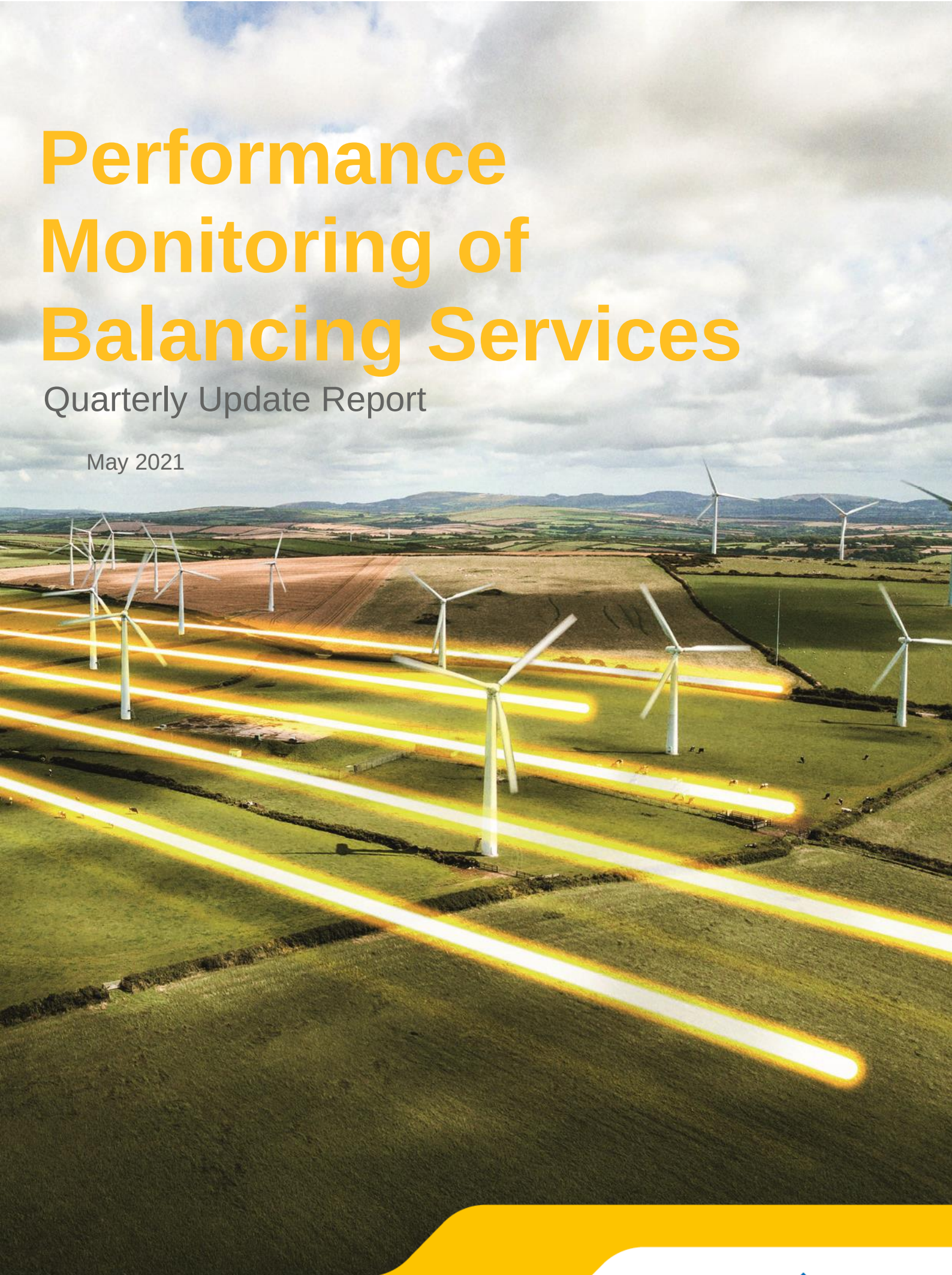
Performance Monitoring of Balancing Services

Quarterly Update Report

May 2021



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Contents

Introduction

Our Roadmap for Enhancements to Performance Monitoring of Balancing Services provides the industry with details on the actions we are taking to provide greater transparency over how we proactively monitor and manage performance of balancing services. Within the roadmap, we have committed to producing quarterly reports which will provide regular updates on the performance of our balancing services. By sharing this data, we hope to provide greater transparency around the performance of the contracts that we award.

We welcome feedback on this report. Should you have any questions or comments, please do not hesitate to contact us at commercial.operation@nationalgrideso.com

What's in this report

This quarterly report covers the three-month period from December 2020 to February 2021 for Fast Reserve, Short Term Operating Reserve (STOR), Enhanced Frequency Response (EFR), Firm Frequency Response (FFR) and Dynamic Containment (DC). Our ambition is to continue to expand the coverage to other services that we procure and include this in future publications.

In this quarterly report we have included the performance monitoring data for Dynamic Containment. We will continue to include this moving forward.

Through proactive Performance monitoring, we continue to drive consumer value. Over the 3-month period between December 2020 to February 2021 we have recovered nearly £1.1m from committed contract spend. Working with service providers we continue to strive towards providing greater transparency of performance so that incremental improvements can be made for the benefit of the system and end consumers.

Short Term Operating Reserve (STOR)

STOR allows us to have extra power in reserve for when we need it. It helps us meet extra demand at certain times of the day or if there's an unexpected drop in generation. We award firm STOR contracts to providers on a Committed or Flexible basis across six annual seasons. Non-Balancing Mechanism (NBM) providers can also offer their assets (where eligible) on the day via the Optional STOR service.

What we pay providers

We make two types of payments for STOR;

- Availability payments – Paid (£/MW/Hr) for the hours in which the committed firm service has been made available.
- Utilisation payments – Applicable to firm and Optional service. Paid £/MWh for the energy delivered.

Performance reports for December 2020 to February 2021

Availability Windows

In the reporting period, which crosses over STOR Seasons 14:5 and 14:6, there were committed STOR Availability Windows across a total of **106,875** half hourly settlement periods (SP) provided by a total of **57 STOR units**. STOR units are monitored to ensure they are available during each SP, and in the reporting period this was achieved in **86%** of SP. Of the **14%** of SP's where units were unavailable, a total of **£45,607** of availability payments were withheld. The 14% comprises of 31 units that either declared themselves unavailable, or triggered an unavailability Event of Default (EOD). This level of availability has remained the same from the previous quarter and remains healthy.

Table 1 Statistics for STOR Availability Dec/Feb 2020/21

Total Settlement Periods (SP)	106,875
Total SP where units available	91,728
Total SP where units unavailable/rejected	15,147
% unavailable/rejected	14%

* Above numbers exclude the STOR 'Flexi' service

Utilisation

For the Firm (BM/NBM) service there were a total of **156** instructions in the reporting period with **122** achieving the required 90% performance - See figure 1 for breakdown of performance. For the Optional (NBM) service there were a total of 36 dispatch instructions, with **16** achieving the required 90% performance to deliver the service - See figure 2 for breakdown of performance. The automated monitoring of contract performance payment withheld a total of **£89,860** where actual energy delivered was less than the instructed energy.

The overall performance of the STOR contracts over this quarter is in line with our expectations and within the contractual requirements, however we continue to monitor the performance and report back to individual providers where necessary.

Figure 1 Firm service performance breakdown

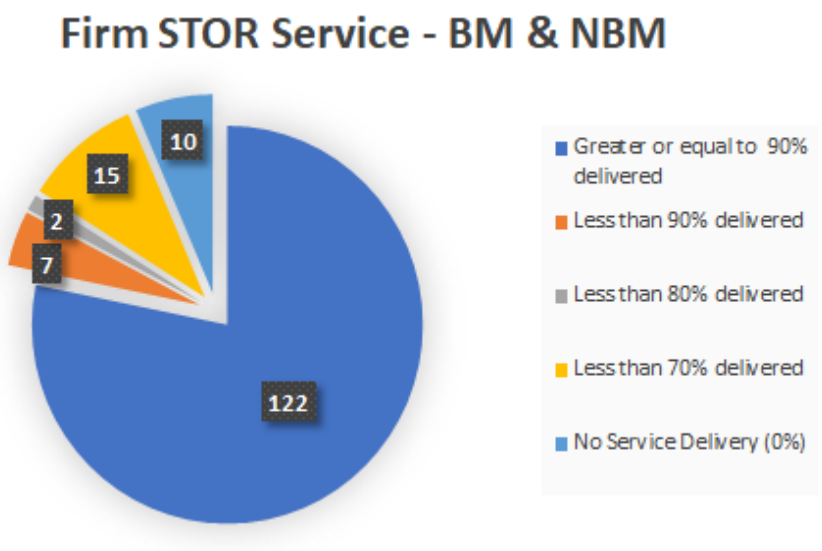
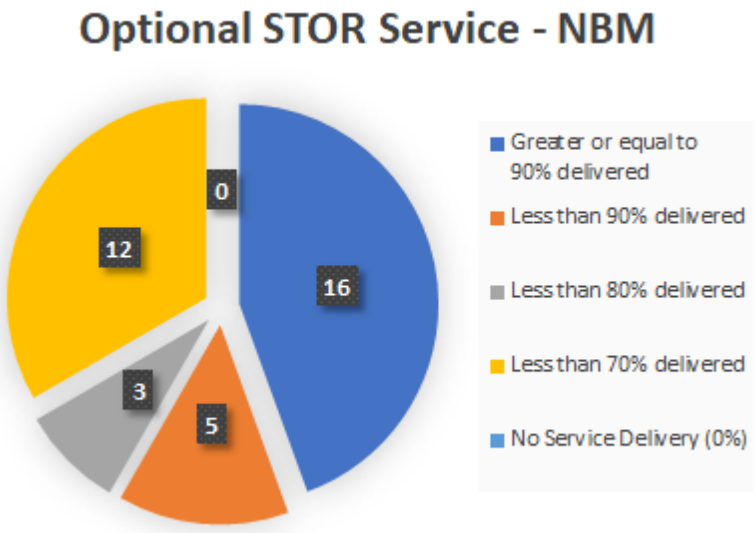


Figure 2 Optional service performance breakdown



Fast Reserve (Optional Service)

Fast Reserve provides the rapid and reliable delivery of active power through an increased output from generation or a reduction in consumption from demand sources, following receipt of a dispatch instruction from the ESO.

Optional Fast Reserve is contracted on the day by instruction from the ESO for a Fast Reserve Unit to be available for instruction under the Optional service.

What we pay providers

We make two types of payments for the Optional Fast Reserve Service;

- Availability payments in £/hours – paid for a unit to be available to supply Fast Reserve
- Utilisation payments in £/MWh – paid for the energy delivered under the service

Payments can be withheld through the monthly delivery reconciliation process based on actual deliver against contracted volume of MW instructed under the service.

Performance reports for December 2020 to February 2021

Utilisation performance

For the Optional service, a total of **2999** dispatch utilisation instructions were issued by the ESO in the reporting period, across **9 Fast Reserve units**. The overall performance of these units was **92%** delivery of MW against the dispatch instruction, a continued trend of increased performance during 2020 and into 2021 (see table below). Through our monthly delivery reconciliation process we withheld a total of **£665,516** of utilisation payments for the 8% under delivery.

Table 1 Statistics for period December 20-February 2021

Expected Delivery MWh	89,753.14
Under-delivered MWh	7,168.92
% Delivery	92.01%
Utilisation Payments Withheld	£665,516.66

Table 2 Statistics for period September-November 2020

Expected Delivery MWh	66,511.87
Under-delivered MWh	6,050.49
% Delivery	90.90%
Utilisation Payments Withheld	£438,629.01

Table 3 Statistics for period June-August 2020

Expected Delivery MWh	45,405.32
Under-delivered MWh	4,494.40
% Delivery	90.10%
Utilisation Payments Withheld	£226,243.40

Firm Frequency Response (FFR)

Firm Frequency Response is a service we use to keep the system frequency close to 50Hz. Fast acting generation and demand services are held in readiness to manage any fluctuation in the system frequency, which could be caused by a sudden loss of generation or demand. There are three types of frequency response known as “primary”, “secondary” and “high”. The difference between primary and secondary is the speed at which they act to recover the system frequency. Both primary and secondary react to low frequency conditions, and high response reacts to high system frequency conditions, restoring the frequency to normal operational limits.

What we pay providers

FFR service is paid an availability fee on a £/Hr basis to providers for the MW and hours in which the firm service has been Contracted through the monthly tender. There is no utilisation payment for the FFR service.

Performance measures

We have a process for the monitoring of contracted FFR delivery on a monthly basis. Performance monitoring is conducted on a sample period which is selected by the ESO, this period is normally where a frequency excursion either above or below 50Hz has occurred. The Percentage Performance score from this sample period will then have the following key performance factors applied:

Table 3 key performance factors

Percentage Under Delivery	Performance Factor
<10%	100%
>10%<60%	50%
>60%<95%	25%
>95%	0%

Where a unit's performance triggers a performance factor regarding the delivery of the service, it will receive a reduced payment for that months contracted availability fee. Where a unit persistently under performs, other measures can be taken by us to address this along with any reduced availability payment. These include retesting of the Unit and applying a de-rating factor to future tender assessments.

Performance reports for December 2020 to February 20201

In the reporting period, covering delivery from FFR tenders TR131 (December), 132 (January) and 133 (February) there was a total of 47 units contracted to deliver Frequency response over the period of 1st December 2020 to 28th February 2021, this number has reduced from previous months as multiple assets have opted to move into the Dynamic Containment service. For this period, there was a total of £7.8 m paid for the availability to deliver the FFR service. Over the three months the performance of Units averaged at 97.6% delivery resulting in us looking to recover circa £119k for under performance for the same period. A breakdown of these figures can be seen in the charts below.

Figure 3 Performance Monitoring December - February

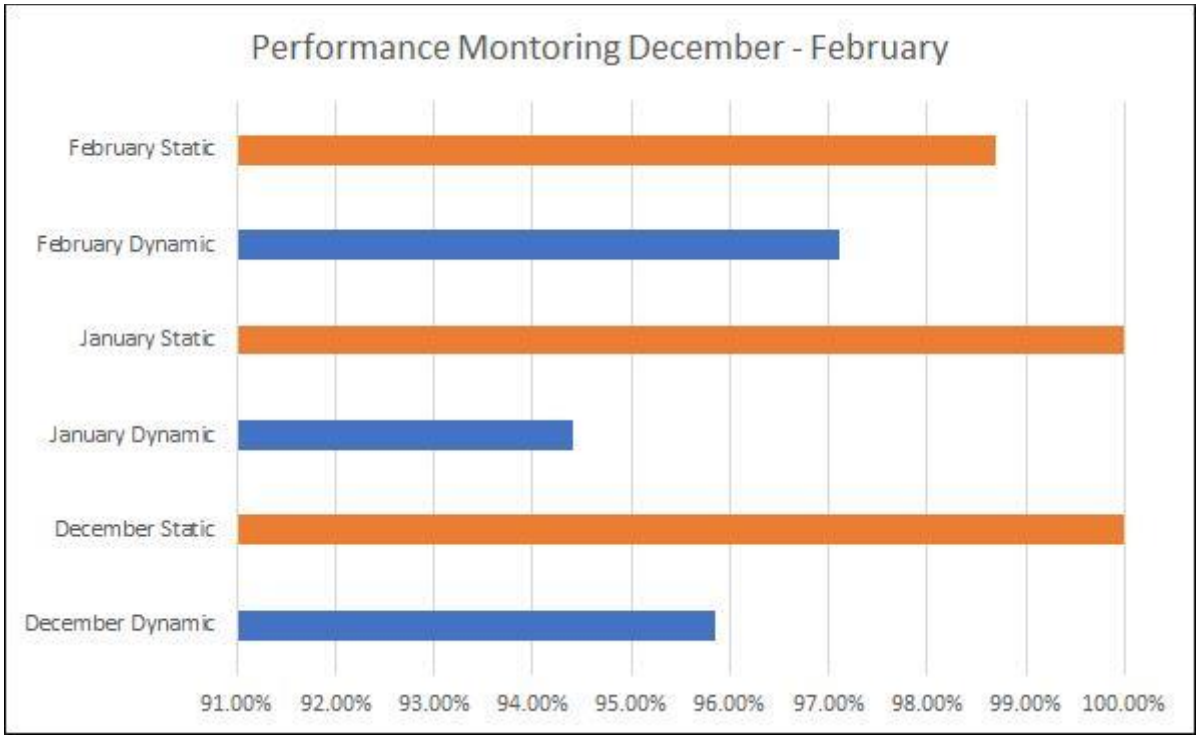


Figure 4 FFR TR131- 133 Tendered costs £/K

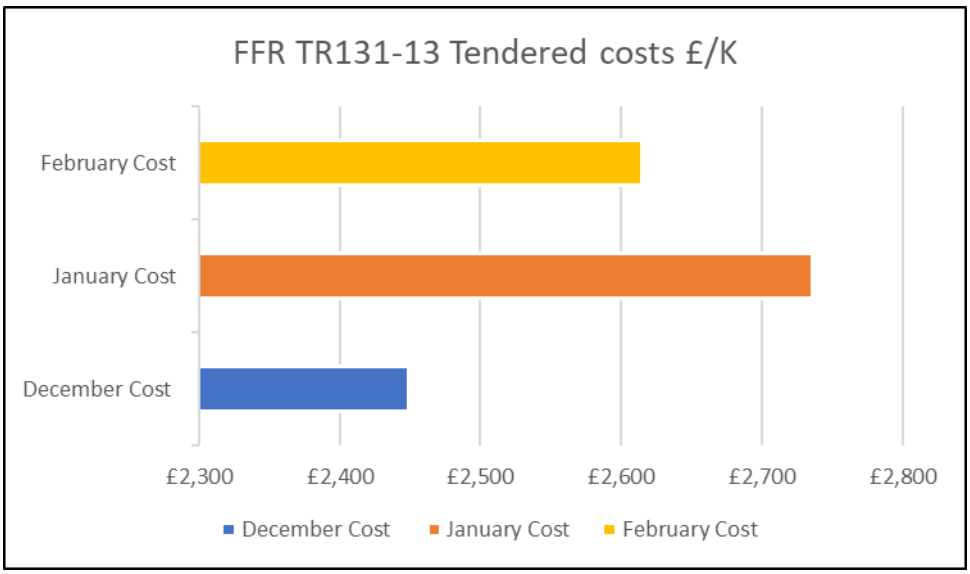
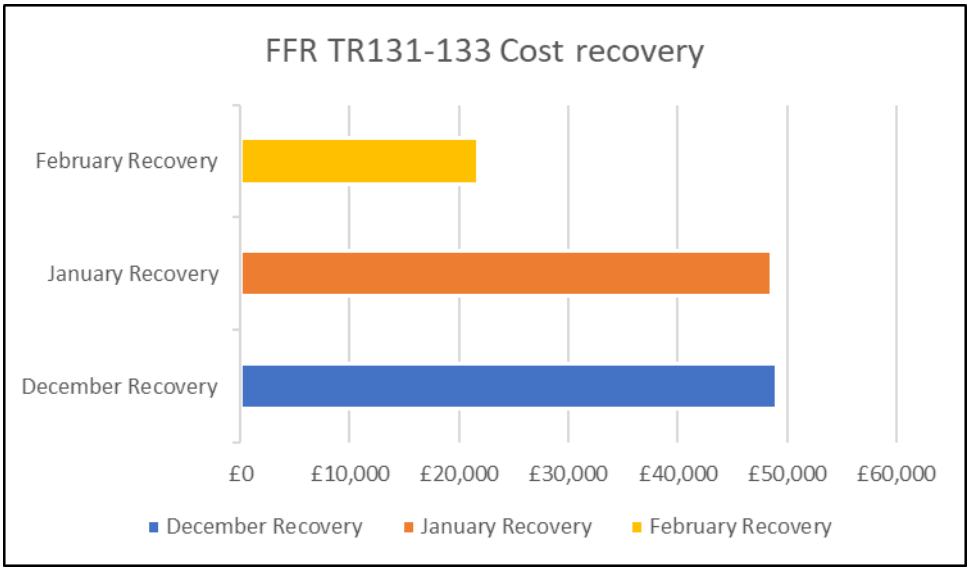


Figure 5 FFR TR128-130 Cost recovery



Enhanced Frequency Response (EFR)

Enhanced Frequency Response is a service we use to keep the system frequency close to 50Hz. EFR is a Faster acting generation and demand services than FFR and like FRR is held in readiness to manage any fluctuations in the system frequency, which could be caused by a sudden loss of generation or demand.

What we pay providers

EFR service is paid availability on a £/Hr basis to providers for the MW in which they have been contracted to provide. There is no utilisation payment for the EFR service.

Performance measures

EFR availability is automatically monitored through declared unavailability. Availability payments are reduced according to the declared unavailability during the monthly period. Providers who have encountered high periods of unavailability are contacted and if persistent then additional measures can be taken.

Performance reports for December 2020 to February 2021

In the reporting period, covering delivery from EFR Contracts during December 2021 – February 2021 the total number of units contracted to deliver EFR was 9 for this period. For this period, there was a total of circa **£5.1m paid for the availability** to deliver the EFR service. During this reporting period, there was an **average availability of 98%,** this is up by 5% on the previous 6 months. Over the reporting period this resulted circa **£259K of availability payments not being paid** to providers. A breakdown of these figures can be seen in the charts below.

The overall performance of the EFR over this quarter is in line with our expectations and within the contractual requirements, however we continue to monitor the performance and report back to individual providers where necessary.

Figure 6 EFR Unit Availability December- February

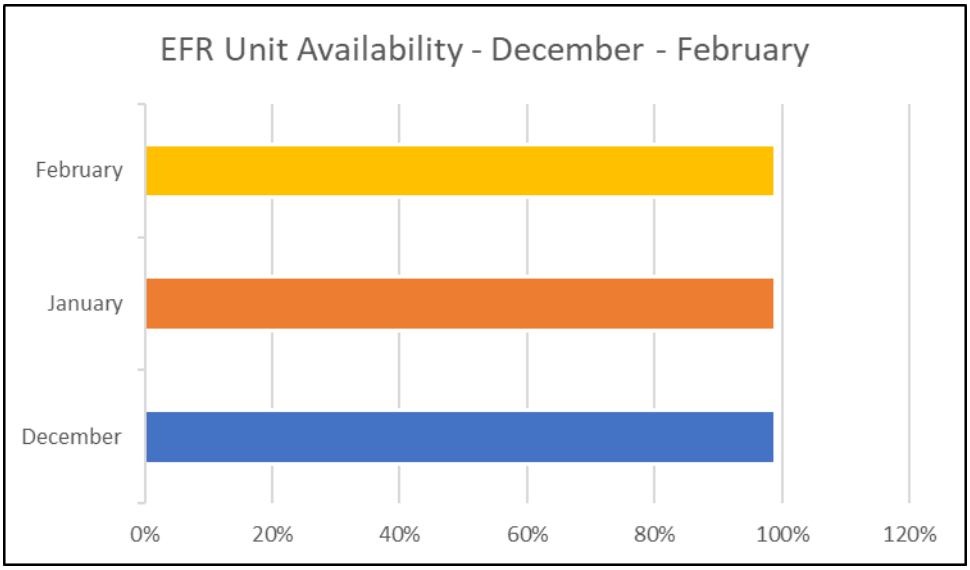


Figure 7 EFR Availability Paid £/K

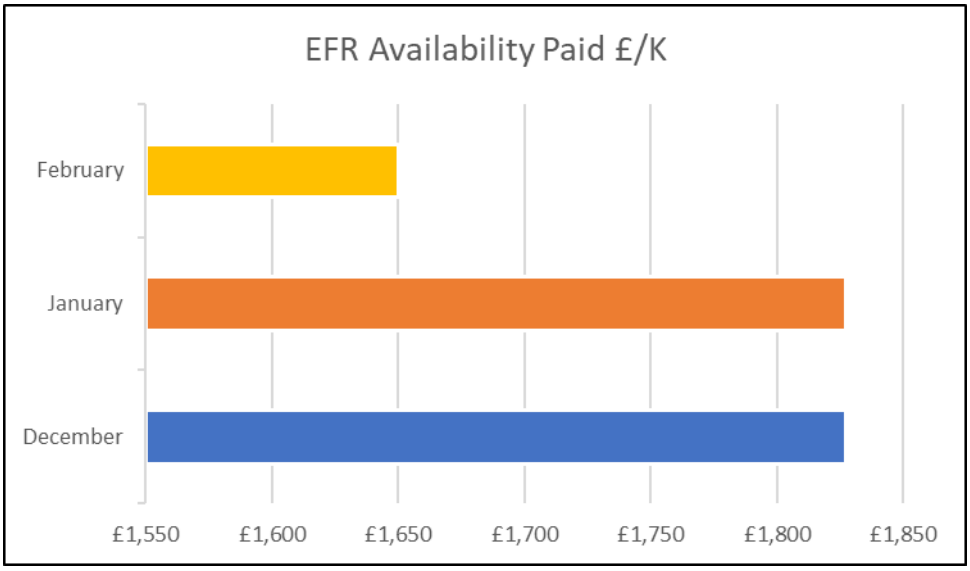
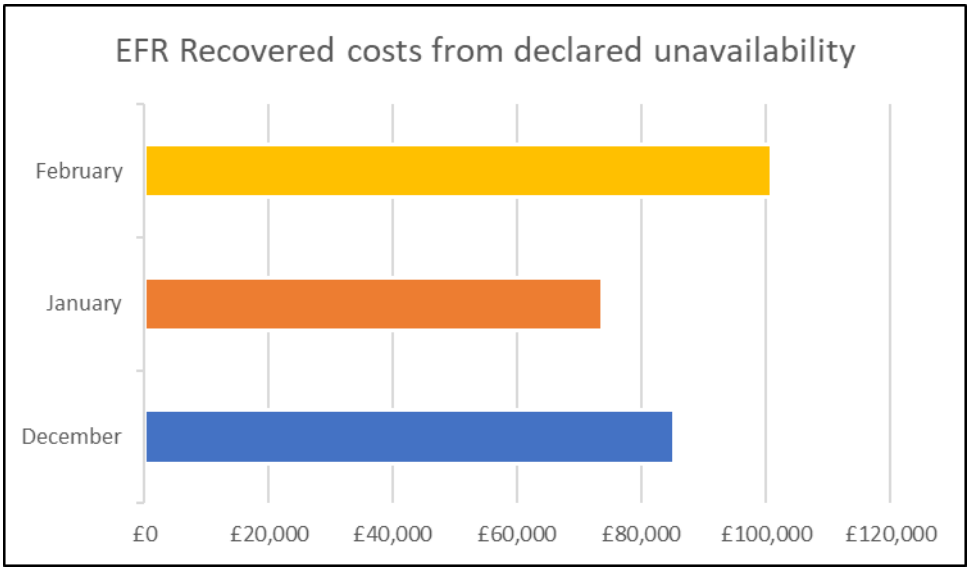


Figure 8 EFR Recovered costs from declared unavailability



Dynamic Containment (DC)

Dynamic Containment is designed to operate post-fault, i.e. for deployment after a significant frequency deviation in order to meet our need for faster-acting frequency response.

As we progress towards net-zero by 2050, we are seeing increasing amounts of renewable generation being used to meet electricity demand. However as renewable generation is more variable than traditional generation, such as coal and gas, we need faster acting frequency response products to help us maintain the frequency at 50Hz.

We aim to deliver a new suite of faster-acting frequency response services to support our operations as the electricity system is decarbonised and to make sure that these new services enable a level playing field for all technologies. Dynamic Containment is the first of our new frequency response services that had its soft launch in October 2020. We currently have over 620 MW of capacity registered in the service and we anticipate this will grow as we move through the soft launch period.

What we pay providers

Dynamic containment is paid via a £/MW/h availability fee for the service. As delivery is reflective of current frequency conditions parties are contracted for set periods for which they are remunerated, should the contracted volumes be delivered in accordance with the service specification.

Dynamic containment is procured on a day ahead basis and is currently one of the most valuable frequency response services.

Service Development

During the first two months of Dynamic Containment operation ESO engaged in a number of forums and provider feedback sessions to gain early insights into the service to ascertain what areas were working well and which could benefit from being improved at pace. This allowed us to gather a set of early developments which would support progressing the service towards its enduring state.

In order to continue moving the DC service forward and follow the learning by doing philosophy set out we opted to progress a number of these early developments through aligning DC with the STOR EBGL Article 18 consultation process which was launched in December. Through this process ESO were able to propose a number of early developments to the DC service through the formalised channel. Responses were received from 9 Providers covering a range of areas, they were generally supportive of the overall approach, including

- Support for moving the penalty to apply daily rather than weekly so participants are not disincentivised to stop delivering if they fail a test early in the week.
- Support the separation of availability determination for high-frequency and low-frequency services in both operational and performance reporting.
- Support to amend the market window to open at D-1 15:00 as it indicates ESO have an understanding of the commercial and resourcing pressures that providers have faced.

Areas where they stated improvements were needed included:

- Clarity on the Service Delivery and Service Parameters - In response we have expanded the Guidance Document wording around the service parameters to provide a narrative explanation to supplement the formulae in the service terms. We have also updated various Service Parameters terms and their descriptions.
- Alignment between Testing Guidelines and other documents - In response we have updated all documents to ensure they were aligned.

We also made further improvements which included:

- Data - Clarity around how to declare availability through the new data streams when ESO are procuring both HF and LF service. Proposal to implement two separate data points for availability, one for LF and one for HF for both operational and performance data purposes to ensure alignment.
- Baselines - Clarification of the baseline rule for energy limited providers. Additional detail on what the ramp rates are for those parties and how the baseline ramp rates calculated work for LF, HF and both.

In January we introduced BM stacking and provided clarity regarding ramp rate limits and general guidance when parties stack BM actions.

Performance for December 2020 to February 2021

Over the period December 2020 to February 2021 DC was activated for 6 significant events. On average, we received performance data for 95% of the contracted volume. Of the data received, an average of 97% of the volume was declared available for the whole duration of the settlement periods. Of the data performance monitored in these periods, 87% was entirely within the 3% error tolerance required for full payment. A reduced payment inline with the contract was paid to those outside of the 3% tolerance.

The overall performance of the DC over this quarter is in line with our expectations and within the contractual requirements, however we continue to monitor the performance and report back to individual providers where necessary.

Moving forwards

We intend to continuously build on the content of this report and to include further Balancing Services.

We welcome feedback on this report. Should you have any questions or comments, please do not hesitate to contact us at commercial.operation@nationalgrideso.com

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