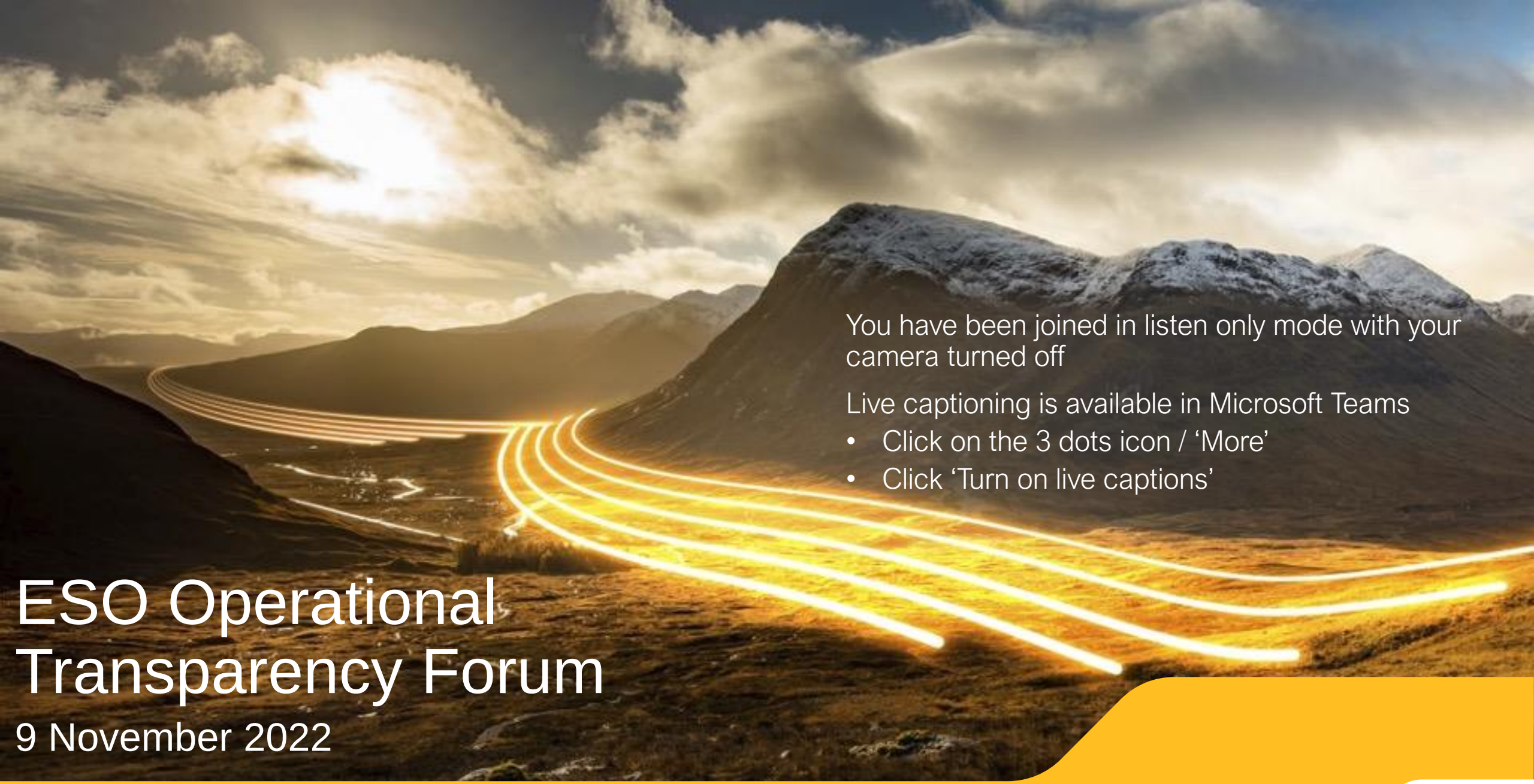


You have been joined in listen only mode with your camera turned off

Live captioning is available in Microsoft Teams

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

ESO Operational Transparency Forum

9 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

Transparency Forum Changes

From the 2nd of November your current calendar invite will stop working.

If you have downloaded this from the website please delete this and register using the following link

https://subscribers.nationalgrid.co.uk/h/d/2A778732FDAC77ED

After 2nd November, everyone registered on this list will receive a direct calendar invitation allowing us to manage event changes more appropriately and keep you updated on event status. Only those registered will be able to join the event but it will remain open to everybody to register, please use business rather than personal emails for registration.

Please send us questions in advance

We are trialling the use of advance questions: https://forms.office.com/r/k0AEfKnai3

In order to ensure we effectively respond on any topic please submit questions by 12:00 on Monday each week, questions submitted after this time may be captured in the following week's OTF.

We will endeavour to answer all questions submitted before the deadline but may still need to take some responses away.

Sli.do will still continue to be used for live Q&A following the weekly slides being presented

Advance Questions

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

Future deep dive/ response topics

Coming soon:

Winter Deep Dive – Today, the OTF will be longer than usual finishing at or before 12:30 (rather than 12).

Response markets deep dive – date TBC

Items we have taken away and will come back to this forum on in the future

REMIT obligations on ESO

Dispatch Transparency ("Skip Rate") Event

Feedback welcomed on our proposed deep dive topics

Questions outstanding we are still working on

AQ18: Currently the Ancillary Services Dispatch Platform lists indicative prices only and it appears the actual price can change depending on whether the unit is run across multiple settlement periods. Can you please publish in advance (i.e. regardless of whether a unit has been dispatched yet) the applicable unit prices by settlement period by unit were they to be dispatched? Without them, ancillary services are currently less transparent than the Balancing Mechanism (which publishes bid-offer lines in advance) and so-so trades (which publishes price tables in advance).

AQ20: Interconnector reference programs were mentioned in today's OTF. They sound tremendously useful, given they don't have the same errors as PNs and account for ramp profiles. Can you please publish these (and/or keep us in the loop with efforts to do so)?

Advanced Questions

AQ17: When do you intend to publish a indicative DC forecast for 2023?

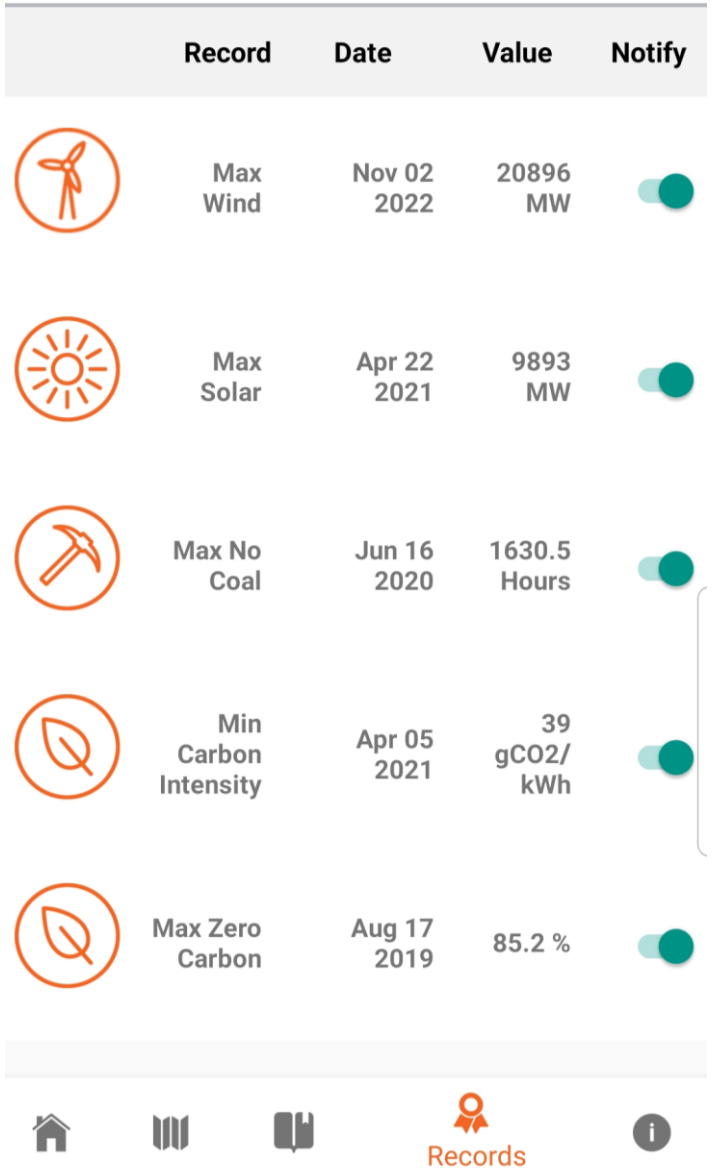
A: We will be publishing this in the response market information report, this will be published on the ESO Data Portal around the 24th of November.

This slide was not presented as part of the Winter special OTF but is included in the online slidepack for reference.

System Events

New wind record on 2nd November of 20,896 MW.

Breaking the 20GW threshold for the first time!



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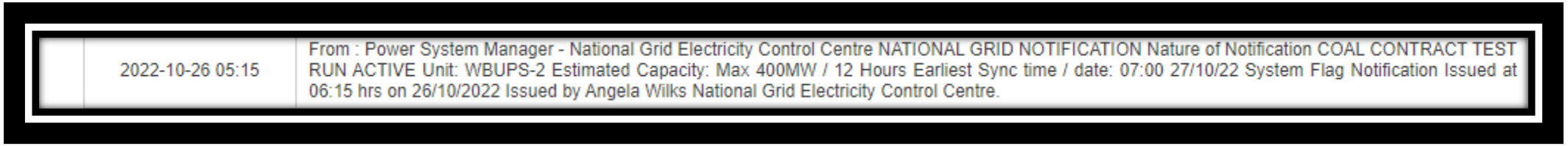
Winter Contingency Service (coal) – Proving Runs

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

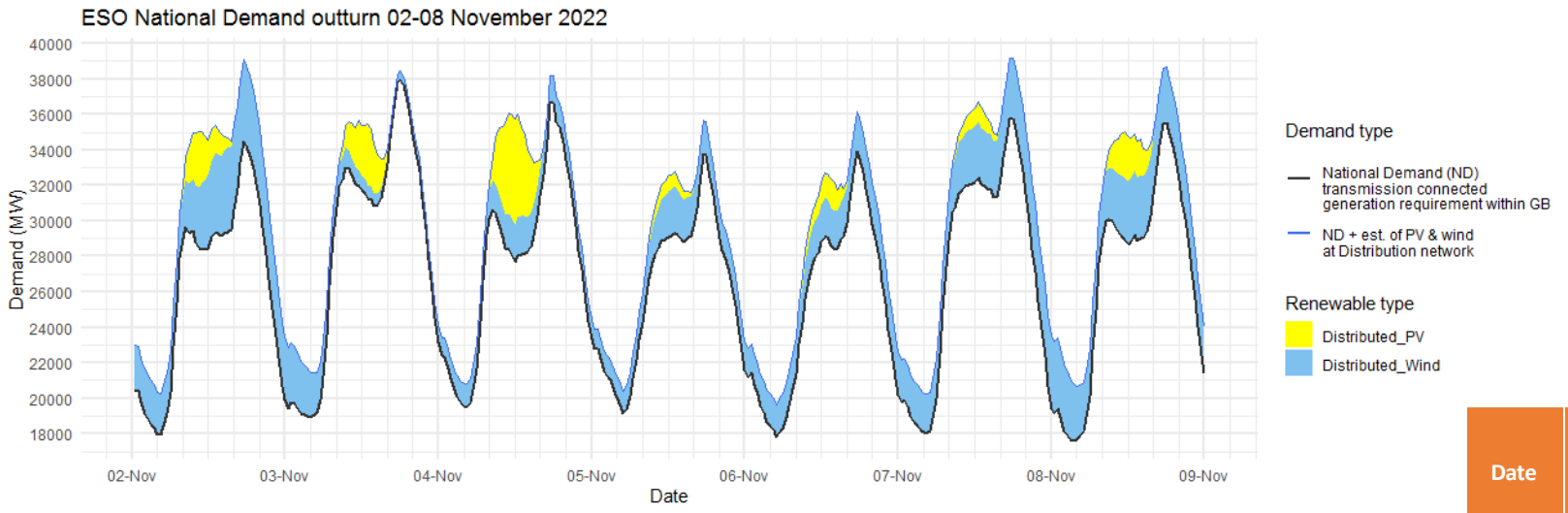


	2022-10-26 05:15	From : Power System Manager - National Grid Electricity Control Centre NATIONAL GRID NOTIFICATION Nature of Notification COAL CONTRACT TEST RUN ACTIVE Unit: WBUPS-2 Estimated Capacity: Max 400MW / 12 Hours Earliest Sync time / date: 07:00 27/10/22 System Flag Notification Issued at 06:15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

This slide was not presented as part of the Winter special OTF but is included in the online slidepack for reference.

Sli.do code #OTF

Demand | Last week demand out-turn



		FORECAST (Wed 02 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)
02 Nov	Evening Peak	34.2	4.5	34.5	0.0	34.5	4.6
03 Nov	Overnight Min	18.4	2.2	18.9	n/a	n/a	2.5
03 Nov	Evening Peak	38.7	0.8	38.0	0.0	38.0	0.5
04 Nov	Overnight Min	20.8	1.3	19.5	n/a	n/a	1.3
04 Nov	Evening Peak	37.1	1.5	36.6	0.0	36.6	1.6
05 Nov	Overnight Min	20.4	1.1	19.1	n/a	n/a	1.3
05 Nov	Evening Peak	33.3	2.0	33.8	0.0	33.8	1.9
06 Nov	Overnight Min	18.9	1.6	17.8	n/a	n/a	1.9
06 Nov	Evening Peak	34.6	2.0	33.9	0.0	33.9	2.2
07 Nov	Overnight Min	18.8	2.3	18.0	n/a	n/a	2.2
07 Nov	Evening Peak	36.5	3.2	35.7	0.0	35.7	3.4
08 Nov	Overnight Min	17.9	3.3	17.6	n/a	n/a	3.2
08 Nov	Evening Peak	36.6	2.9	35.5	0.0	35.5	3.1

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

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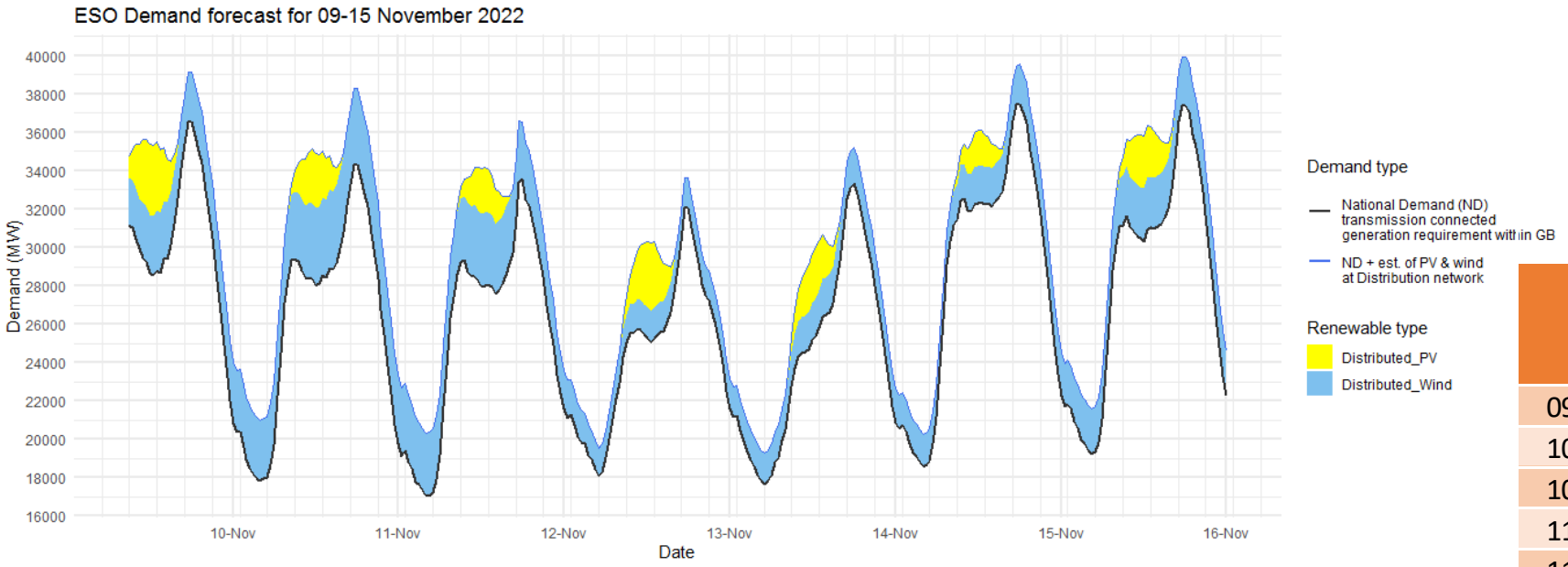
Sli.do code #OTF

Demand | Week Ahead



		FORECAST (Wed 09 Nov)	
Date	Forecasting Point	National Demand (GW)	Dist. wind (GW)
09 Nov 2022	Evening Peak	36.6	2.6
10 Nov 2022	Overnight Min	17.8	3.2
10 Nov 2022	Evening Peak	34.3	3.9
11 Nov 2022	Overnight Min	17.0	3.3
11 Nov 2022	Evening Peak	33.5	3.0
12 Nov 2022	Overnight Min	18.1	1.5
12 Nov 2022	Evening Peak	32.1	1.5
13 Nov 2022	Overnight Min	17.7	1.6
13 Nov 2022	Evening Peak	33.3	1.9
14 Nov 2022	Overnight Min	18.6	1.7
14 Nov 2022	Evening Peak	37.5	2.1
15 Nov 2022	Overnight Min	19.2	2.4
15 Nov 2022	Evening Peak	37.4	2.5

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 9 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	10/11/2022	40866	17620	4020	35540	19400
Fri	11/11/2022	41142	13870	4020	34540	18740
Sat	12/11/2022	40501	6470	4020	32740	13550
Sun	13/11/2022	41146	9510	4020	33460	16220
Mon	14/11/2022	41421	10740	4020	37690	13570
Tue	15/11/2022	41336	13430	4020	38250	15180
Wed	16/11/2022	41351	12880	4020	39380	13800

*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))

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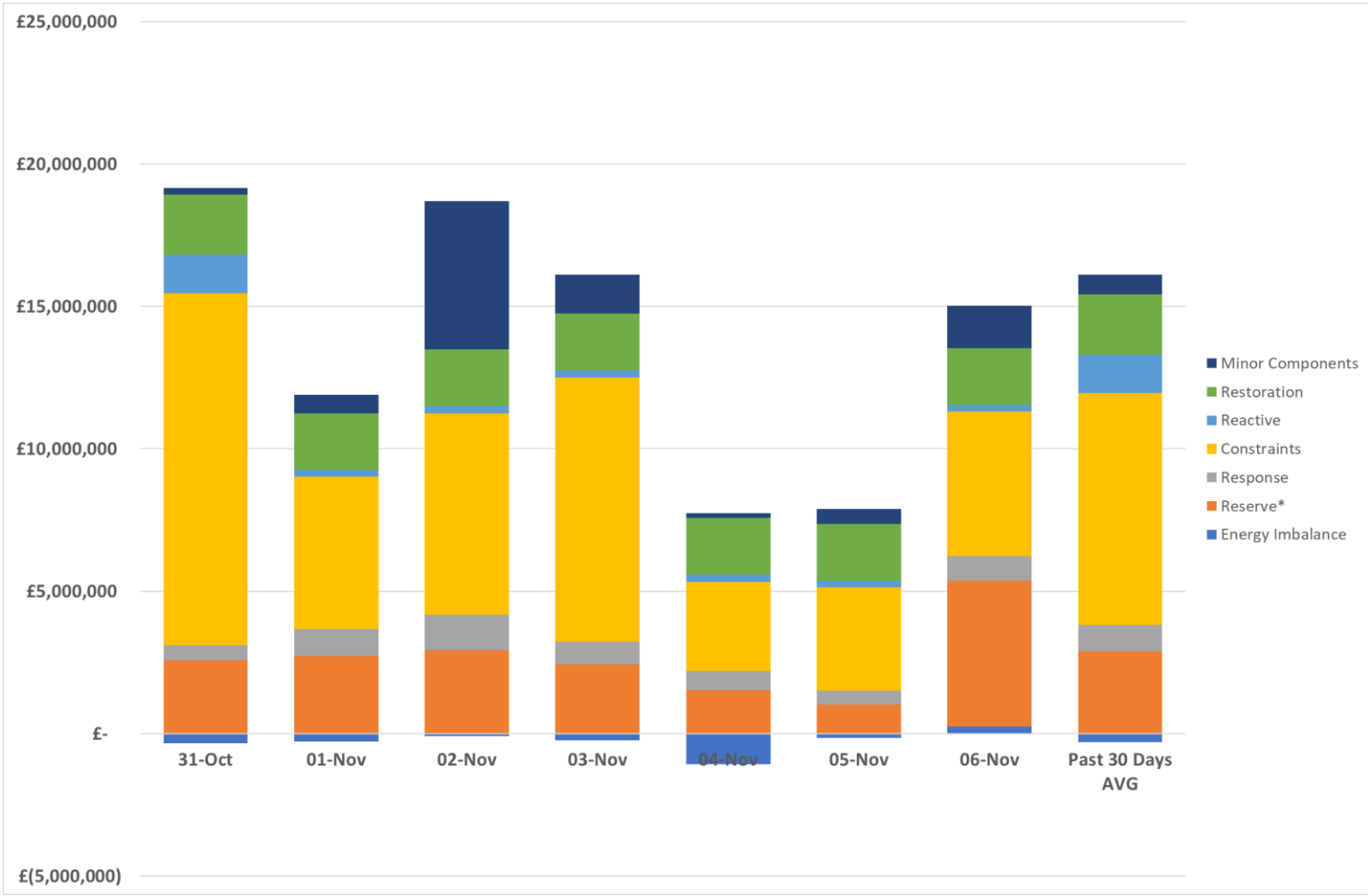
ESO Actions | Category costs breakdown for the last week



Date	Total (£m)
31/10/2022	18.8
01/11/2022	11.6
02/11/2022	18.6
03/11/2022	15.9
04/11/2022	6.7
05/11/2022	7.8
06/11/2022	15.0
Weekly Total	94.3

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.

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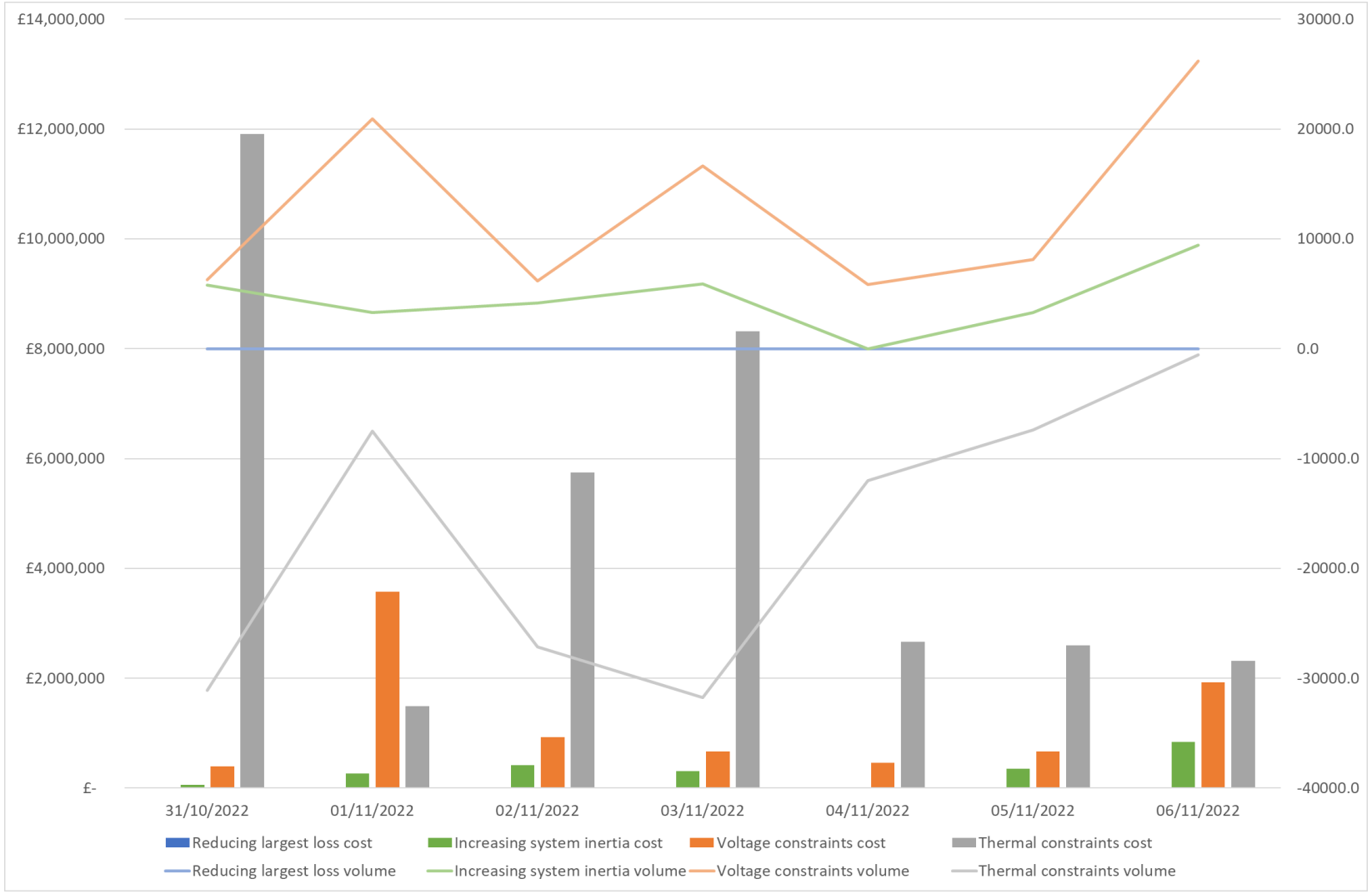
ESO Actions | Constraint Cost Breakdown



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

Voltage
Intervention to manage the voltage levels throughout the week.

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

Increasing inertia
Intervention required to manage system inertia all week except Friday.

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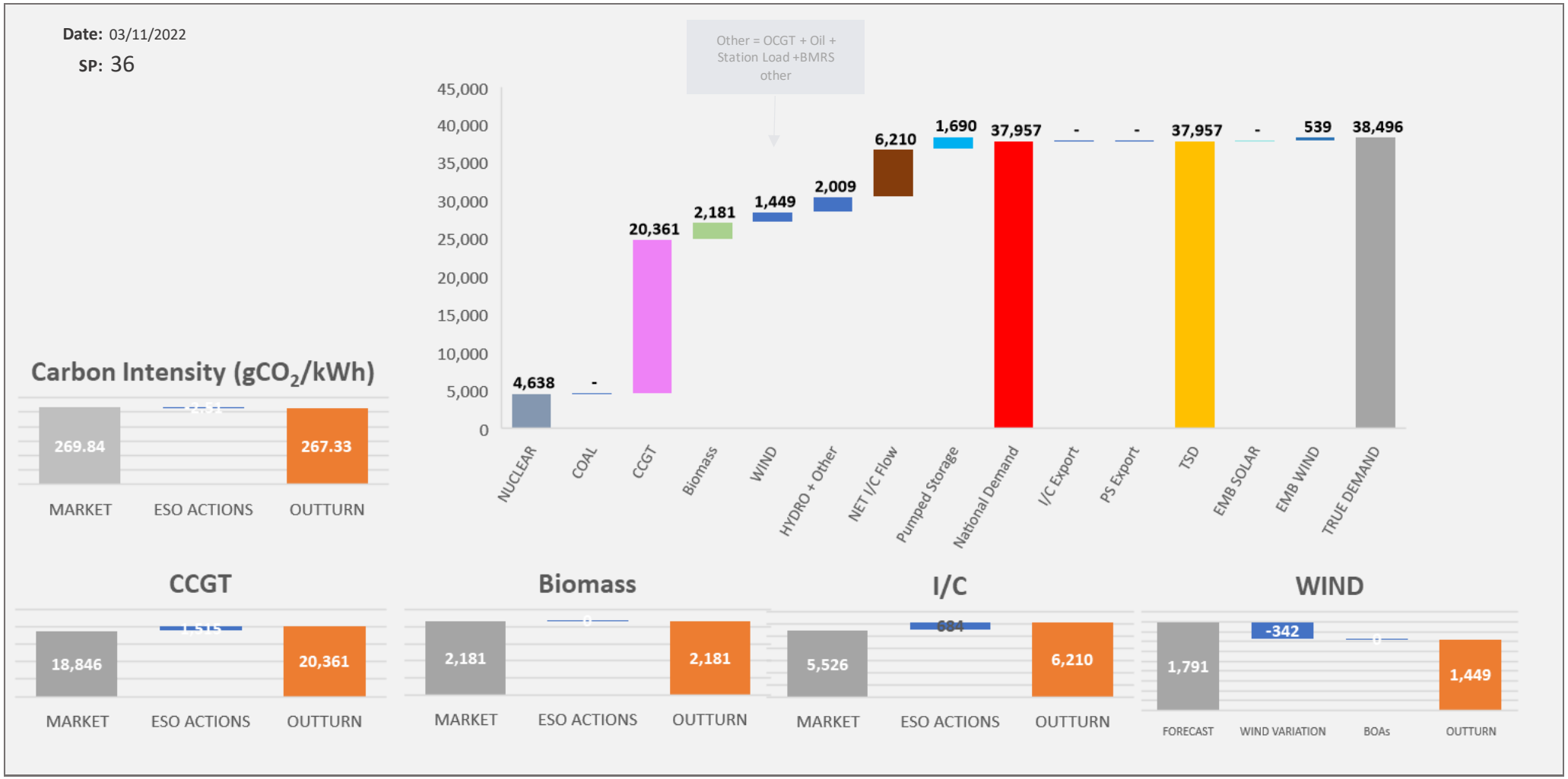
Sli.do code #OTF

ESO Actions | Thursday 03 November – Peak Demand – SP spend ~£270k

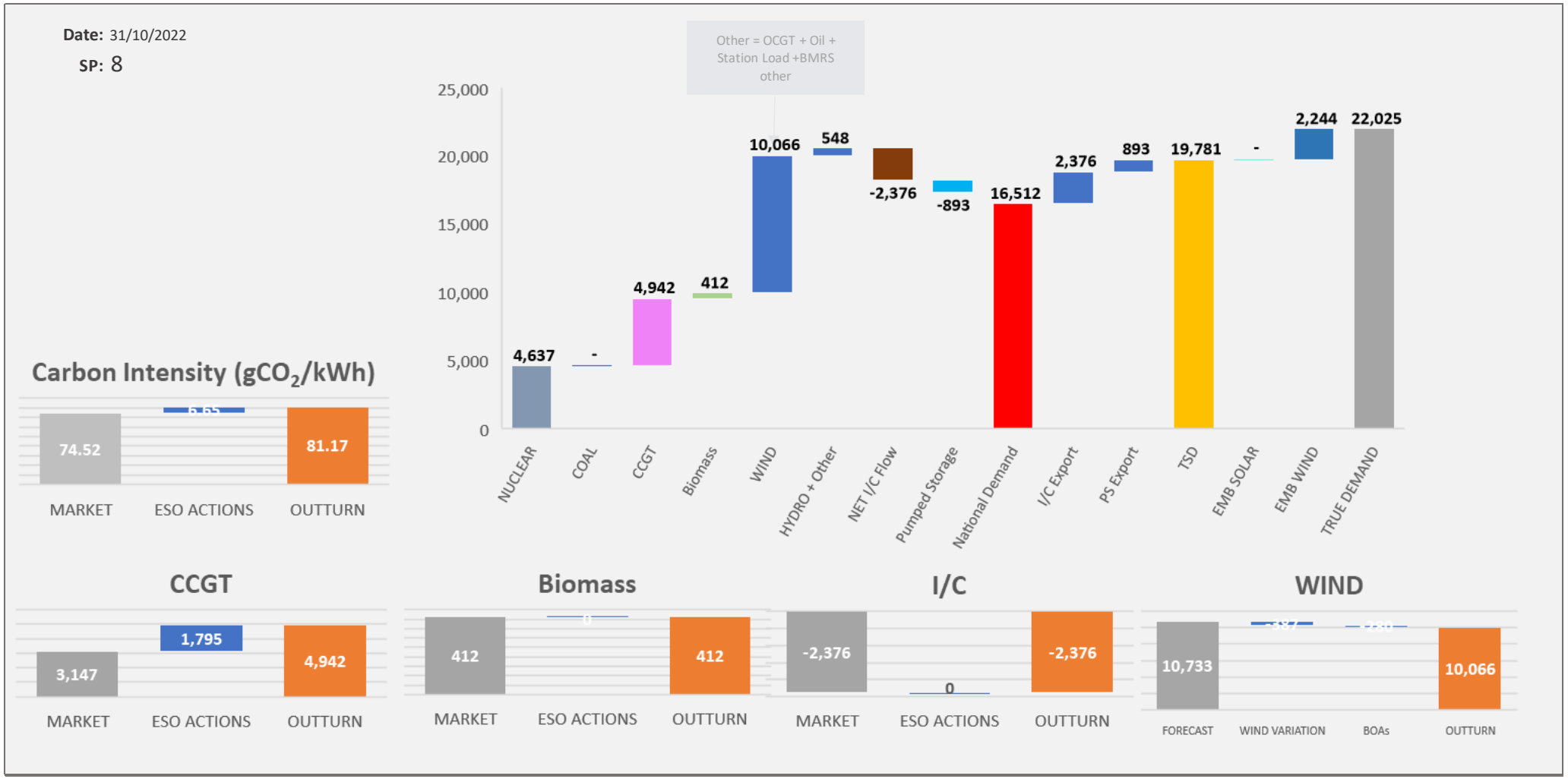


Carbon Intensity data on data portal: https://data.nationalgrideso.com/carbon-intensity1/carbon-intensity-of-balancing-actions

This slide was not presented as part of the Winter special OTF but is included in the online slidepack for reference.

Sli.do code #OTF

ESO Actions | Monday 31 October – Minimum Demand – SP Spend ~ £285k



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

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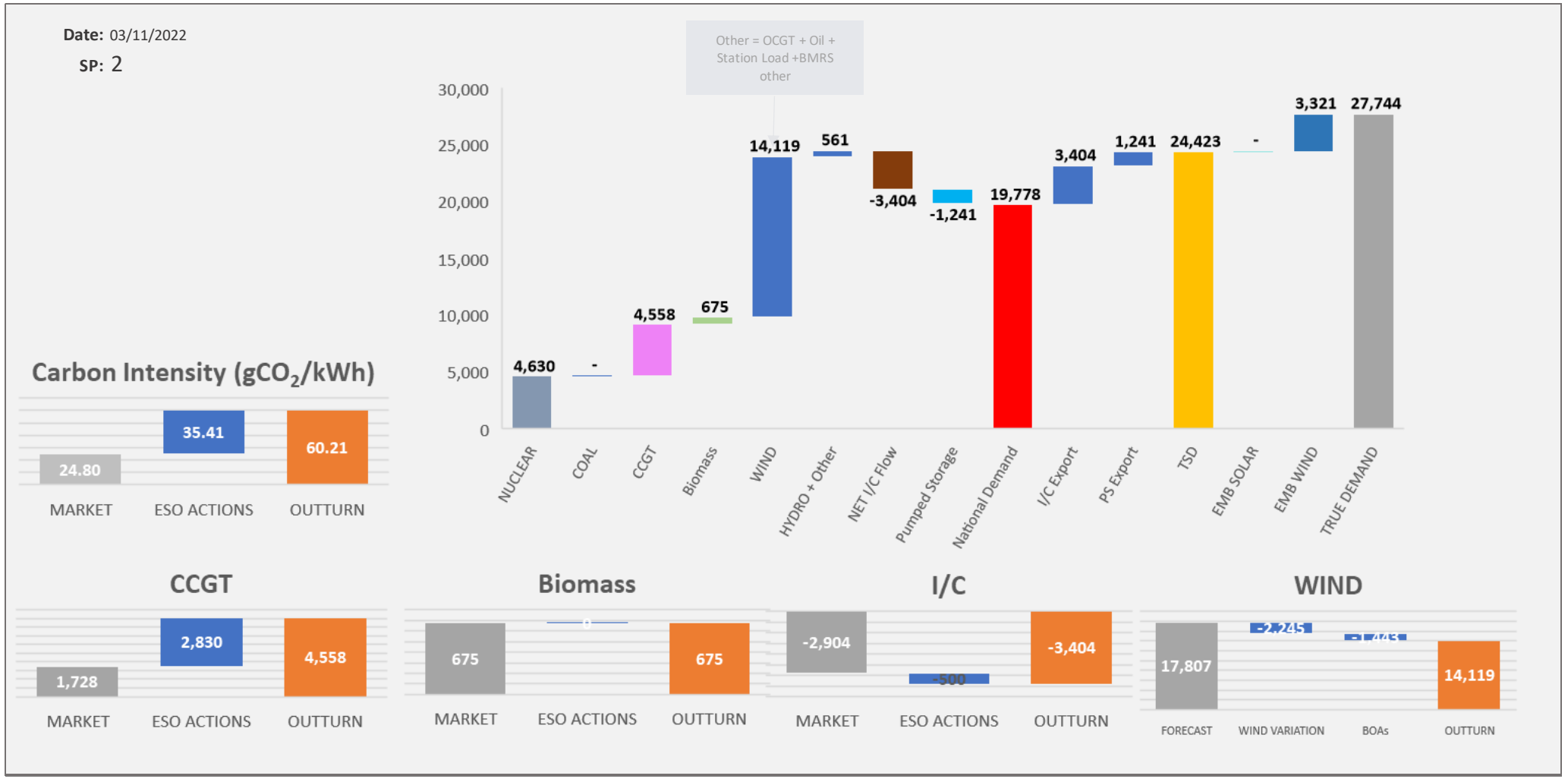
Sli.do code #OTF

ESO Actions | Thursday 03 October – Highest SP Spend ~£537k



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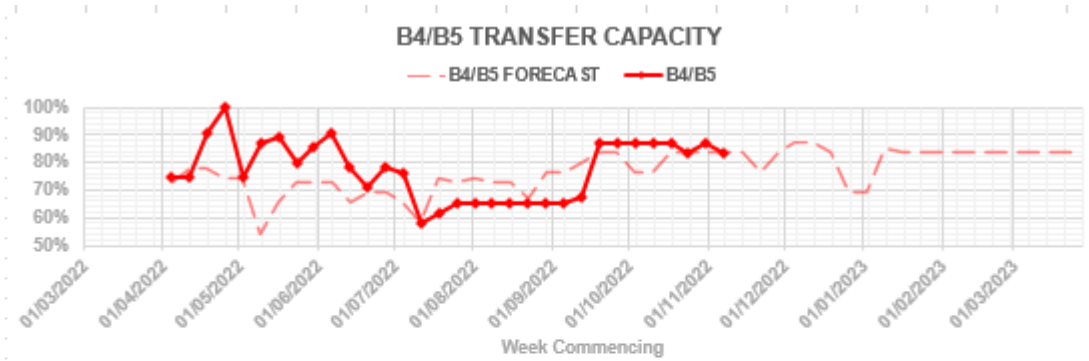
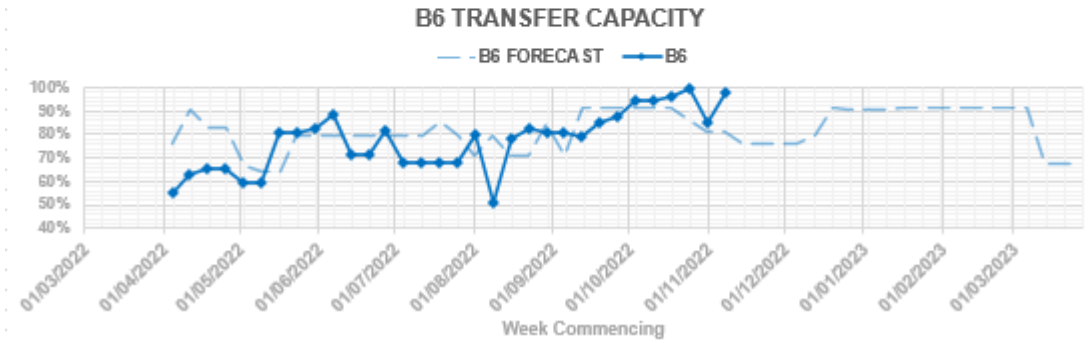
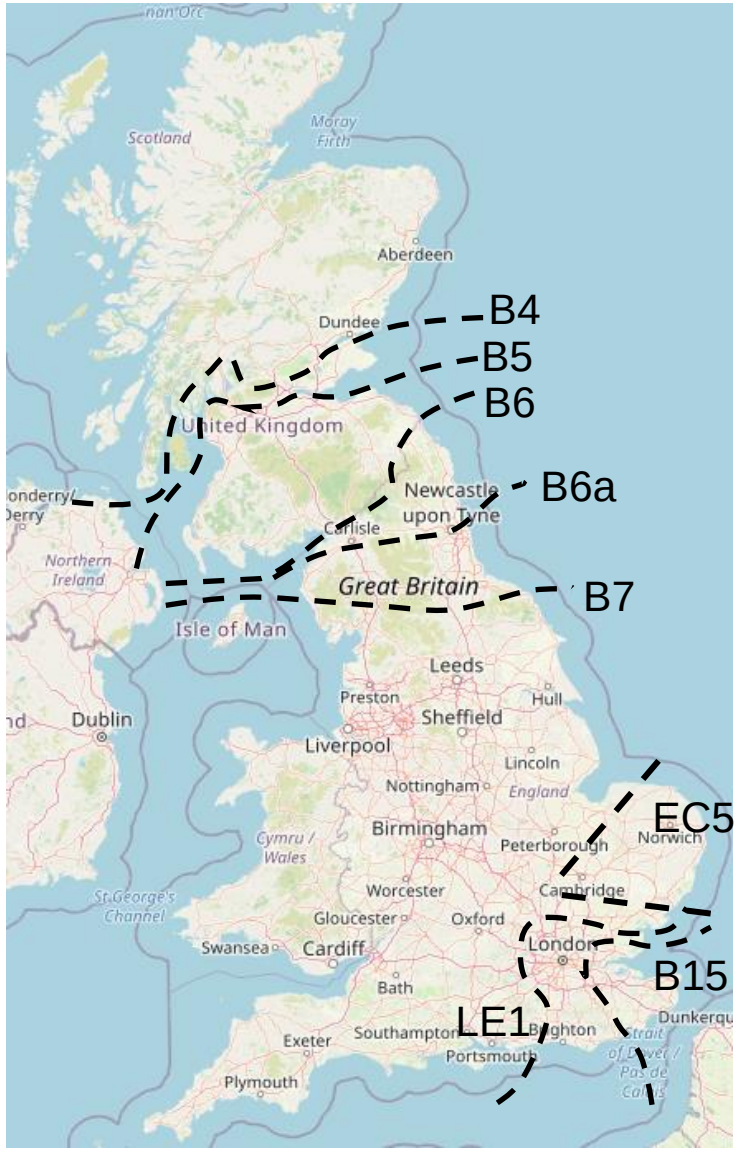
Sli.do code #OTF

Transparency | Network Congestion





Boundary	Max. Capacity (MW)
B4/B5	2750
B6	5600
B6a	6300
B7	8500
LE1	8250
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

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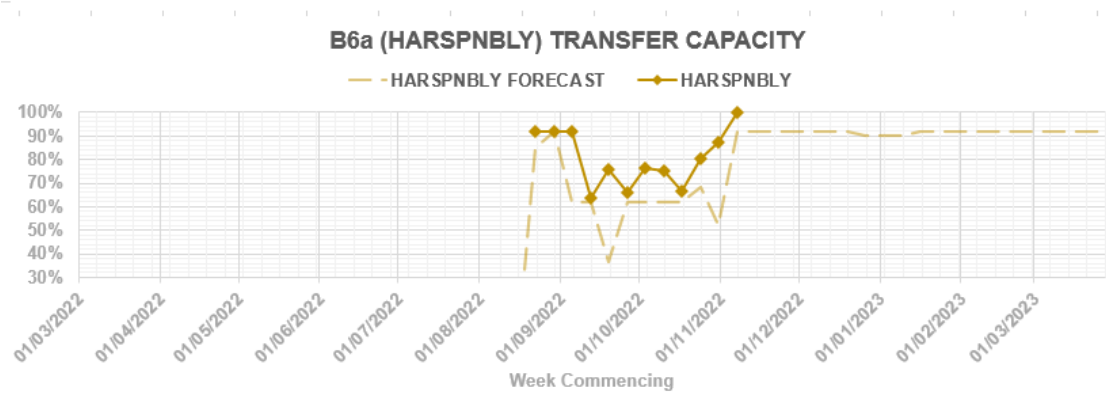
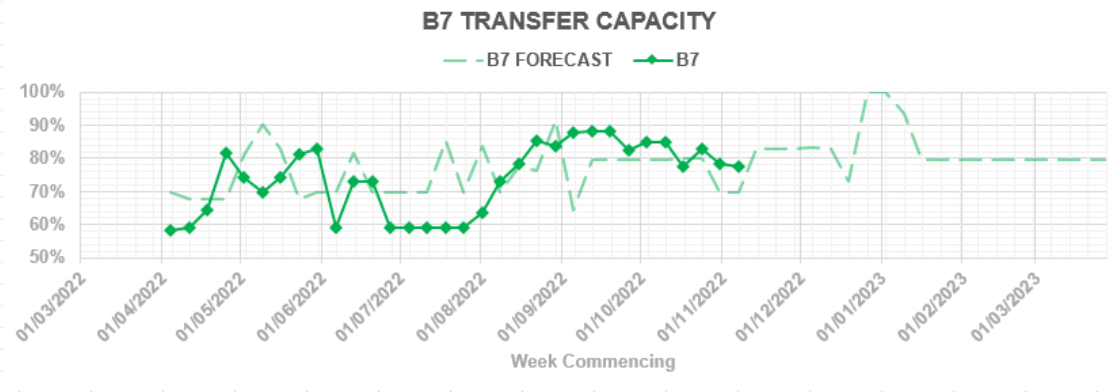
Transparency | Network Congestion





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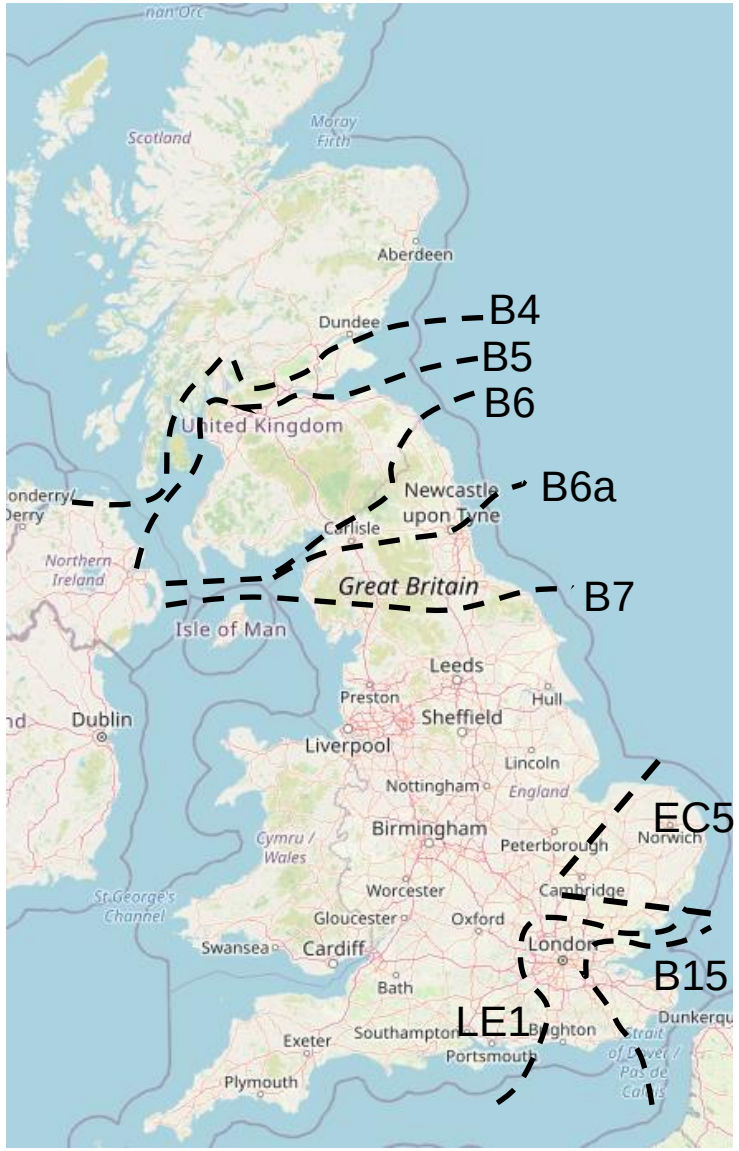

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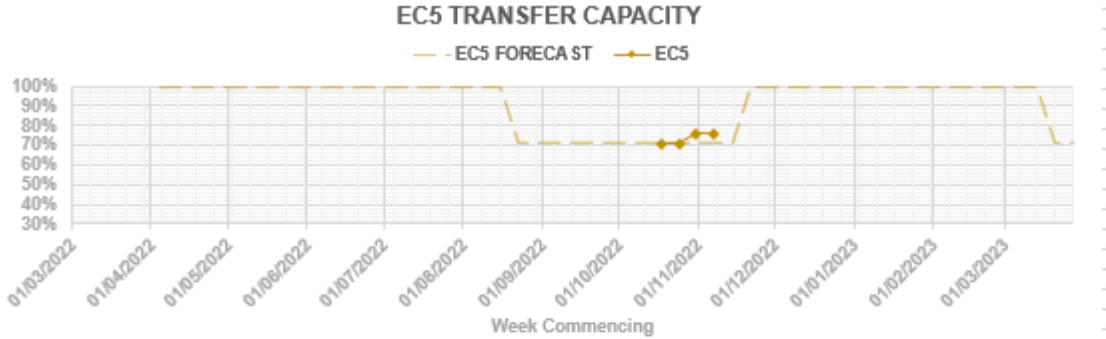

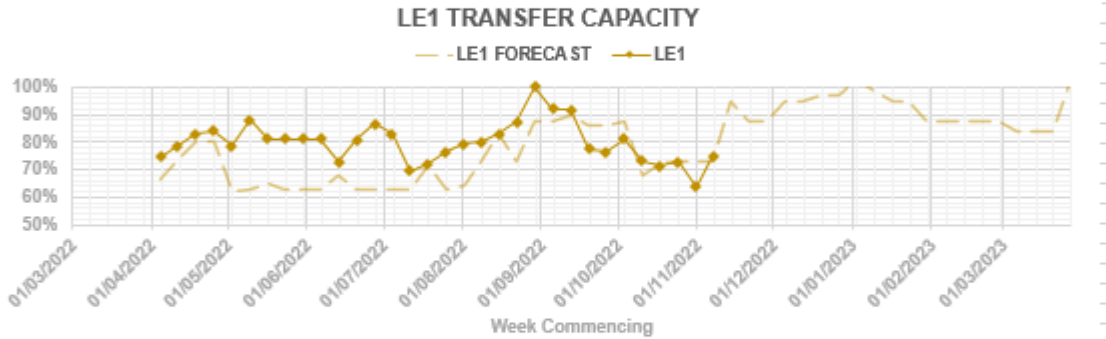

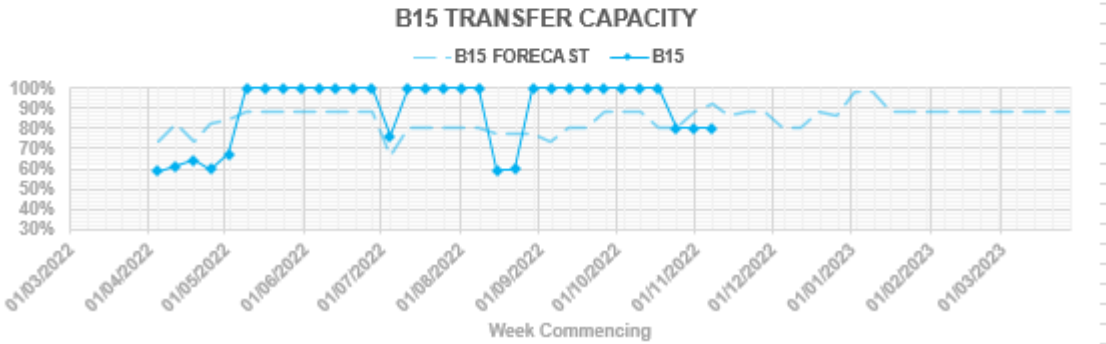

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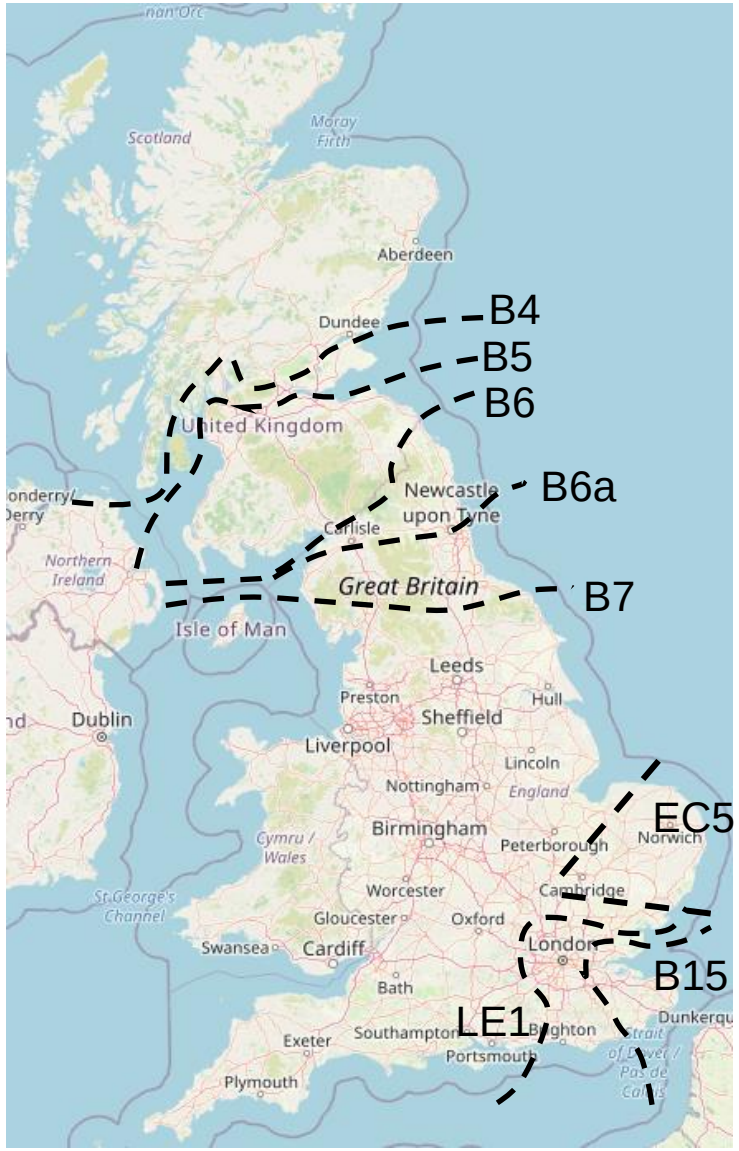

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Previous weeks questions

Q: Any update on ABSVD moving from R2 to SF runs?

A: This required some internal process changes which have now been implemented. We have moved to a weekly process and therefore ABSVD should be showing up in SF runs. Please get in touch with the ESO Settlements team at settlement.queries@nationalgrideso.com if you have any follow up queries to this update or are struggling to see the data in the SF runs.

Q: In April, NGESO announced it would be limiting DM/DR to 100 MW for 6 months to investigate their impact. Can you please share the analysis you made in these 6 months?

We are running analysis to understand DR/DM providers performances and the services' impacts and benefits to the system operations. We are updating our operational tool to accommodate the growing DR & DM markets. These will all feed into our response strategies which we would like to update regularly on the OTF and have separate deep dive sessions.

Q: Thanks for confirming that Slide 13 includes all ESO costs (e.g. BM costs, trades outside BM, other contracts, etc.), it would be helpful to see the split on what is BM costs and then what are the other costs (e.g. trades outside BM, other contracts, etc.). Would this be possible?

These slides are only intended to provide an overview of costs during the week leading up to the OTF with an insight in to the reasons for higher or lower cost days. It is not possible to provide additional analysis in time for the OTF.

For more detailed information, including the split of costs you have asked for, please go to the Monthly Balancing Services Summary (MBSS) which is available on the ESO data portal at this link: MBSS link

The MBSS gives the costs and volumes of balancing services used by the Electricity System Operator. These costs are broken into individual months in the past financial year, as well as by each individual service. The most recent month is based on preliminary figures, which are subject to change once updated information becomes available. These changes will be evident in the datasets of future months. Alongside the data files are the pdf reports of the data, giving some extra insight and analysis.

Deep Dive on Winter 2022: Managing the Power System

Hannah Kernthaler – Short Term Operability Manager

John Zammit-Haber – Energy Security Senior Manager

Two opportunities to discuss Winter

Wednesday 9 November ( )

Today!

Operational Focus

OTF take ... wer system

We ... operational scenarios we anti ... g this Winter and will provide more infor ... on about our emergency arrangements.

Tuesday 15 November (2:30-3:30)

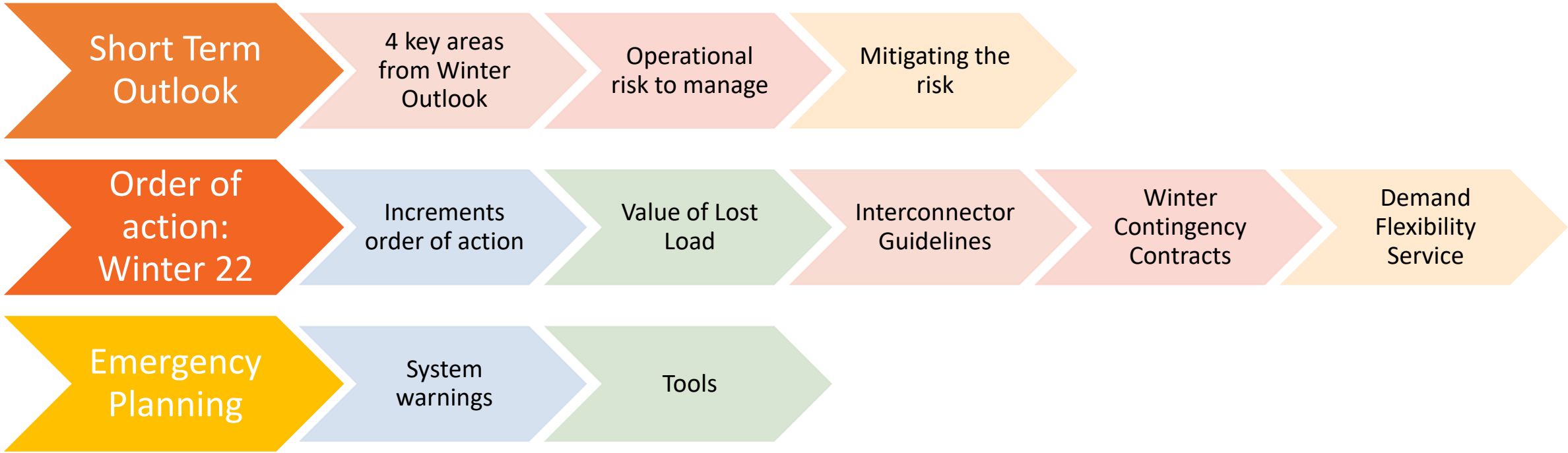
Market Focus

Trading the power market

With LCP Delta we are going to drill into the specifics of how we will balance this Winter and specifically how a trader will successfully navigate the market.

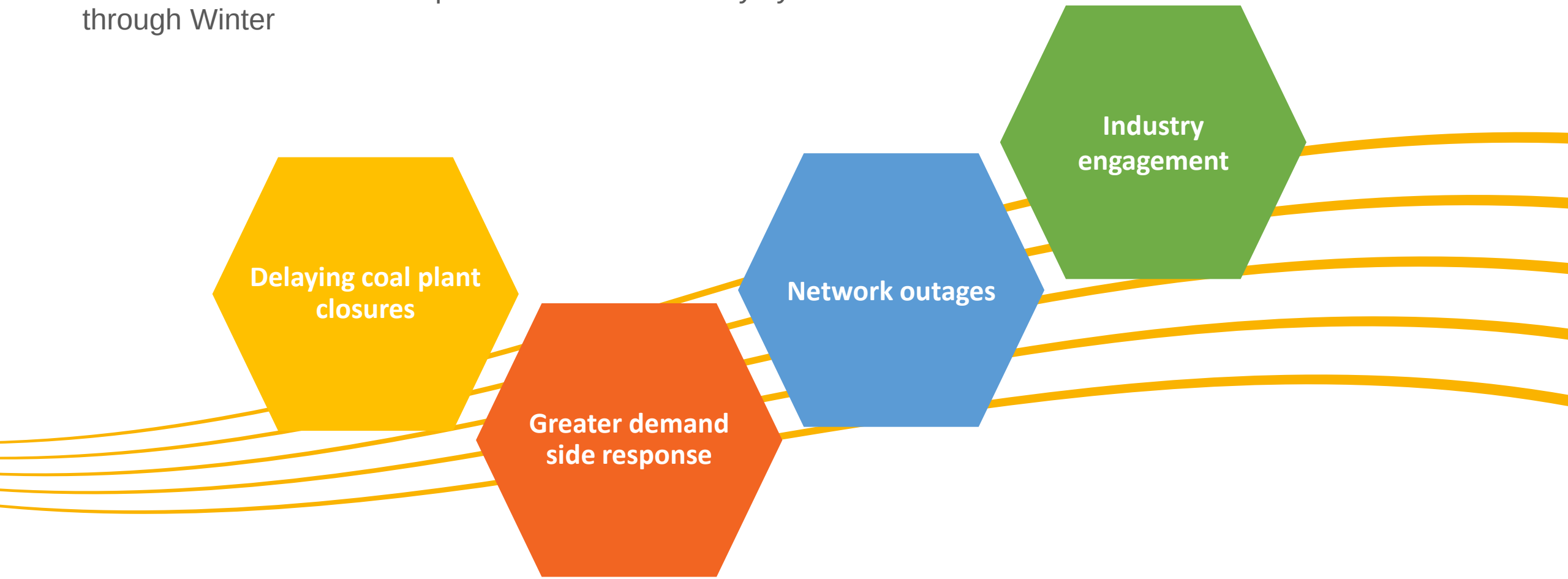
[Register here]

Winter Operations



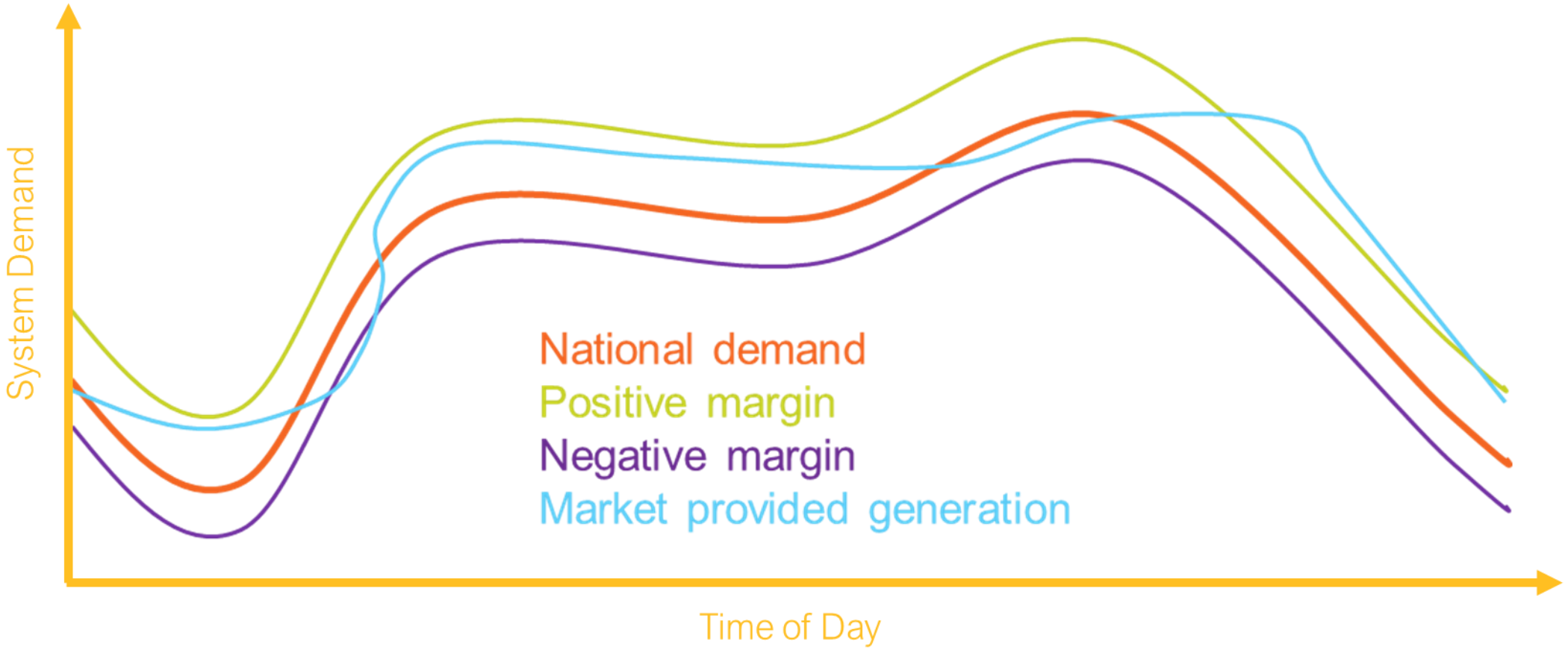
Winter Outlook

Maintain safe and secure operation of the electricity system through Winter



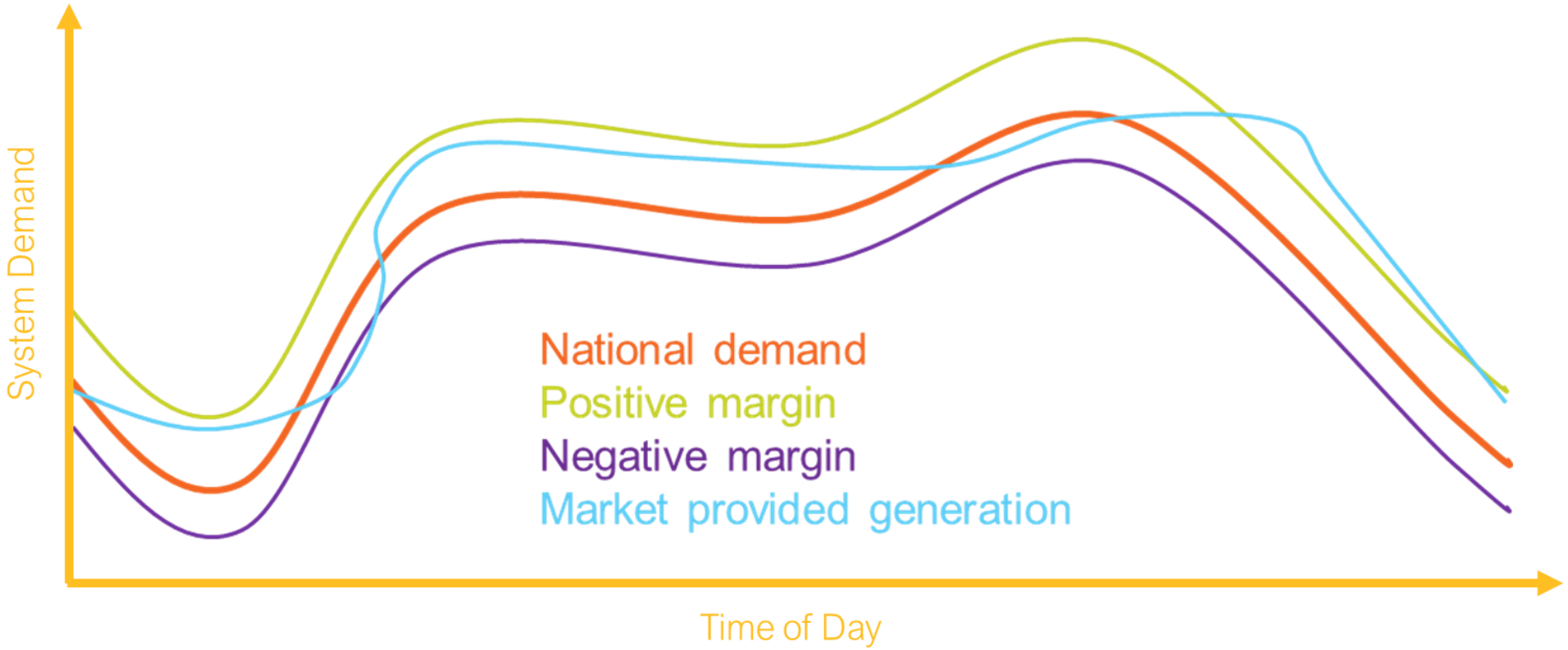
Operational risk to manage

There is a risk that the gap between Market Provided generation and Positive margin is unable to be filled using our current suite of tools.



Mitigating the risk

Use Winter Contingency Contracts and Demand Flexibility Service to fill the gap between the Market Provided Generation and Positive Margin



Combined these contingency measures represent over 3GW of generation and demand reduction

Demand Flexibility Service Update

Key Milestone

Following the close of the EBR Article 18 Consultation for the Demand Flexibility Terms and Conditions, we are pleased to share the final Procurement Documentation on our website following Ofgem's approval. The Demand Flexibility Service is now **live** and runs until the 31st March 2023.

Thank you for your collaborative effort to launch the DFS service. Following additional feedback, and to ensure maximum volume this winter, the ESO is pleased to offer all providers the maximum 12 tests subject to all onboarding steps being completed by no later than **Friday 18 November at 10:00.** Contact your account manager or the DFS team at DemandFlexibility@nationalgrideso.com for more information.

The testing structure for DFS is as follows:

- There will be two **regular** tests each month the service is live
- Each provider will have two **onboarding** tests during their first month in the service

The two DFS **Regular tests** for November are planned to be in the weeks commencing 21st and 28th November 2022. All providers eligible for on boarding tests in November will also be tested twice in November.

You can view all other DFS documents including our Participation Guidance and our Approved providers list on our website via our Demand Flexibility Website.

If you would like to speak to the Demand Flexibility Service team or if you would like to be included on our mailing list, please email DemandFlexibility@nationalgrideso.com

We will notify the market of DFS dispatch decisions (both tests and actual utilisations) on BMRS and all assessment results will be published on our data portal https://data.nationalgrideso.com/data-groups/dfs

Previous weeks questions – Winter theme

Q: Just a follow up, for settlement, what if actual delivery of DFS is less than forecast, what goes into settlement and recalc of imbalance?

A: There will be a retrospective update of BSAD to resolve for a situation where DFS volumes actually delivered are different from those forecast.

Advanced Questions

AQ16: the Environment Agency has recently published Regulatory Position Statement 268 which will allow peaking combustion plant to ‘borrow’ additional operating hours for Q4 2022 from their 2023 allowances – does the ESO have a view as to how much capacity this could provide in 2022?

A: Our assumptions in the Winter Outlook assumed capacity providers delivered in line with their CM obligations. We don't believe that this announcement changes our assumptions for winter.

Advanced Questions

AQ19: Re: cashout implications for the Demand Flexibility Service:

(1) Will there be system messages to warn that the service will be used, like is being done for the Winter Contingency Contracts?

A: Yes. For tests, the DFS volume will be system-flagged, as there is a risk that the Guaranteed Acceptance Price (GAP) will be above the marginal BM price and therefore set the cash out price at an artificially high level, polluting the signal. For real events these will be energy flagged. Notifications will be sent via BMRS and uploaded to the data portal.

(2) Last OTF it was said that use of these services will be communicated through BSAD Data. What will the Service Type and Tendered Status be within the BSAD data? Will the prices and volumes through these flows be firm or indicative only?

A: We will need to take this one away to confirm

(3) If Demand Flexibility usage will be visible in any other flows (e.g. the Ancillary Services Dispatch Platform), how can we identify Demand Flexibility specific service us (as opposed to other services)?

A: We are not anticipating Demand Flexibility usage to be visible in any other flows

(4) How far in advance will the dispatched volumes (not the auction volumes) be communicated to the market (and specifically, will anything ever be communicated/adjusted after period completion)?

A: Assuming this question is referring to actual demand reduction and the settlement of this, we are still working through the details and will update when we have more to share. If this is instead referring to how we will communicate when we have accepted bids into the service, this will be published on our data portal at 16.30 and once we have published this there will be no adjustments.

(5) If the actual demand reduction metered (or imputed) is different to the dispatched amount, will the volumes that feed into the NIV and cashout be revised retroactively? I assume providers will instead be exposed to imbalance (as with every other service), but just want to check

A: There will be a retrospective update of BSAD to resolve for a situation where DFS volumes actually delivered are different from those forecast.

(6) Are any eligible parties participating in this service Production units?

A: This will need to be taken away as we are still onboarding providers. We will provide more information through our normal update routes when we can.

A lot of this content has been covered through today’s deep dive on winter operations. Please get in touch if we haven’t covered anything or you would like more clarification.

Order of Action: Winter 22

Sli.do code #OTF

Everyday Actions	Order	Comments
Reconfigure Transmission Network to reduce network congestion, including: Change substation running arrangements, Tap Quad Boosters, to control flow of energy and Making use of enhanced ratings	Normal operating practice – no cost	Changing daily operating conditions can result in different network configurations to reduce congestion
Review and refine reserve requirement within day dependent on system conditions	Normal operating practice – no cost	Changing system conditions can relieve requirements for reserve or increase requirements. This can change at any time as the conditions change.
All deliverable Offer action on all available BM participants	#1 based on Cost	Scheduled from Day Ahead, action taken in real time – some offers may not be available due to networkcongestion
Issue warming instructions to cold BM participants including Winter Contingency units	#1 based on Cost	Scheduled from Day Ahead, action taken in real time
Buy energy from continental Europe	#1 based on Cost	Scheduled from Day Ahead, action taken from Day Ahead to 4hrs ahead of time by ESO Traders
Reconfigure CCGTs to increase available energy (e.g.sync additional GTs)	#1 based on Cost	Scheduled from Day Ahead, managed within the control timescales within day
SO-SO trade in cost order	#1 based on Cost	SO to SO trade with other SO in Europe/ Ireland

Enhanced Actions (if everyday actions are insufficient)	Order	Comments
Recall TO assets from outage to increase network availability and increase available capacity	#2	Anytime through to control room timescales, depending on ERTS (Emergency Return to Service) time
Plan use of Emergency Assistance (EA) from other SO	#3	Enacted close to real-time. Only applicable if capacity is available on interconnectors. EA can be withdrawn at any time
Instruct Demand Flexibility product	**#4**	**Decision made at timescales as determined by product created (instruction at 24 hours)**
Instruct Winter Contingency Units	**#5**	**Decision made at timescales as determined by dynamic parameters (warming at 12-48hrs)**

Emergency Actions (if enhanced actions are insufficient)	Order	Comments
Emergency Instruction (EI) to other SO	#6	including MaxGen
OC6 demand control instructions to DNOs	#7	This could be via voltage control or demand control (disconnecting customers)
Recommend to BEIS to implement ESEC	#8	Ongoing conversations prior to this so all parties would be aware of risk

Notices are issued at any time as required	Comment
Issue Electricity Margin Notice (EMN)	Request to market to increase available energy or reduce demand. Likely to be issued at Day Ahead. Updated regularly
Issue a High Risk of Demand Reduction (HRDR) system warning	Warning network operators of high likelihood of demand control. Further request to market to increase available energy or reduce demand. Closer to real-time than ENM
Issue Demand Control Imminent (DCI) system warning	If possible, this system warning will be issued 30 minutes prior to demand control. Warning to network operators
AUTOMATICALLY TRIGGERED: A Capacity Market Notice (CMN) is automatically triggered to alert CM participants	Driven by calculation of Market data at 4 hours ahead of real time

Increments Order of Action

The Order of Action is used to constantly reassess. When the Winter Contingency Contract units are dispatched to SEL, we would still look to use all other market options and fast acting units to meet any further requirements

Value of Lost Load (VoLL)

The ESO will continue to preserve demand by taking every available commercial and market action (including accepting costs above the administered VoLL) as well as using emergency actions where necessary.

Disconnection of demand will be a last resort emergency measure taken only when all other options are exhausted.

Interconnector Guidelines

We will utilise all market based solutions before emergency actions on the interconnectors.

This includes SO-SO trades, Emergency Assistance and Emergency Instruction.

In liaison with affected TSO Emergency Instruction can be used to reduce exports to 0MW but cannot reverse the flow.

We are maintaining importance of operational liaison before and on the day to ensure mutual support is provided from and to neighbouring TSOs where possible.

We will make every effort possible to provide assistance to neighbouring TSOs provided it does not require disconnection of GB consumers.

On an occasional and exceptional basis we will use the Winter Contingency Coal units and the Demand Flexibility Service to support exports to the continent if a neighbouring TSO is at risk of demand control and the ESO is unable to assist under either market trades or emergency assistance. This option would not be available if the ESO had identified a potential need to run the coal plant for the benefit of GB customers i.e., to avoid demand disconnection.

In extreme scenarios (ESEC) the restriction of interconnector capabilities will be considered in liaison with affected TSOs to avoid disconnection of GB consumers

Winter Contingency Contracts

An EMN will be issued prior to running the units via a Bid-Offer Acceptance in the Balancing Mechanism.

An EMN will not necessarily be in place prior to sending a warming instruction to any of the Winter Contingency Coal units.

If an EMN is issued, this will be cancelled once the coal unit is committed to being used provided it resolves the margin requirement.

Warming notification will be via SONAR: https://extranet.nationalgrid.com/sonar

Demand Flexibility Service

An EMN will be issued prior to the final DFS requirement publication so before 1430 at the day ahead stage.

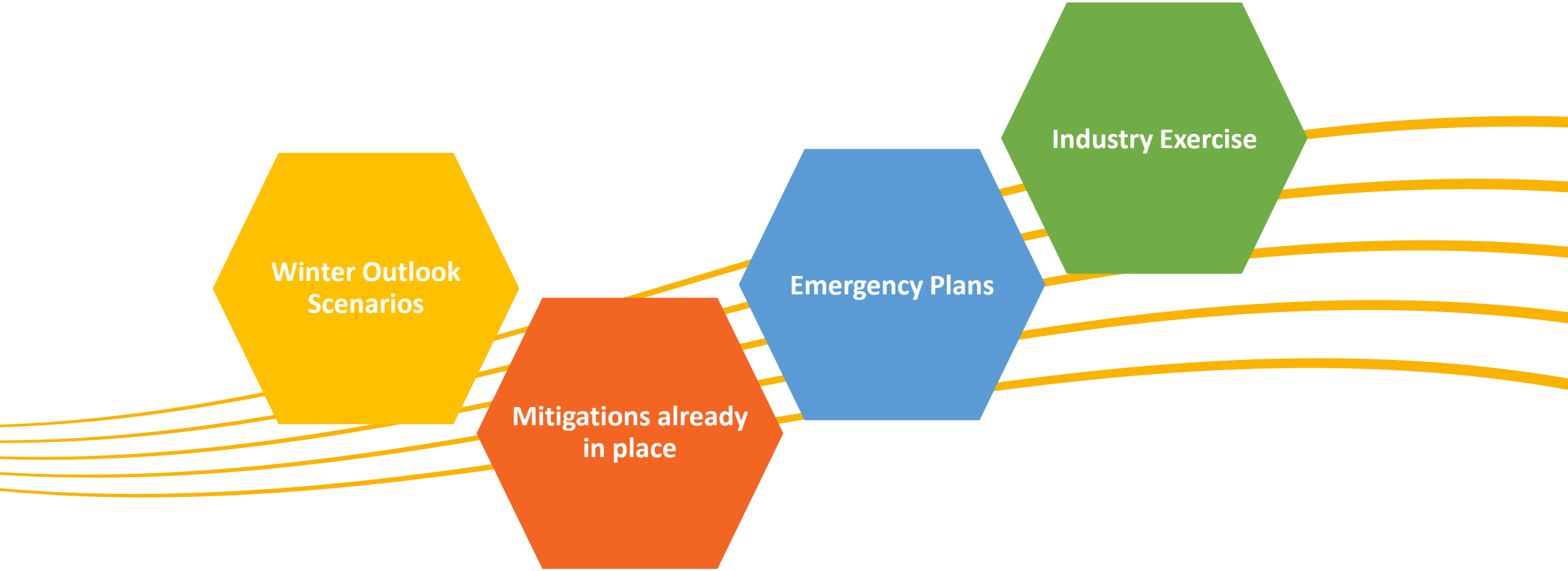
An EMN will not necessarily be in place prior to the initial indication of use of the service at 09:30 at the day ahead stage.

If an EMN is issued, this will be cancelled once Demand Flexibility Service is included in the margin assessment if this resolves the margin requirement.

Requirements and instruction will be published on our data portal: https://data.nationalgrideso.com/data-groups/dfs

Emergency Planning for Winter

Maintain safe and secure operation of the electricity system through Winter



System Warnings

https://www.bmreports.com/bmrs/?q=transmission/systemwarning

Electricity Margin Notice (EMN)

Issued when our normal safety margin for operating the system is not as big as we would like and we cannot address through the normal mechanisms

High Risk of Demand Reduction (HRDR)

Issued when our normal safety margin for operating the system is not as big as we would like it, we cannot address through the normal mechanisms and / or when it judged to be a high risk of demand reduction instructed.

Demand Control Imminent (DCI)

Issued to provide short term notice, where possible, when a demand reduction is expected in the following 30 minutes.

Electricity Margin Notice (EMN)

Please note these are examples only

Notification issued directly to DNOs, TOs and non-embedded customers

From: The Power System Manager, ENCC

GB TRANSMISSION SYSTEM WARNING

Electricity Margin Notice

An EMN has been issued by the System Operator to encourage market actions to restore System Margins to adequate levels.

A **GB TRANSMISSION SYSTEM WARNING** is ISSUED for the period

From.....(Hrs) to .....(Hrs) on..... (Day) ...../...../..... (Date)

This is an Electricity Margin Notice

Aggregate MEL shortfall ..... MW

The current contingency requirement is ……..{ } MW.

……..{ } MW of generation is excluded from the available system margin due to system constraints.

Trading Points, Control Points and **Externally Interconnected System Operators** are requested to ensure current MEL is maintained and to review MEL, notifying NGESO of any additional MW capacity.

Maximum Generation Service may be instructed.

Suppliers please ensure NGESO is advised of any further Customer Demand Management (above that already notified under OC1 of the Grid Code).

Network Operators and **Non-Embedded Customers** are notified that unless there is an improvement in **System Margin** demand reduction may be instructed.

No further action is required until instruction is given by NGESO.

The situation will be reviewed again by NGESO at ..... Hours and an Update issued.

Notification Issued at ..... Hrs on ...../...../.....

(Signed)..... NGESO Electricity National Control Centre

(Print Name) .....

Any calls should be made to the Power System Manager on [redacted]

Information Note: -
As the System Operator, NGESO are responsible for balancing the electricity system in the final hours before real-time. We have routine tools we can use to help us do this, which includes EMNs. An EMN is used to send a signal to the electricity market. It highlights that, in the short-term, we would like a greater safety cushion (margin) between power demand and available supply. It does not signal that blackouts are imminent or that there is not enough generation to meet current demand.

Notification via BMRS

NGESO SYSTEM WARNING BULLETIN NO. 00X

Market Notification of Issue of 'Electricity Margin Notice'

An EMN has been issued by the System Operator to encourage market actions to restore System Margins to adequate levels.

Issued at:

By Duty Power System Manager, Electricity National Control Centre:

This is an Electricity Margin Notice. System margin shortfall {MWSHORT} MW

Maximum Generation Service may be instructed.

Trading Points, Control Points and Externally interconnected System Operators are requested to notify NGESO of any additional MW capacity.

Suppliers please advise NGESO of any additional Demand Control available

The situation will be reviewed again by NGESO at {REVIEWTIME} hours and an update issued.

This Notification of Issue of a GB Transmission System Warning — Electricity Margin Notice Notification Issued at {ISSUETIME} hrs on {ISSUEDATE}

Issued by {ISSUEDBY} NGESO Electricity National Control Centre

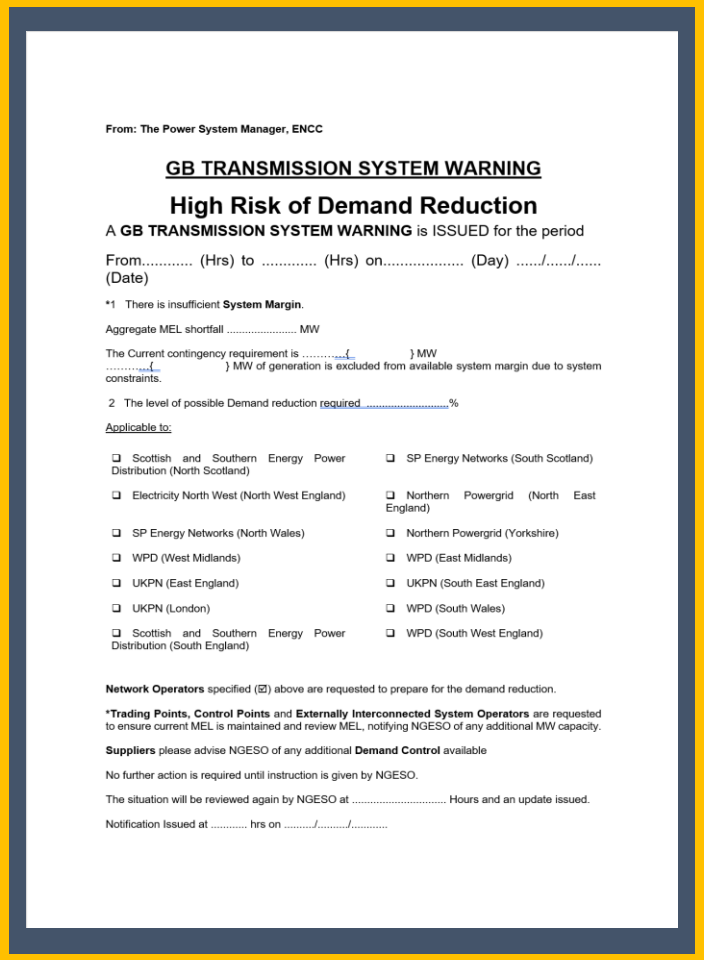
****

Information Note: -
As the System Operator, NGESO is responsible for balancing the electricity system in the final hours before real time. We have routine tools we can use to help us do this, including EMNs. An EMN is used to send a signal to the electricity market. It highlights that, in the short term, we would like a greater safety cushion (margin) between power demand and available supply. It does not signal that blackouts are imminent or that there is not enough generation to meet current demand.

High Risk of Demand Reduction (HRDR)

Please note these are examples only

Notification issued directly to DNOs, TOs and non-embedded customers



From: The Power System Manager, ENCC

GB TRANSMISSION SYSTEM WARNING

High Risk of Demand Reduction

A **GB TRANSMISSION SYSTEM WARNING** is ISSUED for the period

From..... (Hrs) to ..... (Hrs) on..... (Day) ...../...../..... (Date)

*1 There is insufficient **System Margin**.

Aggregate MEL shortfall ..... MW

The Current contingency requirement is ……..{ } MW
……..{ } MW of generation is excluded from available system margin due to system constraints.

2 The level of possible Demand reduction required.....%

Applicable to:

- ❑ Scottish and Southern Energy Power Distribution (North Scotland)
- ❑ SP Energy Networks (South Scotland)
- ❑ Electricity North West (North West England)
- ❑ Northern Powergrid (North East England)
- ❑ SP Energy Networks (North Wales)
- ❑ Northern Powergrid (Yorkshire)
- ❑ WPD (West Midlands)
- ❑ WPD (East Midlands)
- ❑ UKPN (East England)
- ❑ UKPN (South East England)
- ❑ UKPN (London)
- ❑ WPD (South Wales)
- ❑ Scottish and Southern Energy Power Distribution (South England)
- ❑ WPD (South West England)

Network Operators specified (☑) above are requested to prepare for the demand reduction.

***Trading Points, Control Points** and **Externally Interconnected System Operators** are requested to ensure current MEL is maintained and review MEL, notifying NGESO of any additional MW capacity.

Suppliers please advise NGESO of any additional **Demand Control** available

No further action is required until instruction is given by NGESO.

The situation will be reviewed again by NGESO at ..... Hours and an update issued.

Notification Issued at ..... hrs on ...../...../.....

Notification via BMRS to Control Points, Trading Points & Suppliers

NGESO SYSTEM WARNING BULLETIN NO. 00Y

Market Notification of Issue of 'High Risk of Demand Reduction' Warning

Issued at:

By Duty Power System Manager, Electricity National Control Centre:

Based on the current information submitted to NGESO by market participants we are forecasting a significant shortfall of short-term reserve margin of XXXX MW for the period HH:MM hrs to HH:MM hrs on Day Month Year.

The shortfall has necessitated the issuing of a High Risk of Demand Reduction (HRDR) Warning to the Market. In light of this Warning we request all participants to check the accuracy of their data submissions and inform us of any major changes and any additional availability that they may have.

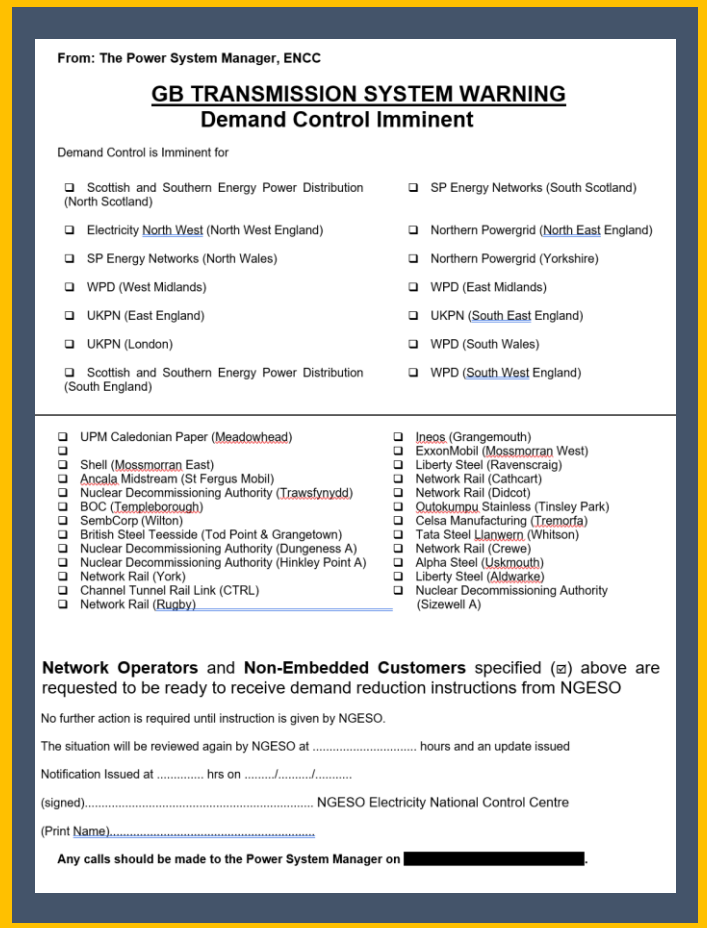
The situation is continually under review and a formal update of the HRDR will be issued at approximately HH:MM hrs.

At this stage it is almost certain that high cost actions, including the commitment of standing reserve, will be required over this period and should further significant plant loss occur or demands out-turn higher than forecast then demand control actions (under OC6 of the Grid Code) will be required.

Given the potential impact of this situation we request all participants to urgently review their plant position and make available any additional output identified.

Demand Control Imminent (DCI)

Notification issued directly to DNOs and non-embedded customers



From: The Power System Manager, ENCC

GB TRANSMISSION SYSTEM WARNING
Demand Control Imminent

Demand Control is Imminent for

- ❑ Scottish and Southern Energy Power Distribution (North Scotland)
- ❑ Electricity North West (North West England)
- ❑ SP Energy Networks (North Wales)
- ❑ WPD (West Midlands)
- ❑ UKPN (East England)
- ❑ UKPN (London)
- ❑ Scottish and Southern Energy Power Distribution (South England)
- ❑ SP Energy Networks (South Scotland)
- ❑ Northern Powergrid (North East England)
- ❑ Northern Powergrid (Yorkshire)
- ❑ WPD (East Midlands)
- ❑ UKPN (South East England)
- ❑ WPD (South Wales)
- ❑ WPD (South West England)

- ❑ UPM Caledonian Paper (Meadowhead)
- ❑
- ❑ Shell (Mossmorran East)
- ❑ Ancala Midstream (St Fergus Mobil)
- ❑ Nuclear Decommissioning Authority (Trawsfynydd)
- ❑ BOC (Templeborough)
- ❑ SembCorp (Wilton)
- ❑ British Steel Teesside (Tod Point & Grangetown)
- ❑ Nuclear Decommissioning Authority (Dungeness A)
- ❑ Nuclear Decommissioning Authority (Hinkley Point A)
- ❑ Network Rail (York)
- ❑ Channel Tunnel Rail Link (CTRL)
- ❑ Network Rail (Rugby)
- ❑ Ineos (Grangemouth)
- ❑ ExxonMobil (Mossmorran West)
- ❑ Liberty Steel (Ravenscraig)
- ❑ Network Rail (Cathcart)
- ❑ Network Rail (Didcot)
- ❑ Outokumpu Stainless (Tinsley Park)
- ❑ Celsa Manufacturing (Tremorfa)
- ❑ Tata Steel Llanwern (Whitson)
- ❑ Network Rail (Crewe)
- ❑ Alpha Steel (Uskmouth)
- ❑ Liberty Steel (Aldwarke)
- ❑ Nuclear Decommissioning Authority (Sizewell A)

Network Operators and **Non-Embedded Customers** specified (☒) above are requested to be ready to receive demand reduction instructions from NGESO

No further action is required until instruction is given by NGESO.

The situation will be reviewed again by NGESO at ..... hours and an update issued

Notification Issued at ..... hrs on ...../...../.....

(signed)..... NGESO Electricity National Control Centre

(Print Name).....

Any calls should be made to the Power System Manager on [redacted].

Please note these are examples only

A reminder: Comparison of Capacity Market Notice (CMN) and Electricity Margin Notice (EMN)

CMN	vs	EMN
Automated	Trigger	Manual
500MW **above** margin requirement	Threshold	500-800MW **below** margin requirement
Not included	Constraints	Included
4 hours out (for initial alert)	Lead time	Flexible
CM Agreement holders put on notice that risk of System Stress Event is elevated	Expected response	Provision of additional energy where possible
Capacity Market Notices Website	Publication	Balancing Mechanism Reporting Service
Aimed at CM agreement holders	Focus	Operationally focused

separate and not sequential

Tools to manage generation shortfall

OC6 voltage reduction

- Short notice
- Short duration
- <5% demand reduction
- No customer disconnections

OC6 demand control

- Short notice
- Short duration
- 5% to 40% demand reduction
- Customer disconnections
- ESO determine disconnection required and instruct DNOs
- DNO implement disconnections in pre-prepared 5% blocks
- Distribution-connected generator sites protected where possible

ESEC

- Longer notice
- Prolonged duration
- 5% to 90% demand reduction
- Customer disconnections
- ESO determine disconnection required and instruct DNOs under Government direction
- DNOs implement rota disconnection in pre-prepared 5% blocks, under Government direction
    - Variable rota disconnections as per ESEC document
    - Priority Sites List

Potential communications options when anticipating demand control

ESO activate Energy Networks Association (ENA) communications group

Appropriate response agreed

ESO will take the lead

May involve national press conferences

Expect there to be significant media coverage, including across the major news channels

DNOs are expected to follow ESO lead on communications whilst ready to address questions from their own customers

Summary

Short Term Outlook

- Operational risk we are managing
- Mitigate through use of Demand Flexibility Service and Winter Contingency Coal contracts

Order of Action ‘22

- Order of Action ‘22
- Interconnector Guidelines
- Winter Contingency Contracts
- Demand Flexibility Service
- Increments Order of Action
- Value of Lost Load

Emergency Planning: System warnings

- EMN
- HRDR
- DCI

- A reminder about CMN

Tools to manage generation shortfall

- OC6 voltage reduction
- OC6 demand control
- Electricity Supply Emergency Code (ESEC)

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

ESO