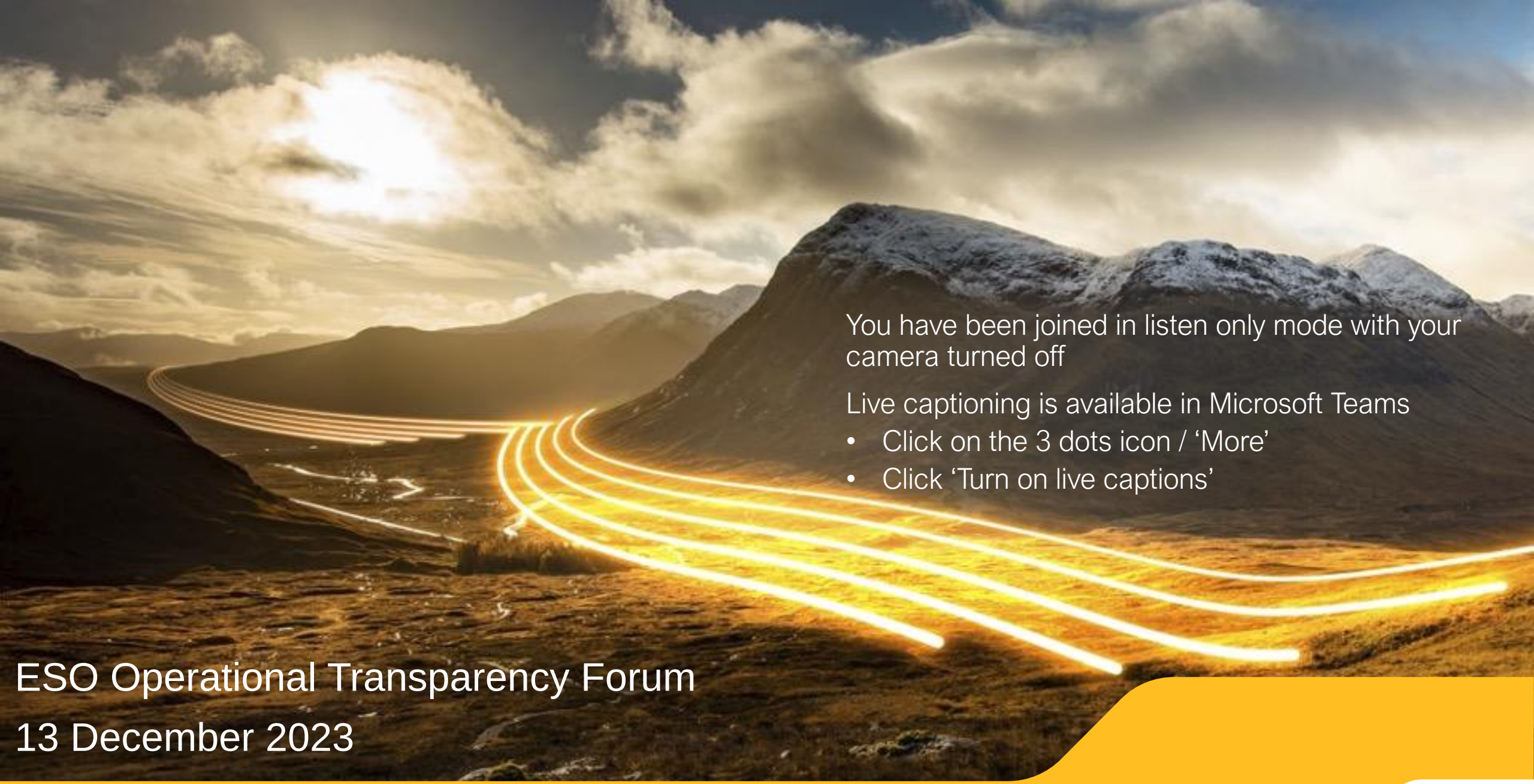


You have been joined in listen only mode with your camera turned off

Live captioning is available in Microsoft Teams

- Click on the 3 dots icon / ‘More’
- Click ‘Turn on live captions’

# ESO Operational Transparency Forum

13 December 2023

ESO

# Introduction | Sli.do code #OTF

**To ask questions live and provide us with post event feedback go to Sli.do and join event code #OTF.**

- **Ask your questions as early as possible** as our experts may need time to ensure a correct answer can be given live.
- **Please provide your name or organisation**. This is an operational forum for industry participants therefore questions from unidentified parties will not be answered live. If you have reasons to remain anonymous to the wider forum please use the advance question or email options given on the slide.
- **Questions will be answered in the upvoted order whenever possible**. We will take questions from further down the list when: the answer is not ready; we need to take the question away or the topic is outside of the scope of the OTF.
- **Sli.do will remain open until 12:00**, even when the call closes earlier, to provide the maximum opportunity for you to ask questions.
- **All questions will be recorded and published.** Questions which are not answered on the day will be included, with answers, in the slide pack for the next OTF.
- **Ask questions in advance** (before 12:00 on Monday) at: https://forms.office.com/r/k0AEfKnai3
- **Ask questions anytime** whether for inclusion in the forum or individual response at: box.NC.customer@nationalgrideso.com

**Stay up to date on our webpage:** https://www.nationalgrideso.com/OTF

# Future deep dive / focus topics

**Today**

Demand Flexibility Service – introduction & overview – 13th December

**Future**

Data Quality in the Balancing Mechanism – project introduction – 20th December

Managing Storm Conditions – date tbc

If you have suggestions for future deep dives or focus topics please send them to us at: box.NC.customer@nationalgrideso.com and we will consider including them in a future forum

**Please note there will be no OTF on 27th December or 3rd January.**

# OBP has gone live!

The first stages of the Open Balancing Platform (OBP) have gone live, revolutionising the Balancing Mechanism as we know it. The new cutting-edge system utilises artificial intelligence to bolster the delivery of a net-zero electricity network and reduce consumer costs by supporting the bulk despatch of battery storage and small Balancing Mechanism Units (BMUs).

More information can be found here: https://www.nationalgrideso.com/news/start-balancing-mechanism-revolution

# Reserve Reform Update Webinar

Please join us for the Reserve Reform Update Webinar on the **19th of December 2023** at **10:00 am**.

**Sign up using this link**

The purpose of this webinar is to update industry on our Quick and Slow Reserve products providing:

- the product implementation timeline
- service design with key details
- next steps

If you have any further questions, please contact the team at:
box.futureofbalancingservices@nationalgrideso.com

# OTF Survey

**The Operational Transparency Forum runs once a week to provide updated information on and insight into the operational challenges faced by the control room in the recent past (1-2 weeks) and short term future (1-2 weeks).**

At the ESO we are always seeking feedback from our customers, stakeholders & providers. This will enable us to improve our understanding of your requirements so that we can meet and look to exceed your expectations.

We would really value a little of your time to take part in an online survey about the OTF to find out whether it is meeting your requirements and how we can improve it. If you are registered for the OTF, you will have received an email with the link this morning.

The survey is accessible via this link and will remain open until **Thursday 21st December**. We expect it will take about 5 minutes to complete.

In January we will present the initial results and action plan back to the OTF.

You can register for the OTF here to ensure you receive future communications.

# What is DFS?

- Demand Flexibility Service
- Service procured to reduce demand, as an enhanced action to help ensure the ESO has sufficient reserve to balance in real time

# Significant updates since last winter

## Procurement

- Added within-day dispatch options, as an alternative to day ahead (14:30 DA, 09:00 ID & 12:00 ID), bringing DFS closer to real-time dispatch

## Delivery & process

- Removed the domestic in-day baseline adjustment to mitigate peverse incetives
- Allowing opt-out (net reduction settled) as well as opt-in (only positive reduction settled)

## Tests

- Replaced “onboarding” and “regular” tests with “DFS tests”, for all providers on the same day
- Role of tests, number of tests and GAP has been laid out in Market Information Report

## Automation

- MPAN duplication
  - Introducing automation for daily checks
  - Introducing rule that latest sign-up “wins”
- Introducing automation option for bid submission

## Participation

- Allowing asset metering in place of boundary metering, where certain criteria and conditions are met
- Requiring HH-settlement for all meters, except providers participating on a domestic boundary meter and Profile Class 3&4, to mitigate peverse incentives

# Events so far this winter

- 16th November — Day Ahead procured **TEST**
- 29th November — Day Ahead procured **LIVE**
- 1st December — Day Ahead procured **LIVE**
- 5th December — Within Day (09:00) procured **TEST**
- 12th December — Within Day (12:00) procured **TEST**

# Testing Principles

- Target high demand periods – align with likely live use
- Maximise volume
- Prioritise system security – limit step volume, and retain flexibility until requirement issued
- Other relevant testing reasons – last year these included testing weekend initiation and testing morning peak delivery
- Tests are not market driven – usually decided week ahead, and not price based

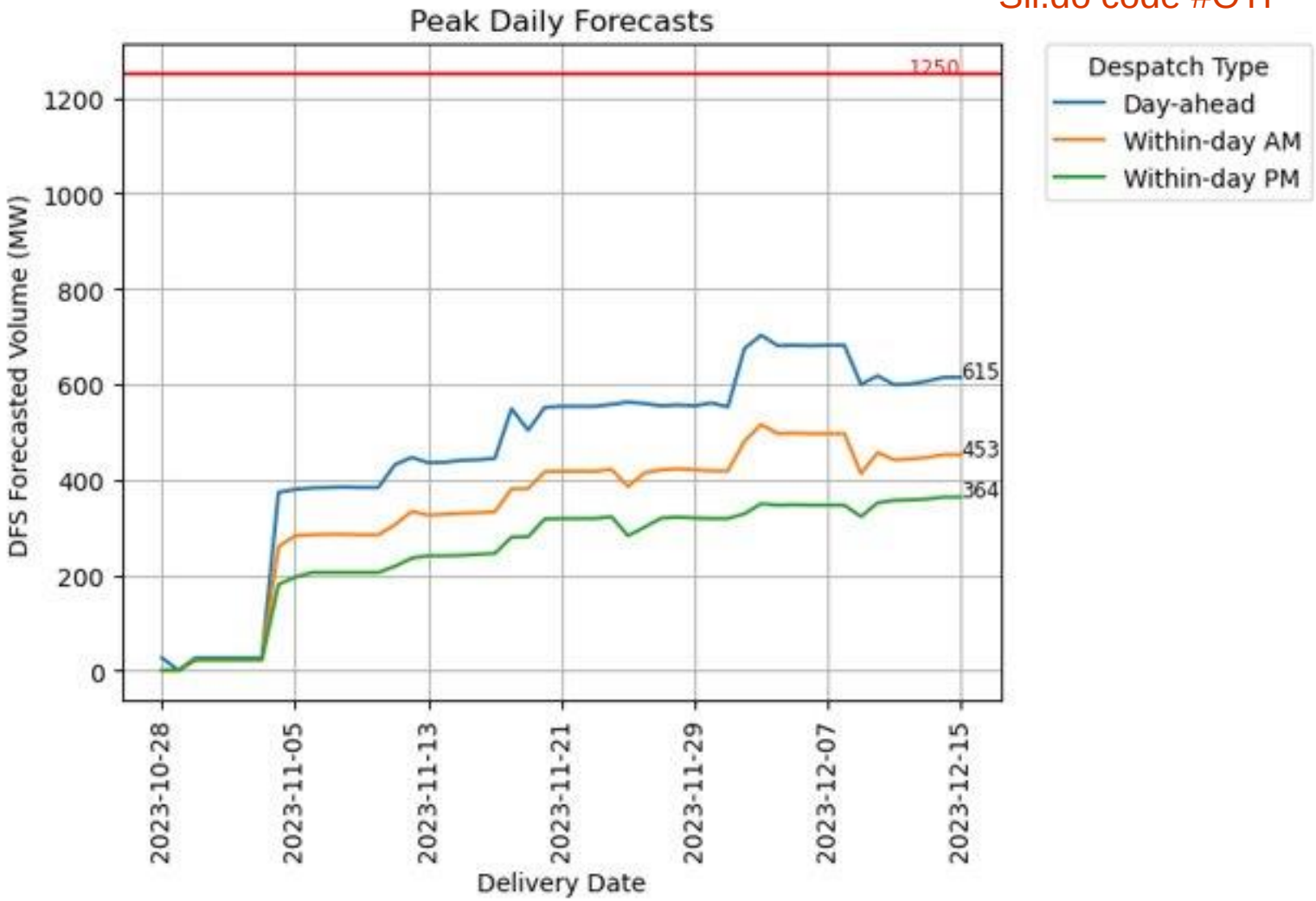
# Testing so far this winter

- Providers waiting for service approval before signing up customers
- Some submission issues encountered during first week of service, delayed first test until resolved
- First test planned to be day ahead, most like last year – minimise risk
- Second test planned to be within day – test new process
- Second test planned for 30th November, no-go decision in morning due to concern of confusion/fatigue with live event likely for 1st Dec
- Second test rescheduled to 5th December
- Third test 12th December

Sli.do code #OTF

# DFS OTF weekly slide example

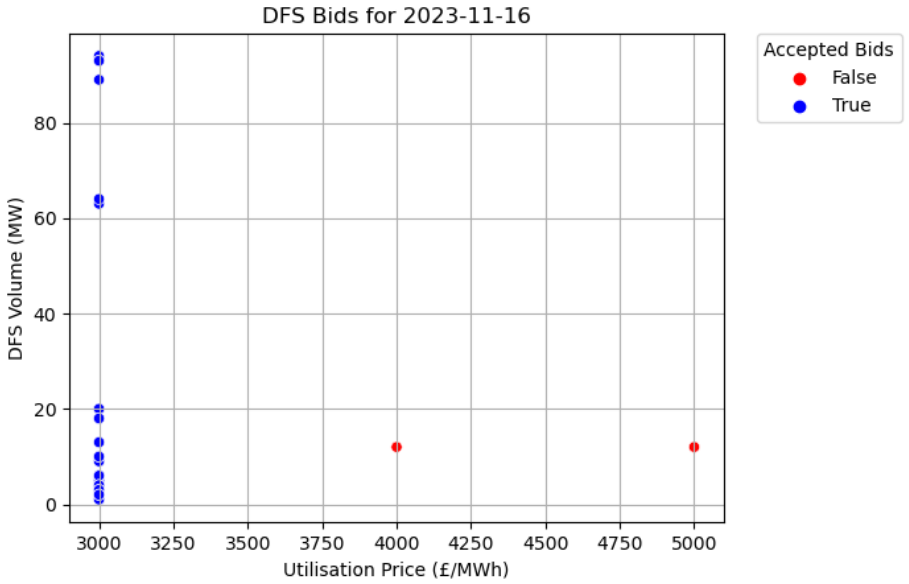
Volume forecasts provided by providers



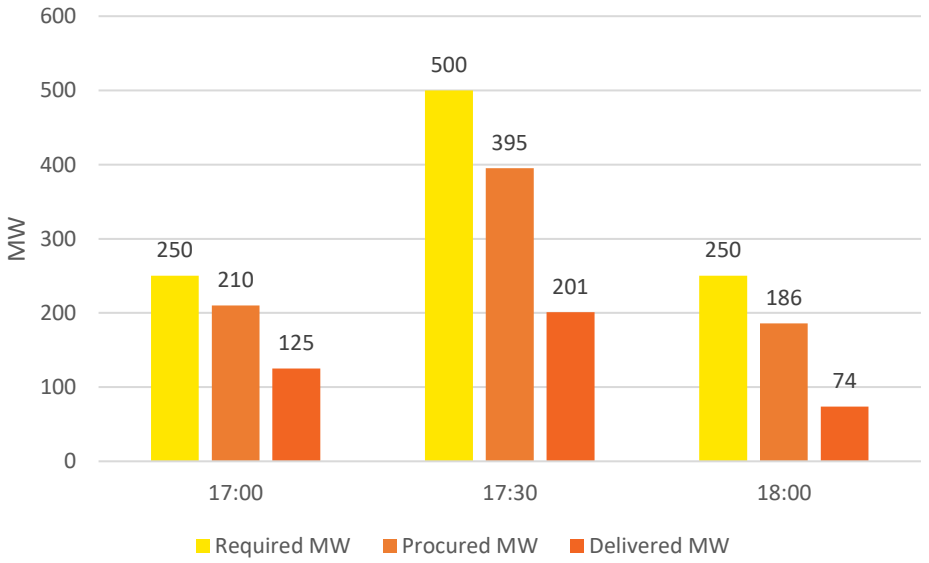

**Events in last week:**

**12th December** **Within Day (12:00) procured TEST**

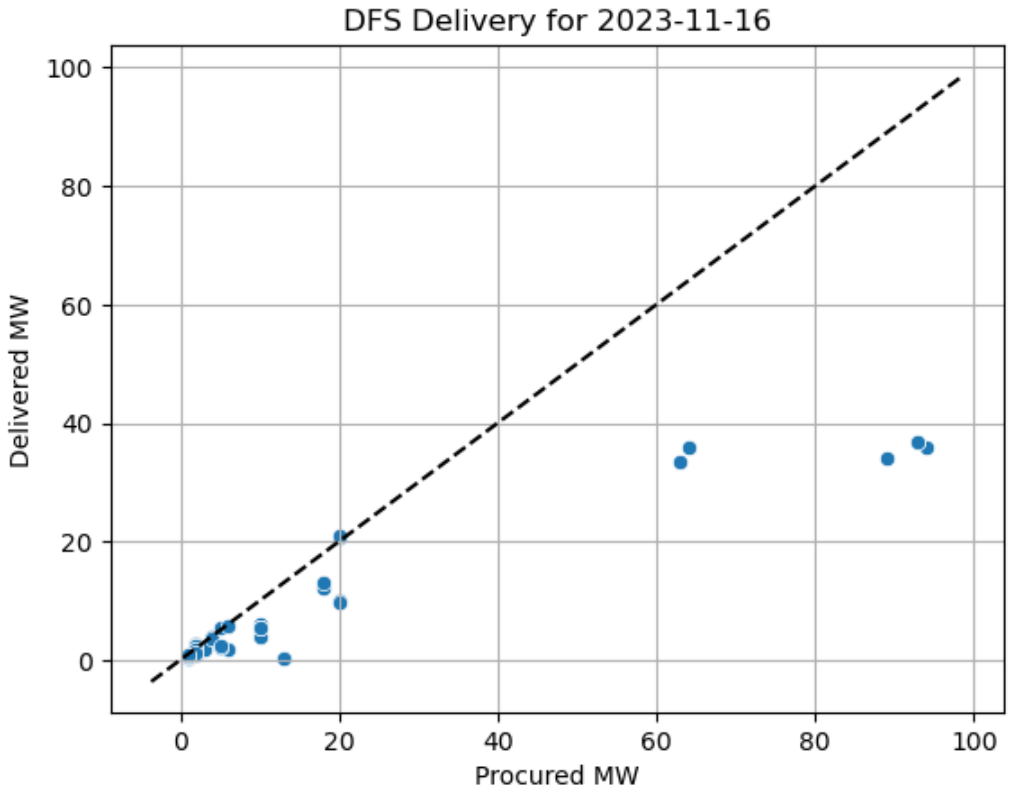
# Test Event #1 16 Nov 23




- 17 Participants and 31 DFS Units.
- Around 350k meters took part.
- Maximum Accepted price was £3,000/MWh.
- 12 MW Rejected at £4,000/MWh and £5,000/MWh (on each period).
- £0.6M expected gross cost ~10% of day's balancing cost



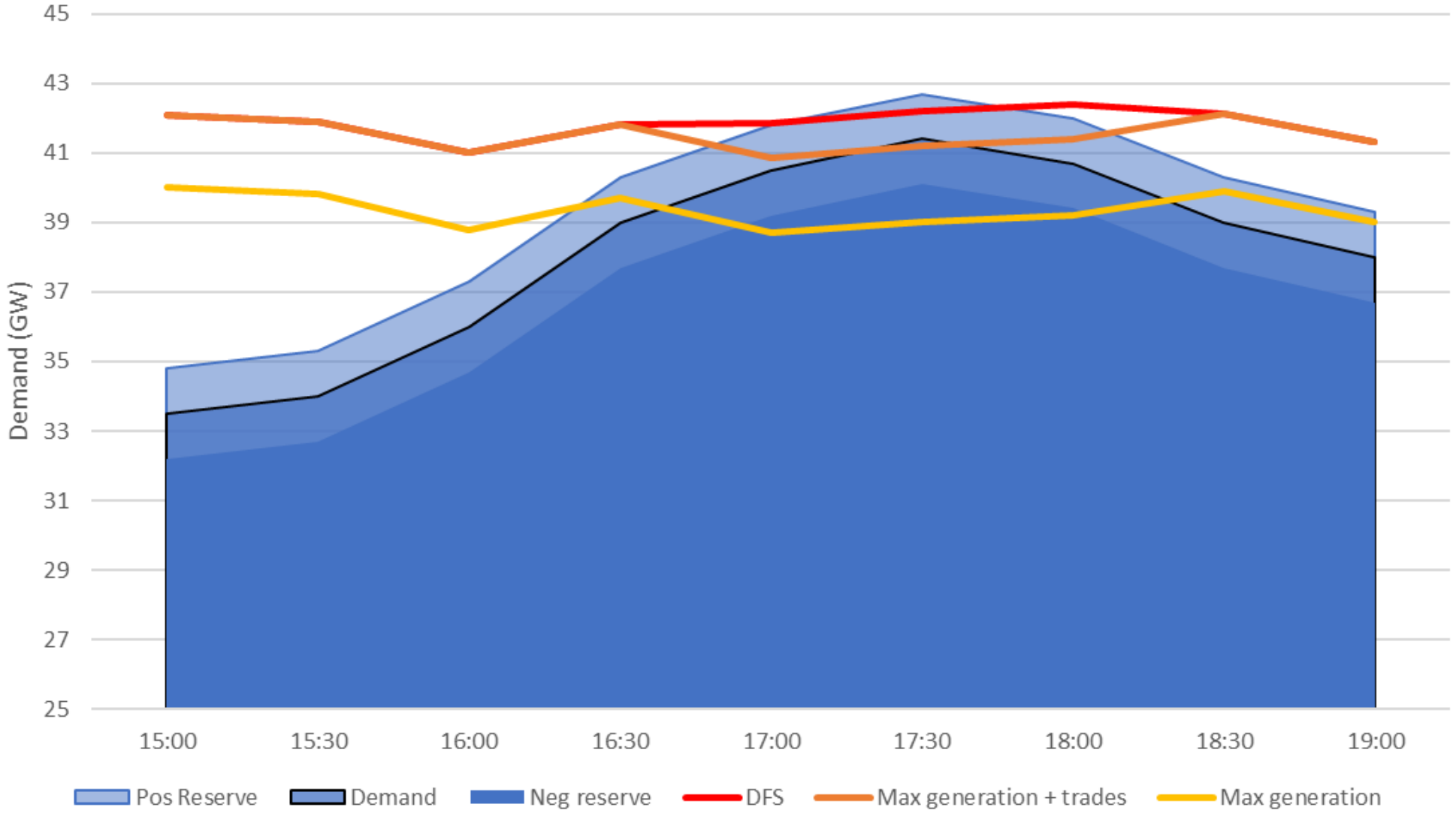
# Test Event #1 16 Nov 23




- On the figure to the left, each dot represents a DFS Unit contracted for a period.
- Dashed line shows perfect agreement between procured and delivered quantities.
- On average, DFS Units delivered less demand reduction than what they were contracted for.

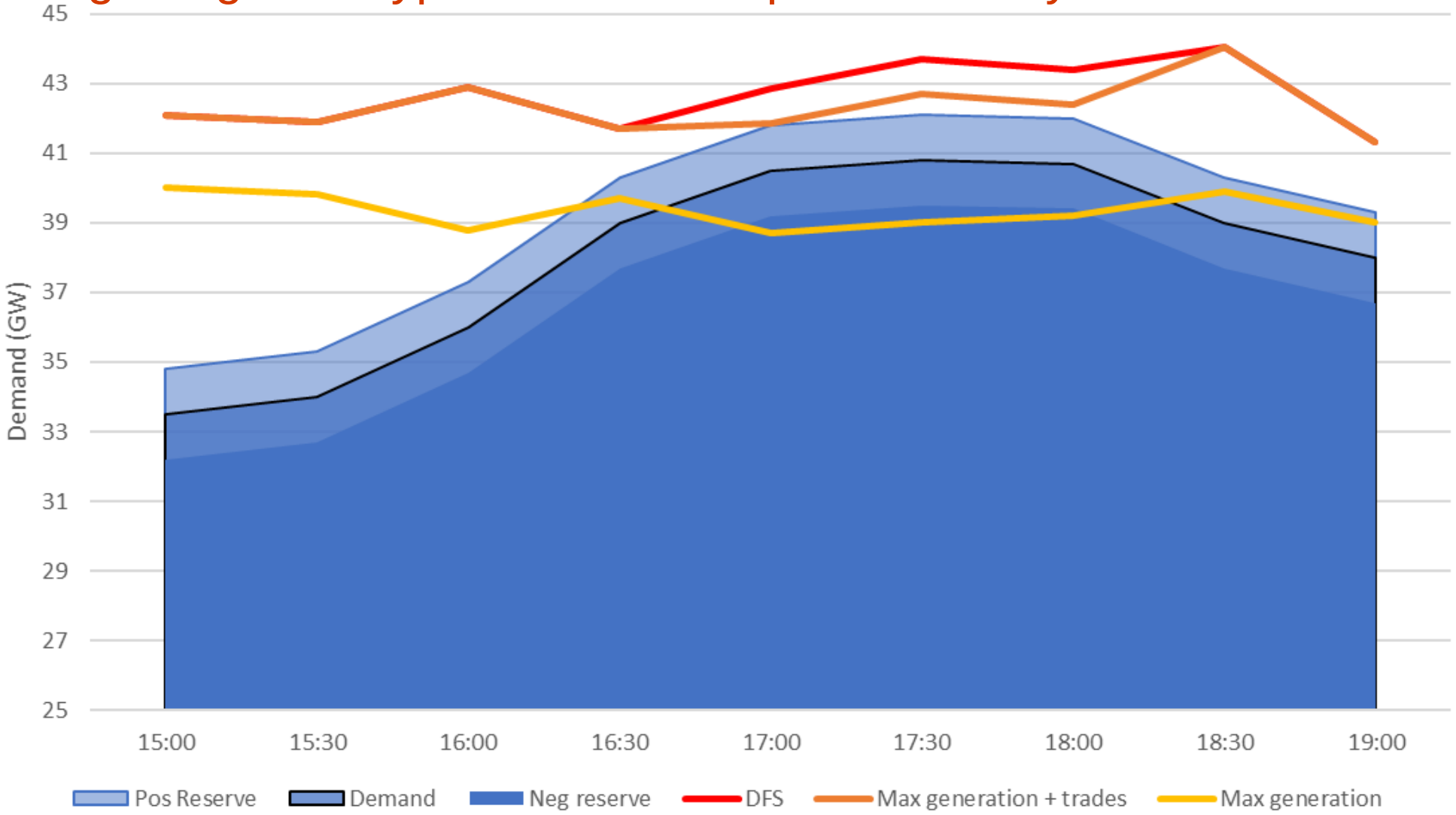
# Assessing Margins – hypothetical example day ahead

Sli.do code #OTF




- Elevated risk of not meeting demand if reserve requirement not met – take available actions to increase reserve
- STOR kept separate as reserve against the largest infeed loss having a fault

# Assessing Margins – hypothetical example within day

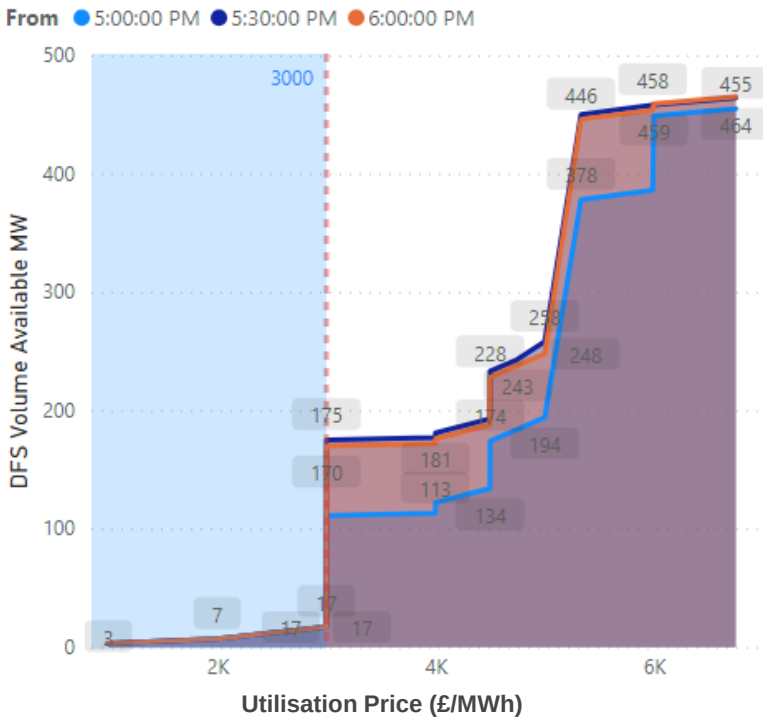



- Demand revised lower, additional volume available to trade on I/C, market reacts to scarcity signals

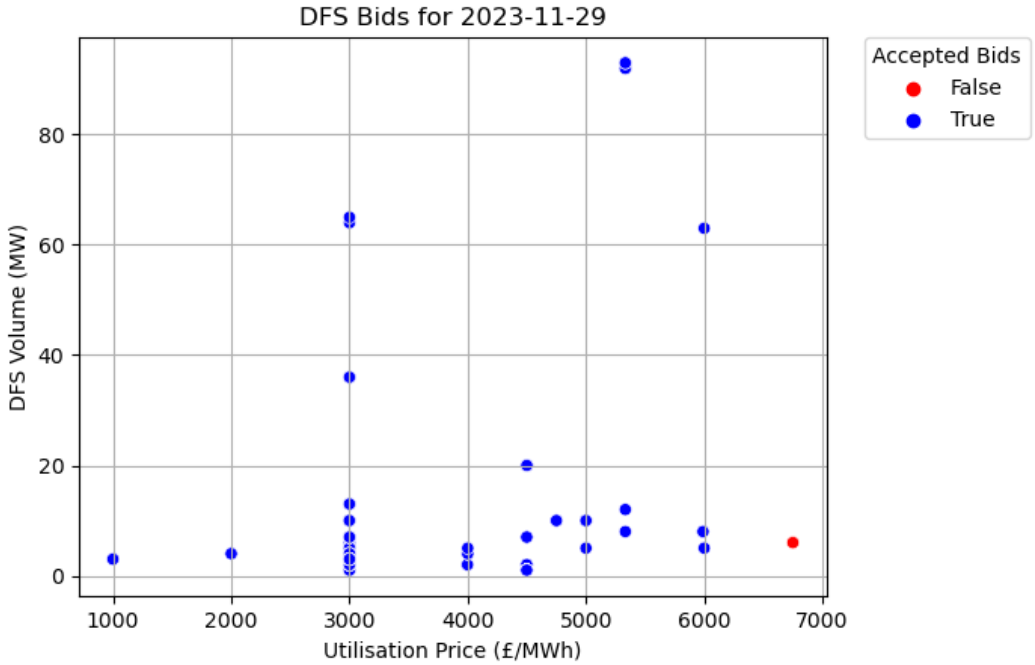
# Live Events W/C 27/11/23

- Interconnector uncertainty – outages and flows not into GB day ahead
- Generation availability in line with Winter Outlook expectation
- High demand due to cold weather (top 5% of Winter Outlook range)
- Low wind Output (lowest 2-5% of Winter Outlook range)
- Day ahead uncertainty greater than within day DFS volumes, and within-day had not been tested

# Live Event #1 29 Nov 23



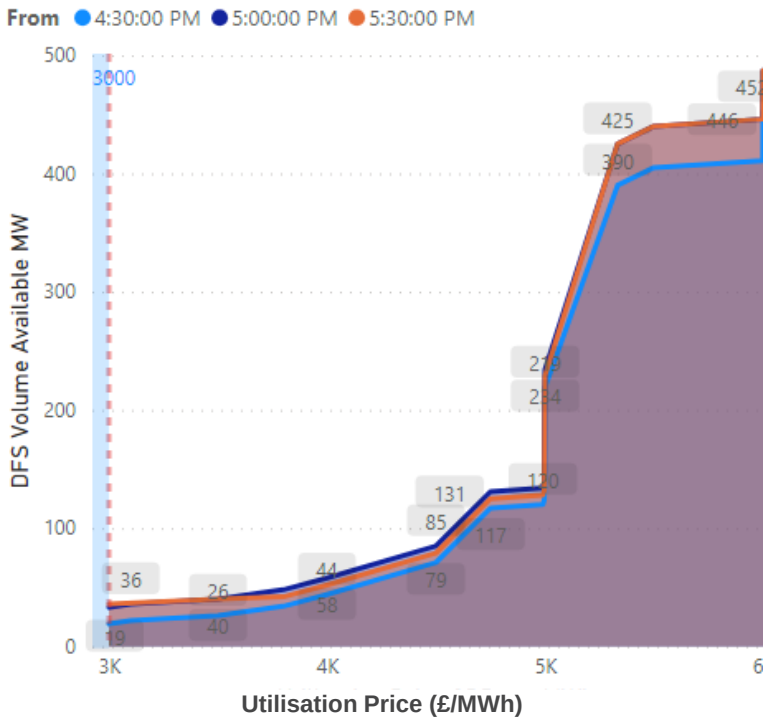

- 20 Participants and 38 DFS Units.
- Average price £4438/MWh
- Maximum Accepted price was £6,000/MWh.
- Minimum Accepted price was £1,000/MWh.
- 6 MW Rejected at £6,750/MWh (on each period).



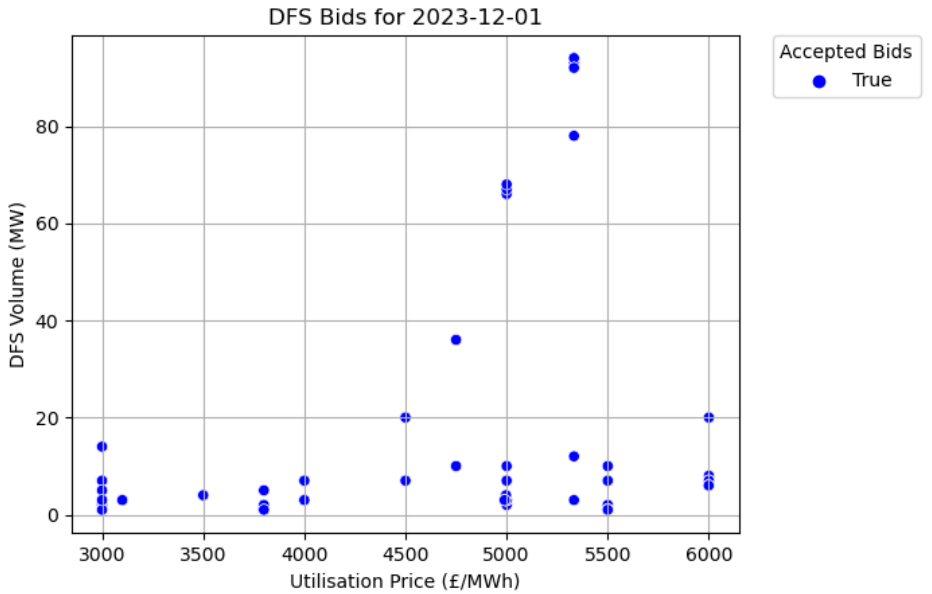
# Rejected Bids

- The ESO has to evaluate system risk and cost to the consumer when making decisions about the volume of reserve to procure, as well as how procurement decisions will impact future market decisions. As such for the live event on 29th November we decided not to procure 6MW at a price of £6750/MWh. This is in line with 12.2.2 of the Procurement Rules.

# Live Event #2 1 Dec 23

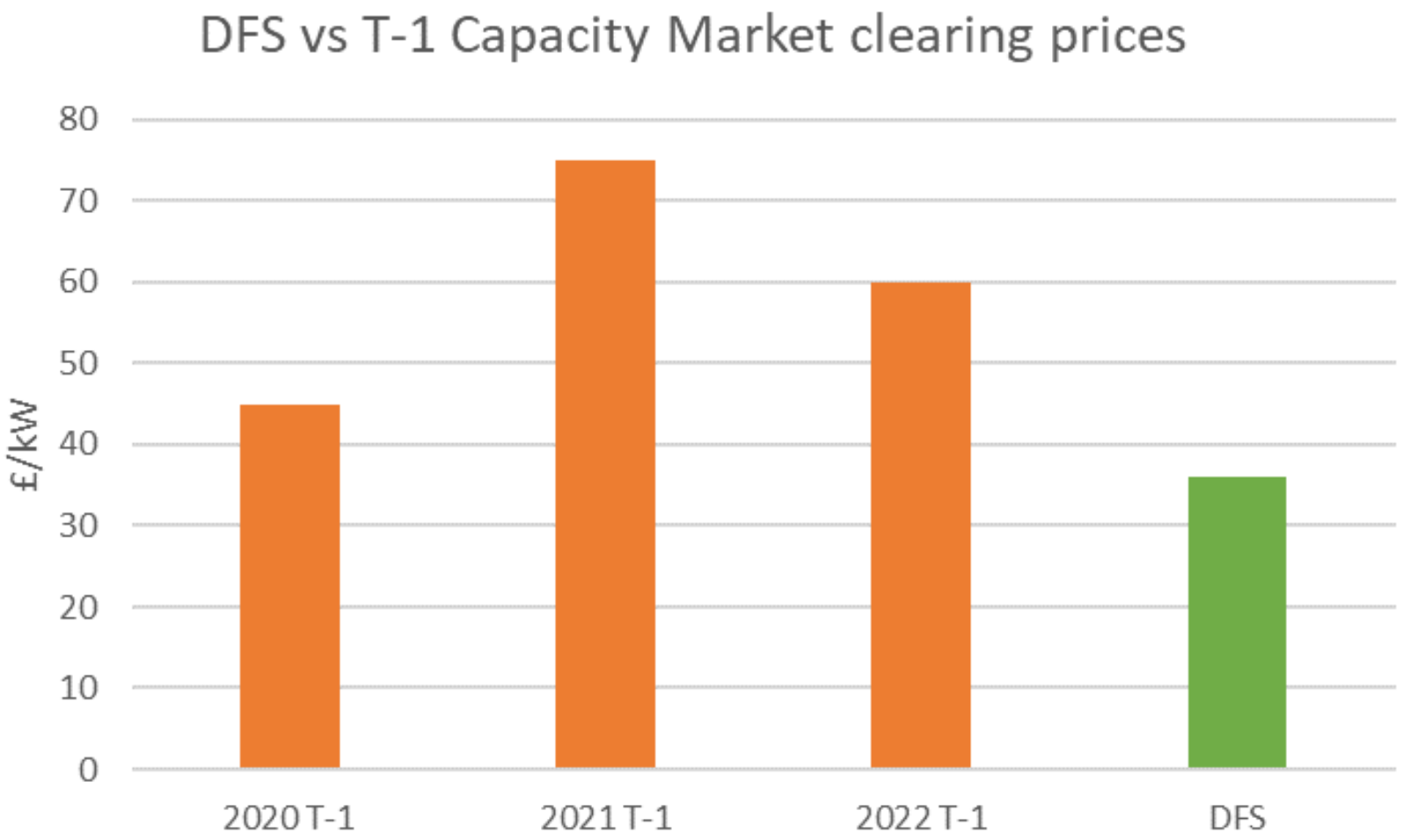



- 21 Participants and 40 DFS Units
- Average price £5012/MWh
- Maximum Accepted price was £6,000/MWh.
- Minimum Accepted price was £3,000/MWh.
- All bids accepted



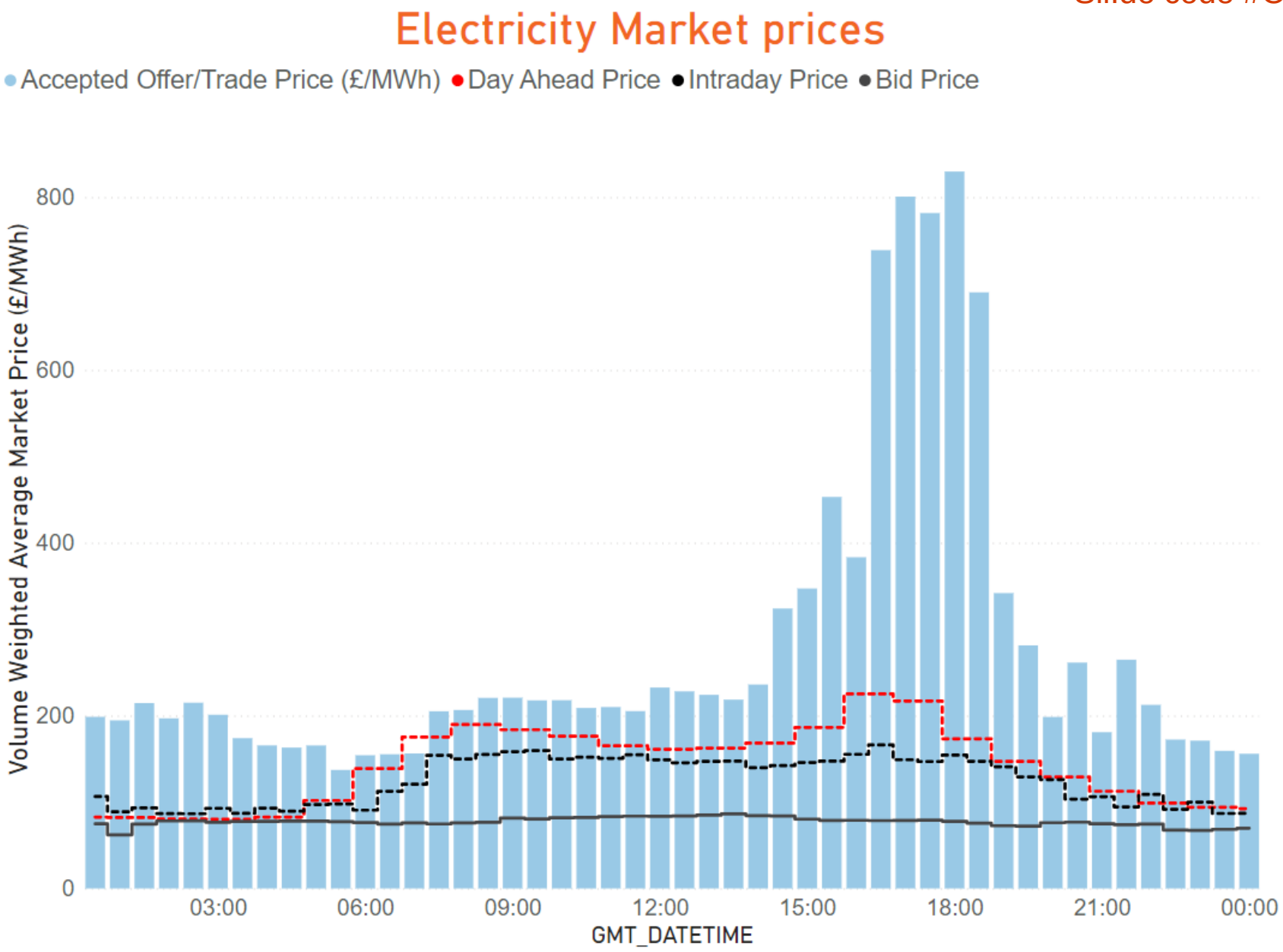
# Value

- The 12 tests with potential for a Guaranteed Acceptance Price (GAP) correspond to a payment of £36/kW of capacity over the winter
- The graph shows the comparison with the last three year-ahead capacity market clearing prices
- Note the GAP will be removed when the volume threshold is met, for more info see our Market Information Report



# Live Event #2 1 Dec 23

- The activation at day ahead does not seem to have impacted the intraday pricing, however the Balancing Mechanism Prices did respond to scarcity in real time
- The BM prices did not rise to DFS levels



# Useful Links



Info on DFS requirements and how much has been bought: https://www.nationalgrideso.com/data-portal/demand-flexibility-service
Derated Margin and Loss of Load Probability: https://bmrs.elexon.co.uk/loss-of-load-probability-and-derated-margin

Published Inputs to assessment:

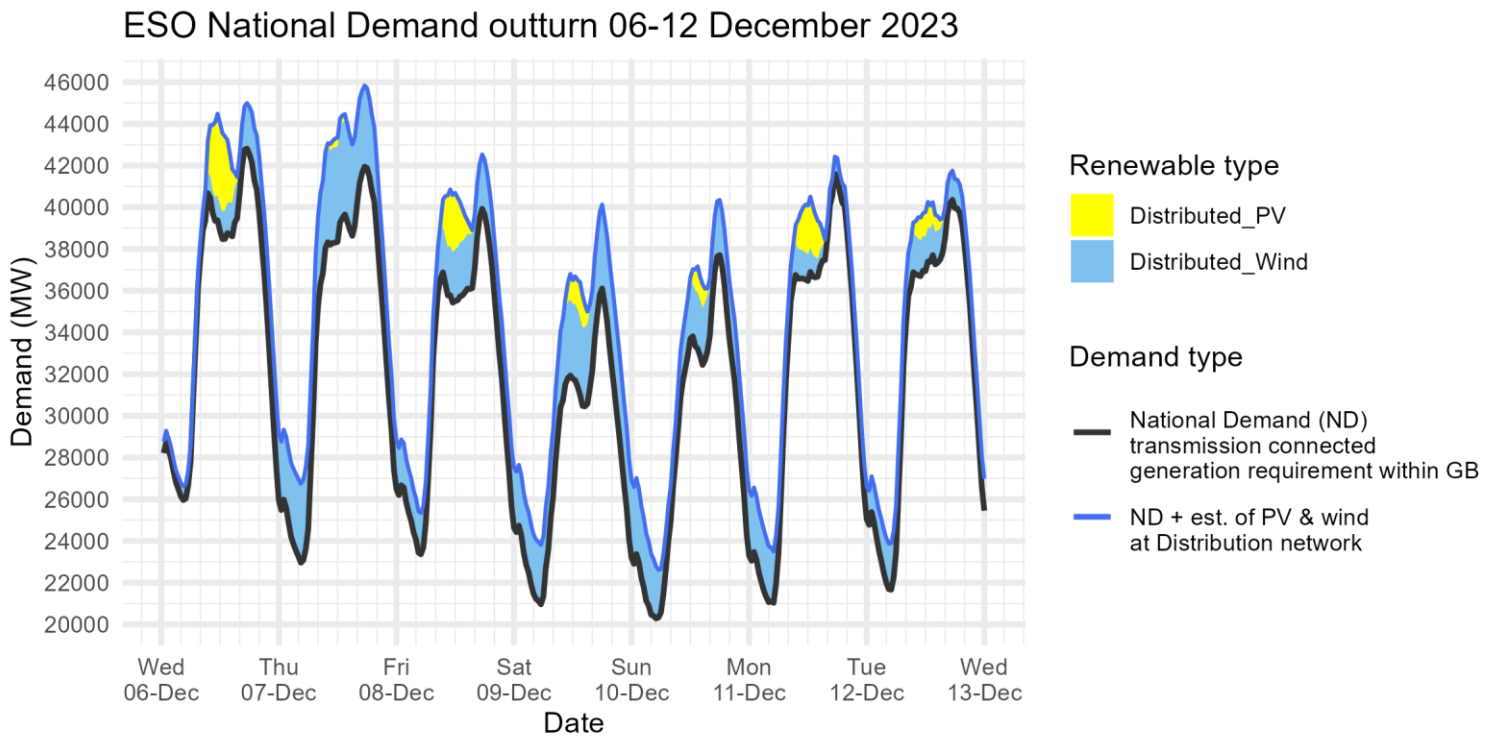
- Wind forecast https://www.nationalgrideso.com/data-portal/day-ahead-wind-forecast
- Demand forecast https://bmrs.elexon.co.uk/demand-forecast
- Interconnector flows https://bmrs.elexon.co.uk/interconnector-flows
- Generation Availability
    - High level aggregate https://bmrs.elexon.co.uk/generation-forecast
    - Individual outage data https://transparency.entsoe.eu/outage-domain/r2/unavailabilityOfProductionAndGenerationUnits/show
- Main constraints flows and limits: https://www.nationalgrideso.com/data-portal/day-ahead-constraint-flows-and-limits/day_ahead_constraint_flows_and_limits

Non-published Inputs to Assessment:
Volume for trading on interconnectors available without putting other TSOs into distress
Engineering Assessment of risks (for example storms or units returning from long outages)
Reserve profile

We don't publish these as they could be confidential, commercially sensitive, provided on an indicative basis or ESO risk management and therefore not firm market data.

However, some of this data is available at a system aggregated level within day when we publish our System Operating Plan data here: https://www.nationalgrideso.com/data-portal/system-operating-plan-sop/system_operating_plan_data_table

# Demand | Last week demand out-turn




| | | FORECAST (Wed 06 Dec) | | OUTTURN | | | |
|---|---|---|---|---|---|---|---|
| Date | Forecasting Point | National Demand (GW) | Dist. wind (GW) | National Demand (GW) | Triad Avoidance est. (GW) | N. Demand adjusted for TA (GW) | Dist. wind (GW) |
| 06 Dec | Evening Peak | 43.4 | 2.4 | 42.8 | 0.0 | 42.8 | 2.2 |
| 07 Dec | Overnight Min | 22.1 | 4.2 | 23.0 | n/a | n/a | 3.8 |
| 07 Dec | Evening Peak | 41.0 | 4.1 | 41.9 | 0.0 | 41.9 | 3.9 |
| 08 Dec | Overnight Min | 21.5 | 3.4 | 23.4 | n/a | n/a | 2.0 |
| 08 Dec | Evening Peak | 39.0 | 2.6 | 39.9 | 0.0 | 39.9 | 2.6 |
| 09 Dec | Overnight Min | 21.5 | 1.7 | 21.0 | n/a | n/a | 2.8 |
| 09 Dec | Evening Peak | 34.5 | 3.4 | 36.1 | 0.0 | 36.1 | 4.0 |
| 10 Dec | Overnight Min | 19.3 | 2.9 | 20.3 | n/a | n/a | 2.5 |
| 10 Dec | Evening Peak | 36.1 | 2.7 | 37.7 | 0.0 | 37.7 | 2.6 |
| 11 Dec | Overnight Min | 20.1 | 2.7 | 21.0 | n/a | n/a | 2.5 |
| 11 Dec | Evening Peak | 40.3 | 1.9 | 41.6 | 0.0 | 41.6 | 0.8 |
| 12 Dec | Overnight Min | 22.4 | 1.4 | 21.7 | n/a | n/a | 2.2 |
| 12 Dec | Evening Peak | 40.7 | 1.5 | 40.4 | 0.0 | 40.4 | 1.4 |

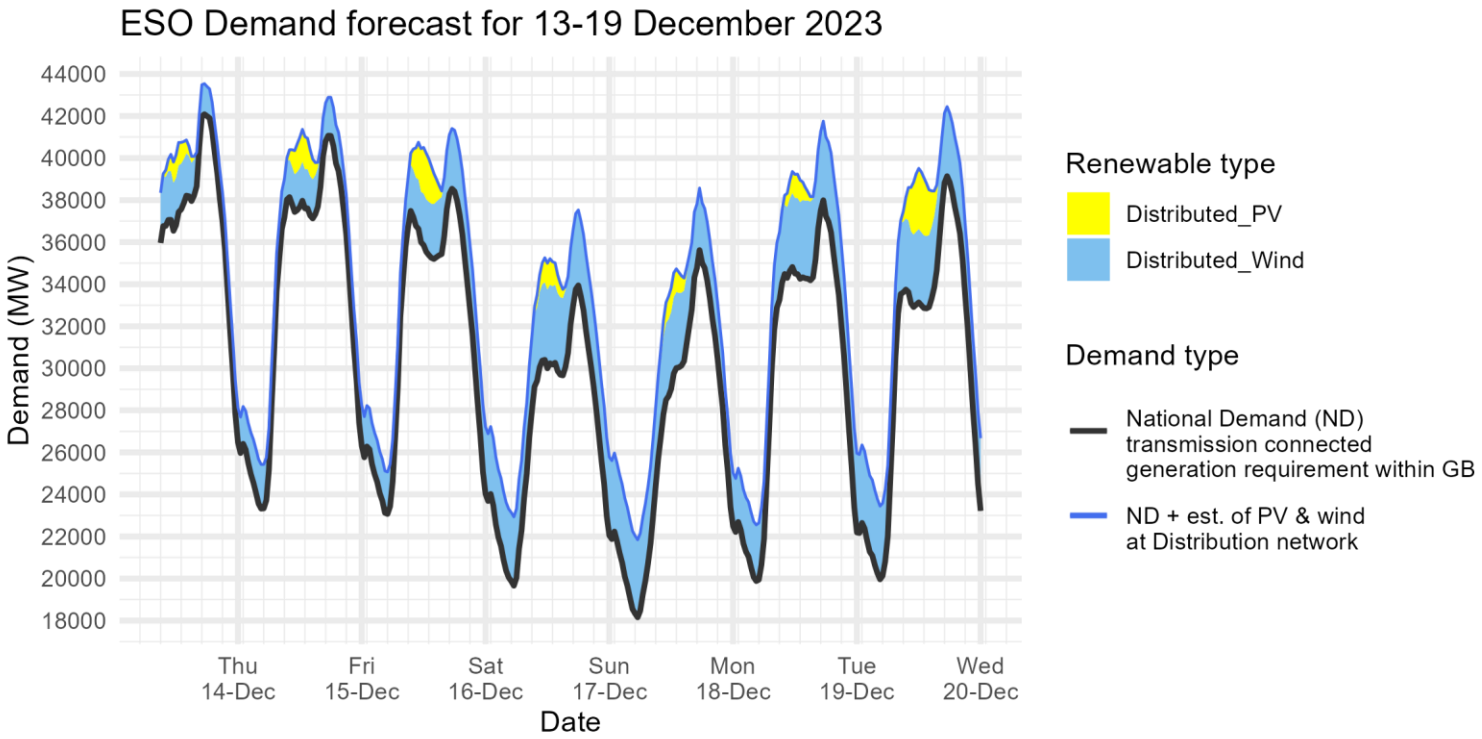
The black line (National Demand ND) is the measure of portion of total GB customer demand that is supplied by the transmission network.

ND values **do not include** export on interconnectors or pumping or station load

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.

Historic out-turn data can be found on the ESO Data Portal in the following data sets: Historic Demand Data & Demand Data Update

# Demand | Week Ahead




| | | FORECAST (Wed 13 Dec) | |
|---|---|---|---|
| Date | Forecasting Point | National Demand (GW) | Dist. wind (GW) |
| 13 Dec 2023 | Evening Peak | 42.1 | 1.5 |
| 14 Dec 2023 | Overnight Min | 23.3 | 2.1 |
| 14 Dec 2023 | Evening Peak | 41.1 | 1.8 |
| 15 Dec 2023 | Overnight Min | 23.1 | 2.0 |
| 15 Dec 2023 | Evening Peak | 38.5 | 2.9 |
| 16 Dec 2023 | Overnight Min | 19.7 | 3.3 |
| 16 Dec 2023 | Evening Peak | 33.9 | 3.6 |
| 17 Dec 2023 | Overnight Min | 18.2 | 3.7 |
| 17 Dec 2023 | Evening Peak | 35.6 | 3.0 |
| 18 Dec 2023 | Overnight Min | 19.9 | 2.7 |
| 18 Dec 2023 | Evening Peak | 38.0 | 3.8 |
| 19 Dec 2023 | Overnight Min | 20.0 | 3.5 |
| 19 Dec 2023 | Evening Peak | 39.1 | 3.3 |

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

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# Operational margins | Week Ahead

## How to interpret this information

This slide sets out our view of operational margins for the next week. We are providing this information to help market participants identify when tighter periods are more likely to occur such that they can plan to respond accordingly.

The table provides our current view on the operational surplus based on expected levels of generation, wind and peak demand. This is based on information available to National Grid ESO as of 13 December and is subject to change. It represents a view of what the market is currently intending to provide before we take any actions. The interconnector flows are equal to those in the Base case presented in the Winter Outlook.

The indicative surplus is a measure of how tight we expect margins to be and the likelihood of the ESO needing to use its operational tools.

For higher surplus values, margins are expected to be adequate and there is a low likelihood of the ESO needing to use its tools. In such cases, we may even experience exports to Europe on the interconnectors over the peak depending on market prices.

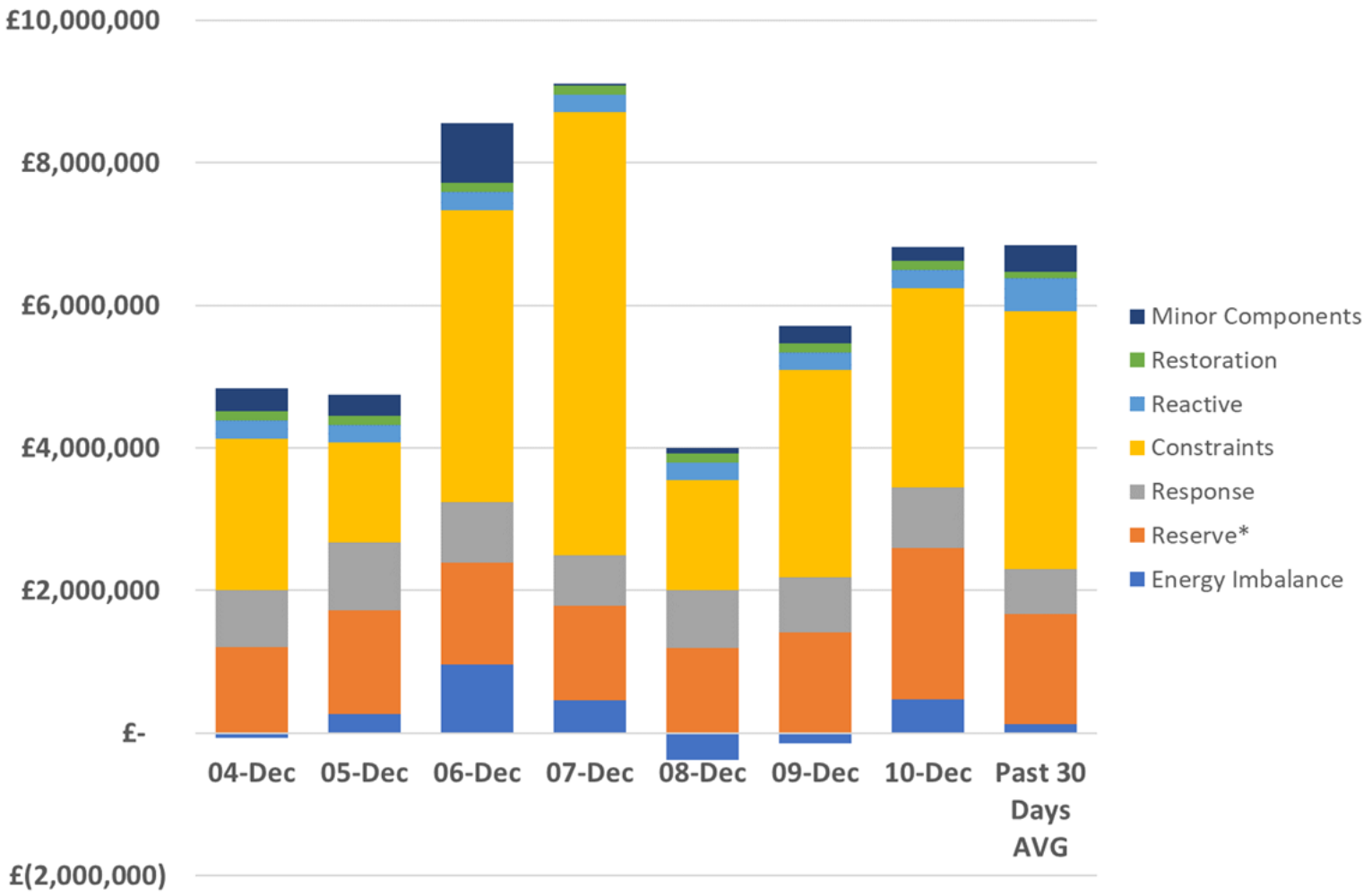
For lower (and potentially negative) surplus values, then this indicates operational margins could be tight and that there is a higher likelihood of the ESO needing to use its tools, such as issuing margins notices. We expect there to be sufficient supply available to respond to these signals to meet demand.

Margins are adequate for the next week.

| Day | Date | Notified Generation (MW) | Wind (MW) | IC Flows* (MW) | Peak demand (MW) | Indicative surplus (MW) |
|---|---|---|---|---|---|---|
| Thu | 14/12/2023 | 44137 | 11050 | 3370 | 42310 | 11740 |
| Fri | 15/12/2023 | 45545 | 14840 | 3370 | 39580 | 18620 |
| Sat | 16/12/2023 | 45179 | 16960 | 3370 | 34700 | 24260 |
| Sun | 17/12/2023 | 45449 | 15230 | 3370 | 36330 | 22790 |
| Mon | 18/12/2023 | 46152 | 17230 | 3370 | 38320 | 22680 |
| Tue | 19/12/2023 | 46773 | 16280 | 3370 | 39270 | 21230 |
| Wed | 20/12/2023 | 47744 | 18310 | 3370 | 40790 | 21610 |

*Interconnector flow in line with the Winter Outlook Report Base Case but will ultimately flow to market price

# ESO Actions | Category costs breakdown for the last week



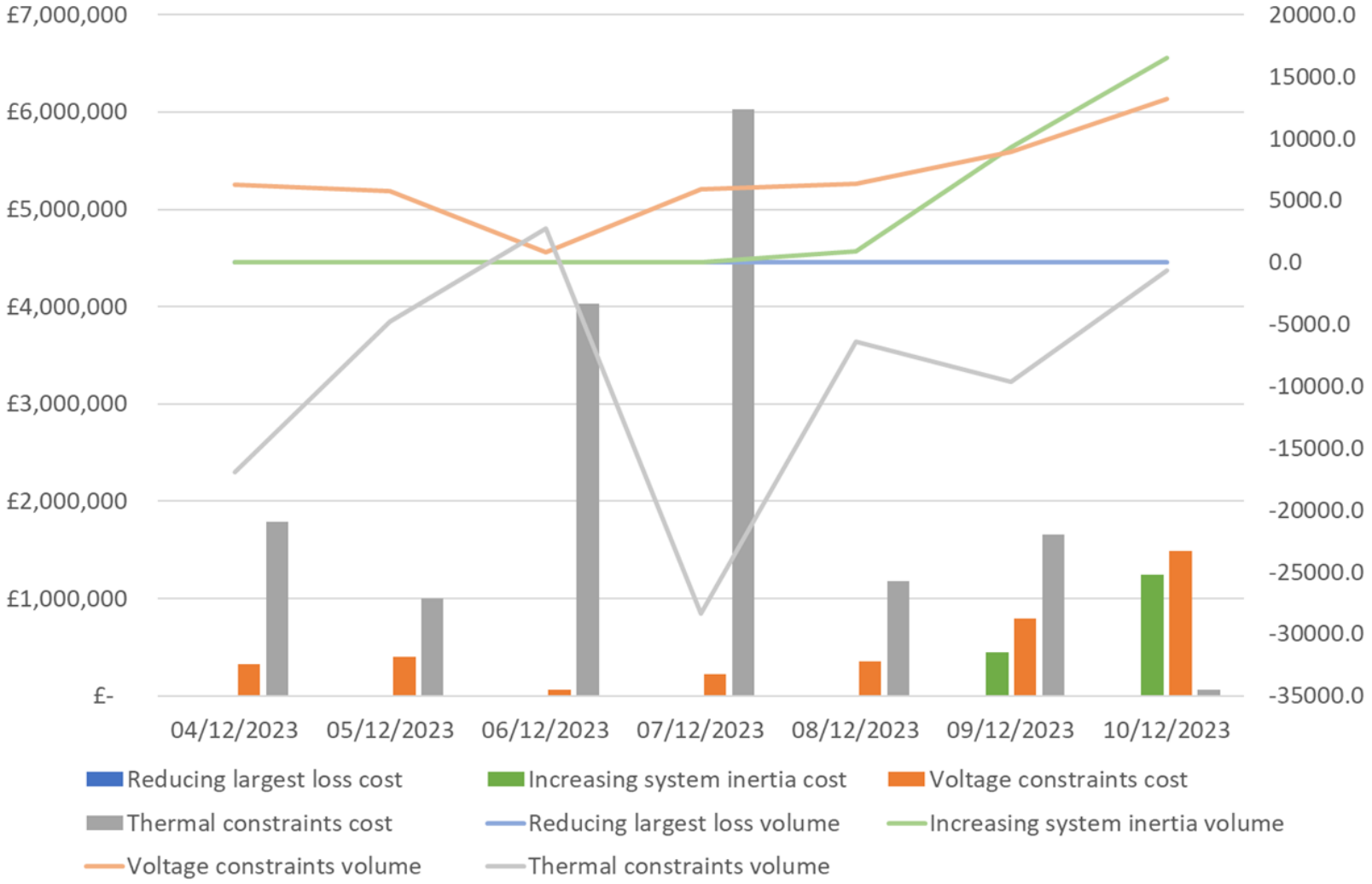

| Date | Total (£m) |
|---|---|
| 04/12/2023 | 4.8 |
| 05/12/2023 | 4.7 |
| 06/12/2023 | 8.6 |
| 07/12/2023 | 9.1 |
| 08/12/2023 | 3.6 |
| 09/12/2023 | 5.6 |
| 10/12/2023 | 6.8 |
| Weekly Total | 43.2 |
| Previous Week | 36.9 |

Constraints and Reserve costs were the key cost component for the week.

Please note that all the categories are presented and explained in the MBSS.

Data issue: Please note that due to a data issue on a few days over the last few months, the Minor Components line in Non-Constraint Costs is capturing some costs on those days which should be attributed to different categories. It has been identified that a significant portion of these costs should be allocated to the Operating Reserve Category. Although the categorisation of costs is not correct, we are confident that the total costs are correct in all months. We continue to investigate and will advise when we have a resolution.

# ESO Actions | Constraint Cost Breakdown



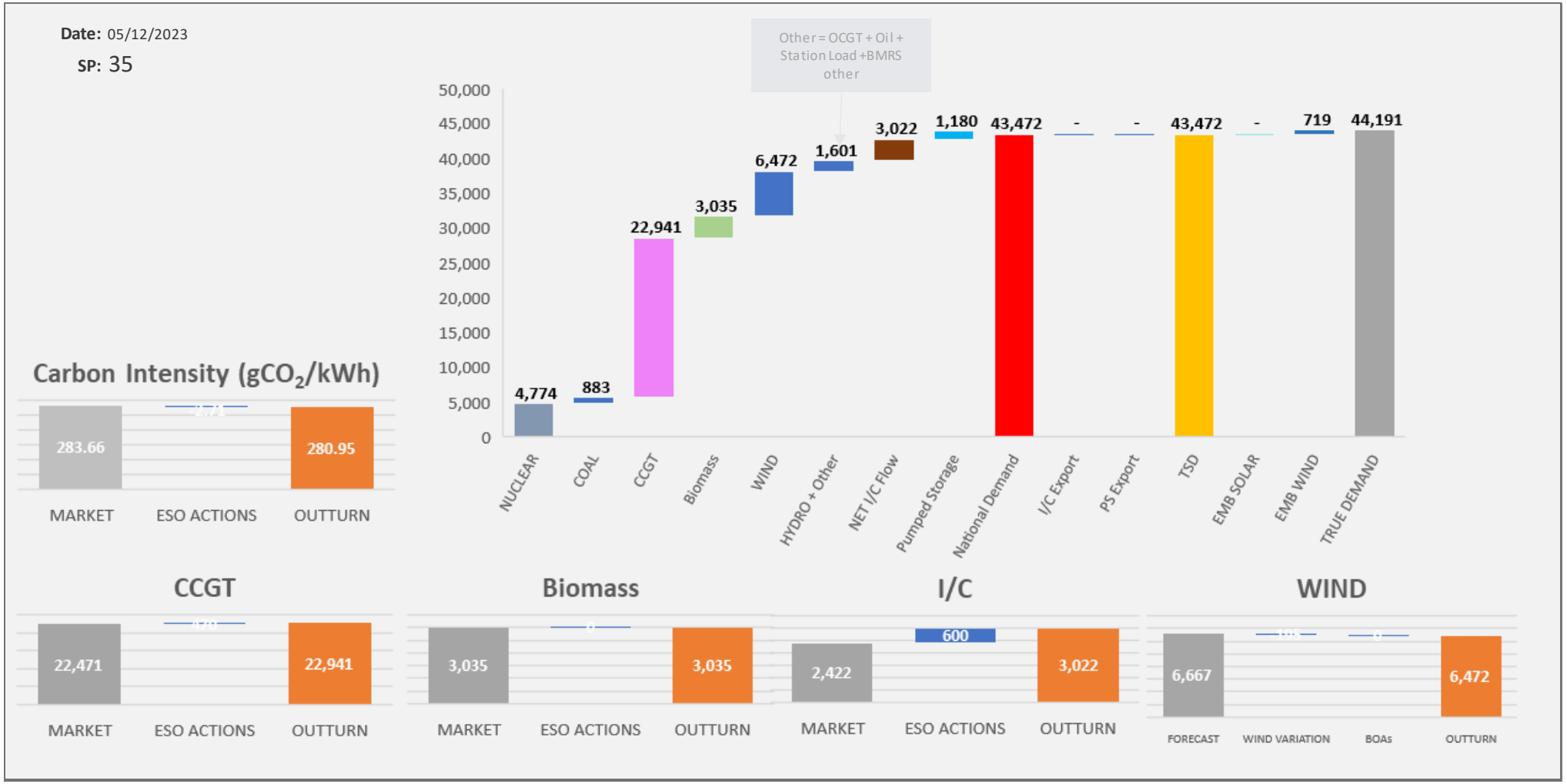

**Thermal – network congestion**
Actions were required to manage thermal constraints throughout the week with the most significant cost on Wednesday and Thursday.

**Voltage**
Intervention was required to manage voltage levels throughout the week.

**Managing largest loss for RoCoF**
No intervention was required to manage largest loss.

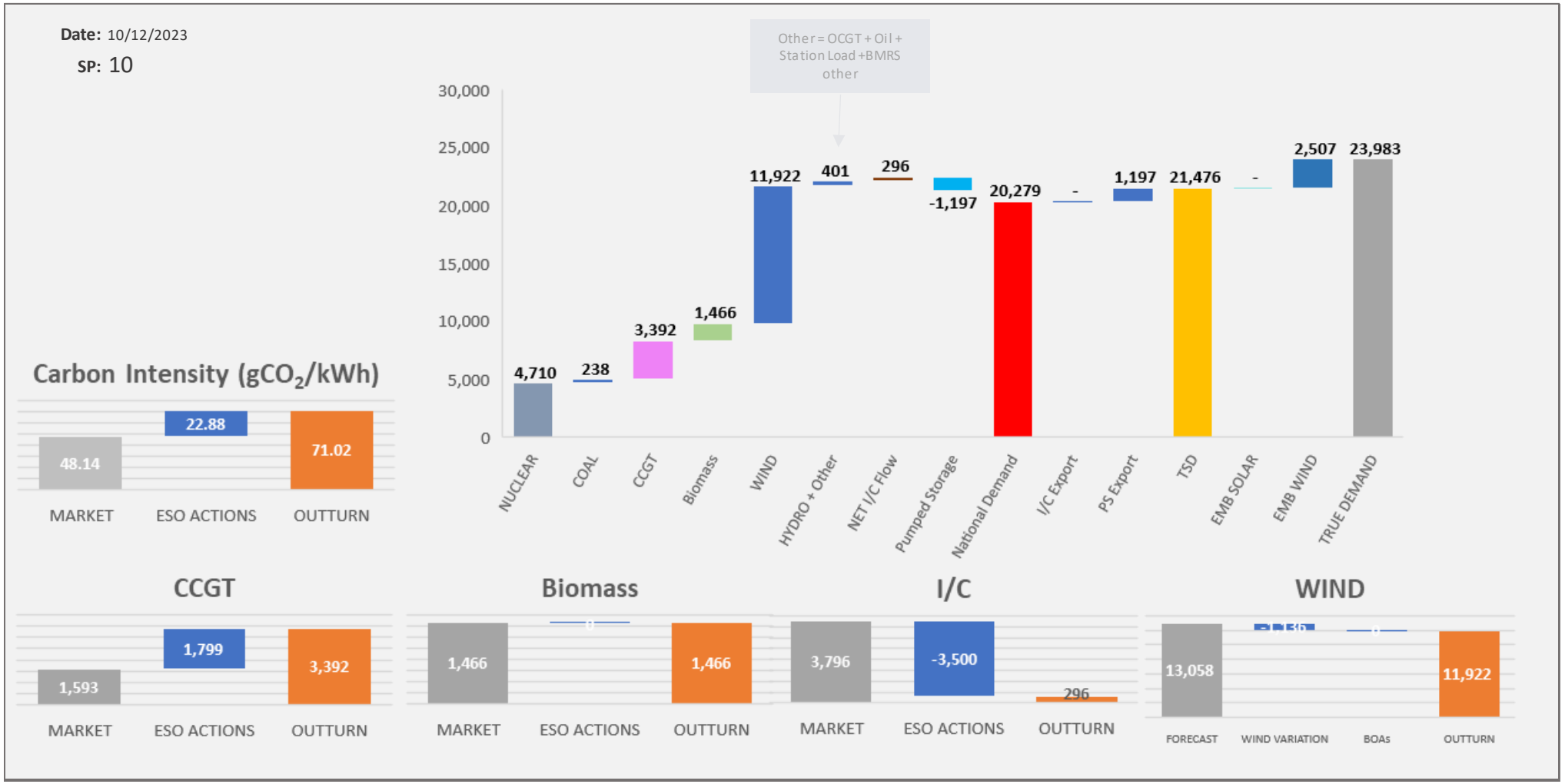
**Increasing inertia**
Intervention was required to manage System Inertia on Saturday and Sunday.

# ESO Actions | Tuesday 05 December – Peak Demand – SP spend ~£84k



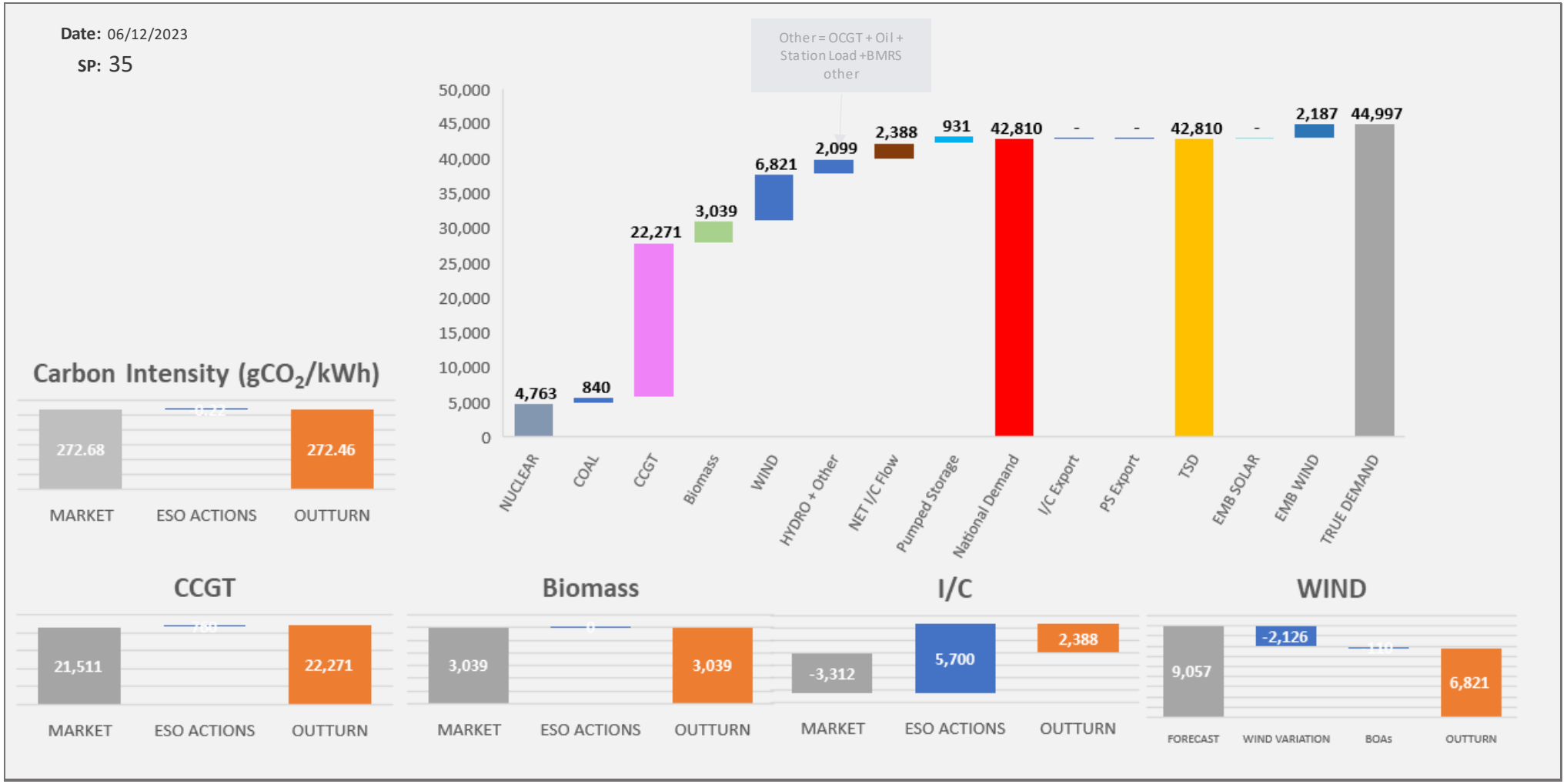

Carbon Intensity data on data portal: https://data.nationalgrideso.com/carbon-intensity1/carbon-intensity-of-balancing-actions

# ESO Actions | Sunday 10 December – Minimum Demand – SP Spend ~£262k



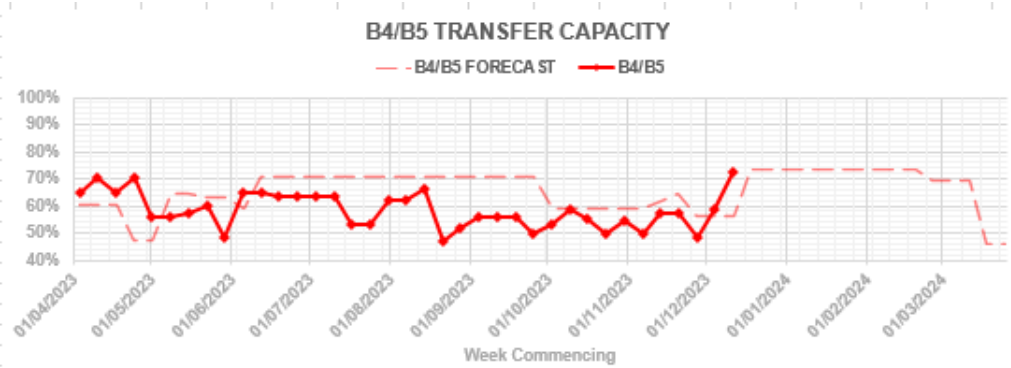

Carbon Intensity data on data portal: https://data.nationalgrideso.com/carbon-intensity1/carbon-intensity-of-balancing-actions

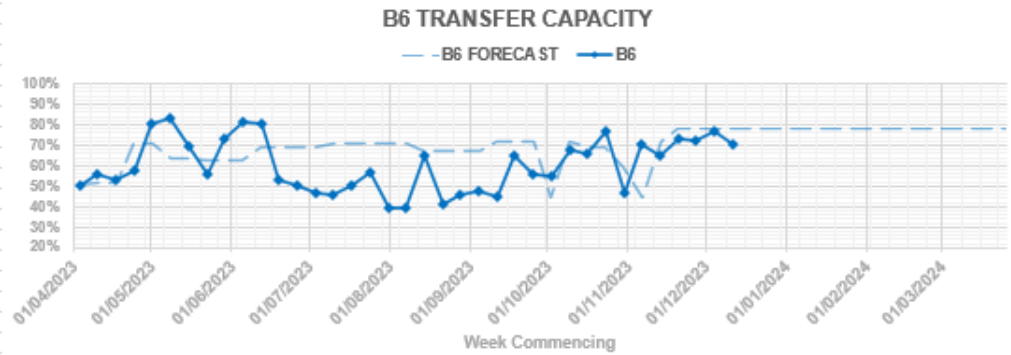
# ESO Actions | Wednesday 06 December – Highest SP Spend ~£552k

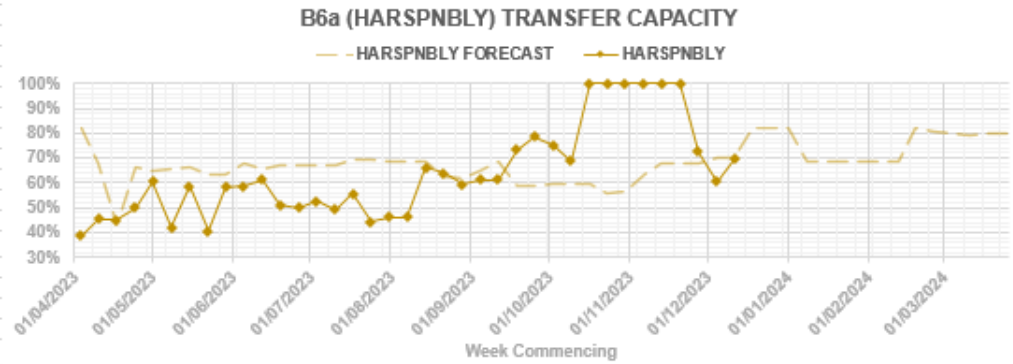



Carbon Intensity data on data portal: https://data.nationalgrideso.com/carbon-intensity1/carbon-intensity-of-balancing-actions

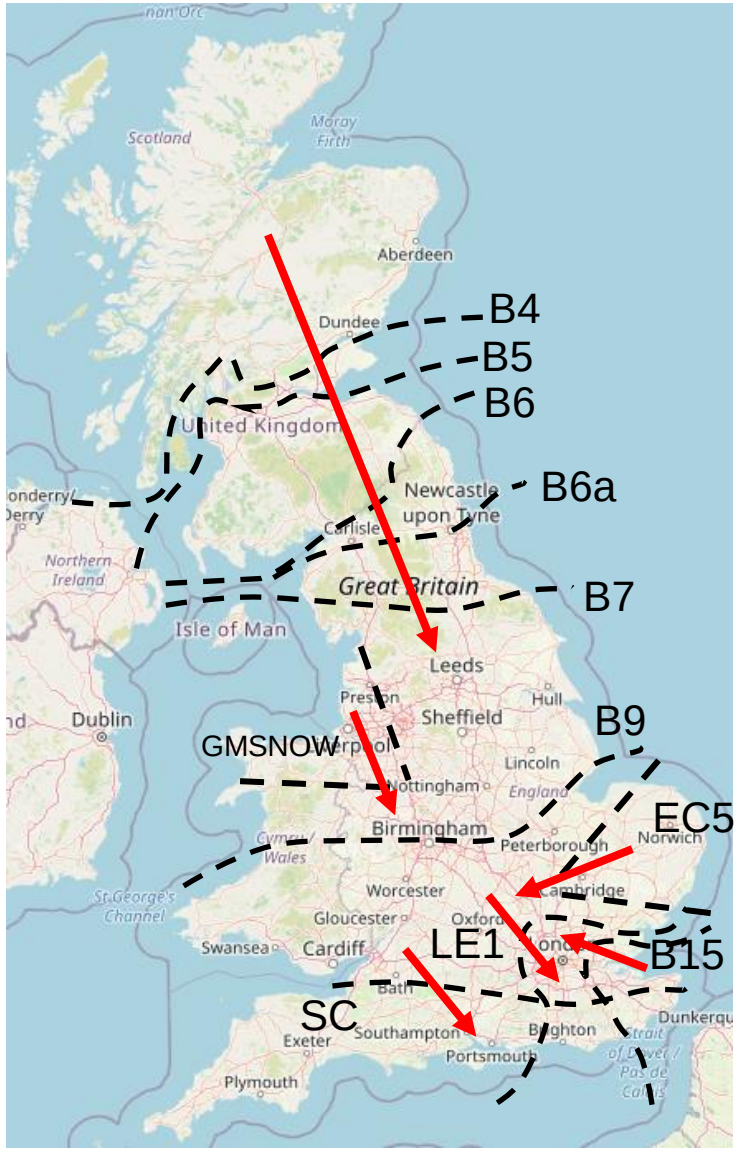
# Transparency | Network Congestion



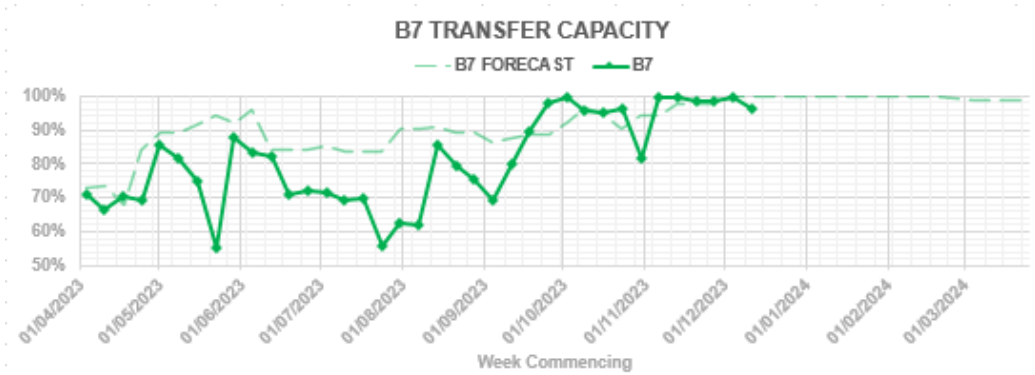



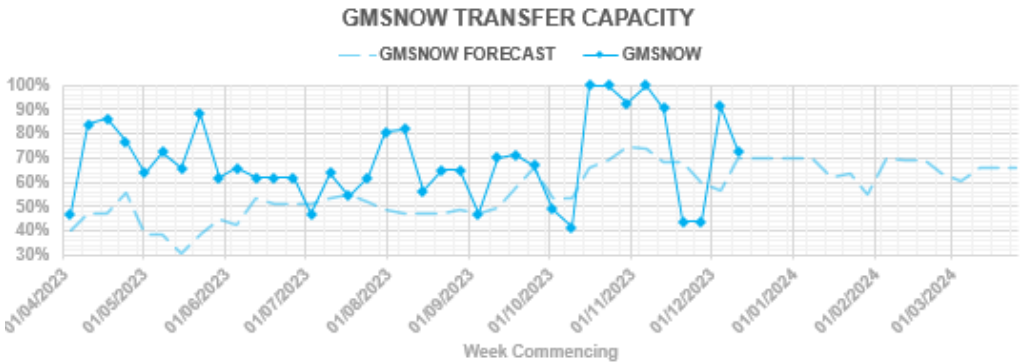

| Boundary | Max. Capacity (MW) |
|---|---|
| B4/B5 | 3400 |
| B6 | 6800 |
| B6a | 8000 |
| B7 | 8325 |
| GMSNOW | 4700 |
| B9 | 10600 |
| EC5 | 5000 |
| LE1 | 8500 |
| B15 | 7500 |
| SC | 7300 |

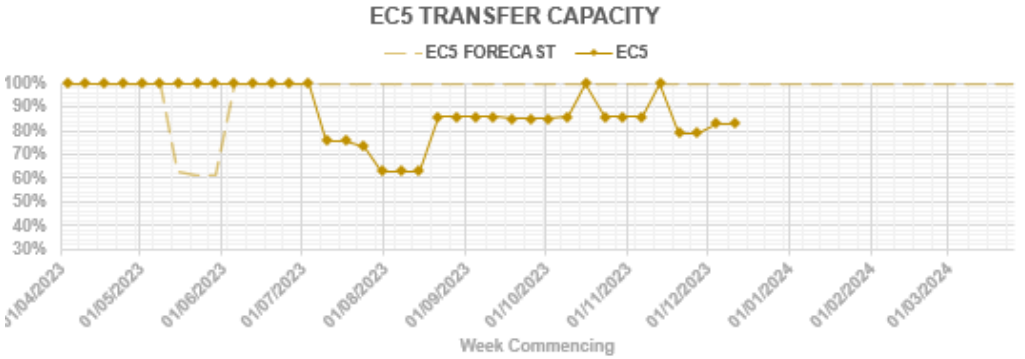



Day ahead flows and limits, and the 24-month constraint limit forecast are published on the ESO Data Portal:
https://data.nationalgrideso.com/data-groups/constraint-management

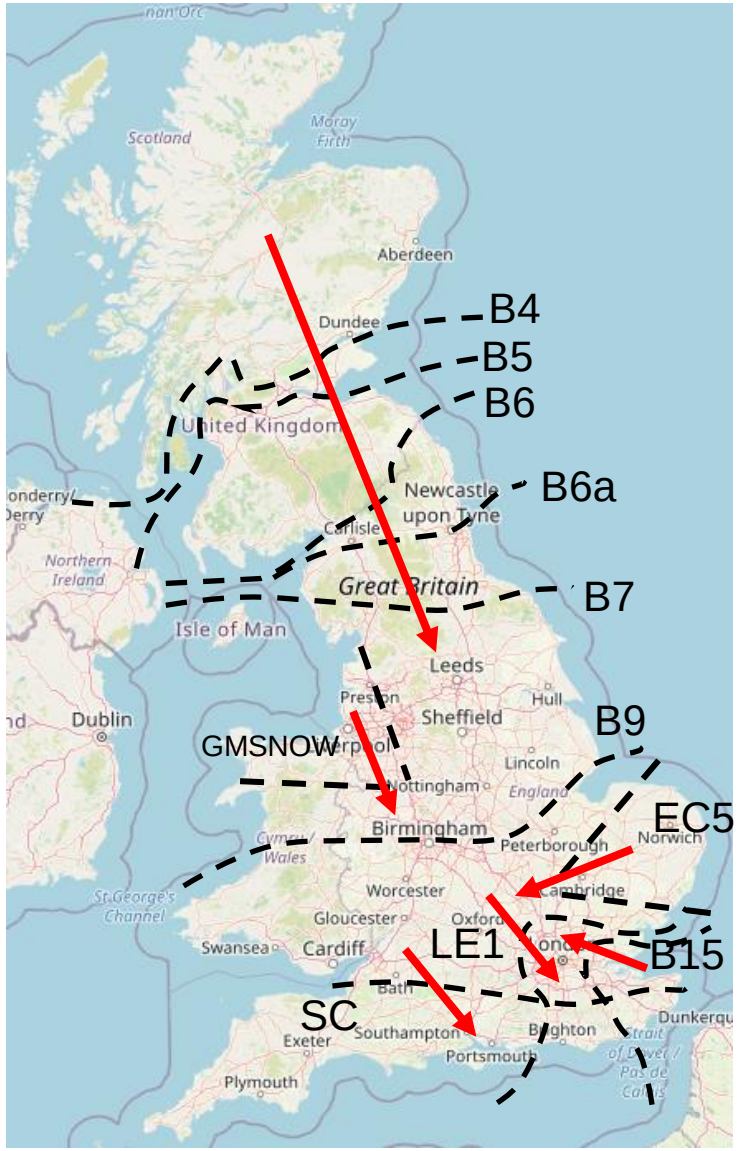
# Transparency | Network Congestion




| Boundary | Max. Capacity (MW) |
|---|---|
| B4/B5 | 3400 |
| B6 | 6800 |
| B6a | 8000 |
| B7 | 8325 |
| GMSNOW | 4700 |
| B9 | 10600 |
| EC5 | 5000 |
| LE1 | 8500 |
| B15 | 7500 |
| SC | 7300 |

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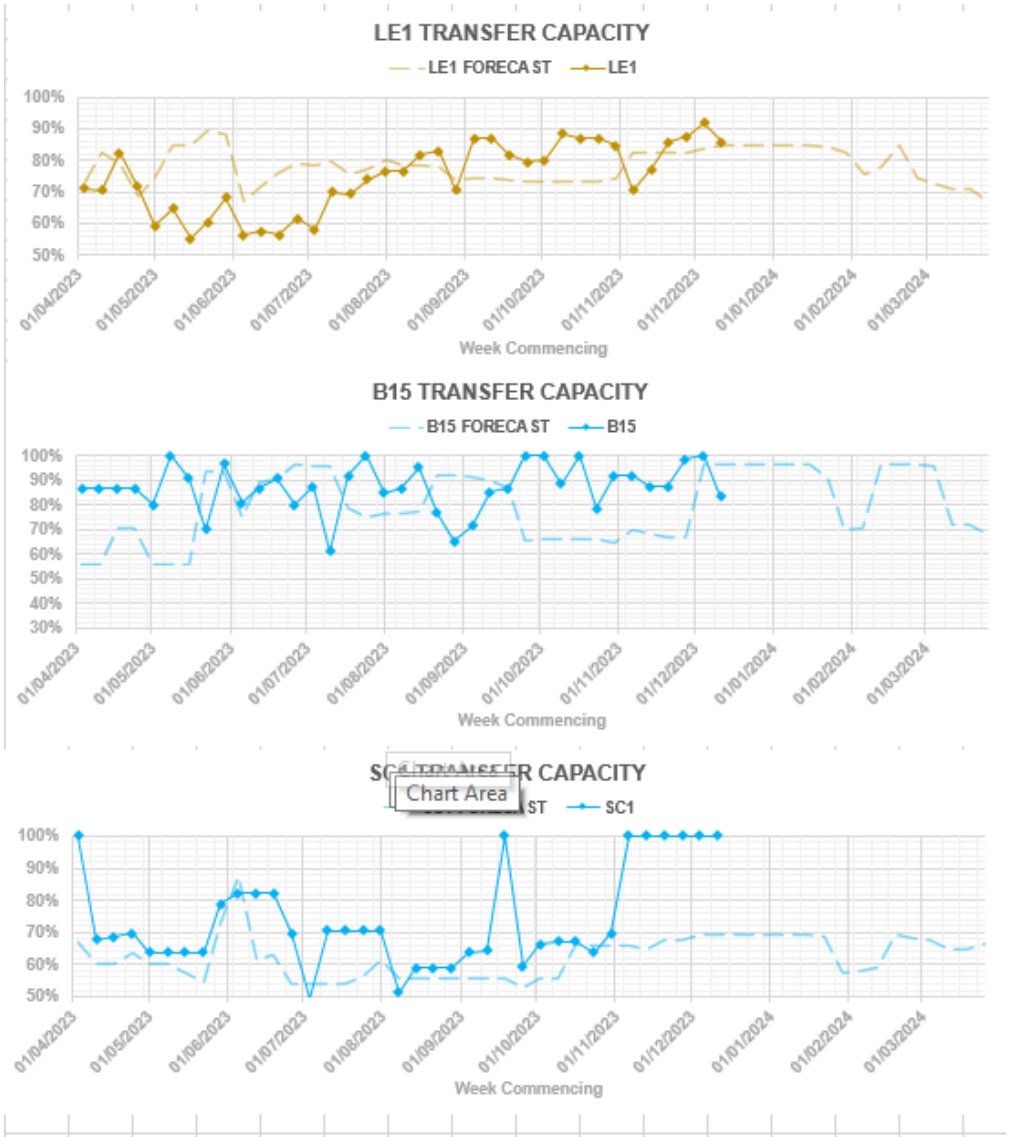


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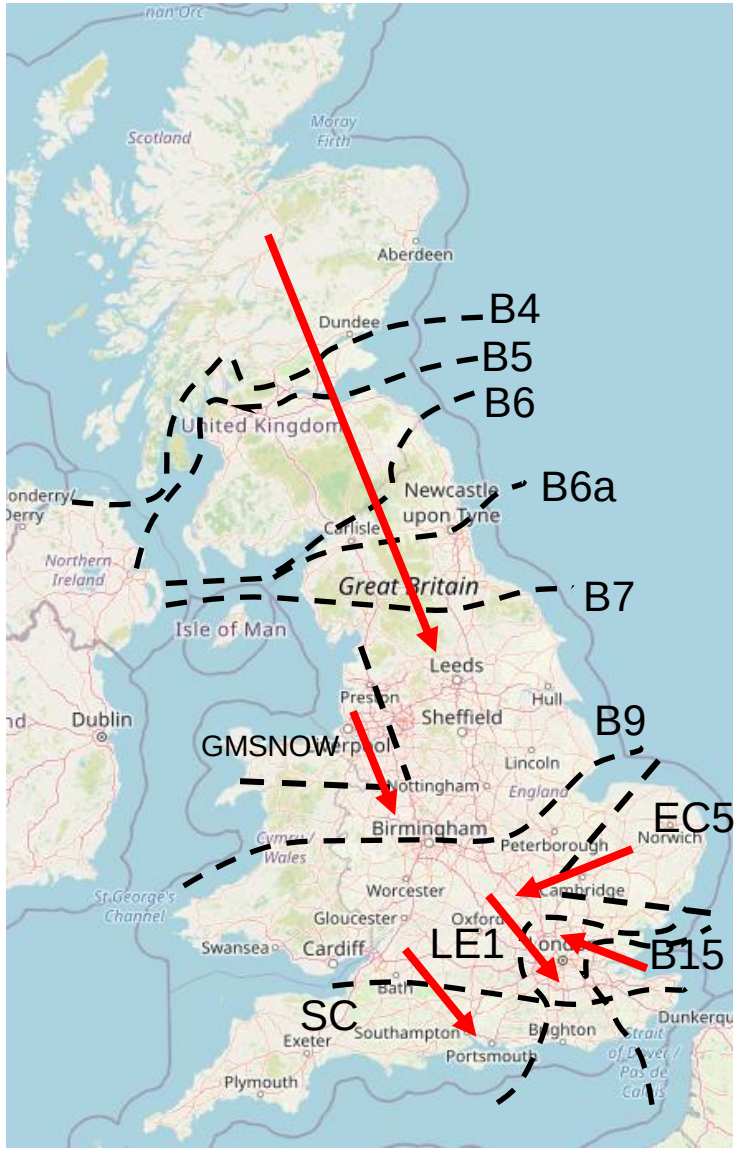


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# Advance Questions

Q: Do you have anywhere that outlines what the rejection codes on the EAC mean? If so could you provide a copy, thanks very much.

A: The EAC (Enduring Auction Capability) rejection codes can be found on Page 5 and 6 of this document: EAC Results Format.docx (live.com)

We will continue to update this as we add new services to the EAC platform.

# Previously Asked Questions

Q: Audrey noted the ESO does not know how much DFS will be delivered when called. Don't we need some non-delivery charge so at least if you call DSR at these high prices it will be reliable?

A: We are provided with forecast volumes from providers, but acknowledge that as the baseline methodology has changed this year, providers will have limited data to be able to model this and so there will be some uncertainty. We are using test events to help providers forecast their delivery as accurately as possible. As an enhanced action we are aiming to grow volume over the winter and as such don't want to disincentivise participation through a penalty charge – although we will only pay for volume delivered to ensure that we are not paying for non-delivery.

Q: With changes to connection queue management, will ESO provide historical connection registers on the data portal so changes can be identified?

A: Reporting around Queue Management and the queue in general is something we are currently looking at.  At the least we should be able to provide historic TEC Registers via the data portal.  More granular reporting around the contracted background is being progressed as part of the Connections Action Plan.

# Outstanding questions

Q: Last week the control room turned off some wind units (non SO-flagged) at -40 £/MW in the middle of the day when there were over 5GW of bids in the stack at ~0£/MW. Quite clearly this activity wasn't for energy balancing. What can be done to make these decisions more predictable for the market?

*We have contacted the individual who asked this question and requested that they provide more details before we come back with an answer.*

# Reminder about answering questions at the ESO OTF

- **Questions from unidentified parties will not be answered live**. If you have reasons to remain anonymous to the wider forum please use the advance question or email options. Details in the appendix to the pack.
- **Questions will be answered in the upvoted order whenever possible**. We will take questions from further down the list when: the answer is not ready; we need to take the question away or the topic is outside of the scope of the OTF.
- **Sli.do will remain open until 12:00**, even when the call closes earlier, to provide the maximum opportunity for you to ask questions.
- **All questions will be recorded and published** All questions asked through Sli.do will be recorded and published, with answers, in the Operational Transparency Forum Q&A on the webpage: https://www.nationalgrideso.com/what-we-do/electricity-national-control-centre/operational-transparency-forum
- **Takeaway questions** – these questions will be included in the pack for the next OTF, we may ask you to contact us by email in order to clarify or confirm details for the question.
- **Out of scope questions** will be forwarded to the appropriate ESO expert or team for a direct response. We may ask you to contact us by email to ensure we have the correct contact details for the response. These questions will not be managed through the OTF, and we are unable to forward questions without correct contact details. Information about the OTF purpose and scope can be found in the appendix of this slide pack

slido

# Audience Q&A Session

ⓘ Start presenting to display the audience questions on this slide.

# Feedback

Please remember to use the feedback poll in sli.do after the event.

We welcome feedback to understand what we are doing well and how we can improve the event for the future.

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

# Appendix

# Purpose and scope of the ESO Operational Transparency Forum

## Purpose

The Operational Transparency Forum runs once a week to provide updated information on and insight into the operational challenges faced by the control room in the recent past (1-2 weeks) and short term future (1-2 weeks). The OTF will also signpost other ESO events, provide deep dives into focus topics, and allow industry to ask questions.

## Scope

Aligns with purpose, see examples below:

### In Scope of OTF

Material presented i.e.: regular content, deep dives, focus topics
ESO operational approach & challenges
ESO published data

### Out of Scope of OTF

Data owned and/or published by other parties
e.g.: BMRS is published by Elexon
Processes including consultations operated by other parties e.g.: Elexon, Ofgem, DESNZ
Data owned by other parties
Details of ESO Control Room actions & decision making
Activities & operations of particular market participants
ESO policy & strategic decision making
Formal consultations e.g.: Code Changes, Business Planning, Market development

# Managing questions at the ESO Operational Transparency Forum

- OTF participants can ask questions in the following ways:
  - Live via Sli.do code #OTF
  - In advance (before 12:00 on Monday) at https://forms.office.com/r/k0AEfKnai3
  - At any time to box.NC.Customer@nationalgrideso.com

- **All questions asked through Sli.do** will be recorded and published, with answers, in the Operational Transparency Forum Q&A on the webpage: Operational Transparency Forum | ESO (nationalgrideso.com)
- **Advance questions** will be included, with answers, in the slide pack for the next OTF and published in the OTF Q&A as above.
- **Email questions** which specifically request inclusion in the OTF will be treated as Advance questions, otherwise we will only reply direct to the sender.
- **Takeaway questions** – we may ask you to contact us by email in order to clarify or confirm details for the question.
- **Out of scope questions** will be forwarded to the appropriate ESO expert or team for a direct response. We may ask you to contact us by email to ensure we have the correct contact details for the response. These questions will not be managed through the OTF, and we are unable to forward questions without correct contact details. Information about the OTF purpose and scope can be found in the appendix of this slide pack