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Grid Code Modification	At what stage is this document in the process?
# GC0105: ## Mod Title: System Incidents Reporting	01 Proposal Form **02 Workgroup Consultation** 03 Workgroup Report 04 Code Administrator Consultation 05 Draft Grid Code Modification Report 06 Final Grid Code Modification Report

Purpose of Modification: The Grid Code Review Panel has previously received an annual report from National Grid indicating system incidents and reporting unplanned outages of Interconnectors, load or generation connected to transmission or distribution networks. This annual report is important to industry and to the Grid Code Review Panel as it helps monitor the effectiveness of the technical requirements in the Grid Code and Distribution Code.

	This document contains the discussion of the Workgroup which formed in February 2018 to develop and assess the proposal. Any interested party is able to make a response in line with the guidance set out in Section 5 of this document. **Published on: 29 November 2018** **Length of Consultation: 15 Working Days** **Responses by: 20 December 2018**
	**High Impact**: None identified
	**Medium Impact** None identified
	**Low Impact** all users

Contents

Timetable

The Grid Code Review Panel has agreed the following timetable:

Initial consideration by Workgroup	22 February 2018
Workgroup Consultation issued to the Industry	29 November 2018
Modification concluded by Workgroup	December 2018
Workgroup Report presented to Panel	24 January 2019
Code Administration Consultation Report issued to the Industry	28 January 2019
Draft Final Modification Report presented to Panel	28 February 2019
Modification Panel decision	28 February 2019
Final Modification Report issued the Authority	08 March 2019
Decision implemented in Grid Code	12 April 2019

Any questions?

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1 About this document

This Workgroup Consultation contains the discussion of the Workgroup which formed in February 2018 to develop and assess the proposal.

Section 2 (Original Proposal) and Section 3 (Proposer's Solution) are sourced directly from the Proposer and any statements or assertions have not been altered or substantiated/supported or refuted by the Workgroup. Section 4 of the Workgroup Report contains the discussion by the Workgroup on the Proposal and the potential solution.

The Grid Code Panel detailed in the Terms of Reference the scope of the work for the GC0105 Workgroup and the specific areas the Workgroup should consider.

The table below details these specific areas where the Workgroup have covered them or will cover post Workgroup Consultation.

The full Terms of Reference can be found in Annex 1.

Specific Area	Location in the report
Impact on system processes for National Grid and other users	Section 3 & 4 of the report
History of previous reports and consideration of previous reporting mechanism	Section 3 & 4 of the report
Benefits to system operator and users in helping to perform future policy	Section 3 & 4 of the report
Suitability/flexibility of report for future use	Section 3 & 4 of the report
Inclusion of 'SOF' scenarios and demonstration of what industry wants to do with the information	Section 3 & 4 of the report

2 Original Proposal

Defect

The Grid Code Review Panel has previously received an annual report from National Grid indicating system incidents and reporting unplanned outages of Interconnectors, load or generation connected to transmission or distribution networks. This annual report is important to industry and to the Grid Code Review Panel as it helps monitor the effectiveness of the technical requirements in the Grid Code and Distribution Code.

What

National Grid has produced System Incidents reports for the Grid Code Review Panel on an approximate annual basis for approaching 20 years; however the requirement to do so and the specification for the report have not been included in the Grid Code. The requirement for National Grid in its role as GB System Operator to provide this report to the Panel needs to be enshrined in the Grid Code.

Why

National Grid has provided the report in the past. The report has been vital in monitoring the effectiveness of the Grid Code for example the risk of generation and consequently load disconnection as a result of high Rate of Change of Frequency (RoCoF) events. The reporting procedure was established in 1997 and was referenced in National Grid's February 2009 report on the load disconnection during the significant system incident occurring on 27 May 2008.

Under the new governance arrangements, National Grid has taken the view that the System Incidents report is not mandated by the Grid Code and therefore may not necessarily be delivered. By putting the requirement into the Grid Code this defect will be rectified. As noted above, the report has been vital in monitoring the effectiveness of the Grid Code for example the risk of generation and consequently load disconnection as a result of high Rate of Change of Frequency (RoCoF) events. The reporting procedure was established in 1997 and was referenced in National Grid's February 2009 report on the load disconnection during the significant system incident occurring on 27 May 2008. Examples of reporting by EirGrid, FinGrid and National Grid at the Ops Forum are included in Annex 1[1] Future reporting will help ensure that the Grid Code requirements are fit for purpose and will serve as an early warning if certain Grid Code requirements need to be reassessed as the transmission and distribution systems (together with the load and generation connected to them) changes as GB moves towards a low carbon economy.

How

The Grid Code will be modified to codify the requirement on National Grid to produce the report.

[1] Annex 1 is the presentation (7 slides) from Element Power in October 2018.

3 Proposer's solution

The Original Proposal as put forward by the Proposer was to codify in the Grid Code a requirement for NGET to prepare and present to the October[2] Grid Code Review Panel every year a report titled – **System Incidents Report** - containing the following information:

1. A record of every significant event on the National Electricity Transmission System including the following events:
    a. A loss of infeed or exfeed (import or export including generation, demand and interconnection) of =>250MW.
    b. a frequency excursion outside the operational limits (49.8-50.2Hz).
    c. A fault on the transmission network which:
        i. Could be linked to the known or reported tripping of any Power Station, DC Converter or User System.
        ii. Is linked to a change in the transmission system voltage of more than:
            a. 400kV: > +/-5% for >15min
            b. 275kV or 132 kV: > +/- 10% for >15min
    d. Any known demand disconnected >=50MW from the National Electricity Transmission System or other lesser demand if notified to System Operator.
    e. Any Demand Control action taken.
2. A report of each significant event with the following data as appropriate and available:
    a. The time(s) in hh.mm.ss of the significant event and any potentially related occurrences.
    b. Any known or reported loss of Embedded Power Station(s) with locations and ratings where available.

[2] October has been chosen as summer is the most challenging period for operating the system (due to the lighter loading and higher % penetrations of renewables) and an October report will be up to date for summer events.

c. The frequency record (in table and graphical format) at <=1 second intervals for 1 minute before and after the incident.

d. The frequency (to 2 decimal places) immediately before the significant event.

e. The frequency (to 2 decimal places) immediately after the significant event.

f. The maximum rate of change of frequency recorded during the significant event over a specified time period e.g. 500ms.

g. Where known the MW of all individual losses or trips related to the significant event.

h. Where known the identity the Users and Network Owner of all demand losses or trips related to the significant event.

i. The location of any reported transmission fault on the network diagram and geographically.

j. The extent of any voltage dip associated with the significant event.

k. An estimate of system inertia in MWs (Mega Watt Seconds) immediately before and immediately after the event so that estimated inertia lost in the event is identified.

l. Any other data available that is of value to a clearer understanding of the significant event and its potential implications.

To obtain, manage, present, communicate and report the data above NGET shall:

- Present the System Incidents Report in a pdf and the associated data in a spreadsheet.

- Maintain an area of the National Grid web site with a list of all historic System Incidents Reports and information on any process required for legitimate parties to obtain the reports (if reports are not available to download)

- Notify all Electricity Distribution Licence holders and Network Operators of every significant event and request information to fulfil its duties in section 2 above.

- Include a section in the System Incidents Report showing how system inertia is estimated for Section 2k above.

- Include a section in the System Incidents Report outlining progress towards reporting events and associated data on the National Electricity Transmission System including:
    - three phase fault;
    - three phase to earth fault;
    - phase to phase faults
    - phase to earth faults
    - the associated voltage dips – durations and spreads.
    - over-voltages;
    - under-voltages
    - voltage dips of >50%;
    - lightning strikes.

4 Workgroup Discussions

The Workgroup convened four times to discuss the issue, detail the scope of the proposed defect, devise potential solutions, and assess the proposal in terms of the Grid Code Applicable Objectives.

The Proposer presented the defect that they had identified in GC0105 Proposal and highlighted that the defect related to National Grid taking the view that the System Incidents report is not mandated by the Grid Code and therefore may not necessarily be delivered.

The Workgroup explored a number of aspects in its meetings to understand the implications of the proposed defect and solutions. The discussions and views of the workgroup are outlined below.

Since the Grid Code Review Panel took the decision to send the proposal to Workgroup in December 2017, the Workgroup has convened once in February 2018 and once in March[3] 2018 to develop the solution in accordance with the Terms of Reference and Grid Code Applicable Objectives.

[3] 22/02/18 and 16/03/18

At the initial Workgroup meeting the Workgroup reviewed the reporting requirements that the Proposer had outlined in the Original Proposal[4]. This can be located in Annex 3.

National Grid stated that they would be able to provide the majority of the proposed requirements. The other requirements as set out below were discussed by the Workgroup.

'Significant event'

Whilst the Workgroup agreed on the reporting metrics to be used for each significant event report as listed at 2(a) to (l) in the original proposal, National Grid made representations about the scaling around fault reporting and specifically the proposed reporting threshold of 250MW in the Original proposal. National Grid considered this too low to be considered as being a 'significant' event and suggested a higher 600MW threshold. A Workgroup Alternative Grid Code Modification (WAGCM) has been raised by NGET as consideration was being given for an Alternative Modification Proposal based on this higher threshold (See Annex 4).

Notification Obligations

The Proposer recognised the need for a pragmatic approach around how NGET reports on significant events to the Distribution Licence holders and Network Operators and how these parties respond to the data requests. The Proposer clearly stated that he is not seeking to introduce any new requirement for reporting by means of this proposal but is only seeking to use existing processes and channels to gather the relevant and available data. The Workgroup recognised the need to understand the extent of current reporting mechanisms and obligations in the Grid and Distribution Codes in order to avoid the risk of duplication.

The Workgroup discussed the requirements of STCP 03-1 *Post Event Analysis and Reporting* which sets out how parties (namely NGET and each Transmission Owner) liaise with each other in response to transmission system events, from occurrence through to joint investigations if necessary. The Workgroup discussed the potential need for a consequential change to the STC requiring each TO to provide the System Operator with the information it needs to produce the report. The Proposer stated that they did not want the modification to evolve to require consequential modifications having to be raised for other Codes. The Proposer noted that should any of the

[4] https://www.nationalgrid.com/sites/default/files/documents/GC0105%20Modification%20Proposal.pdf

required information not be available (from the Transmission Owner) in order to complete the System Incidents Report, when the report is produced, then it should be noted in the report and should it be a reoccurring issue then another modification could be considered and raised in the future to address it.

When

The Workgroup agreed that the first annual report should be produced within 12 months of implementation of GC0105 and thereafter on the anniversary of the first month after the first report. The legal text will be worded to reflect this requirement.

The Workgroup discussed the Workgroup Consultation, agreeing that it would be useful to understand what Industry members would use the proposed report for and whether the Workgroup has captured the correct items or whether additional items would provide value. These questions can be found on the response proforma.

Third Workgroup meeting

Given the length of time between the second Workgroup meeting (16 March 2018) and third Workgroup meeting (17 October 2018), at the third Workgroup meeting, the Proposer provided the Workgroup with a recap about the modification. The Proposer stated that historically National Grid had produced a System Incidents Report which covered ex-feed losses and in-feed losses. This report was discontinued. The Proposer requested that the report was continued as it contained useful information to industry. However, National Grid at that time decided not to continue with the report. Therefore, the Proposer raised this modification to compel National Grid to produce an annual report which included system incidents.

The Proposer confirmed that they did not want to be too prescriptive as to the content of the report to allow flexibility to the System Operator but that the report would bring clarity as to what was required in terms of the provision of information. In the event that the report does not meet industry's requirements, a further modification could be raised at a later date.

The NGET representative agreed that there was nothing in the Grid Code to compel National Grid to produce a system incidents report. The NGET representative stated that they will be raising a WAGCM (See Annex 4) in relation to the content of the proposed report as there is disagreement about the content of the report. The areas of disagreement include:

i. The loss of in-feed and ex feed reported should be set to 600 Megawatts as this is more proportionate than the current proposal of 200 Megawatts;

ii. The report should be available to the Grid Code Review Panel and relevant parties rather than generally available due to security; and

iii. To remove the requirement of an annual report as the requirement was more about regular assessment of the system incidents so it does not fit with this modification and therefore specifying an annual report does not add value.

The Workgroup discussed the issue of security and concluded that if the information is made available to some members of industry it must be considered to be in the public domain. The Proposer informed the Workgroup that the previous report was in the public domain and therefore there were competition concerns. The NGET representative stated that further thought needed to be given to the implementation.

A Workgroup member queried what would happen in the event that a Transmission Operator failed to provide the requested information to the System Operator?

The Proposer and NGET representative both confirmed that in their proposals the System Operator would produce the report.

The NGET representative stated that they will incorporate as much of the original proposal as possible into their WAGCM (See Annex 4) so that the differences between the options are minimal.

A workgroup member stated that if the proposal goes into the Grid Code, it will also be required for to be added into the System Operator Transmission Code.

5 Workgroup Consultation Questions

The GC0105 Workgroup is seeking the views of Grid Code Parties and other interested parties in relation to the issues noted in this document and specifically in response to the questions highlighted in the report and summarised below.

Standard Workgroup Consultation Questions:

1. Do you believe that the Original Proposal better facilitates the Grid Code Objectives?

2. Do you support the proposed implementation approach?

3. Do you have any other comments?

4. Do you wish to raise a Workgroup Consultation Alternative request for the Workgroup to consider?

Specific GC0105 Workgroup Consultation Questions:

5. Do you agree that the proposed contents of an annual System Incident report including the associated data on the National Electricity Transmission System (as listed on page 9) includes the necessary items and, if not, are there any items that you would include/exclude/amend?

6. Do you agree that such a System Incident report will be a useful report for industry to help improve system resilience?

7. Do you consider this to be a useful report for your purposes? If yes please provide, where possible, any examples of what you might use it for.

Please send your response using the response proforma which can be found on the National Grid website via the following link:

https://www.nationalgrideso.com/codes/grid-code/modifications/gc0105-system-incidents-reporting

In accordance with GR20.13 of the Grid Code any Authorised Electricity Operator, the Citizens Advice or the Citizens Advice Scotland, The Company or a Materially Affected Party may raise a Workgroup Consultation Alternative Request in response to the Workgroup Consultation. If you wish to raise such a request, please use the relevant form available at the weblink below:

https://www.nationalgrideso.com/codes/grid-code

Views are invited upon the proposals outlined in this report, which should be received by **5pm on 20 December 2018**.

Your formal responses may be emailed to grid.code@nationalgrid.com

If you wish to submit a confidential response, please note that information provided in response to this consultation will be published on National Grid's website unless the response is clearly marked "Private & Confidential", we will contact you to establish the extent of the confidentiality. A response market "Private & Confidential" will be disclosed to the Authority in full but, unless agreed otherwise, will not be shared with the CUSC Modifications Panel or the industry and may therefore not influence the debate to the same extent as a non-confidential response.

Please note an automatic confidentiality disclaimer generated by your IT System will not in itself, mean that your response is treated as if it had been marked "Private and Confidential"

6 GC0105: Relevant Grid Code 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	Positive – because data would be reported which could indicate problems emerging due to the change of generation technologies .
(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);	Positive – because system incidents are generally not zero cost and identification of incidents could provide information for CUSC changes to better reflect such costs.
(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 – because security is threatened if events are not contained and the reporting sheds light on the ongoing effectiveness of containment measures.
(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	Neutral
(e) To promote efficiency in the implementation and administration of the Grid Code arrangements	Positive – because the report has been provided in the past but has not been documented in the Grid Code and not been clearly specified.

The benefits of publishing a System Incident report have been recognised by the industry and the Grid Code Panel over the years as this reporting has already been implemented on an annual basis since 1997. The benefits are that the report. will help ensure that the Grid Code requirements are fit for purpose and will serve as an early warning if certain Grid Code requirements need to be reassessed as the transmission and distribution systems (together with the load and generation connected to them) changes as GB moves towards a low carbon economy.

7 Implementation

The costs are already largely covered as the report has been produced on an annual basis since 1997 at an estimated cost of around £1000 (no more than £10,000). The recommendation is that the requirement to produce a System Incident report should be implemented as soon as practicable as National Grid have made this report many times before.

Therefore, it is proposed that the legal text changes to the Grid Code will be implemented within ten Working Days of an Authority decision. In terms of the production of the report by National Grid[5], its publications on National Grid's website and then its presentation to the Grid Code Review Panel, this will be done annually on the anniversary of the implementation of this proposal into the CUSC. To ensure openness and transparency for stakeholders, all System Incidents for the period prior to[6] the implementation of this proposal (GC0105) will be reported in the first report.

8 Legal Text

The Legal text is contained in Section 3 of this report.

[5] For the avoidance of doubt; given the current (March 2018) deliberations about the separation of the System Operation functions from the Transmission Owner parts of NGET; the obligation to produce the report will be placed upon the System Operation part of the separated business.

[6] The last report ref "ROCOF GCRP_15-16" submitted to the GCRP covered the period up to [20/Nov/2016

Thus, the first report will cover the period from that date onwards.

Annex 1: GC0105 Terms of Reference

nationalgrid

Workgroup Terms of Reference and Membership

TERMS OF REFERENCE FOR GC0105 WORKGROUP

The Grid Code Review Panel has previously received an annual Systems Incident report from National Grid detailing link losses of load or generation on transmission and/or distribution networks. This Systems Incident report is important to industry and the Grid Code Review Panel in order to monitor the effectiveness of technical requirements in the Grid Code and Distribution Code.

Responsibilities

1. The Workgroup is responsible for assisting the Grid Code Review Panel in the evaluation of Grid Code Modification Proposal **GC0105 Systems Incident Reporting** proposed by Guy Nicholson of Element Power in October 2017 and presented to the Grid Code Review Panel on 18 October 2017.

2. The proposal must be evaluated to consider whether it better facilitates achievement of the Grid Code Objectives. These can be summarised as follows:

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

   (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);

   (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; and

   (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. In conducting its business, the Workgroup will at all times endeavour to operate in a manner that is consistent with the Code Administration Code of Practice principles.

Scope

3. The Workgroup must consider the issues raised by the Modification Proposal and consider if the proposal identified better facilitates achievement of the Grid Code Objectives.

4. In addition to the overriding requirement of point 3 above, the Workgroup shall consider and report on the following specific issues:

   a) Implementation and additional costs;
   b) Review draft legal text should it have been provided. If legal text is not submitted within the Grid Code Modification Proposal the Workgroup should be instructed to assist in the developing of the legal text; and

c) *Consider whether any further Industry experts or stakeholders should be invited to participate within the Workgroup to ensure that all potentially affected stakeholders have the opportunity to be represented in the Workgroup.*
d) *Impact on system processes for National Grid and other users*
e) *History of previous reports and consideration of previous reporting mechanism*
f) *Benefits to system operator and users in helping to perform future policy*
g) *Suitability/flexibility of report for future use*
h) *Inclusion of 'soft' scenarios and demonstration of what industry wants to do with the information*
i) *Potential for future development of the System Incidents Report*

5. As per Grid Code GR20.8 (a) and (b) the Workgroup should seek clarification and guidance from the Grid Code Review Panel when appropriate and required.

6. The Workgroup is responsible for the formulation and evaluation of any Workgroup Alternative Grid Code Modifications arising from Group discussions which would, as compared with the Modification Proposal or the current version of the Grid Code, better facilitate achieving the Grid Code Objectives in relation to the issue or defect identified.

7. The Workgroup should become conversant with the definition of any Workgroup Alternative Grid Code Modification which appears in the Governance Rules of the Grid Code. The definition entitles the Group and/or an individual member of the Workgroup to put forward a Workgroup Alternative Code Modification proposal if the member(s) genuinely believes the alternative proposal compared with the Modification Proposal or the current version of the Grid Code better facilitates the Grid Code objectives The extent of the support for the Modification Proposal or any Workgroup Alternative Modification (WACM) proposal WACM arising from the Workgroup's discussions should be clearly described in the final Workgroup Report to the Grid Code Review Panel.

8. Workgroup members should be mindful of efficiency and propose the fewest number of WACM proposals as possible. All new alternative proposals need to be proposed using the Alternative request Proposal form ensuring a reliable source of information for the Workgroup, Panel, Industry participants and the Authority.

9. All WACM proposals should include the Proposer(s)'s details within the final Workgroup report, for the avoidance of doubt this includes WACM proposals which are proposed by the entire Workgroup or subset of members.

10. There is an option for the Workgroup to undertake a period of Consultation in accordance with Grid Code GR. 20.11, if defined within the timetable agreed by the Grid Code Panel. Should the Workgroup determine that they see the benefit in a Workgroup Consultation being issued they can recommend this to the Grid Code Review Panel to consider.

11. Following the Consultation period the Workgroup is required to consider all responses including any Workgroup Consultation Alternative Requests. In undertaking an assessment of any Workgroup Consultation Alternative Request, the Workgroup should consider whether it better facilitates the Grid Code Objectives than the current version of the Grid Code.

12. As appropriate, the Workgroup will be required to undertake any further analysis and update the appropriate sections of the original Modification Proposal and/or WACM proposals (Workgroup members cannot amend the original text submitted by the Proposer of the modification) All responses including any Workgroup Consultation Alternative Requests shall be included within the final report including a summary of the Workgroup's deliberations and conclusions. The report should make it clear where and why the Workgroup chairman has exercised their right under the Grid Code to progress a Workgroup Consultation Alternative Request or a WACM proposal against the majority

views of Workgroup members. It should also be explicitly stated where, under these circumstances, the Workgroup chairman is employed by the same organisation who submitted the Workgroup Consultation Alternative Request.

13. The Workgroup is to submit its final report to the Modifications Panel Secretary on 11 December for circulation to Panel Members. The final report conclusions will be presented to the Grid Code Review Panel meeting on 19 December.

Membership

It is recommended that the Workgroup has the following members:

Role	Name	Representing (User nominated)
Chair	Matthew Bent	Code Administrator
Technical Secretary	Emma Hart	Code Administrator
National Grid Representative*	Simon Sheriden	National Grid Electricity Transmission
Workgroup Member*	Garth Graham	SSE
Workgroup Member*	Guy Nicholson	Element Power
Workgroup Member*	Alan Creighton	Northern Powergrid
Authority Representative	TBC	Ofgem
Workgroup Member*	Isaac Gutierrez	Scottish Power Renewables

14. A (*) Workgroup must comprise at least 5 members (who may be Panel Members). The roles identified with an asterisk (*) in the table above contribute toward the required quorum, determined in accordance with paragraph 15 below.

15. The Grid Code Review Panel must agree a number that will be quorum for each Workgroup meeting. The agreed figure for GC0105 is that at least 5 Workgroup members must participate in a meeting for quorum to be met.

16. A vote is to take place by all eligible Workgroup members on the Modification Proposal and each WACM proposal and Workgroup Consultation Alternative Request based on their assessment of the Proposal(s) against the Grid Code objectives when compared against the current Grid Code baseline.

    - Do you support the Original or any of the alternative Proposals?
    - Which of the Proposals best facilitates the Grid Code Objectives?

    The Workgroup chairman shall not have a vote, casting or otherwise.

    The results from the vote and the reasons for such voting shall be recorded in the Workgroup report in as much detail as practicable.

17. It is expected that Workgroup members would only abstain from voting under limited circumstances, for example where a member feels that a proposal has been insufficiently developed. Where a member has such concerns, they should raise these with the Workgroup chairman at the earliest possible opportunity and certainly before the Workgroup vote takes place. Where abstention occurs, the reason should be recorded in the Workgroup report.

18. Workgroup members or their appointed alternate are required to attend a minimum of 50% of the Workgroup meetings to be eligible to participate in the Workgroup vote.

19. The Technical Secretary shall keep an Attendance Record for the Workgroup meetings and circulate the Attendance Record with the Action Notes after each meeting. This will be attached to the final Workgroup report.

20. The Workgroup membership can be amended from time to time by the Grid Code Review Panel and the Chairman of the Workgroup.

Timeline

Please see the front of Workgroup Consultation for the timeline agreed by the Grid Code Review Panel

Annex 2: Most recent system incidents report to GCRP in January 2017 ref ROCOF GCRP 15-16

Grid Code Review Panel

Summary Report for Significant System Events

By National Grid

1 Introduction

1.1 This Significant System event report fulfils the requirement to provide a summary of the Rate of Change of Frequency (RoCoF) information, as endorsed by GCRP 00/16 (September 2000).

1.2 Generation / Demand trips which caused a RoCoF event and severe system disturbances are reported.

2 Background

2.1 The present ROCOF reporting procedure has been in place since May 1998 and was agreed by Panel representatives.

2.2 The procedure was initiated in response to National Grid's concern that distributed generation protected by Rate of Change of Frequency (RoCoF) protection could trip following a large generation loss. The effect of such RoCoF trips could aggravate the resulting frequency change following the loss and have an adverse effect on normal frequency recovery.

2.3 In order to increase the knowledge of the behaviour of this RoCoF based protection and the risk it may present to the system:

- National Grid agreed to notify DNOs when an incident occurred which could have led to RoCoF operation; and
- Following notification, DNOs inform National Grid of any generation tripping.

2.4 The procedure is triggered for generation losses of 1000 MW or more, demand losses of 1000 MW or more. Information on smaller significant losses is also presented in this report.

2.5 Issues relating to RoCoF driven Loss of Mains Protection are currently being considered by the GC0079 Workgroup, following on from the completion of GC0035. Consideration of RoCoF Withstand issues is now included within the current GC0087 terms of reference, 1Hz/S for new generators has been recommended by workgroup and the work will go out for consultation shortly.

3 Summary of Incidents

3.1 New information on 9 incidents in the period from December 2015 through to the end of November 2016 is presented in this report. The maximum deviation of RoCoF, -0.1116 Hz/s, was driven by the IFA Bipole 2 trip on 20 Nov 2016. There were 2 events in which generation loss reports were received from Distribution Network Operators (DNOs).

4 Three Phase to Earth Faults

4.1 When the previous Significant System Event report was presented, the Panel asked for an update on the occurrence of Three Phase to Earth faults on the National Electricity Transmission System. A review of primary system faults back to 2006 highlighted three unrelated incidents in 2006 (May, June and September). No further events were recorded in the data available.

5 Recommendations

5.1 Members of the Grid Code Review Panel are invited to:

- Note the contents of this report.

PREVIOUS INCIDENTS

Inc Date	Inc Time	Size Loss	RoCoF	Generation Lost (MW)	Max Freq reached	LOSS
18-May-98	09:53			0	0	
19-May-98	09:05	635		0	49.694	Scots 635MW
27-May-98	11:28			0	49.76	
30-May-98	02:06			0	49.72	
20-Jun-98	14:26	1000		18	49.675	Bipole 1 1000MW
29-Jun-98	05:03	410		0	49.77	Scots 410MW
02-Jul-98	11:59	1100		0	49.69	Heysham 1 550MW followed by Heysham 2 550MW four minutes later
04-Jul-98	08:32	600		0	49.77	Hartlepool 2 600MW
29-Jul-98	15:27	550	0.0395	0	49.74	Heysham 1 550MW
31-Jul-98	16:27		0.0485	0	49.75	
07-Aug-98	18:06	645	0.0372	0	49.8	Drax 1 645 MW
17-Aug-98	18:52		0.0275	10	49.7	
07-Oct-98	00:38	660	0.055	0	49.79	Connahs Quay 660MW
09-Oct-98	11:11	1090	0.035	0	49.84	Hartlepool 610MW followed by Fiddlers Ferry 480MW one minute later
17-Oct-98	08:55	650	0.026	0	49.86	Didcot6 650MW
17-Oct-98	09:57	1000	0.069	0	49.637	Bipole 2 1000MW
27-Oct-98	11:50	1000	0.056	19	49.65	Bipole 1 1000MW
14-Nov-98	11:26	1000	0.063	0	49.677	Bipole 1 1000MW
27-Nov-98	11:02	637	0.085	0	49.78	Teesside 637MW
27-Nov-98	16:57	1095	0.05	0	49.71	Teesside 1 490MW, Teesside 2 605MW instantaneous
28-Nov-98	11:16	680	0.018	0	49.73	DIDC B6 680MW
05-Dec-98	10:56	1000	0.059	0	49.7	BIPOLE 2 1000MW
19-Dec-98	20:29	1000	0.05	0	49.83	BIPOLE 1 1000MW
27-Dec-98	00:21	580	0.085	15	49.7	Heysham 1 580MW
27-Dec-98	07:30	1100	0.05	2	49.83	Hunterston 1100MW
02-Jan-99	05:05	1000	0.078	0	49.65	BIPOLE 2 1000MW
31-Jan-99	16:54	600	0.016	0	49.76	Seabank 600MW
14-Feb-99	00:38	100	0.037	0	49.75	Unknown
16-Feb-99	18:58	1000	0.049	0	49.745	Bipole 2 1000MW
21-Feb-99	11:52	1000	0.063	0	49.71	Bipole 2 1000MW
15-Mar-99	12:19	720	0.026	0	49.795	Keadby 720MW
27-Apr-99	13:48	310	0.025	0	49.75	Drakelow 12 310MW
09-Jun-99	21:47	650	0.034	0	49.792	Heysham 28 650MW
19-Jun-99	12:24	600	0.041	0	49.8	Hartlepool 1 600MW
28-Jun-99	12:30	640	0.046	0	49.85	Hinkley 7 640MW
03-Jul-99	03:32	735	0.049	0	49.71	Sutton Bridge 735MW
26-Jul-99	15:55	595	0.042	0	49.71	Sizewell B1 595MW
26-Jul-99	15:57	593	0.042	0	49.66	Sizewell B2 593MW
14-Aug-99	06:51	1188	0.05	12	49.744	Sizewell B 1 & 2 1188MW
14-Dec-99	22:54	650	0.035	0	49.719	Hinkley Point B 7 650MW
04-Jan-00	19:11	650	0.039	0	49.709	Drax 6 650MW
18-May-00	20:38	1200	0.075	22	49.654	Sizewell B 1 & 2 1200MW
03-Jun-00	09:01	1140	0.025	0	49.744	Heysham 1140MW
29-Jun-00	15:46	1000	0.06	0	49.617	Bipole 1000MW

Inc Date	Inc Time	Size Loss	RoCoF	Generation Lost (MW)	Max Freq reached	LOSS
08-Jul-00	15:54	990	0.044	0	49.7	Bipole 990 MW
29-Jul-00	13:55	1000	0.037	0	49.694	Bipole 1000 MW
06-Dec-00	13:44	1260	0.0725	0	49.684	1260MW Sizewell B
05-Jan-01	08:26	1150	0.0475	0	49.632	1150 MW Saltend
10-Jan-01	05:09	1260	0.0755	0	49.709	1260MW Sizewell B
16-Jan-01	02:29	1170	0.06	0	49.65	1170MW Saltend
12-Mar-01	05:36	1100	0.0195	0	49.733	1100MW Longannet
30-Apr-01	11:56	1140	0.04	2	49.731	1140MW Saltend
13-Jun-01	17:53	930	0.011	0	49.728	930MW Connahs Quay
29-Jun-01	11:56	925	0.0235	0	49.799	925MW Connahs Quay
25-Aug-01	14:19	1000	0.0575	0	49.726	Bipole
26-Aug-01	16:51	1000	0.0575	0	49.709	Bipole
16-Oct-01	06:08	1174	0.0675	0	49.735	Sizewell B
22-Jun-02	17:14	1170	0.0865	6	49.598	Sizewell B
09-Jul-02	06:29	1045	0.0465	2	49.62	Peterhead
19-Oct-02	07:11	1200	0.0705	0	49.684	Sizewell B 1200MW
21-Oct-02	08:13	1300	0.037	0	49.667	Peterhead 1300MW
26-May-03	01:36	1175	0.095	54	49.418	Sizewell B 1175MW
17-Jul-03	11:20	1100	0.0565	10	49.633	Saltend 1, 2 & 3
09-Oct-03	10:25	-1000	0.02	0	50.219	System Event
11-Oct-03	09:05	1000	0.056	0	49.676	Loss of Peterhead 1050MW
24-Apr-04	12:52	1000	0.049	0	49.695	Loss of Peterhead 980MW
15-Apr-05	14:44	-		0	0	3 phase fault
19-Apr-05	19:05	1050	0.0045	0	49.676	Loss of Peterhead 1050 MW
21-May-05	05:52	980	0.047	2.3	49.695	Loss of Peterhead 980 MW ,
04-Sep-05	11:50	1110	0.0255	0	49.661	Loss of Peterhead 1110MW
04-Oct-05	13:43	1122	0.0405	3	49.59	Loss of Peterhead 1122MW
02-Dec-05	22:48	1000	0.0205	0	49.751	Loss of Bipole 2 1000MW
10-Jan-06	18:17	966	0.055	0	49.685	Loss of all units at Wylfa 966MW
21-May-06	00:16			0	-	Elstree-Watford South 1 3 phase fault
22-May-06	15:45	1000	0.0565	0	49.632	Loss of Bipole 1 of 1000MW
08-Sep-06	21:29		0	0	0	3 phase fault at Lackenby
06-Oct-07	07:52	1000	0.0035	0	49.74	1000MW loss on Bipole 2
09-Feb-08	12:34	1000	0.0575	0	49.71	1000MW loss on Bipole 2
9-Mar-08	03:22	1050	0.0475	0	49.68	Loss of Peterhead 1050MW
21-May-08	11:40	1000	0.045	0	49.679	1000 MW loss of Bipole 2
27-May-08	11:36	1582	0.073	406.2	48.795	350 MW loss of Longannet followed by 1237 MW Sizewell B
19-Jul-08	01:02	1000	0.058	0	49.656	1000 MW loss of Bipole 2
03-Sep-08	09:47	1100	0.056	9	49.68	Lon gannet Intertrip Operated
08-Nov-08	22:07	1184	0.0695	10.9	49.625	Loss of SIZE-B (Circuit breaker opened at SIZB-1)
29-Jan-09	12:29	1190	0.052	0	49.606	Both Sizewell B units tripped
22-Feb-09	07:02	1000	0.0545	0	49.749	Bipole tripped via High frequency relay resulting in loss of 1000MW
09-Jan-10	01:51	1000	-0.0425	0	50.361	Bipole 2 tripped whilst at 1000MW GB to France
19-Apr-11	08:41	1175	0.0705	0	49.667	PEHE-1 Tripped
23-May-11	19:07	763	1.35	400 estimate	52.17 in islanded group	Multiple circuit trips and loss of supply to Inverness and Western Isles group during high winds.

Inc Date	Inc Time	Size Loss	RoCoF	Generation Lost (MW)	Max Freq reached	LOSS
08-Aug-11	00:28	1000	0.0695	103	49.696	IFA Bipole 2 tripped (1000MW F to GB), DINO-4 pump LF operated at 49.75Hz (275MW), .Alcan LF operated at 49.70Hz (307MW)
02-Mar-12	20:14	1260	0.064	0	49.641	Sizewell B tripped
14-Mar-12	15:10	1000	0.0475	0	49.528	PEHE-1 tripped
18-Jul-12	17:10	1200	0.0825	0	49.597	SIZEB-1 and 2 tripped from 1200MW. A total of 215MW of OCGTs started via LF relays set to 49.6Hz
25-Jul-12	12:50	1000	0.058	0	49.619	IFA Bipole 2 tripped from 1000MW, Frequency recovered by FFR+Dino SG LF125
28-Sep-12	02:48	1000	0.1075	200	49.706	IFA Bipole 2 tripped from 1000MW, Frequency recovered by LF and SP instructions on DINO/CRUA Gen on FOYE-1
30-Sep-12	15:03	1000	0.0875	134	49.615	Sellindge Bipole 2 trip
22-Feb-13	19:33	1000	0.0587	0	49.718	Sellindge Bipole 1 trip
08-May-13	18:24	980	0.0583	0	49.739	BRITNED Trip
31-May-13	08:27	1000	0.1093	0	49.607	Sellindge Bipole 1 trip

Inc Date	Inc Time	Size Loss	Generation Lost (MW)	RoCoF (Hz/s)				Residual H equivalent	Max Freq reached	LOSS
				Over 2 Seconds	Max over 500ms	Min Over 500ms	Range			
29-Jan-09	12:39	1190	0	0.052					49.606	Both Sizewell B units tripped
22-Feb-09	07:02	1000	0	0.0545					49.749	Bipole tripped via High frequency relay resulting in loss of 1000MW
09-Jan-10	01:51	1000	0	-0.0425					50.361	51 Bipole 2 tripped whilst at 1000MW GB to France
10-May-10	11:50	570			-0.040	-0.040	0.000	1.79		Longannet
10-Jun-10	09:13	720			-0.062	-0.062	0.000	1.71		Peterhead
03-Oct-10	22:51	550			-0.050	-0.050	0.000	1.75		Peterhead
19-Apr-11	08:41	1175	0	0.0705					49.667	PEHE-1 Tripped
23-May-11	19:07	763	400 estimate	1.35					52.17 in islanded group	Multiple circuit trips and loss of supply to Inverness and Western Isles group during high winds.
08-Aug-11	00:28	1000	103	0.0695	-0.139	-0.103	0.036	1.99	49.696	IFA Bipole 2 tripped (1000MW F to GB), DINO-4 pump LF operated at 49.75Hz (275MW), .Alcan LF operated at 49.70Hz (307MW),
02-Mar-12	20:14	1260	0	0.064					49.641	Sizewell B tripped
14-Mar-12	15:10	1000	0	0.0475					49.528	PEHE-1 tripped
22-Mar-12	03:24	1000			-0.094	-0.063	-0.031	1.86		Britned Trip
18-Jul-12	17:10	1200	0	0.0825					49.597	SIZEB-1 and 2 tripped from 1200MW. A total of 215MW of OCGTs started via LF relays set to 49.6Hz
25-Jul-12	12:50	1000	0	0.058	-0.078	-0.047	0.031	1.46	49.619	IFA Bipole 2 tripped from 1000MW, Frequency recovered by FFR+Dino SG LF125
28-Sep-12	02:48	1000			-0.168	-0.116	0.052	1.58		IFA Bipole trip
08-May-13	18:24	980	-	-	-0.085	-	-	2.02	49.74	Britned trip
31-May-13	08:25	1000	-	-	-0.047	-	-	1.68	49.603	IFA Bipole trip
18-Aug-13	07:59	1000	-	-	-0.128	-0.120	0.008	1.83	49.623	IFA Bipole trip
25-Nov-13	17:18	1000	-	-	-0.062	-0.058	0.004	1.79	49.712	IFA Bipole trip

Inc Date	Inc Time	DoW	ToD	Size Loss	Reported Generation Lost (MW)	RoCoF (Hz/s)	Starting F (Hz)	Estimated Residual H Equivalent (s)	Demand (MW)	Min/Max Freq	Event
24-Dec-13	01:12	Tue	Night	-925	-	-0.135	50.05	0.199	29137	49.73	IFA Bipole 1 following Dung-Sell 2 trip and co-incident with Dung-Ninf 2 trip
24-Dec-13	03:32	Tue	Night	-925	-	-0.145	50.11	0.196	25248	49.79	IFA Bipole 1 co-incident with Dung-Sell 2 trip
25-Jan-14	08:06	Sat	Day	-1000	-	-0.087	50.00	2.880	33716	49.68	IFA-Bipole 2
20-Mar-14	23:06	Thu	Night	500						50.26	Dinorwig 1 & 6 tripped while in pumping mode
16-Apr-14	20:53	Wed	Eve	-800						49.67	Shutdown of Northwest SHETL group; 1000MW lost generation (500mW wind, 250MW hydro, 100MW Glendoe, 150MW Foyers 1) and 200MW lost demand
27-Apr-14	11:37	Sun	Day	-1000	-	-0.104	49.98	1.773	32946	49.57	IFA Bipole 2 followed by Dungeness 2 (545MW) at 11:38
01-May-14	09:52	Thu	Day	-1280						49.56	All 4 Staythorpe units
08-May-14	18:17	Thu	Eve	-1000			-			49.63	IFA Bipole 2
16-Oct-14	09:06	Thu	Day	-1000	-	-0.081	49.93	1.434	39793	49.56	IFA Bipole 2
09-Jan-15	15:56	Fri	Day	-830						49.70	Spalding North
13-Jan-15	02:31	Tue	Night	-285						49.80	Dinorwig moving to Spin Pump later than expected, some other events may have followed this.
05-Jun-15	14:55	Fri	Day	-950	-	-0.077	49.98	3.268	31471	49.68	IFA Bipole 2
21-Jul-15	15:28	Tue	Day	-748						49.96	IFA Bipole 2
06-Aug-16	06:21	Thu	Night	-1000	-	-0.103	50.02	3.329	24528	49.69	IFA Bipole 2
11-Nov-15	01:54	Wed	Night	-991	-	-0.119	50.00	2.921	22727	49.60	IFA Bipole
11-Jan-16	04:16	Mon	Night	1000	3	-0.0791	49.99		25000	49.64	IFA Bipole 2
09-Jun-16	17:31	Thu	Eve	1000	-	-0.0664	49.98		33970	49.59	IFA Bipole 2 due to DC differential fault on Pole4
23-Jun-16	17:02	Thu	Eve	1100	-	-0.0524	49.98		35000	49.60	SCCL-1, SCCl-2 and SCCL-3
10-Aug-16	08:59	Wed	Mor	1000	41 Estimated	-0.0708	49.95		32000	49.59	IFA Bipole 1
13-Sep-16	14:12	Tue	Mor	1000	-	-0.0712	49.97		34750	49.65	IFA Bipole 2
01-Nov-16	08:44	Tue	Mor	1000	-	-0.0591	50.04		38090	49.73	IFA Bipole2
15-Nov-16	10:34	Tue	Mor	1378	-	-0.0353	50.06		39690	49.70	Didcot B (both units 5 and 6)
16-Nov-16	13:33	Wed	Mor	-1000	-	0.1023	50.03		36400	50.31	IFA Bipole 2
20-Nov-16	09:25	Sun	Day	1000	-	-0.1116	49.91		34400	49.61	IFA Bipole 2

Annex 3: Proposer Presentation to Workgroup October 2018 "Examples of reporting"


elementpower
GC0105
Examples of reporting - Oct 2018
elementpower

Introduction

The proposer was asked to provide examples of reporting as a benchmarking exercise for the System Incidents Report.

Ops forum data 04 July 2018

elementpower

National Grid is already producing and collecting data for other purposes – e.g. this ops forum report.

nationalgrid

AGENDA ELECTRICITY OPERATIONAL FORUM	
Venue:	Park Plaza Riverbank London 18 Albert Embankment, London, SE1 7TJ
Date:	4 July 2018
Registration:	From 09:20 in the Plaza Suite Foyer – Conference Level -4
Start Time:	10:00
Directions:	Getting to the Venue

Electricity Operational Forum – the Plaza Suite		
10:00	Welcome and Introduction	Robert Smith
10:10	Balancing Services Use of System (BSUoS) update	Mat Hofton
10:40	Vector Shift	Rob Westmancoat

nationalgrid

Vector Shift

Robert Westmancoat

LoM: Real-life events

Date	Fault	Loss (MW)
17 Mar '16 12:27	Grain Bus Coupler	470
20 Mar '16 16:13	Grain – Kingsnorth	200
22 May '16 11:15	Langage – Landulph	380
07 Jun '16 17:04	Cowley – Leighton Buzzard – Sundon	145
21 May '17 18:20	Littlebrook Reserve Bar	200
08 Jun '17 16:47	Cottam – Eaton Socon – Rye House	240
10 July '17 14:19	Bramford – Sizewell	300
17 July '17 15:26	Kensal Green Reserve Bar	400
27 Dec '17 02:44	Hinckley Point – Melksham	205
16 Jan '18 14:28	Alverdiscott – Indian Queens – Taunton	290
18 Jan '18 04:59	Burwell – Walpole	315

National Grid Project SIM

National Grid has a project to estimate system inertia.

EirGrid Annual Report

elementpower

EirGrid & SONI produce an annual report on Transmission System Performance comprising 73 pages

All-Island Transmission System Performance Report
2017

SONI EIRGRID

5.4.4 Frequency Excursions

Table 12: Frequency Excursions in 2017

Cause of Incident	Date	Time (UTC)	MW Lost	Pre-incident Frequency (Hz)	Nadir (Hz)	Min Frequency POR (Hz)	Rate of Change of Frequency		t<49.6 Hz seconds	t<49.5 Hz seconds	N-S Tie Line Flow MW
							Max df/dt Hz/Sec	Average df/dt Hz/Sec			
Moyle	21/03/2017	12:15:53	244	49,940	49,595	49,629	-0,55	-0,2	1,2	0	112
Huntstown Unit 2	24/05/2017	06:32:39	350	49,980	49,571	49,613	-0,26	-0,19	2,9	0	-34
Aghada AD2	20/06/2017	11:50:34	410	50,000	49,386	49,413	-0,42	-0,33	6,9	5	-46
Huntstown Unit 2	15/07/2017	17:08:13	350	49,950	49,381	49,402	-0,26	-0,23	6,7	4,7	-35
Whitegate WG1	08/09/2017	11:37:00	180	50,000	49,399	49,45	-0,42	-0,32	6,5	4,1	64
Aghada AD2	24/09/2017	11:59:48	370	50,020	49,305	49,622	-0,5	-0,2	201,5	66,6	-89
Great Island GI4	05/10/2017	05:27:49	215	49,990	49,369	49,396	-0,45	0,24	7,9	5,4	-62
Great Island GI4	27/11/2017	17:02:50	410	49,990	49,245	49,255	-0,58	-0,29	8,4	7	-125

Note NS and Interconnection flows, +VE represents an import to Northern Ireland

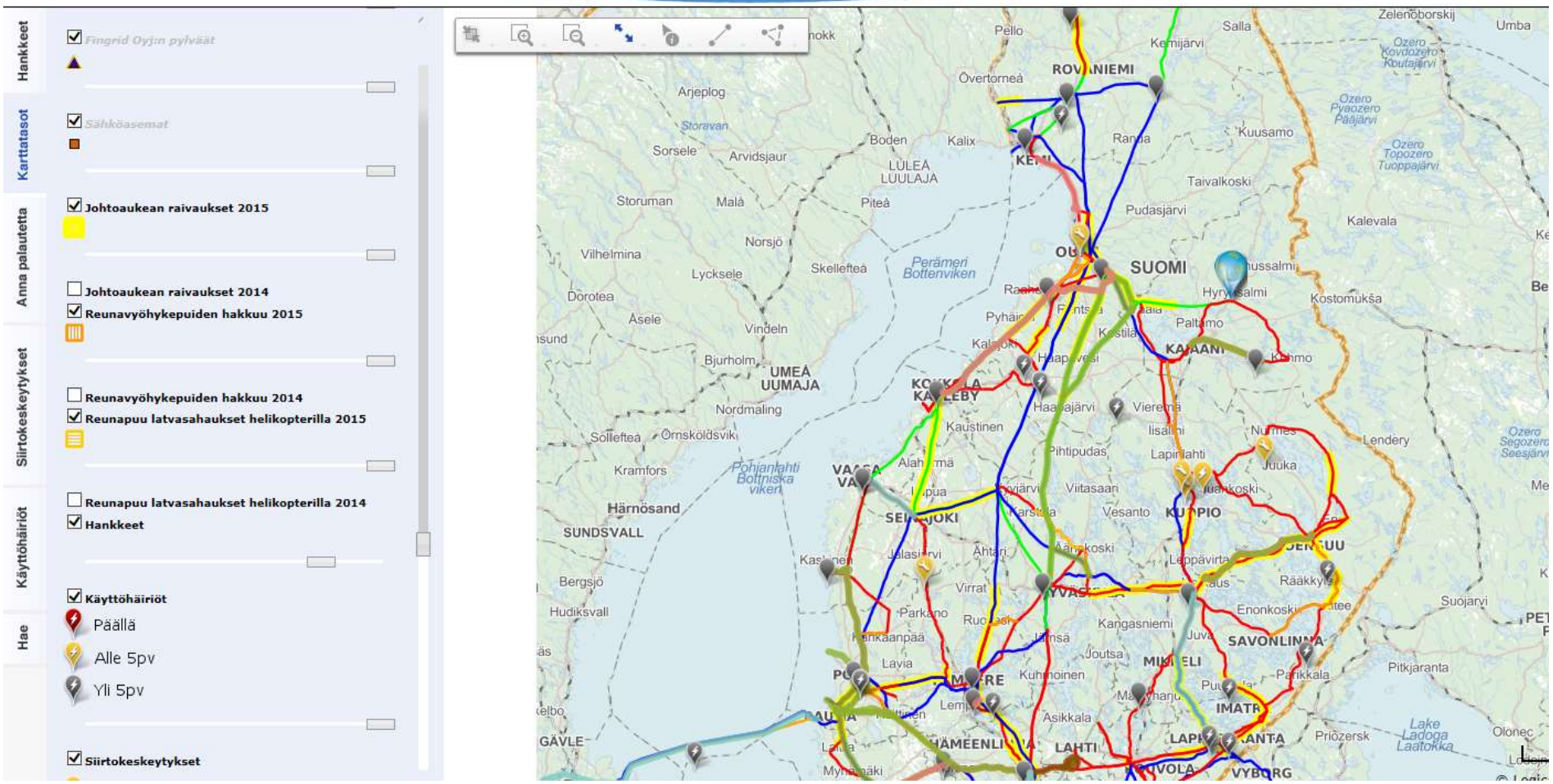
Definitions

Time 0 seconds	Considered to be when the frequency falls through 49,8 Hz
Pre Incident frequency	Average system frequency between t – 60 seconds and t -30 seconds
Nadir (Hz)	Minimum system frequency from t 0 to t + 6 minutes
Minimum Frequency POR (Hz)	Minimum frequency during POR period from t + 5 seconds to t + 15 seconds
Max df/dt Hz/Sec	Maximum negative rate of change of frequency during the period t – 5 seconds to t + 30 seconds, (This is calculated from a five point moving average with a sample rate of 100 milliseconds) Measured at Kilroot Power Station
Average df/dt Hz/Sec	This is the rate of change of frequency observed between two points in time, The first point being when the frequency passes through 49,8 Hz and the second when the frequency nadir is observed between t + 5 seconds and t + 15 seconds Measured at Kilroot Power Station

FinGrid Web Site

elementpower

FinGrid web site shows transmission works, maintenance and faults



ENSTO-E DATA on non-synchronous capacity

ENTSO-E data demonstrates that the GB system is the most advanced in terms of non synchronous infeeds which indicates that monitoring is needed to ensure this development does not cause unforeseen problems.

entsoe

REPORT

Future System Inertia 2

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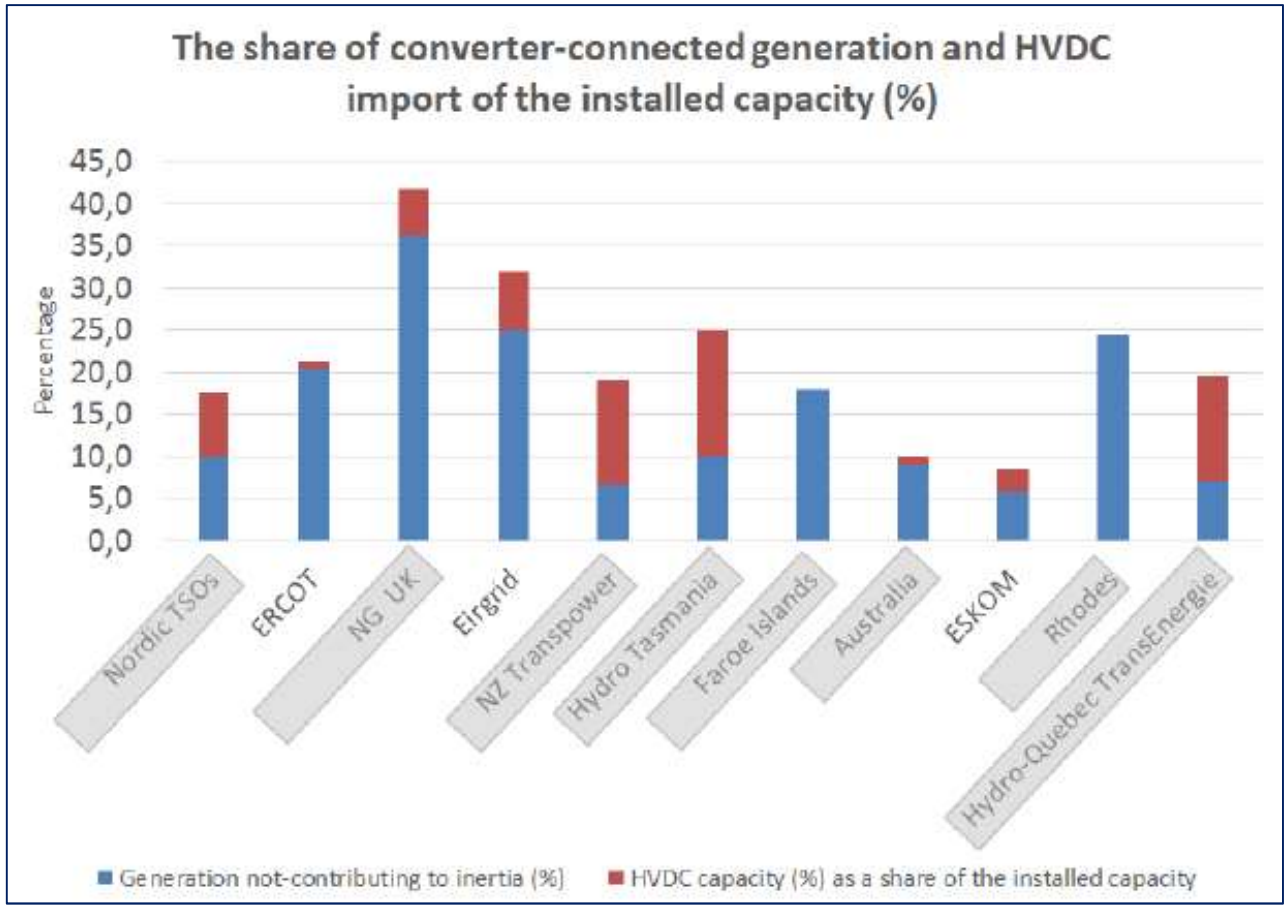

Annex 4: NGET Proposed Workgroup Alternative Grid Code Modification (WAGCM)

The following proposed WAGCM below was raised by NGET, this has currently not been voted upon by the Workgroup as the Proposer is awaiting the outcome of this consultation.

;

Alternative Request Proposal Form Grid Code Modification	At what stage is this document in the process?
# GC0105: ## Mod Title: System Incidents Reporting	01 Proposed Alternative 02 Formal Workgroup alternative

Purpose of Modification: As per the original - The Grid Code Review Panel has previously received an annual report from National Grid indicating system incidents and reporting unplanned outages of Interconnectors, load or generation connected to transmission or distribution networks. The Grid Code Review Panel felt this was necessary as it helped monitor the effectiveness of the technical requirements in the Grid Code and Distribution Code.

The alternative aim is to ensure that what the ESO has delivered in the past can be continued, but not to add additional items in which no customer benefit can be seen or which would be better placed as an obligation on the TOs.

Date submitted to Code Administrator: Nov 2018

You are: A Workgroup member

Workgroup vote outcome: Formal alternative/not alternative

Contents

Any questions?

Contact: Matthew Bent
Code Administrator

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Alternative Proposer:
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07967765889

1 Alternative proposed solution for workgroup review

This alternative was suggested at the last workgroup meeting on 16th March 2018 by National Grid (NG).

It highlights 3 main areas of difference to the original proposal which can be summarised as the original proposal includes new requirements and areas of reporting for National Grid which were not in the report as produced previously on an informal basis. The benefit to consumers of these additional items has not been quantified and since this will lead to extra work for which National Grid is not funded the alternative removes these requirements and instead proposes continuing with the report as has been produced previously.

2 Difference between this proposal and Original

The specific differences are as follows:

First:

- In the original proposal
    - A loss of infeed or exceed (import or export including generation, demand and interconnection) of =>250MW
- NG alterative
    - A loss of infeed or exceed (import or export including generation, demand and interconnection) of 600MW or more.

The reason for wanting to set the limit at 600MW or more is that the 250MW threshold is we think too low. At this level there will not be a discernible system impact and there will be more events. 600MW is a more proportionate level that will genuinely impact the system and is also more appropriate for a report from the TSO.

Second:

- In the original proposal NGET would be required to:
    - Maintain an area of the National Grid web site with a list of all historic System Incidents Reports and information on any process required for legitimate parties to obtain the reports (if reports are not available to download)
- NG alternative
    - Make available to the Grid Code Review Panel and available on request to other interested parties

The reason for not wanting to share this information on the NG ESO website relates to security of the information. Listing all the faults that have the largest impact on the electricity system has no public benefit and we think for security reasons a list of the historic faults on the system that have had the largest impact should not be public domain. Sharing with the Grid Code Review Panel or on request should be sufficient, although this does also reopen the question of what the panel are going to do with this information.

Third:

- In the original proposal NGET would be required to:
    - Include a section in the System Incidents Report outlining progress towards reporting events and associated data on the National Electricity Transmission System including:
        - three phase fault;
        - three phase to earth fault;
        - Phase to phase faults
        - Phase to earth faults
        - The associated voltage dips – durations and spreads.
        - Over-voltages;
        - Under-voltages
        - voltage dips of >50%;
        - Lightning strikes.
- NG alternative:
    - No report of this nature to be provided

The reason for not including the production of this additional report is that it is not something that NGET has ever provided previously and the benefit of sharing the information is not clear. If anything, this requirement would seem to point to a regulatory assessment of the role of the GB TOs in managing their assets rather than the SO in operating the system and therefore should not be included in a modification that is based on giving requirements for system reporting to the SO. If the value of this report could be demonstrated it would be more appropriate to take it forward as a STC change applying equally to each of the GB TOs and potentially OFTOs.

Other more minor wording changes have also been made and the final text is listed in section 6 of this proposal.

3 Justification for alternative proposal against Grid Code Objectives

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

In broad terms this alternative proposal would meet the same objectives to the same extent as the original, but it keeps more to the principles of the report that NGET have provided in the past since this already meets the majority of the criteria and does not add any significant additional tasks to this.

There is currently no obligation on NGET to provide this report and there is no funding for it in the regulatory settlement. The original proposal does not set out what the information will be used for, what the role of the Grid Code Review Panel is in assessing this information or what the defined benefit of this is that can then be assessed against the cost of continuing to produce it.

4 Impacts and Other Considerations

This alternative will mean only the current level of resource is required in NGET to continue producing a report that closely resembles that produced previously. The original proposal will mean more resource is required at NGET to fulfil the additional requirements and lower reporting thresholds.

Consumer Impacts

As per the original

5 Implementation

As above, the costs of producing the report in line with this alternative will not increase. The original proposal will increase costs on NGET above those currently being incurred.

6 Legal Text

Suggested that this text goes as an annex in the Grid Code and is then referred to in the general conditions section of the Grid Code

NGET to prepare and present to the October Grid Code Review Panel every year a report titled – System Incidents Report - containing the following information:

1. A record of every significant event on the National Electricity Transmission System including the following events:
    a. A loss of infeed or exceed (import or export including generation, demand and interconnection) of 600MW or more.
    b. A frequency excursion outside the operational limits (49.8-50.2Hz).
    c. A fault on the transmission network which
        i. Could be linked to the known or reported tripping of any Power Station, DC Converter or User System of 600MW or more (see a)
        ii. is linked to a change in the transmission system voltage of more than
            1. 400kV: -10% to +5% for 15mins
            2. 275kV or 132 kV: +/- 10% for 15min
    d. Any known demand disconnected >=50MW from the National Electricity Transmission System or other lesser demand if notified to System Operator
    e. Any Demand Control action taken
2. A report of each significant event with the following data as appropriate and available:
    a. The time(s) in hh.mm.ss of the significant event and any potentially related occurrences.

b. Any known or reported loss of Embedded Power Station(s) with details where known
c. The frequency record (in table and graphical format) at =1 second intervals for 1 minute before and after the incident.
d. The frequency (to 2 decimal places) immediately before the significant event.
e. The minimum and maximum frequency (to 2 decimal places) immediately after the significant event.
f. The maximum rate of change of frequency recorded during the significant event over a specified time period e.g. 500ms.
g. Where known the MW of all individual losses or trips related to the significant event
h. Where known the identity the Users and Network Owner of all demand losses or trips related to the significant event,.
i. Clearly identify the details of the fault or directly impacted equipment
j. The extent of any voltage dip associated with the significant event.
k. An estimate of system inertia in MWs (Mega Watt seconds) at the time of the event
l. Any other data available that is of value to a clearer understanding of the significant event and its potential implications.

To obtain, manage, present, communicate and report the data above NGET shall:

- Present the System Incidents Report in a pdf report and the associated data in a spreadsheet.
- Make the report available to the Grid Code Panel
- If NGET significantly change the way they estimate system inertia, for section 2k above this will be shared in the report

