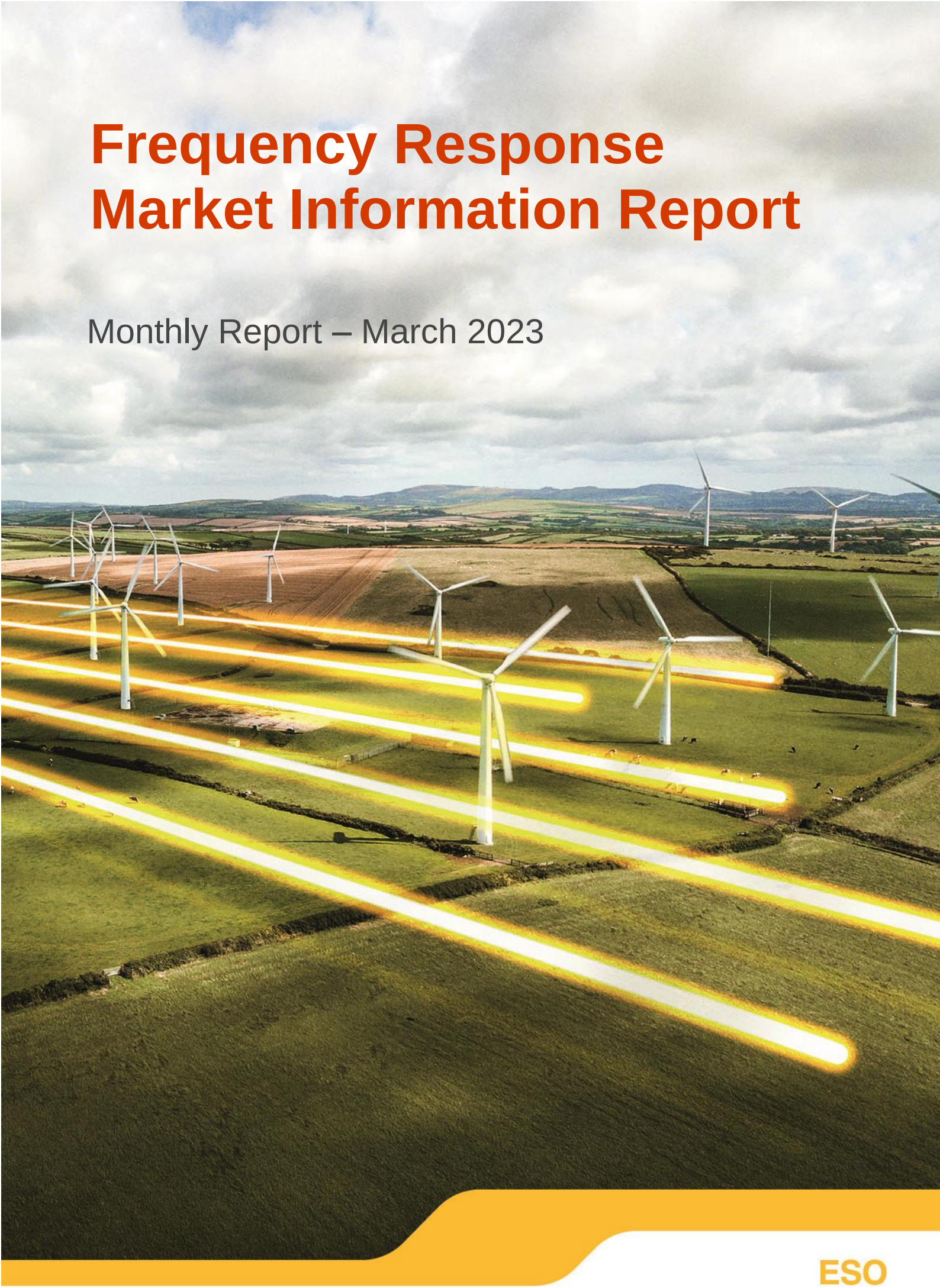
Frequency Response Market Information Report

Monthly Report – March 2023



ESO

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Introduction

The report covers essential information related to procurement of frequency response products, such as:

- Month ahead tender for Dynamic Firm Frequency Response (DFFR)
- Day ahead auction for Dynamic Containment, Dynamic Moderation and Dynamic Regulation (all procured as low and high).
- Day ahead auction for Static Firm Frequency Response (SFFR).

We provide our forecast requirements for these products and give guidance on how to participate in the tenders and auctions. Within this document you will also find information on the frequency response services, such as Dynamic Regulation (DR) and Dynamic Moderation (DM).

We also provide the updates related to phasing out FFR and replacing it with new response suite of products and will communicate the key milestones in that transition.

For longer-term requirements please take a look at our Operability Strategy Report.

Future Requirements and New Services

We know that a successful transition relies on clear and timely signals to facilitate growth and competition in our new markets and to support this we are committed to continuing to improve transparency of both how and when we communicate our future needs. We are in a period of transition where both existing Primary/Secondary/High (PSH) and new (DC, DM, DR) frequency response products will be procured. Our intention once the transition is complete, is to meet our dynamic pre- and post-fault frequency response needs with the new suite of dynamic products (Containment, Moderation and Regulation).

Phase out of Dynamic FFR (DFFR)

A key milestone in frequency response reform is the phasing-out of monthly Dynamic FFR (DFFR). This will happen gradually as we develop and establish the new pre-fault dynamic frequency response products Dynamic Regulation (DR) and Dynamic Moderation (DM).

Last year we shared a report providing details of how we intend to transition to our new services, as well as indicative requirements for 2022 based on our current assumptions regarding system needs and delivery timeframes, the report can be accessed via the ESO Data Portal.

In our January 2023 Market Information Report, we shared that we have now met our internal assurance criteria to increase the volume of DR procured to 200MW from March. Further IT and process developments that are required to be implemented before we further increase DR procurement and fully cease procuring DFFR are still ongoing, and some of these key changes are set to deliver as part of Response Reform Release 1. We are on track with scoped changes to our Release 1. The planned delivery is the end of March 2023. We have identified a new solution for operational metering, which will be delivered later in the spring and does not impact providers' IT developments under R1.

To enable a measured transition between the legacy and new suite of response services for frequency response providers and the ESO, we intend to reduce our DFFR requirements by no more than 50MW for each EFA block per month. Meeting the criteria to increase DR volume means that from March 2023, we started seeking to procure up to 200MW of DR and as such, the contribution of our PSH requirement reflected this increase to manage the system. For May 2023 we will continue to procure up to 200 MW to allow us to carry out more testing.

DR Requirements

We have updated our DR requirements dataset to reflect our expected procurement levels for May 2023, we will continue to be publish revisions to the requirements on the ESO data portal.

DM Requirements

From March we started testing the new volumes of DR on the system both with and without DM to validate expected system performance, where we are reducing the DM requirement (from up to 100MW) we will communicate this with as much notice as possible via the DM requirements dataset. Once we are satisfied with the interactions between increased volumes of DR and DM, we will share further details regarding our anticipated future requirements for DM. In the interim, we will continue to procure up to 100MW of DM, and DM volumes will not contribute to offsetting our minimum dynamic response requirement

Completing the Transition

Once we have confirmation of the revised Release 1 timelines, we intend to release an updated Frequency Response Transition report which will outline the final stages of our transition and associated milestones including DR and DM in line with reduction of DFFR requirements. Our expectation is that the transition will be complete before the end of this year, however this is subject to change based on the timelines associated with the deliverables described above, we will confirm details of the phase out and associated timelines as soon as we have confirmed timelines for these milestones.

DC Requirements

Following a review of market and system conditions, we have revised our requirements for DC low and high resulting in an increase in overall requirements. This change will go live for the 27th of March and will be reflected in the rolling 4-day forecasts. The 12 month forecast data has been updated to reflect this change, we have also included a one-off 2 week forecast table for both DCL and DCH to demonstrate scale of the changes. We will continue to review and revise our requirements in line with system conditions and proactively communicate any changes to the market via this publication and the 4 day rolling DC requirements forecast

Date	EFA_1	EFA_2	EFA_3	EFA_4	EFA_5	EFA_6
25/03/2023	550	575	500	475	450	425
26/03/2023	450	500	475	425	425	400
27/03/2023	675	675	675	700	700	575
28/03/2023	650	650	650	650	650	575
29/03/2023	650	775	650	675	675	700
30/03/2023	875	875	725	700	700	600
31/03/2023	800	825	675	700	700	600
01/04/2023	675	700	700	750	750	625
02/04/2023	675	825	725	725	725	625
03/04/2023	800	800	675	700	700	600
04/04/2023	675	675	675	700	700	600
05/04/2023	650	675	700	700	700	650
06/04/2023	675	800	675	700	725	600
07/04/2023	775	800	725	850	850	625

Table 1: DCL forecast requirements rounded to nearest 25MW

Date	EFA_1	EFA_2	EFA_3	EFA_4	EFA_5	EFA_6
25/03/2023	675	700	675	625	600	450
26/03/2023	500	625	600	550	575	475
27/03/2023	1150	1150	950	875	875	850
28/03/2023	975	1000	850	800	800	875
29/03/2023	1025	1050	900	900	925	975
30/03/2023	1150	1175	975	925	925	925
31/03/2023	1100	1100	925	875	875	900
01/04/2023	1050	1075	1000	975	975	950
02/04/2023	1075	1125	1075	950	950	950
03/04/2023	1100	1100	975	900	900	900
04/04/2023	1075	1075	950	875	900	925
05/04/2023	1075	1100	950	900	900	900
06/04/2023	1075	1100	950	925	925	925
07/04/2023	1075	1125	1050	1050	1050	975

Table 2: DCH forecast requirements rounded to nearest 25MW

Day Ahead Procurement of Static FFR (SFFR)

Ofgem approved the new service terms and procurement rules of DA SFFR on 10th Feb 2023. they can be accessed on the ESO website.

We are in the final phase of testing our end-to-end process and IT tools and system of transitioning procurement of SFFR from monthly to daily procurement. The service is to be launched on the 31st of March when the first auction will take place, with delivery starting at 23:00 the same day. The service is not materially changing and therefore existing tested SFFR assets will not need to prequalify again for daily procurement.

A Mock Auction for Static FFR was carried out on the 2nd of March 2023 to support ESO and industry readiness for the new daily procurement. You can find the slides from the mock auction feedback session with Q&As on the ESO website.

We listened to your feedback and gathered all areas for improvement in the process to make your experience better. We have implemented several changes to the end-to-end process and carried out a second mock auction on the 21st of March 2023 with all improvements implemented. The results from the mock auction can be found on ESO DataPortal website.

Firm Frequency Response Requirement

DFFR via month ahead tender for May 2023 (TR 160)

This section provides information to dynamic FFR providers on the requirement for the tender (TR 160) for delivery in May 2023.

As System Operator, we are required to operate the system economically and efficiently. In TR 159, where only dynamic tenders were assessed, all FFR volume was accepted at a cost less than the alternative actions.

As a prudent System Operator, we seek to optimise our requirements to ensure system security at least cost. As described in the section above, from last month, DR has been offsetting the existing PSH requirements allowing for the reduction of our DFFR requirement by 50MW for EFA blocks 5-6 EFA. As a result of DR caps not being further lifted, we will maintain the requirement of DFFR at the same level as last month.

Month	EFA block	Dynamic Response Required (MW)		
		Primary	Secondary	High
May 2023	EFA 1	250	250	250
	EFA 2	250	250	250
	EFA 3	250	250	250
	EFA 4	250	250	250
	EFA 5	250	250	250
	EFA 6	250	250	250

Figure 1: FFR requirements for May 2023

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 with the additional volumes required for PSH procured via the DR and DM markets, where we do not meet our requirements through the day ahead DR and DM markets, we will use Mandatory Frequency Response (MFR) to address any shortfalls.

Key Dates for DFFR TR 160

This Market Information Report is relevant for dynamic tenders submitted in **April 2023 for delivery in May 2023.** Tenders from eligible service providers for Firm Frequency Response should be submitted on **3rd April 2023 by 17:00** (1st business day) for all tenders.

ESO will notify service providers of the outcome of the tender assessment, and preliminary nominations, by **Thursday 20th April 2023** (12th business day).

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

DFFR April 2023 Contracts Awarded

36 active contracts are due to provide DFFR in April 2023.

Figure 2 displays the number of tenders submitted in the FFR market for the last 12 months by service type.

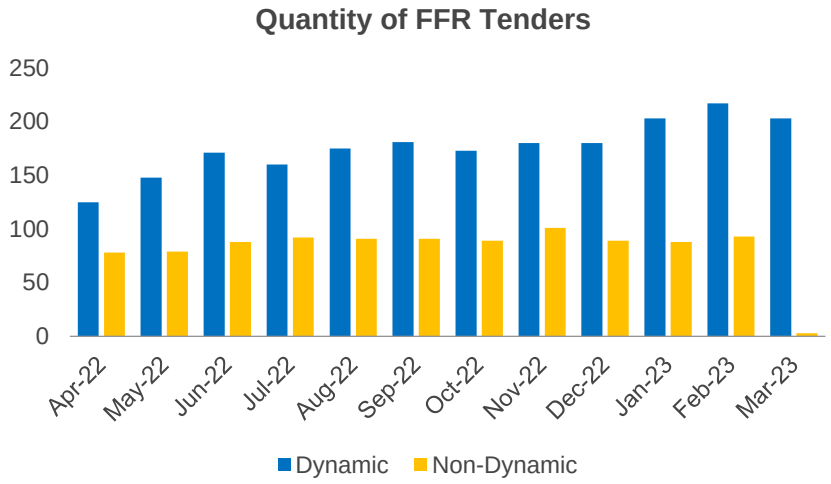


Figure 2: Quantity of FFR Tenders

SFFR for day ahead auction for April 2023

This section provides information to SFFR providers on the requirement for the auctions for delivery in April 2023.

The first delivery day for daily procured Static FFR (SFFR) contracts will commence at 23:00 on 31st March 2023. The requirement is expected to be 250MW for each EFA block in the day for the first three months following go live. Following this initial test period, the SFFR requirement and the market response to the move to daily procurement will be reviewed and any changes in the SFFR requirement will be shared through these Market Information Reports.

Month	EFA block	Static Response Required (MW)
		Secondary
April – June 2023	EFA 1	250
	EFA 2	250
	EFA 3	250
	EFA 4	250
	EFA 5	250
	EFA 6	250

Figure 3: SFFR static requirements for April 2023

Market participants should note that the ESO has license requirements to operate the system economically and efficiently. This means that the SFFR volume advertised above will not always be procured through this daily SFFR market if the system need can be met through other response services or system actions at a lower overall cost to end consumers.

Dynamic Containment 12-month rolling indicative requirements

This section provides information on requirements for Dynamic Containment Low Frequency (DC-LF) and Dynamic Containment High Frequency (DC-HF). These requirements are indicative and subject to change.

In order to improve our view of anticipated level of procured volumes for DC-L and DC-H, from November 2022 we started publishing a new 12 month rolling forecast to determine the requirement for those services. The volumes are driven by actual forecast for demand, inertia, and infeed loss sizes (including progress in the ALoMCP) and reductions in the contracted volumes of legacy services (Enhanced Frequency Response), rather than relying on historical data when determining the requirement.

DC-LF Requirements for next 12 months

Figure 4 presents an indicative view of our expected requirements for the DC-L service. This is split into 200MW volume bands which can be seen in the top middle section of the graphic. For each month the % of time we expect the DC-L requirements to fall within the associated band (based on current assumptions) for each EFA block is represented by the shading of the associated cells as described at the bottom of figure 4.

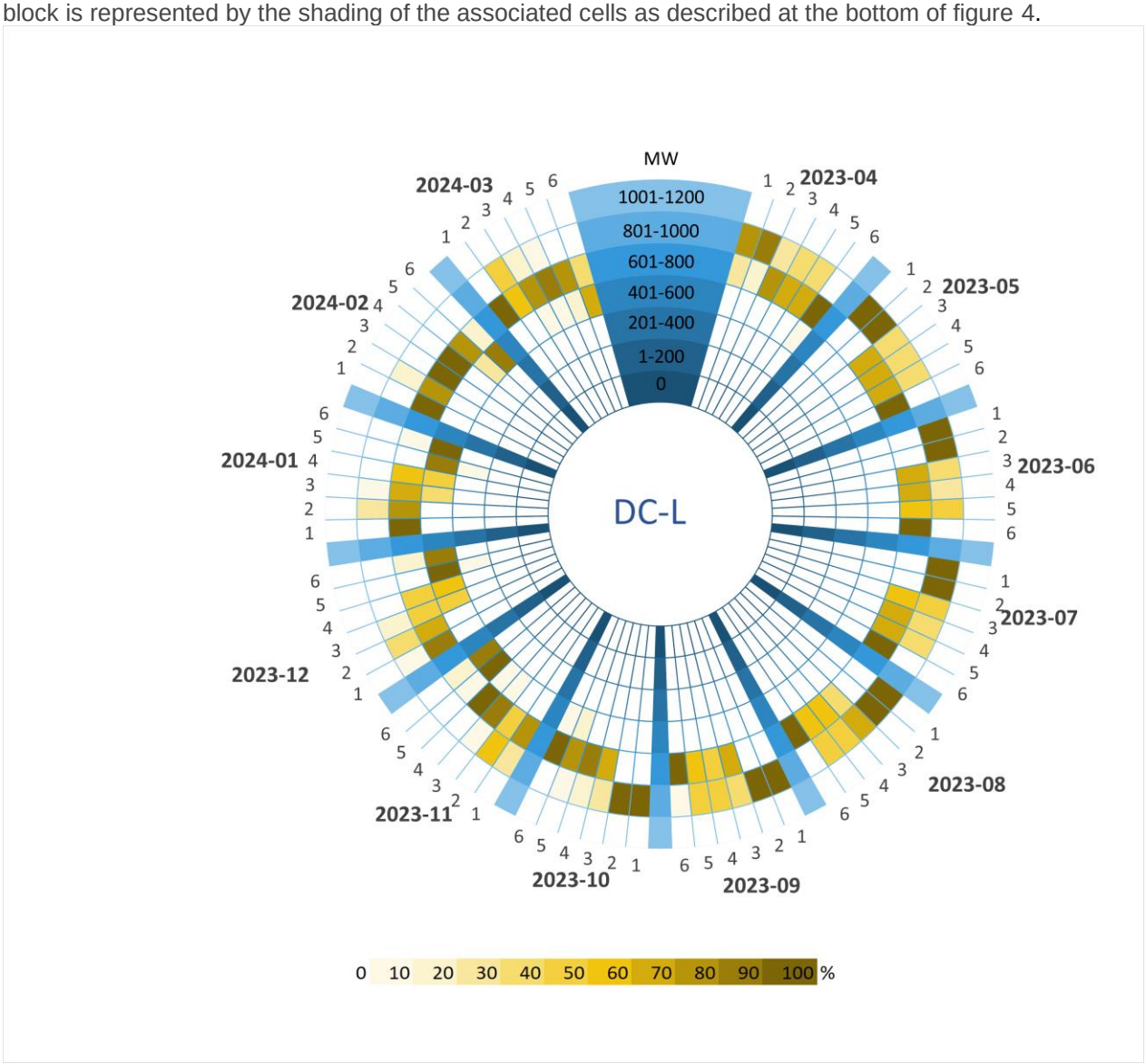


Figure 4: Indicative DC-L Requirements for next 12 months

DC-HF Requirements for next 12 months

Figure 4 presents an indicative view of our expected requirements for the DC-H service. This is split into 200MW volume bands which can be seen in the top middle section of the graphic. For each month the % of time we expect the DC-H requirements to fall within the associated band (based on current assumptions) for each EFA block is represented by the shading of the associated cells as described at the bottom of figure 4.

The DC-H requirements in Figure 4 are indicative requirements based on our actual forecast for demand, inertia, and outfeed loss sizes in next 12 months. We aim to buy enough DC-H to manage the largest outfeed losses on the system. The peak requirement generally occurs during lower demand/inertia EFA blocks

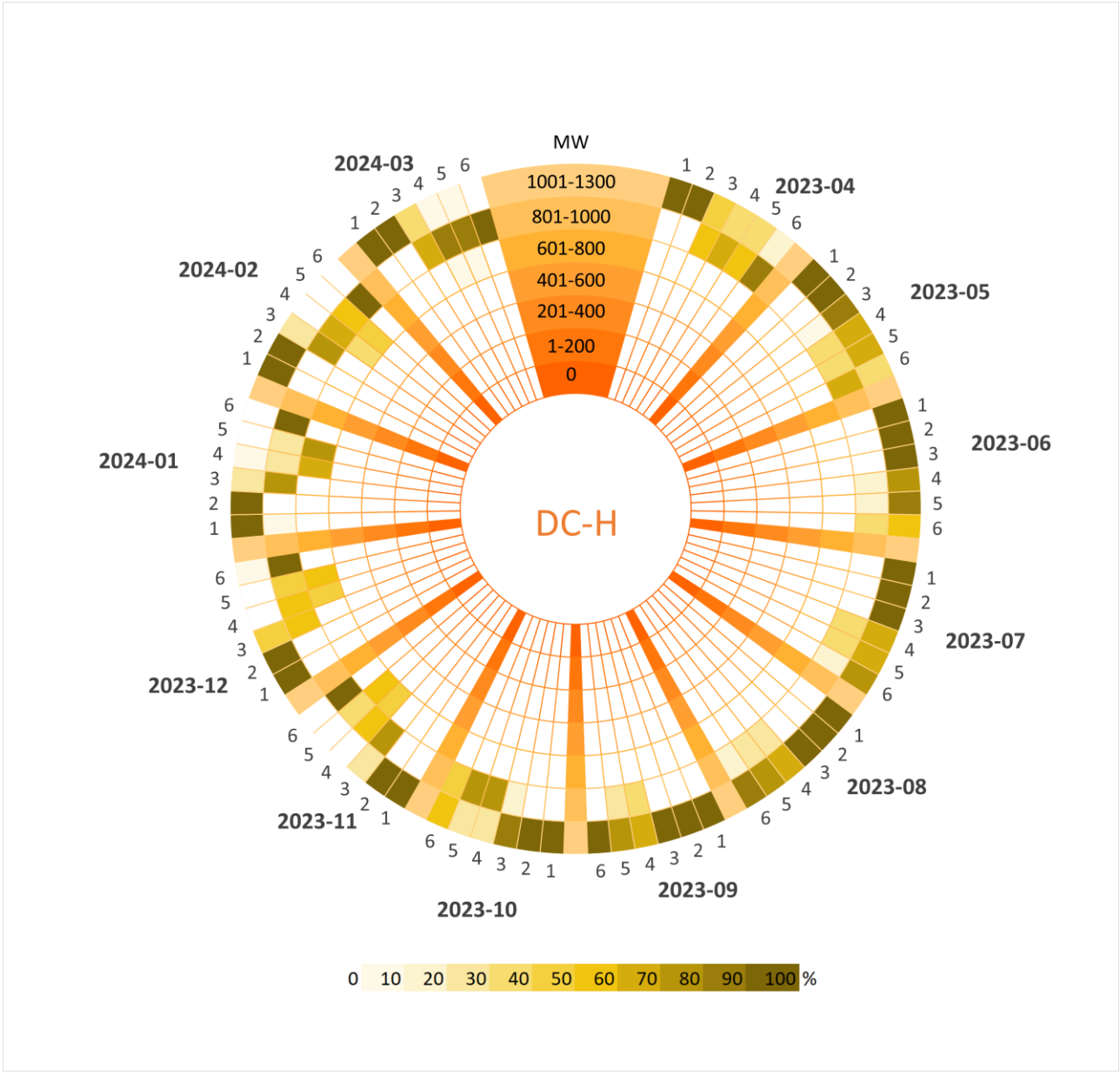


Figure 5: Indicative DC-H Requirements for next 12 months

4 Day Ahead Forecast

You can find daily updates on the ESO Data Portal.

Related Data & Information

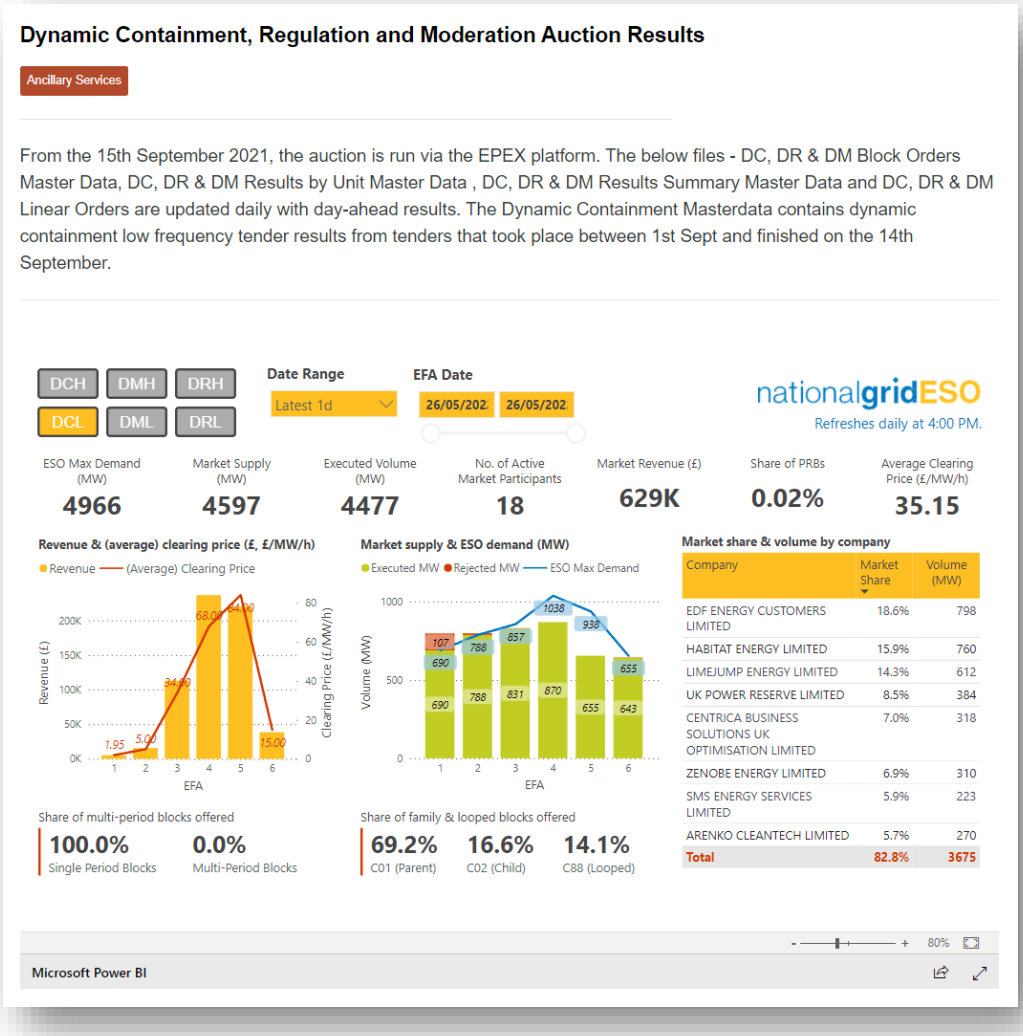
Information related to the service including how to participate can be found on the Dynamic Containment page of the ESO website.

DC Block Orders Master Data, DC Results by Unit Master Data, DC Results Summary Master Data and DC Linear Orders are updated daily with day-ahead results on the ESO Data Portal.

We have published the data for the DC charts above here.

Response Dashboard

An interactive Power BI response dashboard which is refreshed daily and provides an accessible way to explore the auction results for DC, DR and DM.



Appendix 1: DFFR Supporting Information

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 May 2023, the unit must have passed testing prior to the tender submission window closing on the 1st business day in April 2023. 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. 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.

Submission and Results

Tender Submission

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 DFFR 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 and 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 for dynamic response only. Tenders should therefore be submitted for May 2023 delivery.

Results

The full set of FFR results for the last tender round (TR 159) can be found here.

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.

Tender Rejection Guidance

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 ESO 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
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.

Figure 6: Tender Rejection Codes

Appendix 2: SFFR Supporting Information

Procurement Rules

The Procurement Rules for the Static FFR service can be found on the ESO website.

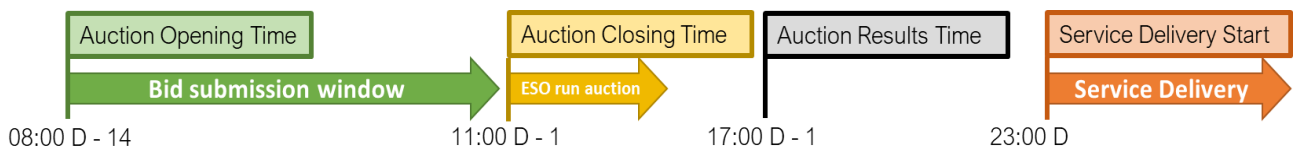
Submissions and Results

Procurement of SFFR will take place across the standard 6 EFA blocks. Bids must therefore only start, and end, at the following times: 2300, 0300, 0700, 1100, 1500 and 1900. Submitted bids must have a minimum window availability of 4 hours in line with EFA blocks.

Please note that the gate opens 14 days before Service Day and bids can be submitted during that time until gate closure at 11:00 am on the EFA day immediately preceding the Service Day.

The below graphic shows the definitions related to Auction Timings as contained within the Procurement Rules.

The Auction Results Time is defined in the Procurement Rules as 17:00, this is a 'no later than' expectation.



*All times are UK local times (BST or GMT)

The full set of SFFR results and Buy Orders are published daily after auction is cleared and can be found on the ESO Data Portal.

Guidance and Data

FFR Service Overview

The FFR Service Overview provides current and potential Firm Frequency Response (FFR) providers guidance on the service. It pulls together FAQs on the service and provides links to related documents.

Related Data

The following information is published on the ESO Data Portal

- Live System Data
- Historic Frequency Data
- Firm Frequency Response (FFR) Post Tender Reports
- Firm Frequency Response (FFR) Market Information

Other Useful Links

- Register for Future of balancing services updates
- ESO Operational Transparency Forum

Appendix 3: Dynamic Containment 12-month rolling indicative requirements – detailed information

DCL	-	200	400	600	800	1,000	1,200
2023-04							
EFA1	-	-	-	-	23	77	-
EFA2	-	-	-	-	13	87	-
EFA3	-	-	-	-	77	23	-
EFA4	-	-	-	-	67	33	-
EFA5	-	-	-	-	67	33	-
EFA6	-	-	-	3	97	-	-
2023-05							
EFA1	-	-	-	-	-	100	-
EFA2	-	-	-	-	-	100	-
EFA3	-	-	-	-	65	35	-
EFA4	-	-	-	-	65	35	-
EFA5	-	-	-	-	65	35	-
EFA6	-	-	-	-	100	-	-
2023-06							
EFA1	-	-	-	-	-	100	-
EFA2	-	-	-	-	-	100	-
EFA3	-	-	-	-	63	37	-
EFA4	-	-	-	-	70	30	-
EFA5	-	-	-	-	53	47	-
EFA6	-	-	-	-	100	-	-
2023-07							
EFA1	-	-	-	-	-	100	-
EFA2	-	-	-	-	-	100	-
EFA3	-	-	-	-	52	48	-
EFA4	-	-	-	-	68	32	-
EFA5	-	-	-	-	61	39	-
EFA6	-	-	-	-	100	-	-
2023-08							
EFA1	-	-	-	-	-	100	-
EFA2	-	-	-	-	-	100	-
EFA3	-	-	-	-	35	65	-
EFA4	-	-	-	-	58	42	-
EFA5	-	-	-	-	58	42	-
EFA6	-	-	-	-	100	-	-
2023-09							
EFA1	-	-	-	-	-	100	-
EFA2	-	-	-	-	-	100	-
EFA3	-	-	-	-	63	37	-
EFA4	-	-	-	-	50	50	-
EFA5	-	-	-	-	53	47	-
EFA6	-	-	-	-	97	3	-
2023-10							
EFA1	-	-	-	-	-	100	-
EFA2	-	-	-	-	-	100	-
EFA3	-	-	-	-	71	29	-
EFA4	-	-	-	-	87	13	-
EFA5	-	-	-	16	77	6	-
EFA6	-	-	-	6	94	-	-
2023-11							
EFA1	-	-	-	-	73	27	-
EFA2	-	-	-	-	43	57	-
EFA3	-	-	-	10	83	7	-
EFA4	-	-	-	3	97	-	-
EFA5	-	-	-	97	3	-	-
EFA6	-	-	-	87	13	-	-
2023-12							
EFA1	-	-	-	-	90	10	-
EFA2	-	-	-	-	65	35	-
EFA3	-	-	-	42	45	13	-
EFA4	-	-	-	52	48	-	-
EFA5	-	-	6	94	-	-	-
EFA6	-	-	-	87	13	-	-
2024-01							
EFA1	-	-	-	-	100	-	-
EFA2	-	-	-	-	74	26	-
EFA3	-	-	-	35	61	3	-
EFA4	-	-	-	45	55	-	-
EFA5	-	-	10	90	-	-	-
EFA6	-	-	-	97	3	-	-
2024-02							
EFA1	-	-	-	-	100	-	-
EFA2	-	-	-	-	79	21	-
EFA3	-	-	-	-	100	-	-
EFA4	-	-	-	-	100	-	-
EFA5	-	-	-	28	72	-	-
EFA6	-	-	-	86	14	-	-
2024-03							
EFA1	-	-	-	-	100	-	-
EFA2	-	-	-	-	58	42	-
EFA3	-	-	-	3	81	16	-
EFA4	-	-	-	3	87	10	-
EFA5	-	-	-	19	81	-	-
EFA6	-	-	-	68	32	-	-

DCH	-	200	400	600	800	1,000	1,300
2023-04							
EFA1	-	-	-	-	-	-	100
EFA2	-	-	-	-	-	-	100
EFA3	-	-	-	-	-	53	47
EFA4	-	-	-	-	-	67	33
EFA5	-	-	-	-	-	60	40
EFA6	-	-	-	-	-	87	13
2023-05							
EFA1	-	-	-	-	-	-	100
EFA2	-	-	-	-	-	-	100
EFA3	-	-	-	-	-	10	90
EFA4	-	-	-	-	-	39	61
EFA5	-	-	-	-	-	35	65
EFA6	-	-	-	-	-	65	35
2023-06							
EFA1	-	-	-	-	-	-	100
EFA2	-	-	-	-	-	-	100
EFA3	-	-	-	-	-	-	100
EFA4	-	-	-	-	-	20	80
EFA5	-	-	-	-	-	17	83
EFA6	-	-	-	-	-	40	60
2023-07							
EFA1	-	-	-	-	-	-	100
EFA2	-	-	-	-	-	-	100
EFA3	-	-	-	-	-	-	100
EFA4	-	-	-	-	-	32	68
EFA5	-	-	-	-	-	39	61
EFA6	-	-	-	-	-	19	81
2023-08							
EFA1	-	-	-	-	-	-	100
EFA2	-	-	-	-	-	-	100
EFA3	-	-	-	-	-	-	100
EFA4	-	-	-	-	-	29	71
EFA5	-	-	-	-	-	23	77
EFA6	-	-	-	-	-	13	87
2023-09							
EFA1	-	-	-	-	-	-	100
EFA2	-	-	-	-	-	-	100
EFA3	-	-	-	-	-	-	100
EFA4	-	-	-	-	-	33	67
EFA5	-	-	-	-	-	27	73
EFA6	-	-	-	-	-	-	100
2023-10							
EFA1	-	-	-	-	-	-	100
EFA2	-	-	-	-	-	-	100
EFA3	-	-	-	-	-	16	84
EFA4	-	-	-	-	-	74	26
EFA5	-	-	-	-	-	74	26
EFA6	-	-	-	-	-	42	58
2023-11							
EFA1	-	-	-	-	-	-	100
EFA2	-	-	-	-	-	-	100
EFA3	-	-	-	-	-	73	27
EFA4	-	-	-	-	47	53	-
EFA5	-	-	-	-	60	40	-
EFA6	-	-	-	-	-	100	-
2023-12							
EFA1	-	-	-	-	-	-	100
EFA2	-	-	-	-	-	-	100
EFA3	-	-	-	-	-	55	45
EFA4	-	-	-	-	48	52	-
EFA5	-	-	-	-	52	48	-
EFA6	-	-	-	-	-	97	3
2024-01							
EFA1	-	-	-	-	-	3	97
EFA2	-	-	-	-	-	-	100
EFA3	-	-	-	-	-	74	26
EFA4	-	-	-	-	71	26	3
EFA5	-	-	-	-	74	26	-
EFA6	-	-	-	-	-	100	-
2024-02							
EFA1	-	-	-	-	-	-	100
EFA2	-	-	-	-	-	-	100
EFA3	-	-	-	-	-	72	28
EFA4	-	-	-	-	38	62	-
EFA5	-	-	-	-	48	52	-
EFA6	-	-	-	-	-	100	-
2024-03							
EFA1	-	-	-	-	-	-	100
EFA2	-	-	-	-	-	-	100
EFA3	-	-	-	-	-	65	35
EFA4	-	-	-	-	3	87	10
EFA5	-	-	-	-	6	87	6
EFA6	-	-	-	-	-	100	-

The forecast is split into 200MW volume bands. For each month, EFA block and product, the % of time we expect the requirements to fall within the associated band (based on current assumptions).