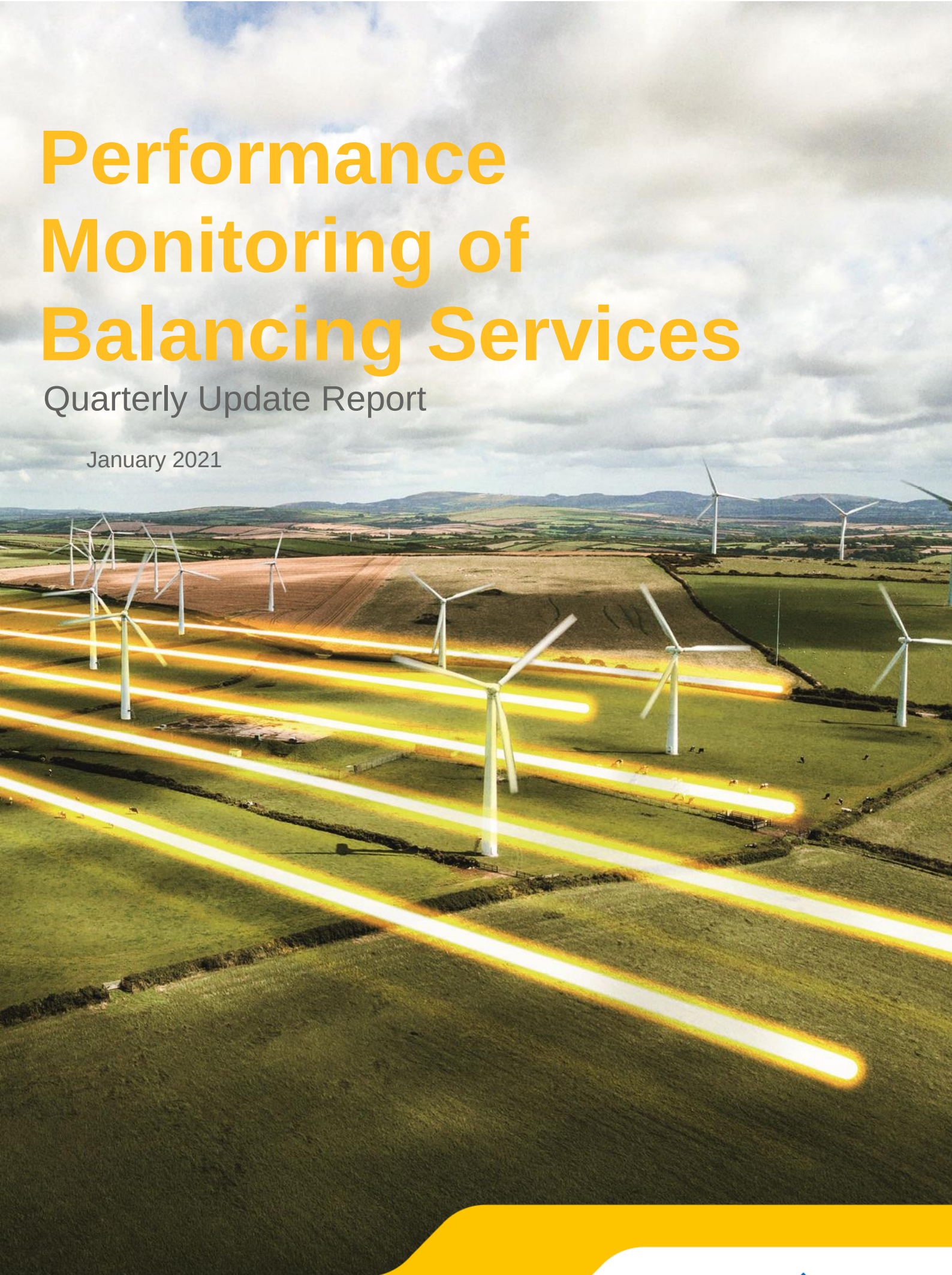
# Performance Monitoring of Balancing Services

## Quarterly Update Report

January 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. We issued the first of these reports in October 2020. By sharing data on performance, 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 September to November 2020. Following on from our first report we have now added Fast Reserve which can be found below along with updates on 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.

Dynamic Containment underwent its soft launch on 01 October 2020. Performance monitoring has been an integral part of the design of this product, with automation and data review a key element. Both BM and non-BM parties are able to send 20Hz metering granularity through a web-based application to allow timely monitoring.

# 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 September to November 2020

### Availability Windows

In the reporting period, which crosses over STOR Seasons 14:3 to 14:5, there were committed STOR Availability Windows across a total of 114,576 half hourly settlement periods (SP) provided by a total of **91 STOR units**. STOR units are monitored to ensure they are available during each SP, and in the reporting period this was achieved in **85%** of SP. Of the **15%** of SP's where units were unavailable, a total of **£568,522** of availability payments were withheld. The 15% comprises of units that declared themselves unavailable, and those triggering an Event of Default (EOD).

***Table 1 Statistics for STOR Availability Sept/Nov 2020***

| | |
|---|---|
| **Total Settlement Periods (SP)** | 114,576 |
| **Total SP where units available** | 91 |
| **Total SP where units unavailable/rejected** | 33 |
| **% unavailable/rejected** | 15% |
| **Total Events of Default (EOD)** | 149 |

* Above numbers exclude the STOR 'Flexi' service

***Table 2 Breakdown of EOD Sept/Nov 2020***

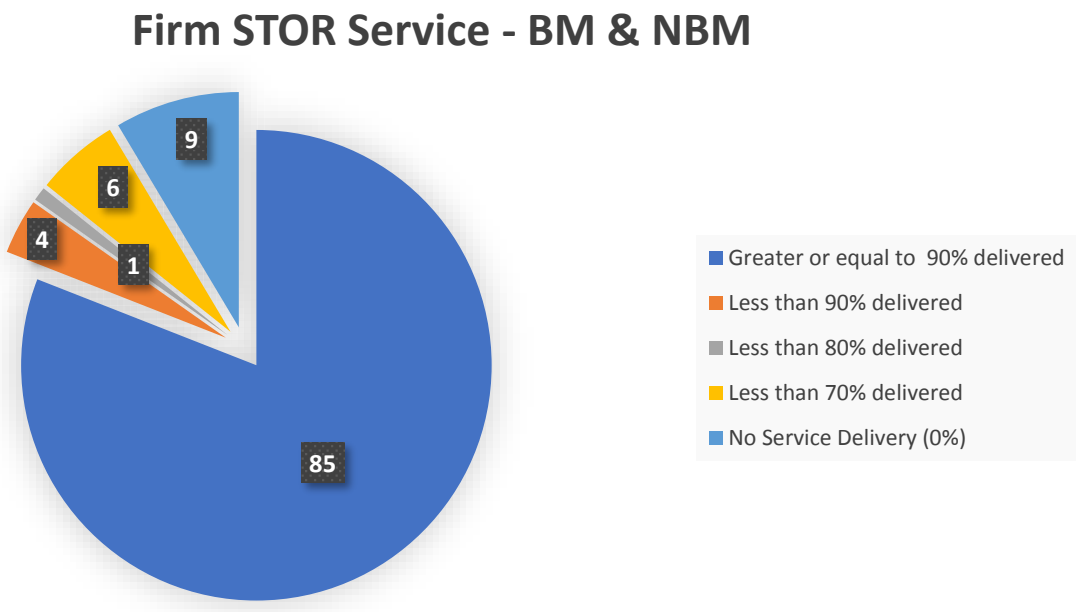
| | |
|---|---|
| **Total Events of Default (EOD)** | 149 |
| **Number of providers with EOD** | 33 |
| **EOD code 'LATE'** | 46 |
| **EOD code 'IANU'** | 67 |
| **EOD code 'CDEL'** | 15 |
| **EOD code 'GUNC'** | 2 |
| **EOD code 'CRSP'** | 17 |
| **EOD code 'ACPT'** | 2 |

See links to the full list of **BM** and **NBM** Events of Default

### Utilisation

For the Firm (BM/NBM) service there were a total of **105** instructions in the reporting period with **85 achieving the required 90% performance** - See figure 1 for breakdown of performance. For the Optional (NBM) service there were a total of 15 dispatch instructions, with **all 15 failing** to deliver the service. The automated monitoring of contract performance payment withheld a total of **£36,730** where actual energy delivered was less than the instructed energy.

*Figure 1 Firm 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 September to November 2020

## Utilisation performance

For the Optional service, a total of **2734** dispatch utilisation instructions were issued by the ESO in the reporting period, across **10 Fast Reserve units**. The overall performance of these units was **90.90%** delivery of MW against the dispatch instruction, a continued trend of increased performance during 2020 (see table below) Through our monthly delivery reconciliation process we withheld a total of **£483,629** of utilisation payments for the 9.10% under delivery.

***Table 1 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 2 Statistics for period April/May 2020***

| | |
|---|---|
| **Expected Delivery MWh** | 15,587.15 |
| **Under-delivered MWh** | 1,834.19 |
| **% Delivery** | 88.23% |
| **Utilisation Payments Withheld** | £128,455.53 |

***Table 3 Statistics for period June/September 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 September to November 2020

In the reporting period, covering delivery from FFR tenders TR128 (September), 129 (October) and 130 (November) there was a total of 68 units contracted to deliver Frequency response over the period of June to August 2020. For this period, there was a total of **£6.0m paid for the availability** to deliver the FFR service. Over the three months the performance of **Units averaged at 98% delivery** resulting in us looking to recover circa **£84k for under performance** for the same period. A breakdown of these figures can be seen in the charts below.

*Figure 3 Performance Monitoring September - November*

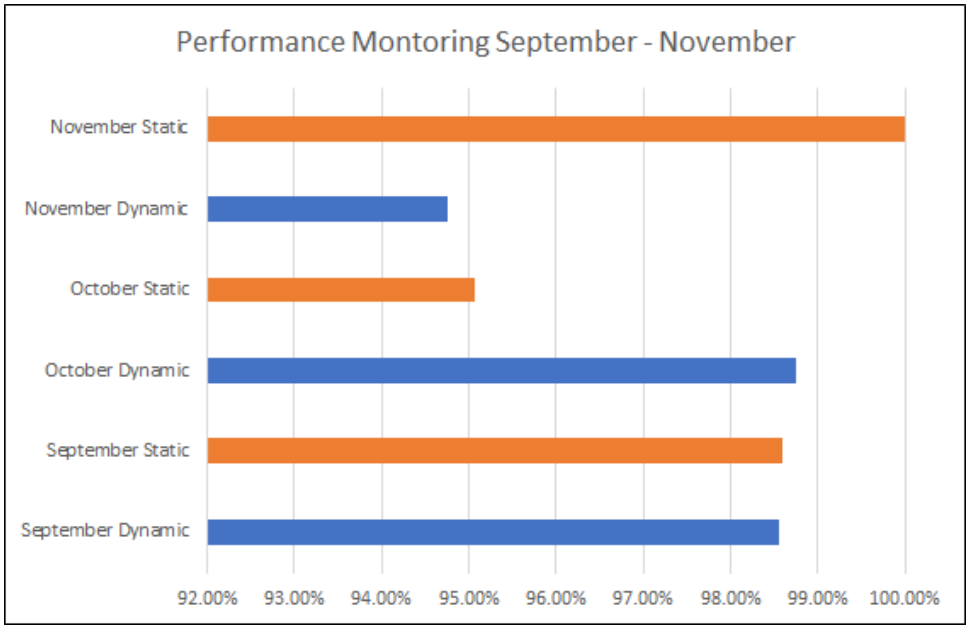



*Figure 4 FFR TR128-130 Tendered costs £/K*

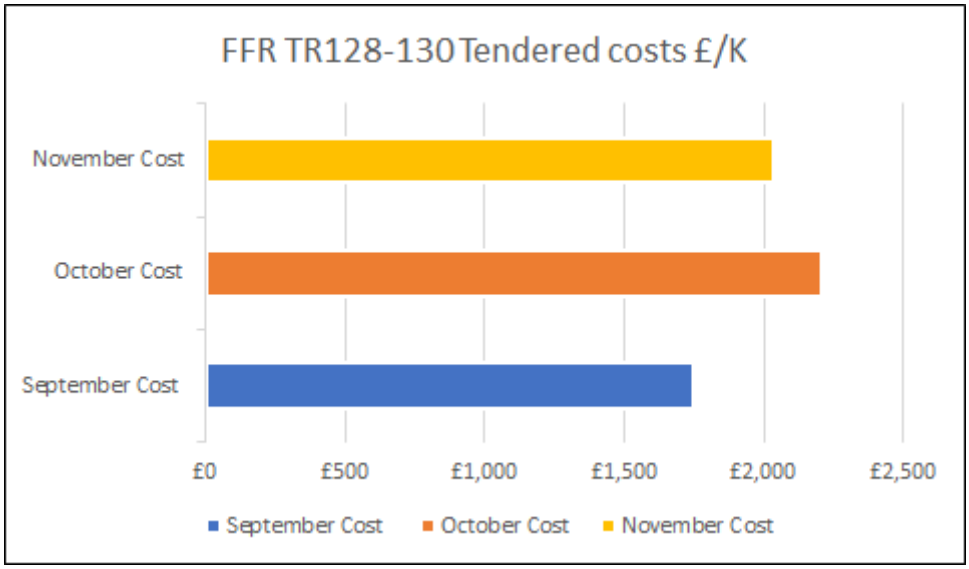
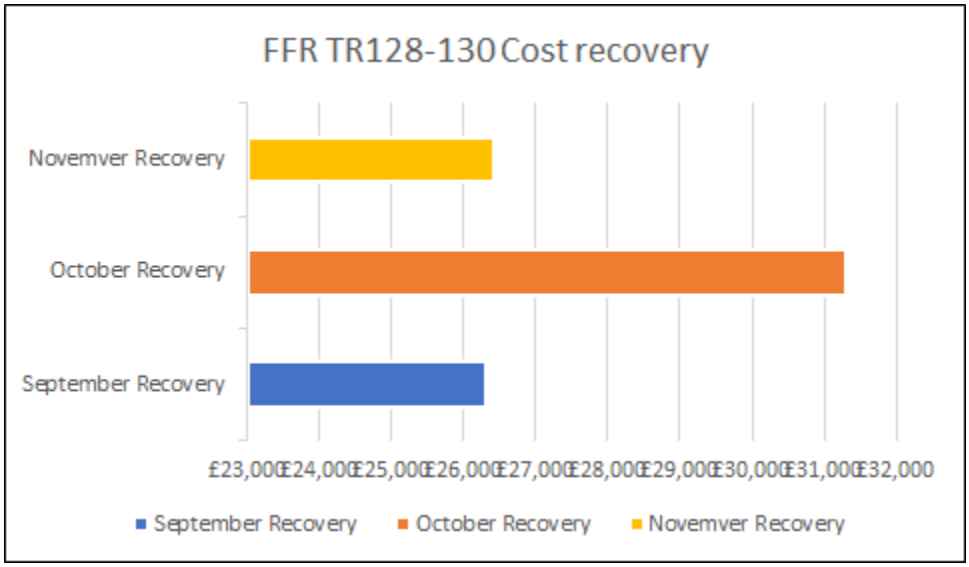


*Figure 5 FFR TR128-130 Cost recovery*



# 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 September to November 2020

In the reporting period, covering delivery from EFR Contracts during September – November 2020 the total number of units contracted to deliver EFR was 10 for September reducing to 9 for the remaining months. For this period, there was a total of **£5.4m paid for the availability** to deliver the EFR service. During this reporting period, there was an **average availability of 93%**. Over the reporting period this resulted circa **£233K of availability payments not being paid** to providers. A breakdown of these figures can be seen in the charts below. For reference, the reduction shown in availability for the month of September was down to an asset being unavailable for most of the month.

*Figure 6 EFR Unit Availability September - November*

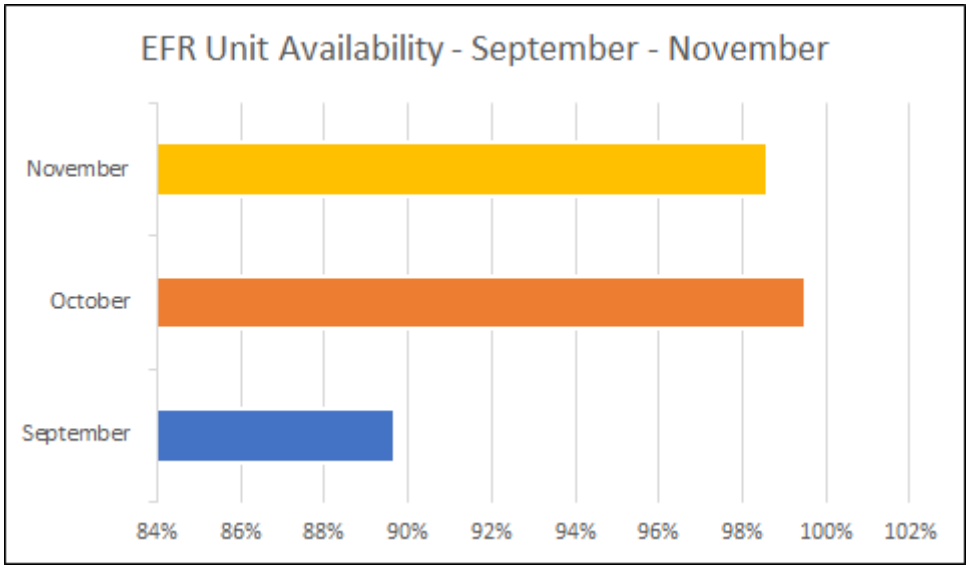


*Figure 7 EFR Availability Paid £/K*

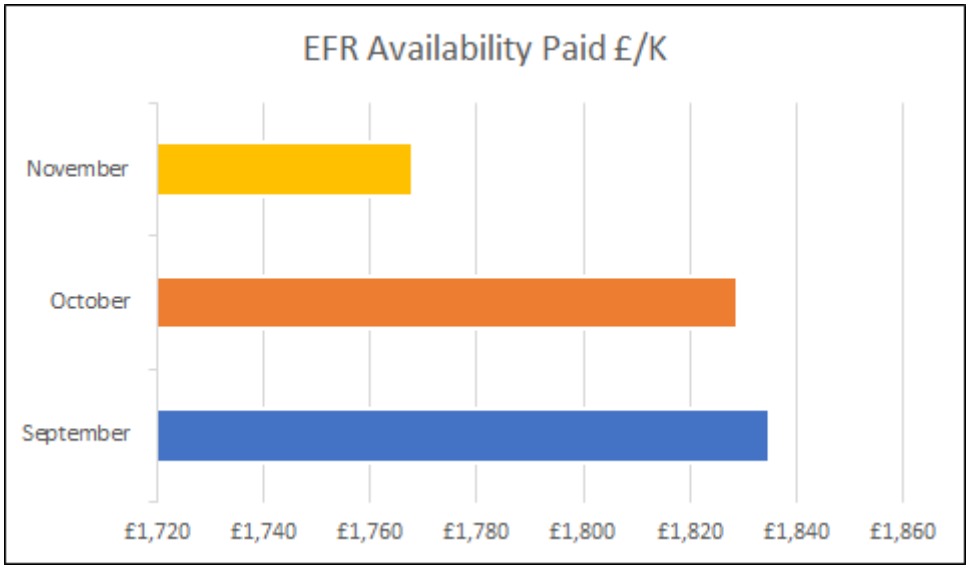
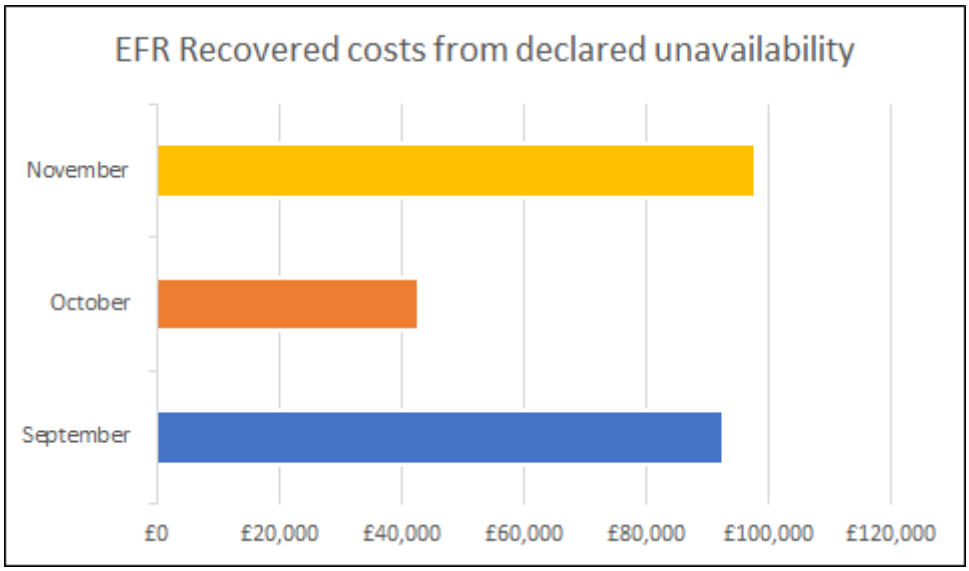



*Figure 8 EFR Recovered costs from declared unavailability*



# 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 380MW 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.

## Performance Monitoring 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. The consultation closed in mid-January and we are currently reviewing responses from industry. Below we outline the broad changes that we were seeking to make through the consultation process based on the feedback and learning since go live. We believe that these changes will further enhance the performance monitoring processes associated with Dynamic Containment and we look forward to sharing the final changes following the conclusion of the consultation process.

Overall penalty mechanism – The majority of initial feedback on the performance monitoring elements to DC was that parties felt a penalty structure that applied to a weeks' worth of payments for a daily contracted service was overly harsh and may result in unintended behaviour of parties potentially moving out of the service for the remainder of a week if poor performance was realised. ESO have taken this on board and agree that the initial structure would benefit from being aligned to daily.

In addition to the penalty structure ESO have also adjusted some tolerances within the formulas to support providers delivery of the service. ESO would encourage parties interested in these details to stay informed of the current ongoing consultation process.

The final key piece of feedback that we received through this process was that whilst the performance monitoring formulas are suitably detailed for the complexity of this service there was a challenge around making these easier for parties to digest. ESO recognise that Dynamic

Containment is a complex product that is seeking to solve complex system requirements and we will continue to enhance our documentation to ensure it offers clarity for industry.

Through the current consultation process we have sought to try and align Schedule 1 and 2 in the Service Terms. We really value the constructive feedback which we have had to date through the consultation and are excited to share the outcome of the process following submission to the regular shortly.

In our next quarterly report we hope to share the approved changes which were made through the consultation and start sharing performance data on a more granular level particularly during large frequency excursions to provide further deep dives into DC delivery and performance. In the meantime, we invite an open dialogue with providers regarding their own performance of DC and are happy to discuss any issues or concerns as they arise so that both parties can continue to learn during the implementation of this new product.

## Moving forwards

We intend to continuously build on the content of this report and to include further Balancing Services. In the next report, we intend to also include FFR Phase 2 Weekly Auction.

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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