nationalgrid

Stage 02: Workgroup Consultation

Grid Code

GC0114: 'System Operation Guidelines Prequalification Processes'

What stage is this document at?

02	Workgroup Consultation
03	Workgroup Report
04	Code Admin Consultation
05	Draft Final Modification Report
06	Report to the Authority

Purpose of Modification:

The EU System Operation Guideline (SOGL) requires NGET to develop prequalification processes for Frequency Containment (FCR), Restoration (FRR) and Replacement Reserves (RR). In line with stakeholder feedback NGET proposes to develop these new processes under the established governance of the Grid Code.

This document contains the discussion of the Workgroup which formed in June 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 10 of this document.

Published on: **17 August 2018**

Length of Consultation: **20 working days**

Responses by: **17 September 2018**

Low Impact: *Existing and future balancing services providers*

Contents

Any Questions?

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Timetable

The following timetable has been proposed by the Code Administrator:

Workgroup Meeting 1	01 June 2018
Workgroup Meeting 2	03 July 2018
Workgroup Meeting 3	03 August 2018
Workgroup Consultation open/closes	16 August 2018/27 September 2018
Workgroup Meeting 4	10 September 2018
Workgroup Report issued to the Grid Code Panel	27 September
Workgroup Report presented to Panel	TBC

Code Administration Consultation Report issued to the Industry/Code Administrator Consultation closes	TBC
Draft Final Modification Report presented to Panel	TBC
Modification Panel decision	TBC
Final Modification Report issued the Authority	TBC
Authority Decision	TBC
Decision implemented in Grid Code	5 WDs after Implementation

About this document

This document is a Workgroup consultation which seeks the views of Grid Code and interested parties in relation to the issues raised by the Original GC0114 Grid Code Modification Proposal which was raised by National Grid Electricity Transmission and developed by the Workgroup. Parties are requested to respond by **5pm** on **17 September 2018** to grid.code@nationalgrid.com using the Workgroup Consultation Response Proforma which can be found on the following link:

https://www.nationalgrid.com/uk/electricity/codes/grid-code/modifications/gc0104-eu-connection-codes-gb-implementation-demand

Document Control

Version	Date	Author	Change Reference
0.1		Code Administrator	Draft Workgroup Consultation to Workgroup
0.2		Workgroup	Draft Workgroup Consultation to Workgroup
0.3		Workgroup	Workgroup Consultation to Industry

1 Summary

1.1 This report aims to outline the discussions had by the Workgroup in respect of its scope; set out the proposals to address the solution from the Proposer and possible alternative options, and provide supporting justification respectively.

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1.2 GC0114 was proposed by National Grid, as the System Operator (SO), and was submitted to the Grid Code Review Panel for their consideration on 8 May 2018.

1.3 The Grid Code Review Panel decided to send the Proposal to a Workgroup to be developed and assessed against the Grid Code Applicable Objectives.

1.4 Section 2 (Original Proposal) and Section 6 (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 8 of the Workgroup contains the discussion by the Workgroup on the Proposal and the potential solution.

1.5 The Grid Code and Distribution Code Review Panels detailed in the Terms of Reference the scope of work for the GC0114 Workgroup and the specific areas that the Workgroup should consider. This can be found in Annex 01.

1.6 Please note that the draft legal text that can be found in Annex 02

2 Original Proposal

Section 2 (Original Proposal) is sourced directly from the Proposer and any statements or assertions have not been altered or substantiated/supported or refuted by the Workgroup. Section 8 of the Workgroup Consultation contains the discussion by the Workgroup on the Proposal and the potential Solution.

Defect

NGET is required to develop new prequalification processes by the EU System Operation Guideline (SOGL).

What

Introduce a new section to the Grid Code describing the prequalification processes as described in the SOGL.

Why

It is requirement of the EU network guideline for NGET to develop these processes. Developing these processes through the Grid Code introduces a clear governance arrangement for these new processes.

How

A new section will be added to the Grid Code to describe the SOGL prequalification processes.

Guidance from BEIS and Ofgem was to apply the new EU requirements within the existing GB regulatory frameworks. This would provide accessibility and familiarity to GB parties, as well as putting in place a robust governance route to apply the new requirements in a transparent and proportionate way.

The SOGL requirement is for NGET to develop and publish the details of the prequalification process by 18 September 2018. NGET is looking to develop these processes through the established Grid Code governance, however the Grid Code modification does not need to be finalised by the 18 September 2018 deadline. NGET will publish the details of the processes in September 2018, whilst acknowledging any further development which may be ongoing.

3 Governance

The Grid and Distribution Code Review Panels agreed that this modification would have a material affect and as a result the modification will go first to Workgroup, following standard procedures and will be submitted to the Authority for decision.

4 Why Change?

This Proposal is one of a number of Proposals which seek to implement relevant provisions of a number of new EU Network Codes/Guidelines which have been introduced in order to enable progress towards a competitive and efficient internal market in electricity. Some methodologies required by the EU Network Guidelines are still in development and these may in due course require a review of solutions developed for Codes that come into force beforehand.

The full set of EU network guidelines are;

- Regulation 2015/1222 – Capacity Allocation and Congestion Management (CACM) which entered into force 14 August 2015
- Regulation 2016/1719 – Forward Capacity Allocation (FCA) which entered into force 17 October 2016
- Regulation 2016/631 - Requirements for Generators (RfG) which entered into force 17 May 2016
- Regulation 2016/1388 - Demand Connection Code (DCC) which entered into force 7 September 2016
- Regulation 2016/1447 - High Voltage Direct Current (HVDC) which entered into force 28 September 2016
- Regulation 2017/1485 - Transmission System Operation Guideline (SOGL) which entered into force 14 September 2017
- Regulation 2017/ 2196 - Emergency and Restoration (E&R) Guideline which entered into force 18 December 2017
- Regulation 2017/ 2195 - Electricity Balancing Guideline (EBGL) which entered into force 18 December 2017

This modification relates to the SOGL guideline which aims at;
"*(a) determining common operational security requirements and principles;*
(b) determining common interconnected system operational planning principles;
(c) determining common load-frequency control processes and control structures;
(d) ensuring the conditions for maintaining operational security throughout the Union;
(e) ensuring the conditions for maintaining a frequency quality level of all synchronous areas throughout the Union;
(f) promoting the coordination of system operation and operational planning;
(g) ensuring and enhancing the transparency and reliability of information on transmission system operation;
(h) contributing to the efficient operation and development of the electricity transmission system and electricity sector in the Union."

Those aims which NGET believes are most impacted by the development of FCR, FRR, and RR prequalification processes are **in bold.**

The EU System Operation Guideline (SOGL) requires NGET (SO) to develop a prequalification process for each of the three categories of frequency reserve;

- Frequency Containment Reserves (FCR),
- Frequency Restoration Reserves (FRR) and
- Replacement Reserves (RR)

NGET (SO) believes existing GB balancing services used to manage frequency can be maintained but must be mapped to one of the above categories; e.g. the existing service of Primary Response maps to FCR, whilst the existing service of STOR maps to RR. Further examples of this mapping of existing Balancing Services to FCR, FRR and RR respectively can be found in Annex [4].

The SOGL was published in the Official Journal of the EU on the 25 August 2017 and came into force 20 days later on the 14 September 2017. The SOGL requires that by 12 month after coming into force NGET (SO) develop and make public the prequalification processes. Therefore the prequalification processes must be developed and published by NGET (SO) by 14 September 2018, and SOGL specifies some minimum requirements; which can be found in Articles 152-179 plus Article 182) of the SOGL. There is no governance requirement in SOGL for the process development, and no regulatory approval required.

Stakeholders have expressed concern that the proposed new processes associated with FCR, FRR and RR in terms of this modification may introduce additional requirements than those set out in SOGL; such as non harmonised and discriminatory application; and have been particularly concerned by the lack of visibility and governance surrounding their development.

The Proposer wishes to develop the SOGL Prequalification processes as a Grid Code modification, which should give customers the desired visibility and governance. NGET (SO) believes that this approach will ensure those considerations set out with regards to application of the SOGL in Article 4 are met, namely that;

"When applying this Regulation, Member States, competent authorities, and system operators shall:
(a) apply the principles of proportionality and non-discrimination;
(b) ensure transparency;
(c) apply the principle of optimisation between the highest overall efficiency and lowest total costs for all parties involved;
(d) ensure TSOs make use of market-based mechanisms as far as possible, to ensure network security and stability;
(e) respect the responsibility assigned to the relevant TSO in order to ensure system security, including as required by national legislation;
(f) consult with relevant DSOs and take account of potential impacts on their system; and
(g) take into consideration agreed European standards and technical specifications."

5 Code Specific Matters

Technical Skillsets

Understanding of the GB regulatory framework (particularly the Grid Code)

An understanding of the existing and future GB balancing services and any associated prequalification activities.

An understanding of the FCR, FRR, and RR prequalification processes as set out in the EU System operation Guideline (SOGL).

Reference Documents

COMMISSION REGULATION (EU) 2017/1485 of 2nd August 2017 establishing a guideline on electricity transmission system operation
https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32017R1485

COMMISSION REGULATION (EU) 2017/2195 of 23 November 2017 establishing a guideline on electricity balancing

https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32017R2195

National Grid Balancing Services
https://www.nationalgrid.com/uk/electricity/balancing-services

Consultation for Great Britain - Synchronous Area Operational Methodology, LFC Block Operational Methodology, LFC Area Operational Methodology and Monitoring Area Operational Methodology
https://consultations.entsoe.eu/markets/synchronous-area-operational-methodology-lfc-block/

6 Solution

Section 6 (Solution) is sourced directly from the Proposer and any statements or assertions have not been altered or substantiated/supported or refuted by the Workgroup. Section 8 of the Workgroup Consultation contains the discussion by the Workgroup on the Proposal and the potential Solution

The intention is introduce a new section of the Grid Code which would set out the FCR, FRR, and RR prequalification processes in accordance with SOGL.

Individual details will be defined for each balancing service, as is the case now. It is envisaged that the SOGL prequalification processes simply provide the overall framework for each type of reserve (FCR, FRR, and RR).

7 Impacts and Other Considerations

- Inclusion of smaller participants (wider engagement through the ENA's Open Networks and NGET's Power Responsive initiatives,
- Potential for cross-code working with Distribution Code
- It is noted that GC0097 is also developing prequalification processes for Project TERRE which is to be the single 'standard' product in GB (and other parts of the Union) for RR when it is introduced.

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

No.

Consumer Impacts

No direct consumer or environmental impacts identified.

8 Workgroup Discussions – Initial four Workgroup meetings

The first Workgroup meeting was held on 6 June 2018, with a second on the 3 July 2018 a third on 3 August 2018 and a fourth on 14 August 2018.

1. Background and Context

As Proposer, Robert Selbie of NGET (SO) presented the proposal and explained the rationale behind the changes being suggested. A general overview of modification process and of GC114 overview was given. It was explained to the Workgroup that the EU System Operation Guideline (SOGL) requires NGET (SO) to develop prequalification processes for Frequency Containment Reserves (FCR), Frequency Restoration Reserves (FRR) and Replacement Reserves (RR) by 14th September 2018, and that these processes were new within the GB market.

The Proposer advised that NGET (in line with stakeholder feedback) proposes to develop these new FCR, FRR and RR prequalification processes under the established governance of the Grid Code. One Workgroup member noted that these proposed new prequalification processes should be under the established governance of the Grid Code, whereby some 400 industry parties could raise modifications, where all stakeholders could raise potential alternatives and (if material) Ofgem would decide on the change, whereas what is being proposed is that a single party (NGET SO) is the only party that could raise potential changes for some of the proposed new processes. Another Workgroup member reminded the Workgroup that not all affected parties could raise Grid Code Modifications.

The Proposer also advised the Workgroup that this Grid Code modification does not need to be finalised by the 14th September 2018 deadline, however, NGET (SO) will publish the details of the FCR, FRR and RR prequalification processes in September 2018, whilst acknowledging any further development which may be ongoing.

The Proposer further explained that Modification proposes to introduce a new section to the Grid Code to describe the SOGL prequalification processes. NGET (SO) believes existing GB balancing services used to manage frequency can be maintained but must be mapped to one of the above categories; e.g. Primary Response maps over to FCR and STOR maps over to RR.

One Workgroup member questioned whether the SOGL prequalification processes could be changed following their establishment by the legal deadline of September 2018. General consensus in the Workgroup was that an ongoing change process

should be possible, and the Workgroup should detail how this would work and present to Ofgem to confirm consistency with the SOGL regulation.

It was noted that SOGL Article 7- "Amendments to the terms and conditions or methodologies of TSOs" envisages a change process where TSOs make propose amendments to the documents produced under SOGL. NGET (SO) clarified that they considered that the existing change process of the Grid Code is sufficient for this purpose. Another Workgroup member queried whether the prequalification processes were intended to apply to individual's sites, groups or as a type test. Consensus of the Workgroup was that the intention of the prequalification process was to apply to Reserve Providers (be this a Unit or a Group, as defined in SOGL, Article (3)). One Workgroup member provided an example of this would be where an owner of a number of sites who wishes to participate within the market place, grouping these sites together in a common block. The Workgroup member pointed the Workgroup to SOGL Article 3, paragraphs 9, 10 and 11 to underpin this example.

Workgroup Representation

Workgroup Representation was also discussed. It was noted that there was recognition at GCRP and at GCDF that SOGL the prequalification processes will impact parties not subject to the Grid Code, therefore engaging smaller reserve providers was important. The Proposer advised that the Workgroup invitation has been published through ENA Open Networks advisory Group membership, NGET's Power Responsive via email 31 May 2018, JESG, Grid Code Distribution lists and NGET's SOGL day in the life webinars.

In between Workgroup 1 and 2, the composition of the Workgroup membership was extended to be more reflective of the impact that the modification will have on smaller reserve providers if implemented. It was noted in Workgroup 2 that the Workgroup members were satisfied that the right participation in the Workgroup had been achieved. It was also noted that all Workgroup memberships have been approved by the Grid Code Review Panel.

In Workgroup 3, a Workgroup member noted that he believed it important that the Workgroup sought representation from Distribution Network Operators, especially in light of wider industry aspiration for distribution led investment signals. The Workgroup member felt that the Workgroup had overlooked the DNOs. Upon revision, the chair of the Workgroup found that DNOs had been in attendance at Workgroup one. The Workgroup decided that specific questions would be asked to the DNOs at the Workgroup Consultation Phase, which should help to encapsulate any input the DNOs may have to this process.

2. Legal Text

During the first Workgroup, the Proposer discussed the need to define the FCR, FRR and RR pre-qualification processes within the legal text. Likewise, the need was also noted from the outset to ensure all requirements from EU Regulations are captured and mapped (balancing service mapping), as was initial draft balancing service mapping. The current proposed legal text is in Annex 2.

(a) Requirement for Prequalification

During the first three meetings differing views within the Workgroup as to what was meant by "prequalification" were presented.

The Proposer was of the opinion that SOGL does not specify whether those reserve providing units or groups who have been prequalified for FCR, FRR, or RR have a requirement (or not) to provide a reserve service. Instead, the

Proposer pointed out that SOGL ensures a process is established (found in SOGL Articles 155(1) and 155(9)) to verify compliance with the specified technical capabilities. The definition in SOGL Article 3(2) (146) is:

"'prequalification' means the process to verify the compliance of a reserve providing unit or a reserve providing group with the requirements set by the TSO;"

It was also discussed by the Workgroup that NGET(SO) has an obligation to develop prequalification processes as part of SOGL implementation in accordance with SOGL Articles 155(1), 159(1), 162(1) by reference to the technical minimum requirements to be specified in accordance with Articles 154(FCR), 158 (FRR) and 161 (RR). It was also noted that any potential reserve providers who wish to offer an FCR or FRR or RR service have an obligation to submit a formal application to NGET (SO) in accordance with SOGL Articles 155(3), 159(3), 162(3) so that NGET (SO) can verify compliance and that such application(s) by the reserve provider can be deemed withdrawn in certain circumstances.

In addition SOGL Articles 158(3), 158(5), 161(3), and 161(5) refers to monitoring of the compliance with FRR and RR connection requirements respectively for those types of reserve providers.
SOGL Article 158(**3**) **and 161**(**3**) state that NGET;

> *"shall adopt the technical requirements for the connection of FRR[/RR] providing units and FRR[/RR] providing groups to ensure the safe and secure delivery of FRR[/RR]."*

There is a requirement for NGET (SO) to specify the minimum technical requirements for FRR and RR providing units and groups in SOGL Articles 158 and 161. These are referred to in **SOGL Article 158**(**3**) **and Article 161**(**3**). This is a connection requirement but only for those parties that apply to provide FRR or RR reserve services. There was disagreement in the Workgroup as to whether or not these requirements, be that prequalification or connection, applies only to parties who applied to provide FRR or RR.

(b) Prequalification without Assets

It was noted by one workgroup member that the implementation of prequalification processes should not inadvertently become a barrier to entry. In the new case of assets who's primary commercial focus is on the delivery of reserve services to the TSO it is important that the ability to prequalify and enter into a commercial contract before the asset is installed be retained as this mechanism underpins the financeability of these assets."

(c)Providers connected to the distribution networks

One Workgroup member stated that it would be prudent to engage DNOs (known as 'DSOs' in SOGL) in regards to the minimum technical requirements, especially in light of wider industry aspiration for distribution led investment signals. It was suggested by another Workgroup member that this could be encapsulated within the Workgroup Consultation questions in order to gauge DNO impacts. It was also agreed by the Workgroup that this engagement is encapsulated within the Terms of Reference of the Workgroup.

A Workgroup member stated that though this may be the case, but it would be prudent to engage other impacted parties.

A Workgroup member highlighted that Article 182(2) states that for the purposes of prequalification process, is that NGET(SO) should develop and specify, an agreement between the TSO and DSOs, setting out the terms of the exchange of

information required for these prequalification processes. The Workgroup came to the consensus that DNO involvement should be sought in the consultation process, and questions considered by the Workgroup in order to gain the best inputs in scope with the Terms of Reference of the modification.

SOGL Article 182(4) was highlighted to the Workgroup. The Proposer stated that it was his belief that during the three month prequalification assessment period; of any individual reserve providing unit or group prequalification application; that this would be where NGET (SO) would work with the relevant DSO to determine any limits to or exclude the delivery of active power reserves located(s) in its distribution system that application. Several Workgroup members disagreed, as new reserve providing assets to be financed well in advance of prequalification, along with minimum technical any specific DSO limits should be set out prior to prequalification.

It was suggested by the Workgroup that SOGL 182(2), 182(3) and 182(4) in terms of the agreement should be included in the legal text, ensuring that it is clear that conversations will be held with the DSO in line with the provisions set out accordingly. The Proposer said this may be better developed in conjunction with the DSOs. However, a Workgroup member noted that the TSO and DSOs agreement(s) in this area would have to be fully transparent to stakeholders so that potential reserve providers were fully aware of this prior to submitting their prequalification application.

Post Workgroup 3, the Code Administrator found that there had been DNO attendance in the formative stages of the Workgroup. The Code Administrator made the Workgroup aware of this.

The workgroup would be interested in the views of other parties in respect of the role of DSOs in the context of the prequalification process for either FCR, FFR or RR. Please see question 6 in this GC0114 specific questions in this consultation and provide any comments[1].

(c) Mandatory GB services

The capability to provide certain balancing services in GB is a mandatory condition of connection (e.g. BM participation, and Mandatory Frequency Response). This ensures NGET (SO) has sufficient tools to enable the safe, economic and efficient operation of the transmission system. NGET (SO) considers that parties who are currently mandated to provide a capability as a condition of connection should not be required to go through an additional prequalification activities, and therefore the existing connection process would provide sufficient verification of compliance.

NGET considers that SOGL Article 155(3) recognises this approach:

"Where the compliance with certain requirements of this Regulation has already been verified by the reserve connecting TSO, it will be recognised in the prequalification".

Alternatively, some Workgroup members considered that the intention of SOGL is that only those reserve providing units or groups who want to apply to prequalify to provide a reserve service to NGET (SO) are required to undertake the prequalification process. Where a party wishes to provide a reserve service, then a formal prequalification application is required to be submitted to the TSO **(SOGL Article 155**(**3**), **159**(**3**) **and 162**(**3**) plus 182(2), 182(3) and 182(4)**)**, which may not be granted, and therefore this indicates that the submission of a prequalification application is a voluntary activity and therefore the mandatory requirement to

[11] SOGL Paragraphs 182.(2), 182.(3) and 182.(4),

provide the capability as a condition of connection in GB is not consistent with SOGL in the context of this been deemed by the TSO as being the automatic application (without the reserve provider making any application) to prequalify for providing FCR, FRR or RR.

The Proposer noted the impact of removing mandatory services. Without mandatory services NGET (SO) would not be able to guarantee that NGET (SO) could secure the system. The presence of the mandatory market means that NGET (SO) can guarantee NGET's licence obligation to secure the system as there is enough capacity to provide the level of response (albeit at a cost). Without that, NGET (SO) would be relying on enough reserve providers deciding to participate in the commercial market to secure the system, which would not be guaranteed. For example, all technologies have to be able to provide response so that NGET (SO) could utilise them to secure the system. There is no guarantee that all technologies would take part in a commercial market if they were not required to. Whilst some might, others wouldn't, even if the market price was very high. It was highlighted that the SOGL has provision for GB specifying the operational procedures for when FCR services have been exhausted (SOGL 152(7)) in the Synchronous Area Operating Agreement[2]. (which, it was noted by the Workgroup, had yet to be finalised). This provision in theory allows for NGET (SO) to specify that Mandatory Services can be called upon by NGET. (SO)If NGET (SO) were to use this approach, parties who do not to offer commercial service would not need to take part in the prequalification application process or the other cumbersome requirements for services they are currently never asked to provide, whilst still permitting NGET (SO) to use this in an emergency only.

A Workgroup member questioned whether NGET (SO) should be using firstly commercial markets, and only mandatory when other options have run out. NGET (SO) set out that procuring at the last minute is the least economic method (although, in accordance with SOGL Article 9 (1), the test is whether the SO action is reasonable, efficient and proportionate, rather than economic). The Proposer outlined that by buying some response ahead of time allows NGET (SO) to hedge their price exposure whilst maintaining flexibility to meet the system needs on the day.

Whilst there is still a difference in views within the Workgroup the proposed legal text is intended to be consistent with both views as it only requires an application to be made for prequalification for approved 'standard' or 'specific' products and currently there are no such approved products. Hence the key question on whether mandatory services are classified as FCR, FRR or RR or not requires to be dealt with when NGET (SO) submit their application to Ofgem, after a public consultation, to get Mandatory Service Agreement services approved (by Ofgem) as 'specific' products as required by EBGL Article 26 in terms of being FCR, FRR or RR as those mandatory services meet the minimum technical requirements (in accordance with Articles 154, 158 and 161).

(d) Direct References to SOGL

The draft legal text provided by the Proposer was initially reviewed by the Workgroup. It was agreed that whilst references within the legal text to the SOGL Regulation itself would be avoided, so that GB parties could understand the GB Grid Code without having to reference to the EU legislation that cross references to SOGL (in the form of 'comments' would be provided at the consultation stage to allow stakeholders to see where the legal text stemmed from). Definitions would

[2] The consultation for Great Britain - Synchronous Area Operational Methodology can be found here;
https://consultations.entsoe.eu/markets/synchronous-area-operational-methodology-lfc-block/

be simply copied from the SOGL Regulation where required. The Proposer agreed to provide a mapping of the relevant articles in SOGL to help Workgroup members understand where the requirements originated from. This was provided at Workgroup three and is available in Annex 3.

(e) Standard Forms for Prequalification

One Workgroup member requested that the prequalification processes be set out the form(s) to be completed by potential reserve providers as part of their formal application. The Workgroup agreed that this should be developed as a schedule to the Grid Code. These applications forms are still to be developed.

(f) Listing of Balancing Services

There was a request from two Workgroup members to list explicitly the existing Balancing Services in terms of whether they would be classified as either FCR, FRR or RR or not classified as any of these three as without this listing stakeholders would be unable to see that the implications of GC0114 could be to them. NGET (SO) believes this would then require codification with the Grid Code of commercial products and services, which would restrict NGET's flexibility in procuring what they need and result in increased consumer cost; although a Workgroup member noted that code changes could (and have in the past) been enacted, if urgently required, within a single Working Day which suggested that flexibility of procurement could be achieved whilst ensuring open governance, full transparency and regulatory approval via a codification route. NGET (SO) considers that codifying testing in the Grid Code would restrict NGET's ability to development and improve their products over time; however, it was noted by a Workgroup member that the NGET (SO) has to act, according to SOGL, in a fully transparent and non discriminatory manner (which included the testing arrangements) so that actual and potential reserve providers can see what is (or maybe) expected of them. According to the Proposer if NGET (SO) introduce a new frequency response specific product (which, as per Articles 18 and 26 of EBGL, would need to be subject to a public consultation and Ofgem approval) then the existing testing regime may not be appropriate, NGET (SO) will therefore have to factor in 6-12 month development time to get a Grid Code change in for the new testing regime before any new reserve providers can go live; although a Workgroup member noted that if urgency is warranted, the necessary Grid Code change(s) could be undertaken much quicker. Furthermore, it would be difficult for stakeholders to respond to a public consultation by NGET (SO) on any future 'specific' product in a meaningful way if key information, such as the testing regime, was unknown. The obligations set out in Articles 18, 25 and 26 of EBGL suggest that there is not necessarily a quick method (as suggested by the Proposer) of introducing a new product in the future and therefore codifying might actually help. Nevertheless, according to NGET (SO) in a world where change is happening faster and new technology types and new business models are being introduced every couple of months, codifying commercial products and services seems very inefficient and will result in additional costs to consumers. It also inhibits innovation; the CLASS project or domestic aggregation are just two examples of projects which would suffer if NGET (SO) were unable to respond to new developments in their testing documents. However, a Workgroup member noted that in respect of the provision of demand side response to the TSO (i.e. NGET (SO)); such as the CLASS project or domestic aggregation; there are multiple EU Network Code obligations associated with that which would have to be discharged prior to any (national) change(s) being implemented and that these could take some time to progress.

The GC0114 Original proposed modification does not include the codification into the Grid Code of the FCR, FRR or RR products and the Workgroup would be interested in the views of other parties as to whether or not this would be beneficial

to the market to have this codification. Please see question 8 in this GC0114 specific questions in this consultation and provide any comments.

3. Balancing Services Mapping

The Workgroup reviewed the existing balancing service mapping to the FCR, FRR and RR reserve products, which was provided by NGET (SO). This is attached in Annex 04. Several corrections and additions were made. It was agreed that the mapping of the existing balancing services to the future reserve products would be validated through the Workgroup consultation. The Workgroup reviewed FCR, FRR and RR definitions set out in SOGL Article 3(2). Key timescales were highlighted, namely:

- Less than 10 seconds = FCR
- Less than 15 minutes = FRR
- Greater than 15 minutes = RR.

Load Frequency Control (LFC) was explained as being the Load Frequency Control area as defined under SOGL. It was noted that GB is a single synchronous area and a single load frequency control area. The Proposer confirmed that with GC0114 FCR, FRR and RR is solely concerned with frequency management (which is tagged as energy not system). The Proposer advised that reserve products can be used for any application to manage the transmission system, and this is consistent with SOGL. NGET believes SOGL is sufficiently flexible to avoid duplicate processes being necessary. Three Workgroup members raised concerns on this point.

The question was raised as to whether NGET have the ability use reserve providers for FCR, FRR or RR that have not gone through the relevant SOGL prequalification application processes. It was advised by the Proposer to the Workgroup that if existing processes were aligned and provided sufficient verification of compliance then there should be no need for reserve providers to go through two qualification processes. Therefore all reserve provision that has been qualified through the existing mandatory service processes can be accessed by NGET (SO). One Workgroup member disagreed, noting that the intention within SOGL was that a single prequalification application process was to be followed for potential providers of either FCR, FRR and RR and didn't believe it was the intention of SOGL that automatic prequalification could (as the Proposer suggests) be assumed. Another Workgroup member opined that there does appear to be a drive for consistency, holding reserve providers to account and finding a common demonstration of capability – however this should be achieved by only completing one process. There was an opinion in that Workgroup that SOGL is not flexible enough for this to be permitted. A Workgroup member illustrated that from an engineering point of view, the equipment is available for a variety of tasks, but from a commercial point of view there might not be the appetite to do so, and hence why arrangements for prequalification application(s) must be voluntary.

The draft mapping of existing products to FCR, FRR and RR reserve services has been provided in Annex 4. The Workgroup would be interested in the views of other parties if they consider this mapping to be appropriate? Please see question 5 in this GC0114 specific questions in this consultation and provide any comments.

The original proposal had intended that if an individual balancing service was listed as providing 2 or more of the European reserve categories (e.g FRR and RR), that the reserve service provider would have to meet the minimum technical requirements for both of the European reserve categories. Therefore providers of STOR, for example, would need to meet the FFR and RR minimum technical requirements.

4. Cross Code Impacts

The Proposer identified several areas where there may be potential cross-code impacts, primarily with Distribution Code. It was also noted that within Grid Code, that GC0097 is also developing a prequalification process for the Project TERRE requirements (see P344, a BSC modification, for more details) which is to be the 'standard' product for RR; whilst Project MARI would, eventually, lead to a similar 'standard' product (in this case for FRR) which would necessitate a prequalification process. Furthermore, it was recognised that similar aspects to GC0114 existed. There were no identified consumer or environmental impacts.

A Workgroup member circulated the proposed Project TERRE prequalification activities (from GC0097) which the Workgroup agreed appear consistent with GC0114 proposal. Another Workgroup member stated that they were concerned that Project TERRE (GC0097) has assumed automatic prequalification for existing BM providers (as also proposed under GC0114), and that SOGL requires a formal prequalification application to be made by the potential reserve providing unit or group as automatic deemed application cannot be assumed according to SOGL. The Proposer stated that they consider that the connection application is sufficient, and that existing compliance testing is sufficient for prequalification therefore no additional activities is required. However, a Workgroup member noted that for existing potential providers it would not have been known (when they signed their connection agreement) what FCR, FRR or RR was (along with the associated obligations etc.,) whilst for new potential providers it would be wrong, in terms of their connection to the network, to impose additional mandatory obligations, as regards FCR, FRR or RR, than those set out in the RfG, DCC or HVDC network codes.

Discussion ensued around about getting legal advice on this topic, and the Proposer suggested that he would have National Grid's legal team look into this. Two Workgroup members requested independent legal advice (not from the Proposer's own legal team). The Code Administrator was asked to consider this. The questions, as agreed by the Workgroup ,which will, initially, go to the Proposer's legal team for review are as follows:

1. In light of the application process set out in Article 155 (paragraph 3), Article 159 (paragraph 3) and Article 162 (paragraph 3) together with the connection requirements set out in RFG, DCC and HVDC, are NGESO allowed under the European regulations to compel parties to prequalify to provide FCR, FRR or RR reserve services as a condition of their connection? (Advice may be sought as to what "potential provider" means within SOGL 155(2)).
2. In light of the application process set out in Article 155 (paragraph 3), Article 159 (paragraph 3) and Article 162 (paragraph 3) together with the connection requirements set out in RFG, DCC and HVDC, should FCR, FRR and RR reserve services be considered as either mandatory or voluntary, or, in accordance with recital 3 of SOGL, both?
3. In light of SOGL Article 152 (paragraphs 7 and 8) can NGESO only call upon mandatory services only after all FCR has been exhausted?
4. Does this principle also apply to FRR and RR reserve services?

5. Discussion on different testing requirements

The Proposer set out that the GC0114 proposed prequalification process as defined do not set any harmonised minimum testing requirements for either FCR or separate requirements for FRR, or separate requirements for RR. Instead the proposer set out that prequalification process require, as a minimum, a self certification against the minimum technical requirements with no testing requirement. It was acknowledged that testing is required today for some existing

balancing services either as part of the connection process or for prequalification for some services. The Proposer is not intending, with GC0114, to define any harmonised minimum level of compliance tests within these prequalification processes for FCR, FRR or RR reserve services. This does not mean testing requirements for individual reserve services are removed.

A Workgroup member noted that there is a requirement, in SOGL, to set minimum technical requirements for FCR, FRR and RR (as set out in Articles 154, 158 and 161 respectively) and therefore it made sense to apply a separate testing requirements for FCR or separate testing requirements for FRR, or separate requirements for RR based on these minimum technical requirements.

The current testing requirements for existing balancing services are, for example, set out below (for Mandatory Frequency Response and FFR testing). NGET's (SO) view is that these are different existing balancing services and hence have different testing requirements as detailed below.

(a) Mandatory Service Agreement (MSA)

The MSA tests cover the capability across the whole load range with the provider having the freedom to operate its plant at variable loading levels in the BM. The tests are specified in the Grid Code with all the same tests for all plant types included. Some of the tests are more targeted to exploring issues in one technology compared to another. However all technologies have to undertake all tests to avoid any perceived discrimination.

The mandatory response capability requirement is exactly that and where required by the Grid Code based on size. These tests are set out in OC5.A.2.8.7 and 4.5.7 for GB User and ECPA.5.8.7 and ECPA.6.6.7 for EU code Users.

The tests characterise the stability and deliver of Primary, Secondary & High response across the load range declared by the provider with onward delivery of values within the MSA contract which are used in control and settlement when the mandatory service is despatched.

(b) Firm Frequency Response (FFR)

The FFR tests are by definition at a fixed loading level agreed as part of the commercial agreement (which, a Workgroup member noted, in the context of SOGL, and NGET (SO) 2 August 2018 FFR testing consultation means they may not be harmonised[3] and could be discriminatory as it does not treat all providers in the same way). There appears to be many ways of offering an FFR service.

1) For an existing provider by utilising a single loadpoint from the MSA and where this is the case and there is no modification to the control functions there should be no need to complete any more tests. The existing MSA values would be applied.

2) For an existing provider by offering a single loadpoint but with an enhanced performance. Where this is the case and there is a modification to the control functions some testing to confirm the enhanced performance and no adverse impact on stability etc., should be required.
The appropriate tests,as defined within the testing guidance for providers of FFR and published by NGET. Which tests are used would be determined based on discussion between NGET (SO) and the provider and understanding of how the enhanced service will be delivered drawing on

[3] available at www.nationalgrid.com

the existing MSA test methodology. An example here is a party who offered a FFR 1% droop response service with 90MW delivery in 10s. Whereas the normal MSA 4% droop response was at about 50MW in 10s so there was good reason to perform additional testing to explore this faster response.

3) For new providers (typically non-BMU) the FFR testing approach does not require providers to carry out MSA tests. These tests are more targeted to what is required for this commercial service and the typical demand side providers capability. Where FFR are being provided by generators with an MSA in place the two positions above should apply instead (which, a Workgroup member noted, could be discriminatory).

A number of Workgroup members still believed that it would be beneficial to potential and actual reserve providers to include the FCR, FRR and RR testing within the prequalification application process as this would allow all activities required to be undertaken by the reserve provider to supply the service to be seen in one place. A potential alternative modification proposal has been be submitted relating to the FCR, FRR and RR testing requirement which can be found in Annex 05.

The current GC0114 Original proposed modification does not include FCR, FRR or RR testing whereas the potential alterative modification the Workgroup would. The Workgroup is interested in the views of other parties as to whether or not it would be beneficial to set out in the Grid Code the testing requirements for FCR, FRR and RR. Please see question 9 in this GC0114 specific questions in this consultation and provide any comments.

Implementation

The Proposer advised that the prequalification application process requires to be in place by 14 September 2018 but believed that there was a large degree of flexibility in SOGL on implementation options.
Options, which were discussed by the Workgroup are as follows:

- Automatic prequalification application for existing service providers with review in 5 years time; or
- Prequalification application processes defined and implemented as and when with new and existing service providers; or
- Other options, to be confirmed in Workgroup discussions.

The general consensus within the Workgroup was that automatic prequalification application was not allowed as the SOGL requires a formal application to be made by a party wishing to provide FCR, FRR or RR reserve services and this is the way the GC0114 proposal has been drafted.

Whilst the implementation timeline of the prequalification application process is clearly defined it was noted that the point in time by which parties have to ensure they have prequalified to allow them to provide an FCR, FRR or RR reserve service was not. It was suggested that this modification could be implemented in such a way as to only apply as and when each balancing service becomes either a ‘standard’ or ‘specific’ service under Articles 18, 25 and 26 of EBGL. For the RR category, the ‘standard’ product will be the that being developed as part of Project TERRE, which is anticipated to go-live in December 2019. Article 26 of EBGL gives NGET (SO) the option to develop a proposal for defining and using ‘specific’ (national) products (over and above multi Member State ‘standard’ products) for balancing energy and balancing capacity.

However, these need to be implemented in parallel with the 'standard' products (as per Article 26 (3) of EBGL). NGET (SO) confirmed to the Workgroup that it intends to do so, and will do so after the approval of the RR implementation framework[4] (this implementation framework has recently been submitted to all EU regulators for approval). It should also be noted that when NGET (SO) start to use the 'standard' product platform they will then be limited to only using approved 'standard' and 'specific' products for that service (see Article 25 (1) of EBGL). This could be as early as December 2019 for RR services. The Workgroup confirmed that six months could be needed to account for the SOGL pre-qualification application timescales. Whilst similar arrangements exist for the FRR 'standard' product (via the development of Project MARI) albeit with different timescales, there are no such provisions for FCR services so it is not clear when formal FCR reserve services will be introduced. Estimated introduction dates are highlighted in Annex 4.

Given the introduction of FCR, FRR and RR reserve services by the EBGL is outside the scope of GC0114, the best option of implementation for the prequalification application process for FCR, FRR and RR is by only requiring applications for prequalification once an FCR, FRR or RR reserve service is formally approved by the NRA(s). It is conclusion of the Workgroup that the timelines highlighted in this report are considered during the implementation process for these services and highlighted to Users during those consultations.

The proposer agreed with the implementation approach proposed by the workgroup and amended the original solution accordingly.

NG Process on Pre-Qualification

During Workgroup 3, the Proposer advised the Workgroup that NGET's approach to prequalification for balancing services is changing to move away from onerous compliance testing and towards more stringent performance monitoring. The prequalification process proposed by NGET is a self-certification process without any testing requirements. A Workgroup member stated that they believed this process currently lacked clarity. One member gave an example whereby when an item of equipment is qualified, there wouldn't be a test of every single associated piece of equipment. One Workgroup member noted that NGET (SO) still require compliance testing onsite.

It was noted by the Workgroup that some equipment needs site testing, which led to wider discussion around fair competition. One Workgroup member noted that the type testing offsite had been able to connect, and he supported the idea of site testing offsite. The same Workgroup member referred to SOGL Article 155(5) to support his statement.

The Proposer noted that although NGET (SO) have a legal deadline to publish the pre-qualification process by 14th September 2018, this transition to put these into practice is a longer timescale. Workgroup members noted that communication on this process with all stakeholders is critical.

BEGA agreements and Pre-qualification

The Workgroup entered discussions on BEGA agreements being part of the prequalification application processes. The Workgroup discussed the issue of formal application, with one Workgroup member in particular noting that this was important legal step. In the view of the Workgroup member the presumed application (to prequalify to provide FCR, FRR or RR) would not be compatible with SOGL. The Workgroup view was that if the equipment installed is capable of

[4] https://www.entsoe.eu/news/2018/06/26/european-balancing-guideline-implementation-two-important-frameworks-submitted-to-regulators-approval/

being utilised at a later date, then it can be retested if indeed necessary if an application to prequalify is forthcoming.

One Workgroup member stated their belief that automatic pre-qualification would place risk on a party who does not want to be involved in balancing service provision as they will be required to price themselves out of the market and as a result the Authority may ask why the price is not competitive. The same Workgroup member noted that they would be happy with a simple but voluntary process, noting potential nervousness when parties are informed of automatic pre-qualification. The difference between an engineering and commercial point of view was also highlighted. The Workgroup noted that there may be scenarios whereby relevant engineering equipment is available, but commercially a provider only want to part take on selected occasions.

FFR testing guidance

The Proposer confirmed that NGET (SO) plan to consult on an updated FFR testing guidance document later in 2018– as signalled in the NGET Product Roadmap for frequency response and reserve[5].

The Proposer stated his belief that some Balancing Services, which the proposal expects to be approved as 'specific' FCR, FRR and RR services in the future, should be mandated to ensure NGET (SO) can ensure security of the system. The proposer acknowledged that currently there are many testing requirements, but that NGET is moving to build a greater focus on performance monitoring. A Workgroup member noted that in order to ensure the operational security of the interconnected transmission system it is essential to define a set of relevant minimum technical requirements; such as for FCR, FRR and RR; that reserve providing units or groups need to meet. The Workgroup member also pointed out that, for the avoidance of doubt, complying with SOGL will ensure the security of the system. The proposer agreed that it was necessary to specify minimum technical requirements, however the proposer believed that SOGL was silent on the testing of those minimum technical requirements. Another Workgroup member outlined that in terms of FCR, FRR and RR reserve services, there should be a minimum testing regime for all participants to meet. The Proposer noted that this could be set at zero to ensure a harmonized approach, highlighting that (in such a case) the technical requirements were identical with or without testing.

High Level Process Based on SOGL Articles 155 and 182

During the workgroup process, the workgroup membership discussed the process for prequalification based on SOGL Articles 155 and 182. This is outlined below.

Step 1

Any Potential party who wishes to provide either FCR, FRR or RR to NGET (SO); from either individual unit(s) at a single connection point or, via aggregation, a group of units of power generating modules, demand units and / or reserve providing units at multiple connection points; would need to complete a short prequalification application form and formally submit it to NGET (SO). The intention is that the form will be simple to complete and if, for example, a party is already providing certain services to NGET (SO) that by indicating this on the form then little additional information will be required to be completed on the form.

[5] https://www.nationalgrid.com/uk/electricity/balancing-services/future-balancing-services

Step Two:
Once NGET (SO) receives the formal application it will consider it. Within eight weeks of the submission date NGET (SO) will confirm that the application is complete – if it is not then the applicant has four weeks to submit the additional information requested by NGET (SO). If this additional information is not submitted then the application will be deemed withdrawn.

Step Three (T):
Where the connection point(s) of the unit(s) or group(s) are on the transmission system then, within three months of confirming that the application is complete NGET (SO) will have evaluated the application and confirmed back to the party that their FCR, FRR or RR unit(s) or group(s) meet the prequalification criteria.

Step Three (D):
Where the connection point(s) or the unit(s) of group(s) are on the distribution system then, within three months of confirming that the application is complete NGET (SO) will, having liaised with the relevant DSO(s), have evaluated the application and confirmed back to the party that their FCR, FRR or RR unit(s) or group(s) meet the prequalification criteria

9 Potential Alternative

During the Workgroup stage, one member discussed the possibility of an Alternative proposal. This potential Alternative proposal is yet to be voted on, but the Proposer of the potential Alternative and the Workgroup thought it prudent to make industry aware through this Workgroup consultation process of the potential Alternative. The potential Alternative can be found in Annex 5 of this document.

10 Relevant Objectives - initial assessment by Proposer

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)	**Positive**
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	**Positive**
To promote efficiency in the implementation and administration of the Grid Code arrangements	**Neutral**

a. Defining FCR, FRR and RR prequalification process in accordance with EU regulations should facilitate greater cross border coordination of frequency ancillary services. This should in turn deliver a more efficient, coordinated and economical system for the transmission of electricity.
b. A European framework for prequalification of balancing services should facilitate greater competition within balancing markets.
c. A European framework for prequalification which considers minimum technical requirements should promote security and efficiency in electricity transmission system.
d. The implementation of EU regulation should positively impact this objective.
e. The introduction of prequalification processes is not anticipated to impact the efficiency in the implementation and administration of the Grid Code arrangements.

11 Implementation

Updated following feedback from the Workgroup.

The legal text proposed requires NGET to ensure that individual Balancing Services follow the SOGL prequalification processes following the regulatory approval of that Balancing Service as a Standard or Specific Product.

12 Workgroup Consultation questions

The GC0114 Workgroup is seeking the views of Grid Code Users 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 GC0114 original proposal better facilitate the Applicable 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? The form to complete can be found here: https://www.nationalgrid.com/uk/electricity/codes/grid-code

Specific GC0114 Workgroup Consultation questions:

5. Do you have any views on the Balancing Services mapping provided in Annex 4 and detailed in Section 8?

6. The workgroup wishes to better understand the implementation of SOGL Article 182.2, 182.3 and 182.4 in GB. In particular, the workgroup would be interested to hear DNO views on the GB implementation of these articles as detailed in Section 8?

7. The workgroup is interested to hear views on the draft Workgroup Alternative Code Modification presented in both Section 9 and Annex 2?

8. The GC0114 Original proposed modification does not include the codification into the Grid Code of the FCR, FRR or RR products and the Workgroup would be interested in the views of other parties as to whether or not this would be beneficial to the market to have this codification.

9. The current GC0114 Original proposed modification does not include FCR, FRR or RR testing whereas the potential alterative modification the Workgroup would. The Workgroup is interested in the views of other parties as to whether or not it would be beneficial to set out in the Grid Code the testing requirements for FCR, FRR and RR.

10. In light of the pre-qualification simplified wording in Section 8, do you have any comments on this?

11. Do you have any views on pre-qualification without assets, as detailed in Section 7?

12. "What are your views on having either a separate pre-qualification process for each balancing service including the SOGL criteria or an upfront pre-qualification process specifically for SOGL ahead of any specific balancing service prequalification process?"

If you believe there are issues in the legal text, can you please bring these to our attention by using the space provided on the response proforma. These will then be discussed at the GC0114 legal text session planned following the closure of this Consultation.

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

In accordance with Governance Rules of the Grid Code, Any Authorised Electricity Operator; the Citizens Advice or the Citizens Advice Scotland, NGET or a Materially Affected Party may (subject to GR.20.17) raise a Workgroup Consultation Alternative Request. If you wish to raise such a request, please use the relevant form available at the weblink below:

https://www.nationalgrid.com/uk/electricity/codes/grid-code

Views are invited upon the proposals outlined in this report, which should be received by **5pm** on **17 September 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 Grid Code Review 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”.

Please note that you can also send responses directly to the Authority.

Annex 1 Terms of Reference

Workgroup Terms of Reference and Membership

TERMS OF REFERENCE FOR GC0114 WORKGROUP

The EU System Operation Guideline (SOGL) requires NGET to develop prequalification processes for Frequency Containment (FCR), Restoration (FRR) and Replacement Reserves (RR). In line with stakeholder feedback NGET proposes to develop these new processes under the established governance of the Grid Code.

Responsibilities

1. The Workgroup is responsible for assisting the Grid Code Review Panel in the evaluation of Grid Code Modification Proposal **GC0114: 'System Operation Guideline: Prequalification Processes'** proposed by Robert Selbie of National Grid Electricity Transmission in May 2018 and presented to the Grid Code Review Panel on 16 May 2018.

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.

   (v) To promote efficiency in the implementation and administration of the Grid Code arrangements.

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 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. Demonstrate what has been done to cover this clearly in the report
d) Consider cross code impacts (eg. with GC0097) and how the modification co-exists with other industry codes to ensure consistency with services being developed and implemented
e) Consider material impact of modification
f) Consider distribution connected parties providing the services
g) Ensure fair representation of industry through Workgroup membership to include generation, demand, storage, aggregators, existing and future balancing services providers
h) Ensure all requirements from EU Regulations are captured and mapped
i) Define the pre-qualification process
j) Define the transitional arrangements
k) Set the implementation date

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 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 **** for circulation to Panel Members. The final report conclusions will be presented to the Grid Code Review Panel meeting on ****.

Membership

It is recommended that the Workgroup has the following members:

Role	Name	Representing (User nominated)
Chair	TBC	Code Administrator
Technical Secretary	TBC	Code Administrator
National Grid Representative*	Rob Selbie	National Grid Electricity Transmission
Workgroup Member*	Garth Graham	SSE
Workgroup Member*	Joshua Logan	Drax Power
(Alternate) Workgroup Member*	Paul Youngman	Drax Power
Workgroup Member	Alastair Frew	Scottish Power Generation
Authority Representative	TBC	
Observer	William Ramsay	NGET

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 GC0114 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

Full timeline to be confirmed.

The May 2018 Panel agreed for the Workgroup Report to be submitted in September 2018.

Annex 2 Legal Text

Legal Text

NB. Comments are included for information to assist the reader and will not be included in the final iteration of this legal text.

GLOSSARY & DEFINITIONS

Balancing Services	As defined in the **Transmission Licence.**
Demand Unit	An indivisible set of installations containing equipment which could actively control the **Demand** at one or more sites by a **Demand Response Provider**, **Demand Facility Owner**, **CDSO** or by a **Non Embedded Customer**, either individually or commonly as part of **Demand Aggregation** through a third party.
Demand Response Active Power	**Demand** within a **Demand Facility** or **Closed Distribution System** that is available for modulation by **NGET** or **Network Operator** or **Relevant Transmission Licensee**, which results in an **Active Power** modification;
Frequency Containment Reserves (FCR)	means the active power reserves available to contain system frequency after the occurrence of an imbalance.
Frequency Restoration Reserves (FRR)	means the active power reserves available to restore system frequency to the nominal frequency.
Replacement Reserves (RR)	means the active power reserves available to restore or support the required level of FRR to be prepared for additional system imbalances, including generation reserves;
Standard Product	means a harmonised balancing product defined by all EU TSOs for the exchange of balancing services.
Specific Product	means a product different from a standard product;

BC4.1 PREQUALIFICATION

NGET shall list the current status and dates of potential status changes of **Balancing Services** as Frequency Containment Reserves (FCR), Frequency Restoration Reserves (FRR) or Replacement Reserves (RR) or existing GB.

Where a **Balancing Service** has been approved as a **Standard Product** or **Specific Product** providing FCR, FRR or RR, **NGET** shall ensure that prequalification processes for that **Balancing Service** follows the processes as set out here.

NGET shall ensure that each relevant **Balancing Service** requires a formal application from the FCR, FRR or RR provider to prequalify.

Where the **Connection Conditions** or **European Connection Conditions** require the capability as a condition of connection, the connection application shall be understood to fulfil this formal application.

BC4.1.1 Prequalification Timelines

Comment [SR1]: Definition taken from GC104, so may be subject to change pending Ofgem Decision.

Comment [NG2]: Definition taken from GC104, so may be subject to change pending Ofgem Decision.

Comment [SR3]: EBGL Article 2(28), 2(36)

Comment [RS4]: Numberings to be reviewed alongside GC0097 development.

Comment [SR5]: SOGL Article 3.2 (6), (7) and (8)

Comment [SR6]: Approval required under EBGL Article 5.2(c) for standard products by all EU regulatory authorities, and under EBGL 5.4(d) for specific products by Ofgem.

Comment [SR7]: SOGL Article 155.3, 159.3 and 162.3

Comment [SR8]: SOGL Article 155.3, 158.3, 158.5, 161.3, 161.5

The following minimum timescales shall be apply to the FCR, FRR and RR prequalification processes;

(a) Within 8 weeks of a formal application from the FCR, FRR or RR provider **NGET** shall confirm the application is complete (from the perspective of information provision)

(b) If the application is incomplete the FCR, FRR, or RR provider shall submit the additional required information within 4 weeks of the a request from **NGET** or it will be presumed that the application has been withdrawn

(c) Within 3 months of confirming that all information has been provided **NGET** shall confirm if the potential FCR, FRR or RR provider meets the requirements in BC4.2.1, BC4.3.1 or BC4.4.1 respectively.

NGET shall re-assess the qualification of FCR, FRR or RR providing units or groups:

a) at least once every 5 years;
b) in case the technical or availability requirements or the equipment have changed; and
c) in the case of FCR providing units or groups, in case of modernisation of the equipment related to FCR activation.

Comment [SR9]: SOGL Article 155.3, 155.4, 155.6, 159.3, 159.4, 159.6 and 162.3, 162.4, 162.5

BC4.2 FCR PREQUALIFICATION PROCESS

NGET shall ensure that each relevant **Balancing Service** prequalification process shall, as a minimum, require the FCR provider to submit a self-certification of the FCR Minimum Technical Requirements as defined in BC4.2.1.

A transitional period for the introduction of FCR Minimum Technical Requirements, as defined in BC4.2.1 and BC4.2.2, shall apply for those FCR providers who are not an **EU Code User**.

Comment [SR10]: SOGL Article 154.2

BC4.2.1 FCR Minimum Technical Requirements

Each FCR provider shall have the right to aggregate the respective data for more than one FCR providing unit if the maximum power of the aggregated units is below 1.5 MW and a clear verification of activation of FCR is possible.

Comment [SR11]: SOGL Article 154.9

Each FCR providing unit and each FCR providing group shall;

a) activate the agreed FCR by means of a proportional governor reacting to frequency deviations or alternatively based on a monotonic piecewise linear power-frequency characteristic in case of relay activated FCR.

Comment [SR12]: SOGL Article 154.6

b) be capable of activating FCR within the frequency ranges specified in the **ECC.6.1.2.1.2**.

Comment [SR13]: SOGL Article 154.6

c) and comply with the following properties

i) Maximum combined effect of inherent frequency response insensitivity and possible intentional frequency response dead band of the governor of the FCR providing units or FCR providing groups of 15 mHz

ii) FCR full activation time of 10 s

iii) FCR full activation frequency deviation of ± 500 mHz

Comment [SR14]: SOGL article 154.6 Table of Annex V

d) specify the limitations of the energy reservoir of its FCR providing units or FCR.

e) Each FCR provider shall be capable of making available to NGET, for each of its FCR providing units and FCR providing groups, at least the following information:

i. time-stamped status indicating if FCR is on or off;

ii. time-stamped active power data needed to verify FCR activation, including time-stamped instantaneous active power;

iii. droop of the governor for **Type C Power Generating Modules** and **Type D Power Generating Modules** acting as FCR providing units, or its equivalent parameter for FCR providing groups consisting of **Type A Power-Generating Modules** and/or **Type B Power Generating Modules**, and/or **Demand Units** with **Demand Response Active Power**.

f) An FCR provider shall guarantee the continuous availability of FCR, with the exception of a forced outage of a FCR providing unit, during the period of time in which it is obliged to provide FCR.

g) Each FCR provider shall inform NGET, as soon as possible, about any changes in the actual availability of its FCR providing unit and/or its FCR providing group, in whole or in part, relevant for the results of this prequalification.

BC4.2.2 In addition to the requirements in BC4.2.1, where a relevant **Balancing Service** is provided by a reserve providing groups or units located in the distribution systems, **NGET** shall ensure that the prequalification process requires the following to be specified;

a) voltage levels and connection points of the reserve providing units or groups;

b) the type of active power reserves;

c) the maximum reserve capacity provided by the reserve providing units or groups at each connection point; and

d) the maximum rate of change of active power for the reserve providing units or groups.

BC 4.3 FRR PREQUALIFICATION PROCESS

NGET shall ensure that each relevant **Balancing Service** prequalification process shall, as a minimum, require the FRR provider to submit a self-certification of the FRR Minimum Technical Requirements as defined in BC4.3.1 and BC4.3.2.

BC4.3.1 FRR Minimum Technical Requirements

Each FRR providing unit and each FRR providing group shall;

a) activate FRR in accordance with the setpoint received from **NGET**;

Comment [SR15]: SOGL Article 156.12

Comment [SR16]: SOGL Article 154.8

Comment [SR17]: SOGL Article 156.4

Comment [SR18]: SOGL Article 156.5

Comment [SR19]: SOGL Article 182.2

b) ensure that the FRR activation of the FRR providing units within a reserve providing group can be monitored. For that purpose the FRR provider shall be capable of supplying to **NGET** real-time measurements of the connection point or another point of interaction agreed with **NGET** concerning:

i. time-stamped scheduled active power output;

ii. time-stamped instantaneous active power for:

— each FRR providing unit,

— each FRR providing group, and

— each power generating module or demand unit of a FRR providing group with a maximum active power output larger than or equal to 1.5 MW;

c) a FRR providing unit or FRR providing group for automatic FRR shall have an automatic FRR activation delay not exceeding 30 seconds;

d) be capable of activating its complete manual reserve capacity on FRR within the FRR full activation time;

e) fulfil the FRR availability requirements;

f) fulfil the ramping rate requirements;

g) inform **NGET** about a reduction of the actual availability of its FRR providing unit or its FRR providing group or a part of its FRR providing group as soon as possible.

Comment [SR20]: SOGL Article 158.1, 158.2, 158.4,

BC4.3.2 In addition to the requirements in BC4.3.1, where a relevant **Balancing Service** is provided by a reserve providing groups or units located in the distribution systems, **NGET** shall ensure that the prequalification process requires the following to be specified;

a) voltage levels and connection points of the reserve providing units or groups;

b) the type of active power reserves;

c) the maximum reserve capacity provided by the reserve providing units or groups at each connection point; and

d) the maximum rate of change of active power for the reserve providing units or groups.

Comment [SR21]: SOGL 182.2

BC4.4 RR PREQUALIFICATION PROCESS

NGET shall ensure that each relevant **Balancing Service** prequalification process shall, as a minimum, require the RR provider to submit a self-certification of the RR Minimum Technical Requirements as defined in BC4.4.1 and BC4.4.2.

BC4.4.1 RR Minimum Technical Requirements

Each RR providing unit and each RR providing group shall;

a) activate RR in accordance with the setpoint received from **NGET**;

b) ensure activation of complete reserve capacity on RR within the activation time defined by **NGET**;

c) ensure de-activation of RR according to the setpoint received from **NGET**;

d) ensure that the RR activation of the RR providing units within a reserve providing group can be monitored. For that purpose, the RR provider shall be capable of supplying to **NGET** real-time measurements of the connection point or another point of interaction agreed with **NGET**:

   i) the time-stamped scheduled active power output, for each RR providing unit and group and for each power generating module or demand unit of a RR providing group with a maximum active power output larger than or equal to 1.5 MW;

   ii) the time-stamped instantaneous active power, for each RR providing unit and group, and for each power generating module or demand unit of a RR providing group with a maximum active power output larger than or equal to 1.5 MW;

e) ensure fulfilment of the RR availability requirements

f) inform **NGET** about a reduction of the actual availability or a forced outage of its RR providing unit or its RR providing group or a part of its RR providing group as soon as possible.

Comment [SR22]: SOGL 161.1, 161.4

BC4.4.2 In addition to the requirements in BC4.4.1, where a relevant **Balancing Service** is provided by a reserve providing groups or units located in the distribution systems, **NGET** shall ensure that the prequalification process requires the following to be specified;

a) voltage levels and connection points of the reserve providing units or groups;

b) the type of active power reserves;

c) the maximum reserve capacity provided by the reserve providing units or groups at each connection point; and

d) the maximum rate of change of active power for the reserve providing units or groups.

Comment [SR23]: SOGL Article 182.2

Annex 3 Code Mapping

This can be found on National Grid's website via the following link;

https://www.nationalgrid.com/uk/electricity/codes/grid-code/modifications/gc0114-system-operation-guideline-prequalification

Annex 4 Balancing Services List/Mapping

This can be found on National Grid's website via the following link;

https://www.nationalgrid.com/uk/electricity/codes/grid-code/modifications/gc0114-system-operation-guideline-prequalification

Balancing service mapping

FCR	FRR	RR
Mandatory frequency response - Primary response - High frequency response	[MARI] *	[TERRE] *
Commercial Frequency Response Service - Primary response - High frequency response	Mandatory frequency response - Secondary	STOR
Firm frequency response (FFR) - Primary response - High frequency response	Commercial Frequency Response Service - Secondary	Demand Turn Up
Enhanced frequency response	Firm Frequency Response (FFR) - Secondary	BM Bids and Offers
Commercial Frequency Management Service	STOR	
	Demand Turn Up	
	Fast Reserve	
	BM Bids and Offers	
	Fast Start	

* When implemented, the TERRE and MARI products will be the standard EU products in accordance with the EU Electricity Balancing Guideline. There is no standard EU product for FCR.

Balancing service mapping

Other Balancing Services which do not map to FCR, FRR or RR		
Black start capability	Commercial Fast De-load Service	Transmission Related Agreements
Reactive power	System-to-System Services (including Emergency Assistance)	BM Start -up
Enhanced Reactive Service	Maximum Generation Service	Demand Intertrips
System to Generator Operational Intertripping	Commercial Intertrips	Forward Energy Trades;
Constraint Management Services	Power Exchange Trades	Energy Balancing Contracts.

These services do not map to FCR, FRR or RR as they are not used to manage the GB frequency, and therefore do not all under the EU categories of reserve as described by EU Regulation System Operation Guideline (SOGL). Providers of these services will not be required to follow the FCR, FRR or RR prequalification processes described in GC0114.

Annex 5 Alternative Proposal

Alternative request Proposal form

Grid Code

Modification potential alternative submitted to

GC0114

Mod Title: As per original (Testing requirements for prequalification added)

Purpose of alternative Proposal:
As per the Original and harmonise testing requirements.

Date submitted to Code Administrator: July 2018

You are: A Workgroup member

Workgroup vote outcome:

What stage is this document at?

01	Proposed alternative
02	Formal Workgroup alternative

Any Questions?

Contact:
First Last
Code Administrator

First.Last
@nationalgrid.com

00000 000 000

Alternative Proposer(s):
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Company

alastair.frew
@scottishpower.com

00000 000 000

Contents

1 Alternative proposed solution for workgroup review

This alternative proposal will use the same changes as the original except it will add harmonised testing requirements into prequalification section for frequency services. Adding the harmonised testing will make it clearer to applicants of all the requirements they need to meet to provide frequency services and prevent applications being surprised that after having prequalified discovering that they are still ineligible and have to submit test results before being allow to provide the service. This alternative will also add industry oversight to testing requirements and correct the current disparity between testing requirements for different parties and is similar to Grid Code modification A10 where guidance on testing was incorporated in to the Grid Code.

This proposal will add testing requirements as per the legal text given in section 6. The proposer of this alternative is still open to suggestions as to whether the detailed descriptions of the newly defined tests should remain in the BC section or within they should go into the CP and ECP sections, but for this version the ECP option is included in the legal text in section 6.

2 Difference between this proposal and Original

This Alternative proposal will use all the same changes as in the original GC0114 proposal except it adds harmonised testing requirements into the prequalification process.

3 Justification for alternative proposal against Grid Code objectives

The GC0114 modification is currently implementing the prequalification requirements for provision of frequency services as required by Commission Regulation (EU) 2017/1485 a Guideline on Electricity Transmission System Operation (SOGL). The Original Proposer's solution is limiting this to only items specifically listed in the SOGL, however it seems odd not to identify the testing required to provide this service in the prequalification process. This situation could potentially mean Users who have been told they have prequalified being told they cannot provide the service due to a lack of test results. This requirement are not considered to be onerous as testing is already required and it is anticipated that existing Users will just be submitting data they already have.

Whilst the prequalification applies to all frequency services FCR, FRR and RR, testing is only likely to be required for automated services associated with FCR and faster FRR services. Within GB Users providing Primary, Secondary, High and Rapid Response via Mandatory Service Agreements (MSA), Firm Frequency Response (FFR) and Enhanced Frequency Response (EFR) are the parties who are most likely to be affected.

3.1 Current Testing Requirements

The current testing requirements for provision of the different services are as follows:-

3.1.1 Mandatory Frequency Agreement Services (MSA)

MSA services require the output from ~~Gensets~~reserve providing unit to vary continuously in response to system frequency changes. MSA service providers require to carry out all the volume tests detailed in one of the following Grid Code Sections ECP.A.5.8.7 (i); ECP.A.6.6.7 (i); OC5A.2.8.7 (i); OC5.A.4.5.7 (i); (note all 4 of these test schedules are identical) reference 1, as shown in figure 1 and complete a MSA response table.

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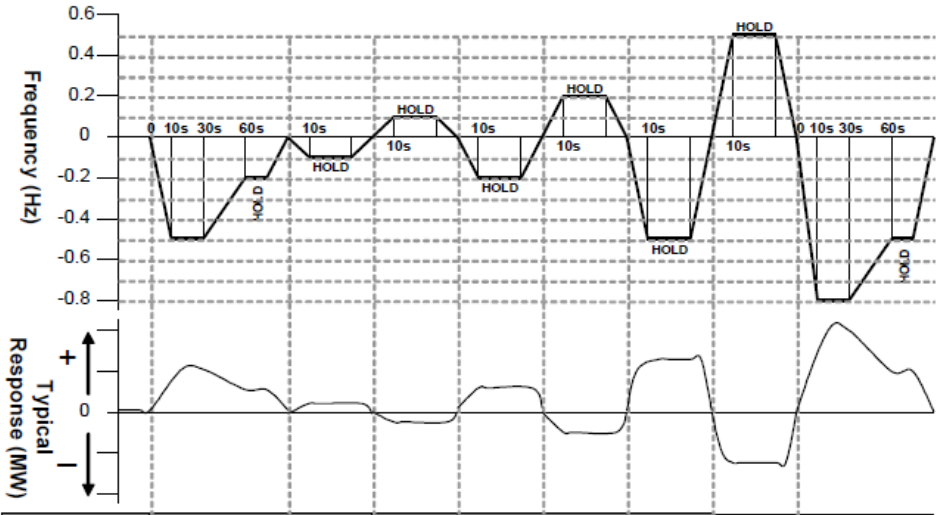

Load Point	LF Event Profile 1	LF Ramp -0.1Hz	HF Ramp +0.1Hz	LF Ramp -0.2Hz	HF Ramp +0.2Hz	LF Ramp -0.5Hz	HF Ramp +0.5Hz	LF Event Profile 2
MLP6			1	2	3		4	
MLP5	5			6			7	
MLP4	8	9	10	11	12	13	14	
MLP3	15						16	17
MLP2	18			19	20	21		22
MLP1	23			24	25			26

Figure 1 – MSA volume test requirements (copy of ECP.A.5.8. Figure 1)

3.1.2 Firm Frequency Response Services (FFR)

There are two types of FFR service which can be provided. Firstly there are Dynamic Services where the reserve providing unit~~Genset~~ output varies continuously in response to system frequency changes, similar to MSA services. Secondly there are Static Services where the output changes by a pre-set amount when triggered by the frequency going above 50.3 Hz or below 49.7Hz. FFR service providers require do the testing detailed in the guidance document Testing Guidance for Providers of Firm Frequency

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Response Balancing Service, reference 2, note this document states in its introduction these tests are required for “prequalification”.

(a) FFR Dynamic Services Tests

Dynamic Services Tests providers are required to carry out the tests in Guidance document section 3 consisting of a set of step tests as shown in figure 2, ramp tests of consisting of 30 second and 90 seconds ramps with an example shown in figure 3 and a 30 minute duration test as shown figure 4.

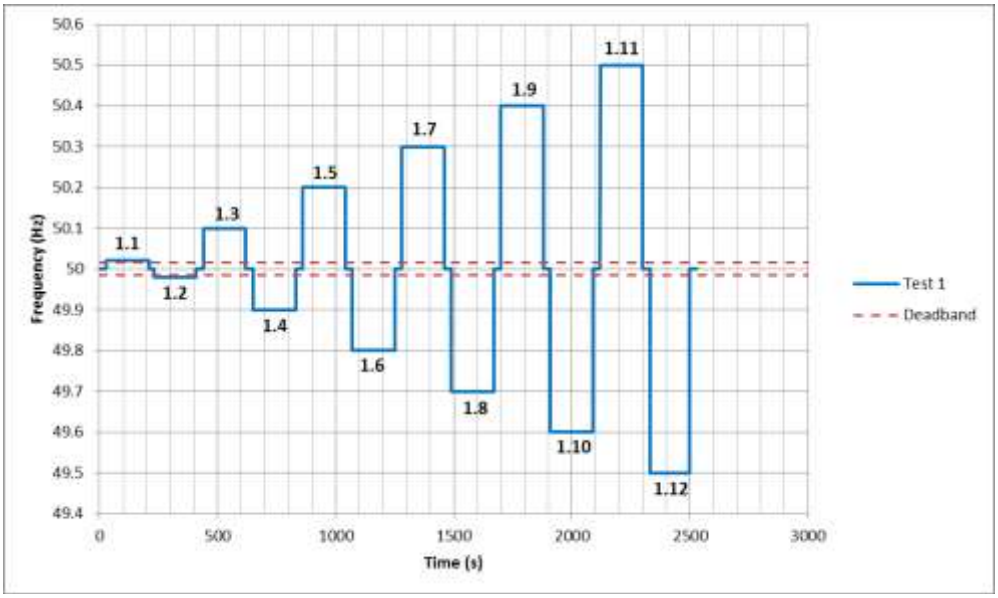


Figure 2 – Dynamic FFR step test requirements (copy FFR Guide Figure 3.1)

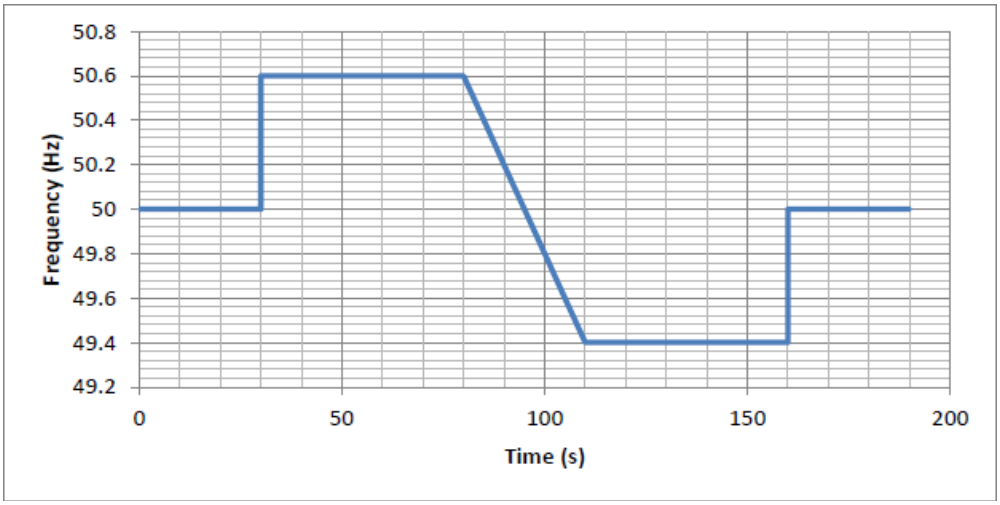


Figure 3 – Dynamic FFR ramp test requirements (copy FFR Guide Figure 2.1)

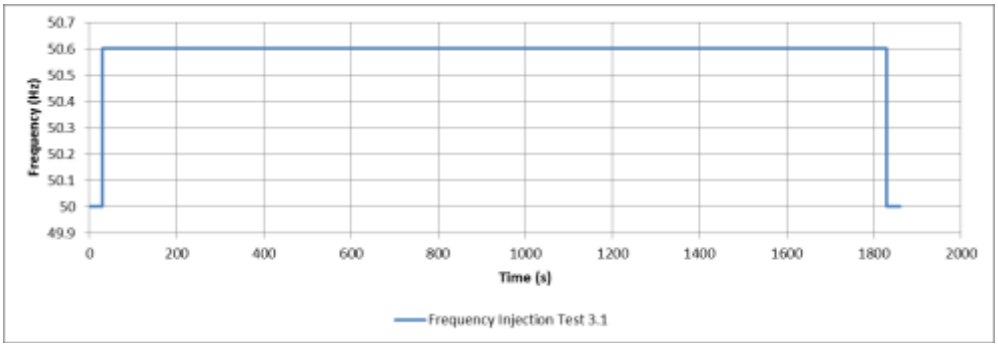
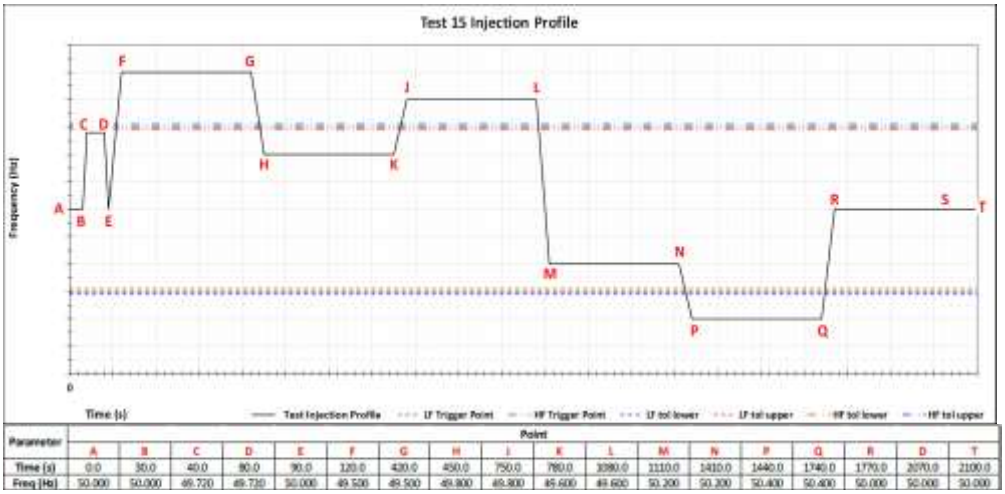


Figure 4 – Dynamic FFR duration test (copy FFR Guide Figure 3.12)

(b) FFR Static Service Test

FFR Static service tests require as series of 30 second ramp tests an example of which is shown in figure 5. It would seem logical that the duration tests which are in the dynamic section would be included for the Static service but they do not seem to be.



Parameter	Point																	
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T
Time (s)	0.0	30.0	40.0	80.0	90.0	120.0	420.0	450.0	750.0	780.0	1080.0	1110.0	1410.0	1440.0	1740.0	1770.0	2070.0	2100.0
Freq (Hz)	50.000	50.000	49.720	49.720	50.000	49.500	49.500	49.800	49.800	49.600	49.600	50.200	50.200	50.400	50.400	50.000	50.000	50.000

Figure 5 – Static FFR ramp test requirements (copy FFR Guide Figure 2.1)

3.1.3 Enhanced Frequency Response

EFR services require the output of reserve providing unit~~Gensets~~ to vary continuously in response to system frequency changes, however there is a deadband around 50 Hz where they do not required to give any response and can operate freely. Currently there are 2 EFR services available different deadband widths of +/- 0.05Hz for the wide service and a deadband width of +/- 0.015Hz for the narrow service. The testing requirements are detailed in the document Testing Guidance for Providers of Enhanced Frequency Response Balancing Service, reference 3, note this document states in its introduction these tests are required for "prequalification"..

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EFR Services Tests are required to carry out the tests in Guidance document section 2 consisting of a set of step tests with an example shown

in figure 6, ramp tests of consisting of 30 second ramps with an example shown if figure 7 and a 15 minute duration test as shown figure 8.

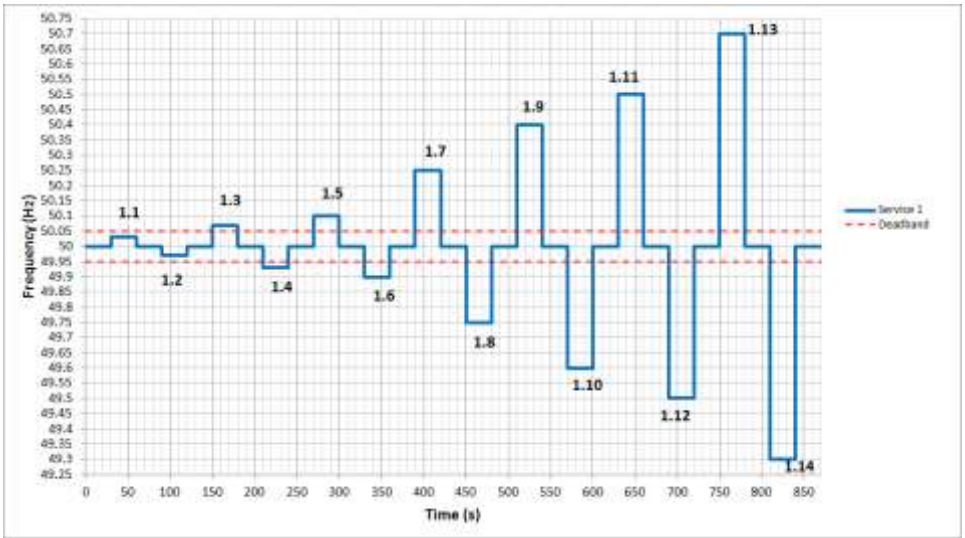

Figure 6 – EFR step test requirements (copy EFR Guide Figure 2.1)

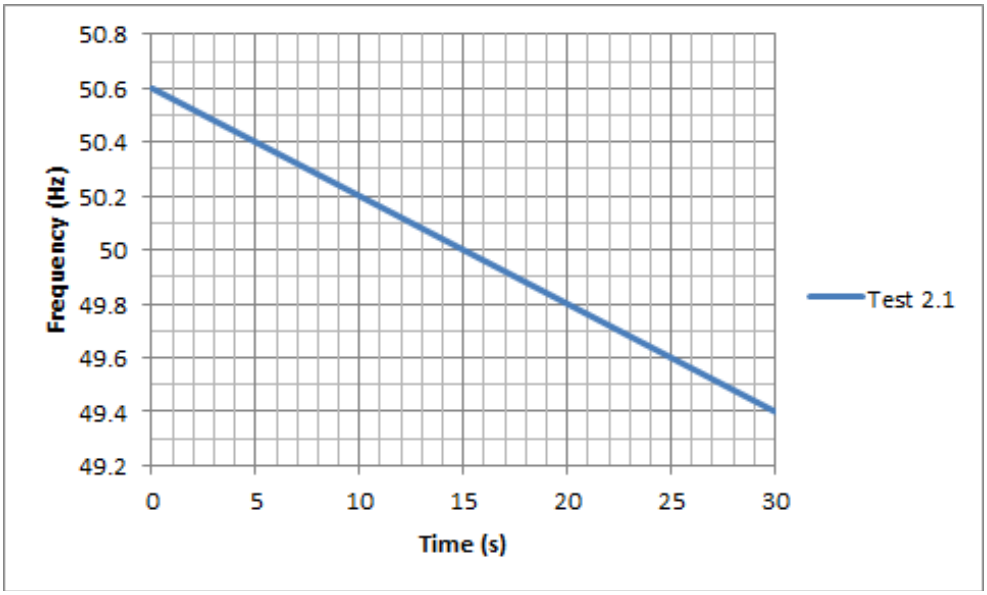

Figure 7 – EFR step test requirements (copy EFR Guide Figure 2.3)

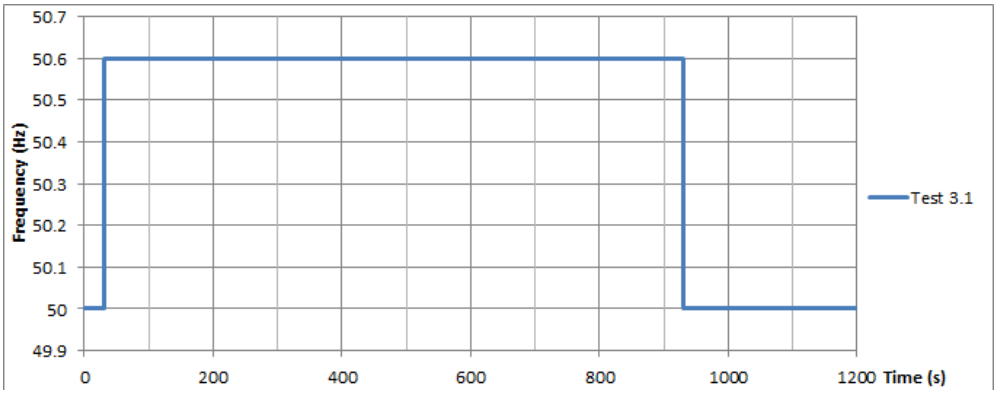

Figure 8 – EFR duration test requirements (copy EFR Guide Figure 2.5)

3.2 Tender Submissions

For all the frequency services the tender process requires submission of primary, secondary and high output responds against specified frequency changes, along with offer prices for providing these responses. The key point to all the tenders is that it is primary, secondary and high output responses are required.

3.2.1 Grid Code Testing for Primary, Secondary and High

The Grid code specifies testing requirements for primary, secondary and high in section ECC.A.3.4 Testing of Frequency Response Capability, reference 4, as follows:-

"The **Primary Response** capability (P) of a **Power Generating Module** or a **CCGT Module** or **Power Park Module** or **HVDC Equipment** is the minimum increase in **Active Power** output between 10 and 30 seconds after the start of the ramp injection as illustrated diagrammatically in Figure ECC.A.3.2. This increase in **Active Power** output should be released increasingly with time over the period 0 to 10 seconds from the time of the start of the **Frequency** fall as illustrated by the response from Figure ECC.A.3.2.

The **Secondary Response** capability (S) of a **Power Generating Module** or a **CCGT Module** or **Power Park Module** or **HVDC Equipment** is the minimum increase in **Active Power** output between 30 seconds and 30 minutes after the start of the ramp injection as illustrated diagrammatically in Figure ECC.A.3.2.

The **High Frequency Response** capability (H) of a **Power Generating Module** or a **CCGT Module** or **Power Park Module** or **HVDC Equipment** is the decrease in **Active Power** output provided 10 seconds after the start of the ramp injection and sustained thereafter as illustrated diagrammatically in Figure ECC.A.3.3. This reduction in **Active Power** output should be released increasingly with time over the period 0 to 10 seconds from the time of the start of the **Frequency** rise as illustrated by the response in Figure ECC.A.3.2."

Figure ECC.A.3.2 – Interpretation of Primary and Secondary Response Service Values

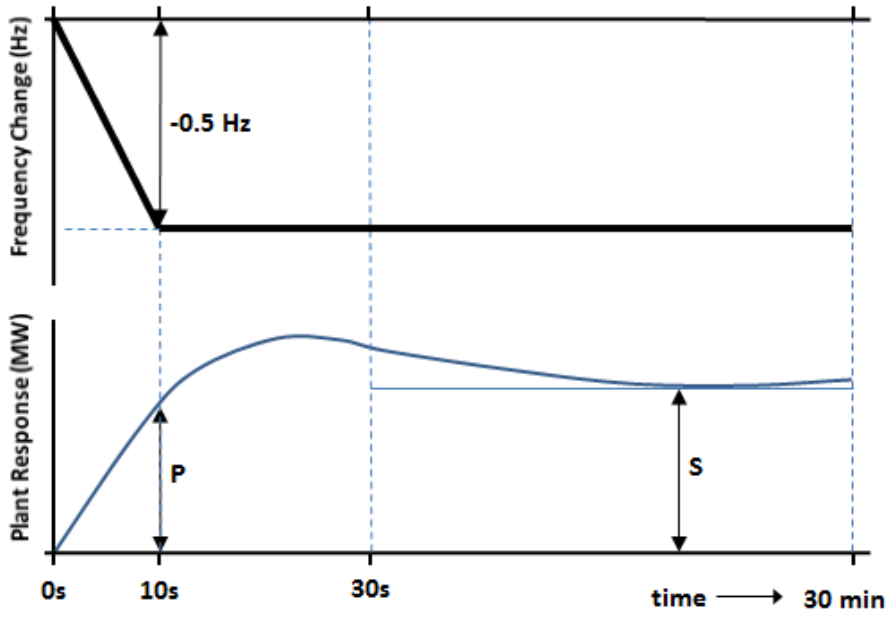

Figure ECC.A.3.3 – Interpretation of High Frequency Response Service Values

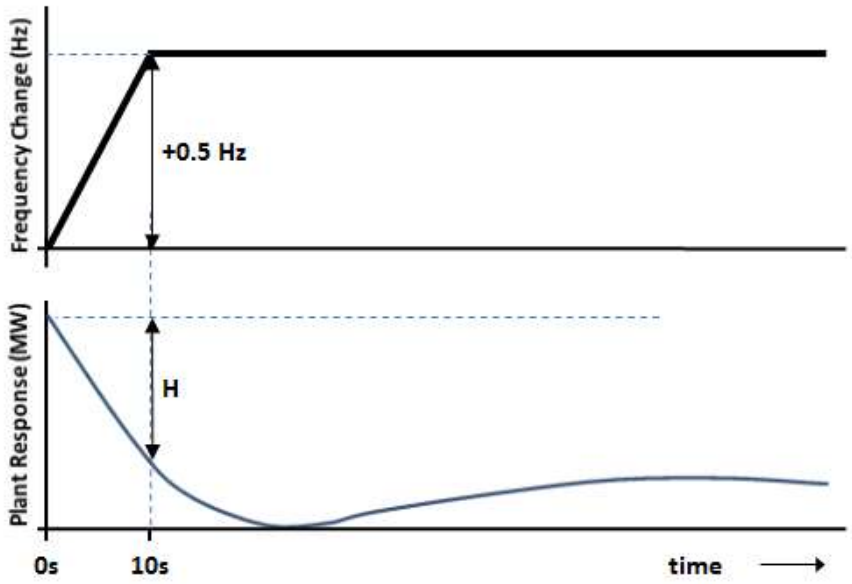

Figure 9 – Grid Code Primary, Secondary & High test requirements (copy Figure ECC.A.3.3 & ECC.A.3.4)

Given that all tender returns require primary, secondary and high response values it is surprising that only the MSA tests require these tests, with both the guidance documents for FFR and EFR using step tests and ramps of longer durations.

3.3 Comparison of Ramp against Step Tests

In order to demonstrate of the different responses of the following figure 10 shows the same generator on the same day being tested with a 0.5Hz frequency decrease over a 10 second ramp test 13 and a 0.5Hz step frequency decrease compliance test H. Similarly in figure 11 the same generator on the same day being tested with a 0.5Hz frequency increase over a 10 second ramp test 14 and a 0.5Hz step frequency increase compliance test I.

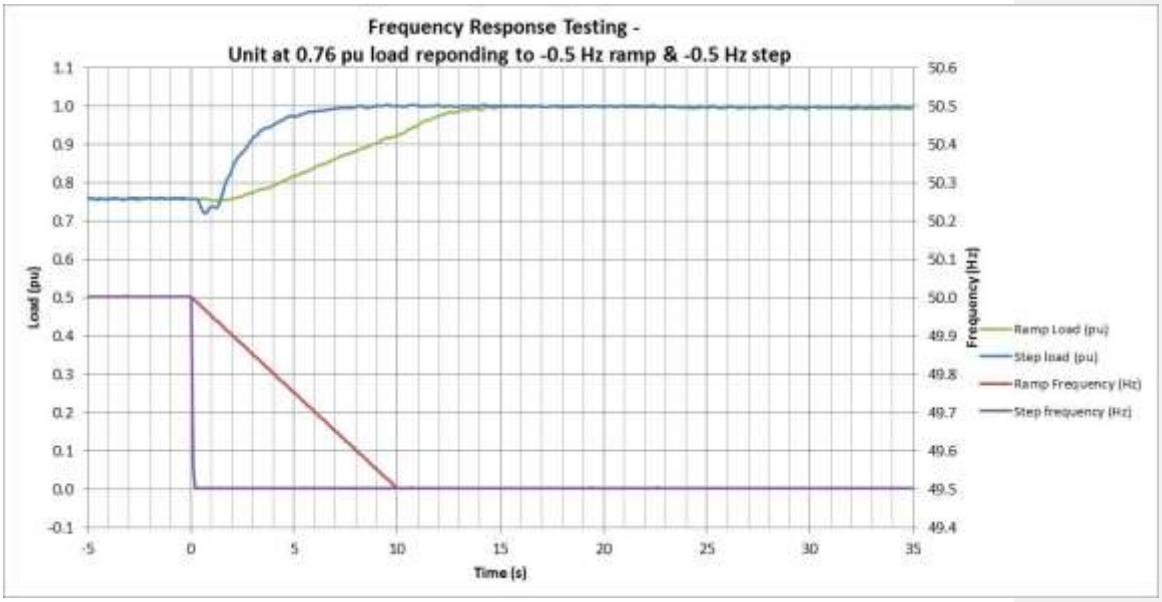

Figure 10 – Comparison of responses to a -0.5Hz step and ramp test

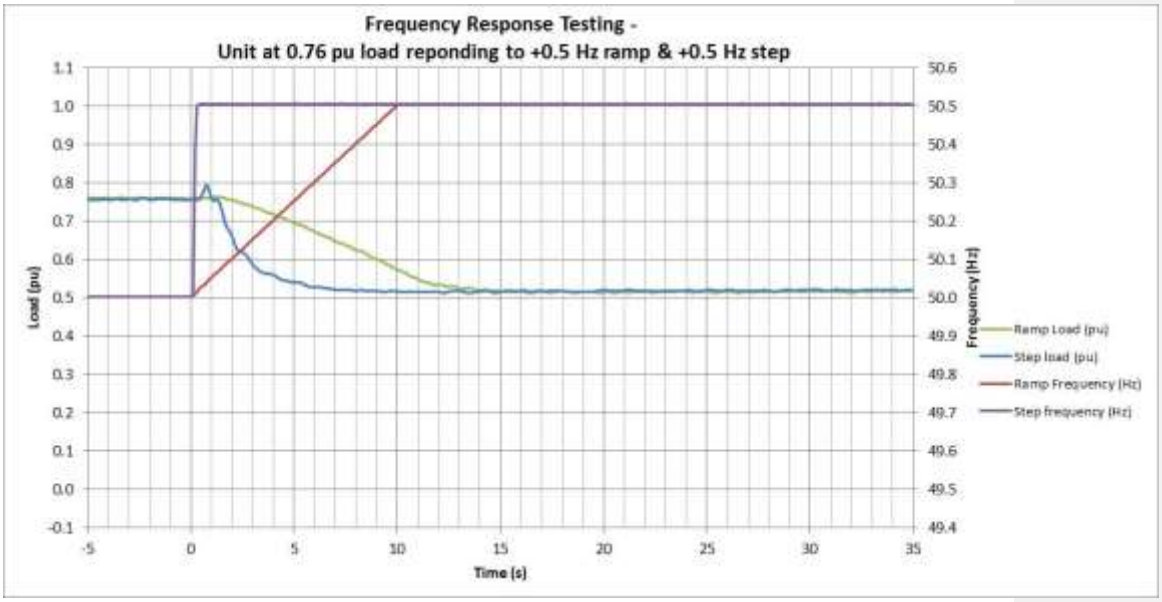

Figure 11 – Comparison of responses to a 0.5Hz step and ramp test

Reviewing the primary response in figure 10 based on a 10s ramp the response is 0.186 pu, whilst if the result is based on a step test the response is 0.241pu, hence a ramp test only gives 70% the response of a step response. Similarly the high response in figure 11 based on a 10s ramp the response is 0.191pu, whilst if the result is based on a step test the

response is 0.239pu, hence a ramp test only gives 80% the response of a step response. There is an even bigger difference if the calculation is carried out after 5 second which is one of the FFR faster options which shows a ramp test response would only be 26% of the step test response.

3.4 Harmonisation of testing requirements

Currently it is not clear what primary, secondary and high response values are being submitted by various parties, whilst some parties who understand the proper definitions may be submitting correct value, others may be following the guidance documents and submitting higher values. It can be argued that if everyone in each category uses the same tests the tenders will be assessed like for like, however the problem occurs when it comes to dispatching the services. NGET control room will be working from different service lists, at the end of the day all these lists are based on MW/£, hence there may not be equitable treat in the decision making process across services as some parties may have MW values only 70% that of others.

Given that currently it is not clear there is a harmonised approach to the tendering process it would appear sensible to include this in the prequalification process where it is clear to users and is covered by code governance. Codifying of tests was first introduced into the Grid Code in 2012 when modification A10 incorporated the existing Grid Code guidance document on testing into the Grid Code. In approving this modification OFGEM's decision letter dated 26 July 2012 on Grid Code Modification A/10: Generator Compliance includes the following statement
"We consider the codification of the Guidance Notes in the Grid Code will improve the understanding of those who wish to connect to, or are already connected to, the NETS, and manufacturers and suppliers of generation equipment, about the compliance testing requirements. There is greater transparency of the technical requirements by their inclusion in Grid Code and the opportunity to revise these requirements more effectively through the open governance arrangements if required. As a result, there should be a positive impact on NGET"s ability to develop, maintain and operate an efficient and economical transmission system."
Unfortunately new services have introduced with new testing requirements which have once again been incorporated into guidance documents which do not have clear industry governance and are not consistent with other existing testing requirements.

To ensure equal treatment it is proposed that parties who are offering frequency services over a loading range shall carry out all the ECP volume tests as per current Grid Code requirements. Parties only offering specific services at fixed loading levels shall carry out the ECP volume tests for MLP4~~3~~ with the MLP4~~3~~ set to the offered load or loads, this will allow direct comparison between service provisions. Additional tests will need to be introduced for triggered services to confirm no response is provided before the trigger point. Similarly if there is a duration test required this now needs to be added. Details of both these proposed new tests are given in the legal text section 6 with the new trigger test in the section ECP.A.5.8.10 and the new duration test in section ECP.A.5.8.11. The proposed trigger tests are very similar to the existing FFR trigger test consisting of steps A,B,C,D & E shown in figure 5 and EFR test 1.1 shown in figure 6. The proposed duration test is very similar to the FFR duration test shown in figure 4 and EFR duration test shown in figure 8. Flexibly has been added to the new

tests to allow them to be easily applied to new trigger levels and new duration lengths. These additional tests will also be added into OC5 or into ECP and CP.

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)	**Positive**
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	**Positive**
To promote efficiency in the implementation and administration of the Grid Code arrangements	**Neutral**

In broad term the reasons why this Alternative proposal better meet the Applicable Objectives are as per the Original whilst, in addition, also being better in terms of discharging 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.

4 Impacts and Other Considerations

As per the Original.

Consumer Impacts

As per the Original.

5 Implementation

As per the Original.

6 Legal Text

As per the Original except for the text in red has been added:-

GLOSSARY & DEFINITIONS

Balancing Services	As defined in the Transmission Licence.
Demand Unit	An indivisible set of installations containing equipment which could actively control the Demand at one or more sites by a Demand Response Provider, Demand Facility Owner, CDSO or by a Non Embedded Customer, either individually or commonly as part of Demand Aggregation through a third party.
Demand Response Active Power	Demand within a Demand Facility or Closed Distribution System that is available for modulation by NGET or Network Operator or Relevant Transmission Licensee, which results in an Active Power modification;
Frequency Containment Reserves (FCR)	means the active power reserves available to contain system frequency after the occurrence of an imbalance.
Frequency Restoration Reserves (FRR)	means the active power reserves available to restore system frequency to the nominal frequency.
Replacement Reserves (RR)	means the active power reserves available to restore or support the required level of FRR to be prepared for additional system imbalances, including generation reserves;
Standard Product	means a harmonised balancing product defined by all EU TSOs for the exchange of balancing services.
Specific Product	means a product different from a standard product;

BC4.1 PREQUALIFICATION

NGET shall list the current status and dates of potential status changes of **Balancing Services** as Frequency Containment Reserves (FCR), Frequency Restoration Reserves (FRR) or Replacement Reserves (RR) or existing GB.

Where a **Balancing Service** has been approved as a **Standard Product** or **Specific Product** providing FCR, FRR or RR, **NGET** shall ensure that prequalification processes for that **Balancing Service** follows the processes as set out here.

NGET shall ensure that each relevant **Balancing Service** requires a formal application from the FCR, FRR or RR provider to prequalify.

Where the **Connection Conditions** or **European Connection Conditions** require the capability as a condition of connection, the connection application shall be understood to fulfil this formal application.

Comment [SR1]: Definition taken from GC104

Comment [SR2]: EBGL Article 2(28), 2(36)

Comment [RS3]: Numberings to be reviewed alongside GC0097 development.

Comment [SR4]: SOGL Article 3.2 (6), (7) and (8)

Comment [SR5]: Approval required under EBGL Article 5.2(c) for standard products by all EU regulatory authorities, and under EBGL 5.4(d) for specific products by Ofgem.

Comment [SR6]: SOGL Article 155.3, 159.3 and 162.3

Comment [SR7]: SOGL Article 155.3, 158.3, 158.5, 161.3, 161.5

BC4.1.1 Prequalification Timelines

The following minimum timescales shall be apply to the FCR, FRR and RR prequalification processes;

(a) Within 8 weeks of a formal application from the FCR, FRR or RR provider **NGET** shall confirm the application is complete (from the perspective of information provision)

(b) If the application is incomplete the FCR, FRR, or RR provider shall submit the additional required information within 4 weeks of the a request from **NGET** or it will be presumed that the application has been withdrawn

(c) Within 3 months of confirming that all information has been provided **NGET** shall confirm if the potential FCR, FRR or RR provider meets the requirements in BC4.2.1, BC4.3.1 or BC4.4.1 respectively.

NGET shall re-assess the qualification of FCR, FRR or RR providing units or groups:

a) at least once every 5 years;
b) in case the technical or availability requirements or the equipment have changed; and
c) in the case of FCR providing units or groups, in case of modernisation of the equipment related to FCR activation.

Comment [SR8]: SOGL Article 155.3, 155.4, 155.6, 159.3, 159.4, 159.6 and 162.3, 162.4, 162.5

BC4.2 FCR PREQUALIFICATION PROCESS

NGET shall ensure that each relevant **Balancing Service** prequalification process shall, as a minimum, require the FCR provider to submit a self-certification of the FCR Minimum Technical Requirements as defined in BC4.2.1.

A transitional period for the introduction of FCR Minimum Technical Requirements, as defined in BC4.2.1 and BC4.2.2, shall apply for those FCR providers who are not an **EU Code User**.

Comment [SR9]: SOGL Article 154.2

BC4.2.1 FCR Minimum Technical Requirements

Each FCR provider shall have the right to aggregate the respective data for more than one FCR providing unit if the maximum power of the aggregated units is below 1.5 MW and a clear verification of activation of FCR is possible.

Comment [SR10]: SOGL Article 154.9

Each FCR providing unit and each FCR providing group shall;

a) activate the agreed FCR by means of a proportional governor reacting to frequency deviations or alternatively based on a monotonic piecewise linear power-frequency characteristic in case of relay activated FCR.

Comment [SR11]: SOGL Article 154.6

b) be capable of activating FCR within the frequency ranges specified in the **ECC.6.1.2.1.2**.

Comment [SR12]: SOGL Article 154.6

c) and comply with the following properties

i) Maximum combined effect of inherent frequency response insensitivity and possible intentional frequency response dead band of the governor of the FCR providing units or FCR providing groups of 15 mHz

ii) FCR full activation time of 10 s

iii) FCR full activation frequency deviation of ± 500 mHz

Comment [SR13]: SOGL article 154.6 Table of Annex V

d) specify the limitations of the energy reservoir of its FCR providing units or FCR.

e) Each FCR provider shall be capable of making available to NGET, for each of its FCR providing units and FCR providing groups, at least the following information:

i. time-stamped status indicating if FCR is on or off;

ii. time-stamped active power data needed to verify FCR activation, including time-stamped instantaneous active power;

iii. droop of the governor for **Type C Power Generating Modules** and **Type D Power Generating Modules** acting as FCR providing units, or its equivalent parameter for FCR providing groups consisting of **Type A Power-Generating Modules** and/or **Type B Power Generating Modules**, and/or **Demand Units** with **Demand Response Active Power**.

f) An FCR provider shall guarantee the continuous availability of FCR, with the exception of a forced outage of a FCR providing unit, during the period of time in which it is obliged to provide FCR.

g) Each FCR provider shall inform NGET, as soon as possible, about any changes in the actual availability of its FCR providing unit and/or its FCR providing group, in whole or in part, relevant for the results of this prequalification.

h) Parties shall submit MSA or CSA tables and test result evidence for the services offered as follows:-
i) For variable load services volume test data shall be provided as required by ECP.A.5.8.7 (i); ECP.A.6.6.7 (i); OC5A.2.8.7 (i); or OC5.A.4.5.7 (i)
ii) For fixed load(s) services volume test data shall be provided for the fixed load point(s) set to MLP4 as required by ECP.A.5.8.7 (i); ECP.A.6.6.7 (i); OC5A.2.8.7 (i); or OC5.A.4.5.7 (i)
iii) For triggered services volume test data as per item (ii) and trigger activation test as per ECP.A.5.8.10; ECP.A.6.6.10; OC5A.2.8.10; or OC5.A.4.5.10
iv) For services which specify a minimum duration a duration tests will be required in addition to any of the above as per ECP.A.5.8.11; ECP.A.6.6.11; OC5A.2.8.11; or OC5.A.4.5.11

BC4.2.2 In addition to the requirements in BC4.2.1, where a relevant **Balancing Service** is provided by a reserve providing groups or units located in the distribution systems, **NGET** shall ensure that the prequalification process requires the following to be specified;

a) voltage levels and connection points of the reserve providing units or groups;

b) the type of active power reserves;

c) the maximum reserve capacity provided by the reserve providing units or groups at each connection point; and

d) the maximum rate of change of active power for the reserve providing units or groups.

Comment [SR14]: SOGL Article 156.12

Comment [SR15]: SOGL Article 154.8

Comment [SR16]: SOGL Article 156.4

Comment [SR17]: SOGL Article 156.5

Comment [SR18]: SOGL Article 182.2

BC 4.3 FRR PREQUALIFICATION PROCESS

NGET shall ensure that each relevant **Balancing Service** prequalification process shall, as a minimum, require the FRR provider to submit a self-certification of the FRR Minimum Technical Requirements as defined in BC4.3.1 and BC4.3.2.

BC4.3.1 FRR Minimum Technical Requirements

Each FRR providing unit and each FRR providing group shall;

a) activate FRR in accordance with the setpoint received from **NGET**;

b) ensure that the FRR activation of the FRR providing units within a reserve providing group can be monitored. For that purpose the FRR provider shall be capable of supplying to **NGET** real-time measurements of the connection point or another point of interaction agreed with **NGET** concerning:

i. time-stamped scheduled active power output;

ii. time-stamped instantaneous active power for:

— each FRR providing unit,

— each FRR providing group, and

— each power generating module or demand unit of a FRR providing group with a maximum active power output larger than or equal to 1.5 MW;

c) a FRR providing unit or FRR providing group for automatic FRR shall have an automatic FRR activation delay not exceeding 30 seconds;

d) be capable of activating its complete manual reserve capacity on FRR within the FRR full activation time;

e) fulfil the FRR availability requirements;

f) fulfil the ramping rate requirements;

g) inform **NGET** about a reduction of the actual availability of its FRR providing unit or its FRR providing group or a part of its FRR providing group as soon as possible.

Comment [SR19]: SOGL Article 158.1, 158.2, 158.4,

h) Parties who are offering automatic FRR with a delivery time of less than 1 minutes shall submit MSA or CSA tables and test result evidence for the services offered as follows:-

i) For variable load services volume test data shall be provided as required by ECP.A.5.8.7 (i); ECP.A.6.6.7 (i); OC5A.2.8.7 (i); or OC5.A.4.5.7 (i)

ii) For fixed load(s) services volume test data shall be provided for the fixed load point(s) set to MLP4 as required by ECP.A.5.8.7 (i); ECP.A.6.6.7 (i); OC5A.2.8.7 (i); or OC5.A.4.5.7 (i)

iii) For triggered services volume test data as per item (ii) and trigger activation test as per ECP.A.5.8.10; ECP.A.6.6.10; OC5A.2.8.10; or OC5.A.4.5.10

iv) For services which specify a minimum duration a duration tests will be required in addition to any of the above as per ECP.A.5.8.11; ECP.A.6.6.11; OC5A.2.8.11; or OC5.A.4.5.11

BC4.3.2 In addition to the requirements in BC4.3.1, where a relevant **Balancing Service** is provided by a reserve providing groups or units located in the distribution systems, **NGET** shall ensure that the prequalification process requires the following to be specified;

a) voltage levels and connection points of the reserve providing units or groups;

b) the type of active power reserves;

c) the maximum reserve capacity provided by the reserve providing units or groups at each connection point; and

d) the maximum rate of change of active power for the reserve providing units or groups.

Comment [SR20]: SOGL 182.2

BC4.4 RR PREQUALIFICATION PROCESS

NGET shall ensure that each relevant **Balancing Service** prequalification process shall, as a minimum, require the RR provider to submit a self-certification of the RR Minimum Technical Requirements as defined in BC4.4.1 and BC4.4.2.

BC4.4.1 RR Minimum Technical Requirements

Each RR providing unit and each RR providing group shall;

a) activate RR in accordance with the setpoint received from **NGET**;

b) ensure activation of complete reserve capacity on RR within the activation time defined by **NGET**;

c) ensure de-activation of RR according to the setpoint received from **NGET**;

d) ensure that the RR activation of the RR providing units within a reserve providing group can be monitored. For that purpose, the RR provider shall be capable of supplying to **NGET** real-time measurements of the connection point or another point of interaction agreed with **NGET**:

i) the time-stamped scheduled active power output, for each RR providing unit and group and for each power generating module or demand unit of a RR providing group with a maximum active power output larger than or equal to 1.5 MW;

ii) the time-stamped instantaneous active power, for each RR providing unit and group, and for each power generating module or demand unit of a RR providing group with a maximum active power output larger than or equal to 1.5 MW;

e) ensure fulfilment of the RR availability requirements

f) inform **NGET** about a reduction of the actual availability or a forced outage of its RR providing unit or its RR providing group or a part of its RR providing group as soon as possible.

Comment [SR21]: SOGL 161.1, 161.4

~~g) Parties shall submit MSA or CSA tables and test result evidence for the services offered as follows: -~~

~~i) For variable load services volume test data shall be provided as required by ECP.A.5.8.7 (i); ECP.A.6.6.7 (i); OC5A.2.8.7 (i); or OC5.A.4.5.7 (i)~~

~~ii) For fixed load(s) services volume test data shall be provided for the fixed load point(s) set to MLP4 as required by ECP.A.5.8.7 (i); ECP.A.6.6.7 (i); OC5A.2.8.7 (i); or OC5.A.4.5.7 (i)~~

~~iii) For triggered services volume test data as per item (ii) and trigger activation test~~

~~iv) For services which specify a minimum duration a duration tests will be required in addition to any of the above~~

BC4.4.2 In addition to the requirements in BC4.4.1, where a relevant **Balancing Service** is provided by a reserve providing groups or units located in the distribution systems, **NGET** shall ensure that the prequalification process requires the following to be specified;

a) voltage levels and connection points of the reserve providing units or groups;

b) the type of active power reserves;

c) the maximum reserve capacity provided by the reserve providing units or groups at each connection point; and

d) the maximum rate of change of active power for the reserve providing units or groups.

Comment [SR22]: SOGL Article 182.2

ECP.A.5.8.10 Triggered Services Test

This test shall be required only if the User is wishing to offered triggered frequency services. The test shall confirm that the service is not triggered before the trigger threshold has been reached by injecting a frequency signal as per figure ECP.A.5.8.10 figure 1 or 2. The hold frequency Y shall be either 0.02Hz above or below the trigger frequency as appropriate.

	Frequency injection table					
Time (s)	0	5	15	25	35	70
Frequency (Hz)	50	50	Y	Y	50	50

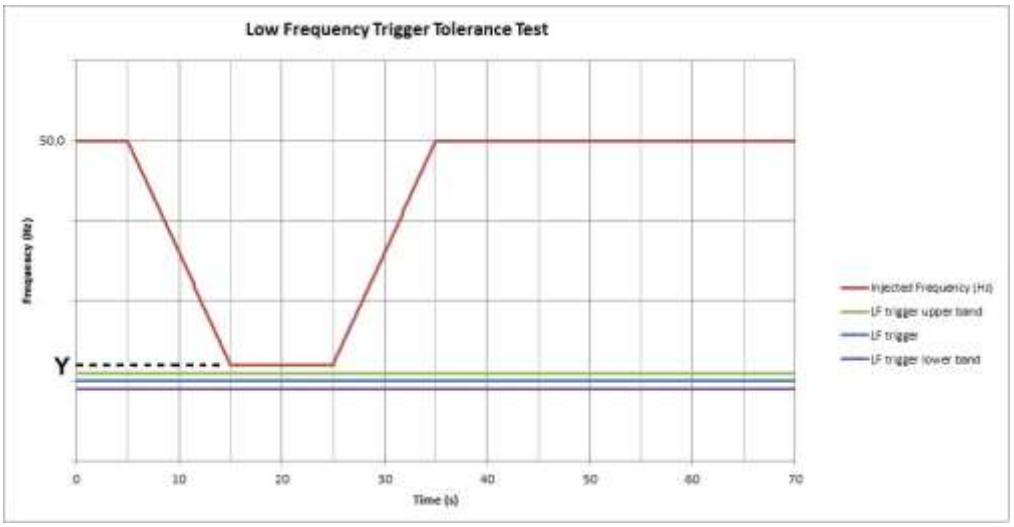

Figure 1 - Test profile for an over frequency duration test

	Frequency injection table					
Time (s)	0	5	15	25	35	70
Frequency (Hz)	50	50	Y	Y	50	50

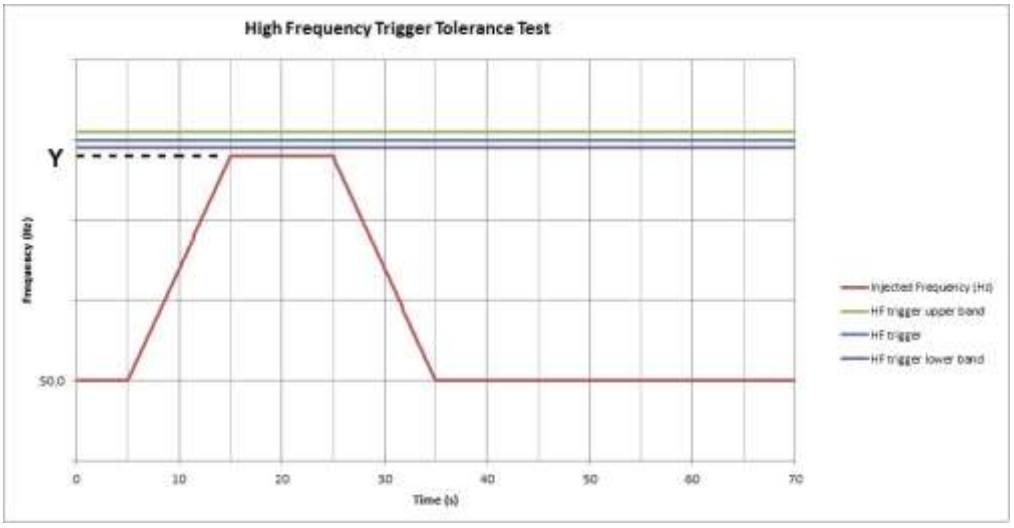

Figure 2 - Test profile for an over frequency duration test

ECP.A.5.8.11 Duration Test

This test shall be required only if the User is wishing to offered a frequency services which specifies a minimum delivery duration. The test shall confirm the service can be delivered for the specified contract period the frequency shall be ramped either up to 50.6Hz or down to 49.4Hz as appropriate as per ECP.A.5.8.11 figures 1 and 2 and held there for the length of the specified contract period (X), before being ramped back to 50Hz.

	Frequency injection table					
Time (s)	0	30	40	40 + X	50 + X	80 + X
Frequency (Hz)	50	50	50.6	50.6	50	50

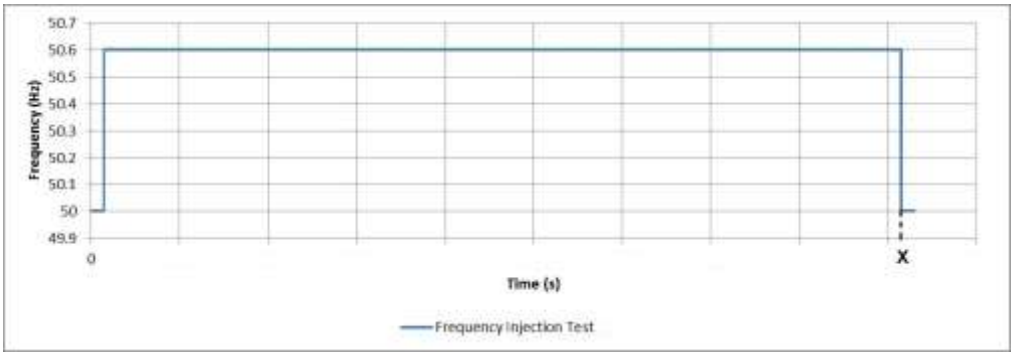

Figure 1- Test profile for an over frequency duration test

	Frequency injection table					
Time (s)	0	30	40	40 + X	50 + X	80 + X
Frequency (Hz)	50	50	49.4	49.4	50	50

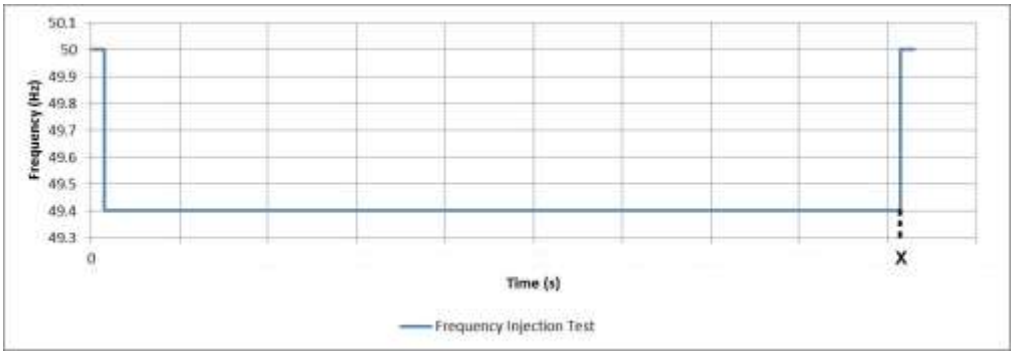

Figure 2 - Test profile for an under frequency duration test

Note these ECP tests need additionally repeated into new sections ECP.A.5.6.10; ECP.A.6.6.11; OC5A.2.8.10; OC5A.2.8.11; OC5.A.4.5.10 and OC5.A.4.5.11.

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7 References

Reference 1:- Grid Code European Compliance Processes ECP can found at https://www.nationalgrid.com/sites/default/files/documents/07_EUROPEAN_COMPLIANCE_%20PROCESSES_I5R22.pdf

Reference 2:- Testing Guidance for Providers of Firm Frequency Response Balancing Service can found at https://www.nationalgrid.com/sites/default/files/documents/FFR%20Testing%20Guidance%20verD11%20Final_0.pdf

Reference 3:- Testing Guidance for Providers of Firm Enhanced Frequency Response Balancing Service can found at https://www.nationalgrid.com/sites/default/files/documents/EFR%20Testing%20Guidance%20VD3%20%28Final%29.pdf

Reference 4:- Grid Code European Connection Conditions ECC can found at https://www.nationalgrid.com/sites/default/files/documents/06_EUROPEAN_CONNECTION_CONDITIONS_I5R22.pdf