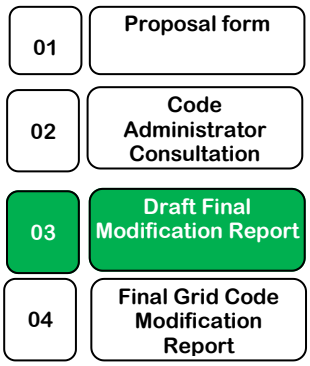
Draft Final Modification Report	At what stage is this document in the process?
# GC0143: ## Mod Title: Last resort disconnection of Embedded Generation	

Purpose of Modification: This modification sets out that under emergency conditions and as a last resort the Electricity System Operator (ESO) may instruct a Distribution Network Operator (DNO) to disconnect embedded generators connected to its system. The requirement for this is due to the unprecedented societal changes brought about by the COVID-19 pandemic which has led to demands out-turning up to 20% lower than predicted

	This Draft Final Modification Report has been prepared in accordance with the terms of the Grid Code. An electronic version of this document and all other GC0143 related documentation can be found on the National Grid website via the following link: https://www.nationalgrideso.com/industry-information/codes/grid-code-old/modifications/gc0143-last-resort-disconnection-embedded The purpose of this document is to assist the Grid Code Review Panel in making its recommendation on whether to implement GC0143.
	**High Impact**: ESO in operating the system; DNOs in potentially being required to take emergency actions; embedded generators in being disconnected under emergency conditions; consumers in preventing security of supply issues
	**Medium Impact** Other Grid Code parties not directly impacted by the need to take emergency actions
	**Low Impact** None

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Contents

Any questions?

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Timetable

The Authority have approved the following timetable:	
Request for Urgency Received	30 April 2020
Panel consideration of Urgency	1 May 2020
Ofgem decision on Urgency	1 May 2020
Publish Code Administrator Consultation (2 Working Days)	1 May 2020 PM
Code Administrator Consultation closing date	5 May 2020
Draft Final Modification Report issued to Panel and Industry	5 May 2020 after 5 PM
Draft Final Modification Report presented to Panel / Panel Recommendation Vote	6 May 2020
Submit Final Modification Report to Authority	6 May 2020
Authority Decision (1 working day)	7 May 2020
Date of Implementation	7 May 2020

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Impact on Core Industry Documentation.

BSC	
CUSC	
STC	
Other	

No cross-code impacts have been identified.

1 About this document

This is the GC0143 Draft Final Modification Report. This document contains the proposed amendments to the Grid Code and the responses to the Code Administrator Consultation which closed on 5 May 2020.

GC0143 was proposed by National Grid ESO and was submitted, with a request for the modification to be treated as urgent, to the Grid Code Review Panel (GCRP) for its consideration on 30 April 2020.

The GCRP met at a Special meeting on the 1 May to discuss the Proposal and urgency request. The Panel recommended, by majority, that the modification be treated as urgent.

The Authority determined that the proposal **should be** treated as Urgent and follow the timeline recommended by the GCRP. The letter to the Authority from the GCRP and the letter from the Authority setting out the reasons for urgency is set out in **Annex 1**.

Code Administrator Consultation Responses

64 responses, including 2 confidential responses, were received to the Code Administrator Consultation. A summary of the responses can be found in Section eleven of this document.

This Draft Final Modification Report has been prepared in accordance with the terms of the CUSC. An electronic copy can be found on the National Grid ESO Website:

https://www.nationalgrideso.com/industry-information/codes/grid-code-old/modifications/gc0143-last-resort-disconnection-embedded

2 Summary

Glossary of terms used in this document

The Panel/ GCRP	Grid Code Review Panel

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ESO	Electricity System Operator
NGESO	National Grid Electricity System Operator
DSO	Distribution System Operators
DNO	Distribution Network Operator
BM	Balancing Mechanism

Defect

At present in the Grid Code while there is a process for the ESO to instruct DNOs to take demand control actions there is not the same detailed ability for the ESO to instruct Distribution System Operators (DSOs) to disconnect embedded generation.

What

Amendments will be made to the Grid Code to clarify the ability of the ESO to do this.

Why

If this change is not made, there is a risk of disruption to security of supply during unprecedented low demand periods caused by the COVID-19 pandemic. This is a rapidly developing situation and could not have been anticipated.

How

The proposed change will set out the ability of the ESO to instruct DNOs to disconnect embedded generation as required in an emergency situation and as a last resort.

3 Governance

Justification for Urgent Procedures

In the Proposer's view this modification is urgent. It is required to be completed before the Bank Holiday on 8 May which is likely to result in a period of low demand with significant operational risk.

If the modification is not completed there is a significant risk of disruption to security of supply; further, if instructions were given to the DNOs in the last resort to disconnect embedded generation it is unclear if these would be legally binding.

Assessing against Ofgem's urgency criteria, an urgent modification should be linked to an imminent issue or a current issue that if not urgently addressed may cause at least one of the following:

a. A significant commercial impact on parties, consumers or other stakeholder(s); or

b. A significant impact on the safety and security of the electricity and/or gas systems; or

c. A party to be in breach of any relevant legal requirements.

Table 1 below outlines how each of the criteria are impacted by this proposed change:

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Table 1

Urgency Criteria	What issue would be caused should this change not be made?
A significant commercial impact on parties, consumers or other stakeholder(s)	Potential security of supply issue causing significant commercial impact
A significant impact on the safety and security of the electricity and/or gas systems; or	Potential security of supply issue caused by low demand period
A party to be in breach of any relevant legal requirements	If instructed to disconnect embedded generation as a last resort, DNOs left in unclear legal position

Panel recommendation and Authority decision

A special Grid Code Review Panel meeting was held on the 1 May 2020 to discuss the modification and request for urgency. The Panel, by majority, recommended that the modification be treated as urgent. A letter was sent from the Grid Code Review Panel to the Authority, on 1 May 2020, recommending that the modification be treated as urgent. The letter outlines the discussion points in the Panel meeting and the comments made by Panel members on the request for urgency.

On 1 May 2020 the Authority decided that GC0143 should be treated as urgent and follow the timeline recommended by the GCRP. The letter to the Authority and the Authority decision letter can be found in Annex 1 of this Consultation document.

4 Why Change?

During the COVID-19 pandemic the societal changes required by the need to achieve social distancing have led to demand for electricity falling by up to 20% compared to predicted values. While the ESO is seeking to mitigate the operational risks due to this by establishing a new service for downward flexibility management, as a last resort if all commercially available options through this service and actions in the Balancing Mechanism (BM) have been taken it may be necessary to seek to control embedded generators. Where these generators are not participants in the BM and therefore do not hold connection agreements with the ESO this can only be achieved by instructing the DNOs to do this through the Grid Code.

Currently in the Grid Code the ability of the ESO to make such instructions is ambiguous and would potentially leave DNOs in a position that they would feel exposed them to legal risk; therefore, the proposed changes seek to clarify these arrangements.

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5 Code Specific Matters

Technical Skillsets

Familiarity with GB frameworks.

Reference Documents

N/A

6 Solution

The changes proposed will give the ESO the clear ability to instruct DNOs to disconnect embedded generation in an emergency situation. This would only be pursued as a last resort if no further actions were available to the ESO either commercially or in the BM. As part of the solution a sunset clause has been included which will time out the additions to the Grid Code in October 2020 if not further amended by this point.

It is the intention that a more considered solution to the issues identified here will be developed in the meantime, potentially by developing a roughly symmetrical arrangement to the existing demand control conditions contained in section OC6 of the Grid Code.

7 Impacts & Other Considerations

As a last resort, this will mitigate the risk of a security of supply issue which will be of benefit to consumers and all industry participants. It is worth noting though that while generators participating in the BM are compensated for any emergency actions instructed by the ESO, there is no such route available to embedded generators that are not BM participants.

Does this modification impact a Significant Code Review (SCR) or other significant industry change projects, if so, how?

No.

Consumer Impacts

If this modification is not implemented quickly the impact on consumers may be disruption to security of supply.

Cost

Industry costs	
Resource costs	**£58,080**– 1 Consultation • 1.5 man days effort per consultation response • 64 consultation respondents
Total Industry Costs	**£58,080**

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8 Relevant Objectives

Impact of the modification on the Applicable Grid Code Objectives:	
Relevant Objective	Identified impact
(a) To permit the development, maintenance and operation of an efficient, coordinated and economical system for the transmission of electricity	None
(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);	None
(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;	Positive
(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	None
(e) To promote efficiency in the implementation and administration of the Grid Code arrangements	None

This modification is required as a last resort to avert disruption to security of supply.

9 Implementation

Whilst it is hoped never to use this, implementation of this modification is sought by 7 May 2020 due to the period of low demand that is anticipated over the Bank Holiday weekend commencing 8 May.

A sunset clause has been included in the legal text that will time out at clock change in October 2020. NGESO commits to progressing a more enduring solution following normal industry processes in the meantime.

10 Legal Text

Proposed legal text is as set out below shown as red line mark-up from the current version of the Grid Code.

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BC2.6.3 Communication With Network Operators In Emergency Circumstances

The Company will issue **Emergency Instructions** direct to the **Network Operator** at each **Control Centre** in relation to actions including special actions as set out in BC1.7, actions in the categories set out under BC2.9.3.3, and **Demand Control** actions. **Emergency Instructions** to a **Network Operator** will normally be given by telephone (and will include an exchange of operator names). **OC6** contains further provisions relating to **Demand Control** instructions.

BC2.9.1 Emergency Actions

BC2.9.1.1 In certain circumstances (as determined by **The Company** in its reasonable opinion) it will be necessary, in order to preserve the integrity of the **National Electricity Transmission System** and any synchronously connected **External System**, for **The Company** to issue **Emergency Instructions**. In such circumstances, it may be necessary to depart from normal **Balancing Mechanism** operation in accordance with BC2.7 in issuing **Bid-Offer Acceptances**. **BM Participants** must also comply with the requirements of BC3.

BC2.9.1.4 In the case of a **Network Operator** or an **Externally Interconnected System Operator**, **Emergency Instructions** will be issued to its **Control Centre**.

BC2.9.3.3 Instructions to **Network Operators** relating to the **Operational Day** may include:

(a) a requirement for **Demand** reduction and disconnection or restoration pursuant to OC6;

(b) an instruction to effect a load transfer between **Grid Supply Points**;

(c) an instruction to switch in a **System to Demand Intertrip Scheme**;

(d) an instruction to split a network;

(e) an instruction to disconnect an item of **Plant** or **Apparatus** from the **System**.

(f) until October 25 2020, an instruction requiring a **Network Operator** to disconnect **Embedded Power Stations** from their **System**. For the avoidance of doubt, this includes the disconnection of **Embedded Power Station(s)** connected to the **Network Operator's System** which are owned or operated by generators that are not **BM Participants**. Such an instruction may:

i) be specific and require the **Network Operator** to disconnect specified **Embedded Power Station(s)**;

ii) be for the **Network Operator** to disconnect **Embedded Power Stations** supplied via one or more specified **Grid Supply Point(s)** with an aggregate **Registered Capacity** of a specified value; or

iii) be for the **Network Operator** to disconnect **Embedded Power Stations** supplied via one or more specified **Grid Supply Point(s)** such that a specified proportion of the aggregate **Registered Capacity** is disconnected.

In any such case the **Network Operator** will not be required to disconnect **Embedded Power Stations** with an aggregated **Registered Capacity** greater than that of the **Embedded Power Stations** supplied via the specified **Grid Supply Point(s).** An instruction from **The Company** to the **Network Operator** will be given to commence

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reconnection. Reconnection shall not take place until such an instruction has been received and be carried out in accordance with the instruction.

BC2.9.4.1:

Where The Company is unable to satisfy the required System NRAPM or Localised NRAPM by following the process described in BC1.5.5, The Company will issue an Emergency Instruction to exporting BM Units for De-Synchronising on the basis of Bid-Offer Data submitted to The Company in accordance with BC1.4.2(d). If **The Company** is still unable to satisfy the required **System NRAPM** or **Localised NRAPM** then **The Company** may issue **Emergency Instructions** to **Network Operator(s)** as set out under BC2.9.3.3(f) to disconnect **Embedded Power Station(s)** from their **System**.

Relevant defined terms: (unchanged, provided for information)

Apparatus	Other than in OC8, means all equipment in which electrical conductors are used, supported or of which they may form a part. In OC8 it means High Voltage electrical circuits forming part of a System on which Safety Precautions may be applied to allow work and/or testing to be carried out on a System.
Plant	Fixed and movable items used in the generation and/or supply and/or transmission of electricity, other than **Apparatus**.

Emergency Instruction	An instruction issued by **The Company** in emergency circumstances, pursuant to BC2.9, to the **Control Point** of a **User**. In the case of such instructions applicable to a **BM Unit**, it may require an action or response which is outside the **Dynamic Parameters** or **Other Relevant Data**, and may include an instruction to trip a **Genset**.

11 Code Administrator Consultation: Responses

The Code Administrator Consultation was issued on 01 May 2020 for two Working Days, with a close date of 05 May 2020.

64 responses were received. A summary of the responses can be found below. The full responses can be found in Annex 2.

Most respondents stated that they understand the reasoning behind the modification being raised and the threat to Security of Supply that the current situation (COVID-19) poses for the GB National Electricity Transmission System (NETS).

Whilst there was broad understanding of the issue facing National Grid ESO there were concerns raised around the approach outlined in this modification. Questions have been raised around the approach through urgency and whether there would be unintended consequences to the modification being implemented as a result.

Various concerns were raised regarding the way in which the DNOs would fulfil instructions received from the ESO, and whether the consequences for customers (particularly those for whom generation formed part of a more complex industrial site, or where deenergisation of generation would also mean the cutting off of local demand) would form part of the decision-making process.

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There was broad support that the defect did need addressing but that it should be done in a more thorough, considered way ahead of implementation. National Grid ESO shared these concerns but were of the opinion that the urgency in putting a last resort tool in place to prevent wider consumer impacts meant that this risk was unavoidable in establishing an immediate solution while needing to be addressed on a more enduring basis.

The themes that have emerged from the Consultation are grouped below:

Environmental impacts

Some respondents outlined the environmental impact should they be instructed by their DNO to disconnect without there being time to complete the action in a considered manner. This could include emissions from the site impacted the environment. Additional concerns were raised around utilities and their need to not be disconnected from the system, this included some water companies and the impact on water supplies.

Implementation & transparency

Points were raised around:

- What visibility the DNOs have and therefore how they would know what to request to disconnect
- What the instruction from the ESO would look like and outline
- How much notice the embedded generator would have to disconnect
- That the order in which disconnection is requested should link to the government carbon net zero targets (or confidence to invest in renewable generation will be impacted) and therefore renewable generation should be considered last
- That the order in which disconnection is requested should be done dependent on how secure the connection is
- Some respondents stated that there needs to be more transparency around what action would be taken ahead of this ‘last resort’ instruction and that these steps need to be in the public domain.
- It was also highlighted that additional clarity from the DNOs would be of benefit so that embedded generators would be aware of ‘what order’ they would be requested to disconnect.
- Time to implement contingency plans, some have stated that there is not enough time to get plans in place ahead of 8 May 2020

Requests have been made for:

- Urgent clarification of how disconnection would be implemented by each DNO; including which sites would be disconnected, whether sites with both export and import would be disconnected, whether disconnection would be automatic or manual
- Plans between the DNOs and large users in their region who could be instructed to be put in place so that it is absolutely clear what will be asked of users
- Advance notice of disconnection of at least 30 mins
- The ESO to publish on its website an assessment of the likelihood that the ESO will instruct embedded generators to be disconnected in each network on a day ahead basis

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Compensation & level playing field

Concerns were raised around a level playing field for embedded generators that are not part of the BM. It was noted that Transmission Connected Generators would receive compensation, along with consumers but that embedded generators (not part of the BM) do not have arrangements to receive any compensation should the instruction be enacted.

Concerns were also raised around the fact that this modification has been raised and that its been raised linking to the tier of connection rather than the security of the connection.

Asset impact and restarting

- Should the disconnection be required without prior notice that this could damage assets and as such incur maintenance and/or repair costs
- Some respondents also highlighted that the restart of some plant would include a site visit and that in the current situation they have concerns around travel and restrictions in place across the UK

Time taken to raise the change

It was highlighted that the ESO could have raised this change at an earlier date and that they had the opportunity to do so in the lead up to the paper being raised on the 30 April 2020. The ESO would contend that they raised the proposal as soon as the issue was clearly identified in a rapidly developing situation.

Offers to work with the ESO and new ESO product (Optional Downward Flexibility Management – PDFM)

A couple of respondents stated that they would be open to have discussions with the ESO around what they could do to assist in the current situation.

A new product being offered by the ESO was noted and clarity was request on how this proposed change would interact with the new product.

Ongoing Grid Code modifications

GC0133 'Timely informing of the GB NETS System State condition'

and GC0109 'The open, transparent, non-discriminatory and timely publication of the various GB electricity Warnings or Notices or Alerts or Declarations or Instructions or Directions etc., issued by or to the Network Operator(s)'

Some respondents stated that these modifications need to be implemented as soon as possible to aid the transparency around the system state to compliment this proposed change so that industry are aware of the situation at any given time.

System Restoration Plan (SRP) compatibility

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It was questioned as to whether this modification is compatible with **GC0127 'EU Code Emergency & Restoration: Requirements resulting from System Defence Plan'** as they do not have a CUSC contact.

A number of other considerations for an enduing solution have been highlighted in the consultation responses that will be taken into consideration for the second phase of this piece of work including a response from Elexon on the interaction with the BSC.

Annex 1: Urgency letters

These can be located in the annex zip folder labelled Annex 1.

Annex 2: Code Administrator Consultation responses

These can be located in the annex zip folder labelled:

Annex 2 Part 1

Annex 2 Part 2

Annex 3 Part 3

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