A landscape photograph featuring snow-capped mountains under a cloudy sky. In the foreground, several bright yellow light trails curve across a valley. The bottom of the image has a yellow gradient bar.

# ESO Operational Transparency Forum

20th Oct 2021

You have been joined in listen only mode with  
your camera turned off

## Introduction | Sli.do code #OTF

**Please visit [www.sli.do](https://www.sli.do) and enter the code #OTF to ask questions & provide us with post event feedback.**

We will answer as many questions as possible at the end of the session. We may have to take away some questions and provide feedback from our expert colleagues in these areas during a future forum. **Ask your questions early in the session to give more opportunity to pull together the right people for responses.**

These slides, event recordings and further information about the webinars can be found at the following location:

<https://data.nationalgrideso.com/plans-reports-analysis/covid-19-preparedness-materials>

### Regular Topics

- Questions from last week
- Business continuity
- Demand review and outlook
- Costs for last week
- Constraints
- Margin update

### Focus Areas

**Frequency Risk and Control Report (FRCR )**

**Transmission Network before Real Time**

## Questions outstanding from last week

**Q:** What date are you stopping the week ahead FFR trial auctions?

**A:** 26<sup>th</sup> November

<https://data.nationalgrideso.com/ancillary-services/firm-frequency-response-market-information>

**Q:** Any plan on publishing the primary, secondary high requirements?

**A:** Procured volume is published in MBSS but not the requirement volume

**Q:** Approx £11m was spent in the BM yesterday. what were the main cost drivers?

**A:** For 12<sup>th</sup> October - high-priced units were required for margin over 4B peak. Rye House @ £3,750/MWhr, Ratcliffe-1 @ £2,950/MWhr. Wind levels were low yesterday. Demand increasing in line with time of year

**Q:** Real time interconnector flows for IFA2, ElecLink & NSL are yet to be made known on <https://extranet.nationalgrid.com/RealTime> Any updates on when this will be available?

**A:** We apologise, but have not enabled this change yet – we are on the case.

**Q:** Why is there no consideration to continental tightness in the outlook report? We could be GW's in deficit if exporting!

**A:** As above, interconnector flow is determined by market conditions and the spread of price between us and our neighbours. Our analysis shows that, if our system is tight, the spread of price will be in our favour.

## Questions outstanding from last week

**Q:** We have seen a number of SO-SO countertrades with the Irish TSO. How is the power procured on your end for the additional exports, and does it affect the balancing mechanism in any way ie. do increased exports push the GB system short?

**A:** The answer to this depends on timescales. They can buy energy in the market via their trading partners. In the shorter timescales we need to decide how much spare margin/reserve we have and if we can facilitate their request without causing us system issues. E.g. SONI request some MW from us for their peak, ENCC would agree if capacity is available, this is then priced against the next expensive (marginal) BMU.

Please be aware that given the volume of questions we are receiving in the OTF we will prioritise the most popular questions to answer on the day and will come back with responses for those we are not able to cover on the day. We will also be signposting, where possible, other areas to find information.

## Future forum topics

**While we want to remain flexible to provide insight on operational challenges when they happen, we appreciate you want to know when we will cover topics.**

**We have the following deep dives planned:**

**27<sup>th</sup> October**

**Carbon Intensity Calculations – previously delayed due to presenter availability**

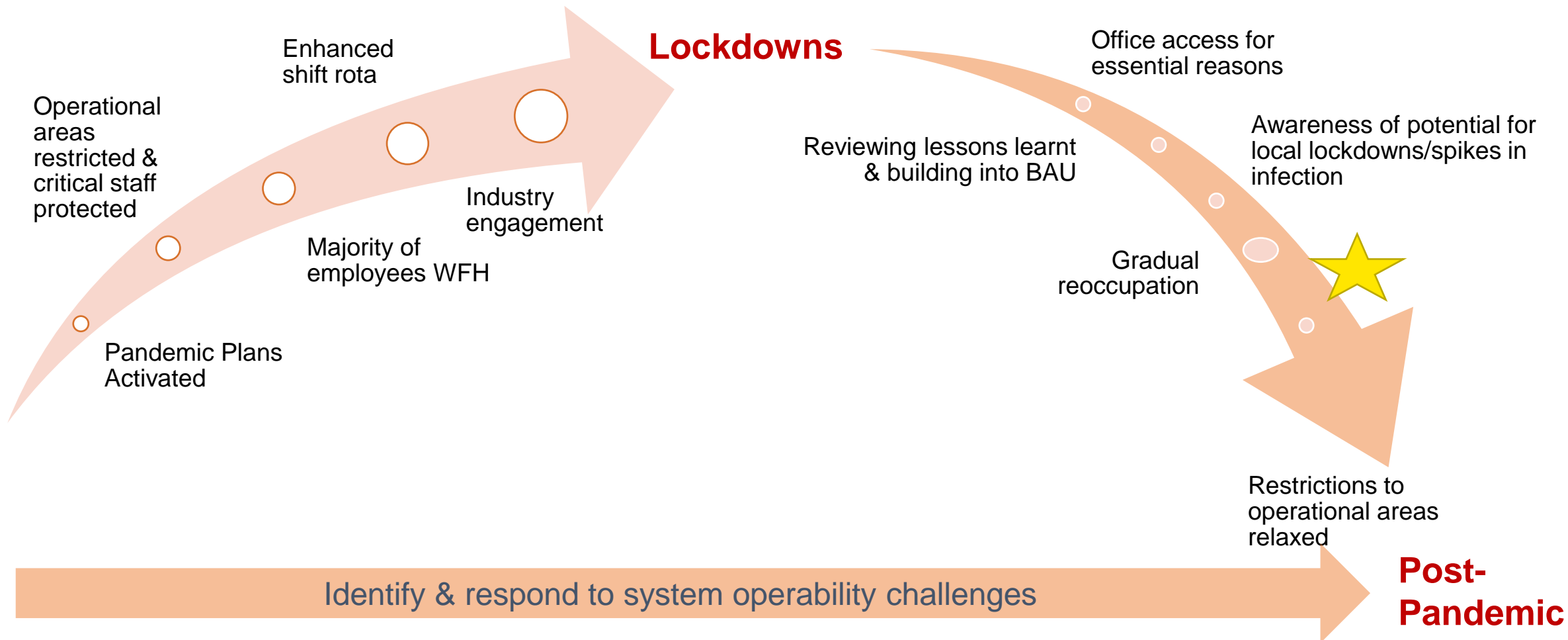
**Powerloop Project Update**

**3rd Nov**

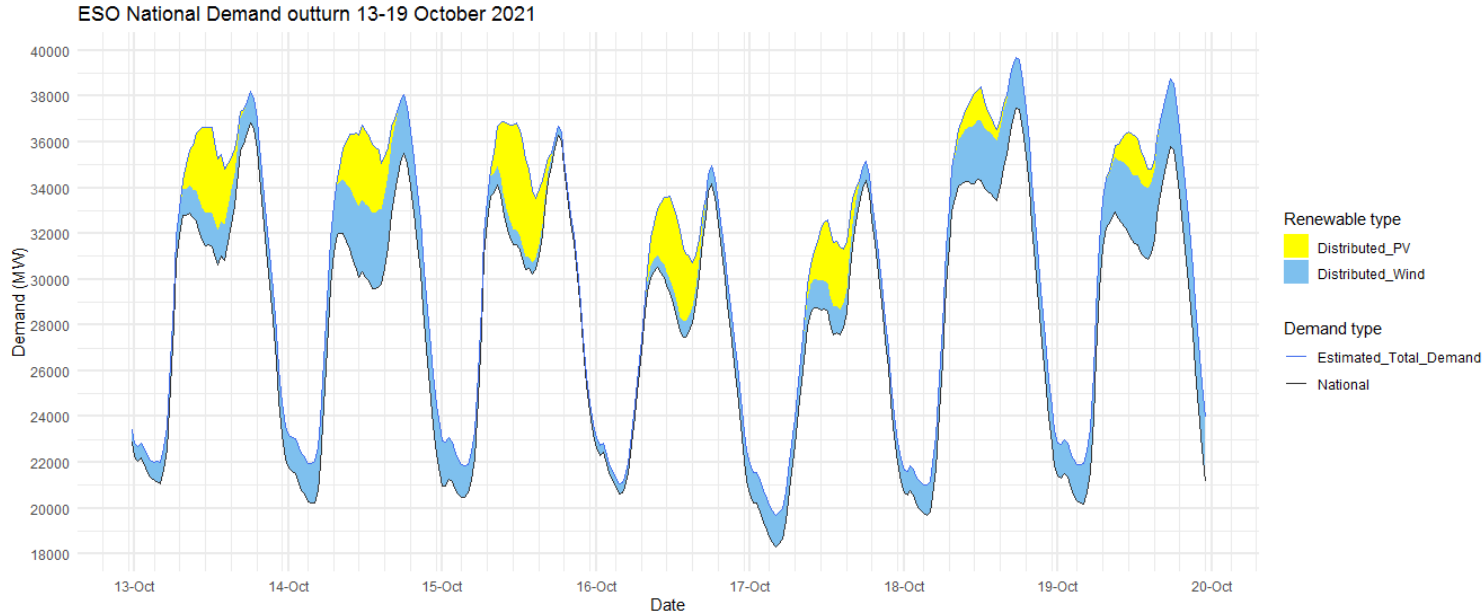
**Digitised Whole System Technical Code**

**Scotland Voltage Oscillations**

# Protecting critical staff to maintain critical operations



# Demand | Last 7 days outturn

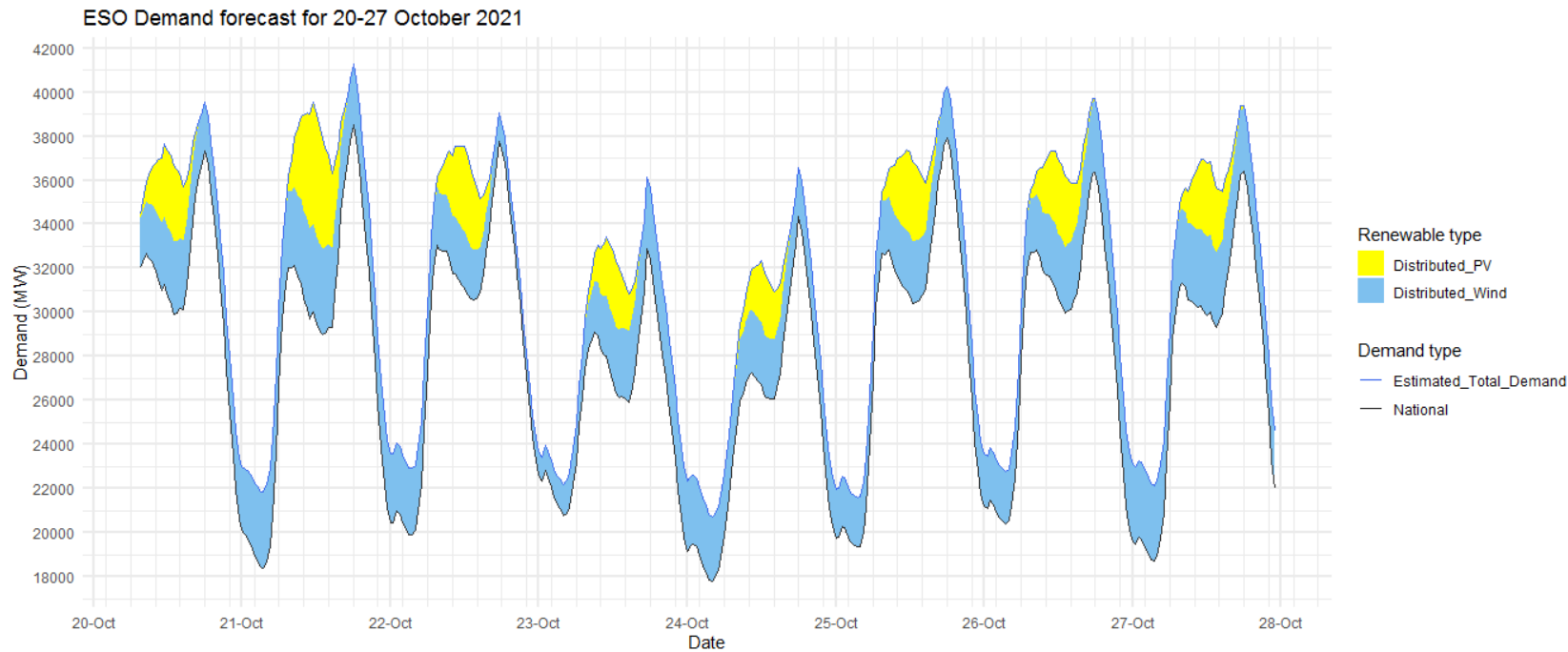


The black line (National Demand) is the measure of portion of total GB customer demand that is supplied by the transmission network.

Blue line serves as a proxy for total GB customer demand. It includes demand supplied by the distributed wind and solar sources, but it does not include demand supplied by non-weather driven sources at the distributed network for which ESO has no real time data.

Date	Forecasting Point	FORECAST (Wed 13)		OUTTURN	
		National Demand (GW)	Dist. wind (GW)	National Demand (GW)	Dist. wind (GW)
13 Oct	Evening Peak	37.0	1.4	36.9	1.3
14 Oct	Overnight Min	19.4	1.9	20.2	1.8
14 Oct	Evening Peak	35.6	2.5	35.5	2.5
15 Oct	Overnight Min	19.9	1.7	20.5	1.4
15 Oct	Evening Peak	37.0	0.4	36.3	0.4
16 Oct	Overnight Min	20.7	0.5	20.6	0.4
16 Oct	Evening Peak	33.5	1.3	34.2	0.8
17 Oct	Overnight Min	18.5	1.6	18.3	1.4
17 Oct	Evening Peak	33.9	1.5	34.3	0.9
18 Oct	Overnight Min	19.4	1.4	19.7	1.3
18 Oct	Evening Peak	36.0	2.6	37.5	2.2
19 Oct	Overnight Min	18.7	2.8	20.2	1.8
19 Oct	Evening Peak	35.3	3.2	35.8	3.0

# Demand | Week Ahead



The black line (National Demand) is the measure of portion of total GB customer demand that is supplied by the transmission network.

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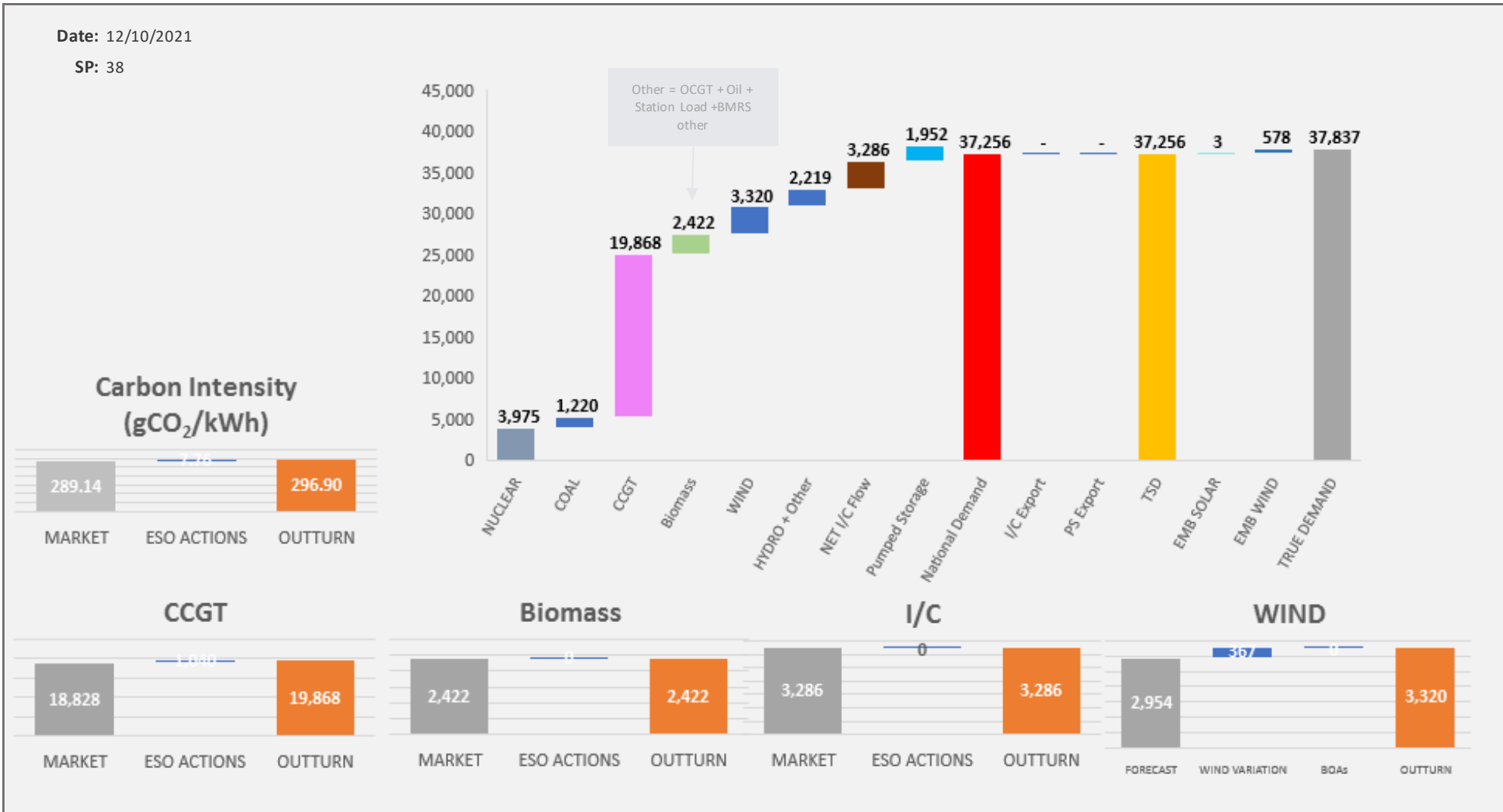
		FORECAST (Wed 20 Oct)	
Date	Forecasting Point	National Demand (GW)	Dist. wind (GW)
20 Oct	Evening Peak	37.3	2.2
21 Oct	Overnight Min	18.4	3.4
21 Oct	Evening Peak	38.5	2.8
22 Oct	Overnight Min	19.9	3.1
22 Oct	Evening Peak	37.8	1.3
23 Oct	Overnight Min	20.8	1.4
23 Oct	Evening Peak	32.9	3.2
24 Oct	Overnight Min	17.8	2.9
24 Oct	Evening Peak	34.3	2.3
25 Oct	Overnight Min	19.3	2.3
25 Oct	Evening Peak	37.9	2.3
26 Oct	Overnight Min	20.4	2.4
26 Oct	Evening Peak	36.4	3.2
27 Oct	Overnight Min	18.7	3.4
27 Oct	Evening Peak	36.4	2.9



# ESO Actions | Tuesday 12 October Peak

Date: 12/10/2021

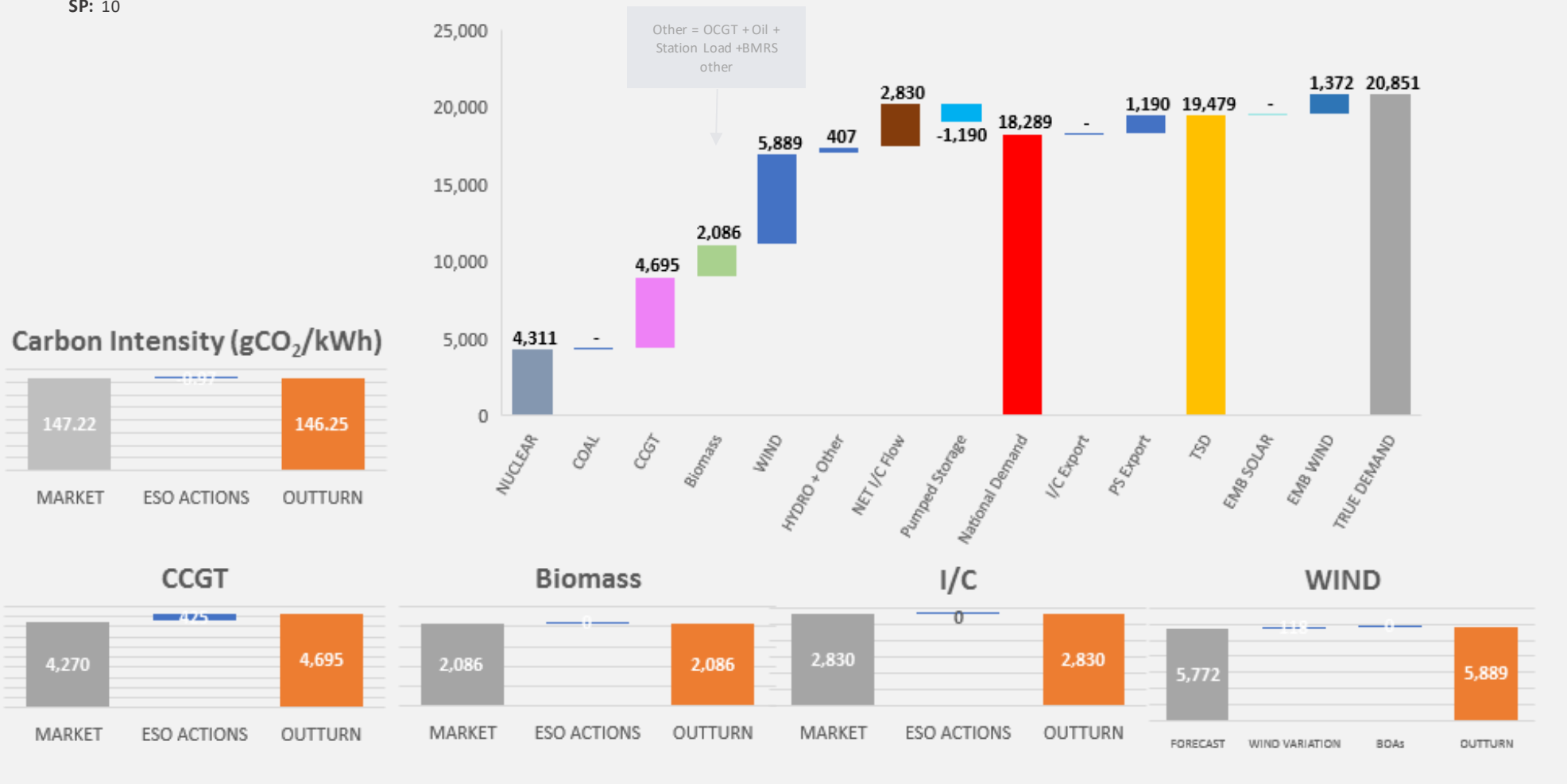
SP: 38



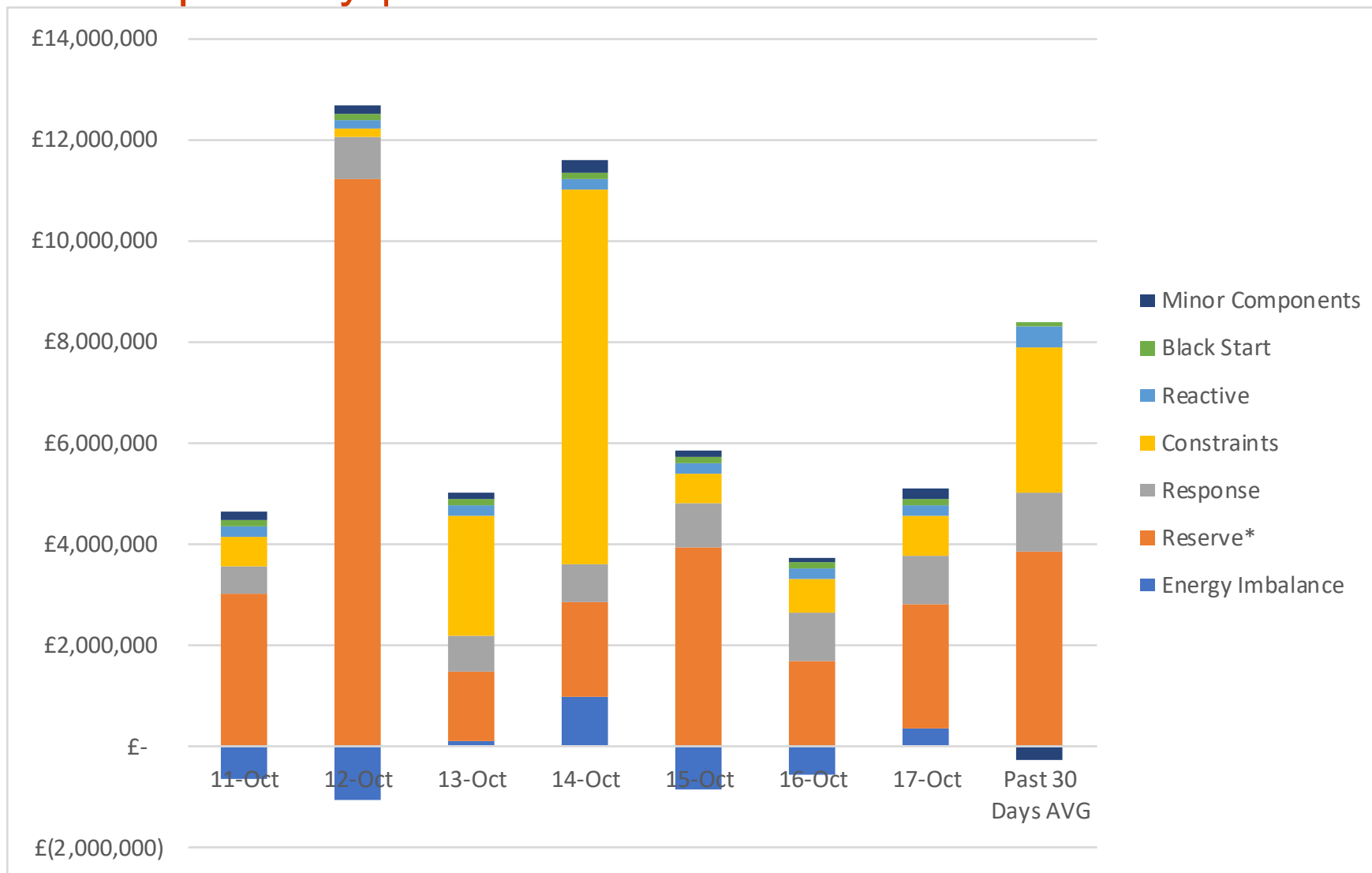
# ESO Actions | Sunday 17 October Minimum

Date: 17/10/2021

SP: 10



## Transparency | Costs for the last week



Tuesday 12 October and Thursday 14 October were the highest cost days for the week.

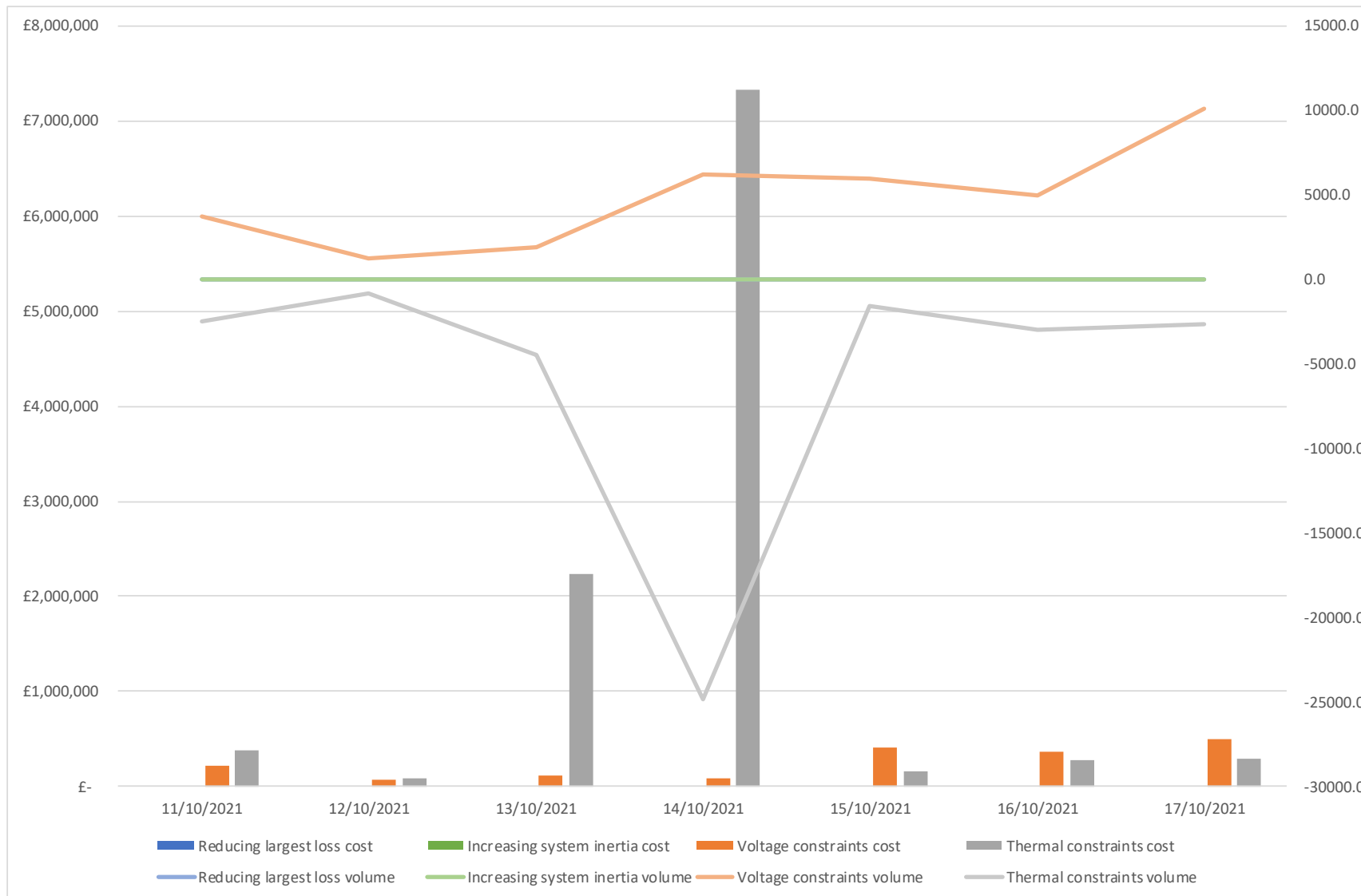
**Operating Reserve** was the main drive for the high spend of Tuesday, accounting for over 90% of the total daily cost. High priced offers submitted by market participant were taken to ensure operating margin and reserve requirement were met.

### Constraint

Thursday, due to sustained high wind levels from the early hours until late evening, high volume of BM actions were required to buy off generation in Scotland to manage thermal Constraints.

### Past 30 Days Average added

# Transparency | Constraint cost breakdown



## Thermal

Between Wednesday and Thursday, large volumes of action required to manage thermal constraints particularly in Scotland.

## Voltage

Some action required to synchronise generation to meet our voltage requirements throughout the week

## Managing largest loss for RoCoF

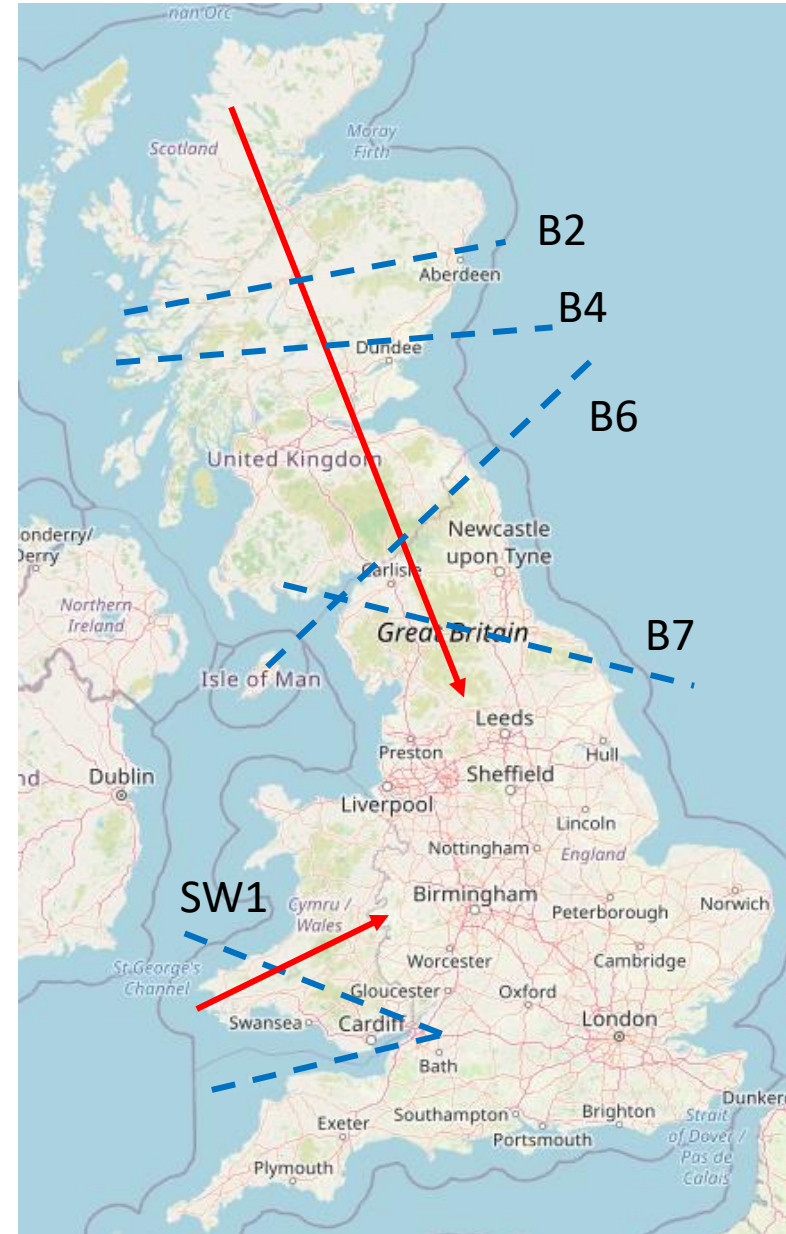
No action required to manage largest loss on interconnectors.

## Increasing inertia

No Intervention required to increase minimum inertia level.

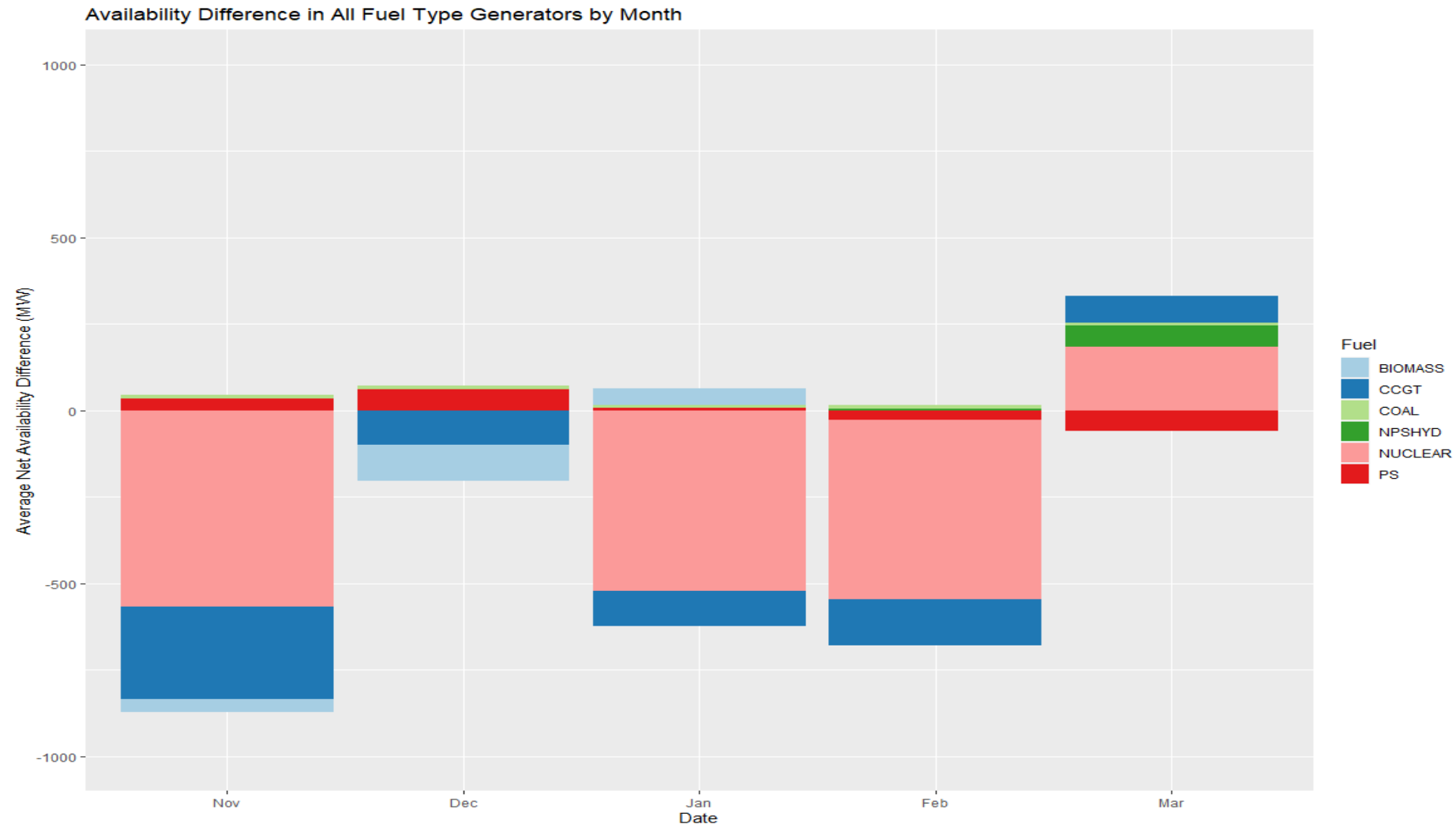
<https://data.nationalgrideso.com/balancing/constraint-breakdown>

# Transparency | Constraint Capacity



# Transparency | Updates to Winter Outlook Analysis: Generator Availability

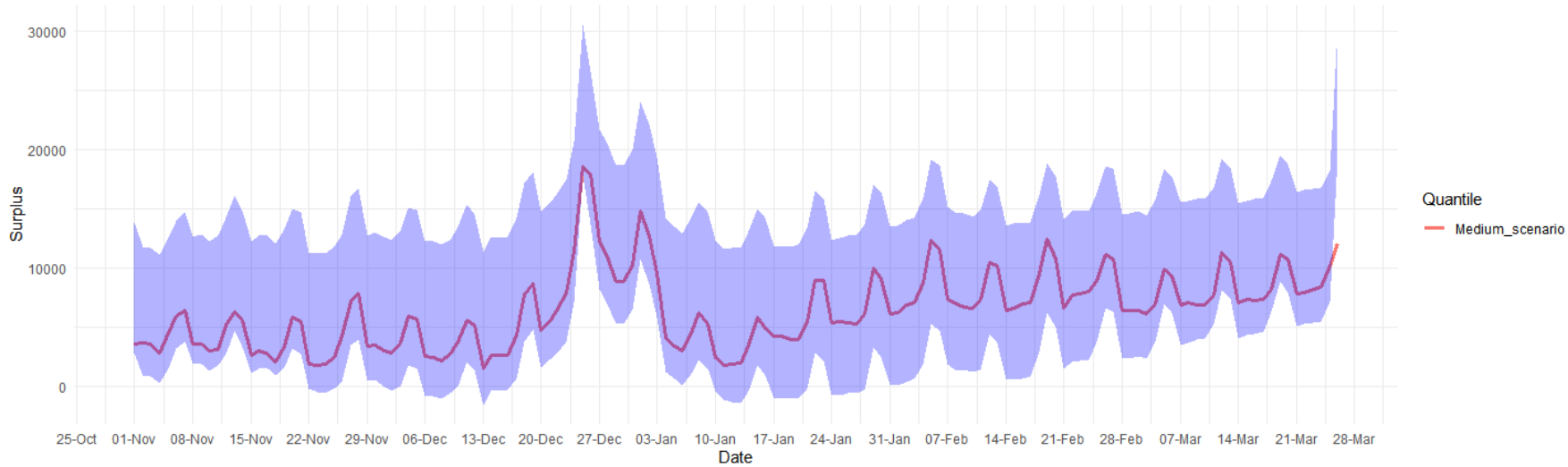
Data within the WOR needs a clear cut off date to allow modelling and creation of the report's content. The data used in this years report was correct as at 8 September. The below sets out the generator availability as of 14 October



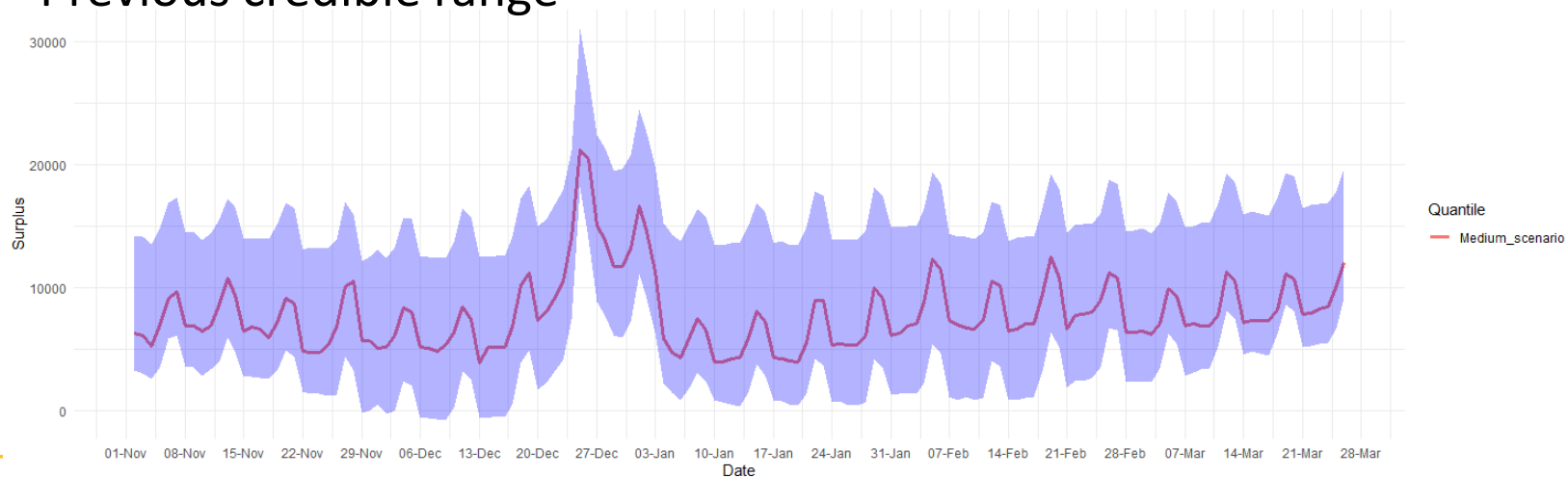
# Transparency | Updates to Winter Outlook Analysis: Impacts to Surplus

The below reflects the updated surplus based on the latest generator availability

## Updated credible range



## Previous credible range



# Frequency Risk and Control Report (FRCR)



# Background and scope

## Background

- ESO raised [SQSS modification GSR027](#) following the 09 August 2019 power cut
- This introduced the new [Frequency Risk and Control Report \(FRCR\)](#)

## Scope

- The first edition of the FRCR focused on the following key areas:
  - establishing the FRCR process to deliver a [clear, objective, transparent process for assessing reliability vs cost](#) to ensure the best outcome for consumers
  - assessing the [risk from the inadvertent operation of Loss of Mains protection](#)
  - identifying [quick, short-term improvements for reliability vs cost](#), including:
    - the delivery of the [Dynamic Containment](#) and [Accelerated Loss of Mains Change Program](#)
    - assessing the [frequency standard](#) that various size loss risks are held to, and
    - the [impact of transmission network outages](#) on [radial connection loss risks](#)

# Implementation of key changes

The implementation to the changes from existing policy took part in two phases:

## Phase 1 – 25<sup>th</sup> May 2021

- removing the tighter frequency limit of 49.5Hz for smaller infeed losses
  - *only applying the wider limit of 49.2Hz for up to 60 seconds to all BMU-only infeed losses*
- No longer taking additional bids/offers on events re-categorised as BMU+VS events
  - *i.e. network faults like double circuits and single circuits*

## Phase 2 – 7<sup>th</sup> Oct 2021

- allow BMU-only infeed loss risks to cause a consequential RoCoF loss, if the resulting loss can be contained to 49.2Hz and 50.5Hz

# Policy on a page

## Response

- Infeed loss risks • prevent BMU-only and VS-only infeed losses causing a frequency deviation below 49.2Hz and restore frequency above 49.5Hz within 60s
- Outfeed loss risks • prevent all BMU-only outfeed losses causing a frequency deviation above 50.5Hz
- prevent the loss of Super Grid Transformer supplies to Distribution Networks causing a frequency deviation above 50.5Hz

## Inertia

- Minimum inertia • maintain system inertia at or above 140 GVA.s
- Largest VS-only loss risk • ensure system inertia is maintained at or above the level that will prevent the largest VS-only loss from causing a consequential RoCoF loss

## Reduce Loss of Mains loss size

- Accelerated Loss of Mains Change Programme • update operational tools with latest program delivery, as a reduction against the initial baseline capacity estimate at the start of the program

## Reduce BMU loss size

- Infeed loss risks • allow BMU-only infeed loss risks to cause a consequential RoCoF loss where the resulting loss can be contained to 49.2Hz
- Outfeed loss risks • consider allowing BMU-only outfeed loss risks to cause a consequential RoCoF loss, as the two losses will partially offset each other

# Impact

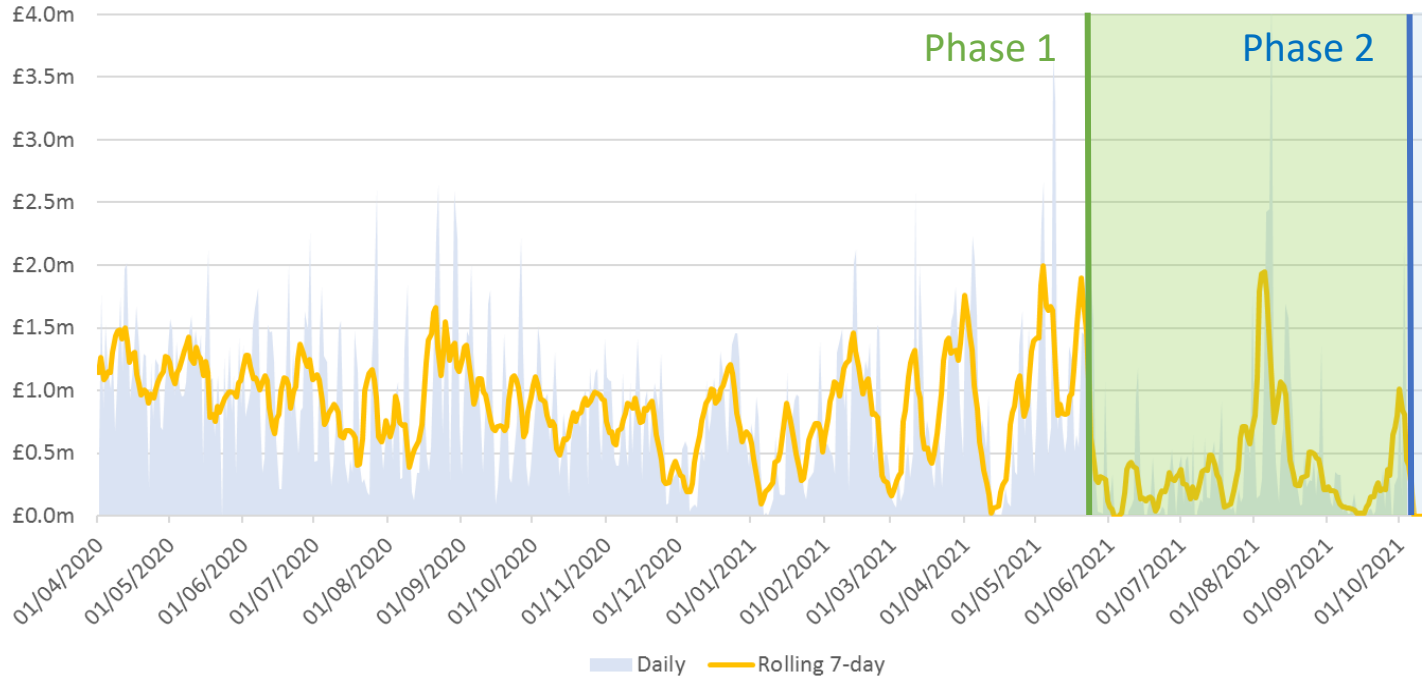
These changes have significantly reduced the quantity and cost of actions taken to manage frequency risks.

This has been possible due to a number of work-areas coming together:

- updating the SQSS through modification GSR027
- the significant reduction in the RoCoF and Vector Shift loss risks through:
  - the initial Grid Code and Distribution code modification, and
  - the ongoing delivery of the Accelerated Loss of Mains Change Program
- the introduction of the new fast-acting Dynamic Containment frequency response allowing us to secure much larger generation losses than we have in the past

# Impact

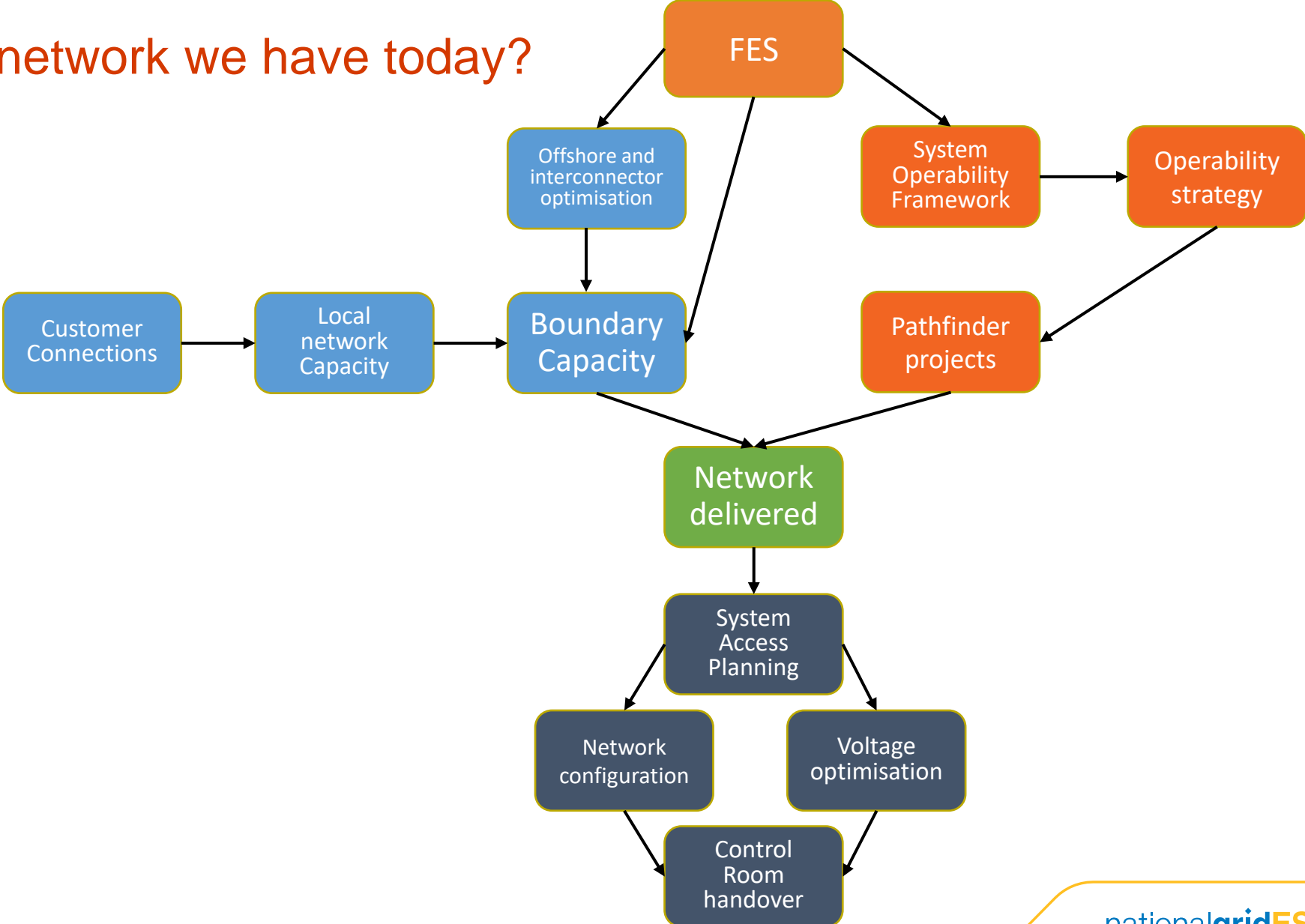
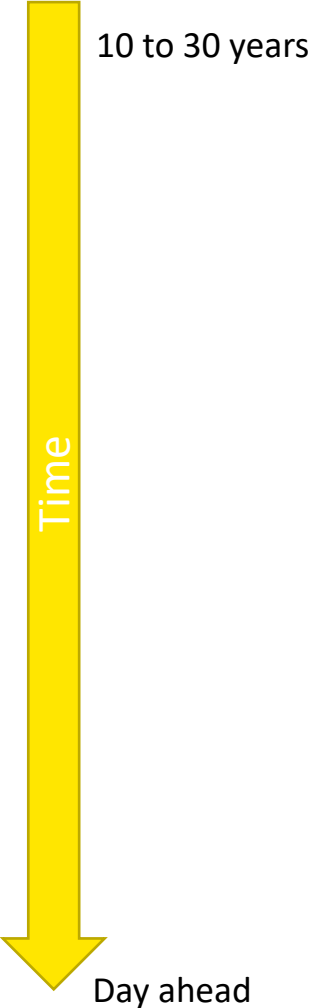
Balancing spend on reducing largest loss for RoCoF



	2020-21	2021-22	Reduction
April	£ 35m	£ 23m	n/a
May	£ 34m	£ 36m	n/a
June	£ 33m	£ 5m	£ 27m
July	£ 25m	£ 10m	£ 15m
August	£ 31m	£ 25m	£ 6m
September	£ 28m	£ 4m	£ 24m
4 month total			£ 72m

# Transmission Network Before Real Time

# How do we get the network we have today?



## Q&A

**After the webinar, you will receive a link to a survey. We welcome feedback to understand what we are doing well and how we can improve the event ongoing.**

Please ask any questions via Slido (code #OTF) and we will try to answer as many as possible now. If we are unable to answer your question today, then we will take it away and answer it at a later webinar.

Please continue to use your normal communication channels with ESO.

If you have any questions after the event, please contact the following email address:  
[box.NC.Customer@nationalgrideso.com](mailto:box.NC.Customer@nationalgrideso.com)



slido

## Audience Q&A Session

 Start presenting to display the audience questions on this slide.

## Q&A

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