



ESO Operational Transparency Forum

8th December 2021

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

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) 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:
<https://data.nationalgrideso.com/plans-reports-analysis/covid-19-preparedness-materials>

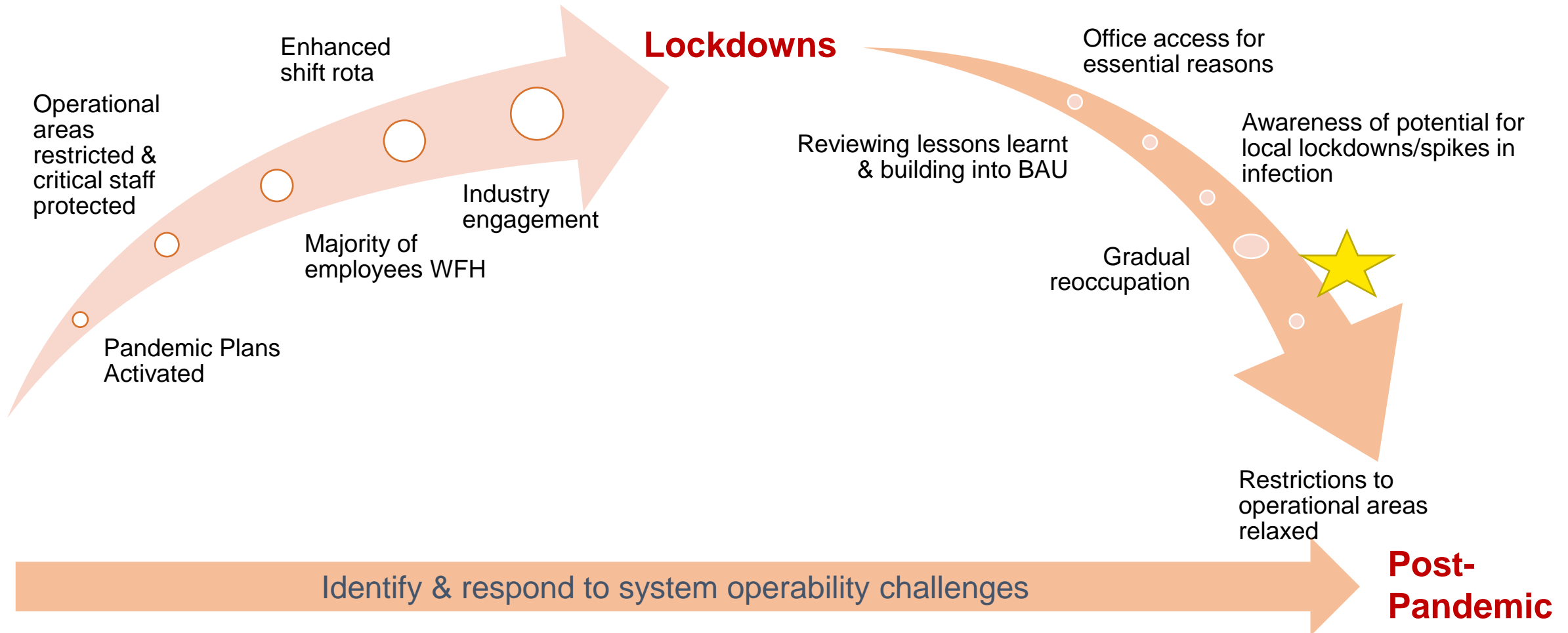
Regular Topics

- Questions from last week
- Business continuity
- Demand review
- Costs for last week
- Outlook
- Constraints

Focus Areas

Capacity Market Notice - Richard Price

Protecting critical staff to maintain critical operations



Questions outstanding from last week

Q: Will you expect to take actions to supplement margins over the coming week if the forecast margins you presented materialise?

A: We will continue to monitor margins and take all normal actions to ensure that our requirements are met in real time, these include taking all available options in the BM (and warming plant to ensure it is available in the BM) and any trading actions available. We also, if required will work with the network operators to ensure congestion is minimised where possible, noting that not all congestion is caused by network outages and the nature of works can mean that it is not always possible to return circuits in the required timescales.

Q: Any trader can tell you the increased cost are from CCGTs dropping PNs during intraday and increasing their first offer pair to 3-4000 GBP because the control room doesn't have time to start up sufficient new CCGTs between intraday gate closure and delivery. Is this legal?

A: All PN data submitted to NGENSO (inclusive of pre-gate closure data) should be reflective of the BMUs expected output.

If we have reasonable grounds of suspicion that a submitted PN does not reflect the generators intended running pattern and therefore a breach of article 5 of REMIT/Grid Code may have occurred, it would be reported in line with our market monitoring obligations.

BMUs are entitled to revise their PNs if at all times they are reflecting this expected output.

(BC1.4.3 “BM Participants should use reasonable endeavours to ensure that the data held by The Company in relation to its BM Units and Generating Units, is accurate at all times.”)

If you want to report a specific instance you can send this to: Marketreporting@nationalgrideso.com and we will review the case.

Questions outstanding from last week

Q: What's the point of the DA STOR market? Shown a clear preference for spinning reserve at CCGTs for £3000+ but unprepared to pay anything higher than £10 for actual reserve. If you want actual reserve, why aren't you prepared to pay for it?

A: The day-ahead auction for Short Term Operating Reserve (STOR) is designed to “ringfence” generation capacity to come online in the event of a significant loss elsewhere in the system.

The ESO must balance the need for sufficient STOR against the cost of securing reserve which, ultimately, will be reflected in consumer bills.

STOR prices must be capped and controlled as often, the reserve, as per its definition, will not be required.

It should be noted that the £10/MWh price for STOR referred to in the question is only the availability price – the price the ESO pays the generation unit to stand idle. If the unit is required, they will be paid a utilisation payment per MWh supplied.

The control room may be required to purchase additional reserve in real time if the STOR secured through the auction process is insufficient to account for a significant change in either demand or supply. If the system is particularly tight, then the price of reserve for a peak demand period will be very high.

If the electricity system is operating with a healthy margin, the STOR auction guarantees payment to a unit whether it is required or not – provided the unit in question is accepted. A unit would not be guaranteed such a payment outside of the STOR auction process.

Q: Can you explain the differences and the causes of the differences between your margin forecast for the last week and outturn ?

A: We are not able to report on every day for which we provide data. The main differences were explained by differences in the wind forecast, due to uncertainty in meteorological forecasting. On two days more generation experienced unplanned breakdowns than the average breakdown rate would imply. As implied by our indicative values, on no days was the outturn margin tight.

Questions outstanding from last week

Q: Knowing that margins were already going to be tight this winter, why has more action not been taken to mitigate constraint management and limit costs to consumers?

A: We continuously review the TO work plans to ensure that outages are placed as optimally as possible. There is a need to carry out maintenance and work to both increase capacity of the network and connect new customers. We have an obligation to facilitate this and it will not always be possible to do this at the ideal time but our planning teams regularly review work with our TO colleagues to ensure the correct balance between work and cost. Our 5 point plan is focussed on ensuring we are continuously focussed on management of constraint costs. See our latest update here <https://www.nationalgrideso.com/news/our-5-point-plan-manage-constraints-system>

Q: Can you shed some more light on the LE1 constraint (as there is no graph)? When exactly was the constraint somewhat lifted and how big are we talking percentage-wise/absolute? Does this mean less restrictions on the interconnectors as seen in the past weeks?

A: Partial outage returned on the 26/11. Increase in limit is around 1.4GW, which is roughly 20%. It means there is less risk that interconnector trades will be required to manage flows across the LE1 boundary. There may be trades for other reasons.

Q: Would be interesting to see a breakdown of costs between forward/spot/BM

A: We aren't privy to the cost of trading in the forward and spot markets as this is the rest of the market that is trading. The cost of our trading activities is available on the data portal.

Q: Whilst you don't engage in proprietary trading deliberately, your trading activities must generate profits /losses? How are these treated?

A: Our trading activity is to reduce costs to the end consumer, compared to the alternative in the BM. If we don't trade, the control room would need to solve the requirement in the BM

Questions outstanding from last week

Q: What is driving procurements way different than the DC demand expectation communicated in the NG Market Information Report?

A: The MIR values are based on historical monthly data to infer what future requirements may be. System conditions may vary between longer term forecasts of requirements vs. the daily buy order where we have access to more accurate information and this is what drives variations in DC requirements

Q: When they expect to publish their D-4 DC demand forecast?

A: We expect to start sharing the 4-day forecast before Christmas. We will issue a notification via the Future of Balancing Services email subscription to notify industry when the document is online

Q: Have you looked at the interaction of Gas Balancing Notifications and power station availability and how electricity and gas control operations interact?

A: ESO & GSO are working together on the RIGSSE project which is a Review of the Interaction of a Gas Supply Shortage on the Electricity system. This work is covering a range of aspects including whole system coordination, sharing of information, ESO/GSO situational awareness, system warnings, gas load shedding hierarchy, etc so that the best overall whole system response is delivered on the day, for the benefit of gas & electricity consumers. The work is due to conclude in March with measures to be implemented from April onwards. The project reports to a E3C task group chaired by BEIS

Q: With Hunterston coming out is expected constraints to decrease in Scotland?

A: With the decommissioning of Hunterston, the baseload generation volume in Scotland will reduce by 1000MW. However, more renewable and flexible/intermittent generators, most notably Seagreen, Nearth na Gaoithe and Firth of Forth windfarms are being connected that will increase the total volume.

Questions outstanding from last week

Q: Are Transmission Owners (TOs) incentivised to complete maintenance on-time during the less operationally expensive times i.e. Summer. If not then this may explain why constraint costs are so high.

A: The TOs need to complete maintenance, reinforcement and customer connection work all year round. We do look at constraints at different timescales – both in our planning timescales and in real time.

Actions are taken in all timescales to ensure that we are optimising these as far as possible, and capacity is maximised so that we minimise spend associated with managing constraints. TOs are not incentivised to complete work in summer verses winter, but the ESO does work closely with the TOs build the transmission outage plan to optimise the placement of outages and minimise constraint spend while delivering the work required on the network.

Q: How are the costs of Bulb etc going bankrupt getting recouped? Will that be coming through DNUoS or BSUoS or something else?

A: New providers claim through Last Resort Supply Payment (LRSP) scheme. This is funded out of DUoS, eventually paid for by customers.

Questions outstanding from last week

Q: Can the outage plans for the winter period be revisited so that more of the network can be available to reduce constraint costs ?

A: Outages on the B2/B4 boundaries are planned to return on the 18th Dec, and then continue from the 4th of Jan. The work is to connect a wind farm. In November there have also been NOA reinforcement works to increase the capacity of the East Coast route, circuit outages returned on the 9th Dec, and continue from the 27th Jan. Some asset replacement work continues in the south of Scotland, but a temporary circuit will be commissioned from the 10th Dec that should alleviate capacity restriction. Delaying outages would knock on work planned for 2022, delaying network reinforcement work and the connection of renewable generation.

Q: Since the constraint payments are going out of hand, is the ESO planning on reviewing projects like GEMS (Generator Energy Management System) and replacing them back with physical reinforcements that were dropped initially in favour of those GEMS-like projects ?

A: The ESO evaluates the use of network build and non-build solutions through a number of processes (e.g. the Network Options Assessment and Strategic Wider Works) in conjunction with the relevant Transmission Owners. These decisions are kept under review as various factors change and the ESO is currently working with SPT to evaluate the most economic and efficient future solution for this part of the transmission network.

Future forum topics

While we want to remain flexible to provide insight on operational challenges when they happen, we appreciate you want to know when we will cover topics.

We have the following deep dives planned:

January:

Balancing Services Adjustment Data (BSAD) Overview

12th Jan: Forecasting methodology (high level overview)

Future:

SO – SO Trading

ESO Review of Balancing Market

Every day the ESO balances supply and demand across the power system. In recent weeks there have been some very high-cost days in the balancing mechanism. As those costs are ultimately borne by consumers it is important to fully understand the factors driving the market.

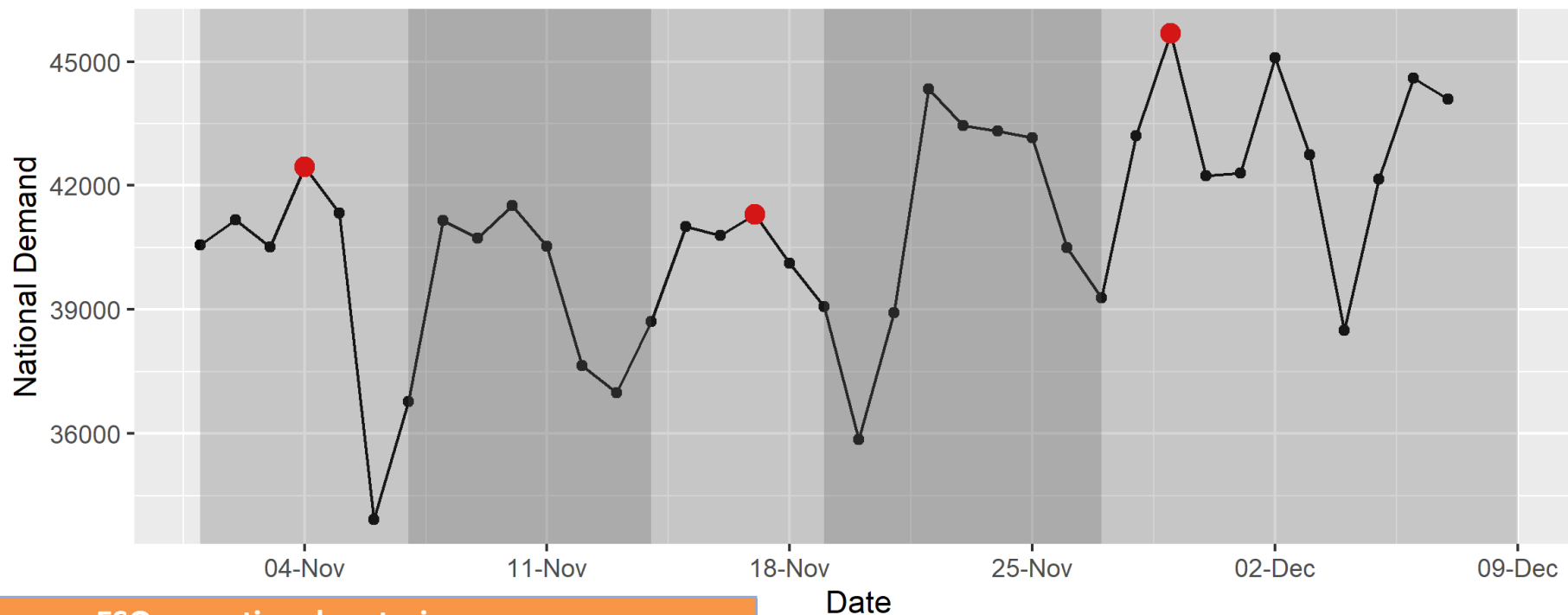
The ESO will therefore undertake a review of the balancing market. It will be run by the National Grid ESO Market Monitoring Team and will be carried out by external consultants.

There are many issues that can, and will, have contributed to the high costs. Our review will seek to ensure that, at a time when households' budgets are under strain, consumers can continue to have confidence in the market.

Update: Terms of Reference published 6 December

<https://www.nationalgrideso.com/news/balancing-market-review-terms-reference>

Demand | Indicative Peak National Demand

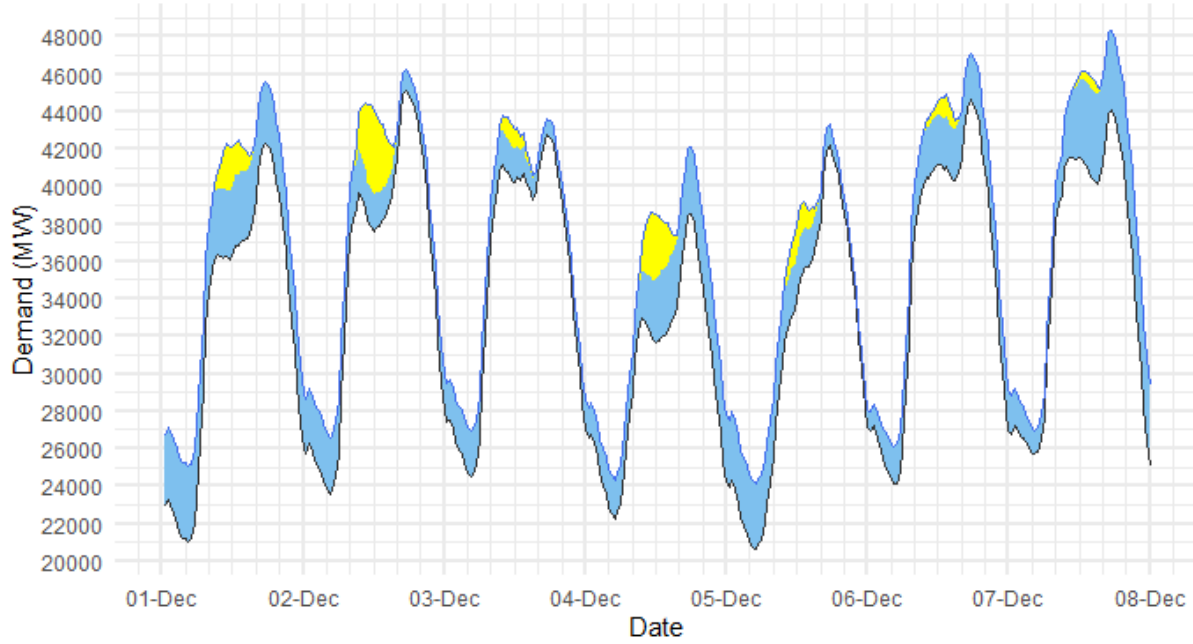


ESO operational metering			
Date	Time (HH ending)	National Demand (MW)	Estimated triad avoidance (HH corresponding with the time of the peak) (MW)
29/11/2021	1730	45679	0
04/11/2021	1730	42443	0
17/11/2021	1730	41303	0

National Demand does not include station load

Demand | Last 7 days outturn

ESO National Demand outturn 01-07 December 2021



Renewable type

- Distributed_PV
- Distributed_Wind

Demand type

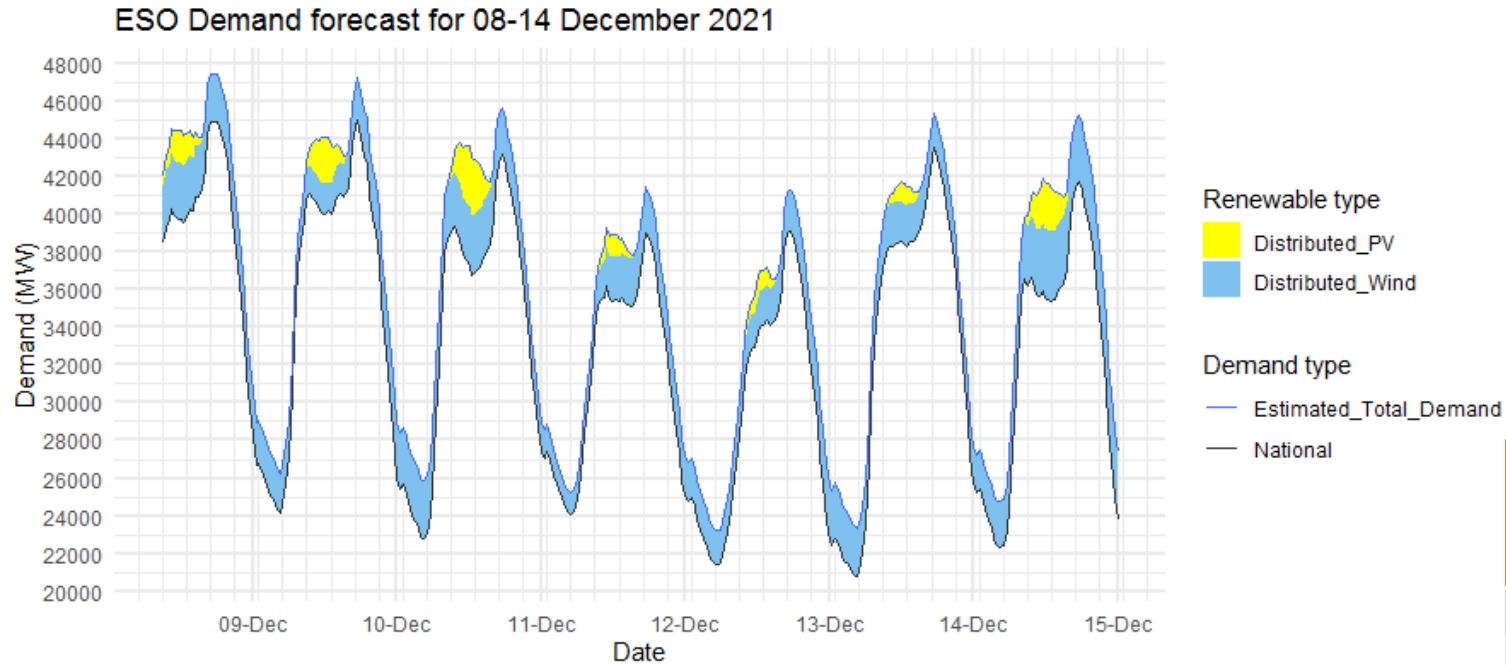
- Estimated_Total_Demand
- National

Date	Forecasting Point	FORECAST (Wed 01)		OUTTURN			
		National Demand (GW)	Dist. wind (GW)	National Demand (GW)	Triad Avoidance est. (GW)	N. Demand adjusted for TA (GW)	Dist. wind (GW)
01 Dec 2021	Evening Peak	42.8	3.2	42.3	0.0	42.3	3.3
02 Dec 2021	Overnight Min	23.0	2.7	23.6	n/a	n/a	3.0
02 Dec 2021	Evening Peak	45.4	1.1	45.1	1.1	46.2	1.1
03 Dec 2021	Overnight Min	24.7	1.9	24.5	n/a	n/a	2.5
03 Dec 2021	Evening Peak	42.9	1.6	42.7	0.0	42.7	0.9
04 Dec 2021	Overnight Min	22.1	2.3	22.3	n/a	n/a	2.0
04 Dec 2021	Evening Peak	38.6	2.7	38.5	0.0	38.5	3.6
05 Dec 2021	Overnight Min	21.6	2.2	20.6	n/a	n/a	3.5
05 Dec 2021	Evening Peak	41.5	1.1	42.2	0.0	42.2	1.2
06 Dec 2021	Overnight Min	24.1	1.4	24.1	n/a	n/a	2.0
06 Dec 2021	Evening Peak	44.8	2.2	44.6	0.0	44.6	2.5
07 Dec 2021	Overnight Min	23.1	2.9	25.7	n/a	n/a	1.3
07 Dec 2021	Evening Peak	44.0	2.9	44.1	0.0	44.1	4.2

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

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.

Demand | Week Ahead

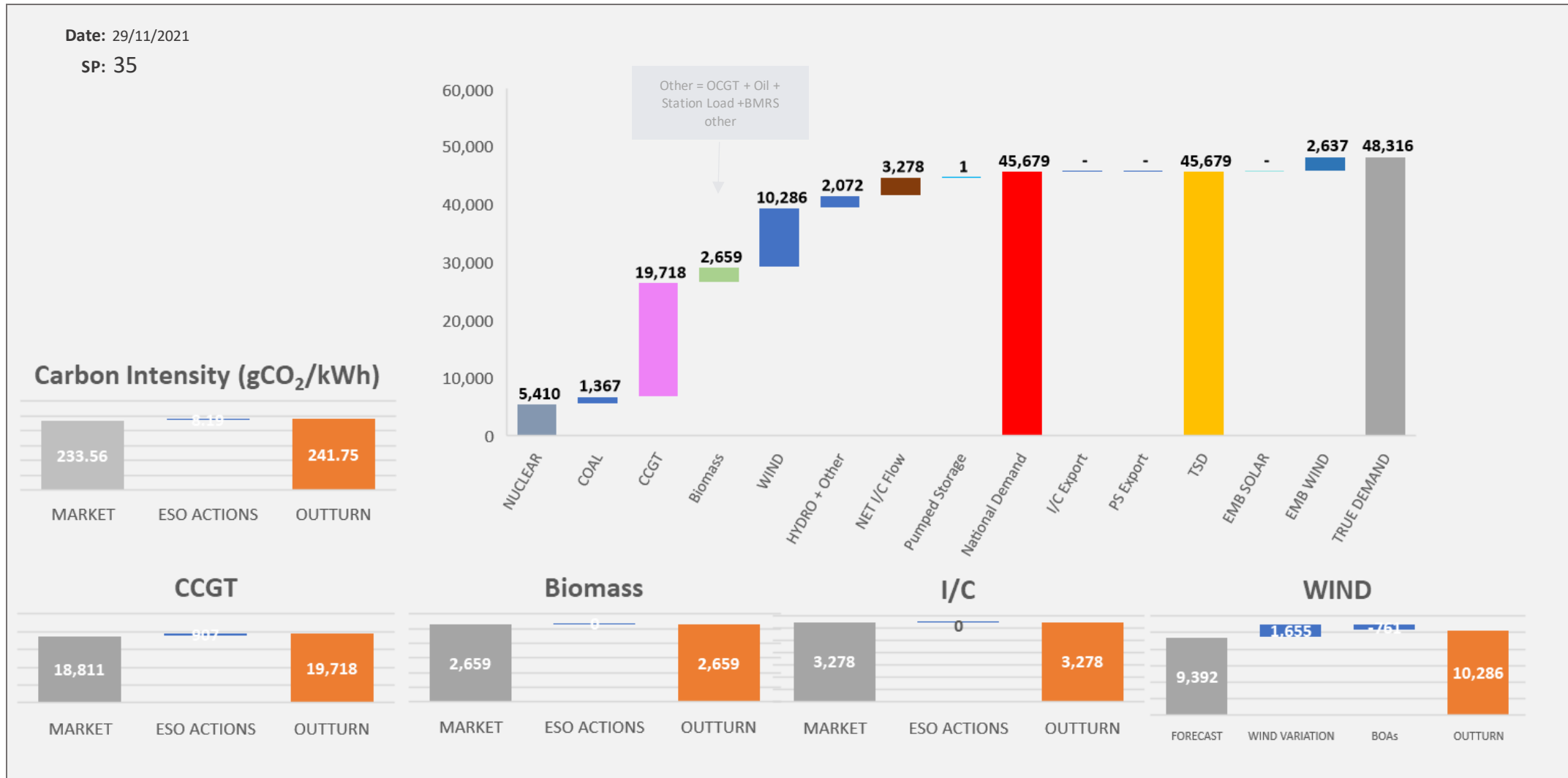


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Blue line serves as a proxy for total GB customer demand. It includes demand supplied by the distributed wind and solar sources, but it does not include demand supplied by non-weather driven sources at the distributed network for which ESO has no real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

		FORECAST (Wed 08 Dec)	
Date	Forecasting Point	National Demand (GW)	Dist. wind (GW)
08 Dec 2021	Evening Peak	44.9	2.6
09 Dec 2021	Overnight Min	24.2	2.1
09 Dec 2021	Evening Peak	45.0	2.3
10 Dec 2021	Overnight Min	22.8	3.1
10 Dec 2021	Evening Peak	43.1	2.5
11 Dec 2021	Overnight Min	24.1	1.1
11 Dec 2021	Evening Peak	39.0	2.4
12 Dec 2021	Overnight Min	21.4	1.8
12 Dec 2021	Evening Peak	39.0	2.2
13 Dec 2021	Overnight Min	20.8	2.6
13 Dec 2021	Evening Peak	43.5	1.8
14 Dec 2021	Overnight Min	22.3	2.5
14 Dec 2021	Evening Peak	41.7	3.5

ESO Actions | Monday 29 November Peak

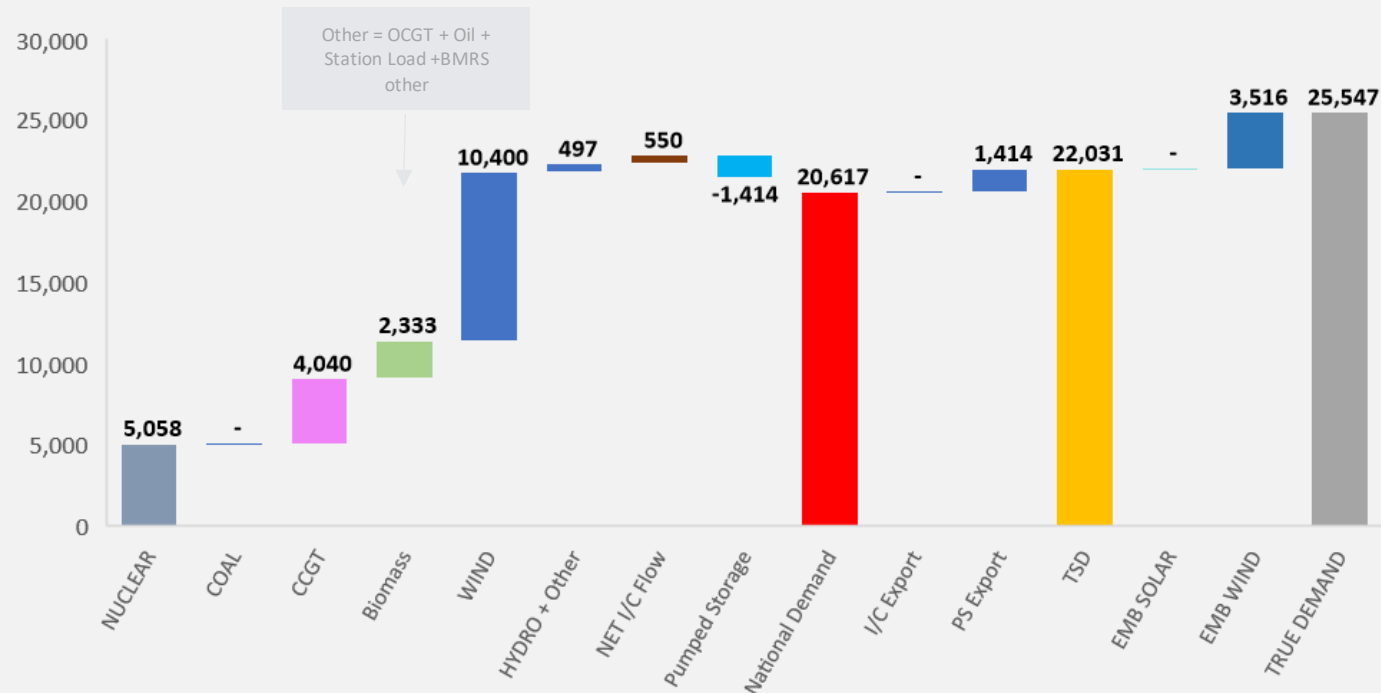
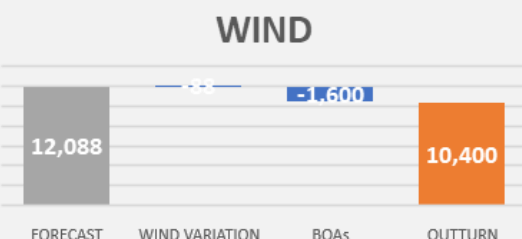
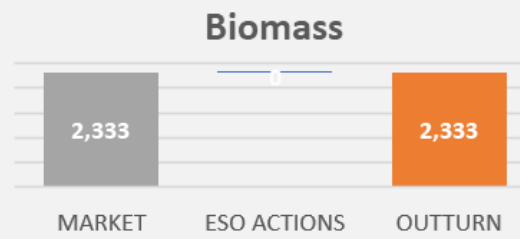


ESO Actions | Sunday 05 December Minimum

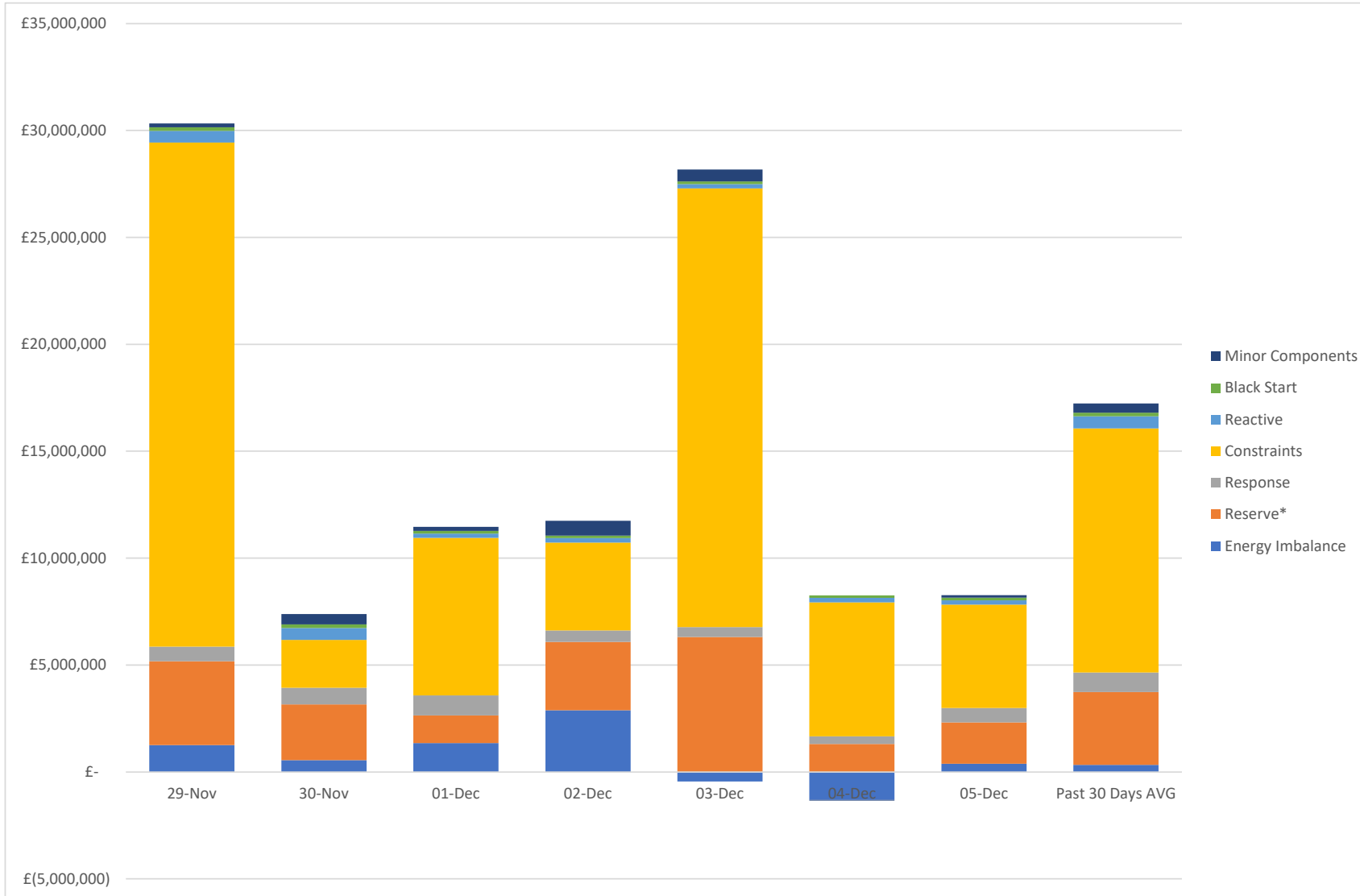
Date: 05/12/2021

SP: 10

Carbon Intensity (gCO₂/kWh)



Transparency | Costs for the last week

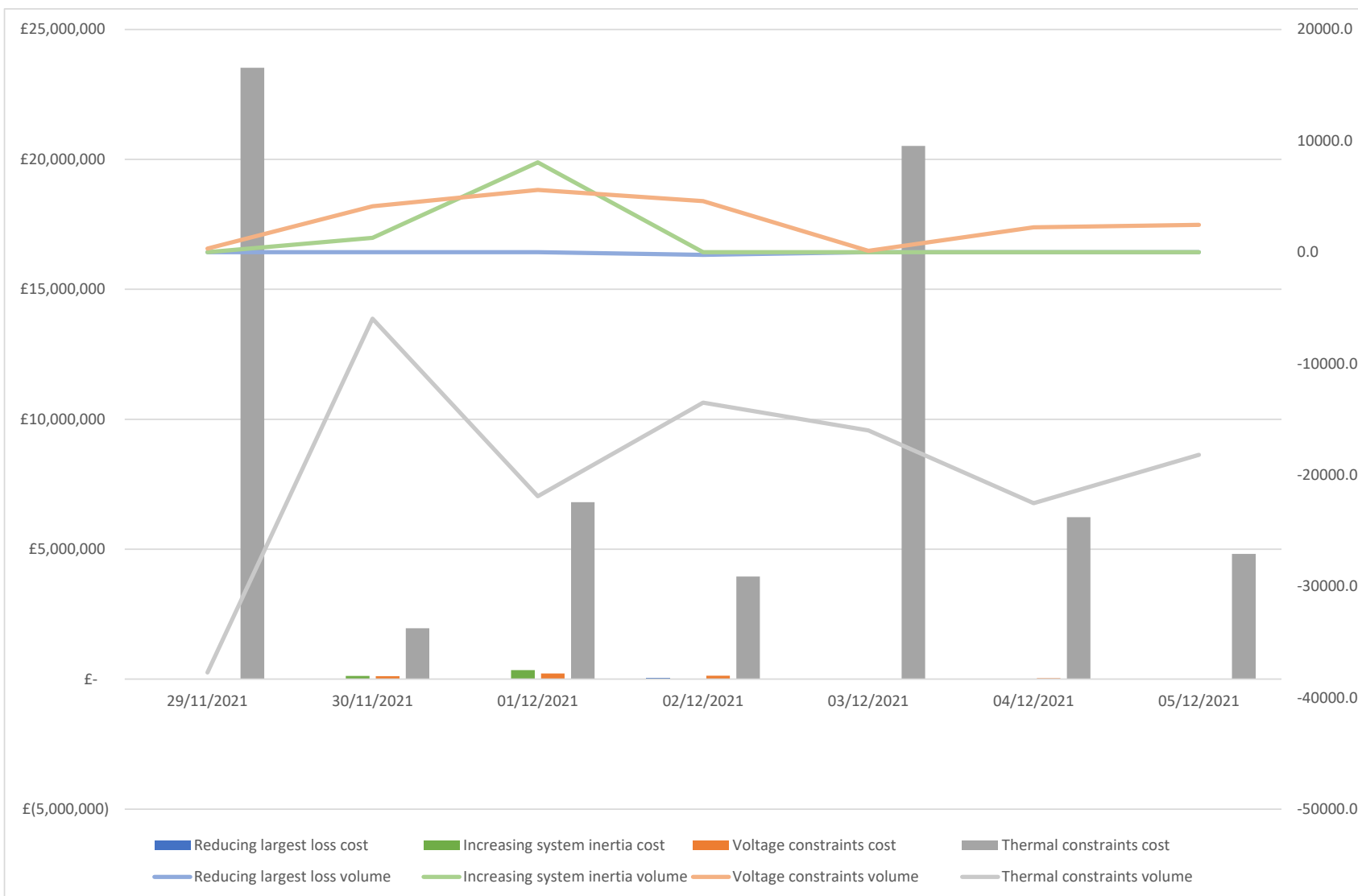


Monday 29th and Friday 3rd were the most expensive days, with a daily spend around £30m on both cases. Wednesday and Thursday daily costs were around £10m.

Constraints actions were needed due to the windy weather that was requiring large volume of BM actions to reduce generation to manage thermal constraints.

Past 30 Days Average added

Transparency | Constraint cost breakdown



Thermal

Monday and Friday high volume of actions required to manage thermal constraints, particularly in Scotland.

Voltage

Tuesday, Wednesday and Thursday some action required to synchronise generation to meet voltage requirements

Managing largest loss for RoCoF

No action required to manage largest loss on interconnectors.

Increasing inertia

Tuesday and Wednesday intervention required to increase minimum inertia.

<https://data.nationalgrideso.com/balancing/constraint-breakdown>

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, imports and peak demand. This is based on information available to National Grid ESO as of 8 December and is subject to change. It represents a view of what the market is currently intending to provide before we take any actions.

The 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 conventional generation (MW)	Wind (MW)	Interconnector availability (MW)	Peak demand (MW)	Indicative surplus (MW)
Thu	09/12/2021	44838	8850	3900	45856	7680
Fri	10/12/2021	44233	10807	3900	43803	11520
Sat	11/12/2021	42468	10362	3900	39348	12368
Sun	12/12/2021	43334	9596	3900	39305	12597
Mon	13/12/2021	43847	8088	3900	43661	8438
Tue	14/12/2021	45336	14582	3900	42578	14289
Wed	15/12/2021	45271	12491	3900	43032	13086

Operational margins: look ahead for the rest of winter

How to interpret this information

This slide sets out our view of operational margin range for the rest of the winter period. 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.

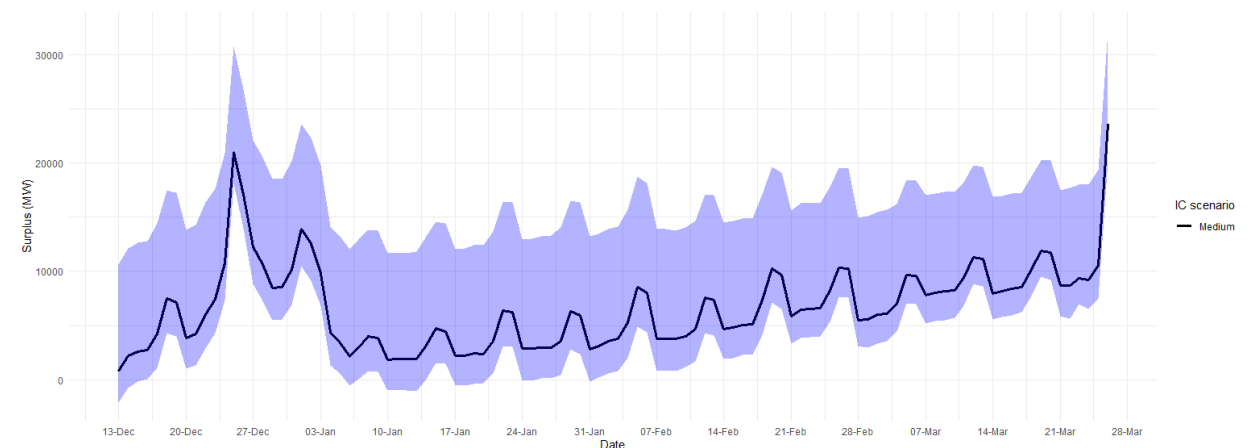
This view is based on information available to National Grid ESO as of 8 December and is subject to change as generators update their availability via REMIT.

The chart represents the potential surplus range we may expect on each day. It is based on 50,000 simulations that account for variation in demand, wind, generation and interconnector availability.

The chart represents a view before the ESO takes any actions. Periods where the lower bound is lowest (and even negative) represent the times when there is a higher likelihood of the ESO needing to use its operational tools such as issuing margins notices. We expect there to be sufficient supply available to respond to these signals to meet demand.

We don't provide an update of this view each week, since in most weeks there is little change.

The situation remains materially unchanged from last week. The chart shows that second week in December and second and third weeks in January are currently the most likely times when we could issue margins notices. We continue to expect there to be sufficient supply available to respond to market signals in order to meet demand.



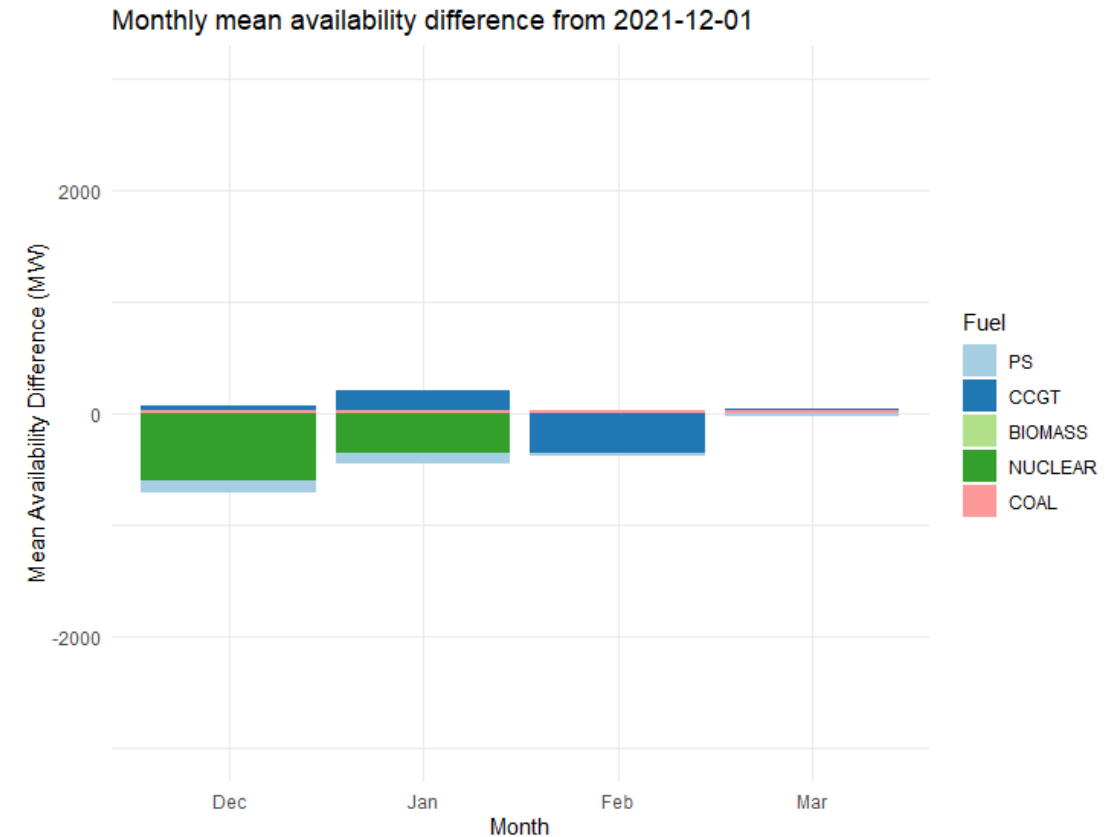
Operational margins: changes in generator availability

This slide sets out how generator availability for the rest of the winter has changed since our last update on 1 December.

The material changes since our last update are:

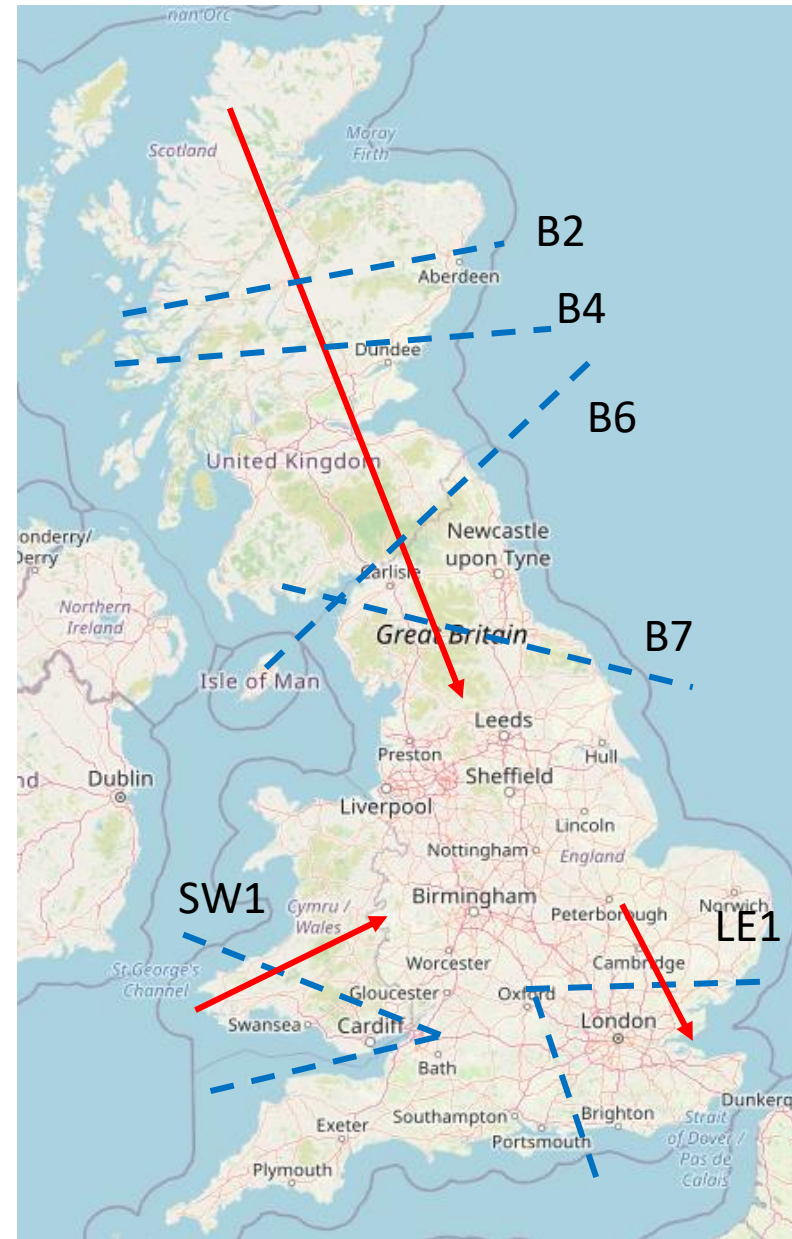
- In December a reduction of about 600 MW in Nuclear units
- In January a reduction of about 350 MW in Nuclear units
- In February a reduction of about 350 MW in CCGT units
- An overall increase in availability in March

The change in the overall position of margin leaves our view of the winter as presented in the Winter Outlook Report unchanged. This coming winter remains comparable to last winter, and we expect sufficient operational surplus for each week of winter 2021/22.

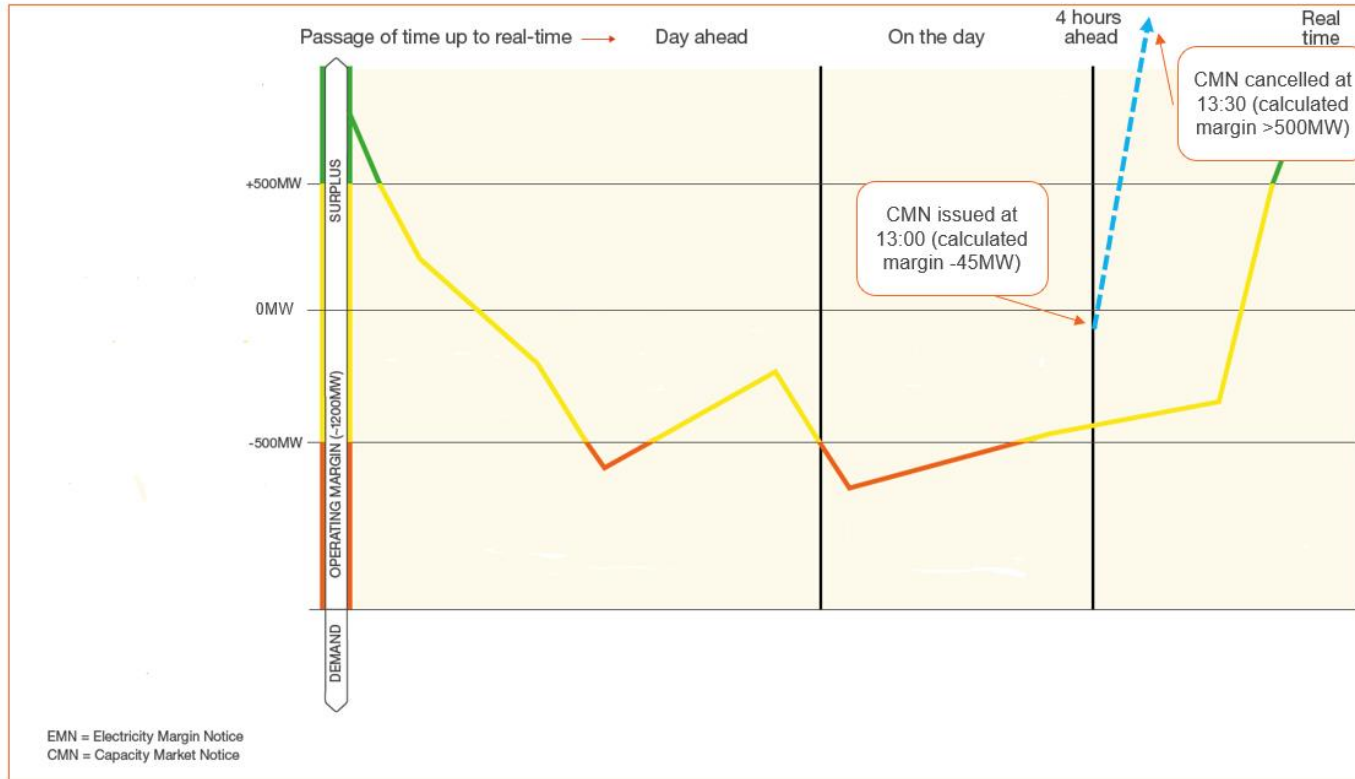


Transparency | Constraint Capacity

100% transfer capacity (MW)	
B6	5400
B7	8250
B2/B4	2700



EMN, CMN explainer with CMN Fri 3rd Dec added



The above slide is based on a template from our website explainer here:

<https://www.nationalgrideso.com/electricity-explained/how-do-we-balance-grid/what-are-system-notice>

The lower trace mainly in yellow and red is just for example purposes and not related to any real margin data or 3rd Dec

- On Friday lunchtime, margins were expected to be tight but manageable for the evening peak.
- The final SOP showed a surplus of 800MW with additional contingency options available if required. The 4HA De-rated Margin was ~ 2GW.
- The CMN system margin calculation at 13:00 is based on a similar total requirement to the other margin calculations (SOP and DRM), but it assumed that two large BMU's with a total capacity of around 1.4GW would not be available for the evening peak, due to the logic the calculation uses
- This anomaly is a rare situation which was caused by the particular timing of the late PN re-submissions, the limitation of the half hourly snapshot data MODIS uses to calculate the margin and the timings of the delayed desync BOAs issued within the half hours concerned.
- We are carrying out further detailed investigations to fully understand the snapshot data and how it was treated by the algorithm.

While margins were tight on Friday there was no likelihood of issuing an EMN. There was no risk to security of supply.

Q&A

After the webinar, you will receive a link to a survey. We welcome feedback to understand what we are doing well and how we can improve the event ongoing.

Please ask any questions via Slido (code #OTF) and we will try to answer as many as possible now. If we are unable to answer your question today, then we will take it away and answer it at a later webinar.

Click to add text

Please continue to use your normal communication channels with ESO.

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

slido

Audience Q&A Session

 Start presenting to display the audience questions on this slide.

Q&A

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