Frequency response products
Market information report

Monthly report

Published August 2021

Contents

Preamble

The report covers essential information related to procurement of frequency response products, such as month ahead tender for Firm Frequency Response (FFR), week ahead auction (Phase 2 Auction Trial) and day ahead tender for Dynamic Containment Low Frequency (DC-LF). We provide our forecast requirements for these products and give guidance on how to participate in the tenders and auctions. We will also provide the latest updates related to our new suite of response products.

Key Points - FFR

This section of Market Information Report is relevant for tenders submitted in September 2021 for delivery in **October 2021.**

Tenders from eligible service providers for Firm Frequency Response should be submitted on **Wednesday 1st September 2021** (1st business day) for all tenders.

National Grid ESO will notify service providers of the outcome of the tender assessment, and preliminary nominations, by **Thursday 16th September 2021** (12th business day).

From January 2018, non-compliant tenders will be rejected prior to assessment.

Providers must use the template provided in the **Coupa** system to tender in for FFR. Use of any other template or submissions via e-mail will not be accepted.

In line with the standardisation outlined in the Product Road Map, procurement of FFR will only take place across the standard 6 EFA blocks. Tenders must therefore only start, and end, at the following times: 2300, 0300 0700 1100 1500 1900. Submitted tenders must have a minimum window availability of 4 hours in line with EFA blocks.

Please note that this is a month ahead only tender. Tenders should therefore be submitted for October 2021 delivery.
A presentation that summarises the FFR results can be found here.

Real-time data i.e. demand and frequency data, over the last 60 minutes can now be found on the Realtime Extranet section on the National Grid website. Historic frequency data as far back as 2014 can also be accessed for GB data at 1 second resolution.

For further information please contact your account manager or:
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Firm Frequency Response monthly tender

This section provides information to FFR providers on the requirement for the tender (TR 141) for delivery in October 2021.

Requirements for October 2021 (TR 141)

Primary Response:
A dynamic primary requirement exists in all EFA blocks.
Secondary Response:
A dynamic secondary requirement exists in all EFA blocks.
There is a non-dynamic (static) secondary requirement in EFA 3 to 6.
High Response:
A dynamic high requirement exists in all EFA blocks.

Image 1: Requirement for 2021 - 2022.

Month	Settlement Period	Dynamic Response Required (MW)			Static Response Required (MW)
		Primary	Secondary	High	Secondary
OCT-2021	EFA 1	450	450	350	0
	EFA 2	450	450	350	0
	EFA 3	450	450	350	52
	EFA 4	450	450	350	66
	EFA 5	450	450	350	0
	EFA 6	450	450	350	0
NOV-2021	EFA 1	450	450	350	0
	EFA 2	450	450	350	0
	EFA 3	450	450	350	0
	EFA 4	450	450	350	0
	EFA 5	450	450	350	0
	EFA 6	450	450	350	0
DEC-2021	EFA 1	650	650	550	0
	EFA 2	650	650	550	0
	EFA 3	650	650	550	11
	EFA 4	650	650	550	6
	EFA 5	650	650	550	0
	EFA 6	650	650	550	0
JAN-2022 – JUNE 2022	EFA 1	650	650	550	0
	EFA 2	650	650	550	0
	EFA 3	650	650	550	0
	EFA 4	650	650	550	0
	EFA 5	650	650	550	0
	EFA 6	650	650	550	0

We evaluate the requirement on a regular basis and should the requirement change, we will communicate it via MIR. This does not signal the end of the Static Secondary Response service, though in accordance with our RIIO-2 deliverables, we have

communicated our intent to transition away from existing response services as we implement the new product suite.
As an efficient System Operator we are required to operate the system at least cost. The liquidity in the FFR market has decreased following the introduction of Dynamic Containment (DC). In TR140 we accepted all the dynamic FFR which cost us less than the alternative actions,. This leaves a significant unfilled dynamic requirement, which is offered to participants in the weekly response auction. In TR140 more static volume was tendered than our published secondary static rquirement . We are able to use this excess to meet our total secondary requirement and therefore reduce the shortfall in dynamic response. So volume above the published static requirement was accepted on this occasion.

Procurement Rules

Testing

Providers are required to have successfully passed FFR testing of their asset by the National Grid Generator Compliance Team prior to tendering in for month ahead delivery. If tendering to provide an FFR service starting on 1st October 2021, the unit must have passed testing prior to the tender submission window closing on the 1st business day in Septmber 2021. Tenders that do not meet this requirement will be deemed non-compliant and automatically rejected.

Limiting tenders

Providers are limited to submitting 3 tenders per unit, per tender period. A tender period is considered to be; month ahead, quarter ahead and per season. All-or-nothing bids will be considered as 1 tender submission.

EFA Block Procurement

For providers wishing to start a tender on the last day of the previous month, these tenders cannot start earlier than 2300 or they will be deemed as non-compliant.
The minimum requirement across each specific EFA block will determine how much volume will be procured for each of the 6 daily 4-hour blocks.
Any outstanding shape will be satisfied, where necessary, closer to real time by the Electricity National Control Centre. ***Results***

Publication – TR140 onwards

Key Points - FFR

Response BOA and Holding Volume and Cost
This information is in Appendix 7 of the adjoining excel file.

FFR service Overview

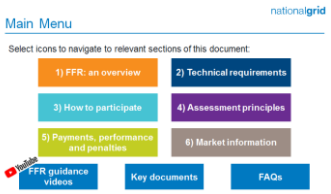
Product Roadmap

Key Points - FFR

Response BOA and Holding Volume and Cost

This information is in Appendix 7 of the adjoining excel file.

FFR service Overview



Product Roadmap

This document sets out the actions to be taken forward for frequency response and reserve.

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From TR140 onwards the unit location will be detailed as part of the results that are published in the FFR Post Tender Report. The locational details consist of the first 4 characters of the postcode for single units that are 1 MW or greater. We will be sending out further clarity regarding how assets that are 1 MW or greater that are part of aggregated units will be reported.

Enhanced Frequency Response (EFR)

100% of EFR is included in the requirements from July 2018.

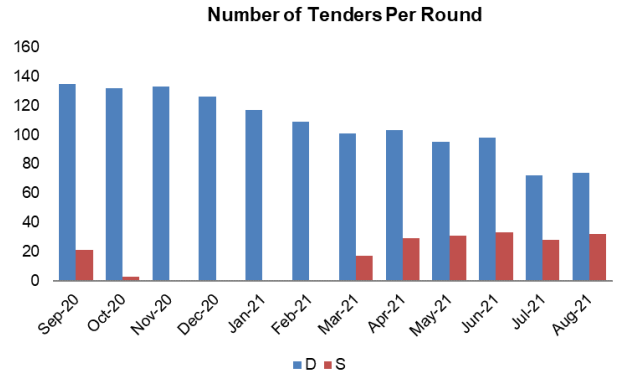
August 2021 FFR Delivery

70 active FFR contracts are due to provide FFR in September 2021. These contracts are made up of:

- **38** dynamic contracts
- **32** non-dynamic contracts
- **0** contract by BMU providers
- **70** contracts by NBMU providers

The chart below displays the number of tenders submitted in the FFR market for the last 12 months by service type.

Image 2: Quantitiy of FFR Tenders



Tender rejection codes

The table below provides guidance as to the reasons why a tender has been rejected. They can be matched against the numbers in the 'Reason Code' section of the Post Tender Report.

No.	FFR Reason Code	Comment
1	Beneficial	While the price submitted was considered beneficial, on this occasion this tender was not accepted for one of the following reasons: 1.2. There was no outstanding requirement 1.3. The desired volume against the National Grid procurement strategy for future tender months had already been satisfied 1.4. This tender formed part of an all-or-nothing group which did not collectively deliver enough benefit to be considered

No.	FFR Reason Code	Comment
2	Price not beneficial across tendered period	The price submitted was too high and did not provide any contract benefit against alternative actions including the mandatory and optional market.
3	Does not meet tender prerequisites	Please refer to the 'Technical Parameters' section using the following link to determine the criteria necessary to participate in the FFR market https://www.nationalgrid.com/uk/electricity/balancing-services/frequency-response-services/firm-frequency-response
4	Multiple tenders received for the same unit	Only the most valuable tender(s) of the total group of submitted tenders was considered.

Key Points – Weekly Auction

For latest news and updates please refer to homepage for the weekly auction:

Auction Results are published on DataPortal:

The weekly auction trial closes at the end of November this year and we will be moving the weekly auction volume into the monthly FFR tenders in the short-term, whilst the new response and reserve services are being developed (expected to deliver next spring).

Weekly Auction Trial – Phase 2

This section provides information to Weekly Auction providers on the requirement for Dynamic Low High and Low Frequency Static Products

In summer 2020 we published findings and learnings about the Auction Trial project in a project **evaluation report**, which was independently created by ESP Consulting.

Procured Volume (FFR and Weekly Auction)

The buy order in the weekly auctions in September will be at least 200 MW in each EFA block. We will seek to procure any unfilled volume in the FFR monthly tender through the weekly auction in order to meet our requirements for minimum dynamic response.

Dynamic Containment

This section provides information on requirements for the Dynamic Containment Low Frequency (DC-LF) product that we use to manage post-fault low frequency deviations caused by large infeed losses on the system.

The first ten months of DC-LF delivery have been a success with volumes in August above 900 MW. The requirements given in **Image 3** outline the expected Dynamic Containment LF requirements for the remainder of 2021.

The values in **Image 3** are dependent on multiple factors including demand, inertia, and loss sizes and are subject to change. Please note that these requirements are in addition to exisiting frequency response products with the total response volume managing BMU-only loss risks and any consequential RoCoF losses that may occur. Please see the Frequency Risk and Control Report (FRCR) available here for the latest updates on frequency management policy.

Requirements for 2021

Image 3: Minimum and Maximum forecast LF DC requirements for 2021 per month.

Month 2021	Min DC LF Requirement (MW)	Max DC LF Requirement (MW)
September	1100	1400
October	1100	1100
November	800	1000
December	800	1100

While we currently procure DC in one 24 hour time period, we will be moving to EFA block procurement. We have listened to your feedback on this change and agree that, in order to allow the impacts of the change to be better understood and to reduce uncertainty in future Dynamic Containment Low Frequency participation, a longer transition to more granular volume requirements is necessary. We will therefore continue to procure within the ranges specified in **Image 3** , whilst we develop a transition plan to move to more granular DC requirements. Once we have developed the transition plan, to ensure visibility, we will communicate it through the Operational Transparency Forum, the MIR and the Future of Balancing newsletter with at least a month's notice of the transition date.

Dynamic Containment high frequency (DC-HF)

DC-HF is planned to launch in October 2021 to help manage large outfeed losses in the system. The EBGL Article 18 Consultation for changes to contractual terms as we introduce Dynamic Containment (DC) High Frequency closed on **19 July 2021**. The suite of consultation documents can be accessed via the link. Thank you for all your feedback which we are currently reviewing and taking into consideration. The proposal has been submitted to Ofgem on the 30th July and we are awaiting the decision.

Future requirements for 2022 and beyond

The amount and type of response the ESO procures is under review to help manage both pre-fault and post-fault frequency as efficiently as possible. The DC requirements will be updated in due course and will be based on a number of factors including:

- Progress of the Accelerated Loss of Mains Change Program (ALoMCP) reducing the risk associated with embedded generation lossed
- Continued growth in the DC volumes and interaction with existing FFR/MFR markets
- New high capacity connections e.g. North Sea Link
- Introduction of new pre-fault frequency response products (Dynamic Moderation and Regulation)
- Outputs from the Stability Pathfinder project and roadmap for system inertia

Dynamic Moderation and Dynamic Regulation

This section provides information on developments related to our new suite of products.

Please refer to **Dynamic Moderation page** and **Dynamic Regulation page** for details related to the new suite of products.

In order to implement the new product suite and avoid overholding of response volumes, it will be necessary to gradually reduce our long-term procurement of the existing P, S and H products. We will continue to hold monthly FFR tenders for month ahead volume and we will communicate how we will manage the transition from the existing mix of products into the new product suite. Please sign up for **updates** for future balancing services.

Response requirement for DM and DR

In early summer we hosted technical design workshops with industry, the output of which will ultimately shape the product designs. Detailed modelling to determine the exact volume requirements for the new products is ongoing. Our overall response requirement is driven by the frequency risks on the system which are changing with new large generation connecting to the network in the next few years. The FRCR reviews these risks, ultimately enabling the ESO to transparently agree with industry the appropriate cost-risk balance for frequency control for consumers in that year.

Dynamic Regulation (DR) will allow us to offset the use of existing products (Primary, Secondary and High dynamic (PSH)) to meet our current minimum dynamic requirement of 550 MW which we currently seek to procure through our month-ahead FFR tender and weekly DLH auction. 550 MW is based on current system conditions and has remained an almost constant requirement for the last 3 years, although at times there are operational conditions (such as during periods of higher uncertainty) where this volume is increased to better manage small frequency deviations close to 50 Hz. As a more efficient product, the requirement for Dynamic Regulation is likely to be less than the current 550 MW of PSH used to meet this system need.

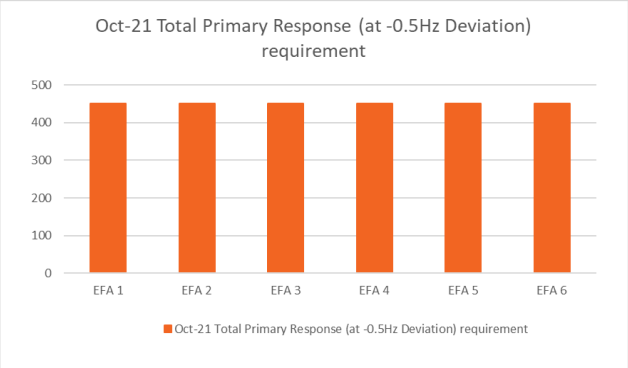
Dynamic Moderation (DM) is designed to manage sudden imbalances which cause frequency deviations (for example, arising from changing weather fronts and forecasting errors) which is a system need that will evolve as the system further decarbonises. At this stage we expect to procure smaller volumes of DM than DR as we launch the products and expect this to grow in the future. Detailed volume requirements will be published in due course as part of the response reform programme. As the system evolves and markets for these new products become liquid we will seek to deliver consumer value through cost optimisation across products.

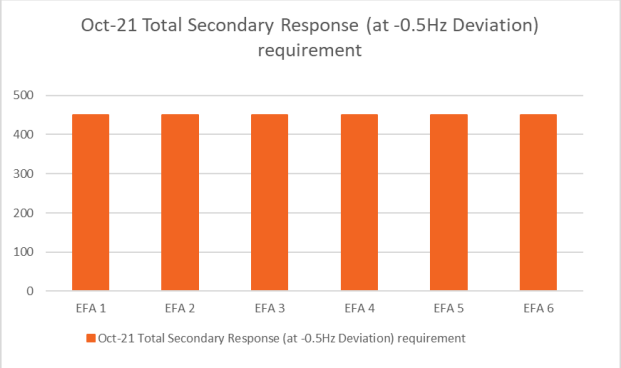
Appendix 1 FFR October 2021 Requirements

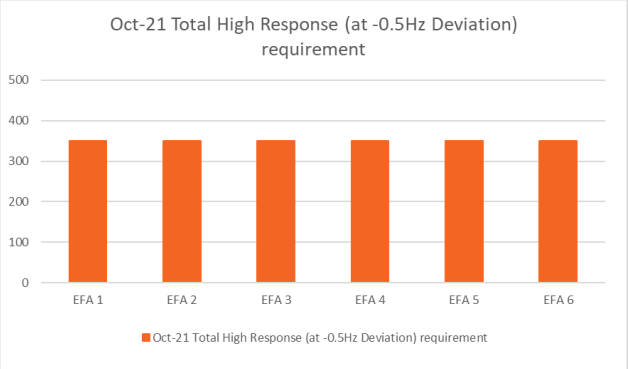
The three charts below display the volume of frequency response left to contract at month ahead.

For month ahead only, except for circumstances where there is a specific dynamic requirement, the requirement will be taken from either dynamic or non-dynamic providers where deemed economic to do so. This means that any requirement found in the non-dynamic market may be procured in the dynamic market if considered more beneficial. With no primary non-dynamic market in existence, procurement of this volume across any EFA block will instead be taken from the dynamic market.

In the move to standard EFA block window durations, the minimum of the total requirement across each EFA block outlines the level to be procured. In light of this transition, the minimum dynamic requirement remains a key component to be satisfied and outstanding volume against this will continue to be procured for operational purposes. For October 2021, this is shown in the table in FFR section of this document.







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