|  |  |  |  |
| --- | --- | --- | --- |
| **Workgroup Consultation** | |  | |
| **GC0145:**  **Updating the Grid Code to include the Manually Activated Reserve Initiative (MARI)**  **Overview:** A new balancing product, manually activated frequency restoration reserves (mFRR) has been developed and all European Transmission System Operators have been directed to create a European Platform for the product. MARI is the European implementation project to provide that platform. This modification will update the Grid Code with the requirements of MARI. | | **Modification process & timetable** | |
| Have 5 minutes? Read our [Executive summary](#_Executive_Summary)  Have 30 minutes? Read the full [Workgroup Consultation](#_Workgroup_Consultation_Introduction) document  Have 40 minutes? Read the full Workgroup Consultation document and annexes | | | |
| **Status summary:** The Workgroup are seeking your views on the work completed to date to form the final solution(s) to the issue raised. | | | |
| **High impact:** Existing and potential providers of balancing services in Great Britain including but not limited to Interconnectors and the Transmission System Operator.  **Medium impact:** Distribution Network Operators. | | | |
| **Modification drivers:** Efficiency, EU Compliance, GB Compliance, Harmonisation, New Markets, New Technologies, Ofgem-led, System Operability, Transparency | | | |
| **Governance route** | This modification is being assessed by a Workgroup and Ofgem will make the decision on whether it should be implemented. | | |
| **Who can I talk to about the change?** | **Proposer:** Louise Trodden, National Grid ESO  [Louise.trodden@nationalgrideso.com](mailto:Louise.trodden@nationalgrideso.com)  Phone: 07866 165538 | | **Code Administrator** **Chair**: Jennifer Groome, National Grid ESO  [Jennifer.Groome@nationalgrideso.com](mailto:Jennifer.Groome@nationalgrideso.com)  Phone: 07966 130854 |
| **How do I respond?** | Send your response proforma to[grid.code@nationalgrideso.com](mailto:grid.code@nationalgrideso.com) **by 5pm on 5 February 2021** | | |

Executive Summary

A new standard EU product, manually activated frequency restoration reserves (mFRR), has been developed and all European Transmission System Operators (TSOs) have been directed by [Article 20](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2017.312.01.0006.01.ENG&toc=OJ:L:2017:312:TOC#d1e2226-6-1)[[1]](#footnote-2) to create a European Platform for the product by July 2022. MARI is the European implementation project launched by the European Network of System Operators – Electricity (ENTSO-E) to provide that platform. This modification will update the Grid Code with the requirements of MARI.

What is the issue?

Failure to implement this modification on time may result in National Grid ESO (NGESO) being non-compliant with EU legislation. This may lead to penalties and could result in market participants being disadvantaged.

What is the solution and when will it come into effect?

**Proposers solution:** A new section will be added to the Grid Code (BC6) to include mFRR requirements. This will follow the principles of Balancing Code 4 and 5 of the Grid Code (BC4 and BC5) which detail the technical requirements for participants of the Trans-European Replacement Reserve Exchange (TERRE).

**Implementation date**: July 2022

What is the impact if this change is made?

Sharing of energy reserves across the EU Internal Electricity Balancing Market (IEM) helps to support the introduction of potential new participants to the market with the objective of increasing security of supply and reducing costs to consumers.

Interactions

**Cross code changes:** A modification to the Balancing and Settlement Code (BSC) P407 to address MARI was raised in May 2020 and is being run as a cross code Workgroup in conjunction with GC0145. Changes will be required to the Grid Code, Balancing and Settlement Code (BSC) and potential consequential changes may also be required to the Connection and Use of System Code (CUSC).

**Risks:**

* **Withdrawal from EU:** It is unknown what Great Britain’s (GB) involvement will be in the Internal Energy Market (IEM) from January 2021 onwards. Whether GB market participants will be able to participate in MARI is subject to on-going negotiations.
* **TERRE** is not fully implemented and has currently been delayed until 2021.
* **Control room and industry engagement** may not be high due to workload constraints and TERRE delays.
* **COVID-19** and the impact this will have upon all stakeholders.
* **Derogations** raised by other EU countries and hence limited ability to use the mFRR product.
* **Short timescales** to formulate and develop solutions - both for code changes and software and process changes.
* Concerns around the use of **LIBRA**, (the platform for standard EU balancing products) being available for non-EU member states.

Contents

* What is the issue?
* What is the solution?
  + Proposer’s solution
  + Workgroup considerations
  + Potential solutions
  + Draft legal text
* What is the impact of this change?
* When will the change take place?
* How to respond
* Acronyms, key terms and reference material

What is the issue?

All Transmission System Operators have been directed by [Article 20](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2017.312.01.0006.01.ENG&toc=OJ:L:2017:312:TOC#d1e2226-6-1)[[2]](#footnote-3) to introduce a platform to facilitate balancing mFRR by July 2022. Failure to comply will result in non-compliance of the legal requirement of EU legislation and affected parties may be subject to penalties. This could also result in market participants being disadvantaged as the same market opportunities available in EU member states would not be available in GB.

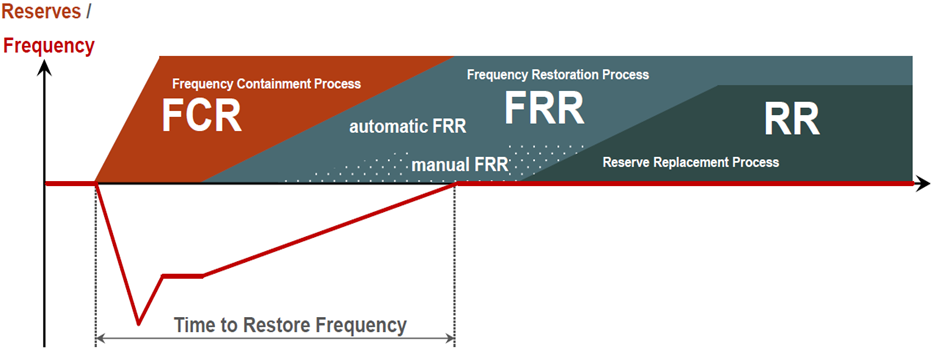
**What is MARI and mFRR?**

MARI is a project which was launched by ENTSO-E to implement the European mFRR platform (known as the Central MARI Platform). This will be the same platform that is used for TERRE, known as LIBRA

While there are some similarities to TERRE in that both MARI and TERRE are European balancing products, MARI is a balancing product in it’s own right. MARI is an EU balancing product which is manually activated in 12.5 minutes[[3]](#footnote-4) and delivered in 15-minute windows of energy blocks. For comparison, TERRE is activated in 30 minutes and delivered in 15-minute blocks.

The MARI product can be ordered either through Scheduled Activation or Direct Activation. The Full Activation Time is the same for both Scheduled Activation and Direction Activation (12.5 minutes). Scheduled Activation will be run every 15 minutes, once for each quarter hour throughout the day, with delivery for the next full quarter hour. Direct Activation will run on-demand, with delivery from the remainder of one quarter hour and to the end of the subsequent quarter hour.

The minimum generation capacity required to participate in mFRR is 1MW while maximum is 9,999 MW. There is a minimum delivery period of 5 minutes.



The above image shows how the Frequency Restoration Process fits into the current services available. Please note that automatic FRR is not an option in GB. Reserve Replacement (RR) is the EU balancing product known as TERRE.

What is the solution?

**Proposer’s solution:**

A new section will be created within the Balancing Services Section of the Grid Code namely BC6. This will follow the principles of BC4 and BC5 which details the technical requirements for participants of Project TERRE. As noted, BC5 will be updated to include the prequalification process for MARI which will sit alongside TERRE.

The development of MARI will build on the existing processes developed for Project TERRE but specifically within the context of the MARI product and MARI timelines for the efficient dispatch and utilisation of mFRR.

NGESO acknowledge that Project TERRE has not been fully implemented within the GB market at the time of writing, the sensible approach is to still build upon the Project TERRE model with development of the model through the design approval stage.

Workgroup Considerations

The Workgroup convened 8 times to discuss the perceived issue, detail the scope of the proposed defect, devise potential solutions and assess the proposal in terms of the Applicable Code Objectives.

**Consideration of the proposer’s solution**

The proposer’s solution simply involves creating a new section in the Grid Code for the requirements of mFRR (MARI), based on sections BC4 which sets out the requirements for RR (TERRE).

**Workgroup Consultation question:** Are you comfortable that the GC0145 solution follows the same principles as the Grid Code solution for TERRE (GC0097)? Yes/No. Please explain your rationale.

In the Workgroup’s Terms of Reference, it is stipulated that consideration should be given to the technical and commercial viability, costs, benefits and risks of the implementation of MARI within GB, as well as the data, remit and transparency requirements to support the P407 solution. This Workgroup does not attempt to finalise the full MARI solution, but only to address the requirements which need to be specified in the Grid Code. The full MARI solution will be captured within separate documents (as was done for TERRE) which NGESO intend to commence work on in 2021. This includes the Dispatch Principles document and the Data Validation and Consistency document. NGESO has put together a MARI Reference Document which covers the draft Dispatch Principles as well as explanation on the types of bids, how the MARI process works and a specific section on interconnectors. This can be found in Annex 3.

The Workgroup discussed the below areas which dictate the structure for this section:

1. Market entry
2. How the platform will work
3. Dynamic parameters
4. Submission and acceptance
5. Bids
6. Ramping
7. Interconnector considerations
8. Interaction with other services
9. MARI Market Suspension
10. DNO Interaction
11. **Market Entry**

The following prequalification requirements which are currently specified for FRR under BC5 will be applicable for mFRR:

* The minimum technical requirements for participation in MARI (BC5.3 - FRR Prequalification process).
* The prequalification timescales (BC5.1.1.1 and BC5.1.1.2)

To participate in the EU mFRR market, a Balancing Service Provider (BSP) must accede and comply with both the BSC and CUSC.

* Under the BSC, the BSP must ‘Qualify’ in a relevant participation capacity (e.g. Generator, Supplier or VLP (Virtual Lead Party)).
* Under the Grid Code, the BSP must complete the ‘Pre-Qualification’ requirements and have the ability to submit MARI bids.

Once ‘Qualified’ under the BSC and ‘Pre-Qualified’ under the Grid Code, a BSP will need to register a BM Unit with both Elexon and NGESO.

It was confirmed that interconnector BM Units cannot participate in MARI. Note this is consistent with TERRE.

**Workgroup Consultation question:** In order to participate in MARI, you need to be a participant in the BM[[4]](#footnote-5) (in a similar way to a party participating in TERRE). Are you comfortable with this approach if you are currently a non-CUSC party? Yes/No/Not Applicable. Please explain your rationale.

1. **How the platform will work**

NGESO shared the diagram below which demonstrates how the platforms will work. Note that this image is provided from the MARI Steering Committee. The MARI Steering Committee is formed with representatives from participating TSOs to support and develop the way that the MARI project will be implemented across Europe. The Central Project team and interconnectors are not explicitly shown as Great Britain is the only participant that uses HVDC interconnectors. Operating Protocols will be created for MARI as was done for TERRE, which will include interconnectors. NGESO confirmed that the drafting for this will start after the Workgroup stage has finished.

****

The steps are as follows:

1. BSP provides bids to local TSO
2. TSO sends bids to the central platform
3. Network constraints are provided to the central platform
4. TSO sends needs to the central platform
5. Algorithm computes optimal solution
6. Central platform informs TSOs of bids that are to be activated
7. Central platform informs TSOs of cross-border exchanges
8. Network constraints are updated ready for next algorithm ‘run’
9. TSOs inform BSPs of their activation
10. **Dynamic parameters**

The Workgroup were presented with the below parameters for MARI. No concerns were raised but it was suggested that NGESO reach contacted the Association for Decentralised Energy (ADE) who have been looking at dynamic parameters. In light of this, NGESO held discussions with the ADE and have provided a response back to their questions which largely revolved around the use of Power Available and if there was a risk that using numerical values for submission into the market could have unintended consequences.

|  |  |  |  |
| --- | --- | --- | --- |
| **Data Item** | **Used for BM** | **Used for TERRE** | **Proposal for MARI** |
| Physical Notification (PN) | Yes - used as a base line for any BOA | Yes - used as a base line for any RRI | Yes - used as a base line for any mFRR Instruction |
| Run up / run down rates | Yes - used to calculate instruction profile | Yes - used to calculate instruction profile | Yes - used to calculate instruction profile |
| Minimum Export Limit (MEL), Maximum Import Limit (MIL) | Yes | Yes (will be used to indicate a fault on the unit) | Yes (will be used to indicate a fault on the unit) |
| Stable Export Limit (SEL), Stable Import Limit (SIL) | Yes | No | Yes (will be used to indicate the min value in MW in which the unit can export power) |
| Minimum Zero Time (MZT), Minimum Non-Zero Time (MNZT) | Yes | No | Yes (will be used to indicate feasibility of bids) |

NGESO confirmed that MZT will be used for MARI and not TERRE because MARI is closer to real time.

**Workgroup Consultation question:** Are you comfortable with the proposed Grid Code Dynamic Parameters? Yes/No. Please explain your rationale.

1. **Submission and acceptance**

**Submission of data**

NGESO confirmed that the same rules outlined for TERRE will be used for MARI regarding submission of data. Bids will come to the platform electronically, as specified in the Grid Code BC4.5.

**Acceptance**

NGESO expressed that the Data Validation and Consistency Rules will be produced though 2021 and will either be a separate document, or the current TERRE document will be updated to include MARI. The draft legal text contains the high-level principles for data validation and consistency.

The minimum quantity for bids is 1MW which is the same as TERRE. However, the Workgroup considered whether step increments of 0.1MW is possible. It was considered that this could be a significant barrier to entry for many parties who have assets up to 0.9MW. This issue was considered to be out of scope of GC0145 and Workgroup members were made aware that a separate issue group is due to be formed with Elexon to discuss the barriers to entry for sub 1MW parties.

**Gate closure**

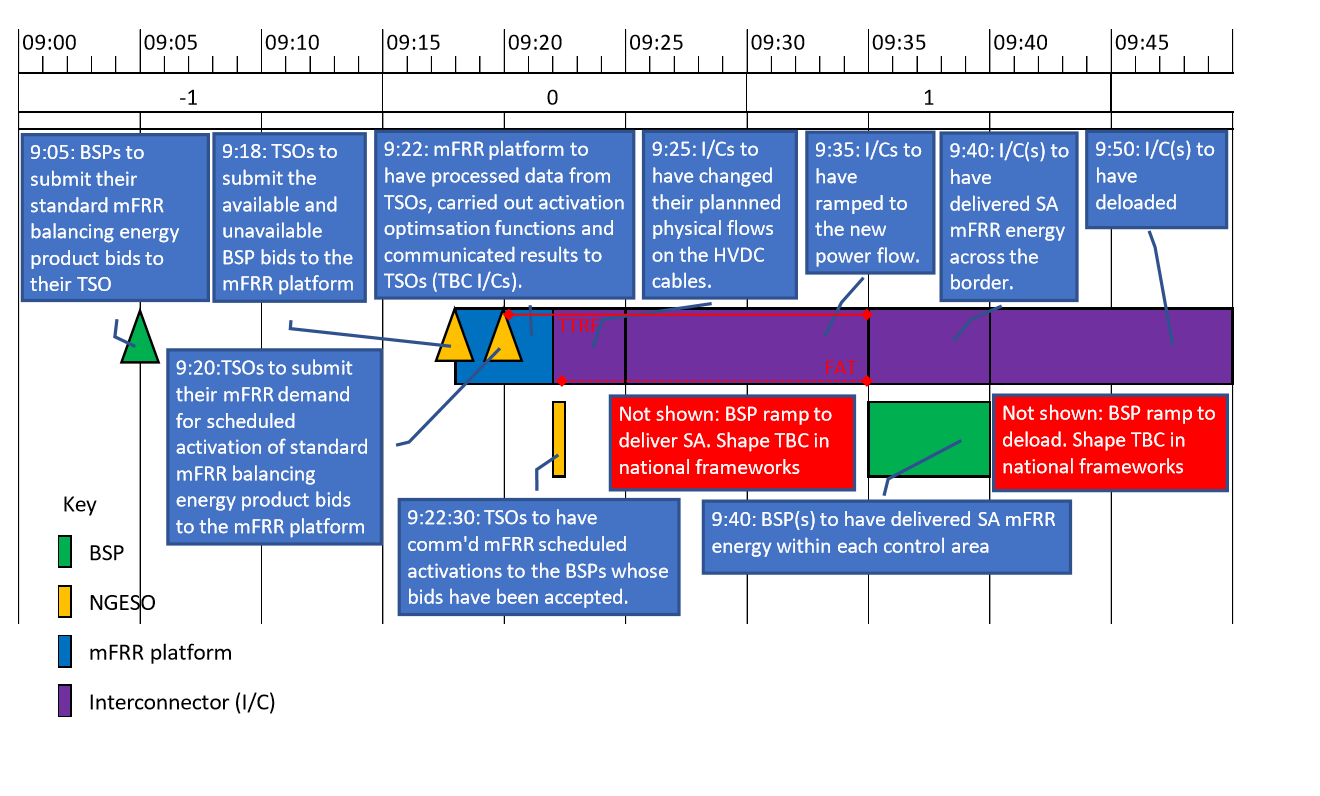
In order to participate in MARI auctions, all BSPs should submit all bids to NGESO by T-25. This will allow NGESO to validate the bids and send on to the Platform by T-12. For more information on Gate Closure please see Article 8 and 9 of the [MARI Implementation Framework](https://www.eles.si/Portals/0/Novice/DOKUMENTI/ACER%20Decision%20on%20the%20Implementation%20framework%20for%20mFRR%20Platform%20-%20Annex%20I.PDF).

**Scheduled Activation (SA) and Direct Activation (DA)**

NGESO explained the difference between SA and DA. The below diagrams were presented to the Workgroup as show the indicative timescales that each activation type will follow.

**Scheduled Activation**

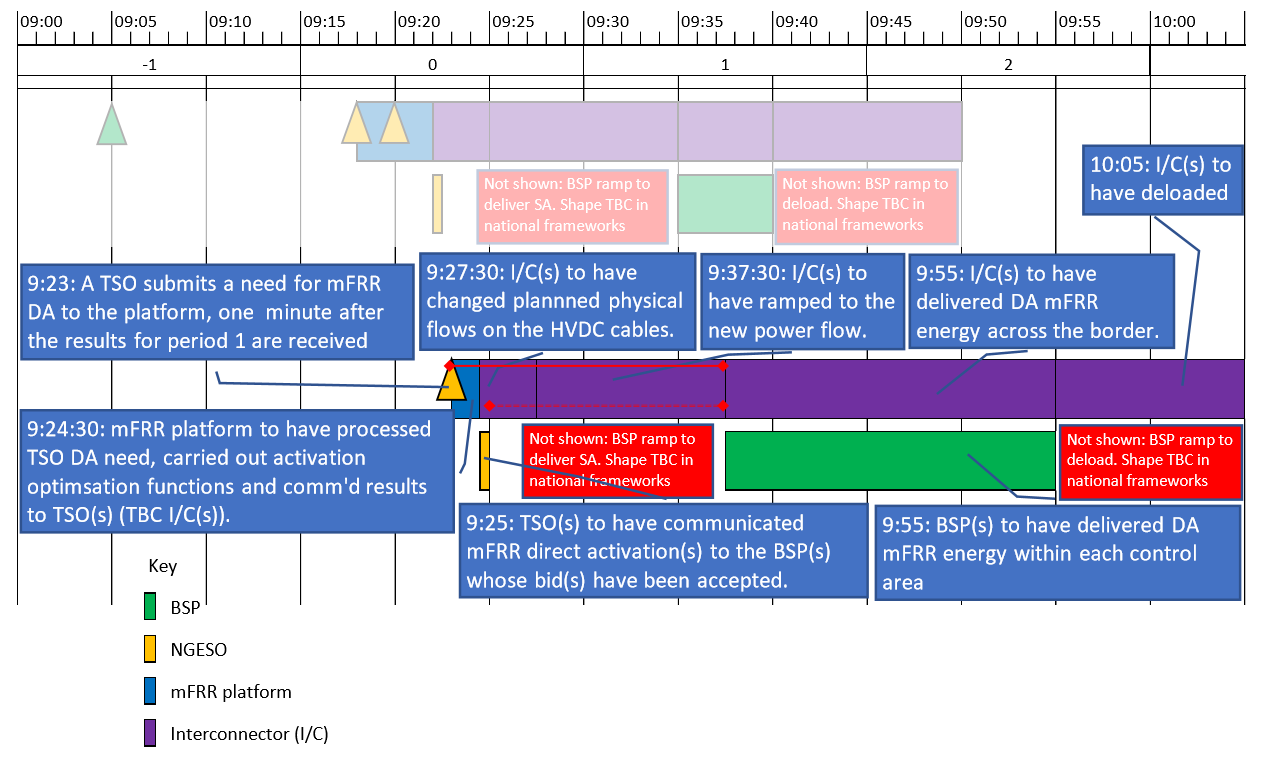
SAs happen every 15 minutes (so occur 4 times an hour).



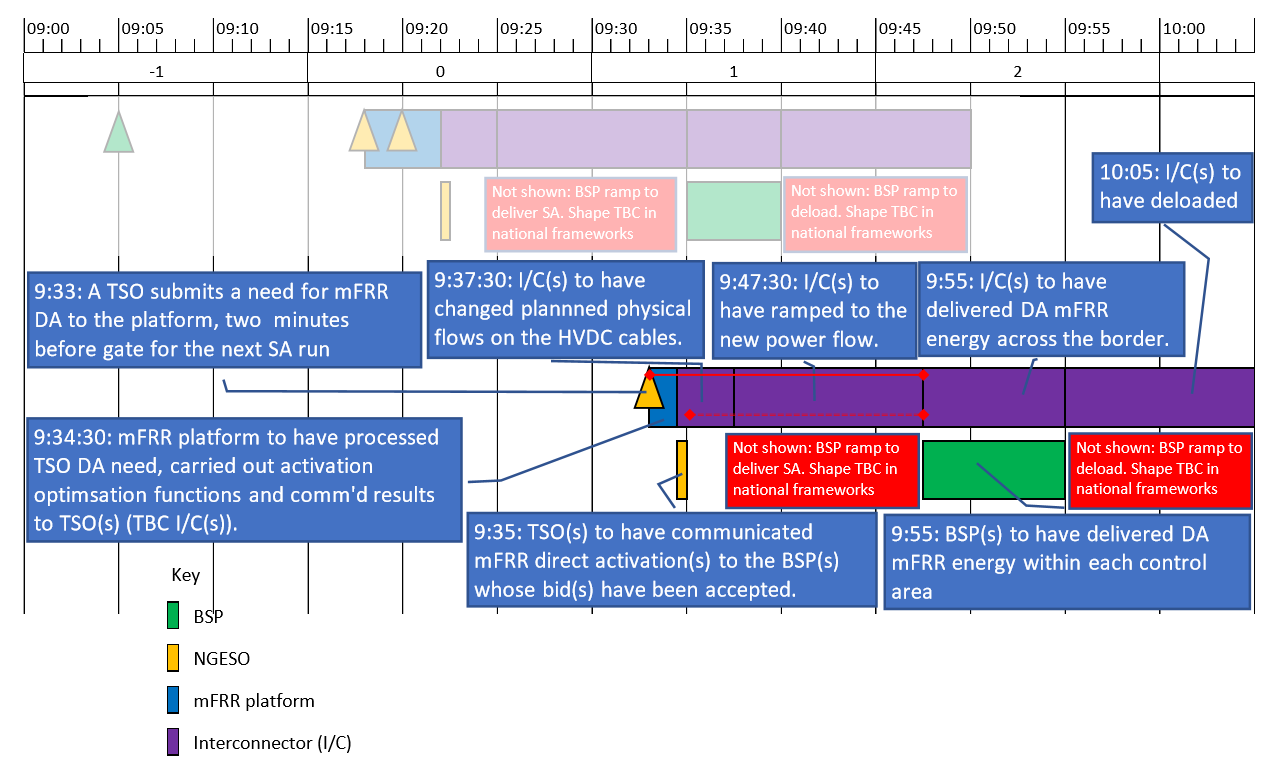
**Direct Activation**

DAs can be asked for in-between SAs. This may be because a TSO has a requirement that needs to be addressed outside of the pre-determined schedules.

One “need” just after previous SA run:



One “need” just before next SA run:



All bids are entered as SA bid and BSPs can further choose if a bid is additionally available for DA. NGESO confirmed that although DA-available bids are optional, both SA and DA will be available to be used. SA and DA will be used in an economic and efficient way, giving the ENCC a greater range of tools to manage the system.

**Workgroup Consultation question:** Are you comfortable with NGESO’s interpretation of Scheduled and Direct Activation? Yes/No. Please explain your rationale.

The Workgroup considered how the Central Platform (LIBRA) will run the algorithm (known as the AOF (Activation Optimisation Function) to determine the right cause of action.

* **Overlapping of services:** The unwinding of instructions will work as does for TERRE so that there is consistency in the dispatch principles. Overlapping will happen more frequently with mFRR activations than RR, because of the shorter timescales for mFRR. NGESO highlighted current tools used in the ENCC will need upgrading so that the algorithm determines the most appropriate action, and that all decisions to balance the system are transparent to the market and made on an economic and efficient basis.
* **Selection of interconnector:** As there are multiple interconnectors connected to GB, the algorithm will determine the flow on each interconnector. Minimum and maximum flow constraints on interconnectors shall be satisfied as far as possible. If NGESO submits a mFRR demand, and there is capacity available on multiple interconnectors connected to GB, the algorithm shall evenly distribute the resulting flow among the interconnectors configured for that given border. See example in Appendix 6.

1. **Bids**

**Bidding process**

NGESO shared the BSP to TSO bidding process in the mFRR platform. Every TSO must electronically submit the energy bids received from BSPs to the mFRR platform. All bids are entered as SA bid and BSPs can further choose if a bid is additionally available for DA.

All submissions of DA-available bids must be fulfilled. If the DA bid is activated, the BSP must be available to be activated and deliver in the current and subsequent quarter hour period. The same process to validate bids which is used for TERRE will be used for MARI. This process ensures no transmission or distribution constraints are caused.

The GC0144[[5]](#footnote-6) Workgroup are currently considering the rules for TERRE Market Suspension and have recommended in their Workgroup Consultation that the same rules should be adopted for MARI and be covered within GC0145.

**Types of Bids**

The standard and variable bid characteristics are defined in the [Implementation Framework (IF) document.](https://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Annexes%20to%20the%20DECISION%20OF%20THE%20AGENCY%20FOR%20THE%20C4/ACER%20Decision%20on%20the%20Implementation%20framework%20for%20mFRR%20Platform%20-%20Annex%20I.pdf)

The bidding process is summarised in the below diagram.

NGESO presented the different types of bids of which there are a number of types. For examples of the different types of bids, please see Annex 7.

|  |  |  |  |
| --- | --- | --- | --- |
| **Bid Type** | **Description** | **Sub-bid Type** | **Description** |
| Simple Bids (within one MTU) | Simple bids – one bid, one price | Divisible bid | Bids can be ‘divisible’ meaning that any portion of the volume of the bid may be activated. A 100MW fully divisible bid may be activated at anywhere between 1MW and 100MW. |
| Indivisible bid | ‘Indivisible bid’ means a standard mFRR balancing energy product bid, which cannot be activated partially, i.e. all or nothing |
| Complex Bids  (within one MTU) | Complex bids – combination of simple bids.  A complex bid consists of a group of bids within the same MTU period that are associated with each other. The following two types of complex bids will be supported by the platform: Exclusive and multipart bids | Exclusive bids | Exclusive bids are mutually exclusive according to the principle “exactly one or none”. They may have different prices, directions and volumes. They must have the same activation type and availability status. Exclusive bids always refer to the same MTU period. |
| Multipart bids | If an upward multipart bid is accepted, then all associated bids with lower price must also be accepted. If a downward multipart bid is accepted, then all associated bids with a higher price must also be accepted. This is referred to as parent-child linking in the mFRR IF. Multipart bids must cover the same MTU period and have the same direction. Each bid must have a different price. They must have the same activation type and availability status |
| Linked bids (between MTUs) | There may be links between bids in different MTU periods. The links will apply retrospectively, i.e. the availability of a bid is determined by the outcome for the linked bids in earlier, already optimised MTU periods. Two different types of links are supported; technical and conditional. | Technically linked bids | Technical linkage is the linkage of two bids (simple or complex) in two subsequent quarter hours. |
| Conditional bids | Conditional linking is a link between two or three adjacent quarter hours and is only applicable to simple bids (for day 1 of go live). |

**Workgroup Consultation question:** Are you comfortable with NGESO’s explanation of the different types of bids? Yes/No. Please explain your rationale.

1. **Ramping**

The period of time to restore system frequency and energy exchange after an unplanned or planned event is known as The Time to Restore Frequency (TTRF). The TTRF for mFRR is 15 minutes. The time to deliver across a border by a TSO will be monitored.

The Full Activation Time (FAT) for mFRR is 12.5 minutes maximum. This is the period of time between the activation request by the connecting TSO in the case of the TSO-TSO model, or by the contracting TSO in the case of the TSO-BSP model and the corresponding start of full delivery of requesting MW power of the concerned balancing energy bid.

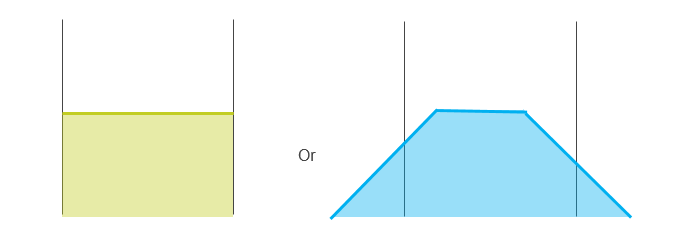
So as soon as the delivery is requested, the FAT is the full time to activate the power.

The Workgroup considered how flexible ramping times will be. The TSO-BSP shape will align with the TSO-TSO shape (the profiled schedule). Any deviation from this shape will be settled at the Balancing Energy Deviation Price (BEDP) which NGESO have proposed to set to zero. Therefore, any volume delivered outside of the standard product shape will not be paid for. For units with longer ramps than the standard product shape, the ramp

will not be paid for. For quicker ramps, as long as the volume is the same as the volume of the standard product shape, the BSP will not be penalised. These principles align with the TERRE market, and have been set out to encourage BSPs to follow the standard product shape,

**TSO-TSO exchange shape**

The TSO-TSO exchange shape is the cross-border exchange shape between two TSOs. The cross-border exchange shape is fixed within the central project as the standard mFRR trapezium shape (profiled shape). NGESO explained the shape chosen was because it aligns with the EU interconnector delivery shape.



The shape is as follows:

* Linear ramp of 10 minutes
* Full delivery of 5 minutes for SA (longer for DA)
* Linear ramp of 10 minutes to de-load

More detail on how the cross-border exchange shape works can be found in Annex 5 slides 14-18.

*Scheduled Activation*

TSO – TSO delivery shape\*:

* 12.5 minutes Full Activation Time, consisting of
  + 2.5 minutes preparation time (from T-7.5 to T-5)
  + 10 minutes start ramping (T-5 to T+5)
  + **5 minutes full delivery (from T+5 to T+10)**
  + 10 minutes end ramping (from T+10 to T+20)

*Direct Activation*

TSO – TSO delivery shape\* (*Direct Activation* in QH0):

* 12.5 minutes Full Activation Time, consisting of
  + 2.5 minutes preparation time
  + 10 minutes start ramping
  + **5 – 20 minutes full delivery (from T+X to T+25)**
  + 10 minutes end ramping (around the end of QH+1, i.e. from T+25 to T+35)

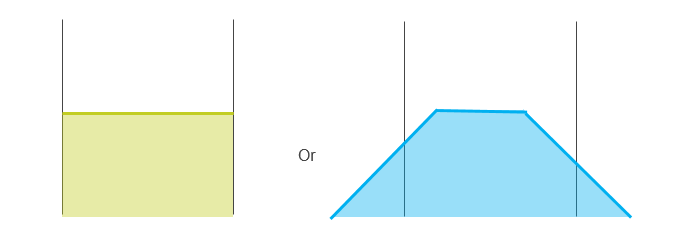


**BSP-TSO delivered shape**

The Workgroup considered the positives and negatives of a ‘block’ or ‘profiled’ shape.

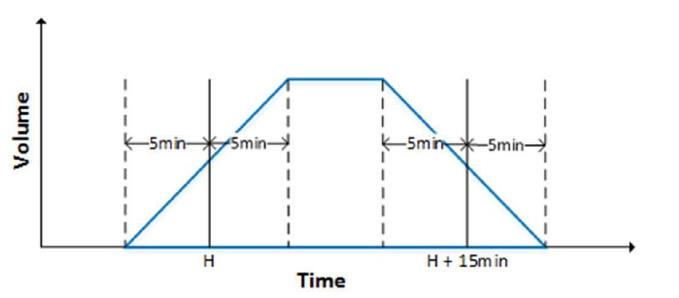
**Block vs Profiled shape**

Diagram A (green) shows a block of energy in a 15-minute MTU. Diagram B (blue) considers the ramping characteristics over the 15-minute MTU. The volume of energy in both shapes are the same, additionally the blue example highlights that activation can be started in one MTU and completed in another.



NGESO proposes the BSP-TSO shape is a ramp profile (‘Profiled shape’), aligned with the TSO-TSO standard product shape. The reason for this this is to keep consistency with TERRE and the TSO-TSO shape. This would have a linear run-up and run-down ramp of 10 mins.

* For SA, this would have a 5-minute activation time.
* For DA, the ramping times will be the same, but the activation period varies depending on the time that the BSP is instructed (the activation period for direct activations stretches until T+30, i.e. until the end of following quarter hour).



**Incentivising the BSP Product Shape**

The MARI market will pay for any volume delivered within the standard allowable ramping period of 10 minutes, starting from 5 minutes before the activation period and ending 5 minutes after the activation period. This volume aligns with the TSO-TSO shape and TSO-BSP shape.

For units with longer ramps than the standard product shape, the ramp will not be paid for. For quicker ramps, as long as the volume is the same as the volume of the standard product shape, the BSP will not be penalised.

The Workgroup were asked to consider whether the mFRR Standard Product Shape should be incentivised, and if so whether it should be harmonised with RR and, to consider whether separate instruction deviation cashflows are required for Scheduled and Direct Activations. Three options were presented by Elexon to the Workgroup for consideration in Annex 6.

NGESO proposed that any deviation from the standard product shape should be settled at the Balancing Energy Deviation Price (BEDP) which they propose to be set to zero. Therefore, any volume delivered outside of the standard product shape will not be paid for.

This solution aligns with TERRE and encourages participants to follow the standard product shape and reduce imbalances. The Workgroup shared no concerns with this option.

**Workgroup Consultation question:** Are you comfortable with the proposed TSO-BSP shape and incentivisation framework? Yes/No. Please explain your rationale.

1. **Interconnector considerations**

Interconnector Workgroup members raised concerns that the detailed MARI solution will not be finalised until after the modification process. Concerns were expressed that this is how it worked for TERRE (GC0097); obligations which are not apparent in the Workgroup phase may transpire later.

The Workgroup discussed a number of aspects in respect to interconnectors and what was within the remit of the MARI modification. This can be found in Annex 8.

**Cross border stacking**

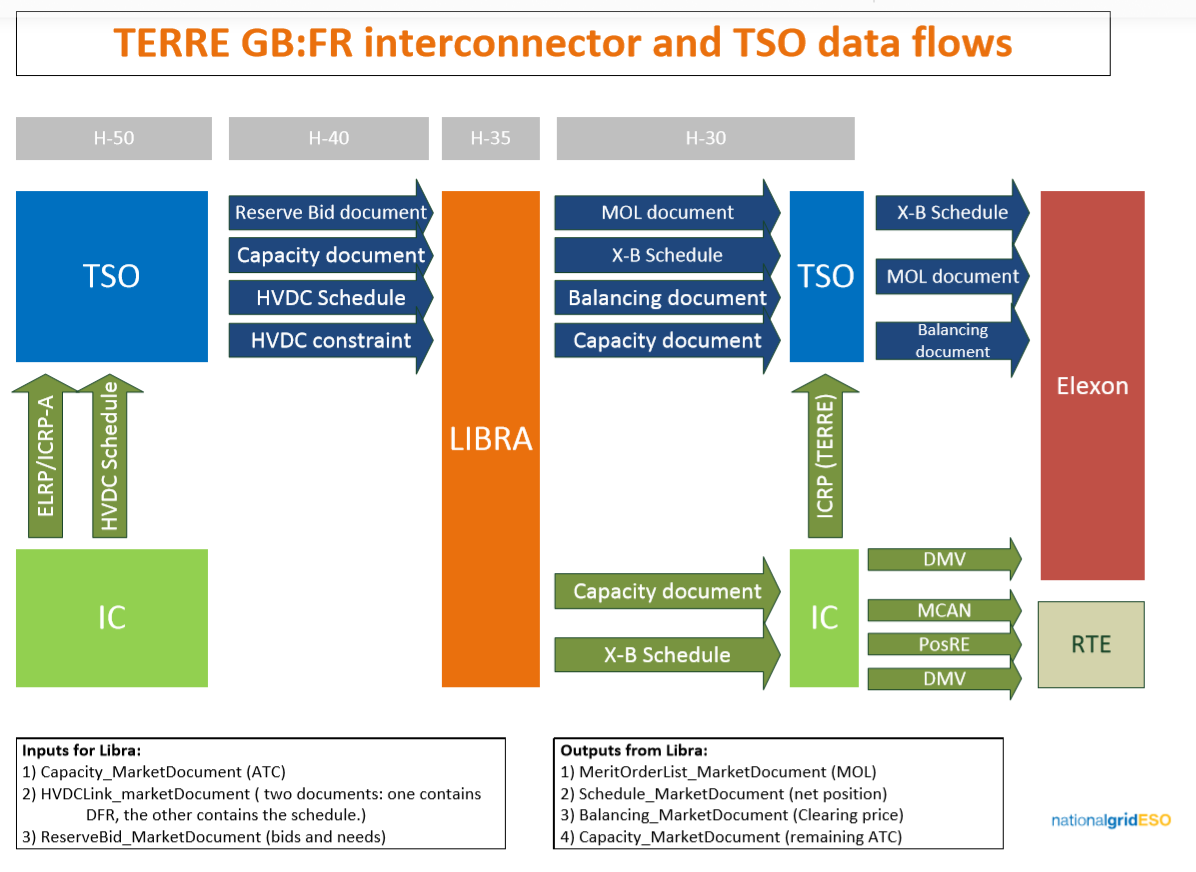
NGESO presented how the stacking of Scheduled Activations (SA) and Direct Activations (DA) will work across a border (see in Annex 4). A workgroup member raised concerns around if shapes are stacked together then it may lead to a more difficult shape for the interconnectors, as the number of blocks which are stacked will then translate to a net flow which is similar to dispatch.

As the direct and scheduled activations stack and interact, the standard shape becomes less uniform and more complex to dispatch from an interconnector operational perspective.  NGESO and the interconnector operators need to manage the aggregated flows. Provided the Available Transfer Capacity (ATC) submitted by NGESO is feasible and ensuring the interconnectors can ramp at their set ramp rate, the interconnector schedules should also be feasible.

**Workgroup Consultation question:** If you represent an Interconnector, do you believe the Scheduled and Direct Activation cross-border schedules are feasible? Yes/No/Not Applicable. Please explain your rationale.

**TSO Schedule Flows**

Specifically, interconnector Workgroup members were keen to understand how Interconnector and TSO schedule flows. The current TERRE Interconnector and TSO data flows (below) were shared with the Workgroup for reference. More work is required in this area between NGESO and interconnectors in 2021 in order to develop the Operating Protocols for MARI.



Once multiple activations are stacked, the profile is more complex to dispatch than a single SA or DA. The MARI platform will share the required activations to the Interconnectors with a profiled shape. This is more complex than receiving the instruction in a block. A block instruction would translate to a simpler shape for interconnector dispatch.

**Instructions to interconnectors**

LIBRA informs NGESO of the cross-border flows resulting from scheduled and direct activations, respectively. In some cases, the resulting cross-border flows may be sent to the regional nomination platform or operator of the interconnector. It is entirely configurable and at the discretion of the TSOs to decide what party or parties shall receive the output files. For TERRE, LIBRA will send the cross-border schedule directly to the interconnectors. NGESO will adopt the same data exchange approach for MARI.

**Deviation from the cross-border schedule**

NGESO expect no changes to current practice with respect to deviations; any imbalance will be picked up in the interconnector imbalance reports and passed to the interconnector as it is for TERRE and other SO-SO trades. This will also be covered in the System-to-System Flow Methodology, the commercial agreements and the Operational Protocol.

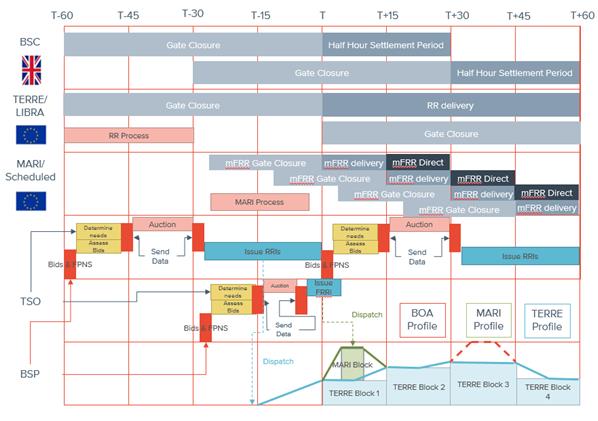
1. **Interaction with other products/services**

**Which markets are mutually exclusive/inclusive?**

* It is not currently possible to participate in both the MARI and STOR markets at the same time. This is the same as TERRE and STOR.
* It is possible to participate in both MARI and TERRE at the same time. They have different timescales to balance energy so parties can participate in both.
* The BM can still be used alongside MARI and TERRE.

A consultation was held by NGESO between 28 October and 30 November 2020 - EBGL Article 26: Proposal for Defining and Using Specific Products for Dynamic Containment, STOR and the BM. This outlines how NGESO expect TERRE to interact with specific products. NGESO expect that similar principles will apply to MARI.

NGESO presented the following diagram to the Workgroup which shows both the TERRE and MARI processes alongside the BM.



**What are mFRR instructions?**

Satisfied demands and bids to be activated will be sent from the central platform to NGESO via a ‘MOL document’ (a ‘Merit Order List’ document’). NGESO will then send mFRR instructions to the relevant BSP’s who have been successful in the auction. mFRR instructions are BOA like instructions.

**mFRR instruction dependencies**

NGESO will use mFRR in conjunction with RR and the BM, so there will be times were standard European products (RR and mFRR) and specific GB products (the BM) interact because BSPs can participate in all three markets. As a result of this interaction, and due to the complexity of the GB market, NGESO will hold the right not to instruct all mFRR activations.

**mFRR Interactions with RR**

TERRE results are published at T-35 and concern the delivery period T to T+60. As the MARI gate closure time for BSPs (for QH0) is at T-25 for scheduled activations, then there appears to be enough time for a BSP to update their position following a TERRE instruction and the two products will stack.

**Workgroup Consultation question:** Are you comfortable with how MARI interacts with other balancing services? Yes/No. Please explain your rationale.

1. **MARI Market Suspension**

The workgroup considered the conditions for which the MARI Market would be suspended. This issue also needs to be considered for TERRE and is the subject of [Grid Code Modification GC0144](https://www.nationalgrideso.com/industry-information/codes/grid-code-old/modifications/gc0144-alignment-market-suspension-rights-eu). The GC0144 Workgroup recommended that the same market suspension requirements that are proposed for TERRE are also used for MARI. GC0144 will run ahead of GC0145, therefore due to the timings of these modifications the legal text for MARI market suspension will be included within GC0145.

**Workgroup Consultation question:** Are you comfortable that the proposals for MARI Market Suspension will be addressed in the GC0145 consultation but follow the same approach as proposed for TERRE Market Suspension in GC0144? Yes/No. Please explain your rationale.

1. **DNO Interaction**

The issue of embedded BSPs behind a connection point was discussed. There are not believed to be any issues for embedded BSPs participating in MARI in the same way as TERRE, however industry participants are invited to comment on this issue through the consultation questions if they believe this presents an issue.

**Workgroup Consultation question:** If you are embedded in a DNO network, do you believe there are any restrictions to participating in the MARI market? Yes/No/Not Applicable. Please explain your rationale.

Draft Legal text

The final legal text for this change can be found in Annex 9.

What is the impact of this change?

**Proposer’s Assessment against Code Objectives**

|  |  |
| --- | --- |
| **Impact of the modification on the applicable objectives:** | |
| **Relevant Objective** | **Identified impact** |
| (a) To permit the development, maintenance and operation of an efficient, coordinated and economical system for the transmission of electricity | **Positive** |
| (b) Facilitating effective competition in the generation and supply of electricity (and without limiting the foregoing, to facilitate the national electricity transmission system being made available to persons authorised to supply or generate electricity on terms which neither prevent nor restrict competition in the supply or generation of electricity); | **Positive** |
| (c) Subject to sub-paragraphs (a) and (b), to promote the security and efficiency of the electricity generation, transmission and distribution systems in the national electricity transmission system operator area taken as a whole; | **Positive** |
| (d) To efficiently discharge the obligations imposed upon the licensee by this license and to comply with the Electricity Regulation and any relevant legally binding decisions of the European Commission and/or the Agency; and | **Positive** |
| (e) To promote efficiency in the implementation and administration of the Grid Code arrangements | **Positive** |

**Standard Workgroup Consultation question:** Do you believe that GC0145 Original proposal better facilitates the Applicable Grid Code Objectives?

When will this change take place?

**Implementation date:**

MARI has a deadline for implementation of July 2022. This is 30 months after the implementation framework approval by ACER. To meet this requirement, it is critical to complete the Workgroup phase by the end of 2020 to allow for a period of software development, testing and implementation.

**Date decision required by:**

June 2022

**Implementation approach:**

This will require all TSOs and interconnectors to update their processes and systems. There will be significant changes required to implement MARI. This will involve updates to the ENCC systems and process, alongside the interconnectors. The current tools used in the ENCC will need upgrading in order to ensure that at all decisions to balance the system are transparent to the market and made on an economic and efficient basis. There will be detailed discussions with the interconnectors in Q2 2021 in respect of the changes and requirements needed for implementation of MARI.

**Standard Workgroup Consultation question:** Do you support the implementation approach?

How to respond

Standard Workgroup Consultation questions:

1. Do you believe that GC0145 Original proposal better facilitates the Applicable Objectives?
2. Do you support the proposed implementation approach?
3. Do you have any other comments?

Specific Workgroup Consultation questions:

1. Are you comfortable that the GC0145 solution follows the same principles as the Grid Code solution for TERRE (GC0097)? Yes/No. Please explain your rationale.
2. In order to participate in MARI, you need to be a participant in the BM[[6]](#footnote-7) (in a similar way to a party participating in TERRE). Are you comfortable with this approach if you are currently a non-CUSC party? Yes/No/Not Applicable. Please explain your rationale.
3. Are you comfortable with the proposed Grid Code Dynamic Parameters? Yes/No. Please explain your rationale.
4. Are you comfortable with NGESO’s interpretation of Scheduled and Direct Activation? Yes/No. Please explain your rationale.
5. Are you comfortable with NGESO’s explanation of the different types of bids? Yes/No. Please explain your rationale.
6. Are you comfortable with the proposed TSO-BSP shape and incentivisation framework? Yes/No. Please explain your rationale.
7. If you represent an Interconnector, do you believe the Scheduled and Direct Activation cross-border schedules are feasible? Yes/No/Not Applicable. Please explain your rationale.
8. Are you comfortable with how MARI interacts with other balancing services? Yes/No. Please explain your rationale.
9. Are you comfortable that the proposals for MARI Market Suspension will be addressed in the GC0145 consultation but follow the same approach as proposed for TERRE Market Suspension in GC0144? Yes/No. Please explain your rationale.
10. If you are embedded in a DNO network, do you believe there are any restrictions to participating in the MARI market? Yes/No/Not Applicable. Please explain your rationale.
11. Do you believe it is appropriate to proceed with this work on the basis of the uncertainties around Brexit, and the number of derogations from other European countries?
12. Do you believe that the GC0145 and P407 solutions are coordinated?

The 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 above.

Please send your response to [grid.code@nationalgrideso.com](mailto:grid.code@nationalgrideso.com) using the response pro-forma which can be found on the [GC0145](https://www.nationalgrideso.com/industry-information/codes/grid-code-old/modifications/gc0145-updating-grid-code-include-manually) modification page.

In accordance with Governance Rules if you wish to raise a Workgroup Consultation Alternative Request please fill in the form which you can find at the above link.

*If you wish to submit a confidential response, please note that information provided in response to this consultation will be published on National Grid ESO’s website unless the response is clearly marked “Private & Confidential”, we will contact you to establish the extent of the confidentiality. A response marked “Private & Confidential” will be disclosed to the Authority in full but, unless agreed otherwise, will not be shared with the CUSC Modifications Panel or the industry and may therefore not influence the debate to the same extent as a non-confidential response. Please note an automatic confidentiality disclaimer generated by your IT System will not in itself, mean that your response is treated as if it had been marked “Private and Confidential”.*

Acronyms, key terms and reference material

|  |  |
| --- | --- |
| **Acronym / key term** | **Meaning** |
| ACER | Agency for the Cooperation of Energy Regulators |
| ADE | Association for Decentralised Energy |
| AOF | Activation Optimisation Function |
| Baseline | The code/standard as it is currently |
| BSC | Balancing and Settlement Code |
| BC | Balancing Code |
| BM | Balancing Mechanism |
| BOA | Bid Offer Acceptance |
| BSA | Balancing Services Agreement |
| BSP | Balancing Service Provider |
| CUSC | Connection and Use of System Code |
| DA | Direct Activation |
| EBGL | Electricity Balancing Guideline |
| ENCC | Electricity National Control Centre |
| ENTSO-E | European Network of System Operators for Electricity |
| ESO | Electricity System Operator |
| EU | European Union |
| FAT | The Full Activation Time |
| FRR | Frequency Restoration Process |
| GB | Great Britain |
| HDVC | High Voltage Direct Current |
| IEM | Internal Electricity Market |
| LIBRA | Pan-EU Balancing platform |
| MARI | Manually Activated Reserve Initiative |
| MEL | Minimum Export Limit |
| mFRR | Manually Activated Frequency Restoration Reserves |
| MIL | Maximum Import Limit |
| MTU | Market Time Units |
| MNZT | Minimum Non-Zero Time |
| MZT | Minimum Zero Time |
| NGESO | National Grid Electricity System Operator |
| RR | Replacement Reserve |
| SA | Scheduled Activation |
| STOR | Short-Term Operating Reserve |
| TERRE | Trans European Replacement Reserves Exchange |
| TSO | Transmission System Operators |
| TTRF | The Time to Restore Frequency |

**Reference material:**

1. [MARI Implementation Framework](https://www.eles.si/Portals/0/Novice/DOKUMENTI/ACER%20Decision%20on%20the%20Implementation%20framework%20for%20mFRR%20Platform%20-%20Annex%20I.PDF)
2. [Annexes to Decision of the Agency for the Cooperation of Energy Regulators No03-2020 – mFRR Platform](https://www.nationalgrideso.com/document/166086/download)
3. [Article 20 EGBL](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2017.312.01.0006.01.ENG&toc=OJ:L:2017:312:TOC#d1e2226-6-1)
4. [BSC Modification P407](https://www.elexon.co.uk/mod-proposal/p407/)
5. [Connection and Use of System Code (CUSC)](https://www.nationalgrideso.com/industry-information/codes/connection-and-use-system-code-cusc-old/modifications/cmp328-connections)
6. [Market Entry](https://www.elexon.co.uk/reference/market-entry/) – Elexon
7. [Replacement reserve (RR)](https://www.nationalgrideso.com/industry-information/balancing-services/reserve-services/replacement-reserve-rr)
8. [TERRE – GC0097 Final Modification Report](https://www.nationalgrideso.com/document/166086/download)

Annexes

|  |  |
| --- | --- |
| **Annex** | **Information** |
| Annex 1 | GC0145 Proposal Form |
| Annex 2 | GC0145 Terms of Reference |
| Annex 3 | NGESO MARI Reference Document |
| Annex 4 | Cross border stacking of SA and DA (WG5) |
| Annex 5 | Cross border exchange shape (WG6) |
| Annex 6 | Instruction Deviation Cashflow (WG6) |
| Annex 7 | Types of bids (WG7) |
| Annex 8 | Interconnector considerations |
| Annex 9 | GC0145 Draft legal text |

1. [Article 20 of European Balancing Guidelines (EBGL-Commission Regulation (EU) 2017/2195)](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2017.312.01.0006.01.ENG&toc=OJ:L:2017:312:TOC#d1e2226-6-1) [↑](#footnote-ref-2)
2. [Article 20 of European Balancing Guidelines (EBGL-Commission Regulation (EU) 2017/2195)](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2017.312.01.0006.01.ENG&toc=OJ:L:2017:312:TOC#d1e2226-6-1) [↑](#footnote-ref-3)
3. 12.5 minutes is the full activation time (FAT). Full Activation Time is the maximum time that a BSP has available to deliver full power. The 12.5 minutes comprises of 2.5 mins for BSP preparation plus a 10 minute ramp. [↑](#footnote-ref-4)
4. Please note that you need to be a participant in the BM but this does not mean you need to be an “active” participant in the BM. I.e. There is no requirement to send Physical Notifications (PNs). [↑](#footnote-ref-5)
5. [GC0144: Alignment of Market Suspension Rights to the EU Emergency and Restoration Code Article 35.1(b)](GC0144:%20Alignment%20of%20Market%20Suspension%20Rights%20to%20the%20EU%20Emergency%20and%20Restoration%20Code%20Article%2035.1(b)) [↑](#footnote-ref-6)
6. Please note that a participant needs to register as a BMU but does not have to be an active participant in the BM. [↑](#footnote-ref-7)