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Frequency Response Reform January Webinar

Webinar 22/01/2025 Q&A

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General Questions

- *(Unless I missed a mention to it) I'm a bit concerned that there's been no proposal for moving Response to an SP-based procurement similarly to Reserve. We flagged several times in the past that having Service Windows with a different duration for Response/Reserve creates complications in the bidding process and results in a less efficient clearing. Units also have to forego a larger opportunity when clearing in Response and that eventually leads to having to price higher.*

We fully agree that this is a high-value change and it's one we wish to pursue. We're conducting an impact assessment of the change right now and expect to have some insights to share for comment in the next couple of months.

- *When do you expect the different automated checks & penalties for Dynamic Response to rollout in 2025?*

We have already started sharing data with providers on the first checks that will be penalised with penalties to be introduced in Spring.

- *Why is the tiered penalty regime intended to wait until 2026? Hasn't this already been agreed in principle with market and Ofgem?*

This is a challenging delivery as it involves both legacy and new systems and data, although Ofgem were in favour of the policy they could not approve the change due to lack of clarity around the delivery timelines. We will reconsult and share updated delivery timelines when we have a firm date. This does not impact the current implementation of penalties for individual checks.

- *as H declines there is a question over how these services combine- the services are in danger of construction in a centralised swing equation concept of service based on perfect measurement and response whereas real-world will deviate and see*

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unintended interaction. it may be worth considering a course correcting decentralised control signal as per EFCC philosophy. also note that particularly rapid action from large power electronic devices local to each other (e.g. two HVDC devices nearby one another) will influence their local frequency measurement and response on a weaker system- which again benefits from a course correction

We understand this question to be pointing out that in a low inertia (low-H) power system, it may not be good enough to design frequency response services based on a national model. We agree, and our internal modelling of response services is already based on a refined version of our 36-bus Power Factory network model. This allows us to test the impact of locational issues on the performance of the response services and ensure that they are specified appropriately to meet the future needs of the power system.

Our most recent assessment of a decentralised (regional) control signal showed that the added risk outweighs the potential benefit. However, it's helpful feedback and we can look to reexamine it as part of the wider investigation into locational procurement.

MFR Reform

- *Given MFR is relatively slow moving (e.g. 2 min response time), how responsive to frequency does it need to be once response starts? Is it triggered and stays on no matter what the frequency does (like SFFR)? Or does it have a frequency-sensitive curve like DM/DR/DC, but if so, how quickly can MFFR providers realistically respond to instantaneous frequency changes?*
- *To follow up: the 10 second / 30 second response time seems to reflect a relatively slow rate of response. If it takes 10/30 seconds to readjust, then does NESO's expectations reflect this lower granularity of response capability? A lot can happen within 30 seconds.*

To clarify, the MFR arming instruction has a 2-minute lead time (so that the unit doesn't have to start following frequency until 2 minutes after the instruction issue time). Once the arming is complete, the unit will follow frequency in a curve analogous to the delivery curves for DM/DR/DC.

While the Secondary component of MFR is allowed 30 seconds to deliver, it will practically always be armed in conjunction with the Primary component which delivers from 10-30 seconds. Thus, the combined service always starts to deliver after 10 seconds – this is in line with the delivery timescales for DR and is still fast enough to be valuable in managing pre-fault frequency.

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- *What level of pressure is NESO under from the EU to withdraw or modify the MFR service and is there a deadline for making the required changes to comply with EU regulations?*
- *Why are we worrying about the EU law - there is nothing the EU can do and the cost of the adjustment is too high.*

We are only attempting to comply with the elements of EU regulation which were retained in GB law, so although the regulations were first adopted as part of our alignment with the Third European Energy Package, they are now GB regulations.

The reform or retirement of MFR is currently derogated until 2029, although we hope to have implemented a compliant replacement service before then.

If some element of the process doesn't stand up to cost-benefit analysis, we have the option of recommending to Ofgem to extend part or all of the derogation indefinitely.

- *The Energy Payment has been as far as I am informed a function of fuel price. How will this apply for fuel free technologies (Wind)?*

Yes, the design intent is that the energy payment covers the cost/opportunity cost of delivery, which is largely a fuel cost. For fuel free technologies (specifically listed as wind, solar, tidal and wave), the energy payment is currently set to zero in MFR.

- *Can you confirm that the lack of H only instructions discriminates against PV and wind, which operate most cost effectively at full output power. This reduces market liquidity.*
- *In general, if a unit is at full load, then there should be no requirement for a provider to provide Primary or Secondary response when instructed (as the deload should be zero) and so an MFR is in effect an H only instruction, and so should not necessarily prevent units from participating. There is another factor here regarding how a unit is calculated to be at full load, which is where the Power Available signal was developed as a better measure of full load than MEL. For units without this, an H only instruction would make it clearer and is something we intend to develop as part of the future service.*
- *Is there any sort of de-rating applied for batteries for the High Service in MFR?*

There is not. Due to the requirement to continue provision indefinitely, batteries are not currently eligible to provide the High service (and yes, this is one of the facets of MFR that will definitely need to change).

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- *Is it mandated that MFR frequency measurement is undertaken at the generator rather than a potentially remote control point. This is important in the exceptional situation of system split and islanding.*

It is – and yes, this means that in the extreme situation of system split and/or during system restoration, each power island will seek to keep itself balanced to the best of its ability.

- *its worth noting MFR is an example of an inherent and indivisible nesting of inertia provision and response. similarly there is value in providing flexibility in specification and testing of power electronic based delivery of Grid Forming and response activities either from the same device or devices as designed to complement one another. this can provide significant efficiencies in individual device savings- we will be getting into this area in more detail based on simulation experience in the 17th-19th March ACDC conference, but happy to arrange a discussion with you ahead of that if useful.*

There is no requirement to provide inertia in order to provide MFR (and indeed some MFR providers do not provide inertia), but we agree that how response and inertia services work together is an important area of consideration.

Static Response Questions

- *sFFR should be co-optimized with DCL. It makes no sense that sFFR clears higher than DCL, considering DCL is a very similar service but much more efficient*

Thank you for the feedback – co-optimisation with DCL is high up our priority list for sFFR changes but has a longer timeline than some of the other potential areas. However, bear in mind that even in a co-optimised world, the auction algorithm may still select a higher price for sFFR if that maximises social benefit.

- *For SFFR, is the activation period always exactly 30 minutes, or do you ever ramp them down early? For example, what if there's a transient frequency event on period change?*

Yes, the activation period is always exactly 30 minutes. Currently there's no provision in the service for an earlier deactivation; this is one of the potential reforms we'd like to consider.

- *As a small provider of SFFR (2MW split across 9 sites) I am concerned that the costs to modify our controls and metering at 9 sites could affect the financial viability for me to provide the service. What considerations are being made for small providers with regards to costs to adjust to any potential future changes required?*

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While we haven't yet developed those specifics, this is an important point that we absolutely have to have answers to before we proceed with any changes.

- *Is the analysis of containment also considering the impact of Limited Frequency Sensitive Mode – Underfrequency (LFSM-U) which triggers below 49.5Hz.*

No, as the quantity of LFSM-U available depends on the market positions and availability of units on the system and so cannot be relied upon to be available during an event. Instead LFSM-U is an additional security measure to enhance system security in extreme frequency events.

- *Trigger levels- the same point as applies to LFDD band setting decisions- there needs to be commonality of specification of metering and the trigger level response accuracy, and action latency "baked into" instrument and service specification to inform practical trigger level specifications for a given minimum specification otherwise different triggers will be a theoretical but not real benefit. similar issue to manage where we are thresholding between different types of services. How long does the excursion have to exist for to trigger SFFR? 1 second?*
- *How long does a frequency trigger have to persist in order to trigger SFFR? 1 second? One twentieth of a second?*

Thank you for this. A more robust set of technical specifications will absolutely form part of a revised Static service in order to get the most out of the service.

The service doesn't currently specify any minimum duration of a low frequency event, so a unit would be expected to trip as soon as frequency below the trigger level was observed.

The required sampling rate is 1Hz. Therefore, a unit would not necessarily be expected to respond to a frequency event shorter than 1 second. If you see the sampling rate or minimum event duration as a relevant parameter to participation, then please do let us know.

Locational Procurement Questions

- *If Response/Reserve is procured by location, would we have different clearing prices for different locations?*

This is one possible approach with much to recommend it. We'll publish a breakdown of options, including possible procurement approaches, in the near future.

- *I agree Francisco about the point around locational consideration. another point in addition to the different frequencies in different locations based on inertia distribution for the frequency event is the inter-area modes that may be present at that time ahead of an event- i.e. not to grow a regional difference by exciting an*

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inter-area mode. as the strength of the network falls, previously well damped modes can progressively become less damped influencing this.

Thanks for your feedback. Our studies of locational procurement will include modelling of interactions between locational frequency response and inertia.

- *Can I clarify why we are getting a rejection for a response tender due to locational constraints. I understood that when we have TEC, we have firm transmission access?*

TEC (Transmission Entry Capacity) guarantees that a unit will be able to generate regardless of system constraints (or that if it is not, it will be compensated via BOA), but not that it will always be eligible to participate in all Ancillary Services.

- *under locational procurement, do you have any idea on how many zones could be created?*

Our starting option is to keep GSP Group aggregation and use the unit GSP-breakdown as an additional input when assessing the bids.

This is part of what we need to consider in our market design, to balance the simplicity of fewer or existing zones with the increased complexity of more zones but aligning better with constrained areas of the network.

- *DSOs and NESO have been talking service co-operation for years without much happening. Is there a tangible initiative afoot to create any sort of DSO/NEO locational service?*

NESO is working with the Electricity Networks Association and Distribution Operators through the ENA's Open Networks forum on a number of topics for greater collaboration. Please see the Open Networks webpage for more details:
<https://www.energynetworks.org/work/open-networks/>.