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Grid Code Issue Paper

Paper Ref:	pp16/49	Date Raised:	06/07/2016

For circulation to the Grid Code Review Panel

Raised by Mark Krajniewski on behalf of NGET

Emergency Disconnection of Embedded Generation

Before submitting this paper, did you present this issue to the Grid Code Development Forum?				
No		Yes	X	[Please provide details of any outcomes below]
The June 2016 GCDF agreed the requirements for Emergency Disconnection of Embedded Generation should be codified in the Grid Code.				
GCDF is a periodic meeting where stakeholders can discuss any Grid Code-related technical issues. It gives stakeholders the opportunity to fully understand their issues before raising them to the Panel. Click the link above for more info, including dates.				

<<PANEL RECOMMENDATION>>

What would you like the GCRP/DCRP to do? (Mark the appropriate box)	
Note the issue for information only	
Consider the issue and provide guidance	
Further investigate this issue at a one-off workshop *[Please consider GCDF if answered 'no' for question above]*	
Approve this issue for a workgroup for further analysis and form solutions *[Please consider workgroup Terms of Reference and attendance at workgroup]*	X
Progress this issue straight to Industry Consultation *[Please contact the code administrator before proceeding (see details at the bottom)]*	

<<DEFINE>>

Please describe your issue…

The increase in volumes of distributed generation has increased the operational challenges of maintaining the security and stability of the Transmission System to the extent that under extreme conditions (high solar, high wind and low demand) there is a risk that NGET as System Operator will not be able to operate the NETS within SQSS standards. This issue can potentially lead to tripping off of assets and uncontrolled disconnections impacting generators, customers and end consumers.

These issues are normally managed by accepting Bids in the Balancing Mechanism, however in some areas of the network there are insufficient parties participating in the BM to allow sufficient actions. Not all wind generators participate in the BM and none of the solar generators participate and this also means that they are not able to provide voltage control, and renewable generation typically provides little system inertia. The majority of the larger conventional generators do participate in the BM but these also provide other services such as inertia and voltage control and it is not always possible to bid all of this generation off due to the need for these other services.

nationalgrid

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NGET have endeavoured to make commercial arrangements with generators to avoid issuing Emergency Instructions, some have agreed bilateral trading agreements and some participate in the Power Responsive and Demand Turn Up services, but there is still a risk that insufficient commercial actions will be available under these extreme circumstances and Emergency Instructions will be the only option available.

NGET already has the ability under BC2.9 to issue emergency instructions *'in order to preserve the integrity of the **National Electricity Transmission System** and any synchronously connected **External System'*** and BC2.9.1.2(b) specifically states *'the need to maintain adequate **System** and **Localised NRAPM'*** as an example of the need for Emergency Instructions. NRAPM conditions have been notified 19 times since 2013 and Emergency Instructions issued on 9 of these occasions. The risk of NRAPM conditions are published on the National Grid website and all Emergency Instructions are notified via BMRS.

However, there are no details specified of the need for DNOs to have the ability to disconnect embedded generation or the time scales in which they must do this. OC6 provides detailed arrangements for reducing demand but no such detailed arrangements have been specified for reducing embedded generation.

Which Grid/Distribution Code clause/section is relevant for this issue?

BC2.9 EMERGENCY CIRCUMSTANCES
OC6

Please describe your proposed solution…

Provision needs to be added to the Grid Code to require 'Network Operators' to have the ability to disconnect embedded generation when requested by Emergency Instruction from NGET. It should also specify how, and in what timescales, the reduction should be achieved.

In the absence of Grid Code provisions NGET have agreed bilateral arrangements with DNOs to avoid delaying the connection of new embedded generation. Inclusion of these provisions in the Grid Code would prescribe standard arrangements to avoid the need to bilateral arrangements.

nationalgrid

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How has this issue originated?	
An affected party has identified a Grid Code defect	X
An affected party wishes to provide information to the Panel	
An affected party has identified a Grid Code procedural inefficiency	X
An affected party needs clarity	
As a consequence of Significant Code Review (initiated by the Regulatory Authority)	
As a consequence of a licence or legislative change (including European Law)	
Other:	

<<ASSESS>>

How are the Grid Code and Distribution Code objectives better achieved by resolving this issue?
Economic & Efficient Development: *(i) to permit the development, maintenance and operation of an efficient, coordinated and economical system for the transmission of electricity*
Capability of the DNOs to disconnect generation upon NGET's emergency instruction would lead to a more efficient and co-ordinated operation of the transmission of electricity.
Competition*: (ii) to facilitate competition in the generation and supply of electricity … (on terms which neither prevent nor restrict competition in the supply or generation of electricity)*
NA
System Security: *(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;*
Capability to disconnect distribution generation by the DNOs would help maintain the security and stability of the transmission as well as the distribution network.
Licence Obligations: *(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*
NA

<<IMPACT>>

To what extent are industry stakeholders affected by this issue?	
Developers/Operators of all generation units	Medium
National Electricity Transmission System Operator (NETSO)	High
Transmission Owners (incl OFTOs & Interconnectors)	Medium
Distribution Network Operators	High
Suppliers	Low

nationalgrid

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Aggregators	Low
Demand Customers (including Response providers)	Low
Manufacturers	NA
Regulator	NA
Other: None identified	

Is there a positive impact on greenhouse gas emissions by resolving this issue?				
No	X	Yes		[Please provide details below]
Another primary objective of the Third Energy Package and the EU Network codes is to better facilitate the connection of renewable generation.				

Is there any impact on industry codes or documents?					
CUSC	X	STC		BSC	
SQSS		Distribution Code	X	DCUSA	
Other Industry Documents				[Please provide details below]	

Is there a time limitation for this issue?				
No	X	Yes		[Please provide details below]

Have you attached any supporting documentation?				
No	X	Yes		[Please provide details/attach files below]

Document Guidance

This template 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.

Grid Code Issue Papers for consideration at the next scheduled Grid Code Panel meeting (GCRP), must be submitted THREE weeks in advance [GCRP dates]

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

An overview of the Grid Code modification process can be found here:

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http://www2.nationalgrid.com/WorkArea/DownloadAsset.aspx?id=28959