

# ESO Forward Plan 2020-21

## Monthly Reporting: February

19 March 2021

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## Foreword

Welcome to our monthly performance report for February 2021. Each month, we report on a subset of metrics and performance indicators. This report provides an update on our monthly metrics, which are set out in the 2020-21 [Forward Plan Addendum](#)<sup>1</sup>.

We report our progress against our deliverables on the [Forward Plan tracker](#)<sup>2</sup> which is updated monthly on our website. The Forward Plan tracker has been updated to take account of the revisions to deliverables set out in the Forward Plan Addendum.

## Summary

In February we have successfully delivered the following notable events and publications:

- We published the results of the BM Reserve from Storage trial which we completed in Summer 2020, alongside battery providers such as Arenko.
- We are holding a consultation on terms and conditions of the reinstated Optional Downward Flexibility Management (ODFM) service which closes 15 March 2021.
- An executive summary of the key findings from our Code Administrator Survey 2020 was published.
- We held a webinar to engage with industry on our five-point plan for constraint management.

Our performance is below expectations for the balancing costs metric due to the fault on the Western Link HVDC, and energy costs continue to be affected by high priced offers during periods of tight margins. Similarly, the performance benchmarks for Demand Forecasting Accuracy were unfortunately not met. We did however meet our target for Month-ahead BSUoS Forecast, Right First Time Connection Offers, and System Access Management. We exceeded expectations for Wind Forecasting Accuracy and Security of Supply. Further information on metric performance can be found throughout the report.

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<sup>1</sup> <https://www.nationalgrideso.com/document/173131/download>

<sup>2</sup> <https://www.nationalgrideso.com/document/162046/download>

A summary of our monthly metrics and performance indicators covering January is shown in Table 1 below.

Metric/Performance Indicator	Performance	Frequency	Status
Balancing Cost Management	£163.3m outturn against £147.7m benchmark	Monthly	●
Energy Forecasting Accuracy	Demand MMAE: 659MW; Wind MAPE: 4.78%	Monthly	● ●
Security of Supply	0 excursions for voltage and frequency	Monthly	●
System Access Management	2.48/1000 cancellations	Monthly	●
Month-ahead BSUoS Forecast	12% forecasting error	Monthly	●
Right First Time Connection Offers	96% first time connection offers	Monthly	●

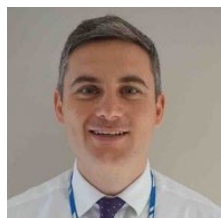
Table 1: Summary of metrics and performance indicators

- Exceeding expectations
- Meeting expectations<sup>3</sup>
- Below expectations

You can find out about our vision, plans, deliverables and full metric suite in the Forward Plan pages of our website<sup>4</sup>. We welcome feedback on our performance reporting to [box.soincentives.electricity@nationalgrideso.com](mailto:box.soincentives.electricity@nationalgrideso.com)

### Gareth Davies

ESO Regulation Senior Manager



<sup>3</sup> We have updated the colour scheme for our metrics to give increased transparency of our performance, noting that meeting expectations still represents good performance. This should give a clearer representation of the status of our activities.

<sup>4</sup> <https://www.nationalgrideso.com/our-strategy/forward-plan>

# Role 1 Control Centre operations

## 1A Balancing cost management

### February 2021 Performance

The approach we use for measuring our Balancing Costs performance is based on a linear trend in a five year rolling mean, based on annual Balancing Services Costs (excluding Black Start). In order to meaningfully employ a linear trend, the data points need to handle one-off permanent changes to the system network which would not be captured by the five-year trend. So far, the only change modelled in this way has been the Western Link. We also make adjustments for significant events which we expect to have an impact on balancing costs, whether this is an upwards or downwards adjustment. These are trends which we would not expect to be captured in the 5-year rolling average, because they relate to either new assets or new trends in market behaviour. Additional information regarding balancing costs calculation and benchmark adjustment can be found on our website<sup>5</sup>.

Please note that the benchmarks were re-calculated in July 2020 to remove the ElecLink adjustor since the interconnector go-live date has been delayed.

	Apr	May	Jun	Jul	Aug	Sep	Oct
Benchmark cost (£m)	67.0	48.2	82.6	65.5	102.0	103.7	126.9
Additional cost adjustment due to WHVDC fault (£m)	0	0	0	0	0	0	0
Benchmark adjusted for WHVDC (£m)	67.0	48.2	82.6	65.5	102.0	103.7	126.9
Outturn cost (£m)	122.4	159.1	135.6	136.0	117.7	135.6	142.4
Status							

Table 2: Apr-Sep 2020 Monthly balancing cost benchmark and outturn.

	Nov	Dec	Jan	Feb	Mar	Total
Benchmark cost (£m)	82.8	126.6	133.2	142.5	118.3	1199.3
Additional cost adjustment due to WHVDC fault (£m)	0	0	0	5.2	0	0
Benchmark adjusted for WHVDC (£m)	82.8	126.6	133.2	147.7	118.3	1204.5
Outturn cost (£m)	197.4	162.0	136.3	163.3		1607.8 [YTD]
Status						

Table 3: Oct-Mar 2020-21 Monthly balancing cost benchmark and outturn.

<sup>5</sup> <https://www.nationalgrideso.com/document/166231/download>

## Supporting information

The balancing costs for February were higher than the benchmark. Costs were mostly driven by system actions. The fault on the Western Link HVDC in the middle of the month significantly depleted the boundary capacity over the Anglo-Scottish border. During the high wind days that followed, large volumes of actions were required on wind North of the boundary. Even on relatively low wind days, action was required to manage the boundary which would not normally be required should the Western Link HVDC be in service. Energy costs continue to be affected by high priced offers during periods of tight margins, although this was less apparent during February than in earlier winter months.

The benchmark is adjusted based on the Western Link unavailability, as the original benchmark assumes that the Western Link will be fully operational.

## Performance benchmarks

- **Exceeding expectations:** at least 10% lower than the figure implied by the benchmark.
- **Meeting expectations:** within 10% of the figure implied by the benchmark
- **Below expectations:** at least 10% higher than the figure implied by the benchmark.

## 1B Energy forecasting accuracy

### February 2021 Demand Forecasting Performance

As outlined in the Forward Plan Role 1 Energy Forecasting Accuracy metric (Metric 1b), the ESO's forecasting performance will be assessed at the end of the performance year. Annual performance targets have been calculated with exceeding, in-line with and below expectations values set out. To allow transparency of our performance during the year, each month we will report an indicative performance for both metrics.

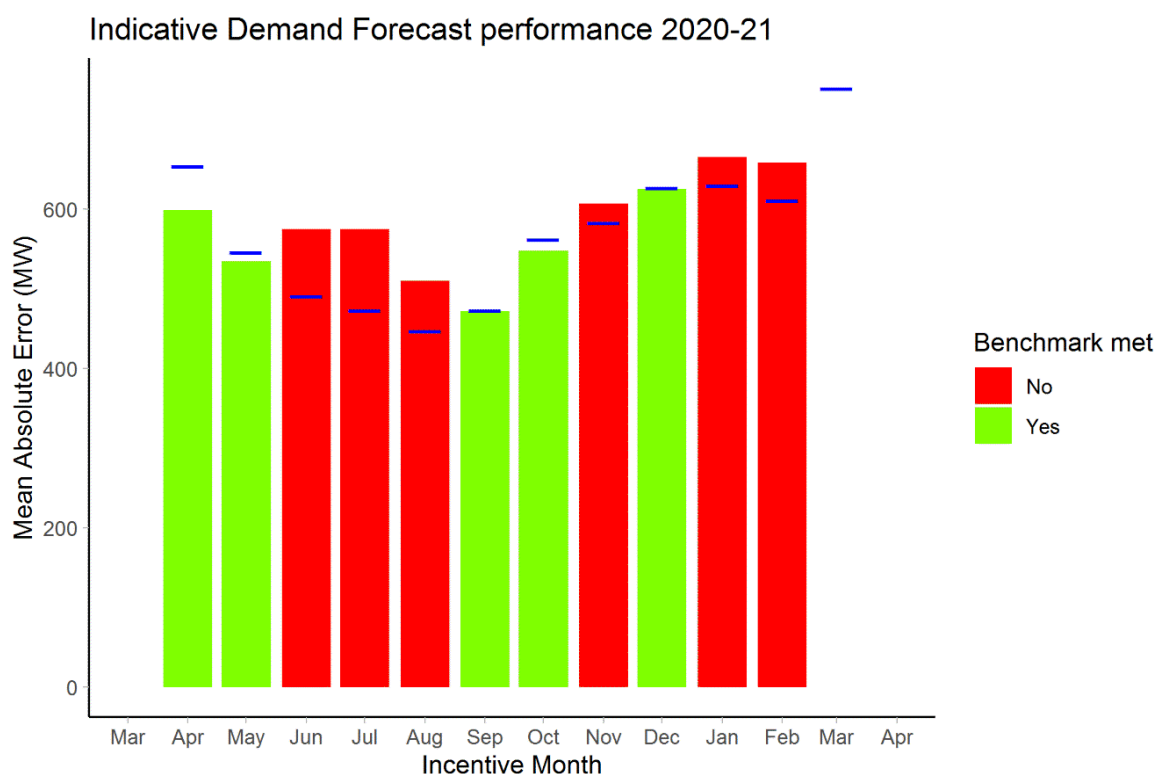


Figure 1: Demand Forecasting , shows our performance from April to October as the green histogram against the blue target line.

#### Day ahead demand forecast benchmarks for financial year 2020-21

Month	Benchmark (MW)	Month	Benchmark (MW)
April	654	October	562
May	546	November	583
June	491	December	627
July	473	January	630
August	447	February	611
September	473	March	752

Table 4: Demand Forecasting Benchmarks

## Supporting information

### DA Demand Indicative Performance for February: 659MW

In February 2021, our day ahead demand forecast indicative performance was outside of the benchmark of 611MW. February's MMAE (monthly mean average error) was 659MW, 48MW above the monthly benchmark.

Demand forecasting in February was challenging due to several factors: a wide range of temperatures; the continuation of the third National lockdown; and the 2020-21 Triad season. The Triads are the three half-hour settlement periods of highest demand on the GB electricity transmission system between November and February (inclusive) each year, separated by at least ten clear days.

Across the month, the largest absolute demand errors were observed during the morning peak, afternoon peak and afternoon trough, all from 15 February onwards. According to the Met Office, February has seen the highest and lowest temperatures of the winter season, with mild weather observed during the second half of the month following a cold spell. The unusually warm temperatures were the main contributing factor for the demand errors; the performance of the solar generation forecast has also contributed to the errors observed during afternoon peak and trough. It is worth noting that there were no major demand errors during darkness peak (DP) in February.

## February 2021 Wind Generation Performance

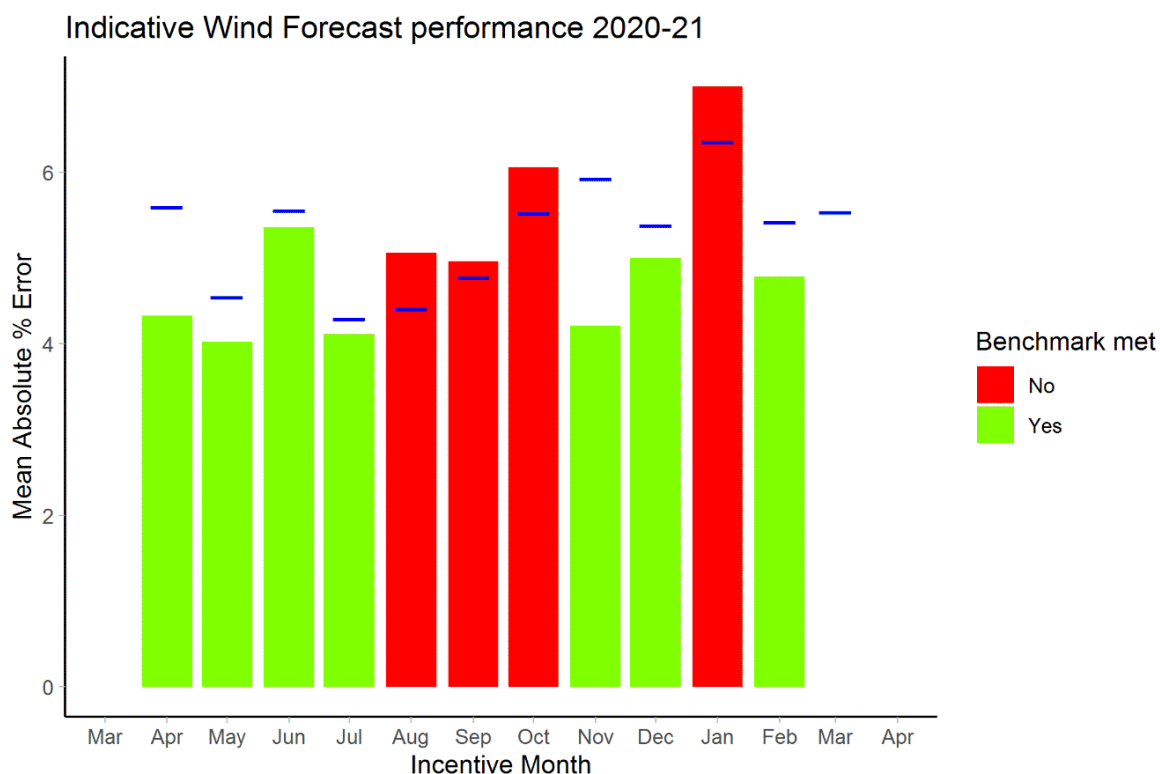


Figure 2 shows our performance this month as the green histogram, against the blue monthly target.

## BMU wind generation forecast benchmarks for financial year 2020-21

Month	Benchmark (%)	Month	Benchmark (%)
April	5.60	October	5.53
May	4.54	November	5.93
June	5.56	December	5.38
July	4.29	January	6.36
August	4.41	February	5.42
September	4.77	March	5.54

Table 5: Wind Forecasting Benchmarks

### Supporting information

#### DA Wind Indicative Performance for February: 4.78%

Wind forecasting performance is exceeding expectations in February. The weather systems that passed over the UK in February either brought very windy conditions or very calm conditions. When the wind is very calm (0 to 4 m/s) weather forecasts tend to be more stable and thus wind power forecasts are more accurate. When it is much windier (16 – 24 m/s) then the wind turbines are at full output. In the high wind conditions, the forecast tends to be more accurate because a greater range of wind speeds give the same result, so wind speed forecast errors are filtered out. In parallel with this weather effect, we have been optimising our forecasting models and taking care to ensure that only good quality availability data is getting through to our forecasting system.

Day ahead electricity prices went negative for six hours or more on the following days: 12th, 13th, 14th, 16th, 19th, 21st, 23rd, 24th. Wind farms with Contract for Difference (CfD) contractual arrangements switch off for commercial reasons when prices are negative for more than 6 hours. On most of these occasions the duration of the negative prices was just 6 hours and so the data shows that these events did not significantly influence forecasting accuracy on these days.

### Performance benchmarks

- **Exceeding expectations:** Error which is at least 5% lower than the benchmark
- **Meeting expectations:** Error which is within 5% of the benchmark
- **Below expectations:** Error which is at least 5% higher than the benchmark



## 1C Security of Supply

### February 2021 Performance

Quality of service delivered in running the electricity network by providing the number of reportable voltage and frequency excursions that occurred during the previous month, and a total for the year to date.

	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Voltage excursions	0	0	0	0	0	0	0	0	0	0	0	
Frequency excursions	0	0	0	0	0	0	0	0	0	0	0	

Table 6: voltage and frequency excursions over 2020-21

### Supporting information

There were no excursions on both voltage and frequency. Our performance was therefore exceeding expectations in February.

### Performance benchmarks

- **Exceeding expectations:** 0 excursions for both voltage and frequency over 2020-21
- **Meeting expectations:** 1 excursion for either voltage or frequency over 2020-21
- **Below expectations:** More than 2 excursions in total over 2020-21

## 1D System Access Management

### February 2021 Performance

Publishing this metric encourages the ESO to investigate the causes of outage cancellations and amend processes where appropriate to prevent a repeat. We will ensure that we seek to minimise costs across the whole system and all timescales when making a decision to recall or delay an outage on the transmission system.

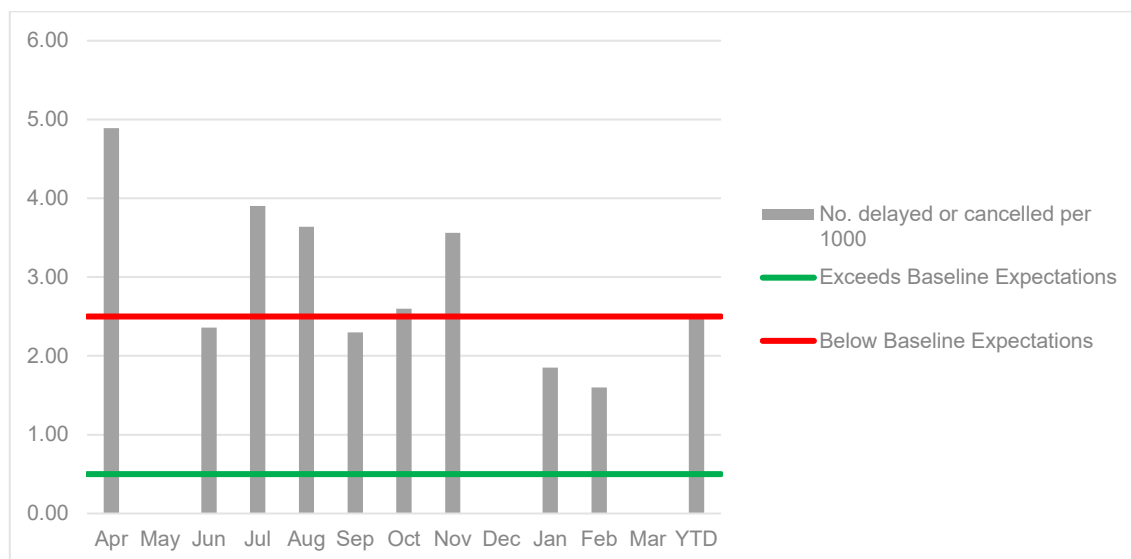


Figure 3: Number of outages delayed by > 1 hour, or cancelled, per 1000 outages

	Number of outages	Outages delayed/cancelled	Number of outages delayed or cancelled per 1000 outages
<b>Apr</b>	409	2	4.89
<b>May</b>	629	0	0
<b>Jun</b>	847	2	2.36
<b>July</b>	769	3	3.90
<b>Aug</b>	824	3	3.64
<b>Sep</b>	870	2	2.3
<b>Oct</b>	770	2	2.60
<b>Nov</b>	842	3	3.56
<b>Dec</b>	524	0	0
<b>Jan</b>	540	1	1.85
<b>Feb</b>	625	1	1.6
<b>YTD</b>	7649	19	2.48

Table 7: Number of outages delayed by > 1 hour, or cancelled, per 1000 outages

## Supporting information

For February, the number of delays or stoppages per 1000 outages has reduced even further from 2.56 to 2.48, this is now within the 'Meets Expectation' benchmark after one event occurred. The event was caused by a modelling discrepancy between the off-line model used within planning and the real-time model the control room use, for a certain network fault. As the discrepancy displayed a non-compliant voltage step change, the outage was not released until it could be further investigated. This is being fed into an on-going investigation on the modelling discrepancies encountered earlier in the year. Overall, we are continuing to effectively engage with the TOs and DNOs and have managed to release 625 outages compared with 534 outages in February 2020. This demonstrates we are facilitating greater access to the transmission network.

## Performance benchmarks

- **Exceeding expectations:** < 1 outage cancellations per 1,000 outages
- **Meeting expectations:** 1 - 2.5 outage cancellations per 1,000 outages
- **Below expectations:** > 2.5 outage cancellations per 1,000 outages

## Notable events this month

### Balancing Mechanism (BM) Reserve from Storage Trial

On Thursday 11 February, we published a review<sup>6</sup> of the Reserve from Storage trial which we ran in the Summer of 2020 with support from several battery storage providers, such as Arenko. The trial results highlighted the potential for £0.7mn in savings to the consumer. This was delivered through utilising batteries, versus the alternative balancing mechanism options, throughout a three-week trial period. We will consult with industry on the next steps in the coming weeks.

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<sup>6</sup> <https://data.nationalgrideso.com/plans-reports-analysis/covid-19-preparedness-materials/r/reserve-from-storage-in-the-bm-phase-3-trial-review>

# Role 2 Market development and transactions

## 2E Month ahead forecast vs outturn monthly BSUoS

### February 2021 Performance

BSUoS forecasts are important to our stakeholders, although we note that our ability to forecast BSUoS is impacted by factors outside of our control. BSUoS costs are factored into the wholesale price of energy charged by generators, and therefore a forecast is vital for those parties when working out where to price their generation.

As BSUoS costs can vary throughout the year, we report the percentage variance between our forecast and the outturn rather than the absolute variance. This metric does not just look explicitly at the volatility, but at the number of occurrences outside of a 10% and 20% band.

Month	Actual	Month-ahead Forecast	APE	APE>20%	APE<10%
April-20	4.77	3.69	23%	1	0
May-20	6.24	3.87	38%	1	0
June-20	5.17	7.18	39%	1	0
July-20	4.78	5.56	16%	0	0
Aug-20	4.18	5.61	34%	1	0
Sept-20	4.75	5.16	9%	0	1
Oct-20	4.28	4.24	1%	0	1
Nov-20	5.61	3.50	38%	1	0
Dec-20	4.16	3.97	5%	0	1
Jan-21	3.66	3.78	3%	0	1
Feb-21	4.92	4.33	12%	0	0
Mar-21					

Table 8: Month ahead forecast vs. outturn BSUoS (£/MWh) Performance

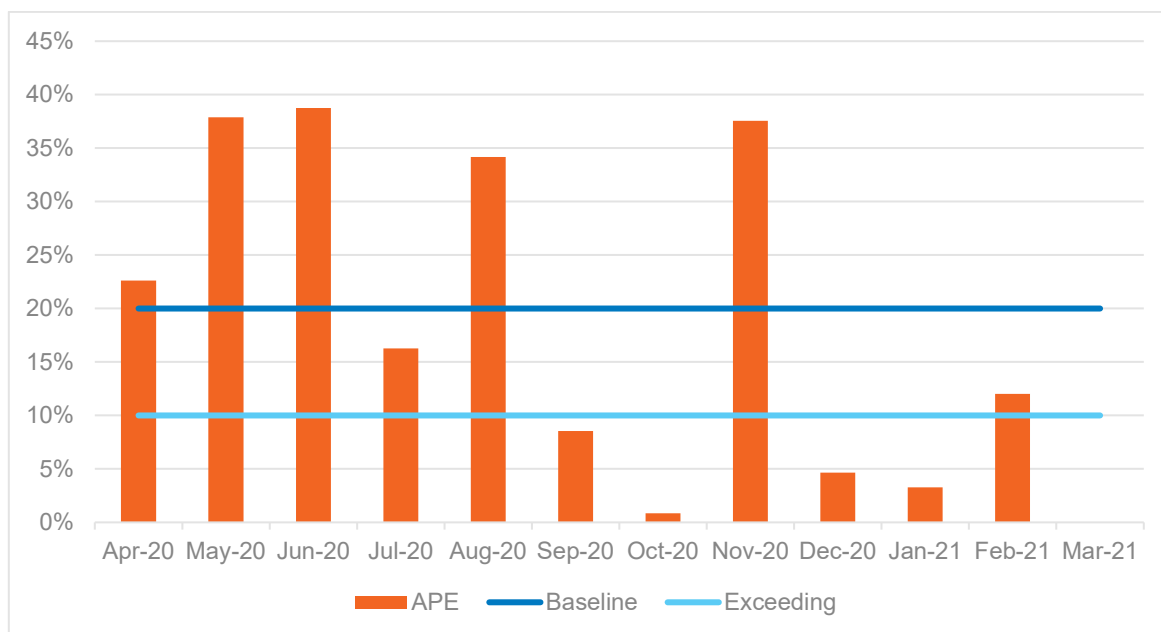


Figure 4: Monthly BSUoS forecasting performance

## Supporting information

For February we had an APE of 12% with higher costs and lower demand than December. The outturn BSUoS forecast for February was higher than January and higher than forecast. Operating reserve costs remained high, as they have been across the winter driven by tight margins but these were lower than January. Constraint costs rose significantly following the loss of the Western Link HVDC mid-month, resulting in a higher than forecast volume of actions required to manage congestion on the Anglo-Scottish boundary. Demand was slightly above forecast and was close to levels experienced last year despite the continuing lockdown conditions.

Our latest view of BSUoS can be found on our website<sup>7</sup>.

## Performance benchmarks

- **Exceeding expectations:** Less than 5 out of 12 monthly forecasts are above 20% Absolute Percentage Error, and 5 or more forecasts less than 10% Absolute Percentage Error
- **Meeting expectations:** Less than 5 out of 12 monthly forecasts are above 20% Absolute Percentage Error
- **Below expectations:** 5 or more out of 12 monthly forecasts above 20% Absolute Percentage Error

<sup>7</sup> <https://data.nationalgrideso.com/balancing/bsuos-monthly-forecast>

## Notable events this month

### Optional Downward Flexibility Management (ODFM) consultation

In accordance with the requirements of EBGL Article 18, we held a consultation<sup>8</sup> on terms and conditions of the reinstated Optional Downward Flexibility Management (ODFM) service. The ODFM service was developed to mitigate low electricity demand risks resulting from unprecedented changes caused by the COVID-19 pandemic. We have outlined that whilst the central case for the summer suggests there is in fact no requirement for ODFM, there are still credible worst-case scenarios that could require additional downwards flexibility: the continued COVID-19 restrictions are likely to present lower demand periods for longer durations this summer than seen in the past. As a result, the service is to be reinstated and is set to go live at 23:00 Friday 30 April and remain in place until 23:00 Sunday 31 October.

Whilst we are aware of providers having previously informed us of service improvements that could be made, we also welcomed views and comments through the consultation. Changes to the service will only be made where necessary, economic and efficient to do so. The consultation closed on 15 March 2021 ahead of submission to Ofgem.

### Code Administrator Survey 2020 summary

Our recent survey results show a step-change in our performance as a Code Administrator over the past year. We have published an executive summary<sup>9</sup> which highlights the key findings which we have also presented to our Code Panels. We are pleased that our overall satisfaction score has increased by 25% when compared to the previous year, at the same time as delivering a high volume of Workgroup meetings and improvements. We took the feedback from the 2019 survey, as well as our own data, to put together an internal improvement plan and create deliverables that would not only address some of the main industry issues but encourage us to think of additional benefits to stakeholders.

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<sup>8</sup> <https://www.nationalgrideso.com/industry-information/codes/european-network-codes-old/meetings/consultation-open-ebgl-article-18-1>

<sup>9</sup> <https://www.nationalgrideso.com/document/187391/download>

# Role 3 System insight, planning and network development

## 3A Right First Time connection offers

### February 2021 Performance

This metric measures whether the ESO aspects of connection offers were correct the first time they were sent out to customers.

Connections Offers	Results
Year to date number of connection offers	299
Year to date ESO related reoffers	13
Year to date percentage of Right First Time connections offers determined from ESO related reoffers	96%

Table 9: Connections re-offers data

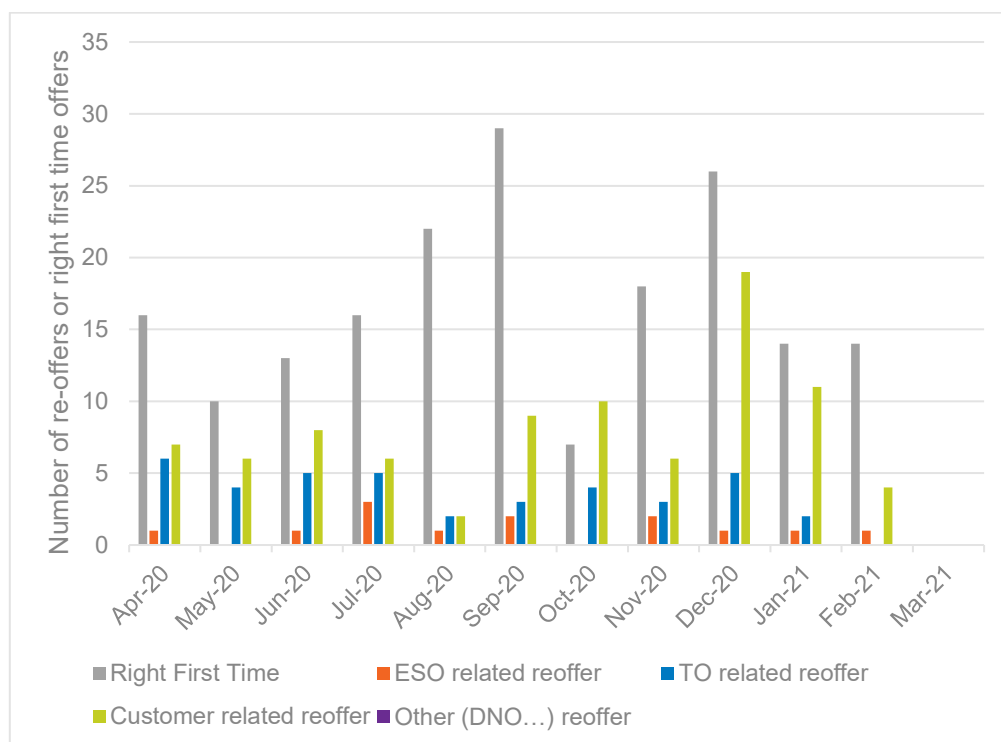


Figure 5: Connections offers monthly performance

### Supporting information

We saw 19 offers returned in February, five of which were subject to a re-offer. There was one recorded ESO related re-offer on contracts signed in this period therefore we are still meeting our target at 96% Right First Time.

For the ESO related re-offer, when reviewing the Stage 2 MM3 which is the Notification of Fixed Works Cancellation Charge (whereby a customer can choose to fix their securities by signing and returning the MM3 statement), it was noticed that the pre trigger amount on the spend profile was incorrect due to an incorrect agreement signed date being input into the securities database.

## Performance benchmarks

- **Exceeding expectations:** 100% of connection offers Right First Time (excluding those where the error was not due to the ESO)
- **Meeting expectations:** 95-99.9% of connection offers Right First Time (excluding those where the error was not due to the ESO)
- **Below expectations:** Less than 95% of connection offers Right First Time (excluding those where the error was not due to the ESO)

## Notable events this month

### Constraints five-point plan webinar

On Thursday 25 February we held a webinar to engage with industry on our five-point plan for constraint management. The points included enhanced Balancing Services Use of System (BSUoS) forecasting, commercial intertrip schemes, the commercial model for storage in a heavily constrained network, regional flexibility market for embedded generation, and working with the Transmission Owners to enhance the capability of existing assets. You can find out more on our blog<sup>10</sup>.

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<sup>10</sup> <https://www.nationalgrideso.com/news/our-5-point-plan-manage-constraints-system>



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