Public

Future of Mandatory Frequency Response

Webinar 16/10/24 Q&A

Market and Policy Questions

- What work is undertaken to track the cost-effectiveness of Mandatory Frequency Response (MFR) vs Dynamic Containment (DC) / Dynamic Moderation (DM) / Dynamic Regulation (DR)?
- Did I understand correctly that the MFR volume you will be procuring in the next couple of years will not be very small?
- Can you over-procure Dynamic Response Services instead of relying on MFR? Dynamic response is priced very competitively and has proper market functioning.

The buy curve that we feed into the DC/DM/DR auction is set with real-time MFR procurement as the counterfactual. The DR buy curve has been limited until now while we conducted additional stability analysis, but we are now expanding the model to take into account the value of over-procurement to mitigate the chance of additional MFR arming.

We monitor volume procured via Dynamic Response auctions, additional MFR volumes due to system change or Dynamic market deficits including their costs. This review in short term will trigger new requirements and cost to inform the market in daily operation, and in longer term will feed into Response Reform activities, e.g. discussion like today on future services, collaborating with the industry.

We don't have a specific forecast of MFR volumes over the next few years, but we currently expect them to reduce substantially.

Procuring sufficient volumes of Dynamic Regulation to avoid MFR use entirely would result in inefficient volumes being procured at day-ahead leading to significant additional unnecessary spend.

- You previously procured a 2s static low response service. Why have you moved this to 30s?

We evolved our fast services for containment into Dynamic Containment, as there are system control benefits from a dynamic service when operating this quickly and stopped procuring the faster static response at that time. We will reevaluate the value of a faster static service as part of the general review of the static service which will kick off in the next few months.

The 30 second static service existed alongside Fast Static – it was previously known as Secondary Static response, which was then included in monthly Static Firm Frequency Response which is now Day Ahead Static Firm Frequency Response.

- Several Industrial & Commercial sites left the static market when you proposed a change to the trigger frequency from 49.7Hz to 49.8Hz. They had zero appetite to incur the dramatic increase in events. They would still be offering 2s response at 49.7Hz if that had not happened. Can you please consult on the impact of possible future changes so as to avoid unfortunate consequences like that?

Any changes to the static service (or any other service) will be subject to a full consultation under Article 18 of the EU rules that have been retained in UK law – in practice this means that the full service terms and procurement rules are published and industry has 1 month to respond with feedback.

In practice we will aim to have informal consultation to get industry views ahead of that so that we can cocreate the best service design in collaboration with industry participants. We acknowledge that this hasn't always been done well in the past and agree that there is value for all in more and earlier engagement for these questions of service design.

- Please could you provide an example of a 'Commercial Response Service' which is due to be phased out?

Before the introduction of standard response products, any providers wishing to offer an enhanced response service via FFR had to first enter into a bilateral Commercial Services Agreement (CSA). Many of these are still

in effect and grant National Energy System Operator (NESO) access to these enhanced response characteristics on an ad-hoc basis. This form of contract is also known as “Mode B”.

- How can NESO make the energy payments more interesting for batteries?

We will be considering energy payments for frequency services in a technology agnostic way. We don’t believe we fully understand the pro’s and con’s of energy payments for all technologies with the types of reform we are considering across the markets at this stage. This is an area we will aim to learn more about over the next stages of industry engagement.

- This is the first time that I have seen all of the frequency services mentioned on the same slide. I think there is a lot of confusion in the market about the purpose, applicability, relevance and scale of these. It would help to have the details of all of these enumerated side by side (Limited Frequency Sensitive Mode (LFSM), MFR, DC/DM/DR, Static, Mode B, etc) going into full detail in each case so that people have a definitive view.

This is great feedback – we acknowledge that we could do a much better job of presenting this holistic picture and will look into putting more information and more coordinated information about our smaller response services onto our website.

Legal and Regulatory Questions

- Aren't any generation connecting to transmission network directly have to comply with MFR services under the Grid Code compliance requirements?

Only generation classified as Large Power Stations (with a specific exemption for Power Park Modules smaller than 50 MW). The definition of Large Power Stations does include embedded generators of the appropriate sizes. Full details are in CC8.1 and the Grid Code glossary.

- In your complete list of frequency response services, could you please differentiate between Frequency Sensitive Mode (FSM) and MFR?

We will make sure this point is covered in other materials, but to clarify it here: the service is called Mandatory Frequency Response, whereas Frequency Sensitive Mode refers to the genset operating mode. So, a unit which provides MFR would be instructed to operate in FSM. The Grid Code generally refers to FSM, since it’s interested in capabilities, whereas MFR is defined in the Connection and Use of System Code (CUSC).

- We have the odd situation of building a new 50 MW T connected recip Balancing Mechanism Unit (BMU). Under European Connection Conditions (ECC), we are obliged to have MFR capability which I am (99%) certain NESO will not use. Doesn't seem joined up?

This is the kind of issue we will consider as part of the reform and replacement of MFR; it’s a major reason that we have included code changes in our timeline.

- Until when is the extension of current derogation? Are you planning to continue the as is service procurement (with possible extension) until the 2027 delivery?

The current derogation runs until March 2025. We have submitted a derogation extension letter to Ofgem to be able to continue to procure the existing MFR service until 2029. However, we aim to introduce changes to make the service compliant or replace it with a compliant service well in advance of this date.

Technical Questions

- What does the process look like regarding setting volume procured from DC/DM/DR vs MFR?
- To what extent could Dynamic Response Services (DC/DM/DR) replace MFR? What are the limiting factors? What about Quick Reserve?
- Given inertia levels and resulting Rate of Change of Frequency (RoCoF), presumably MFR's role is largely pre fault/steady state now. How will that play out if you use less and less MFR, i.e. will the steady state frequency be not quite so steady?

We calculate DC volume in line with current Frequency Risk and Control Report (FRCR) policy, i.e. to ensure adequate DC volume requirements to secure all BMU losses. The calculation considers all system conditions

including system inertia, demand and Loss of Main loss volumes estimation. MFR is no longer able to significantly contribute to post-fault containment, so this volume must be met by the DC service.

DR and DM are set up to stabilise pre-fault frequency to ensure before a large fault happens system frequency is within operational limits. Volume of DR is to fulfil a minimum pre-fault dynamic response requirement as a baseline. DM is used to further settle frequency subject to system volatility due to wind, demand forecasting and planned / unplanned system conditions. We periodically review frequency deviation and update DR and DM requirements and will inform the market via our communication / forecasting route.

The most significant gaps in the Dynamic services are the lack of a mandatory element and the lack of real-time procurement. These make it necessary to retain MFR to ensure security of supply. In terms of frequency control, the Dynamic services could replace MFR today, while maintaining the same or better frequency quality.

Quick Reserve is a pre-fault reserve service – while faster than any reserve service we've previously procured, it isn't able to replace MFR.

- One thing that gets in the way of storage participating in MFR is that the Control Room cannot arm assets with a negative Final Physical Notification (FPN). Seems like a small IT issue that would enable a lot more competition.

This is something we're currently looking to mitigate. It's made more complicated by the ongoing transition to Open Balancing Platform (OBP), but we agree that this is a high-value change and will aim to have some news on it for our next engagement on this topic.

- Not sure/clear NESO are more concerned about frequency management: 1.During normal operating conditions; Abnormal (contingency) conditions?; or Both?

Ultimately, post-fault frequency management is what determines whether there is an impact on the system users, so that's our primary driver. However, our ability to reliably contain and recover from fault conditions is dependent on maintaining good quality pre-fault frequency, so in practice we must be equally concerned with both.

- Isn't Security and Quality of Supply Standards (SQSS) range 49.5 - 50.5Hz?
- The SQSS range was wrongly labelled on one of your earlier slides (shown as 49.2-50.5) hence the question.

Yes, the SQSS allowed frequency range is 49.5-50.5 Hz, with the additional range of 49.2-49.5 being the infrequent excursion range; this was incorrect on the slides during the webinar.