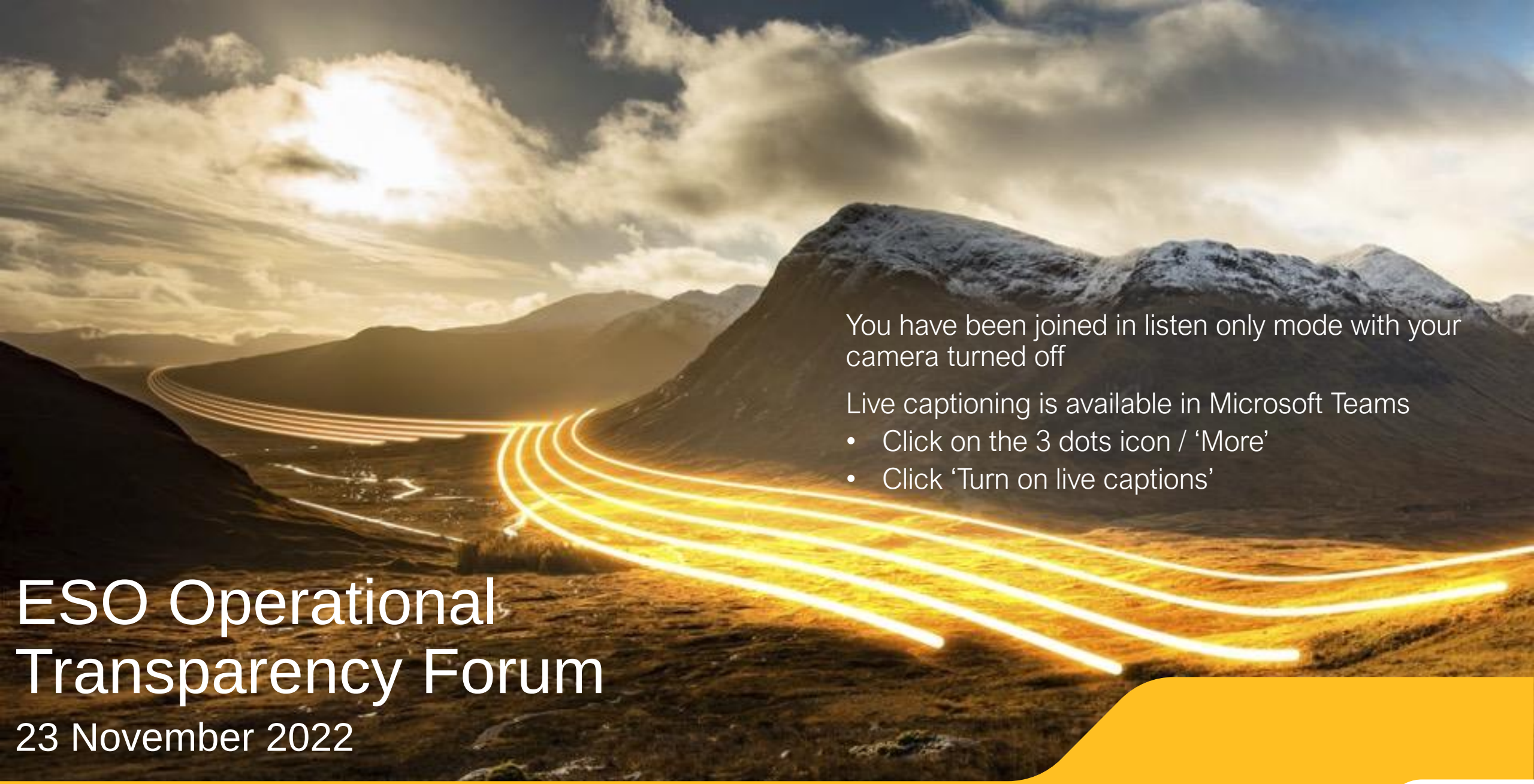


You have been joined in listen only mode with your camera turned off

Live captioning is available in Microsoft Teams

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

ESO Operational Transparency Forum

23 November 2022

ESO

Introduction | Sli.do code #OTF

Please visit 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.**

To tailor our forum and topics further we have asked for names (or organisations, or industry sector) against Sli.do questions. If you do not feel able to ask a question in this way please use the email: box.NC.Customer@nationalgrideso.com

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

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

Future deep dive/ response topics

Coming soon:

Crowdflex project: utilising consumer flexibility – 23rd November

Stability Phase 3 results - 30th November

Response markets deep dive – 7th December

Reserve Reform update – 14th December

Feedback welcomed on our proposed deep dive topics

Dispatch Transparency (“Skip Rate”) Event - Monday 5th December

We would like to invite you to Wokingham for a transparent discussion about how we dispatch and "Skip Rates".

The event will take place in person at our Wokingham offices on **Monday 5th December**. Lunch will be provided and a visit to the control room viewing gallery will be organised.

A Skip refers to an event when a BOA is instructed at a higher cost than an alternative option. The ESO strives to have zero skip rates, unless not preventable. We would like to invite you to discuss our dispatching process (including some examples) as well as the dispatch transparency data available on our portal. This event will also be an opportunity to share your questions regarding skip rates.

We very much look forward to seeing you at this event.

Key information

Date: Monday 5th December

Venue: National Grid ESO Wokingham Office

Time: 10:00 – 14:30

Signup link:

https://forms.office.com/r/VrcCkVz2th

Annual C16 and Relevant Balancing Services (RBS) Guidelines Early Consultation 2022/23

We welcome industry's views on the proposed changes within our informal consultation.

Please find the consultation documents on our C16 web page

Standard Condition Licence C16 "Procurement and use of balancing services" sets out the obligation on the ESO to publish five statements addressing the procurement and use of balancing services. In accordance with C16 of its Transmission Licence, we are required to conduct an annual review of all licence statements, regular reviews of the methodologies and, if appropriate, to propose changes to these documents.

This early consultation does not form part of the C16 Licence Condition or RBS Governance and is an additional one that allows NGESO to do more fact finding and create a more efficient and thorough review.

Please respond by **6th December 2022.**

Any questions please contact balancingservices@nationalgrideso.com

Signpost – Balancing Reserve Consultation

Balancing Reserve (BR) Update

- The Article 18 EBR Consultation for the new Balancing Reserve service went live on 14 November. The documents can be found on our website here.
- The closing date for consultation responses is Wednesday 14 December at 17:00.
- We'd like to encourage people to submit responses early where possible as the ESO consultation review period falls over Christmas.
- Any providers who would like a 1-1, please contact vicci.page@nationalgrideso.com

Demand Flexibility Service

Following the launch of the Demand Flexibility Service, on Tuesday 22nd November we initiated our second DFS Test requirement to registered providers. The trial took place between 17:30 – 18:30.

https://data.nationalgrideso.com/dfs/demand-flexibility-service-test-events/r/utilisation_report_summary_-_test

To get in touch with the team email: demandflexibility@nationalgrideso.com

Winter Contingency Service (coal) – Proving Runs

No further proving runs are planned at present

For the avoidance of doubt, where NGESO instructs any contracted unit, either for initial proving runs or service instructions, across all three contracted sites (EDF, Drax and Uniper) NGESO will inform the market via the BMRS.

Example BMRS notification below

	2022-10-26 05:15	From : Power System Manager - National Grid Electricity Control Centre NATIONAL GRID NOTIFICATION Nature of Notification COAL CONTRACT TEST RUN ACTIVE Unit: WBUPS-2 Estimated Capacity: Max 400MW / 12 Hours Earliest Sync time / date: 07:00 27/10/22 System Flag Notification Issued at 06:15 hrs on 26/10/2022 Issued by Angela Wilks National Grid Electricity Control Centre.

Notable Events

21st November – frequency event – an interconnector tripped whilst exporting from GB at 22:46

22nd November – Capacity Market Notice and cancellation

23rd November – frequency event – an interconnector tripped whilst exporting from GB at 00:06

Electricity Capacity Market Notice Cancelled

Posted by National Grid Electricity System Operator at 3:05pm on Tuesday 22nd November 2022

The Capacity Market Notice originally active from 7:00pm on Tuesday 22nd November 2022 has been cancelled from 7:00pm on Tuesday 22nd November 2022

Electricity Capacity Market Notice Currently Active

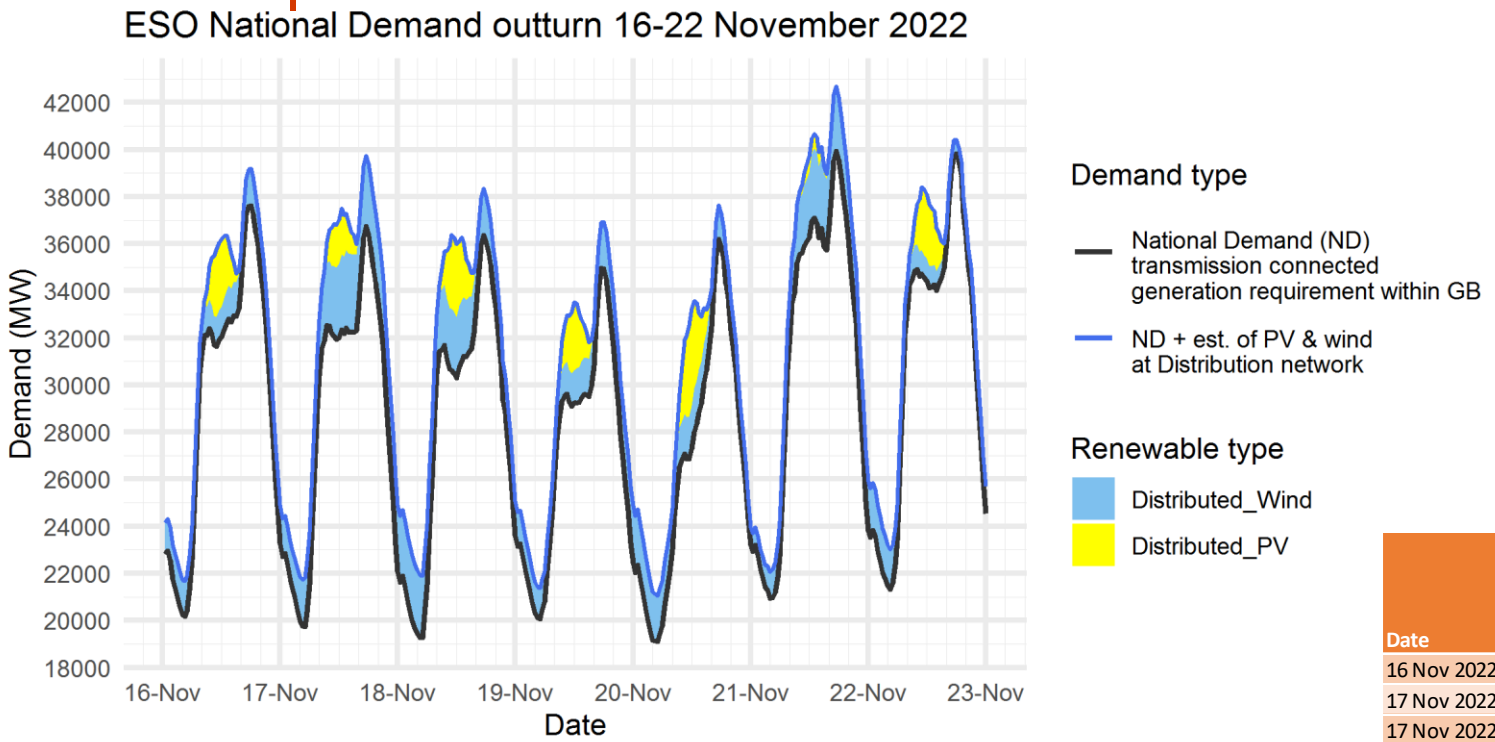
Posted by National Grid Electricity System Operator at 2:33pm on Tuesday 22nd November 2022

Commencement time of notice	7:00pm on Tuesday 22nd November 2022
Circumstances that triggered notice	Margin below threshold set out in Capacity Market Rules
Transmission Demand and Operating Margin (MW)	40,102
Aggregate Capacity of BM Units expected (MW)	40,279
Additional Capacity (MW)	No definitive information regarding additional capacity is currently available to the Electricity System Operator.

Capacity Market participants are advised to review the System Warnings page on **BMRS** for potential additional operational warnings from the Electricity System Operator. This notice is published pursuant to Rule 8.4.6 / 11.3.5 of the **Capacity Market Rules**

Participants are also advised to pay close attention to **De-rated Margin** (DRM) information on the BMRS website that will be updated 3 times (4 hour, 2 hour and 1 hour ahead) in advance of the "commencement time" of this Capacity Market Notice.

Demand | Last week demand out-turn



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

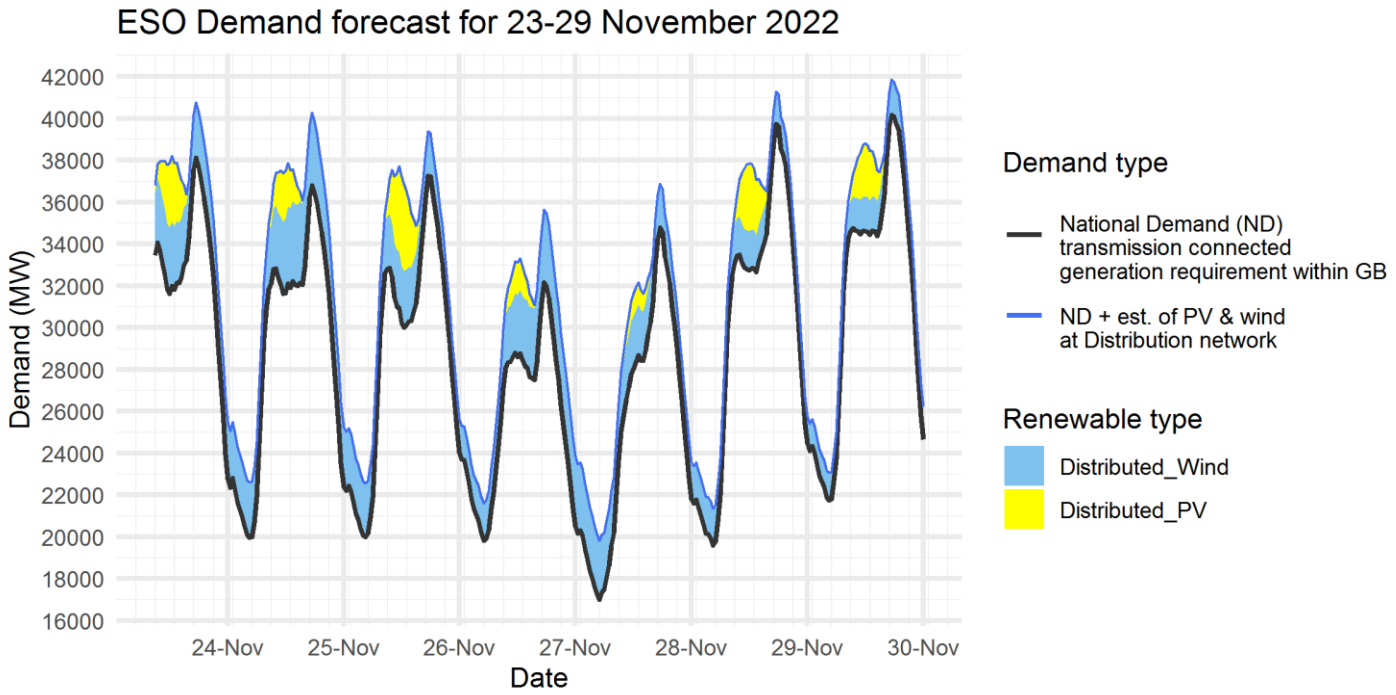
ND values **do not include** export on interconnectors or pumping or station load

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.

		FORECAST (Wed 16 Nov)		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)
16 Nov 2022	Evening Peak	38.3	1.8	37.6	0.0	37.6	1.6
17 Nov 2022	Overnight Min	20.3	1.9	19.7	n/a	n/a	2.1
17 Nov 2022	Evening Peak	37.5	2.8	36.7	0.0	36.7	3.0
18 Nov 2022	Overnight Min	19.7	2.5	19.3	n/a	n/a	2.6
18 Nov 2022	Evening Peak	37.3	2.5	36.4	0.0	36.4	2.0
19 Nov 2022	Overnight Min	20.3	1.5	20.1	n/a	n/a	1.3
19 Nov 2022	Evening Peak	34.7	2.4	35.0	0.0	35.0	1.9
20 Nov 2022	Overnight Min	18.5	2.9	19.1	n/a	n/a	2.0
20 Nov 2022	Evening Peak	36.7	1.8	36.2	0.0	36.2	1.4
21 Nov 2022	Overnight Min	21.5	1.3	20.9	n/a	n/a	1.1
21 Nov 2022	Evening Peak	41.2	1.7	39.9	0.0	39.9	2.8
22 Nov 2022	Overnight Min	22.7	1.4	21.3	n/a	n/a	1.7
22 Nov 2022	Evening Peak	41.9	1.4	39.8	0.0	39.8	0.6

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 23 Nov)	
Date	Forecasting Point	National Demand (GW)	Dist. wind (GW)
23 Nov 2022	Evening Peak	38.1	2.7
24 Nov 2022	Overnight Min	20.0	2.6
24 Nov 2022	Evening Peak	36.8	3.5
25 Nov 2022	Overnight Min	20.0	2.6
25 Nov 2022	Evening Peak	37.3	2.1
26 Nov 2022	Overnight Min	19.8	1.8
26 Nov 2022	Evening Peak	32.2	3.5
27 Nov 2022	Overnight Min	17.0	2.8
27 Nov 2022	Evening Peak	34.8	2.1
28 Nov 2022	Overnight Min	19.6	1.8
28 Nov 2022	Evening Peak	39.7	1.6
29 Nov 2022	Overnight Min	21.8	1.3
29 Nov 2022	Evening Peak	40.2	1.7

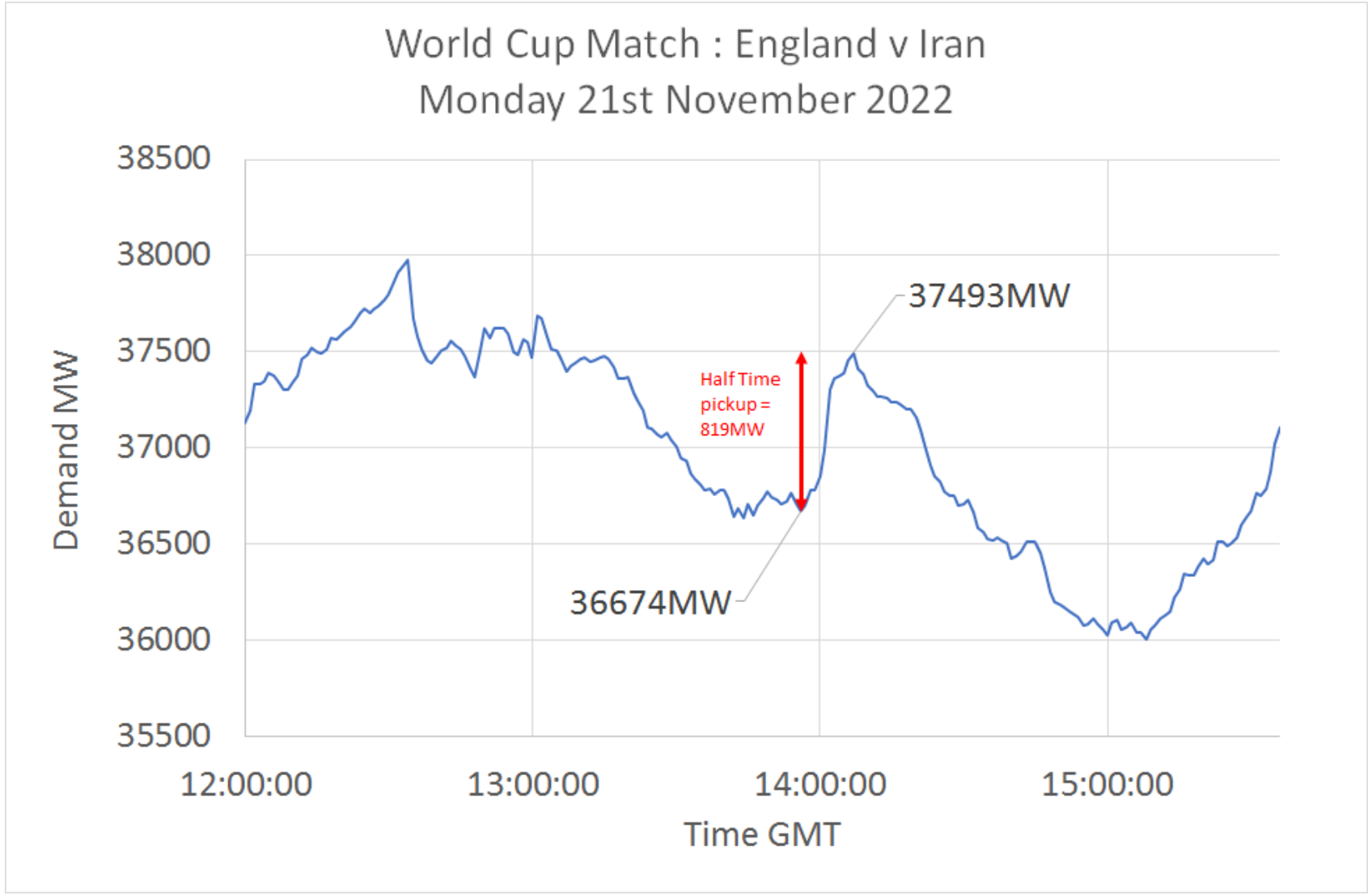
The black line (National Demand ND) is the measure of portion of total GB customer demand that is supplied by the transmission network.

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

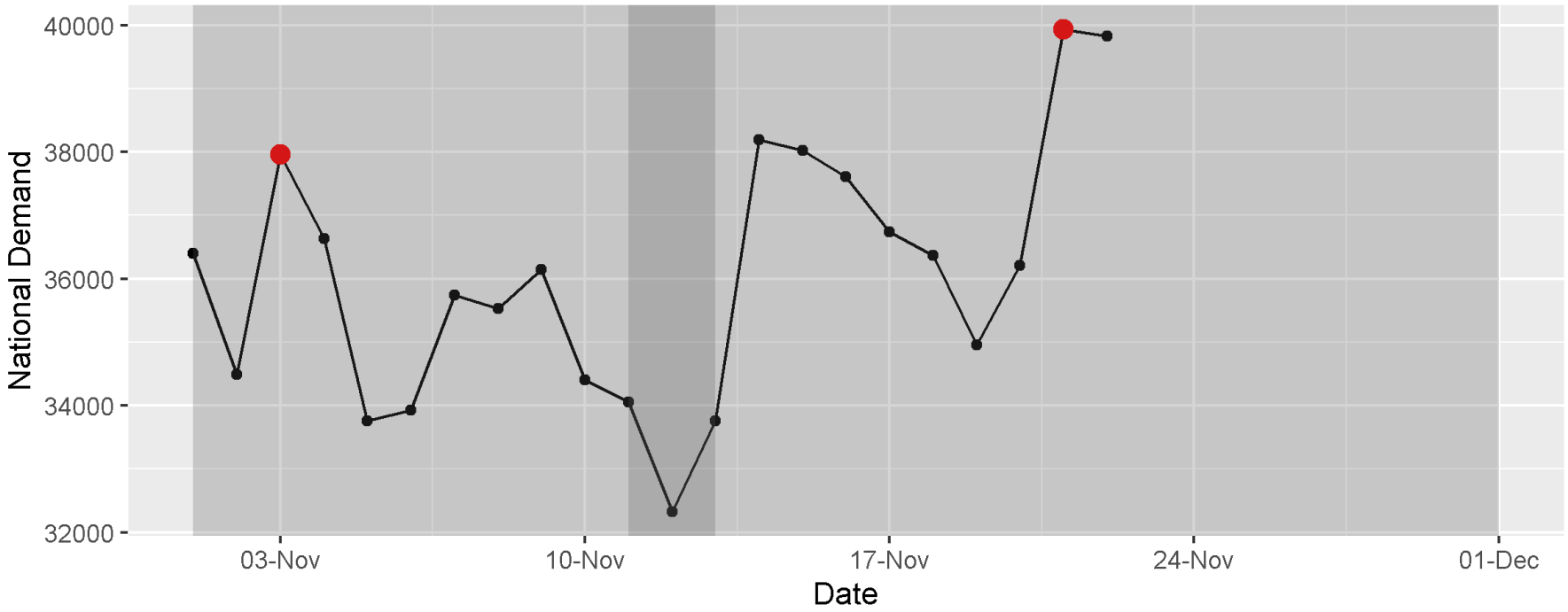
Blue line serves as a proxy for total GB customer demand. It includes demand supplied by the distributed wind and solar sources, but it does not include demand supplied by non-weather driven sources at the distributed network for which ESO has no real time data.

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

World Cup : England v Iran : Monday 21st November 2022



Triad avoidance: indicative triad data based on operational metering



ESO operational metering			
Date	Time (HH ending)	National Demand (MW)	Estimated triad avoidance (HH corresponding with the time of the peak) (MW)
21/11/2022	1730	39932	0
03/11/2022	1800	37957	0

ESO does not include station load.

Indicative triad demand on Elexon's BMRS website quotes "GB Demand" which is based on the Transmission System Demand definition (it adds 500MW of station load onto the National Demand). Also, it shows time as half hour **beginning**.

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 23 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.

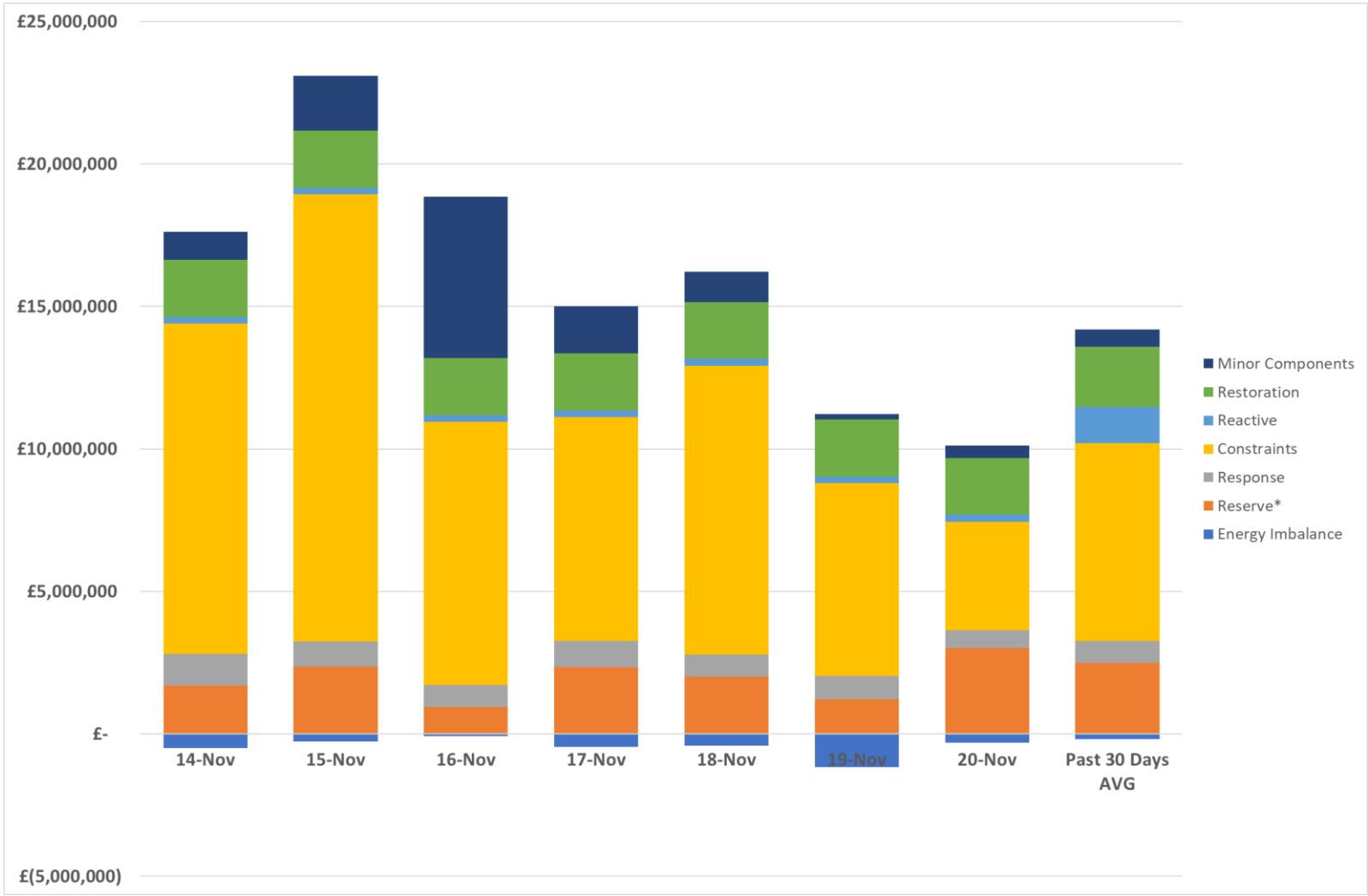
Day	Date	Notified Generation (MW)	Wind (MW)	IC Flows* (MW)	Peak demand (MW)	Indicative surplus (MW)
Thu	24/11/2022	39069	17690	4020	37410	16490
Fri	25/11/2022	39577	10900	4020	37870	11810
Sat	26/11/2022	38145	16060	4020	32760	18010
Sun	27/11/2022	38808	11210	4020	35380	13650
Mon	28/11/2022	40195	6380	4020	40330	5640
Tue	29/11/2022	41072	6850	4020	40480	6800
Wed	30/11/2022	41782	4990	4020	40920	5190

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

Margins do not include NGESO enhanced or emergency actions (Outlined here: download (nationalgrideso.com))

Adequate when Indicative Surplus >= 1000 MW

ESO Actions | Category costs breakdown for the last week

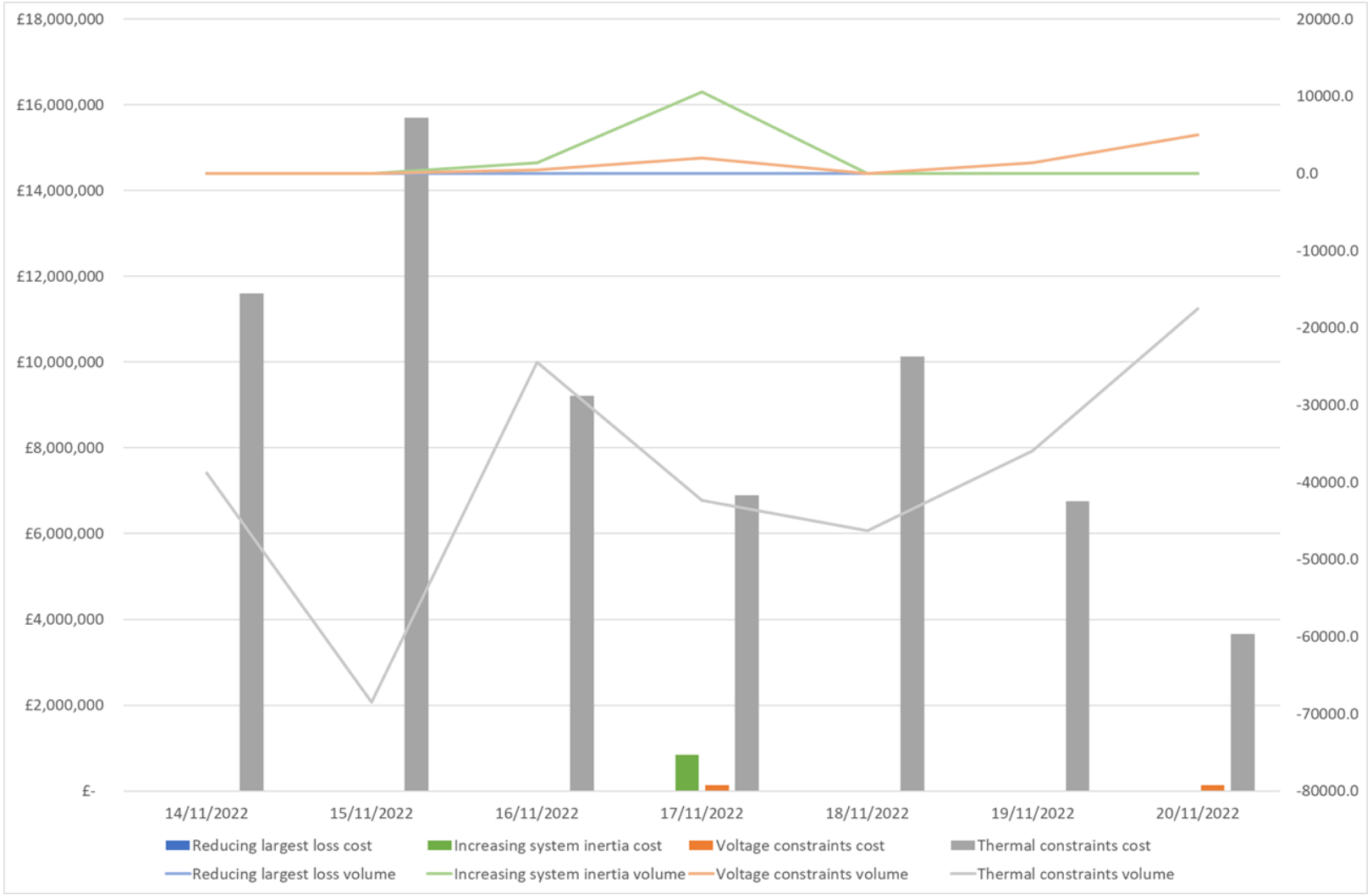


Date	Total (£m)
14/11/2022	17.1
15/11/2022	22.8
16/11/2022	18.8
17/11/2022	14.6
18/11/2022	15.8
19/11/2022	10.0
20/11/2022	9.8
Weekly Total	108.9

Constraints costs (mostly thermal) were the key cost component throughout the week.

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

ESO Actions | Constraint Cost Breakdown



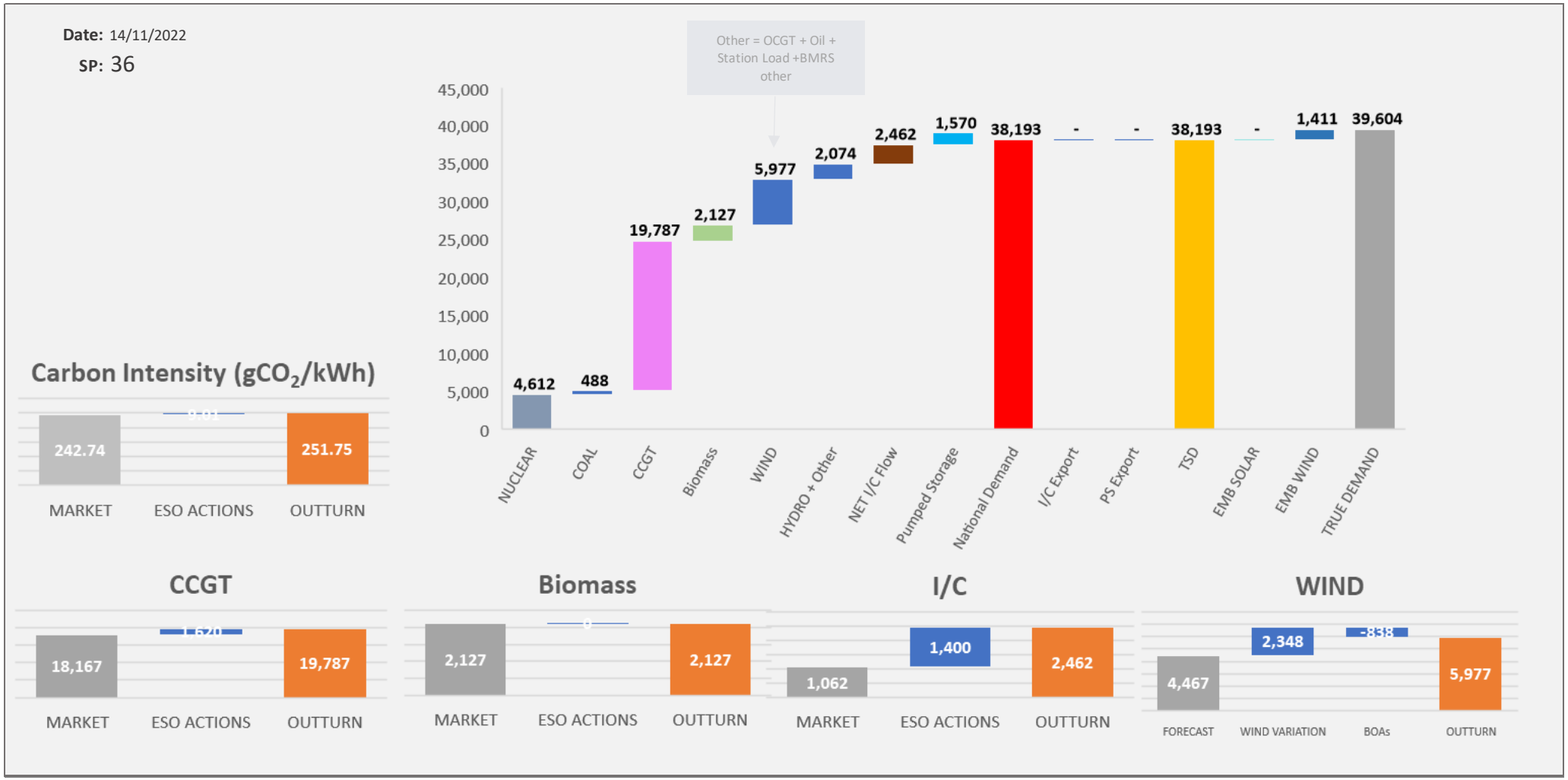
Thermal – network congestion
Actions required to manage Thermal Constraints throughout the week.

Voltage
Intervention to manage the voltage levels on Thursday and Sunday.

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

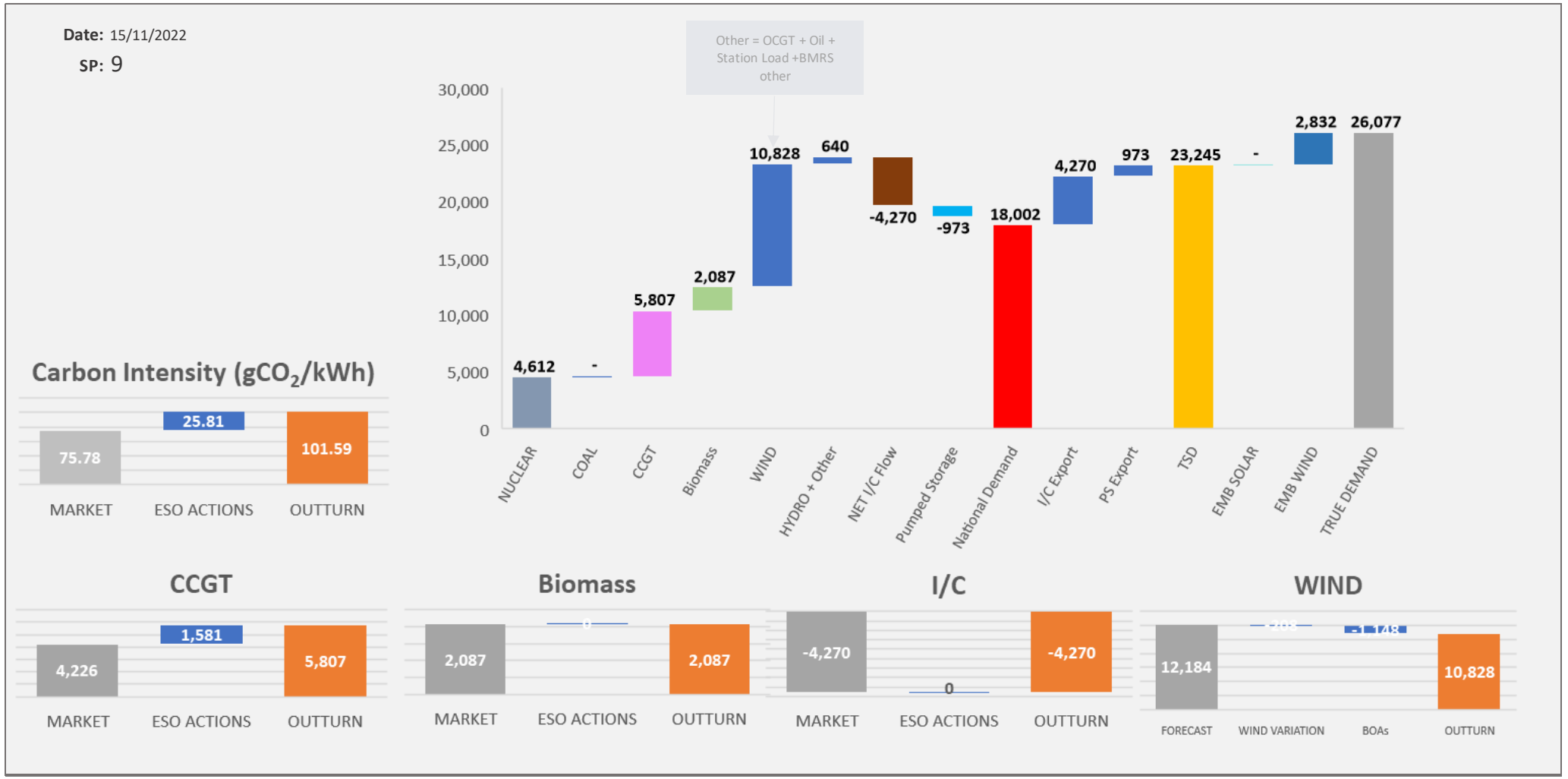
Increasing inertia
Intervention required to manage system inertia on Thursday.

ESO Actions | Monday 14 November – Peak Demand – SP spend ~£455k



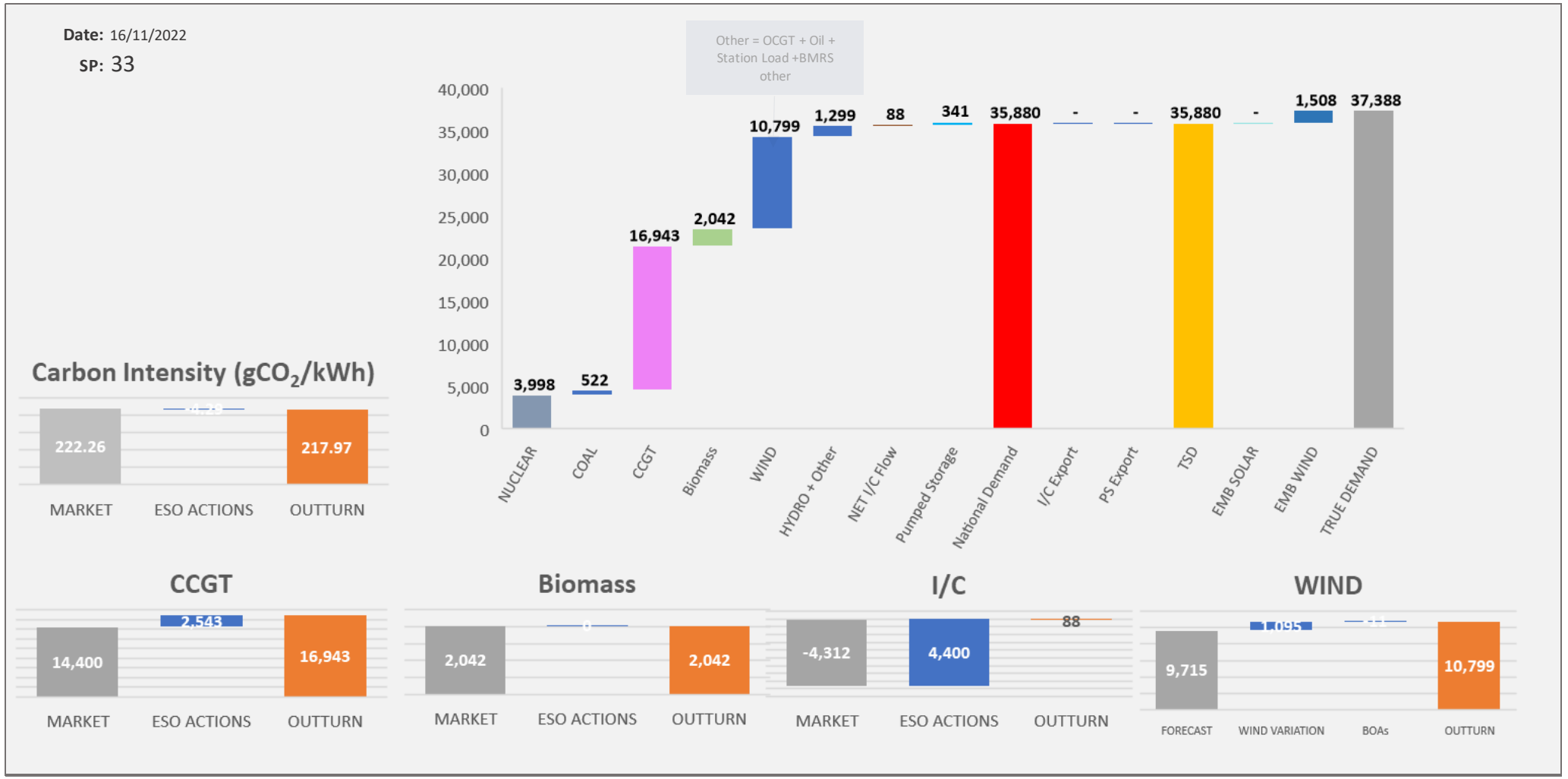
Carbon Intensity data on data portal: https://data.nationalgrideso.com/carbon-intensity1/carbon-intensity-of-balancing-actions

ESO Actions | Tuesday 15 November – Minimum Demand – SP Spend ~£292k



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

ESO Actions | Wednesday 16 November – Highest SP Spend ~£702k



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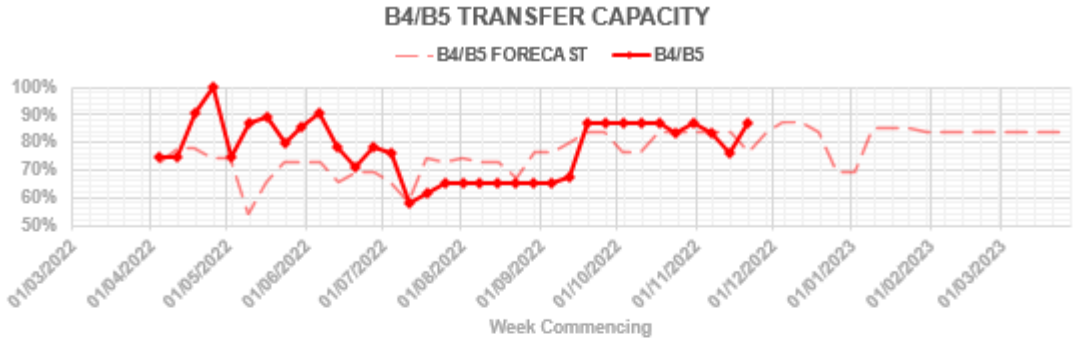
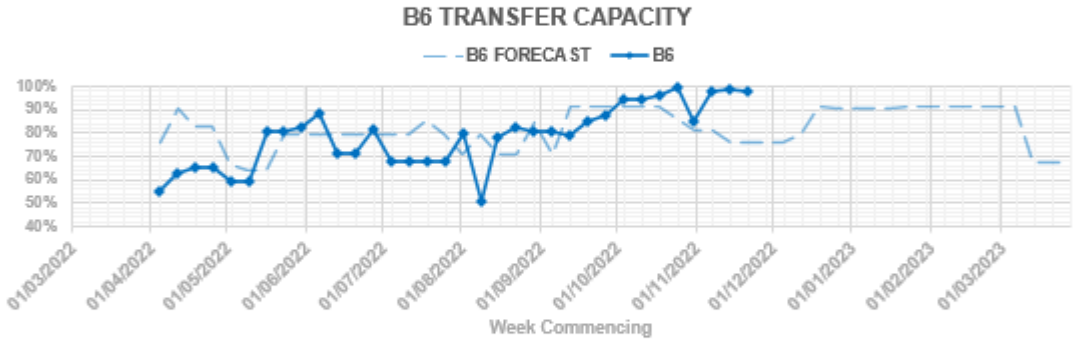
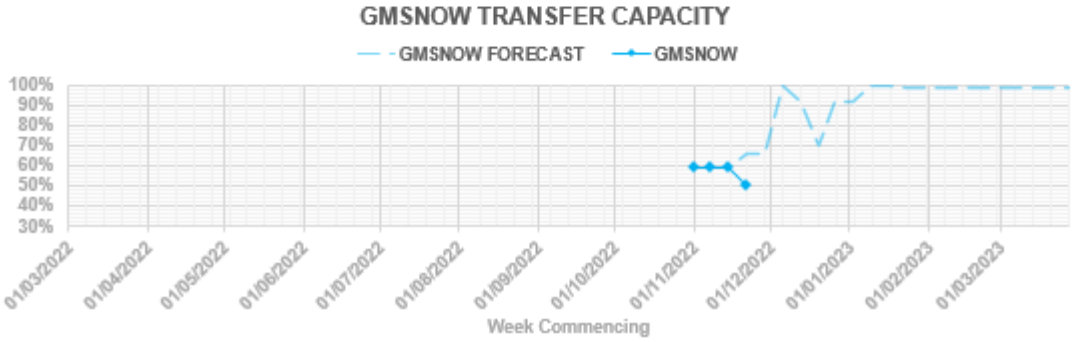
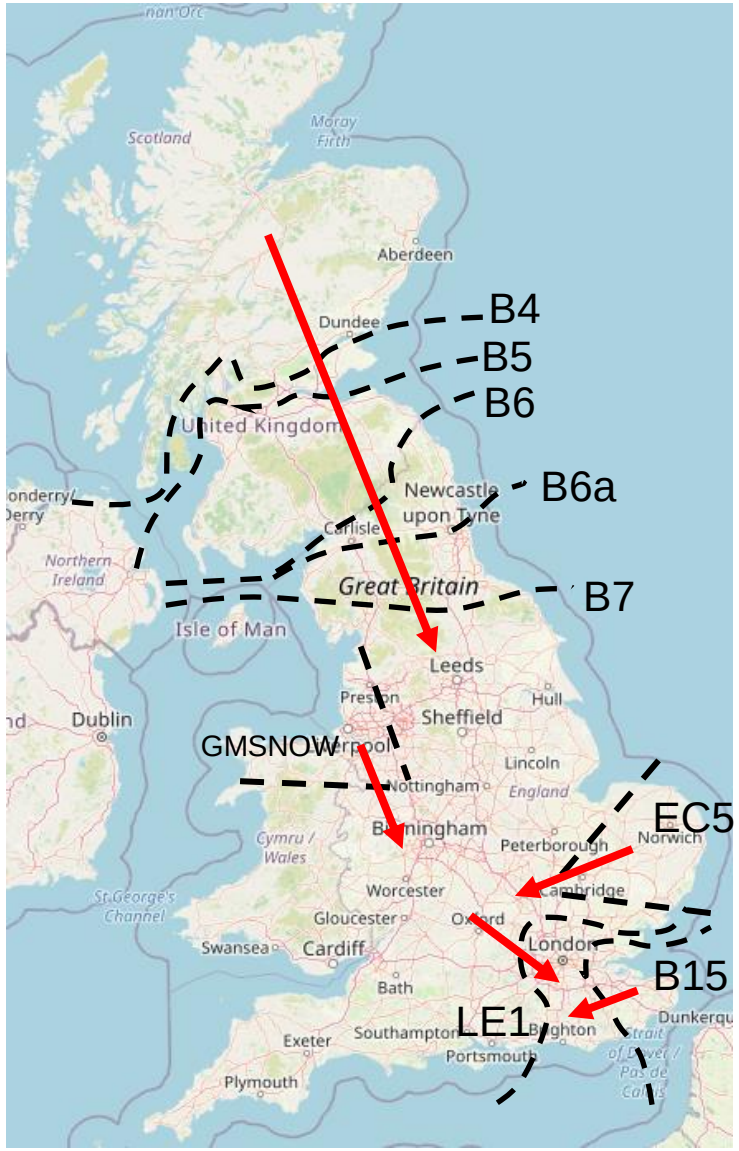
Transparency | Network Congestion





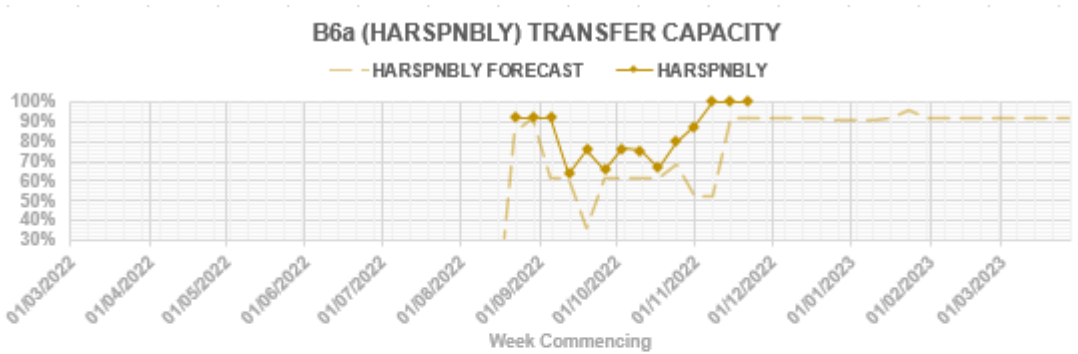


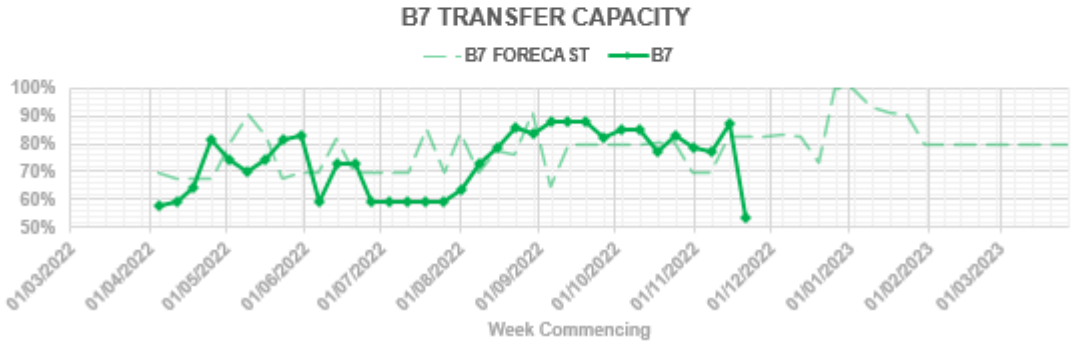
Boundary	Max. Capacity (MW)
B4/B5	2750
B6	5900
B6a	6300
B7	9300
GMSNOW	4550
EC5	5000
LE1	8400
B15	7500



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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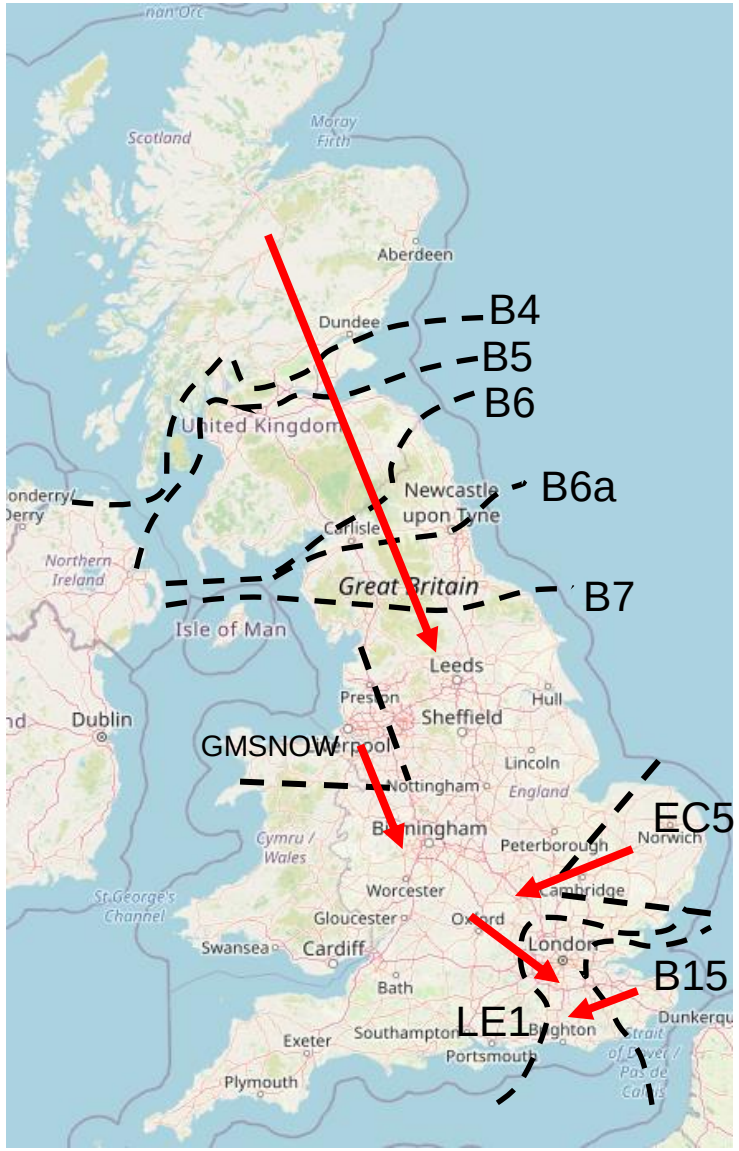

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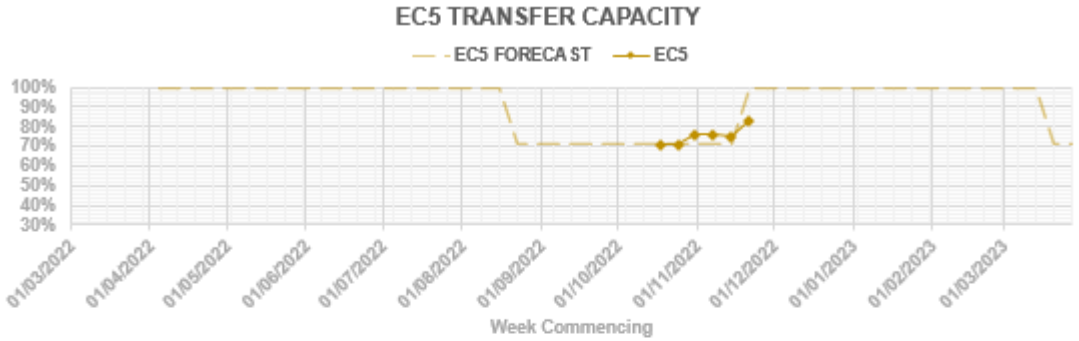
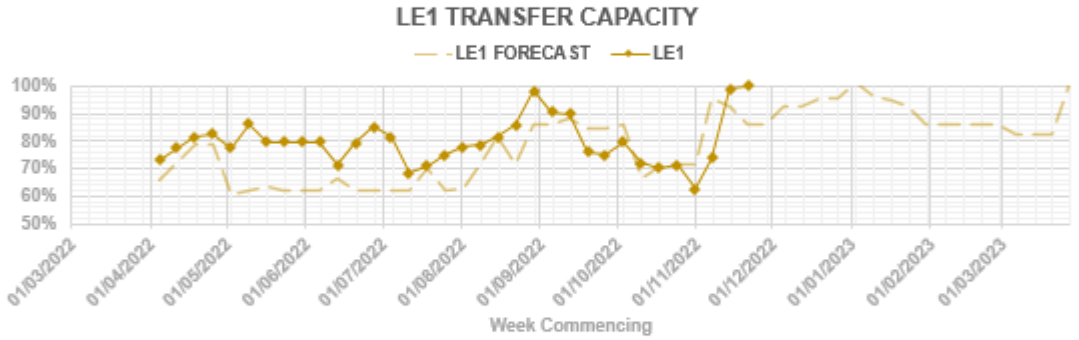
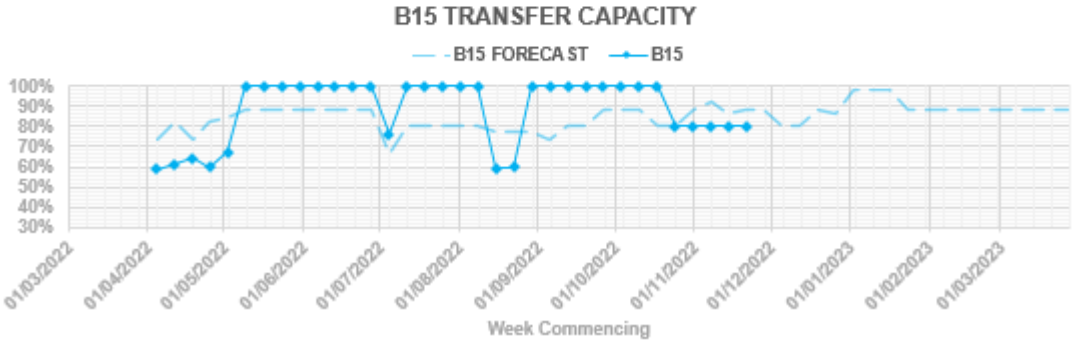
Transparency | Network Congestion







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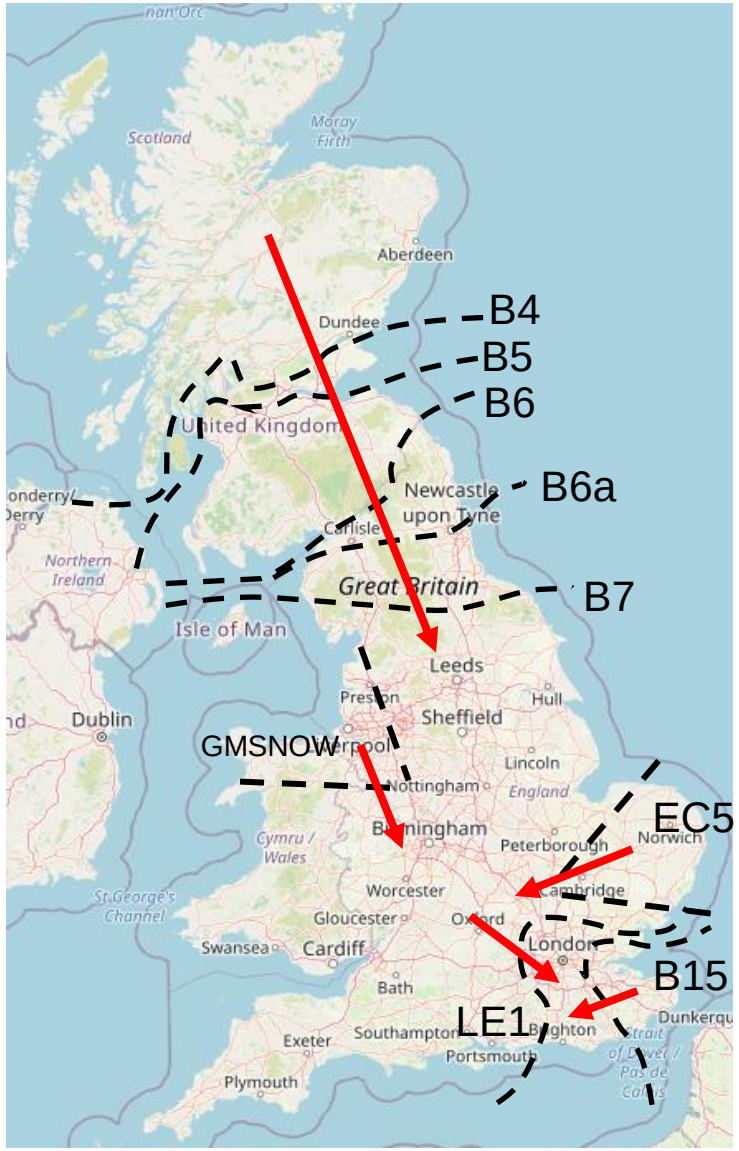

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CrowdFlex

Operational Transparency Forum

November 2022

Problem to address

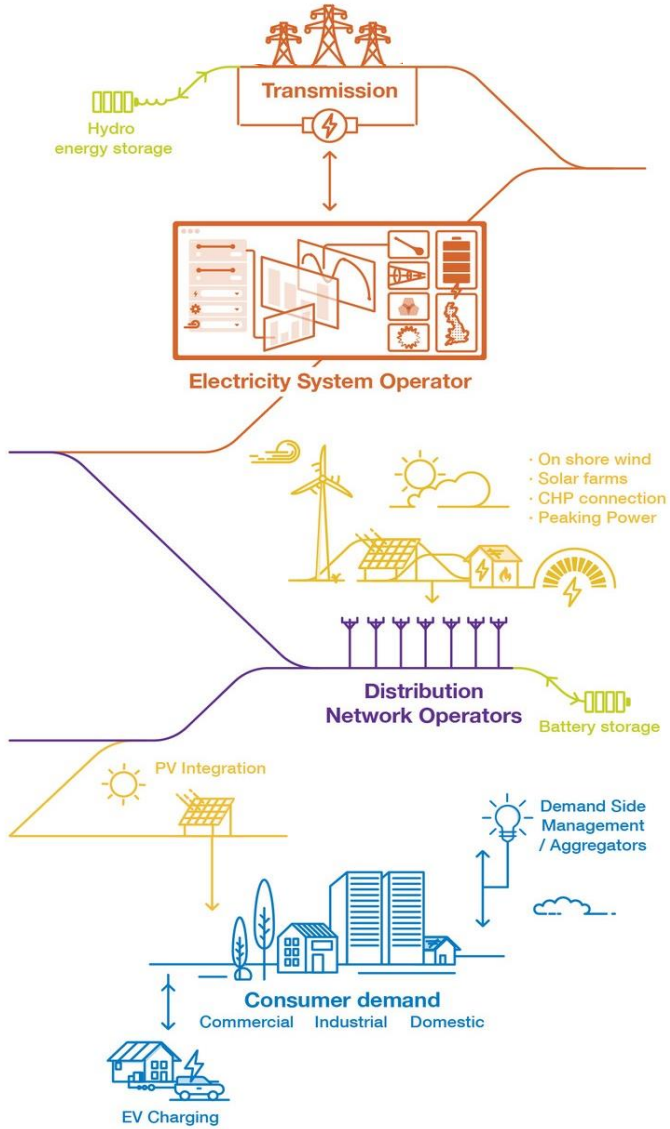
Challenge

- More **renewable generation** which is **non-dispatchable**
- More **electric vehicles** and **heatpumps** which **increase demand**
- So **flexibility** must shift from **supply-side to demand-side**
- A **smart, flexible and reliable** energy system is needed

Opportunity

- **Domestic consumers** offer a nascent, but large **flexibility resource**
- Currently largely **untapped**, due to **limited understanding** and existing **market design**
- Crowdflex explores novel **stochastic flexibility services**, reflecting the **statistical and distributed** assets
- Could enable **lower cost and lower carbon** system operation and reduce capacity and network **investment costs**

CrowdFlex aims to establish domestic flexibility as a reliable energy and grid management service



Project Overview

Objectives

1. **Needs:** to understand and align **ESO/DNO requirements** for flexibility services and consider interaction with the **statistical nature** of domestic flexibility
2. **Trial:** to identify the **technology capability** and **consumer behaviour** parameters to explore in a **real-world trial**
3. **Model:** to understand how the **statistical nature** of flexibility can be developed into **reliable modelling** of domestic demand and flexibility

SIF Discovery: **feasibility** study, Mar-Apr'22 (complete)

SIF Alpha: **design** of trial/model, Aug'22 – Jan'23 (in progress)

Barriers to engaging in flexibility

Pre-contract risks	Risks during use	Risk when something goes wrong
Consumer unwillingness to engage	Potential for contract ‘lock-in’	Lack of access to redress
Consumer inability to engage	Concerns about access to individual disaggregated data	Insurance against issues with assets as a result of DSR actions
Mis-advertising and other mis-information about expected costs, revenue or savings	Poor installation and unclear maintenance obligations of assets such as batteries	Company goes out of business
Opaque and complicated terms and condition	Exposure to financial risk	
Lack of interoperability / lock-in due to technology	Exposure to cyber threat	
Complexity emerging from uncertainty around asset ownership	Confusion due to multiple parties interacting with the consumer	
	Confusion if DNO uses emergency charge limitation	
	Customers energy needs not being met	
	The needs of consumers in vulnerable circumstances are neglected	

Demand Flexibility Service – Trial Preparation

Market

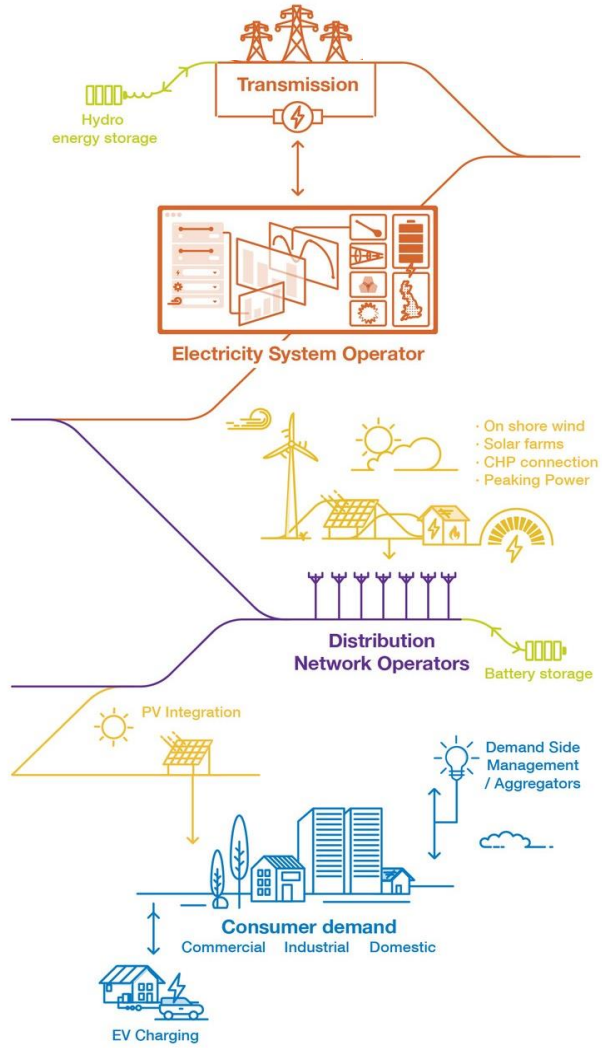
- No **commercial incentive for suppliers** to manager domestic flexibility
- I & C customers **may already be participating** in various balancing products. **Higher incentives** required for businesses to engage.

Operations

- **Engagement/messaging** with domestic consumers is limited – some use of apps, but mostly email/letters/texts. This is mostly passive and one directional (and subject to marketing consent).
- To engage consumers to flex their energy, suppliers would **require development of resources and team(s)**
- Domestic and I&C consumers are **treated very differently** by suppliers **– often account managed by different parts of the business**

Consumers

- Most domestic consumers are not half-hourly settled. Mandatory Half-Hourly Settlement is not in place until 2025
- Where domestic consumers have smart meters, most have **not opted-in to half-hourly data.**



Project suggestions for improvements

Discuss with Ofgem

- Outcome of consultation ‘Delivering a Smart & Secure Electricity System’.
- Request updated on actions committed to in its response to the Energy Digitalisation’s Taskforce’s report.
- Understand if there are any plans to make the PAS 1878 and 1879 standards relating to interoperability and cybersecurity mandatory.

Potential trial design proposals:

- Project to incorporate the following customer needs into trial design:
  - feel confident about the contracts they sign up to / know where to go for help / have control over their data
- Ensure the customer has a single point of contact for issues during trials.
- Create an override facility that ensures the consumer has ultimate control if required.
- Plan for within BETA to incorporate findings of CAB research into increasing understanding of the barriers different consumer groups may face to participating in smart energy technology
- Provide clear and transparent T&Cs

Please send feedback to…….

VirtualES@nationalgrideso.com

Previous weeks questions

Q: Would there be any CM delivery obligations in periods where ESEC has been initiated? Does this count as an action under OC6?

Q: I think the Q on CM System Stress Events was more about eg. do CM obligations fall away once ESEC actions are initiated? If only voltage control is used, is that a SSE?

A: Both the CM and the Electricity Supply Emergency Codes are legislation which BEIS owns and ESO carries out obligations under.

Q: We sometimes experience large delays on bmreports for the system prices (e.g. November 10). Are the system prices available on another more reliable channel? Also, are these outages expected behaviour?

A: Indicative System prices are calculated and published by Elexon. We are happy to raise this question with Elexon.

Q: In case of coal plants being warmed up, how is the cost going to be included in the balancing mechanism?

A: They will be warmed using their warming costs.

Advance questions

Q: Is there a way of only receiving key system warning events (such as HRDR & DCI) to notify us when there is an increased risk of supply interruptions to our demand sites? We would like our 24/7 control room to monitor these effectively, however there is currently a lot of 'noise' in terms of system notifications that aren't relevant to demand sites.

A: System Warnings and System Messages are published through the BMRS and there is an option to sign up to receive email notifications. It is not possible to select which notifications are sent. This service is provided by Elexon rather than the ESO and feedback can be provided using the contact details on the BMRS website.

Q: Where can we find true and complete BSAD data? there seem to be discrepancies between the BSAD data published by Elexon and NGESO.

A: The BSAD (Balancing Services Adjustment Data) is updated between the first publication by Elexon on BMRS and the final version published by NGESO. Elexon's BMRS version is the original data available at the close of the specific settlement period. NGESO final version includes any adjustments made ahead of the II settlement run and can be found on the NG Extranet at: https://extranet.nationalgrid.com/BSAD

Questions outstanding we are still working on

Q: VOLL diff GB cf EU=back off interconnector flow ahead of market suspension-assumes we are treating interconnector demand equivalent to GB demand. Arranging large block load reductions of interconnectors in this situation limit cost/ avoid demand reduction? Where does this sit in the hierarchy of actions?

Q: Apologies, shouldn't an instruction under for voltage control be signalled under P305?

Q: Can you provide a clear date for when the DM/DR volume cap of 100 MW will be raised? We'd like to know it in advance so we can get ready

Q: When will you publish the 2023 DC requirement? Are you going to publish them once a year going forward?

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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

ESO