

# Grid Code Review Panel

**Thursday 30 July 2020**

Online Meeting via WebEx



## WebEx details

Meeting link (copy into web browser):

<https://uknationalgrid.webex.com/webappng/sites/uknationalgrid/meeting/download/1f89c7cc32d34a448b9961d5932dfc78?siteurl=uknationalgrid&MTID=m8e14e7b0a33174e52bc55ff4123621c1>

## Audio connection:

Telephone: 020 7108 6317

Access code: 130 122 2537

Password: PQwp3FBg9G3

**nationalgrid**ESO

# WELCOME

As we continue to operate in these uncertain times and following best practice from other businesses, we want to adapt to be able to facilitate the governance process in the best possible way. Since moving to virtual Panel meetings, we have found it harder to accurately capture minutes and attribute comments correctly to attendees. We are also conscious of the impact of short periods of poor sound quality. With your consent, we wish to use WebEx to record all Panel meetings to help us accurately document minutes. We want to assure you that the recordings will be explicitly used to document minutes only and the same protocol for Panel meetings still applies in terms of strict confidentiality. As has always been the case, the draft minutes will be sent to Panel and the Chair for approval each month. Once the minutes are approved, the recording will be deleted. A reminder of this and consent will be sought at the beginning of each meeting, to be noted in the minutes.

As the independent Panel Chair, we have tested the appropriateness of recording Panel meetings with Trisha McAuley who is supportive of the approach. We welcome any comments or feedback on this.

# Introductions & Apologies for absence

- **Apologies**

Damian Jackman – SSE

Ross McGhin - Onshore Transmission Operator Representative

- **Alternates**

Richard Woodward – Onshore Transmission Operator Alternate

- **Presenters**

Rob Marshall, Code Governance Manager – Prioritisation Process

Rob Wilson, NGESO Technical Codes Change Manager – GC0147

Antony Johnson, NGESO Technical Codes Team – GC0148

Phil Smith, NGESO – ***Standing Item*** - System Reporting

- **Observers**

Kirsten Shilling, NGESO Code Administration Team

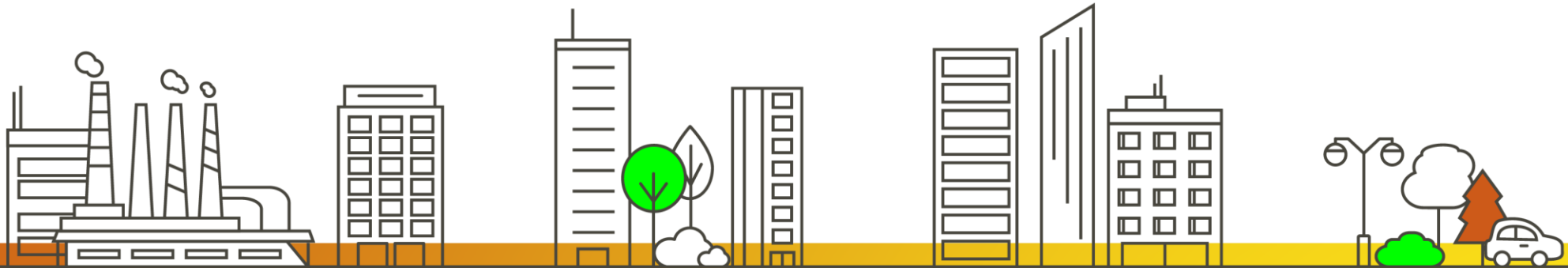
Bryan Rhodes - Alternate, Offshore Transmission Operator Representative



# Approval of Panel Minutes

**Approval of Panel Minutes from the Meeting  
held 25 June 2020**

**Approval of Special Panel Minutes from the  
meetings held on 01 May 2020**



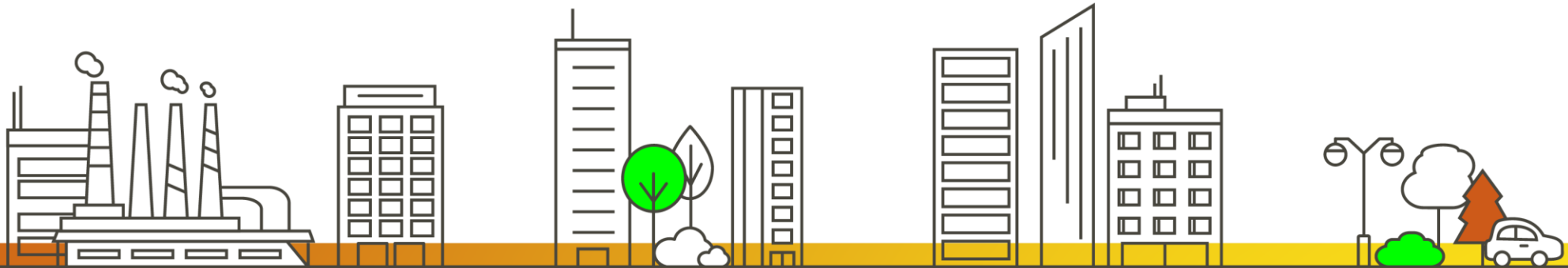
# Actions Log

## Review of the actions log



# Chair's Update

An update from the Chair about ongoing relevant work, discussions etc.



# Authority Decisions



- ❑ **GC0133** – Timely informing of the GB NETS System State condition  
[Pending]

# New modifications submitted

- **GC0147** - Last resort disconnection of Embedded Generation – enduring solution

Presented by Rob Wilson, NGESO


- **GC0148** - Emergency & Restoration – Phase II

Presented by Antony Johnson, NGESO



NEW





**Rob Wilson**  
**Grid Code Panel**  
**30<sup>th</sup> July 2020**

**GC0147**

**Last resort disconnection of Embedded  
Generation – enduring solution**

# The defect - recap of GC0143 background and urgency

- Under emergency conditions the Electricity System Operator (ESO) may need to instruct a Distribution Network Operator (DNO) to disconnect embedded generators connected to its system
- Existing ability under the Grid Code to do this was felt to lack detail and be legally ambiguous
- GC0143 clarified the format of instructions and removed the ambiguity
- The requirement for this was 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
- During very low demand periods very few controllable larger generators will be running
- Urgency was required to achieve a solution before the Bank Holiday weekend on 8 May 2020
- Sunset clause included in solution times out on 25 Oct 2020 after which the original defect will return

# GC0143 Timeline

| Milestone  | Date                            |
|--|---------------------------------|
| Raised at Grid Code panel                          | 1 May 2020                      |
| Ofgem agree urgency                                | 1 May 2020                      |
| Code Administrator Consultation                    | 1 May 2020 to 5pm on 5 May 2020 |
| Panel meeting to approve Final Modification Report | 6 May 2020                      |
| Ofgem approval                                     | 7 May 2020                      |
| Implementation                                     | 7 May 2020                      |



# GC0143 Ofgem decision – key points

In approving GC0143 Ofgem's decision noted the following key points:

- The need for urgency
- The time-limited nature of the GC0143 solution
- Use of disconnections as a last resort only following the exhaustion of all commercial alternatives
- The concerns of respondents on environmental impact, safety issues and impacts on industrial processes, and an expectation on the ESO and DNOs to consider the order in which generation could be disconnected to minimize risks
- The need for an enduring solution which would:
  - Be progressed imminently
  - Allow for full engagement and consultation
  - Take account of the responses received to the GC0143 consultation



# Consultation responses – summary & key themes

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 were raised around the approach through urgency and whether there would be unintended consequences to the modification being implemented as a result, plus the need for a more considered enduring solution.

# Theme #1 - The development of modification GC0143

| Concern                        | Detail   |
|--------------------------------|--|
| Time taken to raise the change | It was highlighted by some respondents that in their view the ESO could have raised this change earlier and that the ESO had the opportunity to do so in the lead up to the paper being raised on the 30 April 2020.   |
| Use of urgency                 | <p>Concerns were raised at the modification being treated as urgent, the limited opportunity for industry engagement, and whether there would be unintended consequences of the modification being implemented as a result.</p> <p>Although there was broad support that the defect needed addressing, many respondents felt that it should have been done in a more thorough, considered way ahead of implementation.</p> <p>Some respondents also stated that there was not enough time to get plans in place ahead of implementation on 7 May 2020.</p> |
| Enduring solution required     | <p>Many respondents highlighted the need for an enduring solution to be developed as soon as possible. It should address the points raised in the GC0143 discussions and consultation responses, and should ensure that all relevant stakeholders are both made aware of the proposal and given suitable opportunity to engage in developing the solution.</p> <p>Some also stressed that the temporary solution, having been approved and implemented, should not set a precedent for the enduring solution.</p>  |

## Theme #2 - Carrying out emergency instructions

| Concern                                      | Detail  |
|--|---|
| Clarity required over order of disconnection | <p>Clarity over the order in which generators would be disconnected, with some suggesting that certain generators, or types of generators, should not be subject to disconnection. Several factors were recommended as considerations that should be included:</p> <ul style="list-style-type: none"> <li>• The government's carbon net zero targets, with the view that renewable generation should not be disconnected ahead of fossil fuel generation.</li> <li>• Security of connection - those power stations providing the greatest level of security of supply should be the last to be disconnected.</li> <li>• 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 cutting off local demand, or could have environmental impacts.</li> </ul> |
| 'Last resort' only                           | <p>Assurance that use would only be in an emergency situation and as a last resort after all other options had been exhausted. Several suggested that this should be included in the legal text. It was also felt that there should be more transparency over the steps that would be taken ahead of any instructions being given, and that these details should be in the public domain.</p>   |
| DNOs' visibility                             | <p>Concern over the visibility that the DNOs have of the information required to carry out emergency instructions, and how they would know what to disconnect.</p>  |
| Clarity over instruction                     | <p>Respondents wanted more clarity over the disconnection process, including what the instruction from the ESO would look like, how DNOs would comply with the instruction and how generators would be notified.</p>  |
| Notice period before disconnection           | <p>Clarity over how much notice generators could expect before disconnection.</p>   |
| Reporting requested                          | <p>Responses included the request that reporting is made publicly available detailing any emergency instructions of this type that are given by the ESO, including the rationale.</p>   |

## Theme #3 - Impacts of emergency disconnection

| Concern                                  | Detail   |
|--|--|
| Commercial impact / lack of compensation | <p>One of the most frequent concerns raised in the responses was the lack of compensation that would be provided to any embedded generators that were disconnected via this process.</p> <p>This was seen to be a financial risk to generators, with many believing this demonstrated the absence of a level playing field and that the process was detrimental to competition since, in contrast, transmission connected generators and those that are in the Balancing Mechanism would receive compensation should the instruction be enacted.</p>   |
| Damage to assets                         | <p>Potential for emergency disconnection to cause health and safety risks, damage to assets and the need for significant maintenance intervention. In some cases, forced disconnection could lead to wider plant shutdowns and disruption to industrial processes. They could be followed by further shutdowns after the system was restored. Some respondents wanted assurance from DNOs that essential infrastructure sites would not be affected.</p> <p>Respondents wanted clarity over the reconnection process, and suggested that, where restarting plants would require a site visit, this would be more difficult now due to the COVID-19 restrictions.</p> |
| Risk to network stability                | <p>There were concerns at the impact to network stability if certain generators that provide services such as inertia and voltage control were disconnected.</p>   |



# What has been done to address concerns?

| Action   | Progress   |
|--|--|
| Work with DNOs on communication that can be published to improve transparency  | Joint guidance agreed and published*   |
| Letter to be published from the ESO on their position on GC0143  | Published*   |
| Review all responses ahead of raising a modification for the enduring solution involving all stakeholders in its development | Report required by Ofgem – completed and published*                              |
| Establish new ODFM service to provide commercial alternative to disconnection  | In place   |
| Repeat consultation to comply with EBGL A18 requirements   | 1 month consultation ran from 21 May to 22 June.                                 |
| Develop enduring solution following normal governance including engagement and consultation                                  | Needs to be in place by Spring 2021; to be raised at July Grid Code Review Panel |

# Optional Downwards Flexibility Management (ODFM)

- The ESO balances balance generation and demand in real time.
- To allow us to do this we need to hold enough reserve to turn generation up or down to meet demand second by second.
- When demand is low, we would expect embedded generation to be running along with nuclear, any transmission connected renewable generation, interconnectors and some conventional generation running at minimum stable export limit (SEL).
- With this profile, there may be a requirement for additional flexibility to balance generation and demand, as well as to achieve sufficient negative reserve and high frequency response.
- ODFM is a new optional service for non-BM parties to allow the ESO to access flexibility that is not currently available in real time.
- ODFM in its current form will time out on 25 October 2020.
- A new product will be developed for use in 2021.
- <https://data.nationalgrideso.com/ancillary-services/optional-downward-flexibility-management-odfm1>

# Use of Emergency Instructions and ODFM in May 2020

## Use of Emergency Instructions:

None – EIs are a last resort to be used only when all commercial alternatives are exhausted

## Use of ODFM:

Sunday 10 May

- Demand of 15.5GW, 238MW used for 3 hours

Saturday 23 May

- Demand of 14.8GW over 1B period (1GW of ODFM used)
- Demand of 16.7MW over 3B period (1938MW of ODFM used)

Sunday 24 May

- 1B demand of 14.5GW (800MW of ODFM used)
- 3B demand of 17GW (no ODFM used)

Monday 25 May

- 1B demand of 16.8GW (no ODFM used)
- 3B demand of 16.45GW (1020MW of ODFM used)

**1B – night/early morning minimum**  
(ie low demand but no solar)  
**3B – afternoon minimum**  
(slightly higher demand but with solar)

# Joint ESO/DNO Guidance - High Level Principles

The following high-level principles will be adhered to where possible and practical. However, it is also recognised that in a developing situation there may be circumstances that prevent either NGESO and/or DNOs from doing this. As experience of this and NGESO's requirements develop, the means of implementing an EI will evolve.

NGESO will observe the following conditions:

**An NRAPM will be issued at the earliest opportunity and prior to requesting EI**

The NRAPM will detail total volume shortfall of downward regulation, applicable time period(s) and time of next review

**Total volume of emergency instruction requested across GB will typically be in blocks of 500-700MW over a 30min period**

Emergency instruction of embedded generation will be:

**Equal across all DNO license areas**

The aggregate registered capacity of the embedded generation associated with an EI will be the same for all DNO license areas

**Likely to cover a whole DNO license area**

The aggregate registered capacity of the embedded generation associated with an EI will be requested at a DNO GSP or GSP group level

**Requested in 50MW blocks**

The aggregate registered capacity of the embedded generation will be in 50MW blocks per GSP, GSP group or DNO license area

**Unlikely to exceed 50% of the combined forecast of embedded wind and PV**

The volume of EI requested per DNO license area is unlikely to exceed 50% of the combined forecast of embedded wind and PV within that area

**Implemented by DNOs in pre-prepared blocks within 5 to 30 min**

Emergency instructions should be implemented 'without delay' and using reasonable endeavours. Where a pre-prepared switching schedule is used this should take between 5 and 30 min. Implementation of a more specific emergency instructions via a bespoke switching routine could take longer but will still be on a best endeavours basis

**Implemented by DNOs in such a way as to deliver a reduction in export, as a consequence of disconnection, as close to 50MW per block as is practicable (ideally between 80 and 100%)**

Where practicable and recognising the real-time challenges of this since EIs are for disconnection of registered capacity and need to be implemented 'without delay', the reduction in export as a consequence of disconnection should be as close to 50MW per block as is practicable (ideally between 80 and 100%), preferably with reference to actual output where this can be established in reasonable timescales



# Joint ESO/DNO Guidance - Priorities for maintaining connection

The priority for maintaining connection to the network must consider whole system impact. These specific priorities will be kept under review in line with, for example, expectations for the season ahead. Priorities should reflect the general and specific information available to DNOs at the time with the aim of meeting the following objectives:

- 1) Maximising value to the total system and local networks by reducing the requirement for other balancing actions; and
- 2) Minimising plant, environmental or system impact on the local network and/or provider

The following guidance has been developed between NGESO and DNOs, taking into account system conditions this summer:

**The order that embedded generation is disconnected will be at the discretion of the DNO**

Under Grid Code BC2.9.3.3 (f) (i) NGESO may requested disconnection of a specific embedded generator

**This will take into account, where practicable, the effectiveness of the disconnection to address the issues trying to be resolved, wider system issues and the potential consequences for the embedded generators**

**It will be broadly in line with the following:**

| ORDER | CATEGORY OF GENERATION                               | COMMENT  |
|-------|--|--|
| 1     | Non-synchronous generation                           | In order to maintain system inertia. The export from these technology types could be weather dependent. Although the instruction would be to disconnect 'registered capacity', it is still expected that this will deliver actual MW output change of between 80% and 100% of requested volume |
| 2     | Synchronous generators without any associated demand | Lower down the list due to the need to maintain system inertia wherever possible   |
| 3     | Synchronous generators with associated demand        | For example, CHP installation waste management facilities, other industrial facilities with substantial on-site demand   |
| 4     | Critical DG support of COVID and CNI sites           |  |

**The reconnection of embedded generation will be:**

**Not completed until notified by NGESO**

**Delivered by a 'consent to reconnect' by NGESO, to be completed as soon as reasonably practicable**

Recognising that the process to reconnect embedded generation may not be straightforward, NGESO will issue a consent to reconnect, and expect this to happen as soon as practicable

# Areas to Address in Enduring Solution

- Symmetry with demand control instructions and protocols in section OC6 of the Grid Code
- System warnings as covered under section OC7.4 of the Grid Code
- Compensation arrangements – not covered under the Grid Code but need to be considered. Also whether Article 13 paragraph 7 of the Clean Energy Package applies.

*NB This requires that “where non-market based redispatching is used, it shall be subject to financial compensation by the system operator requesting the redispatching....except in the case of producers that have accepted a connection agreement under which there is no guarantee of firm delivery of energy”.*

- Definition of last resort. Although in an emergency the ESO and DNOs have to maintain some flexibility to avoid worse disruption for consumers.
- Any other options such as turndown short of disconnections
- How an instruction will be implemented. Including:
  - Order of priority
  - Considerations around damage to equipment/environmental impact
  - Restoration process
- Reporting post-event
- Any cross-code impacts

# GC0147 Legal Text – proposed changes

The following sections have been updated in the proposed legal text for GC0147

| Section   | Changes  |
|---|--|
| OC6B (new section)  | <ul style="list-style-type: none"><li>• New section added, OC6B: Embedded Generation Control, which outlines the procedures for Embedded Generation Control and Disconnection</li><li>• Broadly symmetrical with the current OC6: Demand Control</li></ul> |
| OC7   | <ul style="list-style-type: none"><li>• New System Warnings added to cover Embedded Generation Control.</li></ul>  |
| Glossary & Definitions  | <ul style="list-style-type: none"><li>• Various new and amended defined terms including the new System Warnings</li></ul>  |
| BC2.6.3 Communication With Network Operators In Emergency Circumstances | <ul style="list-style-type: none"><li>• Updated to include Embedded Generation Control (symmetry with Demand Control)</li></ul>  |
| BC2.9.1 Emergency Actions   | <ul style="list-style-type: none"><li>• Timed out GC0143 solution with sunset clause removed</li><li>• Embedded Generation Control added to Emergency Actions</li></ul>  |

# Timeline for Development of Enduring Solution

| Milestone  | Date           |
|--|----------------|
| Raise modification at Grid Code Review Panel       | 30 July 2020   |
| Workgroup nominations sought                       | August 2020    |
| Workgroup meetings x 3                             | Sep – Oct 2020 |
| Workgroup consultation (normally 15 working days)  | Oct 2020       |
| Workgroup report presented to panel                | Nov 2020       |
| Code Administrator consultation (1 month)          | Dec 2020       |
| Draft final modification report presented to panel | Jan 2021       |
| Submission of final modification report to Ofgem   | Feb 2021       |
| Ofgem decision (25 working day KPI)                | March 2021     |
| Implementation                                     | + 10 days      |





# Panel Decision

Does the Panel agree that:

- This is a Standard Governance modification?; and
- This modification should proceed to Workgroup?

# Critical Friend Feedback: GC0147

| Code Administrator comments  | Amendments made by the Proposer  |
|--|--|
| <ul style="list-style-type: none"><li>• Updated modification submission/Panel dates.</li><li>• Updated contact details for the Code Admin and National Grid ESO rep.</li><li>• Highlighted impacts on EBGL Article 18.</li><li>• Made minor typographical amendments and requested clarification on sections of the Proposal form.</li><li>• Requested clarity on the reasons behind highlighted sections of legal text.</li><li>• Added reference material and hyperlink.</li></ul> | <p>The Proposer accepted all the changes, and made the necessary clarifications within the Proposal form and legal text.</p> |



A person with blonde hair is seen from behind, looking out over a city skyline at sunset. The sun is low on the horizon, creating a warm, golden glow. Several bright, diagonal light streaks, resembling digital data or energy, cut across the right side of the image. The person is standing on a balcony or rooftop, with a metal railing visible in the foreground. The city below is filled with various buildings, including a prominent church spire in the distance.

# GC0148: Emergency and Restoration Code – Phase II

Antony Johnson - National Grid ESO

# Summary

- Background
- The Issue and Defect
- Articles falling into Phase II of E&R Code
- Related E&R Articles
- Other Considerations
- Distributed Re-Start
- Proposal
- Interested Parties
- Panel Decision / Next Steps



# Background

- In 2019, the ESO submitted its proposed solution to Ofgem for implementation of the European Emergency and Restoration Code
- This comprised of several submissions:-
  - Grid Code Modification GC0125 (EU Code Emergency & Restoration: Black Start testing requirements for Interconnectors) – *Approved – 5<sup>th</sup> February 2020*
  - Grid Code Modification GC0127 (EU Code Emergency & Restoration: Requirements resulting from System Defence Plan) – *Approved – 5<sup>th</sup> February 2020*
  - Grid Code Modification GC0128 (GC0128 EU Code Emergency & Restoration: Requirements resulting from System Restoration Plan) – *Approved 5<sup>th</sup> February 2020*
  - System Defence Plan – *Submitted December 2019 - Awaiting Approval*
  - System Restoration Plan – *Submitted December 2019- Awaiting Approval*
  - Test Plan – *Submitted December 2019 - Awaiting Approval*
  - Terms and Conditions related to Emergency and Restoration EU Network Code – *Submitted November 2019*
  - Market Suspension Proposals – *Currently subject to Grid Code Modification GC0144*
  - A link to the above documents are available from the attached link:-
- <https://www.nationalgrideso.com/industry-information/codes/european-network-codes/other-enc-documents>

# The Issue and Defect

- The EU Emergency and Restoration Code (Regulation EU 2017/2196) contains two timeframes:-
  - Requirements to be delivered by 18 December 2019 (*Completed – see previous slides*)
  - Specific Articles defined in the EU Emergency and Restoration Code which have a completion date of 18 December 2022.
- The purpose of this presentation is to:
  - Highlight the issues in the EU Emergency and Restoration Code which have a completion date of 18<sup>th</sup> December 2022 and which need to be implemented in GB to ensure compliance
  - Address outstanding issues identified from Phase I of the implementation of the EU Emergency and Restoration Code
    - Application of the EU Emergency and Restoration Code to Smaller players (eg Non-CUSC Parties)
    - Application of Storage Units switching from import to export during low System Frequencies
    - Interaction with other developments – eg the Distributed Re-Start Work, GC0134 and GC0117
    - Consider what future changes may need to be made to the System Defence Plan, System Restoration Plan and Test Plan noting these three documents are still with Ofgem awaiting approval

# Articles falling into Phase II of E&R Code (1)

- Article 15(5) to 15(8) and Article 41 of the E&R apply from 18<sup>th</sup> December 2022.
  - Art 15(5) to 15(8)
    - Design of the Low Frequency Demand Disconnection scheme (LFDD) including the effect of Netted Demand
    - The need to consider the effect of Embedded Generation and least load behaviour on the LFDD scheme
    - The need to consider time delays, avoidance of tripping generation contributing to system inertia and limit risks which could lead to operation outside security limits
    - Conditions to be considered under which netted demand would be integrated as part of the low frequency demand disconnection scheme and whether or not this is appropriate in GB
  - Art 41
    - Communication resilience, equipment redundancy and backup power supplies for 24 hours required for the Restoration Plan
    - Technical requirements for voice communication facilities (agreed with DSO's, SGU's and Restoration Service Providers)
    - Interaction and dependability of TSO to TSO vice communication Systems
    - Ability of SGU's which own and operate Type A and Type B Power Generating Modules to only have data communication facilities instead of voice communication facilities
    - The optional use of an additional voice communication system to support the system restoration plan if required.

# Articles falling into Phase II of E&R Code (2)

- Articles 42(1), (2) and (5) of the E&R Code also apply from 18<sup>th</sup> December 2022.
  - Art 42 (1), (2) and (5)
    - (1) – Each TSO to make available critical tools and facilities referred to in Art 24 of SOGL (eg monitoring system state, telecommand systems, control room interaction, operational security analysis and communications facilities to facilitate cross border trade) for 24 hours in the case of a primary power loss.
    - (2) – Each DSO, SGU and Restoration Service Providers to make critical tools and facilities (see bullet point 1 above) available for 24 hours in the case of primary power loss.
    - (5) – Substations identified as essential for the restoration plan are required to be operational in the case of primary power loss for 24 hours

# Related E&R Articles

- The following articles are related to Articles 15(5) – 15(8), 41, 42(1),(2) and (5) and will require some attention as part of this modification.
- Article 50 – Low frequency demand disconnection issues / review of the System Defence Plan
- Article 48(3) – Test Plan for testing Inter TSO communication facilities – 18 December 2024
- Article 15(9) – Low Frequency Demand Disconnection Scheme – Netted Demand.



# Other Considerations

- In addition to the areas of the EU Emergency and Restoration Codes which are required to be implemented by 18 December 2022 there are some other areas of unfinished business from Phase I and more widely which need to be addressed through this work
  - Application of the EU Emergency and Restoration Code to Smaller players (eg Non-CUSC Parties)
  - Application of Storage Units switching from import to export during low System Frequencies – The current Grid Code only requires tripping.
  - Interaction with other developments – eg the Distributed Re-Start Work, GC0117 (Improving transparency and consistency of access arrangements across GB by the creation of a pan-GB commonality of PGM requirements) and GC0134 (Removing the telephony requirements for small, distributed and aggregated market participants who are active in the Balancing Mechanism)
  - Consider what future changes may need to be made to the System Defence Plan, System Restoration Plan and Test Plan noting these three documents are still with Ofgem awaiting approval

# Distributed Re-Start

- The Distributed Re-Start Project is one which recognises that the traditional suppliers of Black Start Services (Transmission Connected Thermal Plant) are becoming increasingly scarce
- The aim of this project is to look at the ability of:-
  - Other providers to provide Black Start Services including Embedded Generators
  - The ability of Distribution Network Operators to restart parts of their network during a Black Start Event using Embedded Generators which offer Restoration services
  - Encourage Smaller participants into the Defence and Restoration arena.
  - Where Non-CUSC Parties are providing such services they would need to be caught under the remit of the EU Emergency and Restoration Code
- In view of the significant synergies and overlap between the Emergency and Restoration Code and Distributed Re-Start Work, it seems appropriate to combine all of the deliverables into one workgroup
- The distributed Re-Start Project is due to run between March 2019 and March 2022

# Proposal

- Issue to be discussed at July GCDF
- Present the issues and deliverables to the GCRP – July/August
- Propose that a Grid Code Workgroup should be established under the normal Governance route and to consider the following issues:-
  - Update the GB Framework to include E&R Articles 15(5) – 15(8), Art 41 and Art 42 (1),(2) and (5) and assess the related Articles of 50, 48(3) and 15(9).
  - Consider how Non-CUSC Parties are caught by the requirements of the EU E&R Code
  - Develop requirements for Electricity Storage Modules to transition from import to export during low system frequencies
  - Update the System Defence Plan, System Restoration Plan and Test Plan
  - Consider what changes are required to the GB Industry Codes – eg Grid Code (OC5, OC9 and BC2), STC (in particular STCP 06-1) and Distribution Code (DOC9 / G98 / G99)
  - Many of the issues are also relevant to the Distributed Re-Start Project – the ability of embedded Generation and DNO's to participate in a Black Start and System Restoration event. It seems appropriate that this working group would achieve the same objective
  - Be aware of related Work (GC0117, GC0134) and the Open Networks Work

# Interested Parties (including Significant Grid User's)

- Generators (Large, Small and Medium Power Stations)
- Aggregators and Virtual Lead Parties
- Non-CUSC Parties
- Distribution Network Operators
- Transmission Licensees
- Defence and Restoration Service Providers
- The ESO

# Proposer view on Panel Decision / Next Steps

- Panel is invited to agree this proposal proceeds to a Workgroup
- Members of the Grid Code Review Panel who are also members of the Distribution Code Review Panel are invited to discuss this issue at the Distribution Code Review Panel and recommend it is established as a combined Grid Code / Distribution Code Workgroup
- Suggest the first Workgroup meeting is held in Q3 2020
- It is important that the nomination process includes as many interested parties (Significant Grid User's (SGU's)) as possible, particularly from smaller sectors
- The work needs to be completed by December 2022



# Panel Decision

**Does the Panel agree that:**

- This is a Self-Governance modification?; and
- This modification should proceed to Workgroup?

# Does GC0148 meet the Self-Governance criteria?

## Self-Governance Criteria

A proposed Modification that, if implemented,

(a) is unlikely to have a material effect on:

- (i) existing or future electricity consumers; and
- (ii) competition in the generation, distribution, or supply of electricity or any commercial activities connected with the generation, distribution or supply of electricity; and
- (iii) the operation of the National Electricity Transmission System; and
- (iv) matters relating to sustainable development, safety or security of supply, or the management of market or network emergencies; and
- (v) the Grid Code's governance procedures or the Grid Code's modification procedures, and

(b) is unlikely to discriminate between different classes of Users



# In Flight Modification Updates

**Review of all Grid Code modifications  
with current status, next steps and any  
Panel recommendations**

# Critical Friend Feedback: GC0148

| Code Administrator comments   | Amendments made by the Proposer  |
|---|--|
| <ul style="list-style-type: none"><li>• Updated modification submission/Panel dates.</li><li>• Made minor typographical amendments and requested clarification on a sentence within the proposal form.</li><li>• Added dates.</li></ul> | <p>The Proposer .....</p> <ul style="list-style-type: none"><li>• Accepted amendments and sent a clean version back.</li><li>• Requested to add in the panel dates and when modification was raised.</li></ul> |

# Dashboard – Grid Code (as at 22 July 2020)

| Category   | Feb                     | Mar         | Apr                   | May                              | Jun                                       | Jul                   |
|--|-------------------------|-------------|-----------------------|----------------------------------|---|-----------------------|
| New Modifications  | 2                       | 2           | 1                     | 3                                | 0   | 2                     |
| In-flight Modifications                                  | 20                      | 21          | 22                    | 25                               | 25  | 27                    |
| Modifications issued for workgroup consultation          | 0                       | 0           | 1<br>GC0131           | 1<br>GC0134                      | 0   | 1<br>GC0131           |
| Modifications issued for Code Administrator Consultation | 1<br>GC0107/ 113        | 1<br>GC0133 | 2<br>GC0130<br>GC0136 | 1<br>GC0143                      | 1<br>GC0143                               | 2<br>GC0142<br>GC0131 |
| Workgroups held  | 2                       | 1           | 1                     | 4                                | 2   | 3                     |
| Authority Decisions                                      | 0                       | 0           | 0                     | 1<br>GC0143,<br>GC0096<br>GC0105 | 0<br>GC0132                               | 0                     |
| Implementations  | 3<br>GC0125/<br>127/128 | 1<br>GC0135 | 0                     | 1<br>GC0143                      | 4<br>GC0096<br>GC0105<br>GC0129<br>GC0132 | 0                     |
| Modifications on Hold                                    | 1                       | 1           | 1                     | 1                                | 1   | 1                     |
| Workgroups postponed due to quoracy issues               | 0                       | 0           | 0                     | 0                                | 0   | 0                     |



# Grid Code Workgroups for next 3 months (as at 22 July 2020)

## July

- GC0145 – 7
- GC0134 – 27 Jul
- GC0139 – 1 Jul
- GC0141 – 23 Jul

## September

- GC0145 x 2 – 1 Sep and 29 Sep
- GC0147\* x 2
- GC0138

## August

- GC0145 – 20 and 21 Aug
- GC0147\*
- GC0139 – 13 Aug

## October

\***GC0147** due to be raised to July Grid Code Review Panel

See Notes explaining what each Modification is seeking to achieve

# CUSC Workgroups for next 3 months (as at 22 July 2020)

## July

- CMP343/340 – 1 and 7 Jul
- CMP335/336 – 6, 20 and 24 Jul
- CMP350 – 21, 23 and 29 Jul

## September

- CMP328
- CMP344
- CMP311
- CMP326
- CMP330

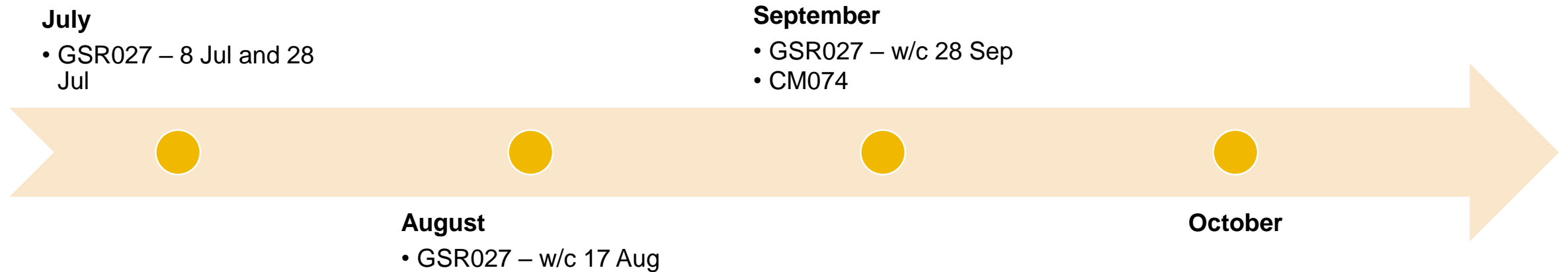
## August

- CMP335/336 – 7 Aug
- CMP343/340 – 11 and 12 Aug
- CMP328
- CMP344

## October

See Notes explaining what each Modification is seeking to achieve

# STC and SQSS Workgroups for next 3 months (as at 22 July 2020)



**GSR027** - To address the specific actions from the Energy Emergency Executive Committee (E3C) and Ofgem final reports into the power outage of 9th August 2019 for the ESO to review, in consultation with industry, the NETS SQSS requirements that drive reserve, response and inertia holding on the GB electricity system.

**CM074** - Modify the definition of Force Majeure (*\*assumes associated CUSC Modification being raised in August 2020*)

# BREAK





# Draft Final Modification Reports

None



# Reports to Authority

None



# Electrical Standards

No Update

# Governance

**Approval of updated  
Terms of Reference for  
GC0145**



# Grid Code Development Forum and Workgroup Day(s)

# Grid Code Development Forum and Workgroup Day(s)

## July Grid Code Development Forum and Workgroup Days

### Workgroup Days – 07 July and 08 July 2020

#### **GCDF – 08 July 2020** – Agenda as follows:-

- Emergency and Restoration Phase 2 - Presentation by Tony Johnson, ESO
- Multiple Fault Ride Through - Presentation by Matt Baller, ESO

## August Grid Code Development Forum and Workgroup Days

### Workgroup Days – 04 and 05 August 2020

#### **GCDF – 05 August 2020** – Draft agenda as follows:-

- Last resort disconnection of Embedded Generation – enduring solution Update (GC0147 Rob Wilson - ESO)
- Systems Incident Reporting Update ( Phil Smith – ESO)

# Standing Items

- **Distribution Code Panel update**
- **JESG Update**
- **System Incidents Reporting**

# GC0105 Reporting timeline

|                |   |
|----------------|---|
| 22 May 2020    | ✓ GC0105 approved   |
| 08 June 2020   | ✓ GC0105 implemented  |
| 12 June 2020   | ✓ Publish <b>Historic Frequency Data</b> (May data)                               |
| 25 June 2020   | ✓ Present draft <b>System Incidents Report</b> (April data) to GCRP               |
| 15 July 2020   | ✓ Publish <b>Historic Frequency Data</b> (June data)                              |
| 22 July 2020   | ✓ GC0105 page go-live on ESO website  |
| 30 July 2020   | ✓ Present <b>System Incidents Report</b> (May data) to GCRP                       |
| 31 July 2020   | Publish <b>System Incidents Report</b> (May data)                                 |
| 17 August 2020 | Publish <b>Historic Frequency Data</b> (July data)                                |
| 27 August 2020 | Present <b>System Incidents Report</b> (June data) to GCRP                        |
| 31 August 2020 | Publish <b>System Incidents Report</b> (June data)                                |
| October 2020   | Publish one-off catch up <b>System Incidents Report</b> covering Nov-19 to Mar-20 |



# GC0105 webpage now live

<https://www.nationalgrideso.com/system-incidents-report>

## System Incidents Report

[Back to home](#)

At National Grid ESO, we're committed to being transparent and sharing information with our partners in the energy industry.

Our monthly System Incidents Report is now available to download and indicates system incidents and losses of load or generation on transmission and/or distribution networks.

This report is important to industry and the Grid Code Panel to monitor the effectiveness of technical requirements in the Grid Code and Distribution Code. The report facilitates insight-led discussions at our regular Grid Code panel meetings.

Find out more about the [GC0105 modification](#) and the considerations behind it.

### Need the data from this report?

As the authority on electricity data, we are committed to communicating our work and making our data accessible – whether that's the Historic Frequency Data report or FFR market data.

Head over to the National Grid ESO Data Portal to browse all the data we publish.

[Visit the National Grid ESO Data Portal](#)

**Pre-April 2020 (1)**


**April 2020 (1)**

### April 2020

The specification of the System Incidents Report is currently being finalised, this report should be treated as a draft.

Your feedback is important to us. Let us know how we're doing.

Name

 GC0105 System Incident Report - April 2020 - v1

# GC0105 Latest updates

|                   |                             | (ix) the location of any reported Transmission fault on the network diagram and geographically; | (x) the extent of any voltage dip associated with the Significant Event; | (xi) an estimate of system inertia in MWs at the time of the Significant Event along with how it has been calculated; and | (xii) any other data available that is of value to gain a clearer understanding of the Significant Event and its potential implications; and |
|-------------------|-----------------------------|---|--|---|--|
| Event Ref         | Event Name                  | Location of transmission fault  | Voltage Dip  | System Inertia  | Additional data  |
| Event Date-Number | Text                        | Text  | %  | GWs   | Text   |
| Event 20200501-1  | Loss of Embedded Generation | Bolney - Ninfield 400kV circuit   | 91% 100ms transient  | 26  |  |
| Event 20200510-1  | Loss of SCCL-1              | N/A   | N/A  | 120   |  |
| Event 20200524-1  | Loss of DINO-5 and DINO-6   | N/A   | N/A  | 278   |  |
| Event 20200527-1  | Loss of GRAI-8              | N/A   | N/A  | 177   |  |
| Event 20200528-1  | Loss of CNQPS-1             | N/A   | N/A  | 140   |  |

## Voltage Dip

In development. This month's report includes our proposed approach of showing transient voltage dip with loss % and duration measured at the local substation.

Not applicable for generation losses as we don't experience significant voltage changes for generation losses.

## System Inertia

Now reported in GWs

The background features several decorative yellow lines. In the top left, there are several thin, curved lines that sweep upwards and to the right. In the bottom right, there are several thicker, parallel diagonal lines that sweep upwards and to the right, creating a sense of movement and modern design.

# Updates on other industry codes



# Horizon Scan

(February, May, August, November)



# Forward Plan Update/Customer Journey)

(January, March, May, July, September, November)



None

# Prioritisation process

**Rob Marshall**

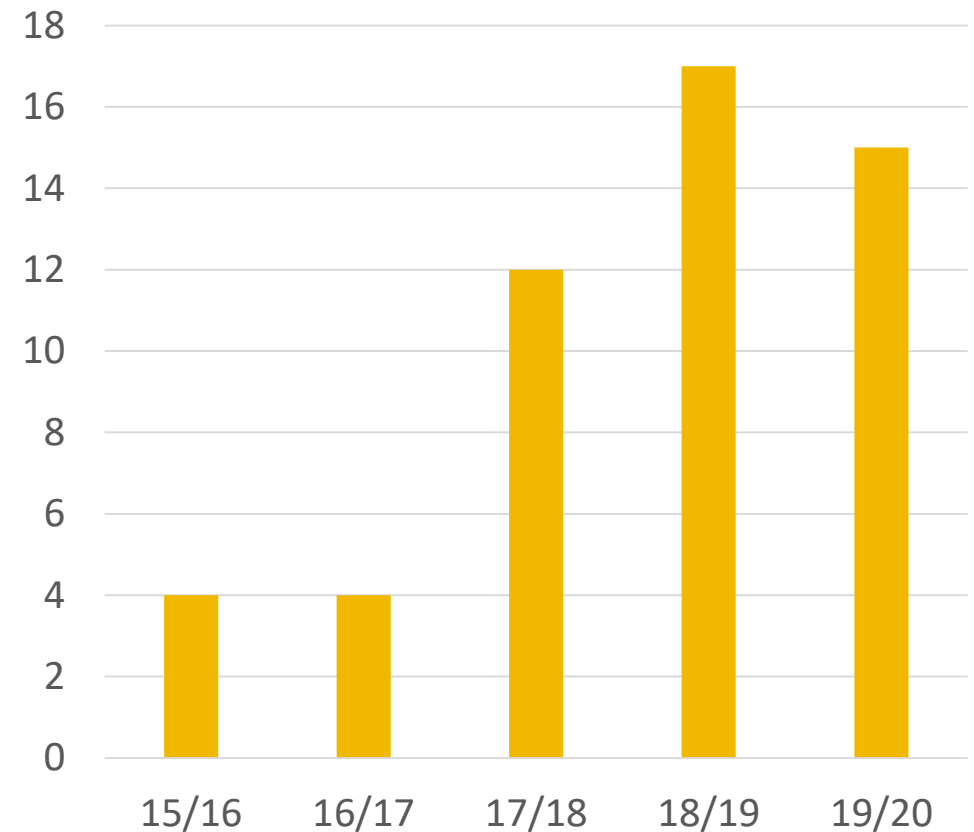
Electricity Code Governance Manager - NGESO



# Background

- Number of new modifications are increasing
- Industry tells us it doesn't have time to engage
  - 51% of those asked agree they had sufficient resource to deal with Grid Code in 2019 CACoP survey; down from 71% in 2018
- We have held more workgroups than ever before across our codes
  - 2018/19: 108
  - 2019/20: 121
- There isn't capacity across industry to progress all of the modifications at the same time

**New Grid Code Modifications**



# Who should be involved in prioritisation?

There isn't a codified process for this

- BEIS/Ofgem are considering introducing this as a responsibility of the Code Administrator within the Energy Code Review

The process needs to be

- Impartial
- Transparent
- Regular
- Informed

Code panels are the most appropriate decision makers to prioritise because:

- Elected to represent the industry
- All meeting papers, minutes and outputs are published
- Held monthly
- Industry experts

*Grid Code Review Panel shall endeavour at all times to operate in an efficient, economical and expeditious manner, taking account of the complexity, importance and urgency of particular Grid Code Modification Proposals*

GR.2.3(b)(i)

# Roles and responsibilities in the prioritisation process

## Role of panel members – Decision makers

- Listen to the views of proposers and other industry parties
- Give their view on the prioritisation of modifications
- Agree on a collective view of prioritisation

## Role of Code administrator - Facilitators

- Facilitate discussion through liaising with proposers and other industry parties with views on prioritisation
- Record decisions and maintain prioritisation stack
- Make all results transparent for industry

## Mechanism

### Monthly process:

- Assess the priority of new modifications against existing modification prioritisation
- Panel members highlight and discuss specific modifications that they think should have a higher or lower priority

### When required:

- Full review of all modifications' prioritisation

# Principles of prioritisation

The principles guiding panel members in deciding on prioritisation

- Urgency – could be a compliance deadline or a key date at which the consumer value will change
- Consumer benefit
  - Lower bills
  - Reduced environmental damage
  - Improved reliability and safety
  - Better quality of service
  - Benefits for society as a whole
- Cross-code impacts

*Consumer benefit categories from Ofgem's Consumer Impact Report*

The background features several abstract, flowing yellow lines. In the top left, there are several curved lines that sweep upwards and to the right. In the bottom left, there are more curved lines that sweep downwards and to the right. On the right side, there are several straight, parallel lines that slope upwards from left to right. These lines are all a consistent yellow color and vary in thickness and curvature.

# Discussions on Prioritisation

# Prioritisation Principles

## **Complexity**

The defect addressed by the proposed modification has implications for many different areas of the energy system which need to be taken into consideration throughout the process. The technical complexity and cross code impact of the modification will most likely require significant use of industry time and a higher than average number of workgroups to conclude the process.

## **Importance**

The perceived value and risk associated with the proposed modification. The value / risk could be considered from a number of different perspectives i.e. financial / regulatory / licence obligations both directly for customer and end consumers more generally.

## **Urgency**

A proposed modification which requires speedy consideration within the code governance process, as well as the timescales for implementation within the respective code.



# AOB

- 1. DRC Schedule Proformas (Rob Wilson, ESO)**
- 2. General discussion on impacts of coronavirus outbreak (ALL)**

# Next Panel Meeting

**10am on 27 August 2020 via WebEx**

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**Papers Day – 19 August 2020**

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**Modification Proposals to be submitted  
by 12 August 2020**

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# Close



**Trisha McAuley**  
Independent Chair, GCRP