ESO Operational Transparency Forum

22 March 2023

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’

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:

Advanced question can be asked here: https://forms.office.com/r/k0AEfKnai3

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

Future deep dive / focus topics

Today

Balancing Markets Winter Costs review (November, December, January, February) – 22nd March

Future

Response markets deep dive

System Inertia – Stability webinar Tuesday 28th March, 10:00 – 11:30 (link on the next slide)

Feedback welcomed on our proposed deep dive topics

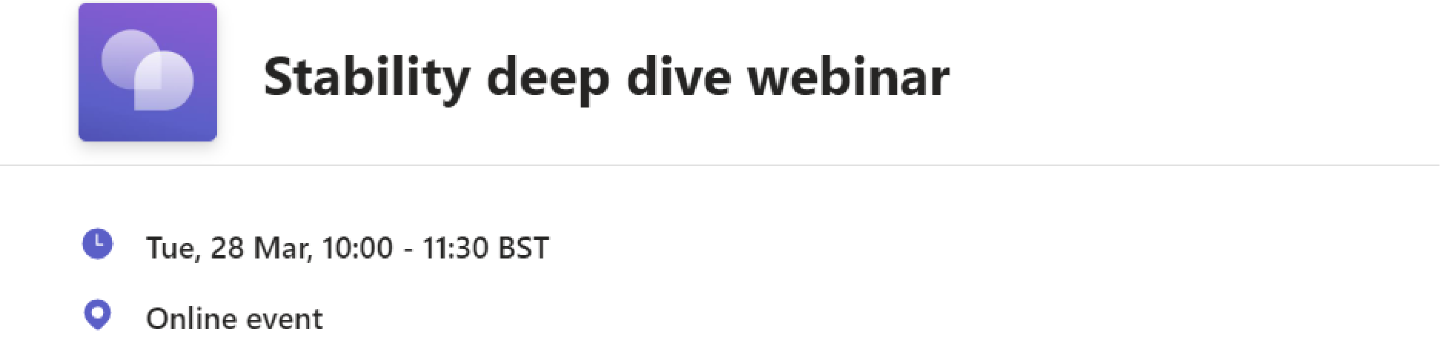
Stability Deep Dive Webinar

Based on feedback we received at our January Operability Strategy Report (OSR) webinar, we are planning a stability deep dive session on **Tuesday 28th March 10:00-11:30**.

This webinar will provide a deep dive into our stability workstream, looking at what we have achieved to date, what the future challenges are and what we are doing to resolve these challenges now and in the future. There will also be an opportunity for Q&A.

You can register for this event at the following link:

https://events.teams.microsoft.com/event/f8b7d3b0-f161-4b30-994a-1394bcc887a1@f98a6a53-25f3-4212-901c-c7787fcd3495



Winter Enhanced Actions

Service instructions

The following BM Start-Up instructions were issued over this period:

BMU ID	Instruction Issued	Instruction Cancelled	Notes
RATS-1	15/03/2023 05:00	N/A	Planned Non-Proving Run (RATS-4 substituted)
DRAXX-6	15/03/2023 07:55	N/A	Planned Non-Proving Run

Demand Flexibility Service Advanced Anticipated Requirements Notice

BMU ID	Instruction Issued	Instruction Cancelled	Notes
DFS	20/03/2023 10:00	N/A	BMRS - Test 18:00 - 19:00 on 21st March
DFS	22/03/2023 10:00	N/A	BMRS - Test on 23rd March

For clarity, going forward we intend to issue a BMRS message for any actions relating to the winter contingency units.

Winter Balancing Market Review

Christopher Salter

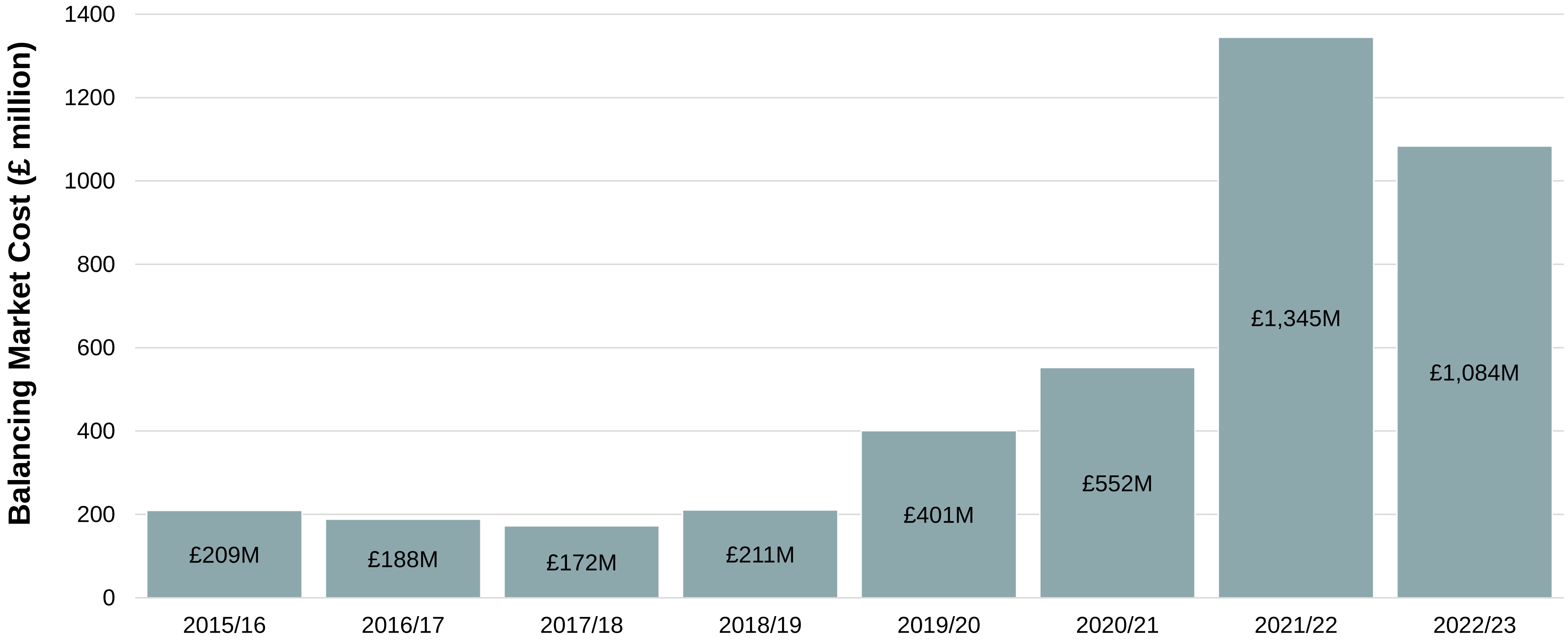
Market Monitoring Team

ESO

Winter Balancing Market Review

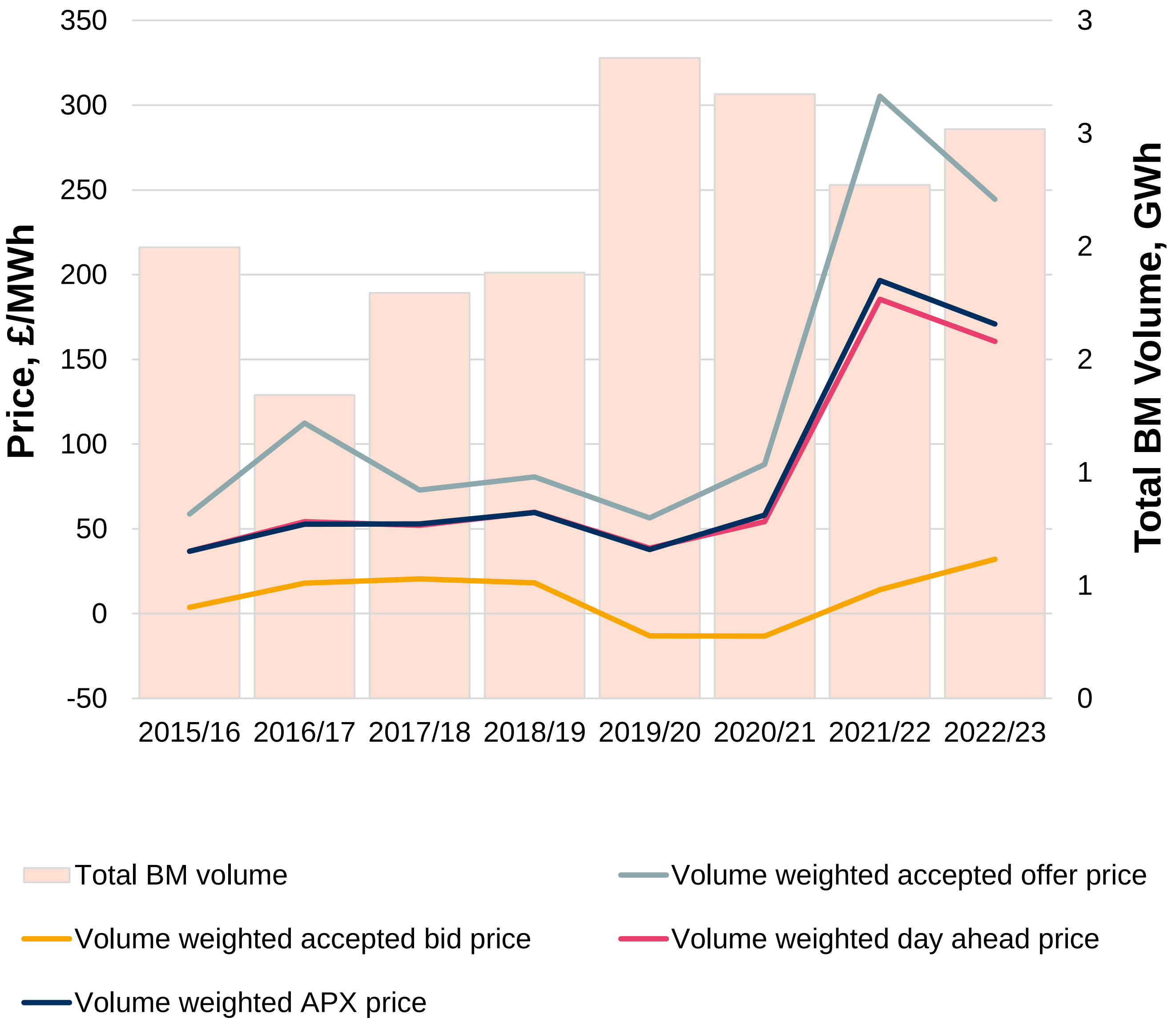
Between November 2022 and February 2023 total balancing market costs* were £1.08bn down from £1.35bn last year

However, this compares to £0.55bn in winter 2020/2021 and £0.40bn in 2019/2020



*Balancing market in this context means the direct cost of bid and offer acceptance, and trades conducted by ESO, this does not include ancillary service markets, this is not to be confused with the balancing services summary which includes ancillary services and includes an estimate of the impact of the transactions on the imbalance position. This is selected as a means of comparing energy prices across markets without the contribution to costs from ancillary services.

Summary of Winter Volumes and Prices



Between winters the volumes of BM actions have increased

The volume of actions was 2.52GWh, an increase of **+11%**

Between winters wholesale prices have reduced

The BM volume weighted average accepted offer price has reduced by approx. **-20%**

The Intraday market is price has reduced by approx. **-13%**

The day ahead market price has reduced by approx. **-13%**

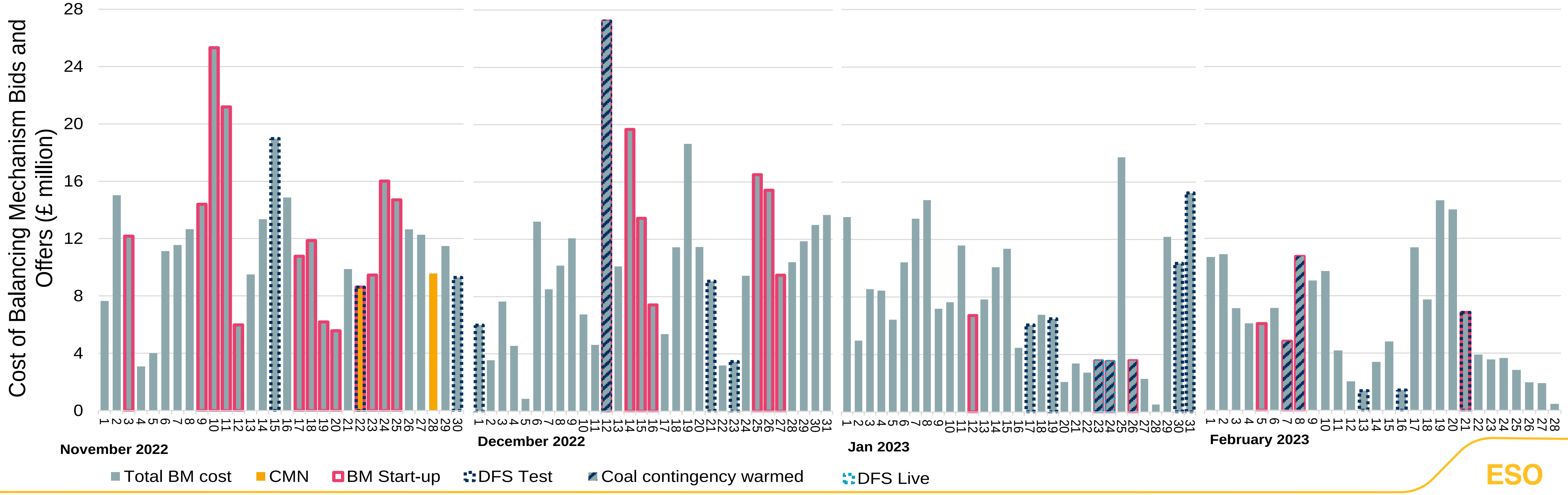
Gas prevailing market price has reduced by approx. **-30%**

Daily Costs and Enhanced Actions

ESO have introduced a number of enhanced actions this winter to ensure system security
These include the demand flexibility service (DFS) and Coal Contingency contracts

Overall the most expensive day of winter 2022 has been 12th December 2022 at a total cost of £27.2M
There were 2 days where CMNs were issued, 6 days of coal warming and uses of 13 DFS (including tests).

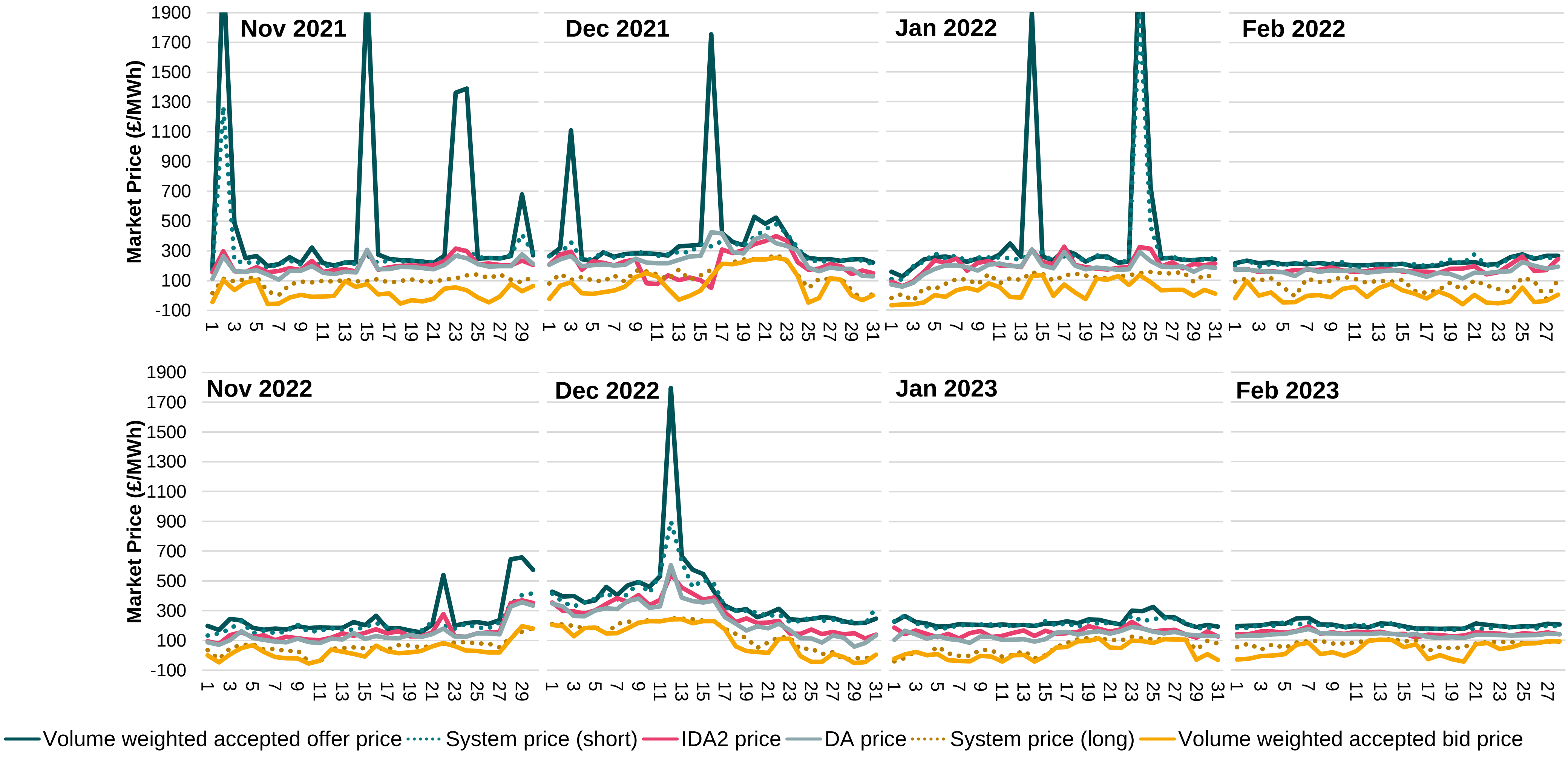
There is no clear and obvious link can be made between these enhanced actions and total BM costs



*Cost of Bids and Offers accepted and BSAD trades, Excluding cost of DFS

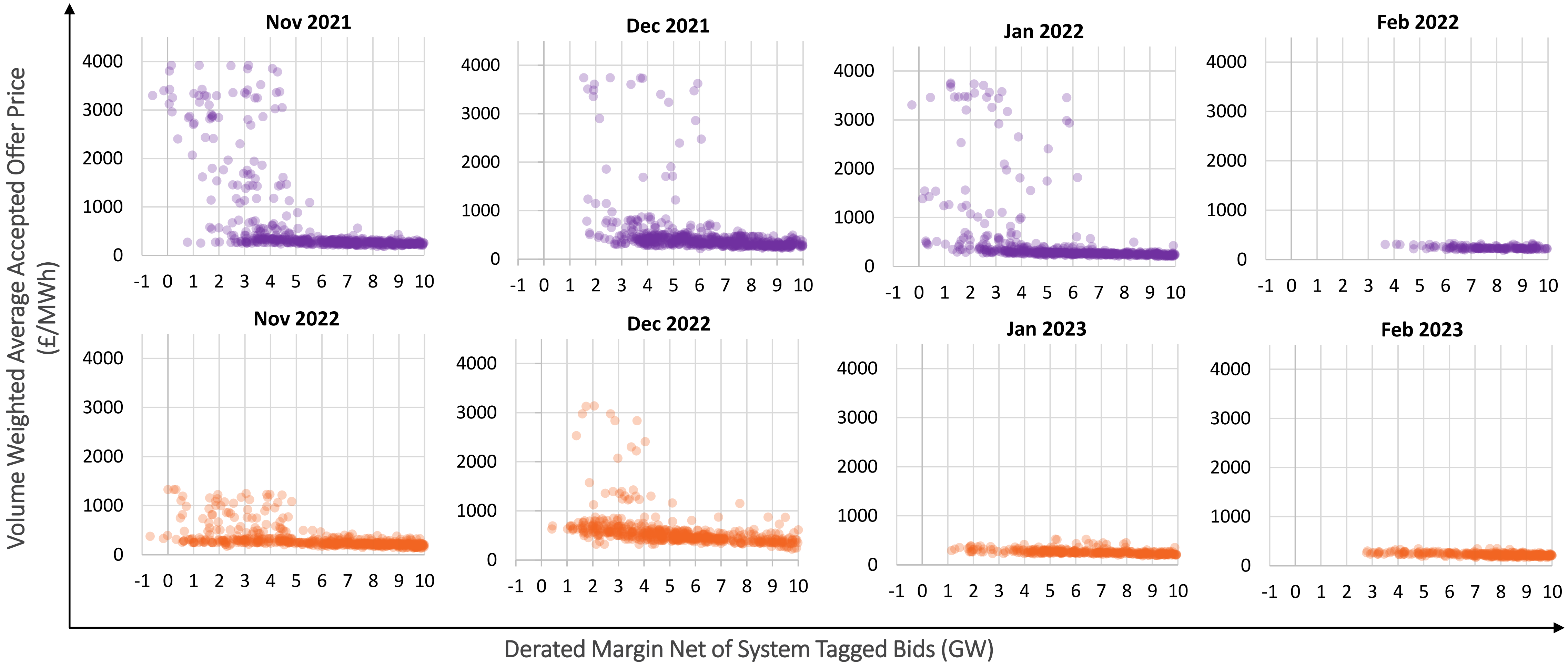
Wholesale Market Prices

Overall BM prices have been much less volatile this winter for similar forward market conditions with only a few periods where the accepted BM price becomes disassociated from other markets



Scarcity Pricing

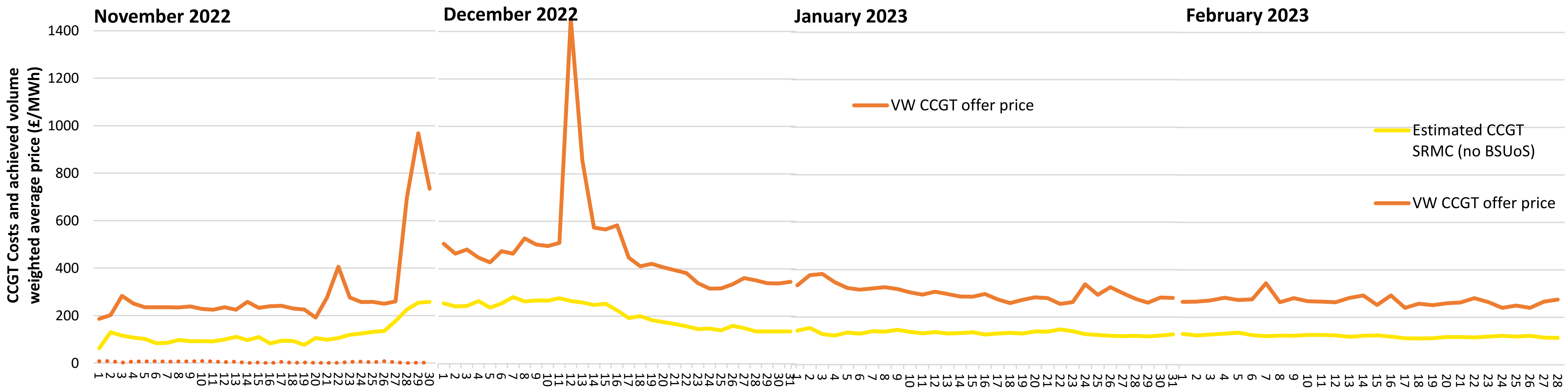
Scarcity pricing is still present in the BM but is less frequent and on average more moderate when comparing winters. Last winter for de-rated margins as great as 6GW volume weighted average prices over £3000/MWh were accepted reflecting commercial strategies which created scarcity of reserve



Influence of Gas Prices on BM Market Prices

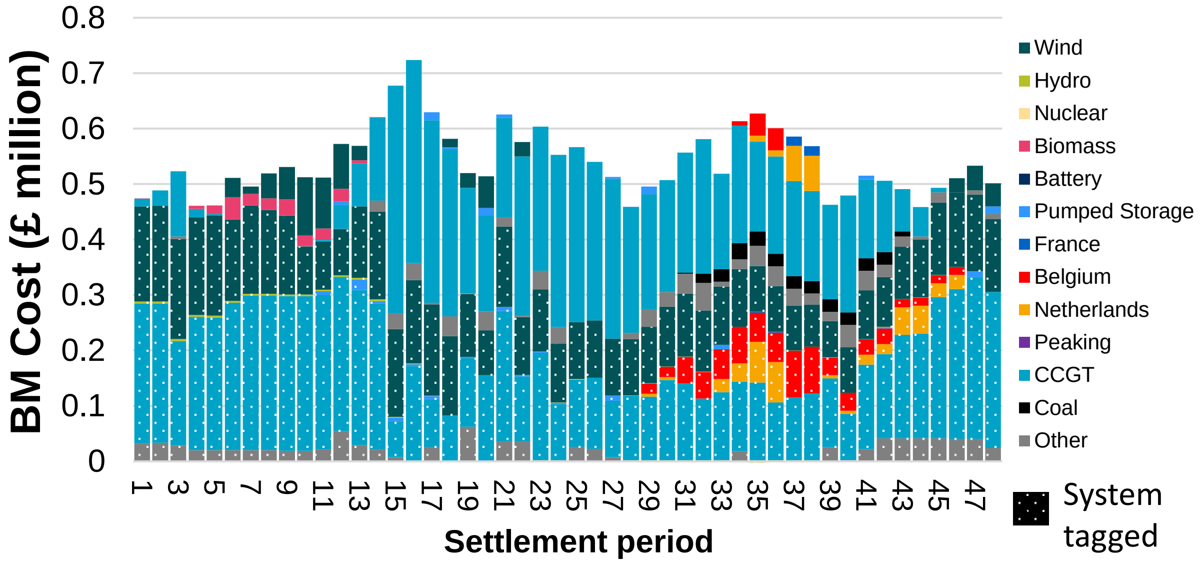
Gas prices and therefore short run marginal costs for CCGTs remain very high historically, although they are lower than last winter and have decreased from a winter peak in December 2022

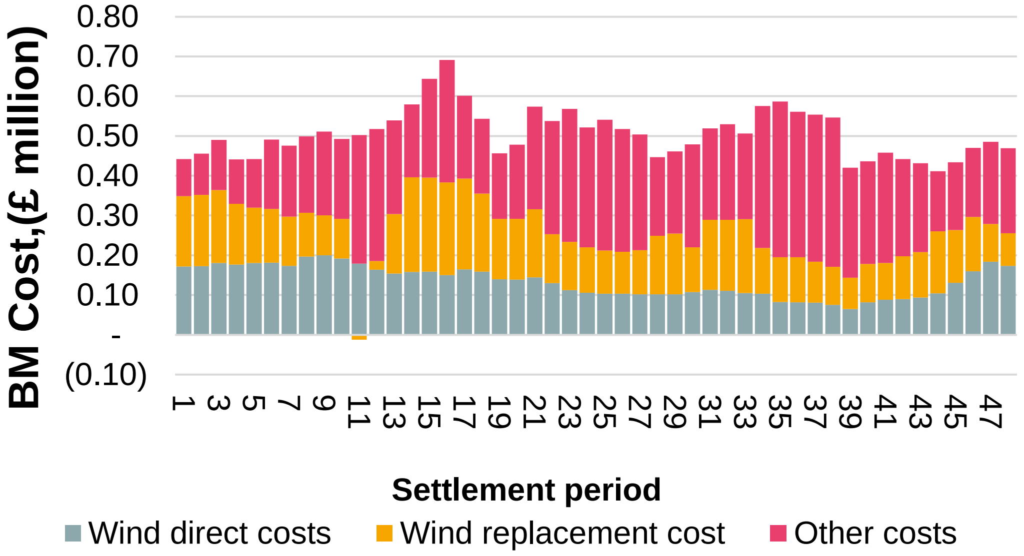
However, due to the very high CCGT offer prices, estimated spreads remain substantially higher than in previous years, but have consistently fallen since December,.
down to a difference of £148/MWh in February 2023 between accepted offer prices and the short run marginal cost.

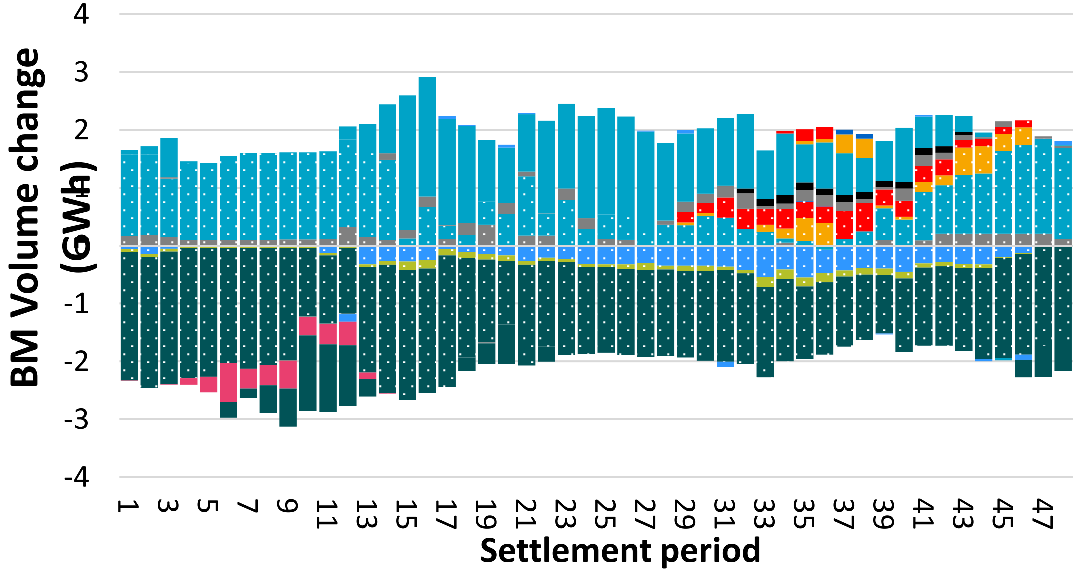


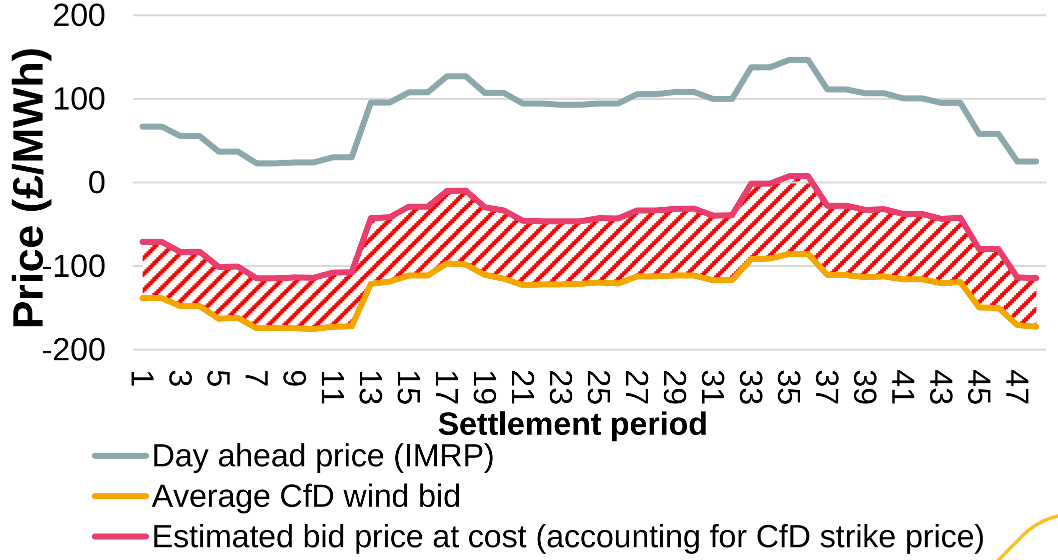
*Short run marginal cost is a representative figure for the costs of operating a CCGT, each unit will have their own economics so this is not a direct profit margin calculation.

Expensive Days Review, 10th November







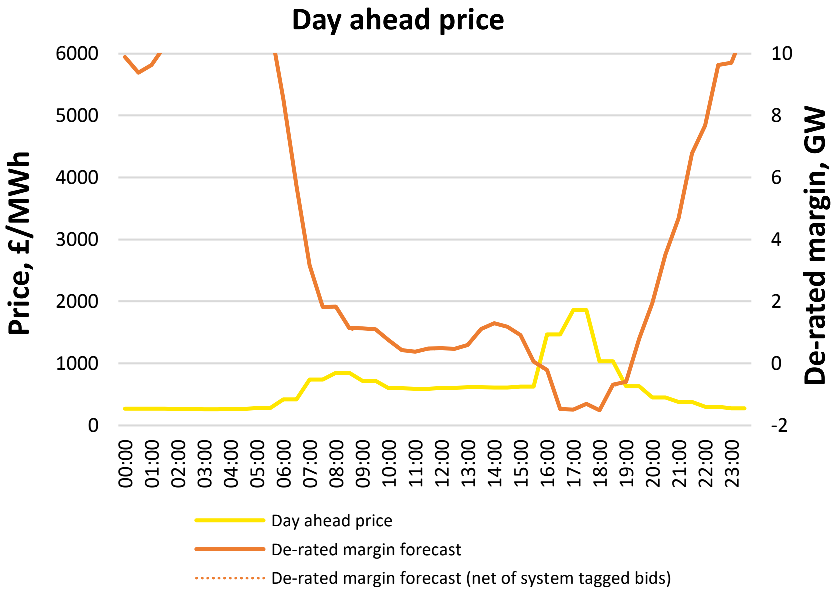


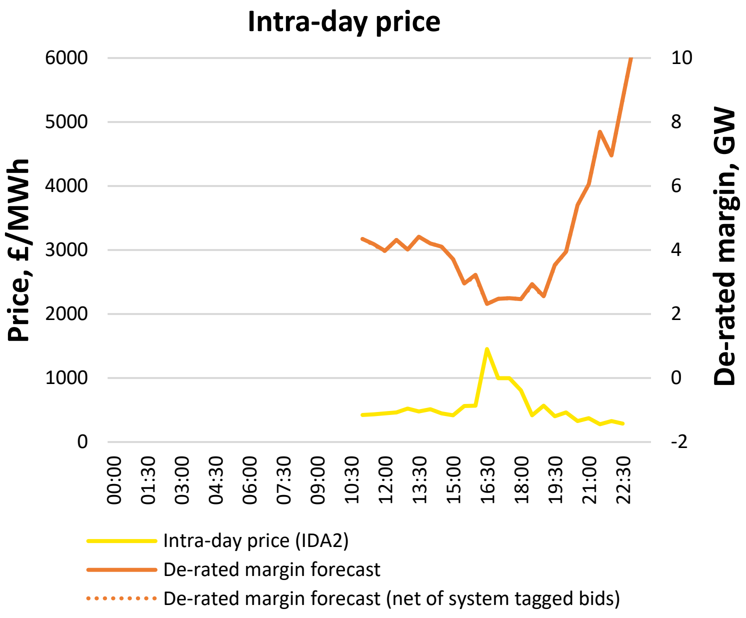
Expensive Days Review, 12th December

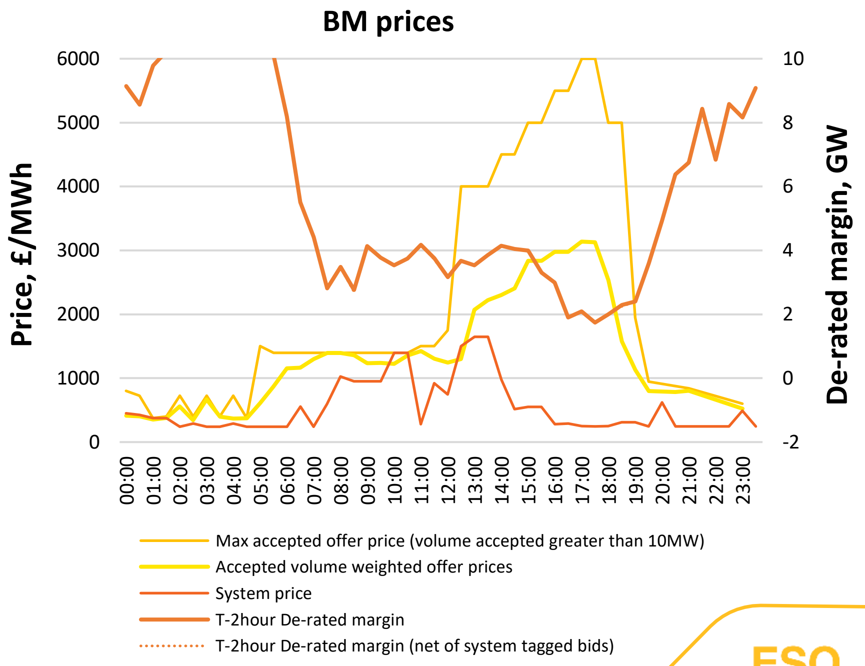
Very tight margin forecasts at day ahead led to very high day ahead prices of up to £1900/MWh

However, the intraday prices cleared substantially lower with a peak of £1500/MWh as the margin outlook substantially improved.

In balancing mechanism timescales, peak prices were up to £6000/MWh, with Volume Weighted Average prices over £1200/MWh accepted between 07:30 and 18:30 to maintain adequate system margins.







Winter Balancing Market Review Workshop

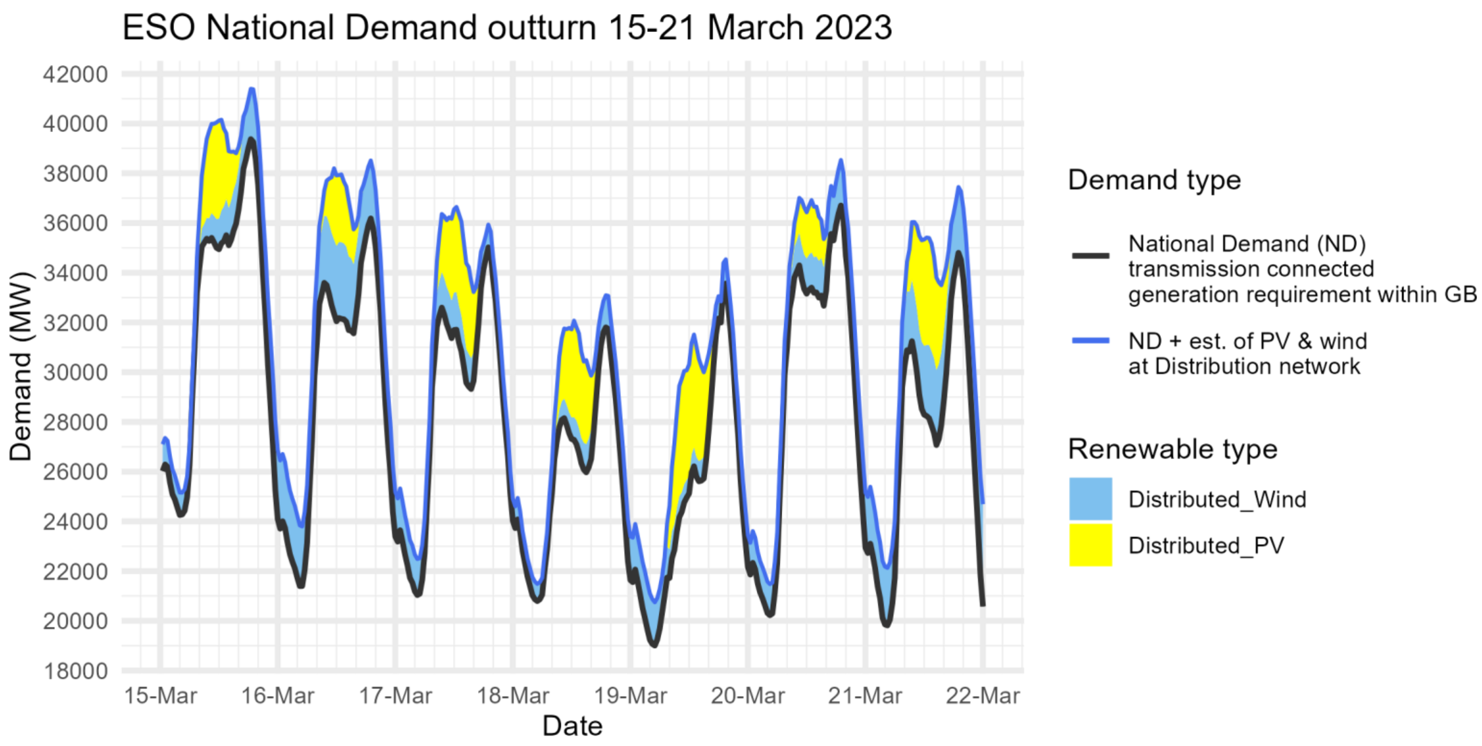
Following your feedback at the last OTF session, we want to understand the appetite to attend a workshop on the winter review work.

We expect this to be an interactive session for you to share observations and ideas on the drivers of costs this winter.

We encourage you to let us know if you are interested in attending and the format you think would be most productive.

https://forms.office.com/r/trntBdTB32

Demand | Last week demand out-turn



		FORECAST (Wed 15 Mar)		OUTTURN	
Date	Forecasting Point	National Demand (GW)	Dist. wind (GW)	National Demand (GW)	Dist. wind (GW)
15 Mar	Evening Peak	38.0	2.1	39.4	2.0
16 Mar	Overnight Min	20.5	2.6	21.4	2.4
16 Mar	Evening Peak	36.4	2.4	36.2	2.3
17 Mar	Overnight Min	21.7	1.7	21.0	1.5
17 Mar	Evening Peak	36.4	1.2	35.0	0.9
18 Mar	Overnight Min	20.3	1.3	20.8	0.7
18 Mar	Evening Peak	31.8	2.2	31.8	1.3
19 Mar	Overnight Min	18.9	1.9	19.0	1.7
19 Mar	Evening Peak	33.5	1.8	33.6	1.0
20 Mar	Overnight Min	19.3	2.1	20.2	1.3
20 Mar	Evening Peak	36.5	2.1	36.7	1.8
21 Mar	Overnight Min	20.4	1.7	19.8	2.3
21 Mar	Evening Peak	37.3	1.6	34.8	2.6

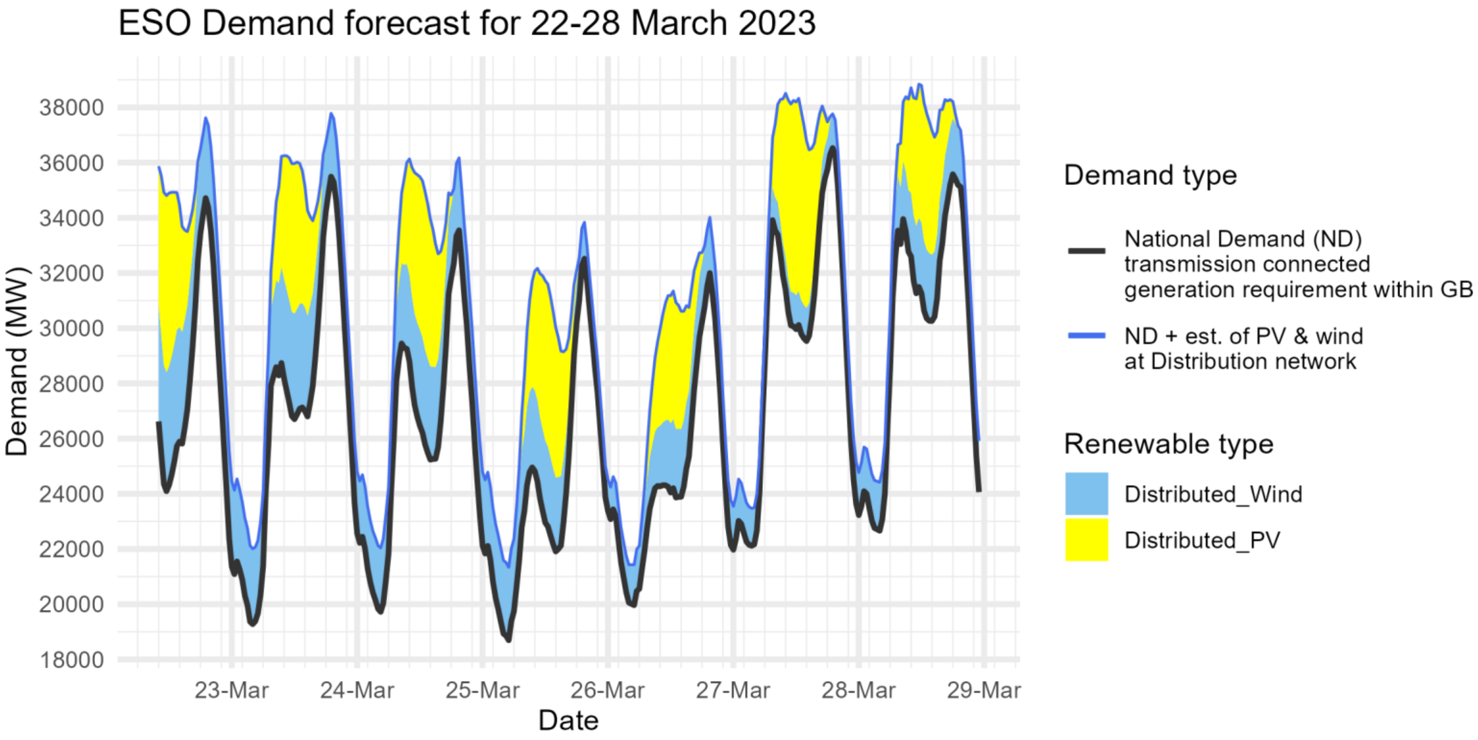
The black line (National Demand ND) is the measure of portion of total GB customer demand that is supplied by the transmission network.

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

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

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

Demand | Week Ahead



		FORECAST (Wed 22 Mar)	
Date	Forecasting Point	National Demand (GW)	Dist. wind (GW)
22 Mar 2023	Evening Peak	34.7	2.9
23 Mar 2023	Overnight Min	19.3	2.7
23 Mar 2023	Evening Peak	35.5	2.3
24 Mar 2023	Overnight Min	19.7	2.3
24 Mar 2023	Evening Peak	33.5	2.6
25 Mar 2023	Overnight Min	18.7	2.6
25 Mar 2023	Evening Peak	32.5	1.3
26 Mar 2023	Overnight Min	20.0	1.5
26 Mar 2023	Evening Peak	30.8	2.1
27 Mar 2023	Overnight Min	22.0	1.6
27 Mar 2023	Evening Peak	36.3	1.2
28 Mar 2023	Overnight Min	22.7	1.8
28 Mar 2023	Evening Peak	35.6	2.0

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

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 22 March 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. This is based on our current assessment and is subject to change.

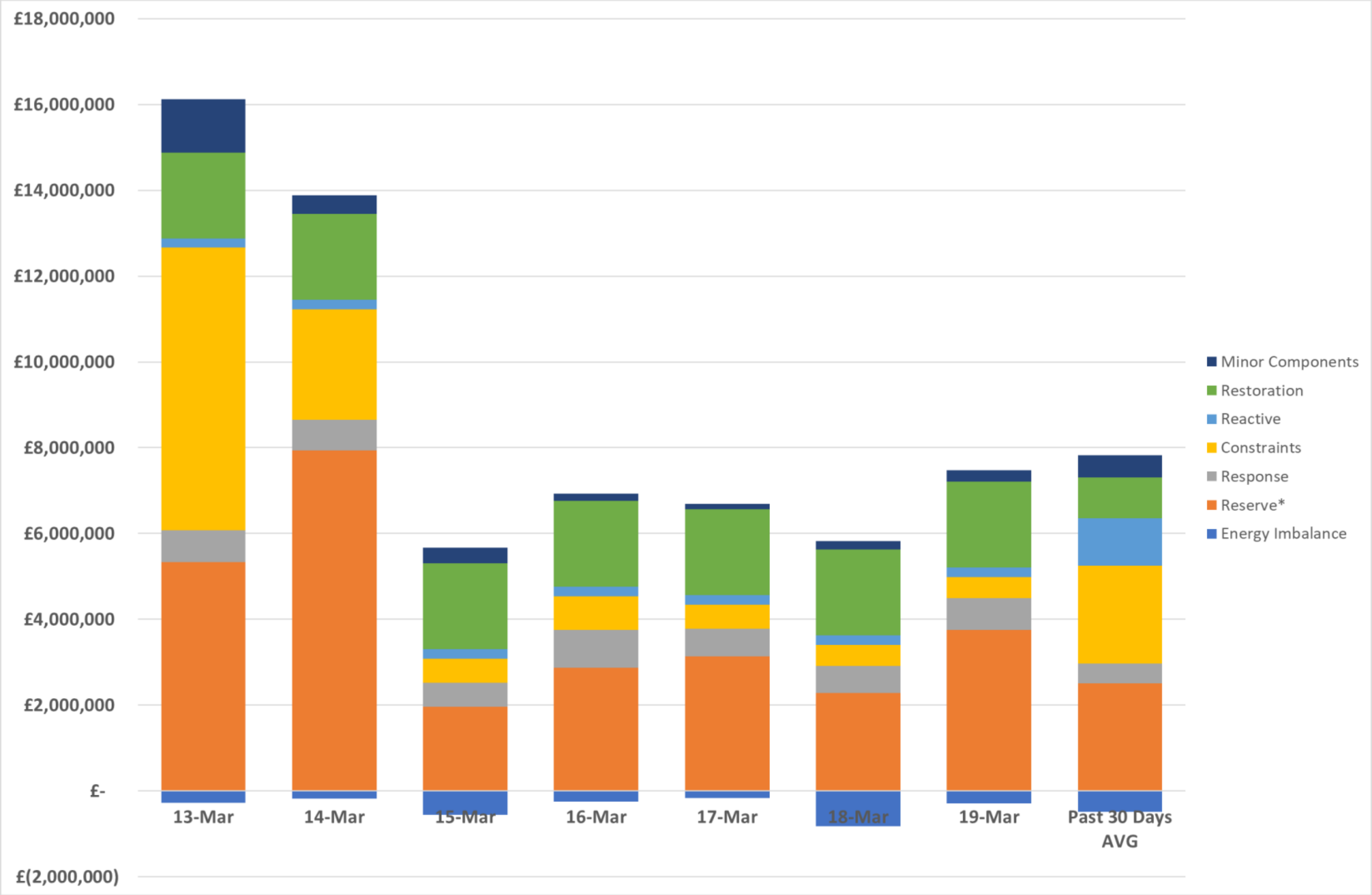
Day	Date	Notified Generation (MW)	Wind (MW)	IC Flows* (MW)	Peak demand (MW)	Indicative surplus (MW)
Thu	23/03/2023	40097	12120	4270	35820	15850
Fri	24/03/2023	40170	12040	4270	34190	17460
Sat	25/03/2023	39920	7190	4270	33200	13710
Sun	26/03/2023	39660	10670	4270	32810	17140
Mon	27/03/2023	40095	4330	3890	35920	7980
Tue	28/03/2023	40035	9360	3890	35460	13310
Wed	29/03/2023	40410	11680	3890	35370	15620

*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



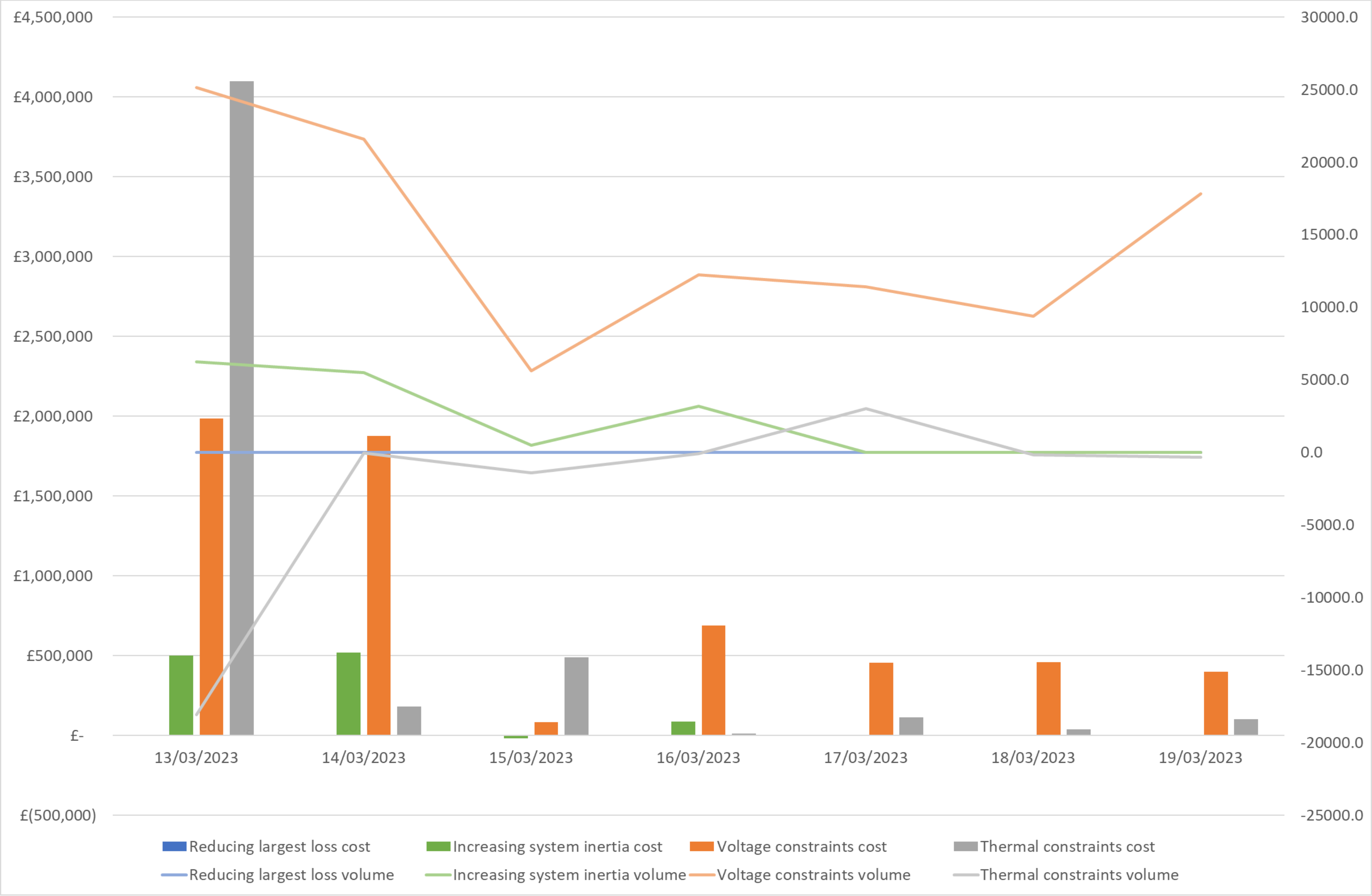
Date	Total (£m)
13/03/2023	15.8
14/03/2023	13.7
15/03/2023	5.1
16/03/2023	6.7
17/03/2023	6.5
18/03/2023	5.0
19/03/2023	7.2
Weekly Total	**60.1**
Previous Week	**51.6**

Reserve and Constraints costs were the key cost component throughout 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



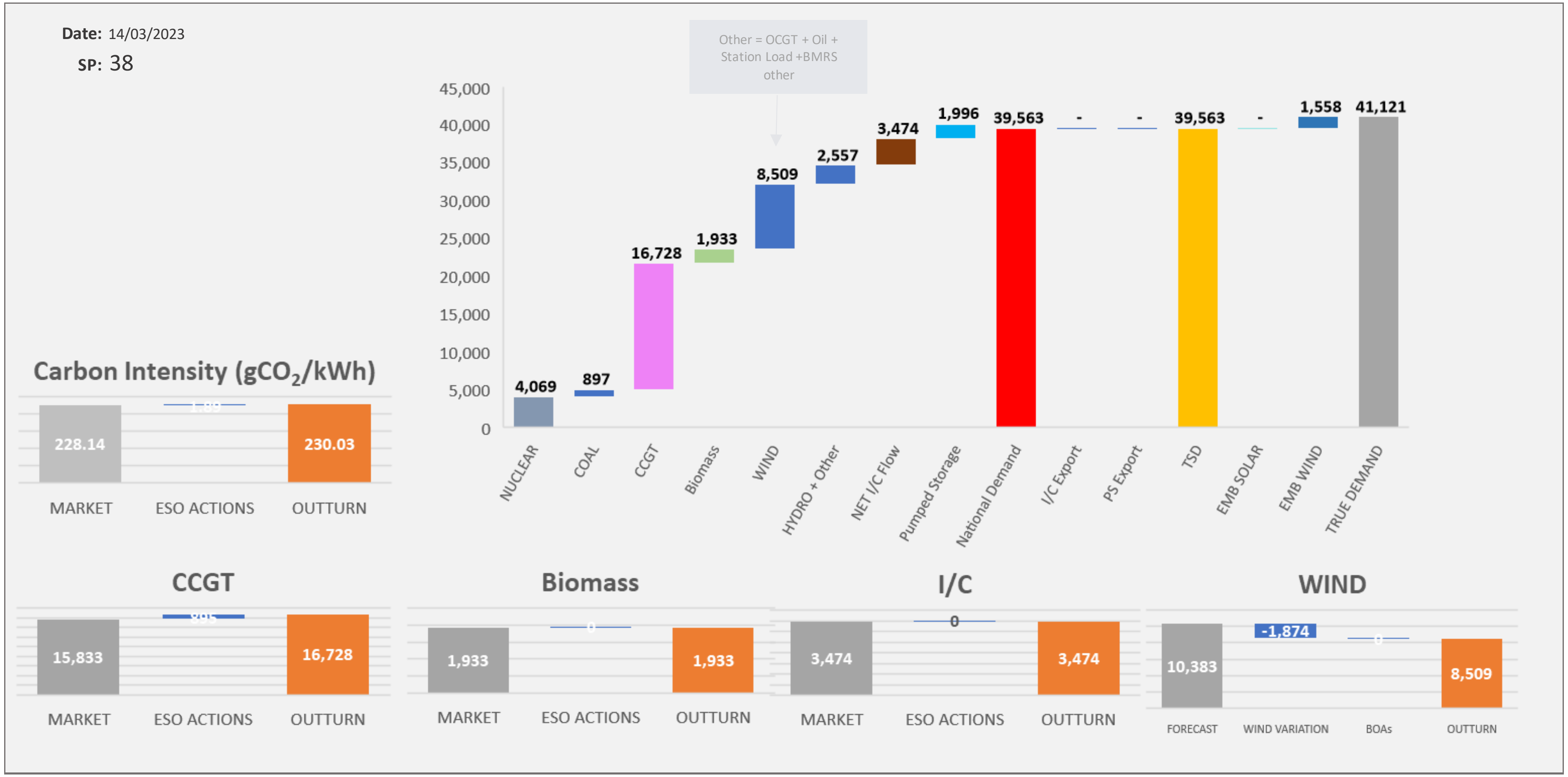
Thermal – network congestion
Actions required to manage Thermal Constraints throughout the week with highest costs on Monday.

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

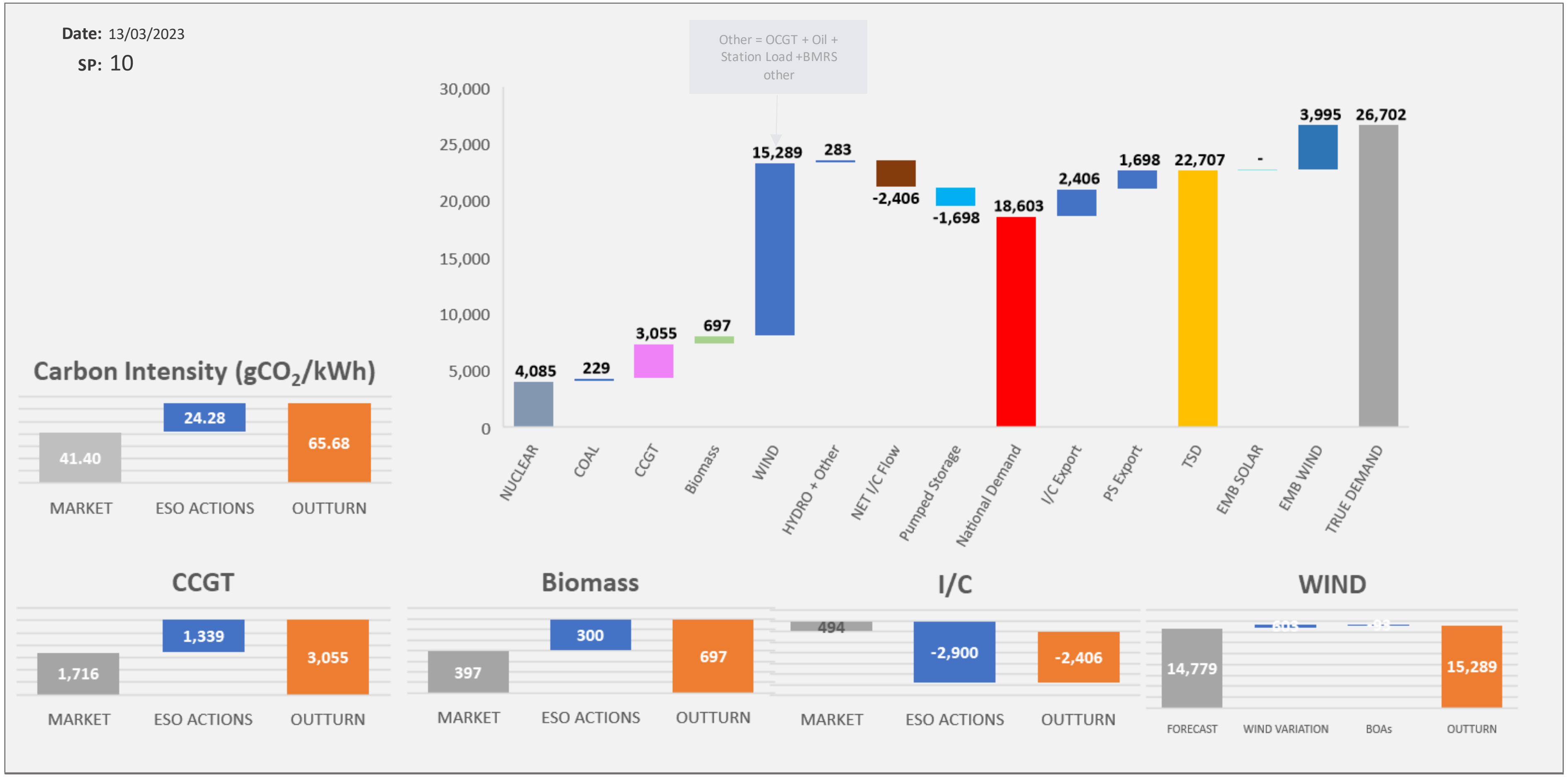
Managing largest loss for RoCoF
No intervention was required to manage largest loss.

Increasing inertia
Intervention was required to manage system inertia from Monday to Thursday.

ESO Actions | Tuesday 14 March – Peak Demand – SP spend ~£218k

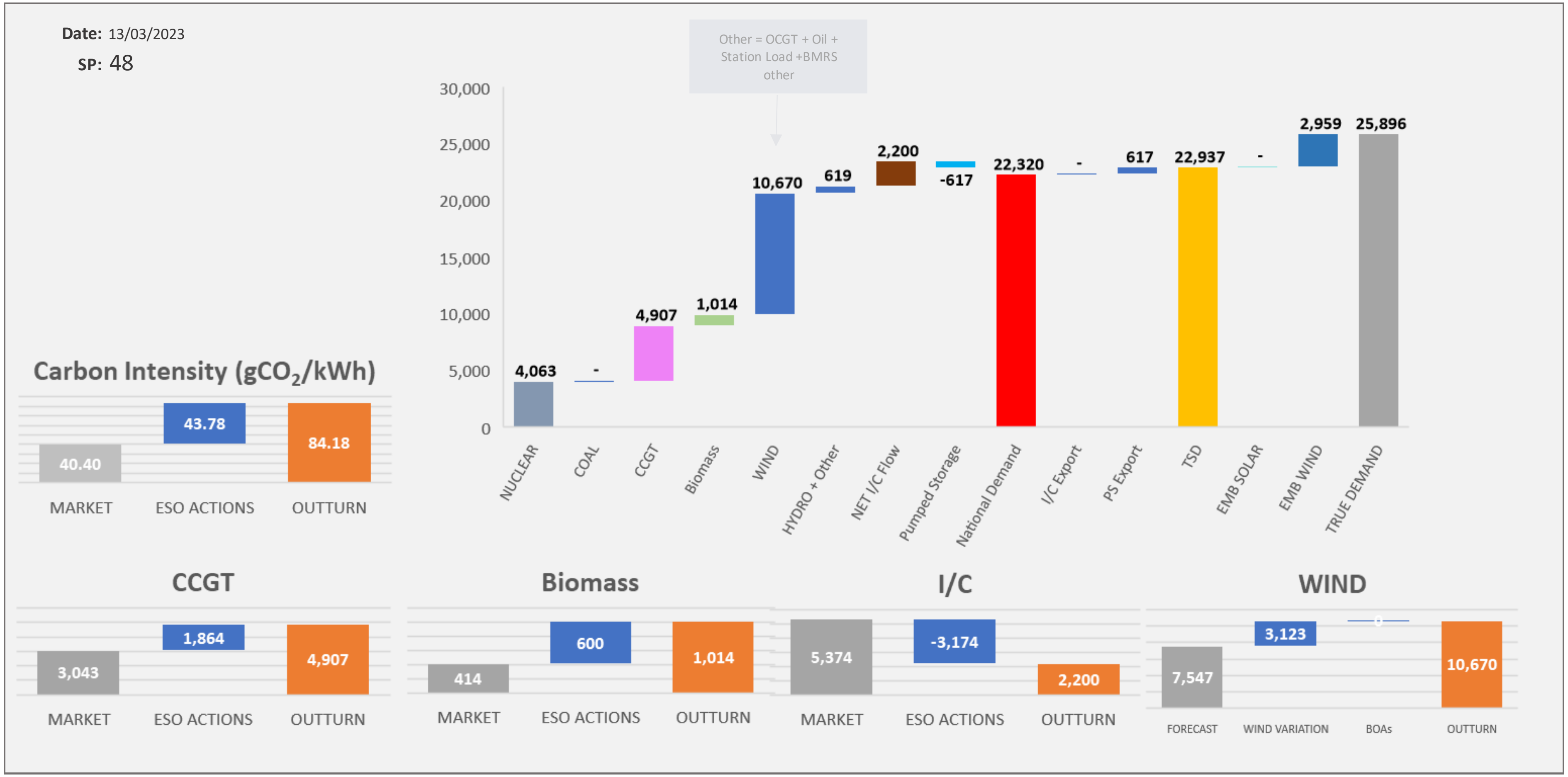


ESO Actions | Monday 13 March – Minimum Demand – SP Spend ~£360k



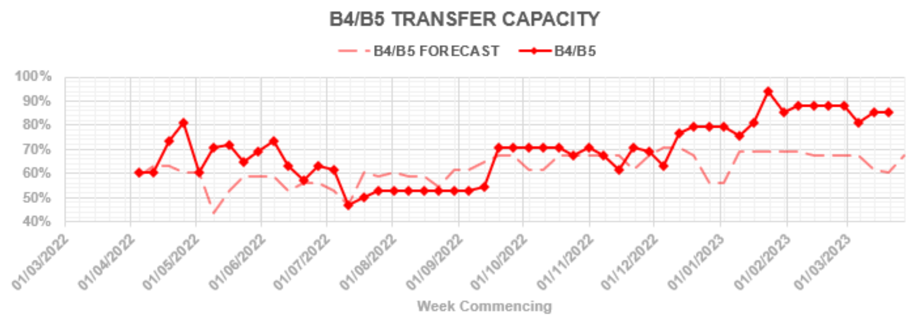
Carbon Intensity data on data portal: https://data.nationalgrideso.com/carbon-intensity1/carbon-intensity-of-balancing-actions

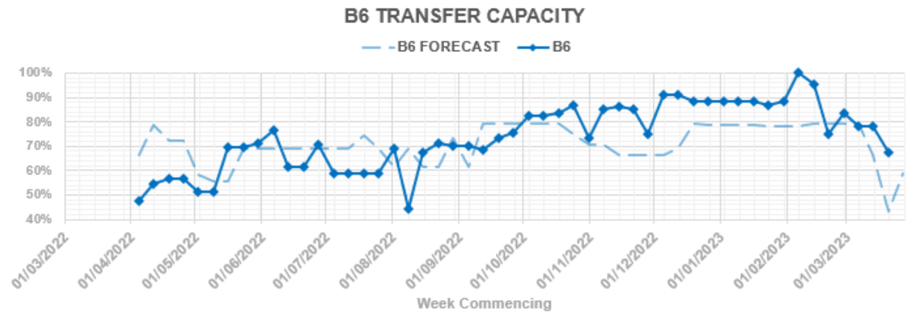
ESO Actions | Monday 13 March – Highest SP Spend ~£654k

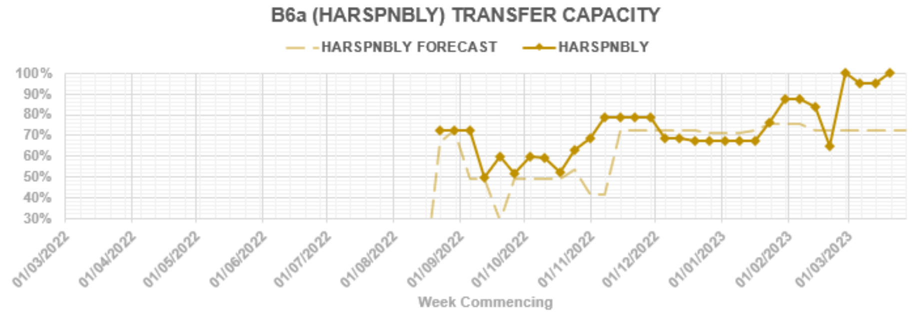


Carbon Intensity data on data portal: https://data.nationalgrideso.com/carbon-intensity1/carbon-intensity-of-balancing-actions

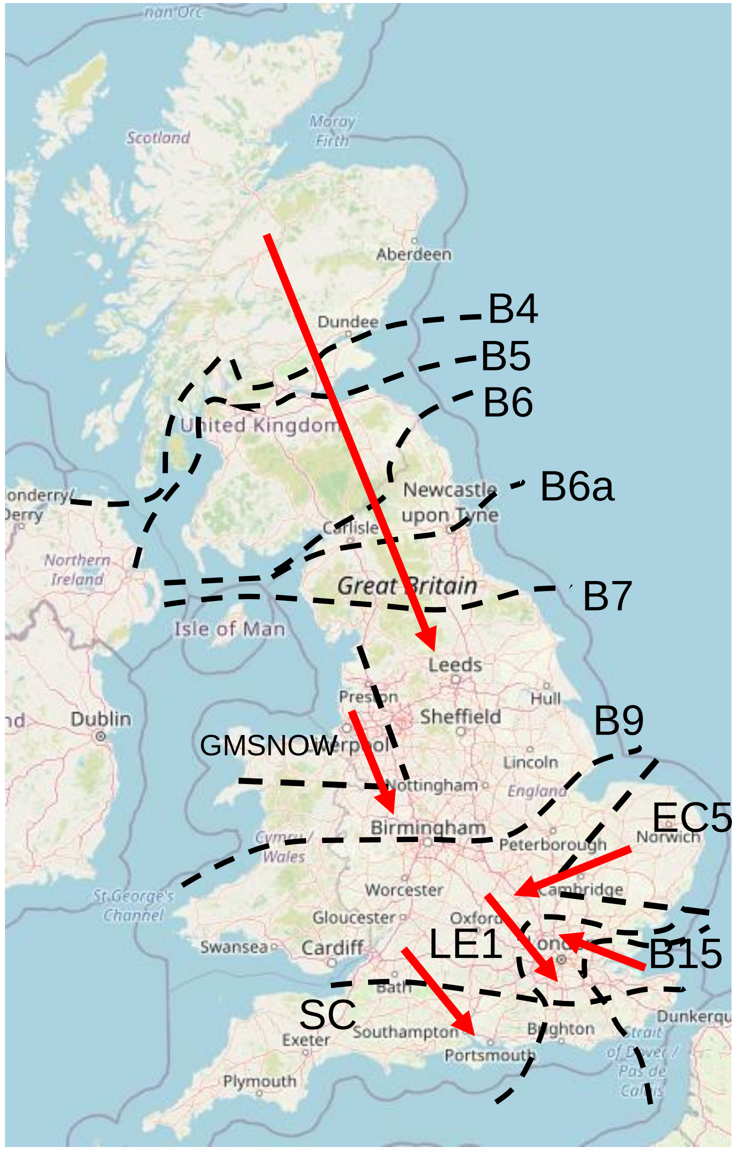
Transparency | Network Congestion





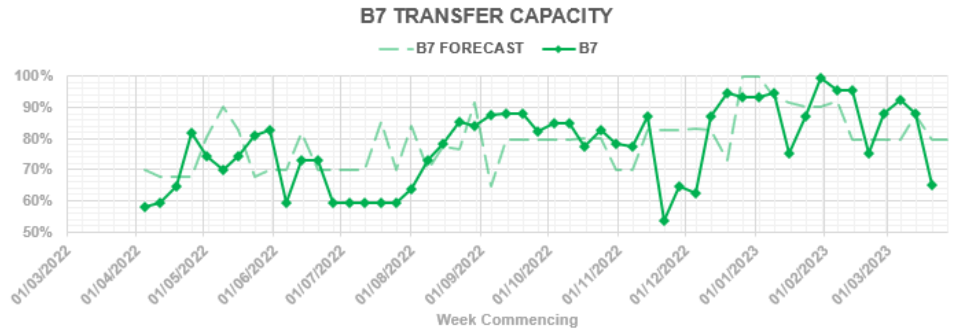


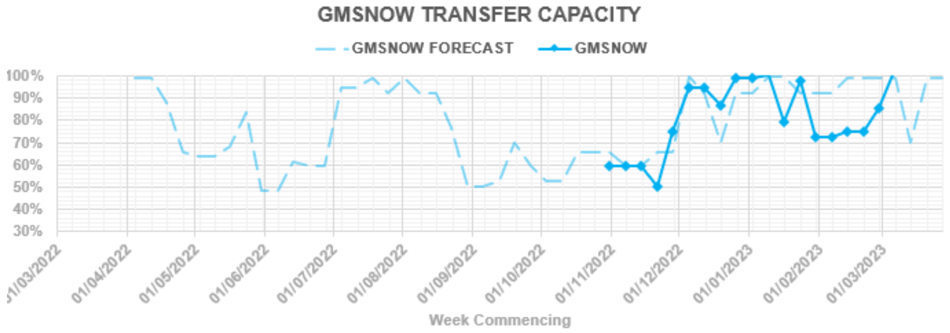
Boundary	Max. Capacity (MW)
B4/B5	2700
B6	4500
B6a	5800
B7	6050
GMSNOW	4500
B9	9800
EC5	5000
LE1	8500
B15	6600
SC	6700

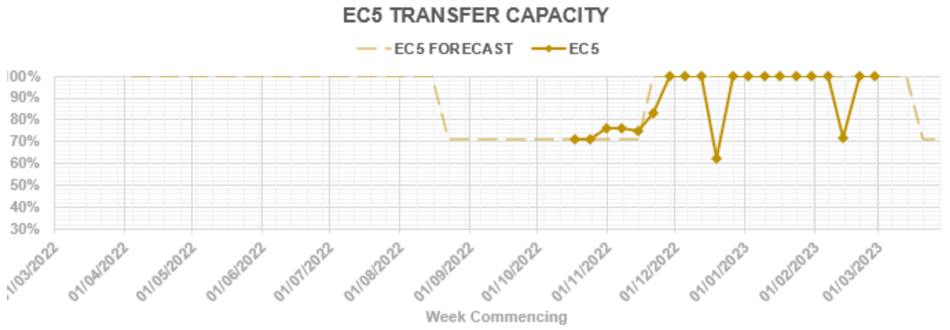


Day ahead flows and limits, and the 24-month constraint limit forecast are published on the ESO Data Portal:
https://data.nationalgrideso.com/data-groups/constraint-management

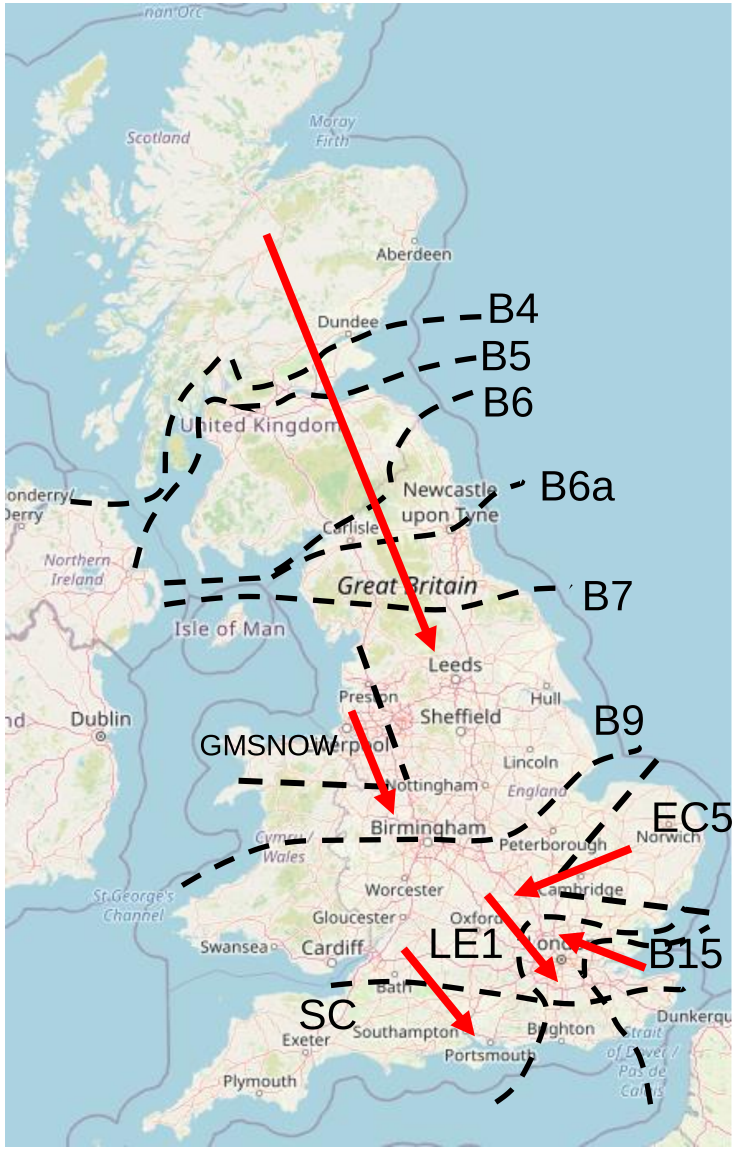
Transparency | Network Congestion





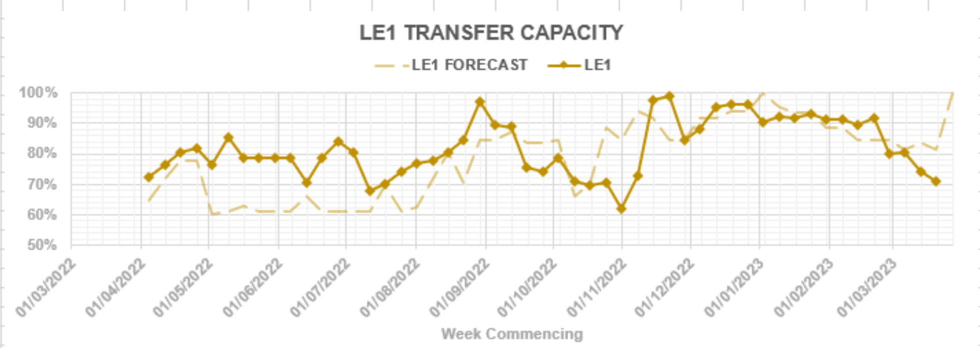


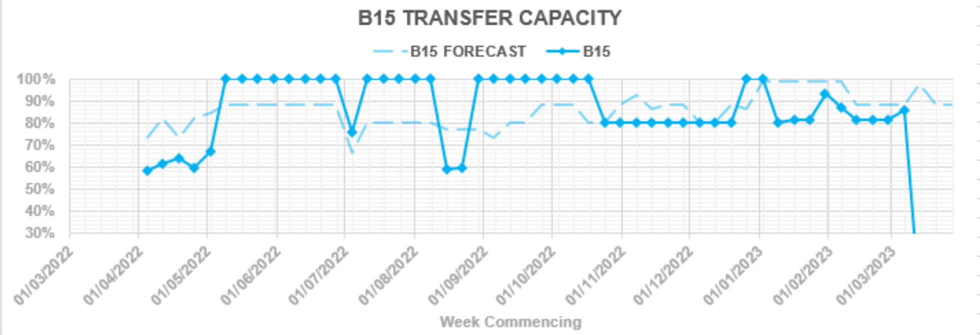
Boundary	Max. Capacity (MW)
B4/B5	2700
B6	4500
B6a	5800
B7	6050
GMSNOW	4500
B9	9800
EC5	5000
LE1	8500
B15	6600
SC	6700

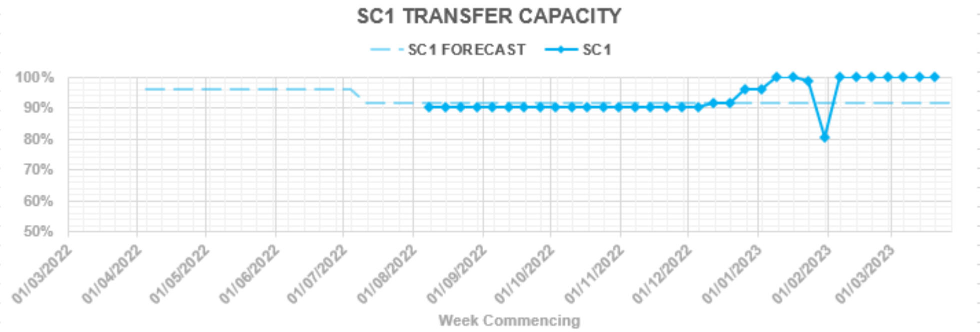


Day ahead flows and limits, and the 24-month constraint limit forecast are published on the ESO Data Portal:
https://data.nationalgrideso.com/data-groups/constraint-management

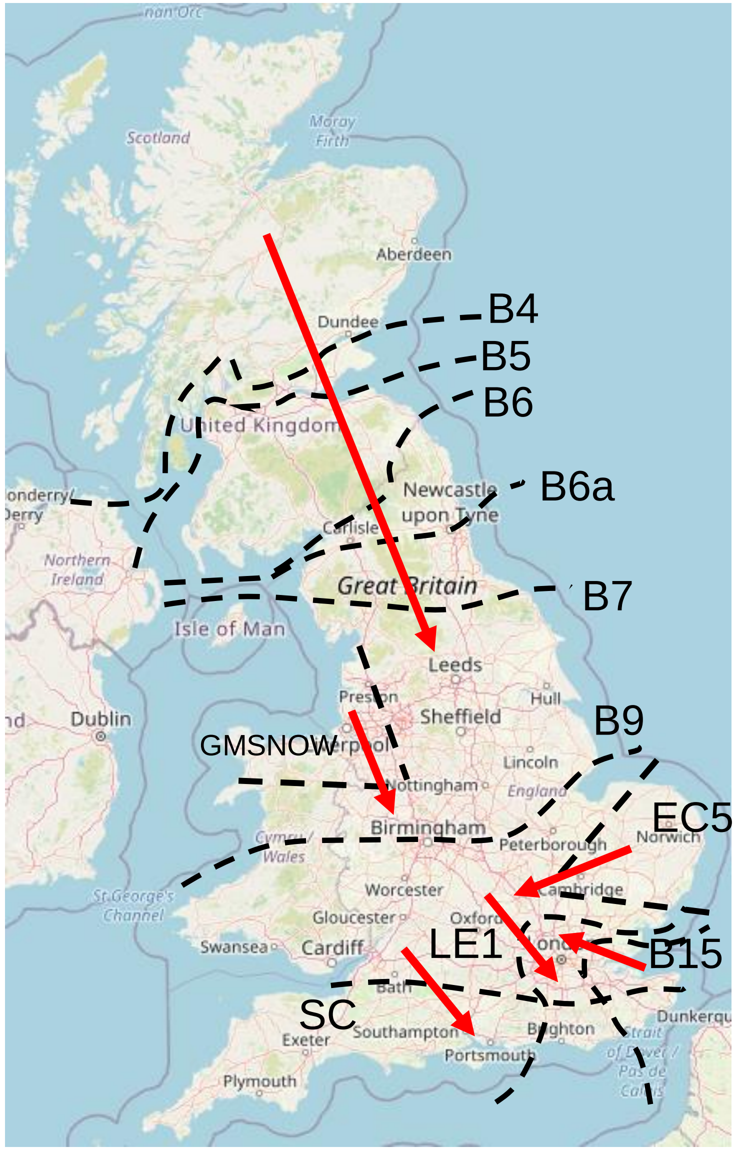
Transparency | Network Congestion







Boundary	Max. Capacity (MW)
B4/B5	2700
B6	4500
B6a	5800
B7	6050
GMSNOW	4500
B9	9800
EC5	5000
LE1	8500
B15	6600
SC	6700



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

Previously asked questions

Q: Drax5+6 warmed for non-proving runs 14/03/2022. Considering there was no issues with margins, little/no chance of ICs flipping to full exports and no indication that they'd be required for energy, was this just transmission network contingency to manage Pennine constraint in case of plant trips?

A: This question was answered during last week OTF presentation. Please see slide 5 in the pack for the OTF on 15 March.

Q: On Friday 10th March, why was Coryton offered on £215/MWh for the evening peak when Seabank 1 was spare much cheaper at £190/MWh? Coryton was not system flagged.

A: We do not comment on individual units or actions at this forum. For information: our Dispatch Transparency dataset has information for actions not taken and this can be found on our data portal at: ESO Data Portal: Dispatch Transparency - Dataset| National Grid Electricity System Operator (nationalgrideso.com)

Q: Regarding order of actions. Please can slides be replicated with all volumes/margins included? Appreciate the slides today, but still lots of grey areas which leave questions unanswered.

A: We will not providing further detail in this forum.

Previously asked questions

Q: Noting that on March 7 France was Importing hard (up to 11GW) at the Peaks and not a lot less across the Daytime. Luckily Germany was Exporting hard (up to 11GW) to every neighbouring Country (including Denmark and Norway).

A: Thank you for your comment. France has approximately 18GW of interconnections to other countries. I think that we can see that they were ultimately able to support exports to GB over the peak because of imports from other countries.

Q: With 7GW of I/Cs is it now appropriate to ask ENTSO-E for a better real time to prediction data interface for all connected parties to see what might happen? We, Fraunhofer can show real time for all connected countries (I/C only to the Russian system) but metering they have can be delayed or missing.

A: Thanks for the feedback, we are considering all data inputs around demand and generation inputs to give us better operational insight.

Q: Apologies if I missed this but you requested volume on IFA 1 and IFA 2 via BSAD but none was taken. Why was this? Did you not receive any offers?

A: After the auction requirement had been sent out, RTE requested that we did not trade with them due margin issues related to the strikes in France. Unfortunately this information is not publicly available though, RTE’s information not ours (link).

Previously asked questions

Q: Did NGESO save the consumers money by despatching WBPS 1 & 2 over RHYPS? Given that the coal contracts are already a sunk cost effectively but the cost of despatching RHYPS at £5,750 was c. £10m.

A: The decision to dispatch coal is not a cost one but is based on our assessment of the need for enhanced action.

Q: Have you a link available yet to register for the March 28 Inertia event please?

A: Please see the slide in today's pack (22 March 2023).

Q: I think the problem with timescale questions is to get across the understanding of handling 'time in two dimensions'. Target time and Lead time. Would animated presentations help?

A: Thank you for this feedback. This is a really interesting suggestion which we will consider as we develop new materials.

Q: And what about analysis of the counterfactual scenario where units were instructed ahead of coal?

A: Thank you for this suggestion. We will share this idea with the team conducting the review of Winter 2022/23.

Q: Noting the question on Transparency. Is there yet any more information on the structure of the FSO and whether the ESO functions might be 'split' between Planning and Operation?

A: Please see our webpage for the currently available information and contact details for our Transformation team.

Previously asked questions

Q: Where are the ESO Remit Obligations documented please?

A: Please see the links to the guidance documents below:

- Acer
- Official Journal of the European Union
- Ofgem

Q: Why was Rye house dropped yet WB-2 synchronised afterwards?

A: We do not comment on individual units or actions at this forum. However it is important to remember that once a BOA is issued this is a commitment that the unit will achieve MNZT (minimum non-zero time) even as the energy balancing and system operation requirements change over time.

Please see the details of the timeline on the last week's OTF presentation (link).

Previously asked questions

Q: BPS says: The need to instruct in accordance with the winter contingency service contracts would normally be in order to maintain system security in the event that all valid and feasible Bids and Offers have been accepted in the BM. Note - accepted, not ordered.

A: For the avoidance of doubt, the decision to instruct the winter contingency service will be taken based upon the prevailing system conditions on the transmission system. Under these exceptional circumstances, the price of other available actions offered through the BM will have no bearing upon the decision to instruct the winter contingency service.

Q: Is there a timing issue around buying NBM plants for energy vs assessing the peak need in the BM or via coal?

A: ESO when assessing its operating plans will consider all options is has available to it from BM and NBM submitted data. This allows the ESO to create a plan that meets both system and energy requirements. Timing is always a factor in developing plans as some commitments need to be made many hours before real time due to the nature of the provider.

Q: Should you drop the regular content from the slide pack when a topic comes up like 7th March? We now only have 15 minutes for questions on slido and there are some important ones to be answered today.

A: Thank you for your feedback. We do discuss the balance of forum content every week and do our best to anticipate the best way to use the time. We included the regular content this week to allow us additional time to work on our responses to your questions.

If you have additional questions after the Sli.do closes today you can also use the advance questions form or email: .box.NC.customer@nationalgrideso.com

Advanced questions

Q: On the ESO Data Portal a dataset called “Historic GB Generation Mix and Carbon Intensity” is published. Amongst the different generation types included is one labelled “OTHER”. Output from this “OTHER” category has been increasing over time since early 2018 and now averages more than 300MW with maximum monthly values as high as 1800MW.

The ESO does provide a list of BMUs to Elexon identified as “OTHER” that is published on the Generation by Fuel Type tab of the Elexon Kinnect Insights Solution and there is a similar but not identical list published on BM Reports. However the limited number of BMUs in these lists does not explain the magnitude of generation output attributed to “OTHER”. Note that some of the BMUs in the “OTHER” list published on BM reports are even labelled as “dummy”.

Please can you provide more detail on the units that are included in the “OTHER” category of generation output published in your “Historic GB Generation Mix and Carbon Intensity” dataset and ideally a comprehensive list of these units.

A: We use the *fuelhh* (half hourly aggregated generation) dataset from Elexon including their numbers for the Other category. The link gives some insight into what goes into the Other category. We are unable to provide more insight into the specific units that are included in that category. If you require the information you will need to ask Elexon for further detail about their data at BMU level.

Essentially, anything that doesn't fit into the existing categories will get put under 'other'. This likely includes technologies like battery storage which might help explain why the numbers have been increasing.

Advanced questions

Q: As noted in the latest OTF, Government has requested an extension to the contingency contracts for winter 2023/24. However, Ratcliffe Unit 3 secured a Capacity Market Agreement in the T-1 2023/24 auction for the same period. Please can ESO confirm that this unit will therefore not be eligible for another contingency contract, as it will already be 'in market'?

A: We do not comment on individual units or actions at this forum. However, units which are available in the markets will not be eligible for the contingency contracts.

Q: Economic incentives relating to Drax U1's CfD contract have meant that it hasn't run this winter and its long NDZ appears to have effectively made it unavailable to the ESO this winter in operationally useful timescales. Given that:

- the Department of Energy Security and Net Zero are interested in having additional non gas fired capacity available next winter;
- Drax and EDF have stated that their coal units are closing at the end of March 2023; and
- there is a risk that Drax U1 faces similar economic incentives next winter

is the ESO going to consider a contractual arrangement with Drax U1 that would make it available to the ESO to run in operationally useful timescales if it isn't self dispatching commercially?

A: We do not comment on individual units or actions at this forum. However, units which are available in the markets will not be eligible for the contingency contracts.

Advanced questions

Q: There is circa 1 GW of de-rated Demand Side Response (DSR) capacity contracted for the 22/23 Capacity Market Delivery Year. If an Electricity Market Notice remains in force at delivery, then logically a Capacity Market Notice will also be active at delivery and Capacity Market DSR providers will be incentivised to reduce demand. What was the ESO’s assumption (in MW) of the impact of Capacity Market DSR on forecast demand on Tuesday 7th March when assessing system margins and deciding whether the threshold for issuing an EMN had been reached or not?

A: As we have mentioned previously, we haven’t ever experienced a CMN being active in real-time and so we have limited information on which to base any assumptions about what might be delivered by Capacity Market participants. However, we operate the system to manage generation and demand fluctuations on a daily basis and we have a number of tools we can use to mitigate the risks.

A CMN was not issued on 7 March which was because the data input into the algorithm did not result in a margin less than 500MW, the CMN trigger level. This was largely driven by the interconnector position assumptions within the CMN calculation.

Consequently, we did not include an assumption about what capacity would be delivered in response to the CMN.

Questions we are still working on

Q: Could you share the link to the content of the new Construction Planning Assumptions and storage modelling?

Q: I have few queries from today’s session (8th March):

- The presenter mentioned that BALIT service is now called as “Excess Energy” service. I understood that service is still in use and only name is changed but it is mentioned in the ppt that ESO can not use this service (see snip). On a different slide: it is mentioned that Excess energy service is used by NGESO (see snip2).
- Please clarify can NGESO use “Excess Energy” service?
- If yes: What is the minimum notice period?
- If no – what is the minimum notice period?
- Please explain in detail how, when & why “excessive Energy” service is used by NGESO.

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