

## Grid Code Administrator Consultation Response Proforma

### GC0143: 'Last resort disconnection of Embedded Generation'

Industry parties are invited to respond to this Code Administrator Consultation expressing their views and supplying the rationale for those views, particularly in respect of any specific questions detailed below.

Please send your responses by **17:00** on **5 May 2020** to [grid.code@nationalgrideso.com](mailto:grid.code@nationalgrideso.com). Please note that any responses received after the deadline or sent to a different email address may not be included within the Final Modification Report to the Authority.

Any queries on the content of the consultation should be addressed to Christine Brown at [christine.brown1@nationalgrideso.com](mailto:christine.brown1@nationalgrideso.com)

These responses will be included within the Draft Grid Code Modification Report to the Grid Code Panel and within the Final Grid Code Modification Report to the Authority.

<b>Respondent:</b>	Anthony Browne <a href="mailto:anthony.browne@nwl.co.uk">anthony.browne@nwl.co.uk</a> 07970232339
<b>Company Name:</b>	Northumbrian Water Limited
<b>Please express your views regarding the Code Administrator Consultation, including rationale. (Please include any issues, suggestions or queries)</b>	<p><i>For reference, the Applicable Grid Code objectives are:</i></p> <ul style="list-style-type: none"><li>(a) To permit the development, maintenance and operation of an efficient, coordinated and economical system for the transmission of electricity;</li><li>(b) Facilitating effective 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);</li><li>(c) 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;</li><li>(d) 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; and</li><li>(e) To promote efficiency in the implementation and administration of the Grid Code arrangements.</li></ul> <p>Grid Code Modification 0143 has a primary objective of satisfying criteria C above. Criteria A, B and D relate to competition or efficiency so are not directly relevant to the operational challenges associated with COVID19.</p>

Any response to the COVID19 outbreak should prioritise the operational resilience of key infrastructure.

With respect to objective C, the proposed code modification may satisfy broad objectives but Northumbrian Water believes that there will be significant unintended consequences for key sectors including Utilities.

Northumbrian Water has experienced changes to its provision of essential Water and Waste Water services as a result of COVID-19. There is increased demand for clean water as individuals seek to adhere to the hygiene principles advised by the Government. This has placed upward pressure on Northumbrian Water's energy consumption.

It is a vital aspect of our COVID-19 response that Northumbrian Water remains resilient.

Shutdown of embedded renewable generators could have three significant negative consequences:

1. Embedded renewable generators are vital for our Sewage and Sludge treatment processes. Heat recovery from Combined Heat & Power Engines is necessary to pasteurise sewage sludge prior to its recycling to land. This process produces biogases that must be utilised in the onsite systems which Code Modification 0143 seeks to disconnect. The biogas generation cannot be halted as it is a result of the critical treatment process and there is no storage for the gas which will continue to be produced. Northumbrian Water's sites produce 70,000m<sup>3</sup> biogas per day. If the embedded generation is switched off, the gas will be diverted to flares (one flare at each site). These flares are an emergency system and should not be used routinely. If the flare were to fail then the site would be venting methane, which has a Global Warming Potential 86 times greater than Carbon Dioxide. In short, the Disconnection of these generators would result in multiple issues:
  - a. Breaching of consents to air (excessive gas flaring, odour release and increased risk of methane release to atmosphere);
  - b. The discharge to land of sludge not properly treated for Ecoli and salmonella; and
  - c. The discharge to rivers of partially/untreated effluent.
2. Embedded hydro electric generators on the inlets of Water Treatment Works play a key role in provision of Power to these critical sites. As a physical and chemical process Water Treatment operates best when in relatively steady state. A disconnection of these assets could result in an interruption to Water Supply.
3. Fluctuations in energy demand with motor start-up (and start-up currents) could be increased if embedded generation is not allowed to continue to operate, placing stresses on Supply Capacities and instantaneous loads on the distribution network. This could lead to power interruptions at water and wastewater treatment works that then give rise to environmental compliance risks or interruptions to public water supply.

These points are not exclusive to Northumbrian Water and quick collaboration with colleagues has highlighted that these concerns are valid UK wide. The lack of scope within Grid Code Modification 0143 to

	recognise that embedded generation is a vital part of resilient operations for key sectors is the reason that Northumbrian Water are responding with the below suggested modifications.

### Code Administrator Consultation questions

Q	Question	Response
1	<b>Do you believe GC0143 better facilitates the Grid Code Objectives? Please include your reasoning.</b>	<p>No. Firstly, objectives A, B, D and E are not relevant/ priority objectives during the exceptional circumstances surrounding the COVID19 outbreak.</p> <p>Objective C is not satisfied appropriately by GC0143 for the Water Sector (and likely other key utilities) as it introduces very high risks to key service provision and to the environment.</p> <p>GC0143 also materially affects the statutory obligations on water companies, for example, compliance with Drinking Water Inspectorate, Environment Agency and OfWAT commitments.</p> <p>Embedded generation which primarily exports energy onto to the distribution network with no associated “on-site” load, or where the onsite load does not relate to key services may be disconnected. <i>Note that For renewable generators commissioned under the Renewables Obligation Scheme and the Feed In Tariff Scheme the energy regulator Ofgem and FIT accredited suppliers routinely collect the total generation output, onsite use and export which may be a useful (and validated) data set about how each generator behaves.</i></p> <p><b>The embedded generation associated with Key Utilities should not be considered available for disconnection during low demand periods unless all other avenues have been pursued. An exemption from disconnection should be issued by MPAN.</b></p>

Q	Question	Response
2	<b>Do you support the proposed implementation approach?</b>	<p>No. Northumbrian Water proposes that there be a tiered approach within Grid Code Modification 0143 that recognises two aspects of overall system operation.</p> <p>Firstly, that for the reasons outlined in the previous section, water utility companies (and other essential utilities) be given some form priority within any last resort measures.</p> <p>Northumbrian Water will contact the DNOs directly requesting that our supplies are treated as essential.</p> <p>In practice this would mean that embedded generation exporting directly to the Distribution Network be disconnected to manage the grid system preferentially as there may be other, environmental or quality, impacts arising from disconnecting generators embedded within “essential sites”.</p> <p>Disconnecting Northumbrian Water’s embedded generators which are ‘behind the meter’ could cause significant fluctuations in energy demand locally – creating issues on the Distribution Network that unintentionally lead to brown-outs or supply interruptions that could then give rise to environmental pollution incidents or disruption to the supply of clean drinking water.</p>
3	<b>Do you have any other comments in relation to GC0143?</b>	<p>Whilst objective C is a priority, further consideration must be given to appropriate mitigations of negative impacts before implementation. This is absolutely necessary to ensure that key services are not detrimentally affected across the UK.</p>