent Good Industry Practice for hydro operators. Propose the operator of a hydro generator communicates to the NETSO the duration available to continue turndown in present water conditions on the receipt of a BOA instruction and the NETSO is reasonably obliged to adhere to the advised duration.

Assessment against Grid Code Objectives

[Will the proposed changes to the Grid Code better facilitate any of the Grid Code Objectives:]

(i) to permit the development, maintenance and operation of an efficient, coordinated and economical system for the transmission of electricity;

The proposal is not to change the Grid Code but to share the understanding of the operational impact on hydro operators when their generators are required to take action under the Balancing Mechanism. It is recognised the NETSO is focused closely on the safe operation of the Transmission System and instructing BOAs to the declared dynamics, however there is no dynamic that assures generators of having the BOA instruction lifted. Improved co-ordination of the operational position between the NETSO and hydro station would improve efficiency.

(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);

This paper aims to improve the understanding of the position experienced by hydro operators on occasion when held off by BOA for long periods. SSE believe submitting inflexible dynamics to ensure hydro stations are never put in this position does not improve the efficiency of the system operation. Increasing dynamics after a number of BOAs have been accepted, for example minimum zero time (MZT) could be deemed a market breach and raising prices to remove the BMU from the Market could be viewed as an infringement of Transmission Constraint Licence Conditions.

(iii) subject to sub-paragraphs (i) and (ii), 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; and

Improved understanding and coordination of the operational requirements of the transmission system between the NETSO and hydro station operators to avoid the position where a hydro operator rejects a BOA on safety grounds.

(iv) to efficiently discharge the obligations imposed upon the licensee by this license and to comply with the Electricity Regulation and any relevant legally binding decisions of the European Commission and/or the Agency.

Impact & Assessment

Impact on the National Electricity Transmission System (NETS)

Potentially if BOA instructions have to be rejected, the NETSO will be required to take alternative more expensive actions, if available, or to issue Emergency Instructions to manage their operational requirements and alleviate risk to transmission assets and other system Users.

Impact on Greenhouse Gas Emissions

Aim is to maximise renewable generation and so reduce greenhouse gas emissions.

Impact on core industry documents

none

Impact on other industry documents

none

Supporting Documentation

Have you attached any supporting documentation NO

If Yes, please provide the title of the attachment:

Recommendation

The Grid Code Review Panel is invited to:

Note the issue for information only

Consider the issue and provide guidance/clarification

Document Guidance

This proforma is used to raise an issue at the Grid Code Review Panel, as well as providing an initial assessment. An issue can be anything that a party would like to raise and does not have to result in a modification to the Grid Code or creation of a Working Group.

Guidance has been provided in square brackets within the document but please contact National Grid, The Code Administrator, with any questions or queries about the proforma at grid.code@nationalgrid.com.