ESO RIIO2 Business Plan

May Monthly Incentives Report

23 June 2021

Contents

Introduction

The ESO's RIIO-2 Business Plan, submitted to Ofgem in December 2019, sets out our proposed activities, deliverables and investments for 2021-26 to enable the transition to a flexible, net zero carbon energy system.

The ESO's Delivery Schedule sets out in more detail what the ESO will deliver, along with associated milestones and outputs, for the "Business Plan 1" period, which runs from 1 April 2021 to 31 March 2023.

Ofgem, as part of its Final Determinations for the RIIO-2 price control, set out that the ESO would be subject to an evaluative incentive framework, assessing our performance in delivering the Business Plan.

The ESO Reporting and Incentives (ESORI) guidance sets out the process and criteria for assessing the performance of the ESO, and the reporting requirements which form part of the incentive scheme. Every month, we report on a set of monthly performance measures; Performance Metrics (which have benchmarks) and Regularly Reported Evidence items (which do not have benchmarks). This report is published on the 17th working day of each month, covering the preceding month.

Every quarter, we report on a larger set of performance measures, and also provide an update on our progress against our Delivery Schedule in the RIIO-2 deliverables tracker.

Every six months, we produce a more detailed report covering all of the criteria used to assess our performance.

Please see our website for more information.

Summary

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

- A new record was set for the proportion of UK generation provided by wind power, reaching 62.5% on 21 May. This overtakes the previous record of 59.9%, set in August 2020.
- We began focused engagement on Distributed ReStart procurement and compliance, holding a webinar in May, with further meetings to come in June.
- We published the latest Power Responsive Guide to Demand Side Response in May along with webinar guides. These provide a starting point for anybody looking to understand the demand side proposition, and access additional revenue by providing Balancing Services to NGESO or DNOs.
- We held an industry webinar on Dynamic Containment (DC) procurement changes on 20 May, going into more detail on the proposed changes on how we procure DC, moving to daily auctions.
- We also held Reserve Reform co-creation workshops on two days in May, to help us come to a better proposal for the new reserve product suite.
- We published a report on our conclusions and key findings from the Power Potential commercial market trials that ran in January to March this year.
- We also published the Technical Feasibility Assessment on how Energy Storage could help manage constraints on the electricity transmission network between 2022-2030.
- We opened the consultation on our Network Options Assessment (NOA) 2021-22 methodology.
- Lastly, more than 100 stakeholders joined our DSO Transition Webinar.

The table below summarises our Metrics and Regularly Reported Evidence (RRE) performance for May 2021.

Table 1: Summary of Metrics and Regularly Reported Evidence

Metric/Regularly Reported Evidence		Performance	Status
Metric 1A	**Balancing Costs**	£155m vs benchmark of £100m	●
Metric 1B	**Demand Forecasting**	2.6% vs benchmark of 2.3%	●
Metric 1C	**Wind Generation Forecasting**	4.0% vs benchmark of 4.5%	●
Metric 1D	**Short Notice Changes to Planned Outages**	0 delays or cancellations due to an ESO process failure (vs benchmark of 1 to 2.5)	●
RRE 1E	**Transparency of Operational Decision Making**	99.6% of actions have reason groups allocated	N/A
RRE 1G	**Carbon intensity of ESO actions**	6.2gCO2/kWh of actions taken by the ESO	N/A
RRE 1I	**Security of Supply**	0 instances where frequency was more than ±0.3Hz away from 50Hz, 0 voltage excursions	N/A
RRE 1J	**CNI Outages**	0 outages	N/A
RRE 2E	**Accuracy of Forecasts for Charge Setting**	15% forecasting error	N/A

Below expectations ● **Meeting expectations ●** **Exceeding expectations ●**

We welcome feedback on our performance reporting to box.soincentives.electricity@nationalgrideso.com

Gareth Davies
ESO Regulation Senior Manager

Role 1 Control Centre operations

Metric 1A Balancing cost management

May 2021 Performance

This metric measures our balancing costs based on a benchmark that has been calculated using the previous three years' costs and outturn wind generation. It assumes that the historical relationship between wind generation and constraint costs continues, recognizing that there is a strong correlation between the two factors. Secondly, it assumes that non-constraint costs remain at a calculated historical baseline level. A more detailed explanation follows:

At the beginning of the year the non-adjusted balancing cost benchmark is calculated using the methodology outlined below. The final benchmark for each month is based on actual outturn wind, but an indicative view is provided in advance based on historic outturn wind.

i. Using a plot of the historic monthly constraints costs (£m) against historic monthly outturn wind (TWh) from the 36 months immediately preceding the assessment year, a best fit straight-line continuous relationship is set to determine the monthly 'calculated benchmark constraints costs'.

ii. Using a plot of historic monthly total balancing costs (£m) against historic monthly constraint costs from the 36 months immediately preceding the assessment year, a best fit straight-line continuous relationship is set, with the intercept value of that straight line used to determine the monthly 'calculated benchmark non-constraints costs'.

iii. An equation for the straight-line relationship between outturn wind and total balancing costs is then formed using the outputs of point (i.) and point (ii.).

iv. The historic 3-year average outturn wind for each calendar month is used as the input to the equation in point (iii). The output is 12 ex-ante, monthly non-adjusted balancing cost benchmark values. The sum of these monthly values is the initial 'non-adjusted annual balancing cost benchmark'. The purpose of this initial benchmark is illustrative as it will be adjusted each month throughout the year.

Total Balancing Costs *(£m)* = (Outturn Wind *(TWh)* x 12.16 *(£m/TWh)*) + 19.75 *(£m)* + 41.32 *(£m)*

A monthly ex-post adjustment of the balancing cost benchmark is made to account for the actual monthly outturn wind. This is done by following the process described in point (iv.) above but using the actual monthly outturn wind instead of the historic 3-year average outturn wind of the relevant calendar month. The annual balancing cost benchmark is then updated by replacing the historic value for the relevant month with this actual value.

Figure 1: Monthly total balancing cost benchmark versus outturn.

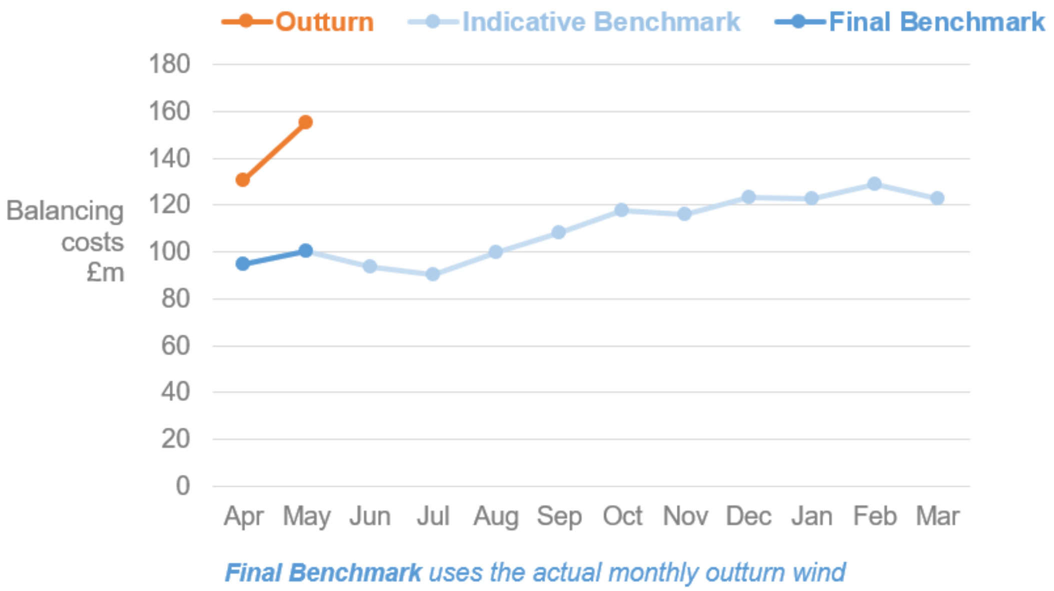


Table 2: Monthly balancing cost benchmark and outturn (Apr-Sep 2021)

All costs in £m	Apr	May	Jun	Jul	Aug	Sep	YTD
Benchmark: non-constraint costs (A)	41.3	41.3	41.3	41.3	41.3	41.3	82.6
Indicative benchmark: constraint costs (B)	59.9	50.6	52.2	49.1	58.3	66.8	110.5
Indicative benchmark: total costs (C=A+B)	101.2	91.9	93.6	90.5	99.7	108.2	193.1
Outturn wind (TWh)	2.8	3.2					6.0
Ex-post benchmark: constraint costs (D)	53.5	58.9					112.4
Ex-post benchmark (A+D)	**94.8**	**100.3**					**195.1**
Outturn balancing costs	**130.4**	**155.0**					**285.4**
Status	●	●					●

Please note that the 2020-21 incentivised balancing cost figures did not include costs for restoration but from April 2021 these are included.

Performance benchmarks

- ● **Exceeding expectations:** 10% lower than the balancing cost benchmark
- ● **Meeting expectations:** within ±10% of the balancing cost benchmark
- ● **Below expectations:** 10% higher than the balancing cost benchmark

Supporting information

The balancing costs for May were higher than the costs for April and outturned above benchmark. The main drivers for cost in May were RoCoF, Response and Fast Reserve.

As outlined in more detail above, the benchmark for this metric is made up of constraint cost and non-constraint cost elements. Below we look at performance against those two elements.

Non-constraint costs

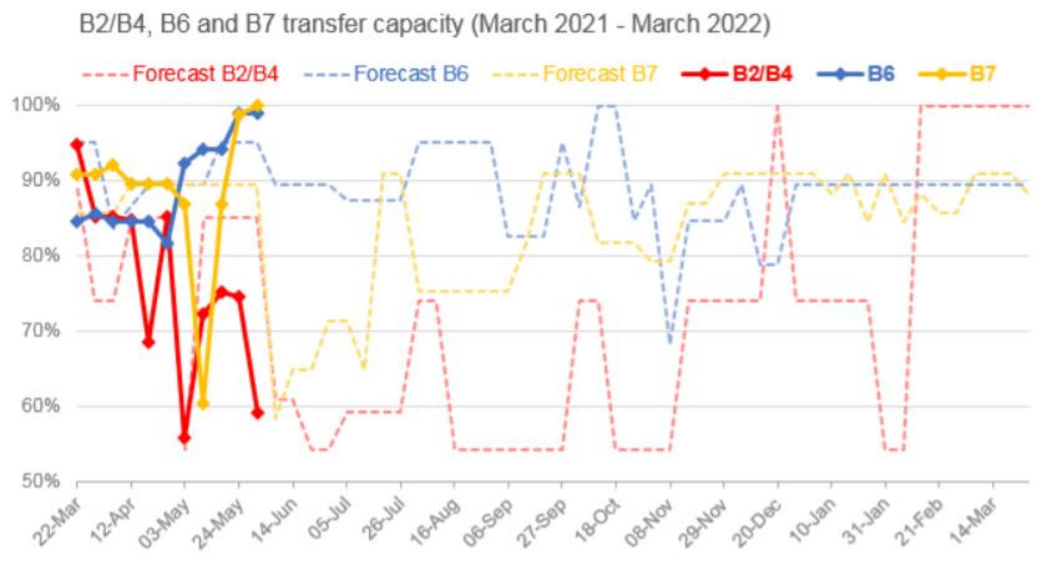
Operating reserve costs for May (£13.6m) were lower than April (£22.7m) as margins improved. Energy Imbalance (£15.2m), Response (£29.3m) and Fast Reserve (£19.8m) increased as lower demands and lower inertia contributed to system uncertainty.

The electricity system has changed dramatically over the last few years and is continuing to change at an unprecedented rate. The volumes of Fast Reserve and Response products required has increased, particularly through 2020-21 and through this year due to the increase in the scale and volume of frequency risks which must be secured. This is largely driven by the increase in renewable generation and interconnected networks. The procurement of Dynamic Containment is an additional spend in Response which will allow us to implement the recommendations of our Frequency Risk and Control Report (FRCR) over the coming months. The benchmark for Metric 1A takes energy costs from historical years (36 months) and, with the rate of change on the electricity system, these costs are not representative of the costs of managing the system today.

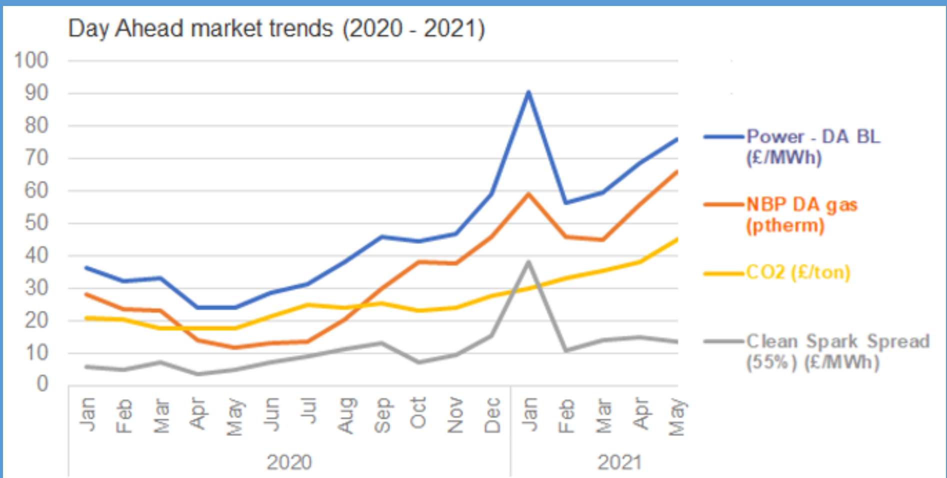
Constraint Costs

RoCoF costs for May (£38.5m) were significantly higher than April (£23.2m), as we would expect as we move towards the lower demands of summer. But RoCoF costs for May were lower than May last year due to higher demands this year, with less severe restrictions due to COVID-19. These costs should fall in June as a result of changes made from the FRCR which is made possible in part by the procurement of Dynamic Containment.

Low wind levels coupled with good network availability resulted in lower thermal constraint costs than April as boundary capacities were less depleted. As shown in the graph below, B7 (Upper North of England) and B6 (SP Transmission to NGET) have been largely intact through April and May. The internal Scotland constraints, such as B2 (North to South SHE Transmission) and B4 (SHE Transmission to SP Transmission boundary), have been more affected by outages but with the low wind levels this hasn't had a big impact on costs.

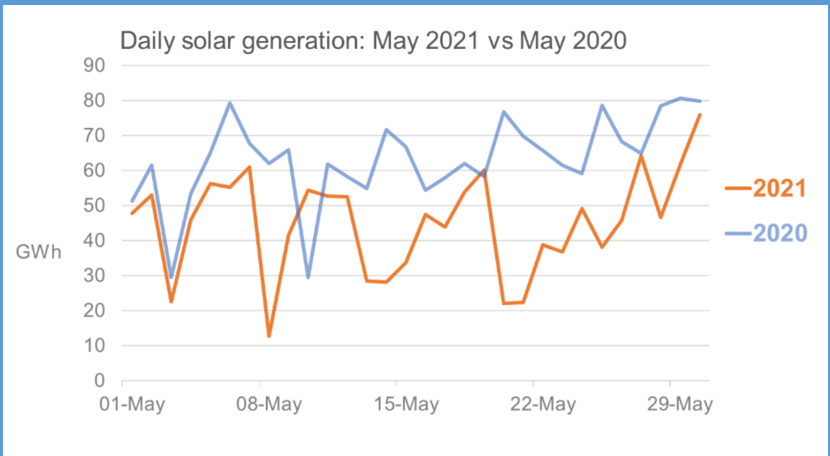


Changes in energy balancing costs



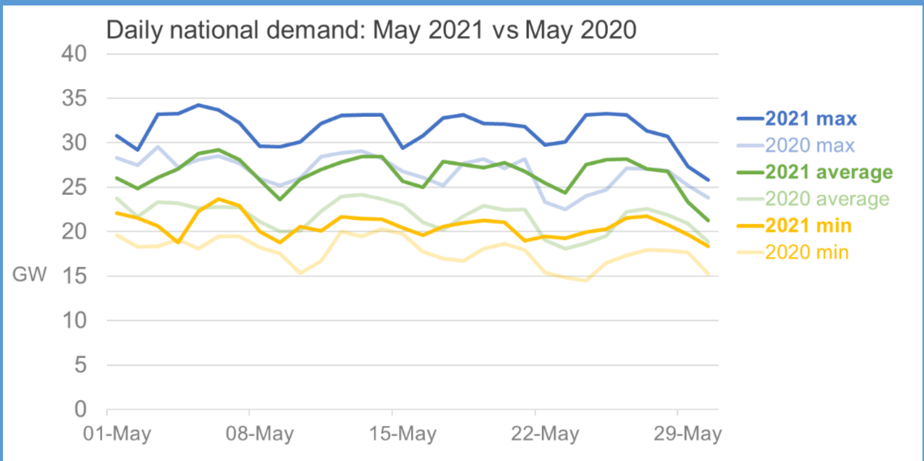
The monthly Day Ahead (DA) power price continued to rise in May to around £76/MWh as gas prices and CO2 prices also rose. The increased proportion of renewable generation on the system has eroded the correlation between market prices and BM costs, however higher DA power prices can lead to a higher cost for the actions on the buy (offer) side as conventional generation may be required for system or energy reasons. The cost for managing sell (bid) actions is less impacted by market prices as renewable generation is likely to run and their prices won't be based against the spark spread.

Comparison of solar generation against May 2020



The solar output was consistently lower through May this year compared to May last year. Over the course of the month the total solar output was 0.5TWh lower than last year.

Comparison of demand against May 2020



Demand levels have been significantly higher over the course of May this year. The average daily demand has been around the level of the maximum daily demand last year. ODFM (Optional Downward Flexibility Management) has been re-introduced in case of very low demands but was not required in May.

Metric 1B Demand forecasting accuracy

May 2021 Performance

This metric measures the average absolute percentage error (APE) between day-ahead forecast demand and outturn demand for each half hour period. The benchmarks are drawn from analysis of historical forecasting errors for the five years preceding the performance year.

If the Optional Downward Flexibility Management (ODFM) service is used, it will be accounted for in the data used to calculate performance. The ESO shall publish the volume of instructed ODFM.

A 5% improvement in historical 5-year average performance is required to exceed expectations, whilst coming within ±5% of that value is required to meet expectations.

Performance will be assessed against the annual benchmark of 2.1%, but monthly benchmarks are also provided as a guide. The ESO will report against these each month to provide transparency of its performance during the year.

Compared with last year's reporting, there are two differences in relation to ,metric 1B. The first one is that the performance is reported as the mean absolute percentage error (APE) rather than mean average error expressed in MW. The second difference is that the accuracy is measured for each Settlement Period, rather than each Cardinal Point.

Figure 2: Monthly APE (Absolute Percentage Error) vs Indicative Benchmark (2021-22)

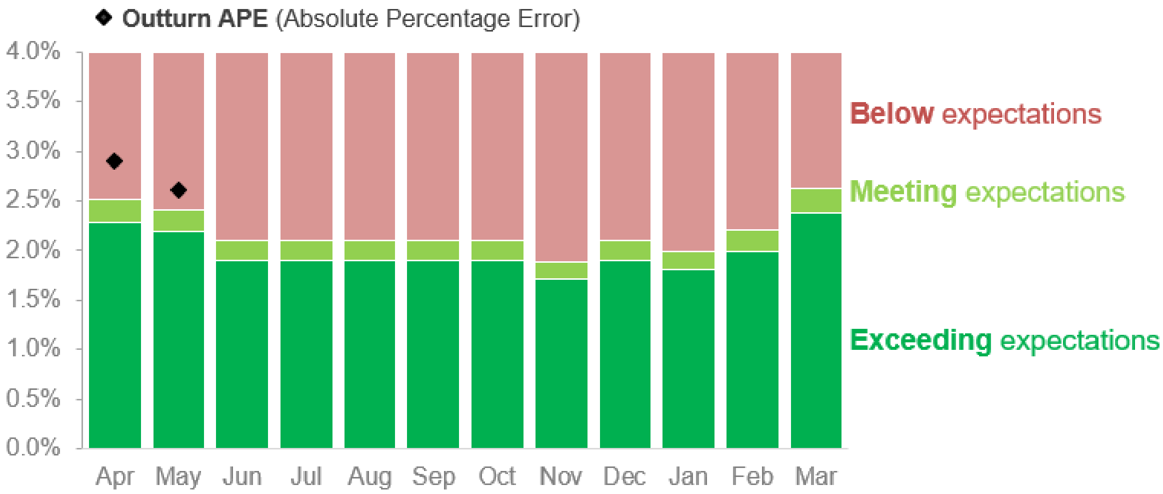


Table 3: Monthly APE (Absolute Percentage Error) vs Indicative Benchmark (2021-22)

	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Full Year
Indicative benchmark (%)	2.4	2.3	2.0	2.0	2.0	2.0	2.0	1.8	2.0	1.9	2.1	2.5	**2.1**
APE (%)	**2.9**	**2.6**											
Status	●	●											

Performance benchmarks

- ● **Exceeding expectations:** <5% lower than 95% of average value for previous 5 years
- ● **Meeting expectations:** ±5% window around 95% of average value for previous 5 years
- ● **Below expectations:** >5% higher than 95% of average value for previous 5 years

Supporting information

In May 2021, our day ahead demand forecast indicative performance was not within the benchmark of 2.3%. May's MAPE (Mean Absolute Percentage Error) was 2.6%.

The biggest errors at the day ahead forecasting horizon were mostly observed between 10:00 and 15:30, SP20 to SP31. A summary of the largest errors is shown in a table below.

Considering long-term data and looking at historical Mays, May 2021 was unusually cold and wet. Apart from the Late Bank Holiday weekend, temperatures for most of the month were subdued. Most of the country experienced rainfall well above the long-term averages for the month. This drove atypical demand behaviour across the month.

People's behaviour is still affected by COVID-19, but is less consistent which translated into greater forecasting errors.

Performance in May 2021: largest errors		
Error greater than	**No of SPs**	**% out of the SPs in the month**
1000MW	391	26%
1500MW	162	11%
2000MW	53	4%
2500MW	13	1%
3000MW	0	N/A

Triads only take place between November and February, and therefore did not impact on forecasting performance during May.

There were no occasions of missed or late publications.

Metric 1C Wind forecasting accuracy

May 2021 Performance

This metric measures the average absolute percentage error (APE) between day-ahead forecast and outturn wind generation for each half hour period as a percentage of capacity for BM wind units only. The benchmarks are drawn from analysis of historical errors for the five years preceding the performance year.

A 5% improvement in historical 5-year average performance is required to exceed expectations, whilst coming within ±5% of that value is required to meet expectations.

Figure 3: BMU Wind Generation Forecast APE vs Indicative Benchmark (2021-22)

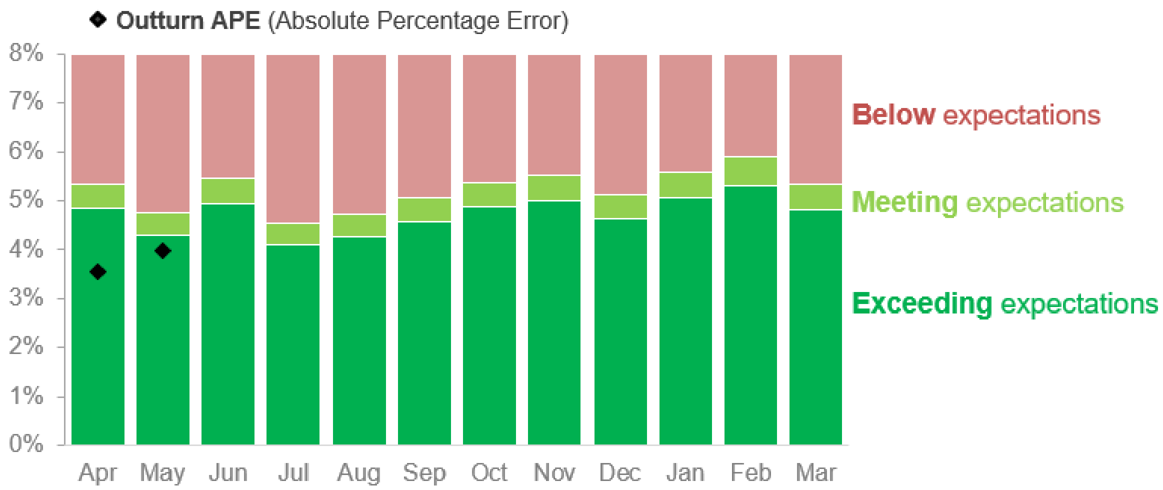


Table 4: BMU Wind Generation Forecast APE vs Indicative Benchmarks (2021-22)

	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Full Year
BMU Wind Generation Forecast Benchmark (%)	5.1	4.5	5.2	4.3	4.5	4.8	5.1	5.3	4.9	5.3	5.6	5.1	**5.0**
APE (%)	**3.5**	**4.0**											
Status	●	●											

Performance benchmarks

- ● **Exceeding expectations:** <5% lower than 95% of average value for previous 5 years
- ● **Meeting expectations:** ±5% window around 95% of average value for previous 5 years
- ● **Below expectations:** >5% higher than 95% of average value for previous 5 years

Supporting information

In May 2021, our wind forecast indicative performance was within the benchmark of 4.5%. May's MAPE (Mean Absolute Percentage Error) was 4.0%.

May 2021 turned out to be one of the wettest on record. Nine out of the 31 days in May had significant rainfall brought by weather fronts moving across the UK. Although rainfall is not directly related to wind power it can be an indicator of turbulent weather conditions. On two of these days the centre of the low pressure also passed across the UK. On all of these occasions, we would expect to see larger than usual wind power forecasting errors.

Eleven out of the 31 days in May had significant lightning activity occurring across the UK. Lightning is a good indication of atmospheric instability. It is commonly difficult to forecast so can lead to greater wind power forecast errors.

Despite these unusual weather conditions, the national weather forecasting input data that we use was relatively accurate, and combined with our forecasting models this gave us a result within the 'exceeding expectations' target. For full details of the improvements we have made to date, and additional developments planned see pages 40-41 of our 2020-21 End of Year Report.

Wind farms with CFD (Contracts for Difference) contractual arrangements switch off for commercial reasons while prices are negative for six hours or more. In May there were no occasions when the electricity price went negative. The electricity price used for this analysis is the Intermittent Market Reference Price. Market Price Data for May can be downloaded from here: https://www.emrsettlement.co.uk/settlement-data/settlement-data-roles/

There were no occasions of missed or late publications.

Metric 1D Short Notice Changes to Planned Outages

May 2021 Performance

This metric measures the number of short notice outages delayed by > 1 hour or cancelled, per 1000 outages, due to ESO process failure.

Figure 4: Number of outages delayed by > 1 hour, or cancelled, per 1000 outages

Table 5: Number of outages delayed by > 1 hour, or cancelled, per 1000 outages

	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	YTD
Number of outages	845	856											1701
Outages delayed/cancelled	0	0											0
Number of outages delayed or cancelled per 1000 outages	0	0											0

Performance benchmarks

- **Exceeding expectations:** Less than 1 outages delayed or cancelled per 1000 outages
- **Meeting expectations:** 1-2.5 outages delayed or cancelled per 1000 outages
- **Below expectations:** More than 2.5 outages delayed or cancelled per 1000 outages

Supporting information

For May, the ESO has successfully released 856 outages and there have been zero delays or cancellations due to an ESO process failure.

This is within the ‘Exceeds Expectations’ target of less than one delay or cancellation per 1000 outages, and is a stronger performance than the same month last year (May 2020-21) when there were 1.93 cancellations or delays per 1000 outages.

The ESO is regularly engaging with the TOs and DNOs to maximize system access, and has released a greater number of outages compared with historic years for May, with 756 outages in 2019-20 and 629 outages in 2020-21.

RRE 1E Transparency of operational decision making

May 2021 Performance

This Regularly Reported Evidence (RRE) shows % balancing actions taken outside of the merit order in the Balancing Mechanism each month.

We publish the Dispatch Transparency dataset on our Data Portal every week on a Wednesday. This dataset details all the actions taken in the Balancing Mechanism (BM) for the previous week (Monday to Sunday). Categories and reason groups are allocated to each action to provide additional insight into why actions have been taken and ultimately derive the percentage of balancing actions taken outside of merit order in the BM.

Categories are applied to all actions where these are taken in merit order (Merit) or where an electrical parameter drives that requirement. Reason groups are identified for any remaining actions where applicable. Additional information on these categories and reason groups can be found on our Data Portal in the Dispatch Transparency Methodology.

Categories include: System, Geometry, Loss Risk, Unit Commitment, Response, Merit

Reason groups include: Frequency, Flexibility, Incomplete, Zonal Management

The aim of this evidence is to highlight the efficient dispatch currently taking place within the BM while providing significant insight as to why actions are taken in the BM. Understanding the reasons behind actions being taken out of pure economic order allows us to focus our development and improvement work to ensure we are always making the best decisions and communicating this effectively to our customers and stakeholders.

The Dispatch Transparency dataset, first published at the end of March 2021, has already sparked many conversations amongst market participants. It is anticipated that as we continue to publish this dataset, we will be able to provide additional insight into the actions taken in the Balancing Mechanism and help build trust as we become more transparent with our decision making.

Table 6: Percentage of balancing actions taken outside of merit order in the BM

	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Percentage of actions taken in merit order, or out of merit order due to electrical parameter (category applied)	90.4%	88.4%										
Percentage of actions that have reason groups allocated (category applied, or reason group applied)	99.6%	99.6%										
Percentage of actions with no category applied or reason group identified	**0.4%** (173)	**0.4%** (147)										

Supporting information

Please note that the data for April has been corrected in this report. The original figures were incorrect due to an error in the model calculations. The original figure of 3% of actions with no category applied or reason group identified has now been revised to 0.4%. The methodology and raw data have not changed.

This month, 88.4% of actions were taken in merit order, or taken out of merit order due to an electrical parameter. For the remaining actions, where possible, we allocate actions to reason groups for the purposes of our analysis. We were unable to allocate reason groups for 0.4% of the total actions this month.

RRE 1G Carbon intensity of ESO actions

May 2021 Performance

This RRE measures the difference between the carbon intensity of the combined Final Physical Notification (FPN) of machines in the Balancing Mechanism (BM) and the equivalent profile with balancing actions applied.

It is often the case that balancing actions taken by the ESO for operability reasons increase the carbon intensity of the generation mix. More information about the ESO's operability challenges is provided in the Operability Strategy Report.

For full details of the methodology please refer to the Carbon Intensity Balancing Actions Methodology document.

Table 7: gCO2/kWh of actions taken by the ESO

	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Carbon intensity (gCO2/kWh)	2.1	6.2										

Supporting information

The month of May 2021 saw an average difference between the carbon intensity of FPNs and the position after balancing actions of 6.17 gCO2/kWh. The maximum difference was 50.03 gCO2/kWh and the minimum was -12.58 gCO2/kWh. The average difference was 4.1 gCO2/kWh higher than it was last month.

As we highlight in the notable events for Role 1, May had high levels of wind generation. High wind tends to lead to the control room having to curtail wind to guarantee system stability and security. Curtailing wind increases the overall carbon intensity of the system, as conventional generation is typically used to plug the energy gap. This explains why the difference for this month is markedly higher than last month.

The average wind level was 5,501 MW, or 17.9% of the generation mix. Where wind makes up a large share of the generation mix, wind can become the cost-effective option in the stack for reducing output. The high penetration of wind this month means that even where wind was curtailed because of energy rather than system requirements, these actions push the FPN and post balancing action positions further apart.

The second weekend of May saw the largest divergence between FPNs and carbon intensity after balancing actions. Over 8 and 9 May, the average difference was 30.43 gCO2/kWh. The average share of the generation mix for wind during this period was 38%.

During May, the main trend we have observed is where there is high wind and the system is long. This means the control room must reduce energy on the system, issuing bids to wind units, which increases the carbon intensity of balancing actions.

RRE 1I Security of Supply

May 2021 Performance

This Regularly Reported Evidence (RRE) shows when the frequency of the electricity transmission system deviates more than ± 0.3Hz away from 50 Hz for more than 60 seconds, and where voltages are outside statutory limits. On a monthly basis we will report instances where:

- The frequency is more than ± 0.3Hz away from 50 Hz for more than 60 seconds
- The frequency was 0.3Hz - 0.5Hz away from 50 Hz for more than 60 seconds.
- There is a voltage excursion outside statutory limits. For nominal voltages of 132kV and above, a voltage excursion is defined as the voltage being more than 10% away from the nominal voltage for more than 15 minutes, although a stricter limit of 5% is applied for where voltages exceed 400kV.

For context, the Frequency Risk and Control Report defines the appropriate balance between cost and risk, and sets out tabulated risks of frequency deviation as below, where 'f' represents frequency:

Deviation (Hz)	**Duration**	**Likelihood**
f > 50.5	Any	1-in-1100 years
49.2 ≤ f < 49.5	up to 60 seconds	2 times per year
48.8 < f < 49.2	Any	1-in-22 years
47.75 < f ≤ 48.8	Any	1-in-270 years

At the end of the year, we will report on frequency deviations with respect to the above limits and communicate any plans for future changes to the methodology.

Table 8: Frequency and voltage excursions

	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Frequency excursions (more than 0.5 Hz away from 50 Hz)	0	0										
Instances where frequency was 0.3 – 0.5 Hz away from 50Hz	0	0										
Voltage Excursions defined as per Transmission Performance Report[1]	0	0										

Supporting information

There have been no reportable frequency or voltage excursions for May 2021.

[1] https://www.nationalgrideso.com/research-publications/transmission-performance-reports

RRE 1J CNI Outages

May 2021 Performance

This Regularly Reported Evidence (RRE) shows the number and length of planned and unplanned outages to Critical National Infrastructure (CNI) IT systems.

The term 'outage' is defined as the total loss of a system, which means the entire operational system is unavailable to all internal and external users.

Table 9: Unplanned CNI System Outages (Number and length of each outage)

	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Balancing Mechanism (BM)	0	0										
Integrated Energy Management System (IEMS)	0	0										

Table 10: Planned CNI System Outages (Number and length of each outage)

	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Balancing Mechanism (BM)	0	0										
Integrated Energy Management System (IEMS)	0	0										

Supporting information

There were no outages, either planned or unplanned, encountered during May 2021.

Notable events this month

New record set for wind energy

The proportion of generation provided by wind power peaked between 2am and 3am on Friday, 21 May. During that hour, onshore and offshore wind turbines generated 62.5% of Great Britain's electricity. That contribution easily surpassed the previous record of 59.9%, set in August 2020.

Winds were so strong and sustained that there were several periods between 10pm Thursday and early Friday morning when wind power was supplying more than 60% of Great Britain's electricity.

Wind power generation peaked at 16.3GW on Friday 21 May, below the record of 17.6GW achieved on the Bank Holiday in early May. But because demand was lower overnight, on 21 May wind contributed a higher proportion of the electricity needed.

Distributed ReStart Procurement and Compliance stakeholder engagement

On 20 May we held a webinar[2] which provided an overview of our developments in procurement and compliance, as a commencement of our focussed engagement as we develop our process and thinking. We then invited Distributed Energy Resource (DER) participants for further 1-2-1 meetings to fully understand their requirements and seek feedback on our proposals. The first meeting was held on 27 May and further meetings will be held in June.

[2] https://players.brightcove.net/867903724001/default_default/index.html?videoId=6255943776001

Role 2 Market development and transactions

RRE 2E Accuracy of Forecasts for Charge Setting

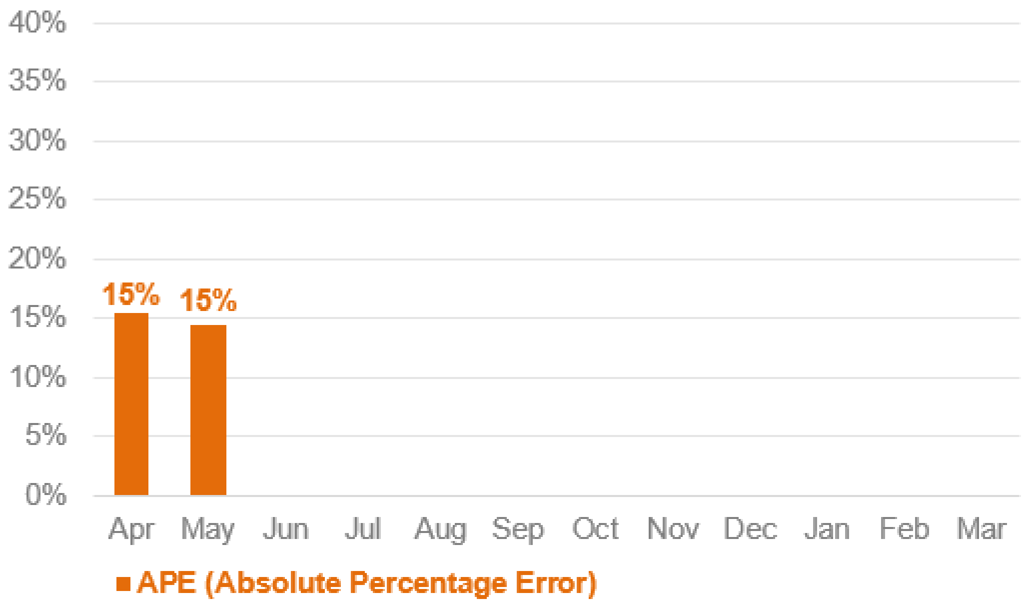
May 2021 Performance

This Regularly Reported Evidence (RRE) shows the accuracy of Balancing Services Use of System (BSUoS) forecasts used to set industry charges against the actual outturn charges.

Table 11: Month ahead forecast vs. outturn BSUoS (£/MWh) Performance

	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Actual	3.81	4.36										
Month-ahead forecast	3.22	3.73										
APE (Absolute Percentage Error) [3]	**15%**	**15%**										

Figure 5: Monthly BSUoS forecasting performance (Absolute Percentage Error)



Supporting information

The outturn BSUoS for May was higher than April. Constraint costs rose due to higher RoCoF costs as a result of lower demand. Energy Imbalance, Fast Reserve and Response prices all rose as a result of managing a low inertia system with a high degree of uncertainty. The total BSUoS volume was slightly lower in May than April (despite May being a 31-day month) due to lower demands as we move into the summer months.

[3] Monthly APE% figures may change with updated settlements data at the end of each month. Therefore, subsequent settlement runs may impact the end of year outturn.

Notable events this month

Power Responsive guide to Demand Side Response published

The latest Power Responsive Guide to Demand Side Response[4] was published in May, as well as webinar guides.

This guide is a great starting point for anybody looking to understand the demand side proposition, and access additional revenue by providing Balancing Services to NGESO or DNOs, whether directly or through a third party. Businesses from many sectors including manufacturing, health services, retail, and transport, are continuing to support our energy system. Aggregators and suppliers are numerous, and their support can be extremely valuable in helping to identify flexibility opportunities for stakeholders and consumers.

Dynamic Containment (DC) procurement webinar

Following the Response Reform webinar held on 29 April, we held a DC procurement changes webinar[5] on 20 May. This went into more detail on the proposed changes on how we procure DC. We are preparing to move our new response services to daily auctions. The procurement process will largely remain the same, apart from a few changes resulting from the trial feedback and lessons learnt.

Reserve Reform Workshop

On 26 and 27 May we held Reserve Reform co-creation workshops. This related to the new reserve products which will go through the various elements of product and service design we consulted on earlier this year. These smaller workshops will allow us to come to a better proposal for the new reserve product suite. The output of the workshops will form the basis of a final consultation on product and service design in the summer.

Power Potential trial with UKPN

The Power Potential commercial market trials ran from 6 January to 28 March 2021. By working in partnership with UK Power Networks and with the industry in a trial environment, we have been able to identify a number of learning points. We are aware of the flexibility market DNOs are working on and are ensuring there is no conflict with the reactive power market. On 4 May 2021 we submitted our report[6] on the conclusions and key findings from Power Potential.

[4] http://powerresponsive.com/wp-content/uploads/2021/04/NG_MEUC-book-2021.pdf
[5] https://players.brightcove.net/867903724001/default_default/index.html?videoId=6255941612001
[6] https://www.nationalgrideso.com/document/191146/download

Role 3 System insight, planning and network development

Please note there are no monthly metrics or RREs for Role 3.

Notable events this month

Network Options Assessment (NOA) 2021-22 methodology consultation

In May we opened the consultation for our NOA 2021-22 methodology[7]. It closed on Tuesday 22 June. We have consulted with the TOs and Ofgem whilst preparing this NOA methodology statement.

This document provides an overview of the aims of the NOA and details the methodology which describes how we assess the required levels of network transfer, the options available to meet this requirement, and recommends options for further development. It is important to note that whilst we recommend progressing options in order to meet system needs, any investment decisions remain with the Transmission Owners (TOs) or other relevant parties as appropriate.

This methodology document describes the end-to-end process from the analysis to publishing the NOA report, and identifies the roles and responsibilities of the ESO and TOs. It includes timescales as set out in the Electricity Transmission Standard Licence Condition C27.

Technical Feasibility Assessment published

On 10 May we published the Technical Feasibility Assessment on how Energy Storage could help manage constraints on the electricity transmission network between 2022-2030. Publishing these documents launches one month of stakeholder engagement on the proposed scope of work, and in parallel a month for expressions of interest from consultants who might want to tender.

On 26 May we hosted a webinar to explain both processes, we had around 100 attendees including storage providers and consultants. On 10 June we closed both processes, and shortly afterwards we will update the scope in response to the feedback and send a Request For Proposal (RFP) to five to six consultants shortlisted from those that responded to the Request For Information (RFI). Links to the scope, the RFI, webinar registration and how to respond are all on the webpage[8].

DSO Transition Webinar

Following the launch of our Distribution System Operation (DSO) consultation in April, we held a webinar on 6 May to allow stakeholders to hear from ESO colleagues around the ten coordinating functions we proposed in our consultation. The Association for Decentralised Energy (ADE) and Energy Networks Association (ENA) also presented their views on the importance of, and priorities for the DSO transition. Over 100 stakeholders attended the webinar to hear more on our approach and ask questions. We have now published responses to all questions raised[9] and the webinar is now available on our website[10].

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[7] https://www.nationalgrideso.com/document/191581/download

[8] https://www.nationalgrideso.com/future-of-energy/projects/pathfinders/constraint-management/energy-storage-technical-feasibility-assessment

[9] https://www.nationalgrideso.com/document/192106/download

[10] https://players.brightcove.net/867903724001/default_default/index.html?videoId=6252928262001