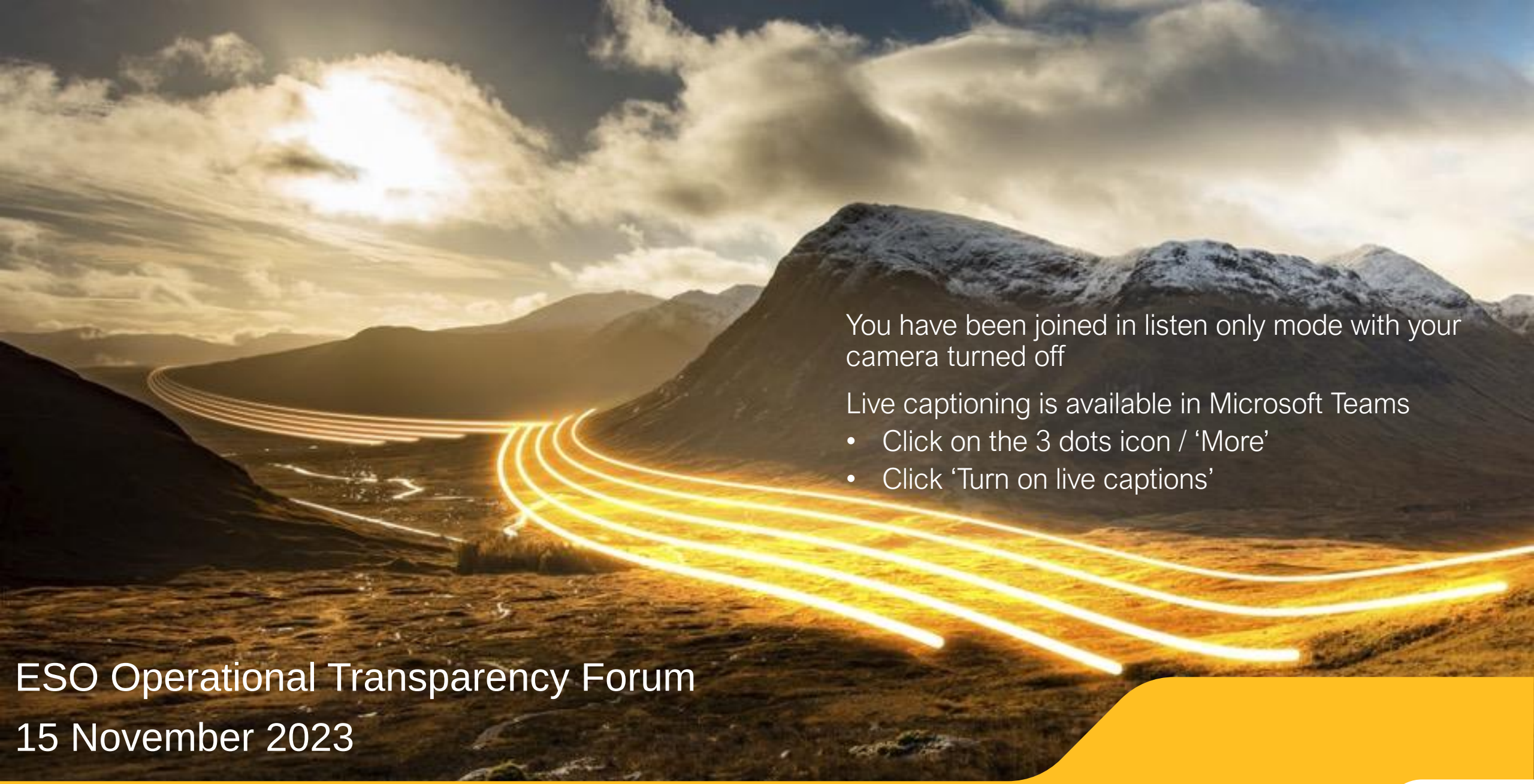


You have been joined in listen only mode with your camera turned off

Live captioning is available in Microsoft Teams

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

ESO Operational Transparency Forum

15 November 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.

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

Future deep dive / focus topics

Today

Future

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

You can ask questions in advance (before 12:00 on Monday) at: https://forms.office.com/r/k0AEfKnai3

Balancing Reserve Webinar: Post Industry Consultation

Please join us for the Balancing Reserve Webinar on **16th November 2023 at 10:00 am**.

The purpose of this webinar is to review stakeholder feedback from our EBR Article 18 consultation prior submission to Ofgem, and to provide further information on timelines and next steps. The EBR Article 18 consultation closed on 26th October 17:00 but the documents are still available on our website.

We will also hold a Q&A session at the end of the presentation for any questions that you may have. The session will be recorded and shared on our website along with a Q&A document.

Register for Balancing Reserve Webinar here

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

Electricity System Restoration Engagement Webinar – 22 November 2023

Are you based in the UK's South West & Midlands region and interested in providing restoration services? If so, then our upcoming stakeholder engagement webinar will be very useful for you.

The South West & Midlands tender for restoration services includes the East Midlands, West Midlands, Southern England, South Wales and South West England which will be launching in early 2024. This tender is designed to follow on from the contracts awarded during our previous tender for this region and closes out this round of regional restoration tenders.

Our stakeholder webinar on **22nd November 2023 11.00am - 12.00pm** will provide an overview of the tender timescales, technical requirements, the process through to service go-live and what's different this time round with the ESR procurement. We welcome all technology types to take part in the restoration tenders, including Distributed ReStart services to supplement any full service provisions for the SW & Midlands region.

This webinar will be a great opportunity for you to come along and ask any questions ahead of the expression of interest (EOI) stage in early 2024. During the webinar we will also be seeking feedback on our proposed steps.

Please register your details *HERE* and we will send you a placeholder for the session.

ESR Market Engagement Webinar for the SW & Midlands ESR Tender 2024 - Event Registration (office.com)

Enhancing Energy Storage in the Balancing Mechanism – follow up webinar

On 16 October, we welcomed over 75 stakeholders from across the energy industry to our 'Enhancing Energy Storage in the Balancing Mechanism' event where we outlined our plan to enhance the use of storage assets in our balancing activities and the timelines to achieve this.

A key focus of the event was to explore, in strong collaboration with industry, how to co-create and develop the capabilities and future market design solutions that will enable efficient dispatch of all assets in the Balancing Mechanism, in line with our net-zero ambitions.

To view the full timeline of or balancing activities, and view the event slides and Q&A, visit:

Enhancing Energy Storage in the Balancing Mechanism | ESO (nationalgrideso.com)

Follow up webinar – 14 December 2023

At the October event, we committed to sharing with you the outputs of the independent LCP Delta analysis, as well as a progress update on our plans.

The webinar will be held on the 14 December, 10.00 – 11.30am. Please register your attendance at the below registration form and the calendar invite will be sent to you shortly. Further details regarding the agenda will be shared in due course.

Registration form - Follow-up Webinar (office.com)

Markets Forum – Nov 2023

Thanks to all who attended. For anyone who missed it, the content from the day will be available on the website by the end of the week.

We wanted to share the results from the Slido poll on cadence of engagement.

The winner was quarterly updates.

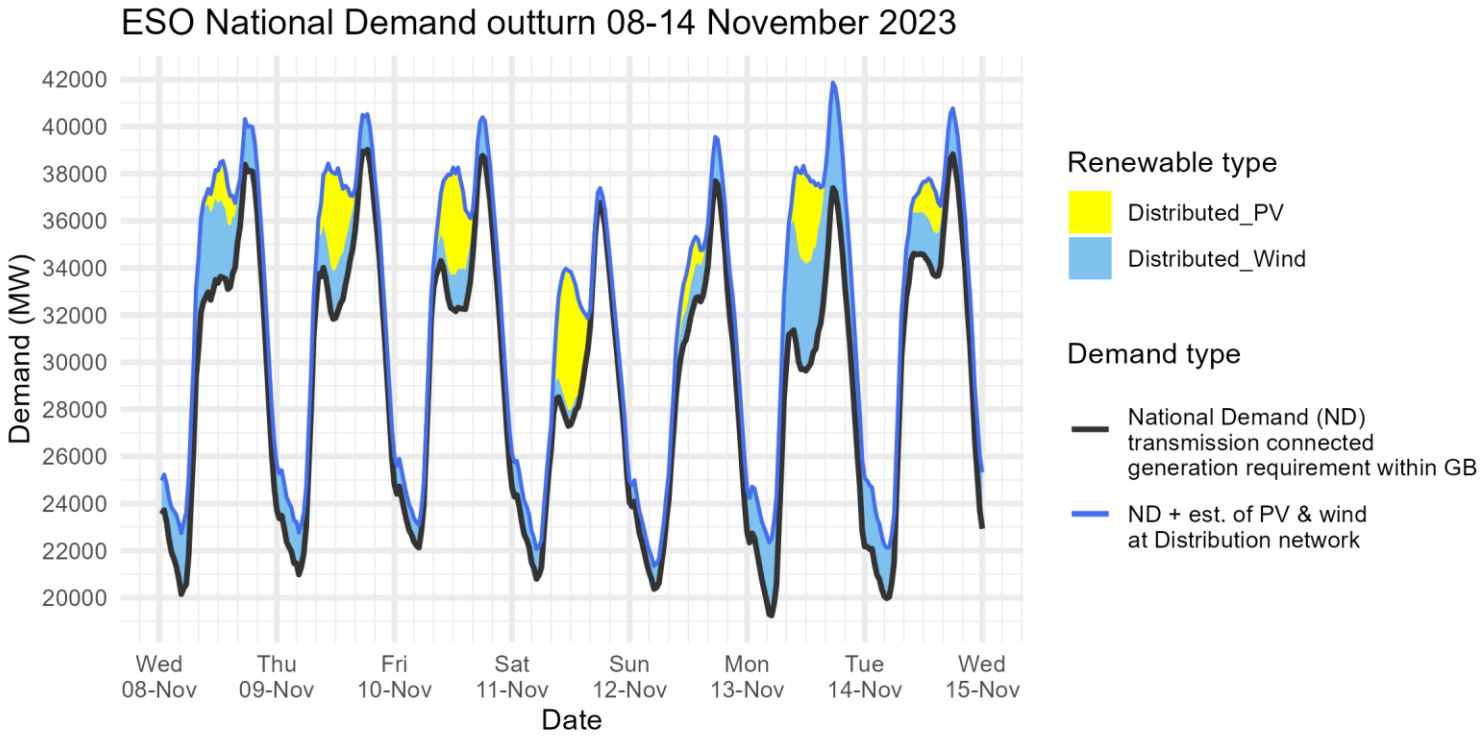
More information on what this will look like will be shared by end of December. We have also taken note of the suggested topics.

Feedback - Slido is open till the end of the week if you haven't already provided feedback (#MF2023 or QR code below). We would love to hear your thoughts on how the event went.

If you have any questions or concerns, please contact the team at:

box.MarketsEngagement@nationalgrideso.com

Demand | Last week demand out-turn



Date	Forecasting Point	FORECAST (Wed 08 Nov) National Demand (GW)	FORECAST (Wed 08 Nov) Dist. wind (GW)	OUTTURN National Demand (GW)	OUTTURN Triad Avoidance est. (GW)	OUTTURN N. Demand adjusted for TA (GW)	OUTTURN Dist. wind (GW)
08 Nov	Evening Peak	38.6	1.9	38.4	0.0	38.4	1.9
09 Nov	Overnight Min	21.1	1.8	21.0	n/a	n/a	1.8
09 Nov	Evening Peak	39.8	1.5	39.0	0.0	39.0	1.5
10 Nov	Overnight Min	22.1	1.2	22.1	n/a	n/a	1.0
10 Nov	Evening Peak	38.5	1.7	38.8	0.0	38.8	1.6
11 Nov	Overnight Min	21.3	1.0	20.8	n/a	n/a	1.3
11 Nov	Evening Peak	36.7	0.4	36.8	0.0	36.8	0.6
12 Nov	Overnight Min	21.5	0.6	20.4	n/a	n/a	1.0
12 Nov	Evening Peak	36.1	2.7	37.7	0.0	37.7	1.9
13 Nov	Overnight Min	19.7	2.3	19.2	n/a	n/a	3.3
13 Nov	Evening Peak	37.8	3.1	37.4	0.0	37.4	4.5
14 Nov	Overnight Min	19.0	3.4	20.0	n/a	n/a	2.1
14 Nov	Evening Peak	37.5	3.0	38.8	0.0	38.8	1.9

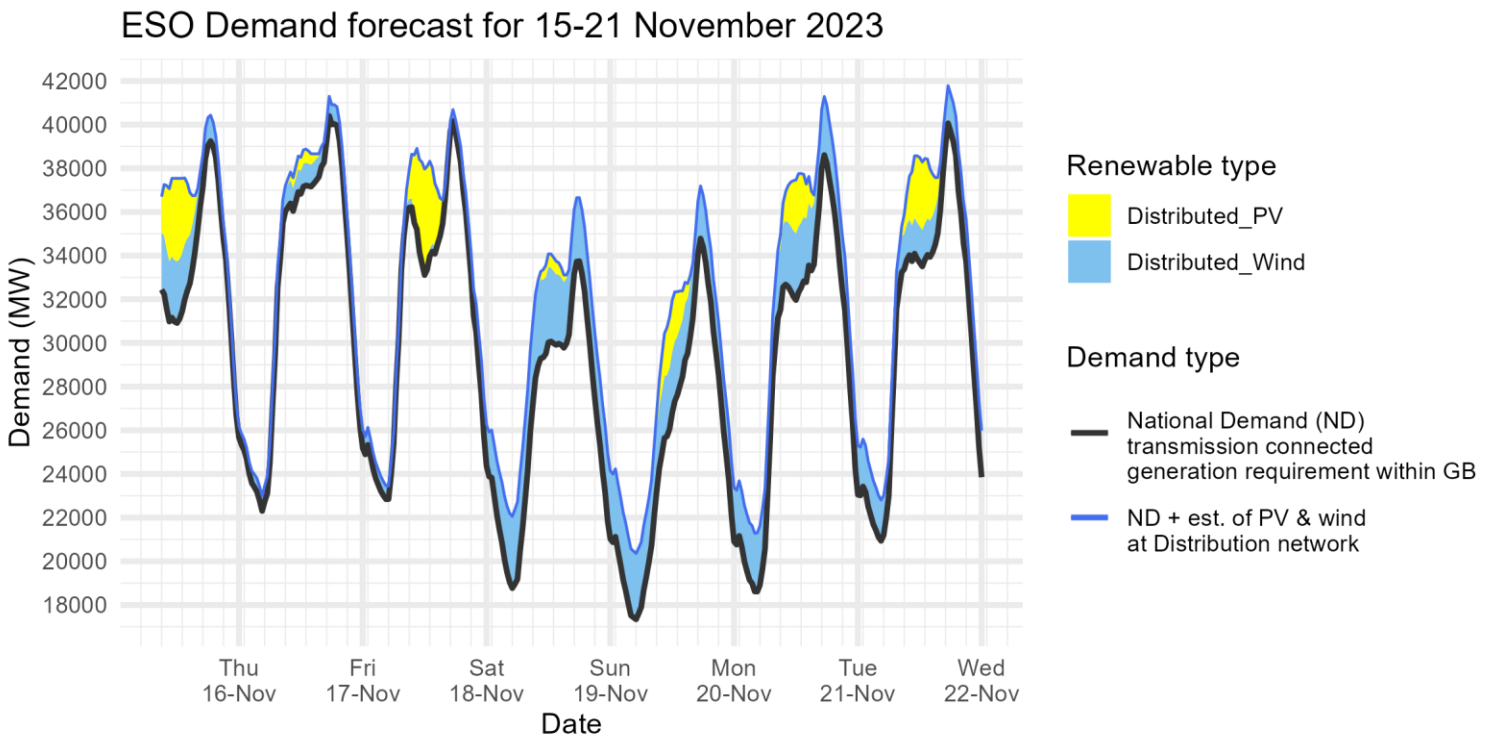
The black line (National Demand ND) is the measure of portion of total GB customer demand that is supplied by the transmission network.

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



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		FORECAST (Wed 15 Nov)	
Date	Forecasting Point	National Demand (GW)	Dist. wind (GW)
15 Nov 2023	Evening Peak	39.2	1.2
16 Nov 2023	Overnight Min	22.3	0.7
16 Nov 2023	Evening Peak	40.4	0.9
17 Nov 2023	Overnight Min	22.8	0.6
17 Nov 2023	Evening Peak	40.2	0.5
18 Nov 2023	Overnight Min	18.8	3.3
18 Nov 2023	Evening Peak	33.7	2.9
19 Nov 2023	Overnight Min	17.3	3.0
19 Nov 2023	Evening Peak	34.8	2.4
20 Nov 2023	Overnight Min	18.6	2.7
20 Nov 2023	Evening Peak	38.6	2.7
21 Nov 2023	Overnight Min	20.9	1.9
21 Nov 2023	Evening Peak	40.1	1.7

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 15 November 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	16/11/2023	41029	5530	3820	40910	5380
Fri	17/11/2023	41624	1480	3820	40330	2690
Sat	18/11/2023	40394	14220	3820	34000	20030
Sun	19/11/2023	41170	11020	3820	34530	17180
Mon	20/11/2023	41720	12900	3820	39200	14770
Tue	21/11/2023	41816	8800	4080	40460	10050
Wed	22/11/2023	42197	15660	4080	39310	17320

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

Operational margins | Week Ahead

- To plan the system ahead of control room operations, we require information of planned outages and availability of BM units (Operational Code 2 (OC2) obligations).
- If you submit data to REMIT via MODIS or directly to the BMRS Remit platform we automatically pick this up and combine it with data submitted directly into eGAMA (which replaced the old TOGA-GOAMP in March 2021).
- The volume of data entered directly into eGAMA has dropped recently - please continue to enter information for your units or start doing this going forward.

If you have any issues logging in or questions on how to submit the data, please email us on: box.modellingandinsight@nationalgrideso.com.

Further information eGAMA (Electricity Generation Availability and Margin Assessment) available here:

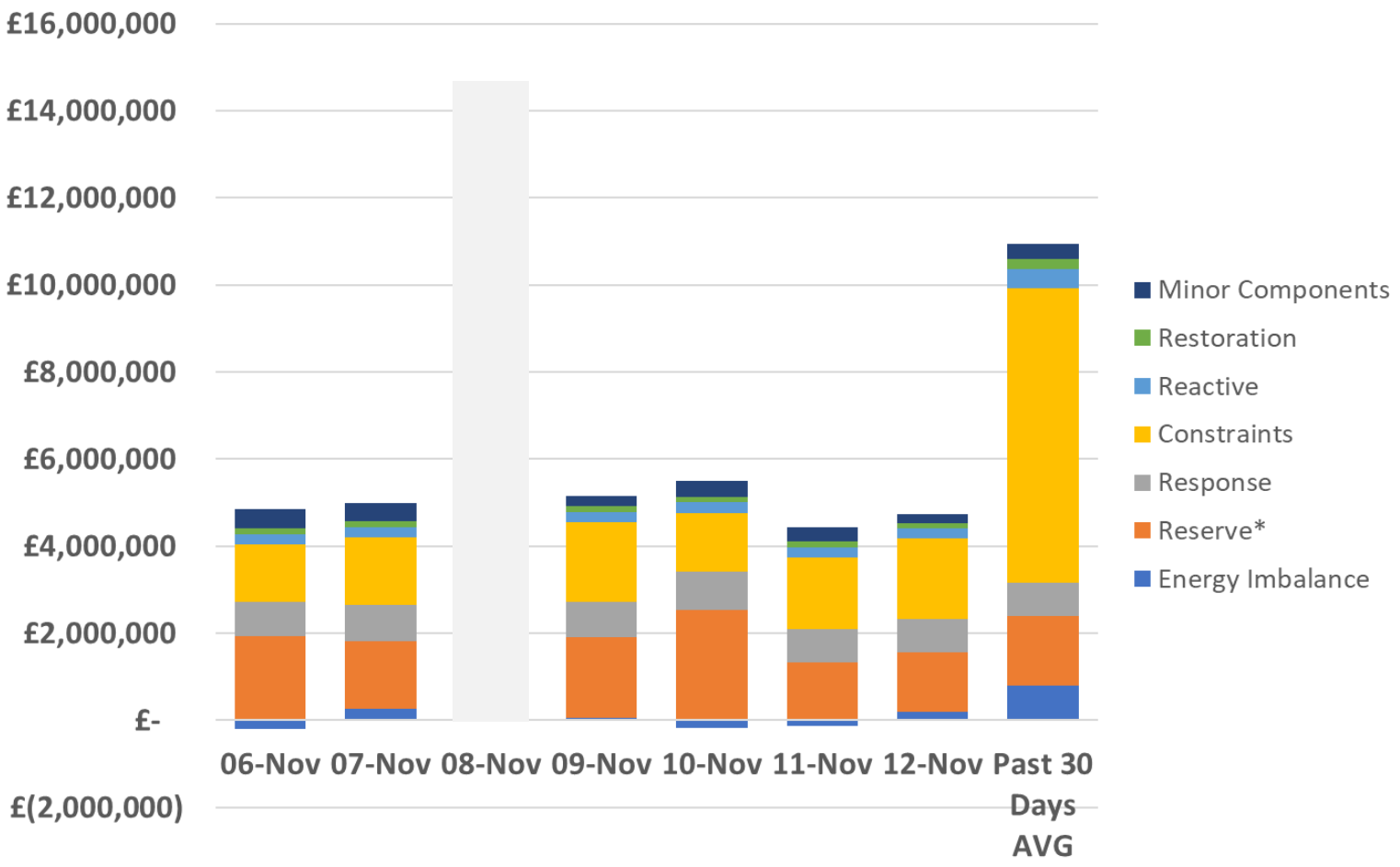
https://www.nationalgrideso.com/industry-information/network-access-planning/egama#

Further information on OC2 here:

download (nationalgrideso.com)

ESO Actions | Category costs breakdown for the last week

Date	Total (£m)
06/11/2023	4.7
07/11/2023	5.0
08/11/2023	14.5
09/11/2023	5.2
10/11/2023	5.3
11/11/2023	4.3
12/11/2023	4.7
Weekly Total	43.7
Previous Week	59.4

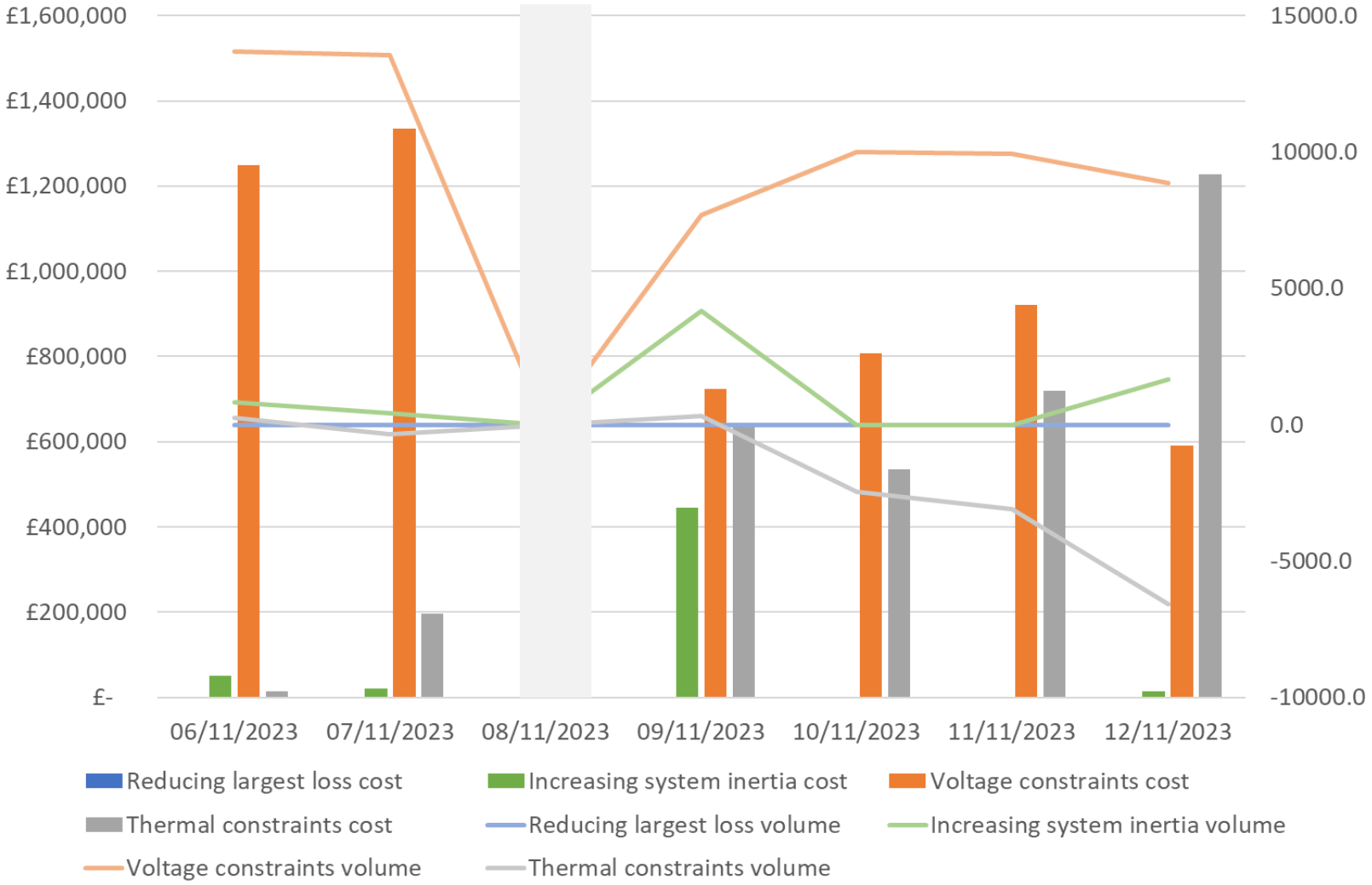


Constraints and Reserve costs were the key cost component for the week.

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



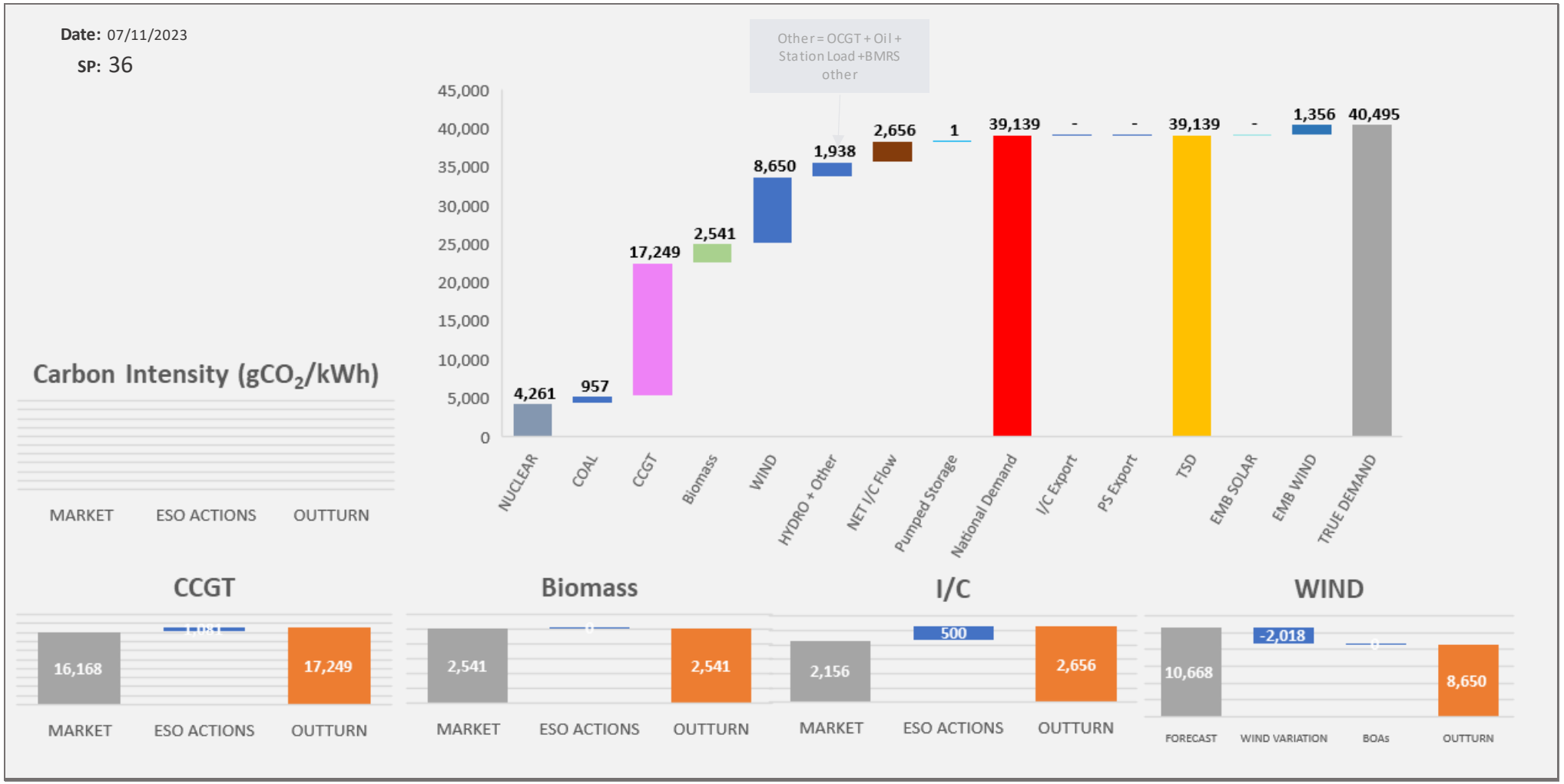
Thermal – network congestion
Actions were required to manage thermal constraints throughout the week with the most significant costs on Sunday.

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

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

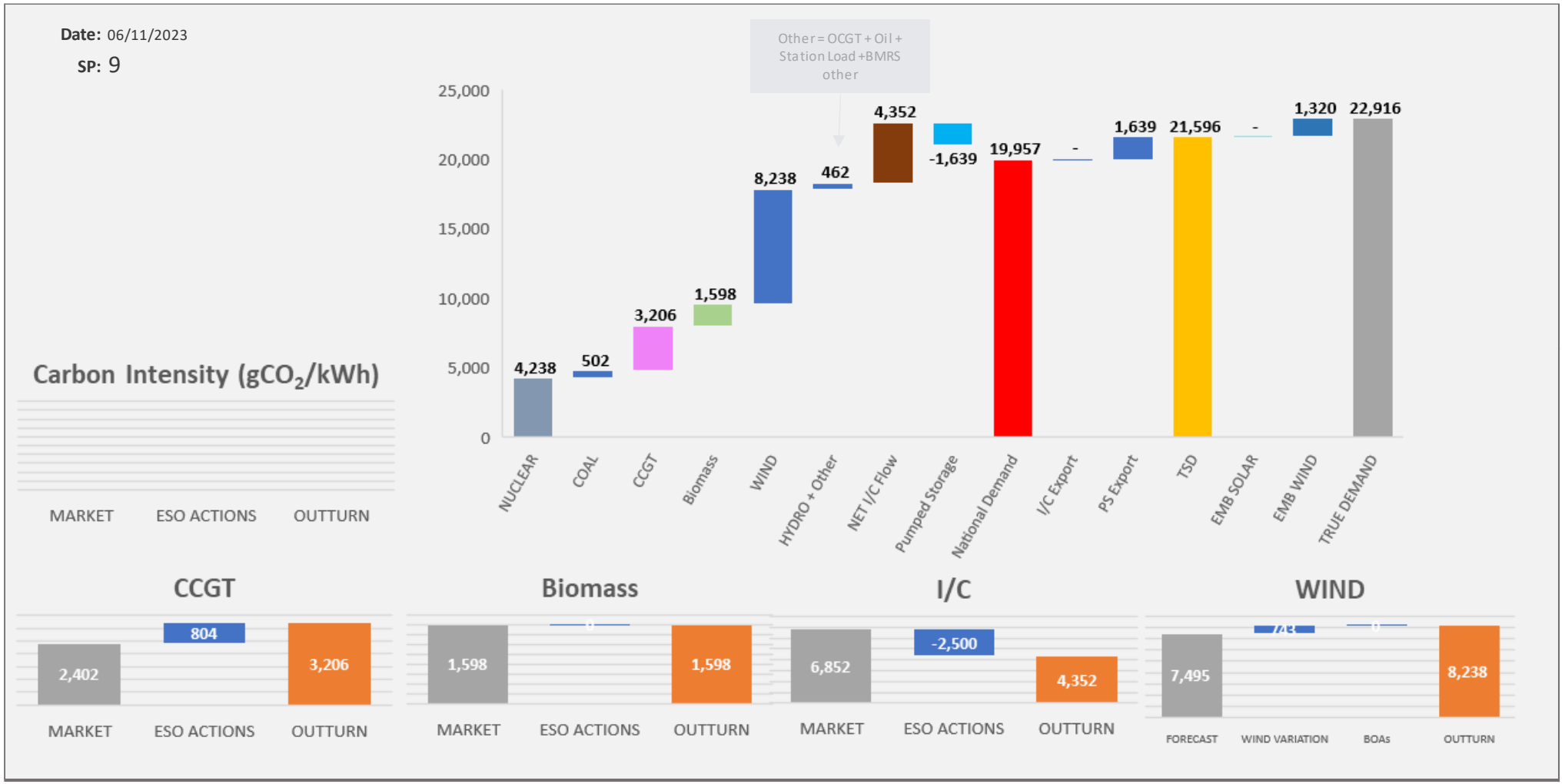
Increasing inertia
Intervention was required to manage System Inertia, except for Friday and Saturday.

ESO Actions | Tuesday 7 November – Peak Demand – SP spend ~£47k



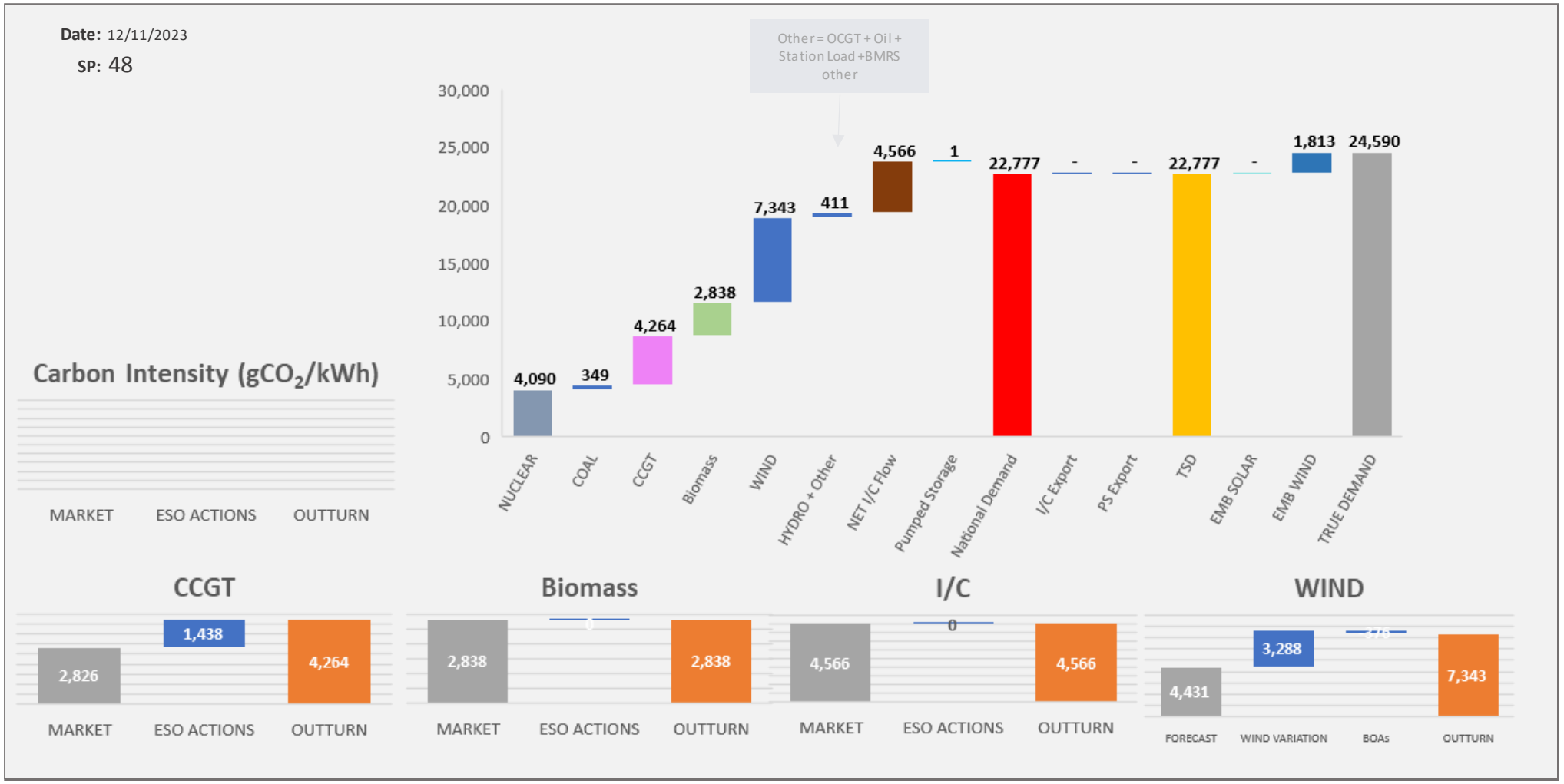
Carbon Intensity data on data portal: https://data.nationalgrideso.com/carbon-intensity1/carbon-intensity-of-balancing-actions

ESO Actions | Monday 6 November – Minimum Demand – SP Spend ~£136k



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

ESO Actions | Sunday 12 November – Highest SP Spend ~£279k



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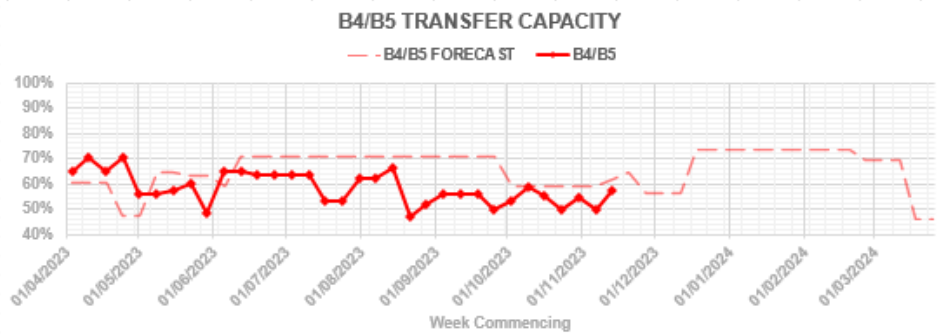
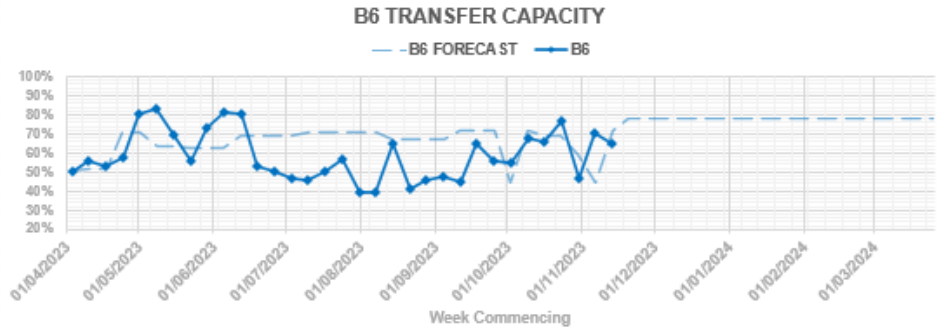
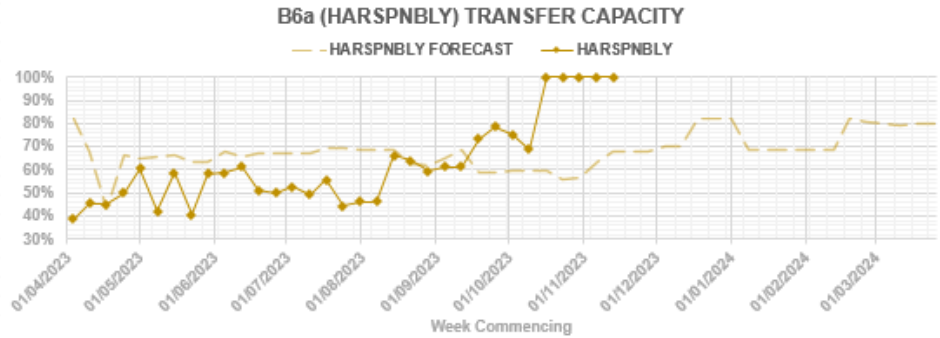
Transparency | Network Congestion







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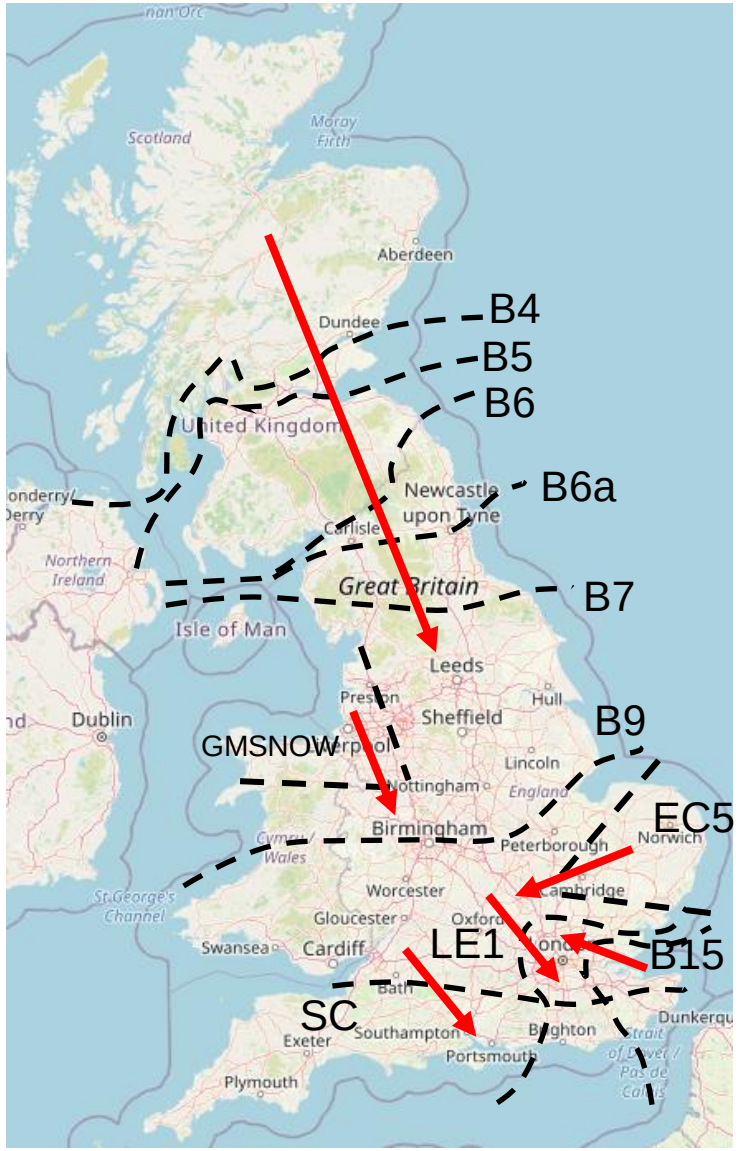
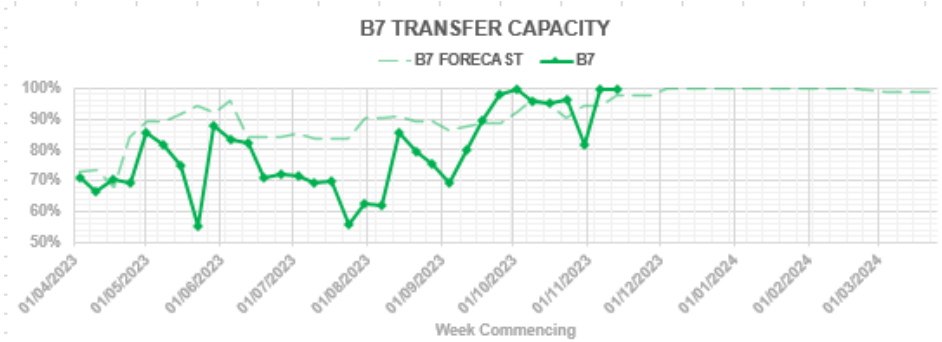
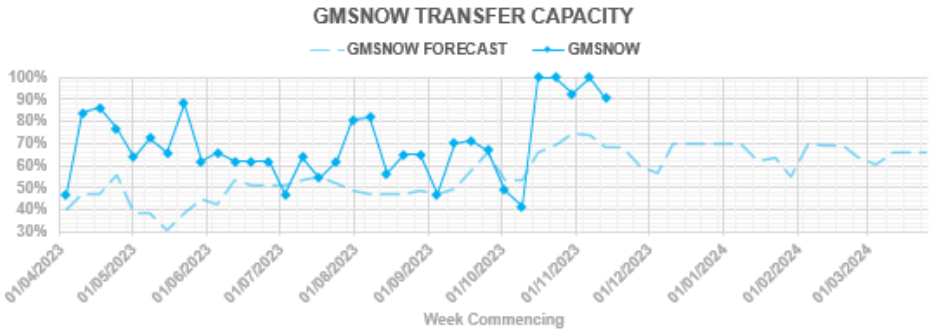
LE1	8500
B15	7500
SC	7300

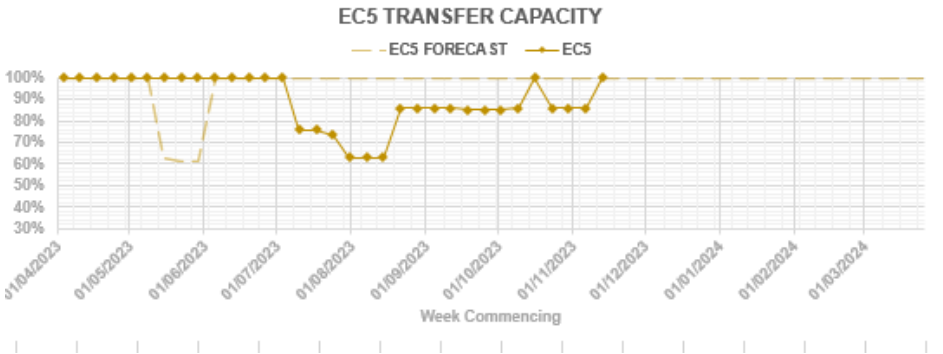


Day ahead flows and limits, and the 24-month constraint limit forecast are published on the ESO Data Portal:
https://data.nationalgrideso.com/data-groups/constraint-management

Transparency | Network Congestion







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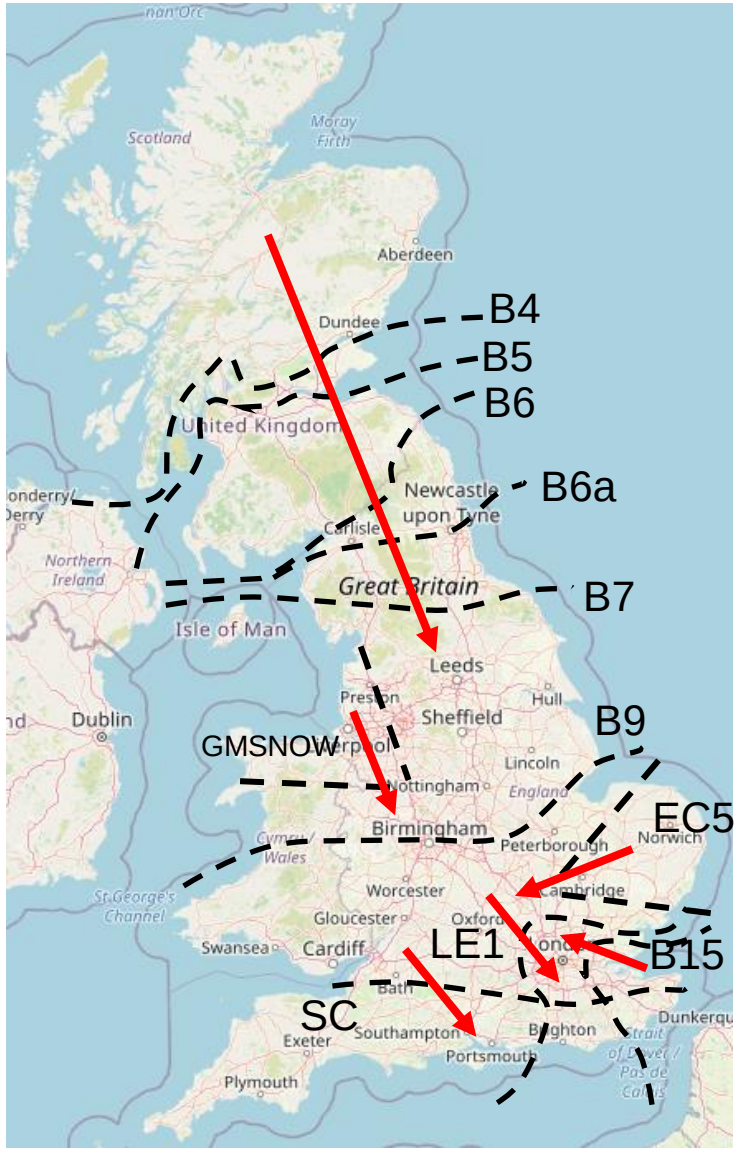

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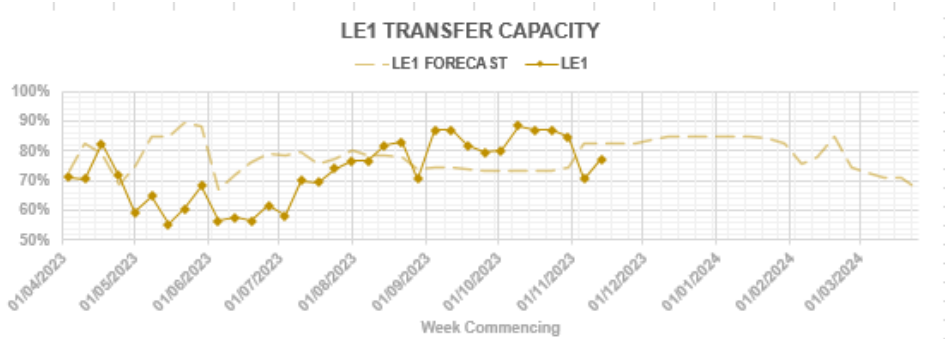
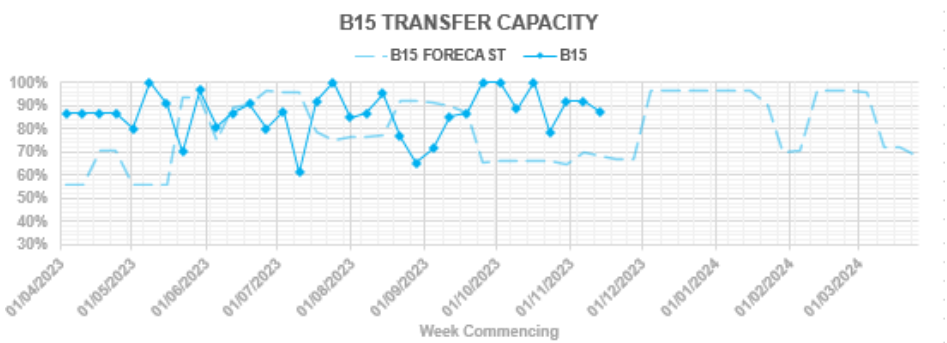
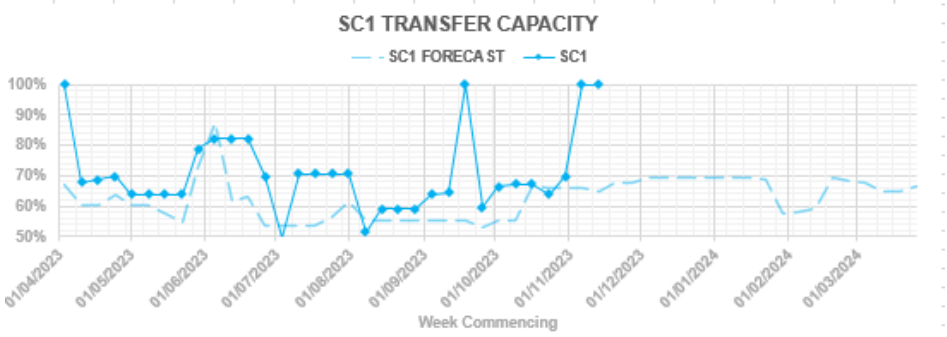
Transparency | Network Congestion







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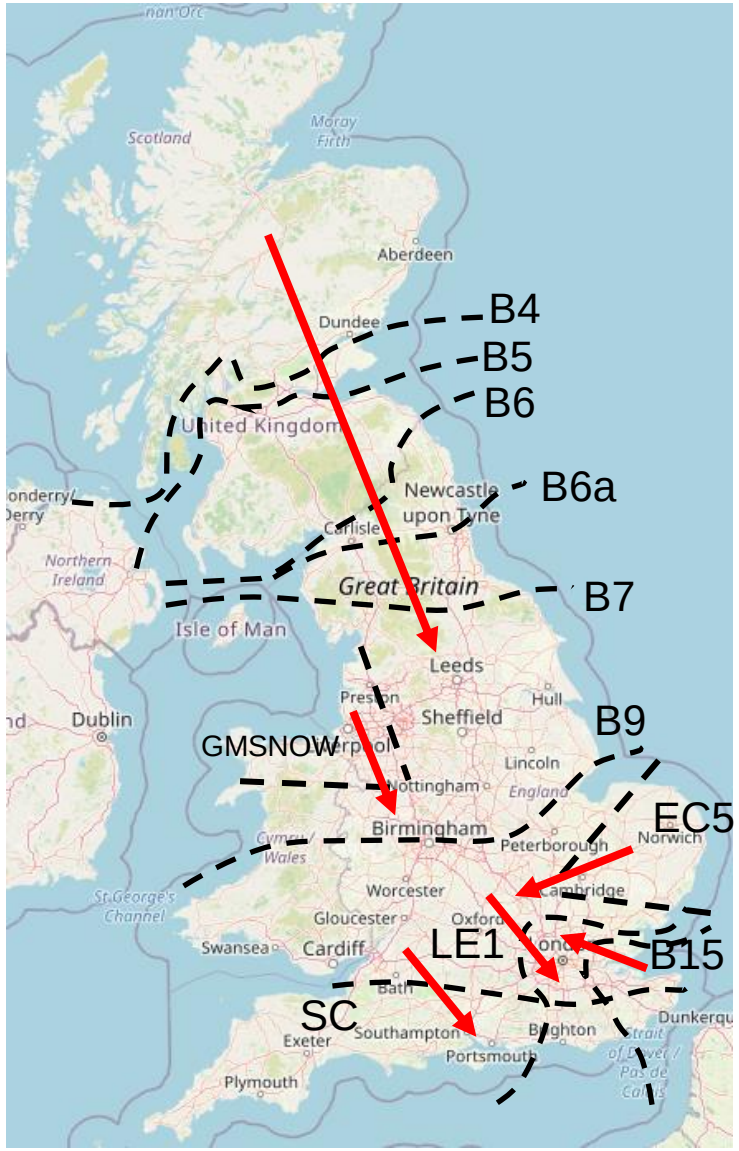

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Previously Asked Questions

Q: When logged in in the EAC portal, submitted baskets disappear after some time. If we log out and log back, the baskets reappear. Is this due to login expire? This is very error prone - can you make sure it doesn't happen, or that you force us out when the login expires?

A: We are implementing a change at the end November 2023 whereby, if a provider is inactive for 15 minutes or more, they will need to login again. If they are active, they will stay logged in until the inactivity exceeds 15 mins.

Q: Are there any plans to revise either of the published BSUoS fixed rates relating to next year (Apr to Sept 24 and/or Oct 24 to March 25)? For example, I think the Apr to Sept 24 fixed rate includes higher over recovery than what have outturned to date in Apr to Sept 23? Thanks

A: We are continually reviewing the published Final and Draft BSUoS tariffs for next year against actual recovery and costs positions. The amount of over recovery that we were forecasting would be available to feed into Final Tariff 3 (Mar 24 – Sep 24) and Draft Tariff 4 (Oct 24 – Mar 25) has moved significantly since the tariffs were published in June this year. Currently, we can accommodate this degree of movement by adjusting Tariff 4, that will be published as a Final Tariff by the end of December this year. It's important to note that Final Tariff 4 is already looking like it will be significantly different to what Draft Tariff 4 was due to the already mentioned movements. Between now and the end of December we will continue to closely monitor the situation and if there are further large movements, that increase the likelihood of a need to reset Final Tariff 3 then we will engage with Market participants about this.

Previously Asked Questions

Q: Yesterday, the EAC algorithm cleared EFA 5 DCH @ -£7.56. I understand there was low procurement but only 20MW of this was price < £0. Looping bids & the introduction of negative pricing could go some way to explaining but the lowest bid in the auction for any service was -£5.48. Can someone explain

A: All executed DCH sell orders were offered in baskets that also offered DCL. Either the sell orders looped DCH and DCL (two or more products in the same order) or had parents defined on DCH and children defined on DCL.

As per market design, surplus can transfer within a looped order (this feature exists since EPEX and is kept in EAC). For a looped sell order that is defined on product A and product B, it is possible accept the entire order when the part on product A is out-of-the-money whilst the part on product B is in-the-money, if the entire sell order has non-negative surplus. For example, basket 37859 only has a parent order, this order has a surplus of 1939.52 in DCL and a surplus of -1629.76 in DCH, the order has a total surplus of 309.76.

Surplus can also transfer from child orders to parent orders (but not from parent orders to child orders; this feature also exists since EPEX and is kept in EAC). It is possible to accept a parent that is out-of-the-money if its children are deeply in-the-money so that the entire parent-children family has non-negative surplus. For example, basket 37654 has a parent order and three child orders, the parent order has a negative surplus of -137.04, three child orders have total surplus of 513.36, hence the entire basket has a total (positive) surplus of 376.32.

*Note that the parent order of basket 36895 has 0 surplus which was likely to be the marginal order and set the clearing prices.

Previously Asked Questions

Q: Will the revised Compliance measures be ready ahead of the next planned connection of a similar asset?

A: Any changes to compliance process and when the changes become effective will follow the normal industry process. We are working toward providing additional guidance for Users soon to support future connections.

Q: When NGESO dispatched additional synchronous generation onto the system in response to these SSO events, how much consideration was given to the risk of plant damage when subjecting those assets to SSO? Does NGESO consider that risk to be zero and does it have evidence to support that position?

A: Additional synchronous generations were dispatched as part of defensive measures to reduce the risk of occurrence of SSO. They were not dispatched onto the system during the SSO events. The main SSO risk associated with synchronous machine is in the form of SSTI, during the event, there is no evidence to suggest any SSTI torsional mode was excited.

Q: On the morning of the 2nd November we saw a number of short frequency spikes on the grid. Although we saw the largest change in frequency in the South East, the impact was visible right across the grid. There was no overall shift in the grid frequency so it didn't appear to be a generator disconnecting. Do you know what caused this?

A:Thanks for your question. We also observed frequency variations / spikes around 08:27hrs on the 2nd of November particularly while Storm Ciaran was hitting the South of England and the Kent/Sussex coast. The spikes of the frequency were caused by multiple transmission circuit trips during the storm. If you have any further questions please do raise them through the OTF or direct to me at: box.NC.Customer@nationalgrideso.com

Previously Asked Questions

Q: EAC Auctions are not sorted by date in the portal, but by auction ID. This is quite error prone. Could we have them sorted by date, rather than auction ID?

Q: In EAC portal, Auction section, could you replace “Start date” with “Auction date”? It’s not clear what "start" means and it’s easy to misunderstand this to be the delivery date rather than the auction date. Similarly, could you change “start time” -> “auction closure time” (or something similar)?

A: Thank you for your feedback. We have passed this onto the EAC team for their consideration.

Outstanding Questions

Q: The DC procurement forecast history (and probably other) dataset has recently been given two different date formats. Could NGESO consolidate on one date/datetime format? It would make data handling with your date much easier. Thank you

We followed up with this owner of this question by email as we need more clarification behind this request.

Q: We also saw oscillations in the South East region on the 04/04/21. Is there any information on those events? These were a smaller magnitude but longer duration. In this week's OTF I raised a question about the oscillations we saw in the South East area in 2022 (sorry I got the year wrong in the Sli.do question!) and whether there was any published information on this, I was asked to provide specific times. The screenshots below shows the oscillations we saw up to at 17:31:09 on the 04/04/22:

Thank you for providing the additional information, we have passed this onto the relevant team and will provide an answer at a future OTF.

Q: DCH procurement volumes on 07/11 were 46% below the latest forecasted requirements before the auction run, was this an incorrect forecast and if not, then which specific system conditions changed from forecast publication to auction run?

Q: Will the new EAC results endpoints (e.g., EAC ESO Results Summary 2023-2024) expire after 2024? Can you clarify if you intend to use new endpoints in the future? If not, can you strongly consider omitting the years from the names to prevent them from becoming outdated?

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