



ESO Operational
Transparency Forum
2 February 2022

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, 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:

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

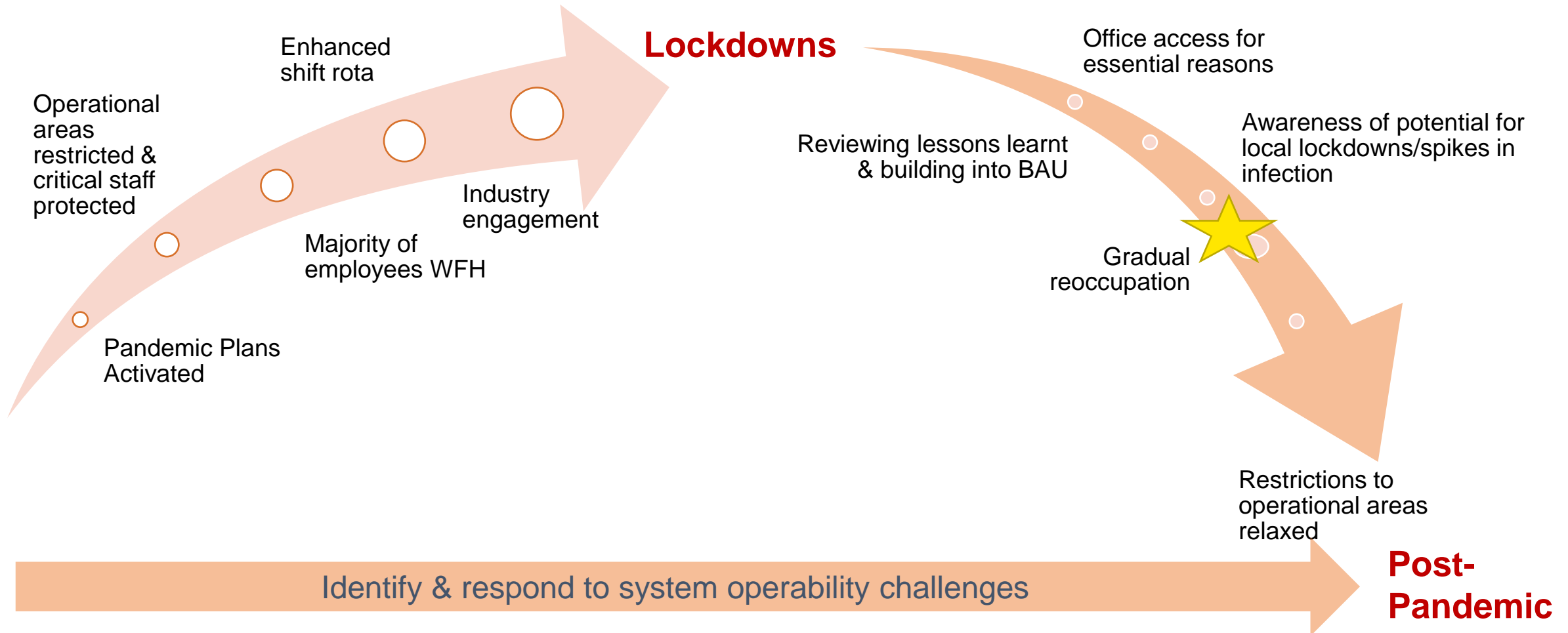
Regular Topics

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

Focus Areas

Domestic reserve scarcity trial

Protecting critical staff to maintain critical operations



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:

February:

16th Feb: Balancing Services Adjustment Data (BSAD) Overview
 Day in the life of SO-SO Trading

Manifest Error Process Overview

Sterilised Headroom Overview

Questions outstanding from last week

Q: Have you studied the correlation between the different chosen drivers in short and long term forecasting of BSoUS? Are they truly independent explanatory variables and what would be the effect if they weren't?

A: We have studied the correlation. From a technical perspective it is not a requirement of the models that we use for the explanatory variables to be independent, as long as they are not too closely linked. The Monte Carlo methods we use effectively create the correct dependence structure between these explanatory variables.

Q: Are you going to publish the BSUOS forecast with high and low probability bands as you did before?

A: Yes this is one of the incremental improvement areas we are planning to share in subsequent forecasts

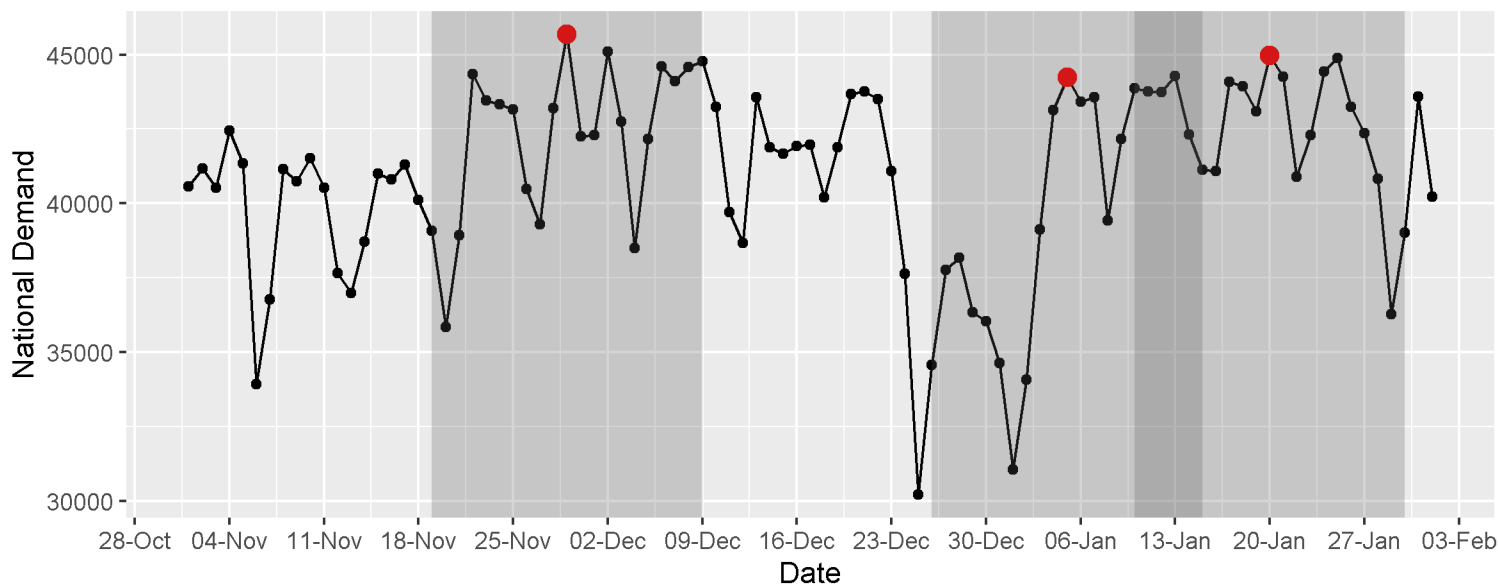
Q: Do you let OFGEM know on the higher prices of the generation plants?

A: The ESO market monitoring team review prices, physical notifications and dynamic parameters of generation on all days. If instances of potential market manipulation through high prices were identified these would be reported to OFGEM in line with our REMIT requirements as a Persons Professionally Arranging Transactions (PPAT).

Q: I think the question about the margin is the margin associated with the S7a trades. Could someone explain how they are calculated

A: There is no difference in how the margin is calculated in terms of the normal ENCC process, which I think has been covered many times, as OSM we need to decide what is the most cost effective means to achieve this margin, so if there is capacity on the IC's this will be costed (via discussion with the traders) against running additional BMUs to achieve this margin, and following the assessment a decision will be made whether to request these trades or not.

Demand | Indicative Peak National Demand



If there is anybody in the forum who engages in the triad avoidance activity and would like to discuss it with us, please contact us at: **Demand.forecasting@nationalgrid.com**

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
20/01/2022	1730	44977	400
05/01/2022	1800	44245	0

We present National Demand operational metering because triad demand is calculated on the basis of demand excluding interconnector exports. This definition of demand is neither National Demand nor Transmission Demand, but more closely tracked by National Demand.

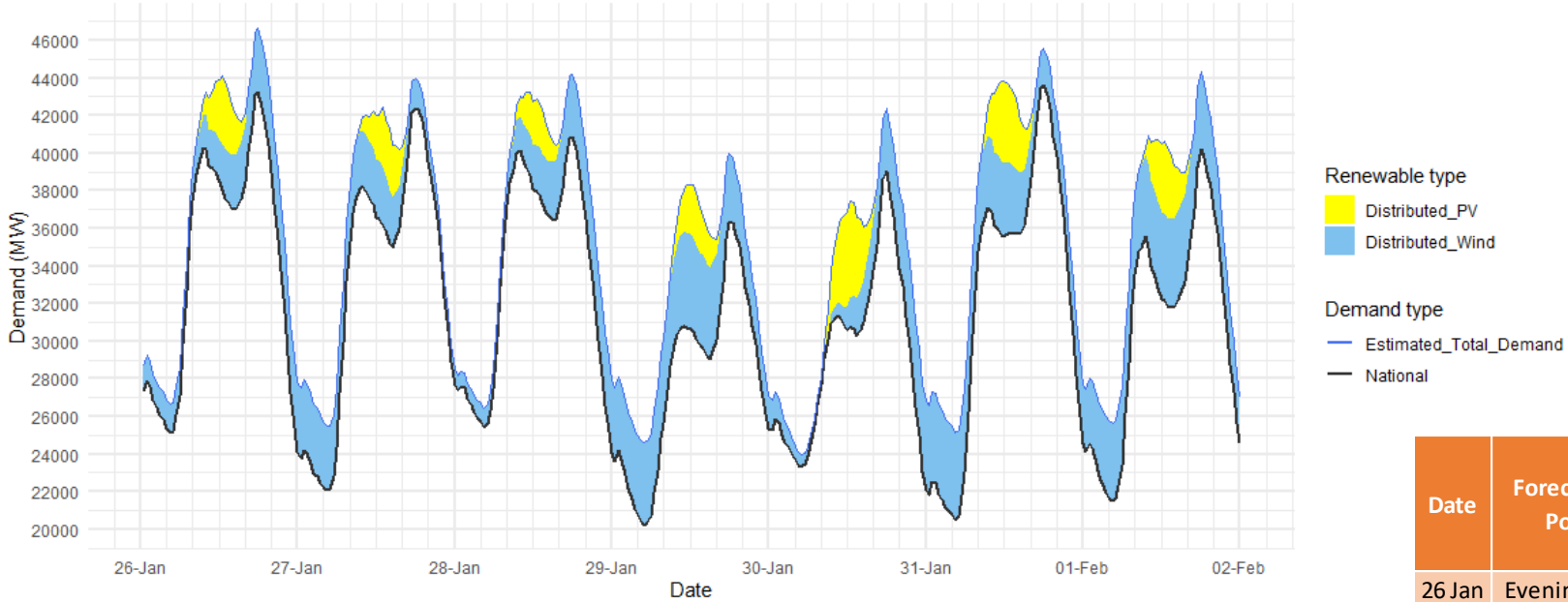
National Demand does not include station load.

Indicative triad demand on Elexon's BMRS [website](#) quotes "GB Demand" which is based on the Transmission System Demand definition (it adds 500MW of station load onto the National Demand).

It shows time as half hour beginning.

Demand | Last week demand out-turn

ESO National Demand outturn 26 January-01 February 2022



Renewable type
 Distributed_PV
 Distributed_Wind

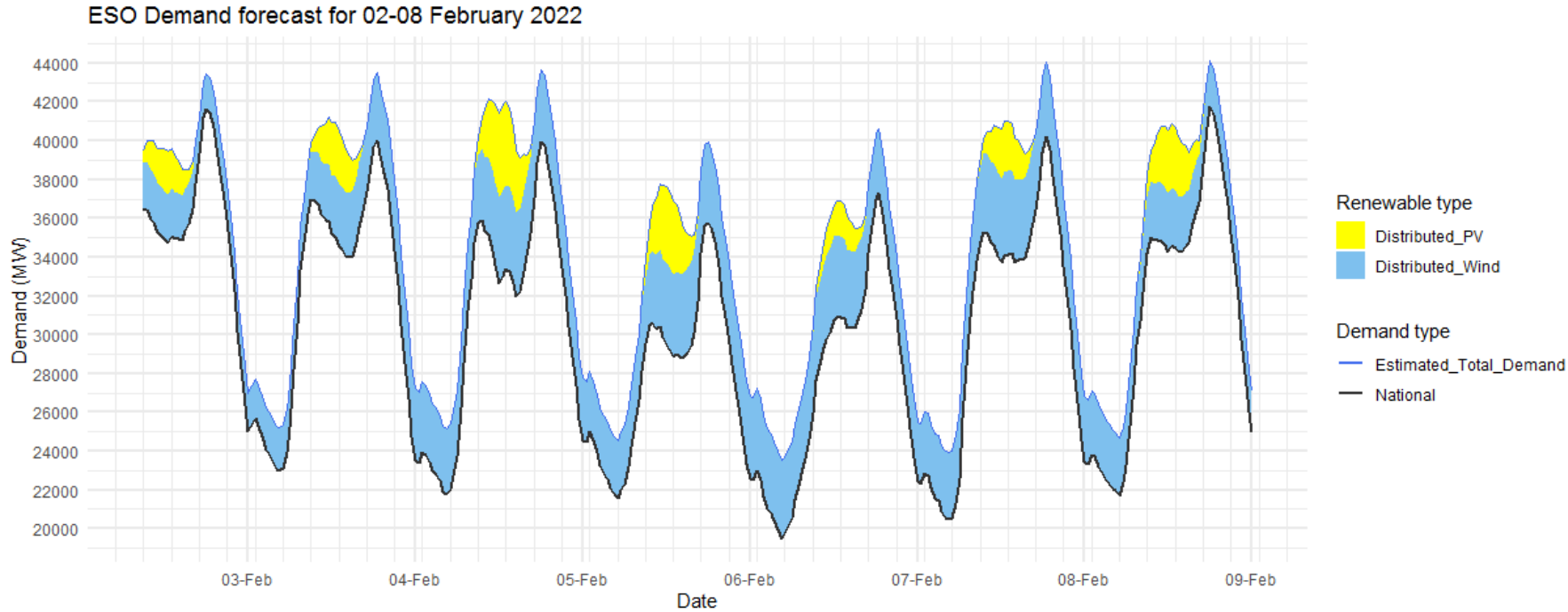
Demand type
 Estimated_Total_Demand
 National

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.

Date	Forecasting Point	FORECAST (Wed 26 Jan)		OUTTURN			
		National Demand (GW)	Dist. wind (GW)	National Demand (GW)	Triad Avoidance est. (GW)	N. Demand adjusted for TA (GW)	Dist. wind (GW)
26 Jan	Evening Peak	43.5	3.3	43.2	0.0	43.2	3.4
27 Jan	Overnight Min	22.2	3.6	22.1	n/a	n/a	3.4
27 Jan	Evening Peak	43.4	2.1	42.4	0.0	42.4	1.6
28 Jan	Overnight Min	25.2	1.1	25.4	n/a	n/a	1.0
28 Jan	Evening Peak	40.2	3.5	40.8	0.0	40.8	3.4
29 Jan	Overnight Min	19.6	4.1	20.2	n/a	n/a	4.4
29 Jan	Evening Peak	36.4	3.1	36.3	0.0	36.3	3.7
30 Jan	Overnight Min	22.1	1.1	23.3	n/a	n/a	0.6
30 Jan	Evening Peak	38.1	2.7	39.0	0.0	39.0	3.4
31 Jan	Overnight Min	20.6	3.4	20.5	n/a	n/a	4.6
31 Jan	Evening Peak	42.0	3.1	43.6	0.0	43.6	2.0
01 Feb	Overnight Min	21.7	3.4	21.5	n/a	n/a	4.1
01 Feb	Evening Peak	41.5	3.3	40.2	0.0	40.2	4.1

Demand | Week Ahead



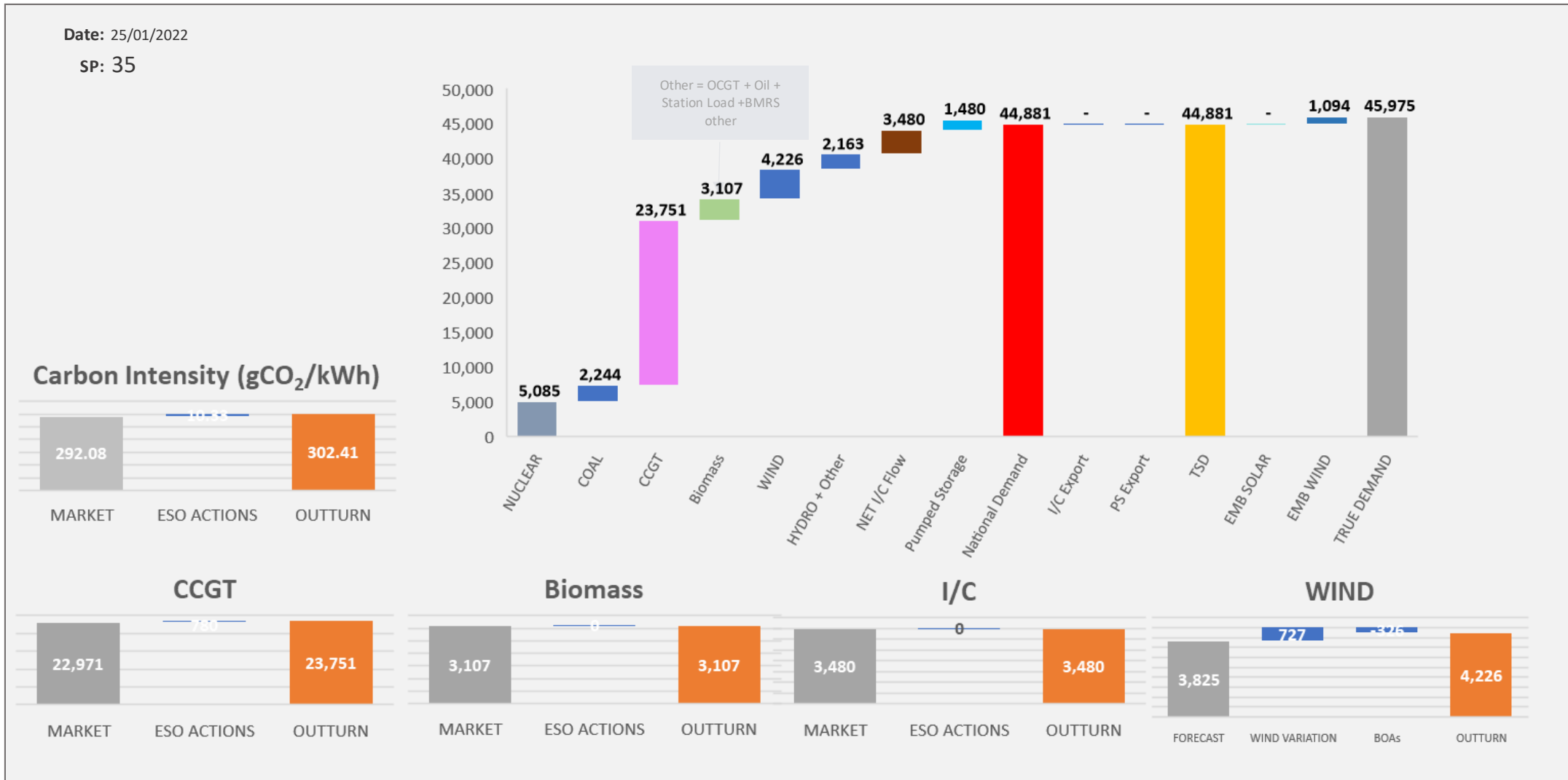
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First time ESO shares its Triad Avoidance adjusted **National Demand** forecast is after 21:00 on D-1

		FORECAST (Wed 02 Feb)	
Date	Forecasting Point	National Demand (GW)	Dist. wind (GW)
02 Feb 2022	Evening Peak	41.6	1.9
03 Feb 2022	Overnight Min	23.0	2.2
03 Feb 2022	Evening Peak	40.0	3.5
04 Feb 2022	Overnight Min	21.8	3.4
04 Feb 2022	Evening Peak	39.9	3.7
05 Feb 2022	Overnight Min	21.6	3.0
05 Feb 2022	Evening Peak	35.8	4.1
06 Feb 2022	Overnight Min	19.5	4.0
06 Feb 2022	Evening Peak	37.3	3.3
07 Feb 2022	Overnight Min	20.5	3.4
07 Feb 2022	Evening Peak	40.2	3.8
08 Feb 2022	Overnight Min	21.7	2.9
08 Feb 2022	Evening Peak	41.8	2.3

ESO Actions | Tuesday 25 January Peak

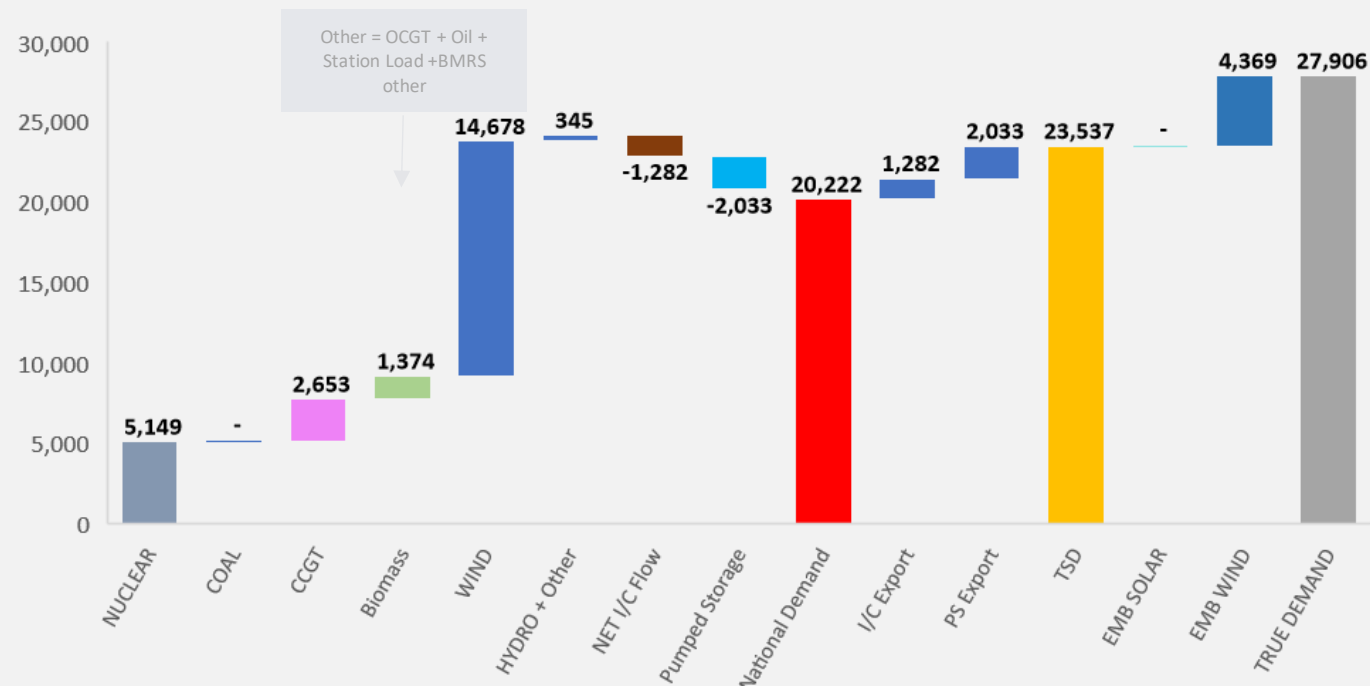
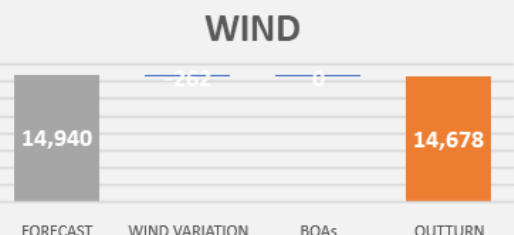
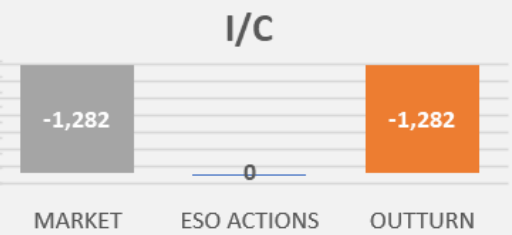
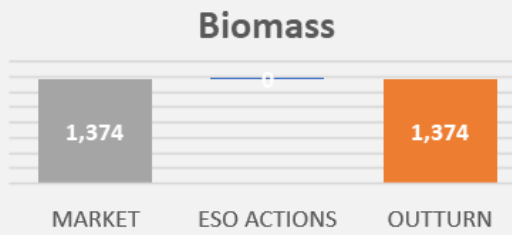
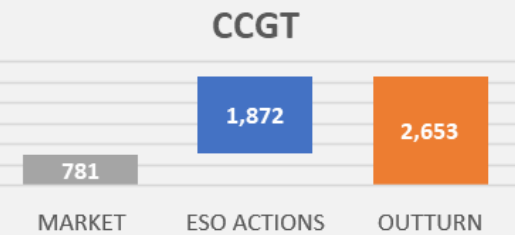


ESO Actions | Saturday 29 January Minimum

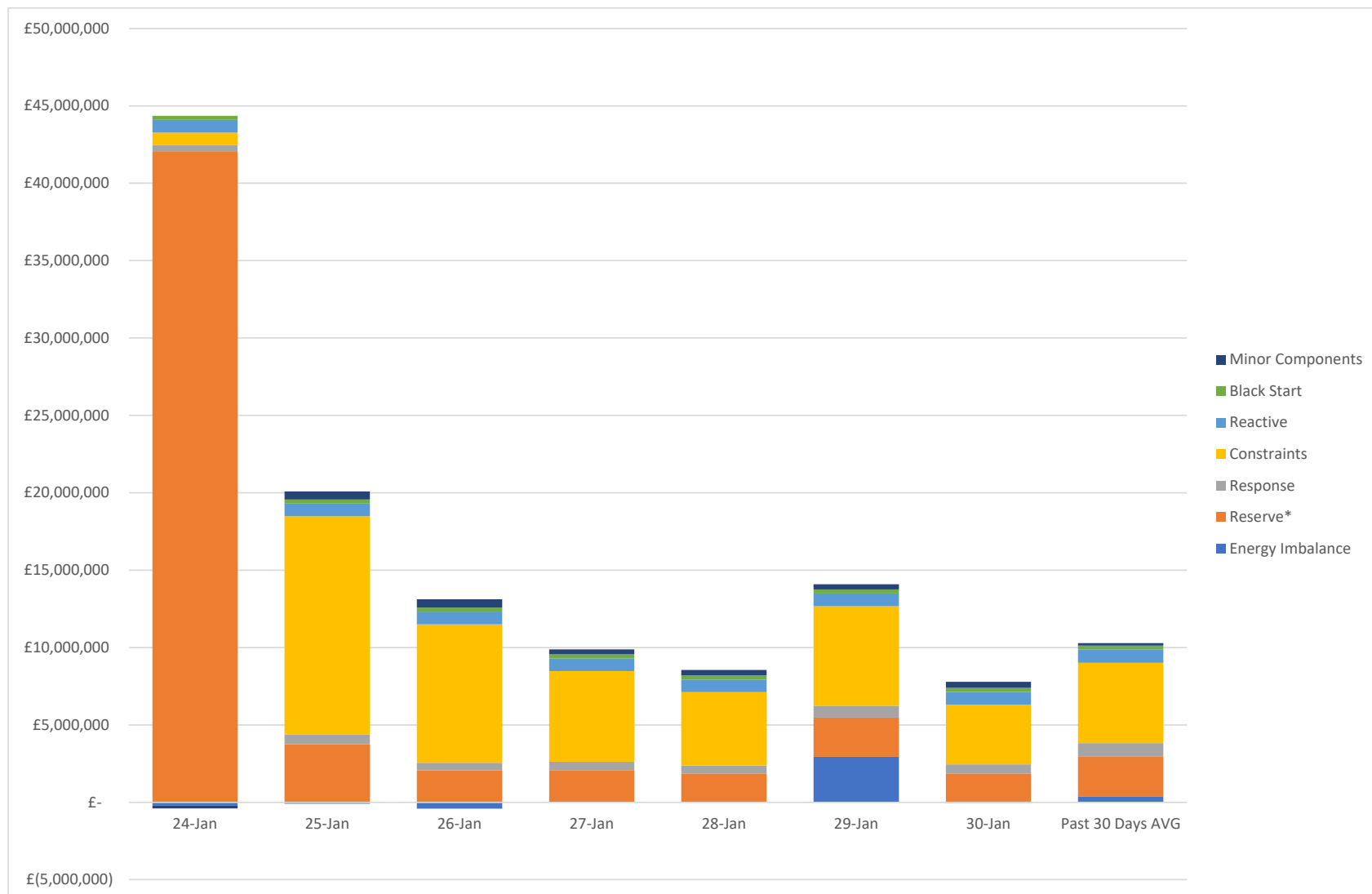
Date: 29/01/2022

SP: 10

Carbon Intensity (gCO₂/kWh)



Transparency | Costs for the last week

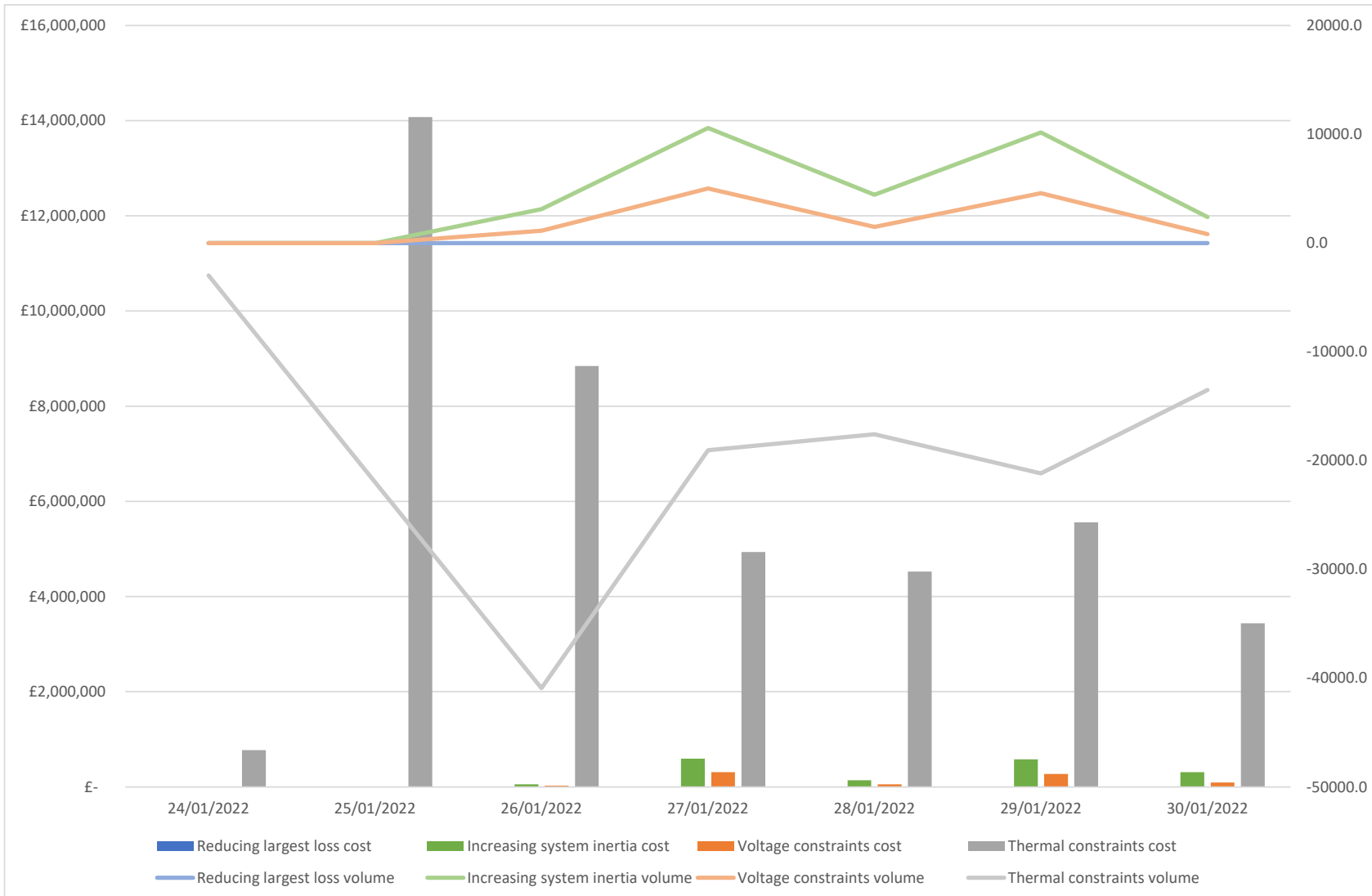


Monday 24th was the most expensive day with a spend of £45m, of which £42m were due to actions for Operating Reserve.

Other expensive days were Tuesday 25th and Saturday 29th with daily costs of £20m, and £14m respectively. Wednesday 26th the cost was close to £13m. The main driver behind the high spend over those days were the costs associated to constraint actions.

Past 30 Days Average added

Transparency | Constraint cost breakdown



Thermal

Throughout all days, actions were required to manage thermal constraints, with little intervention on Monday. High volume of actions on Tuesday and Wednesday.

Voltage

Action taken to synchronise generation to meet voltage requirements between Thursday and Sunday.

Managing largest loss for RoCoF

No intervention required to manage largest loss on interconnectors.

Increasing inertia

intervention required to increase minimum inertia between Thursday and Sunday

<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 2 February 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.

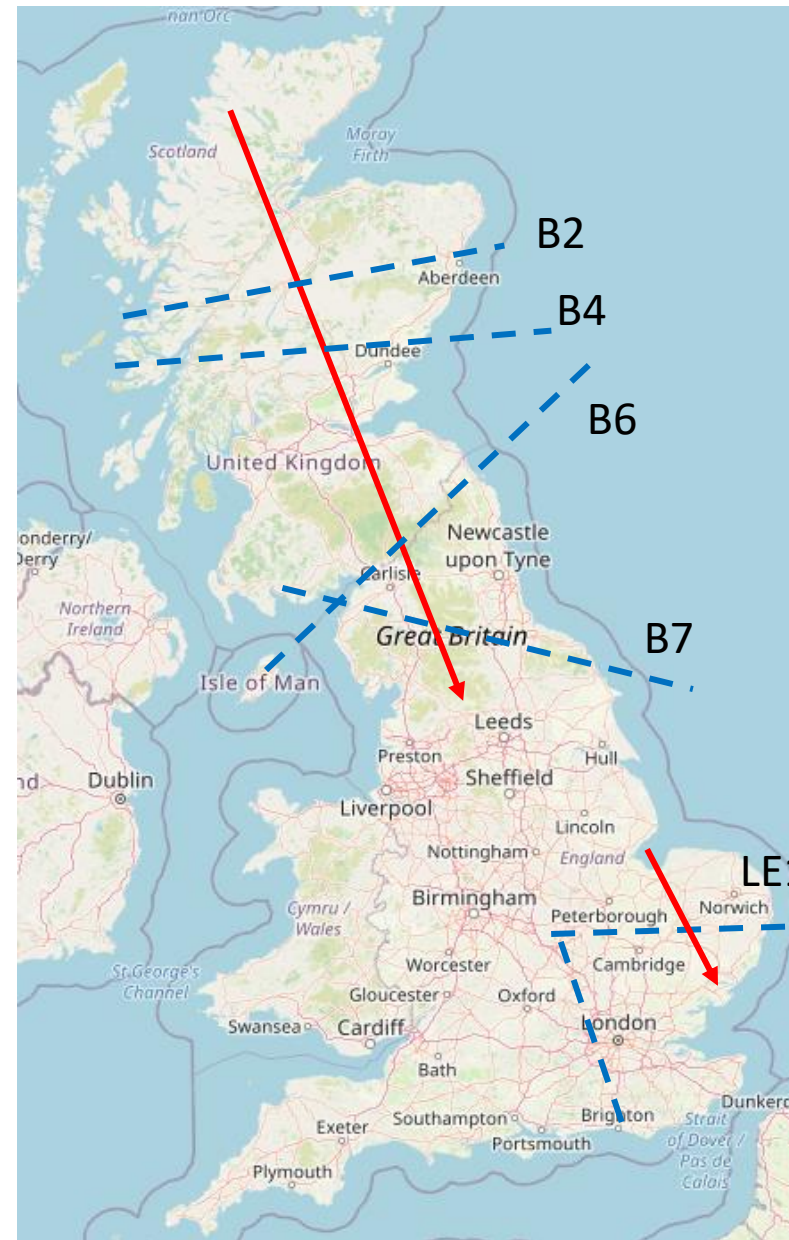
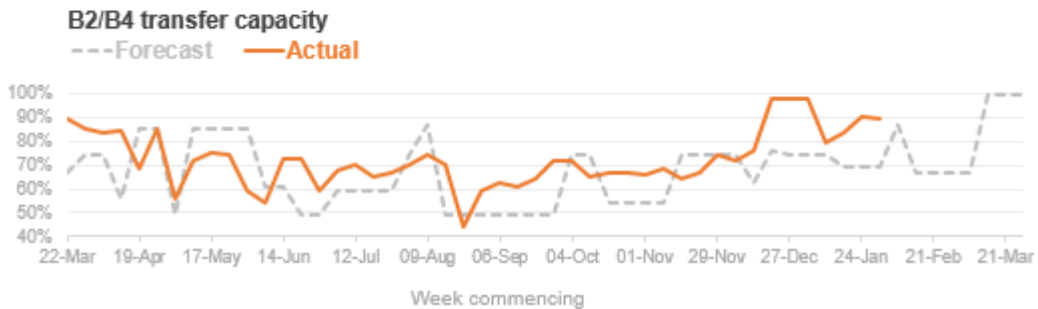
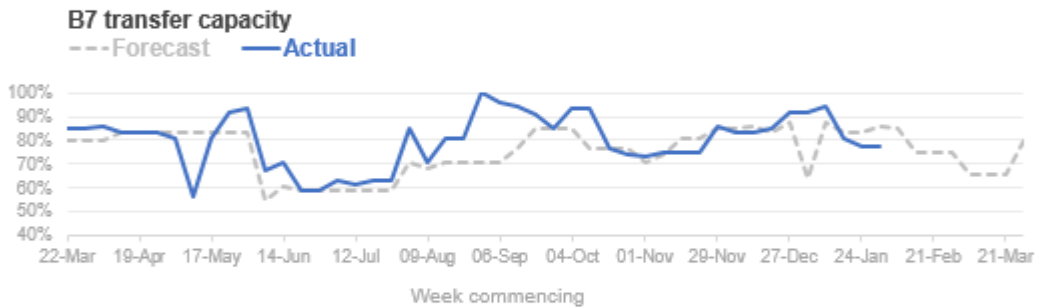
For lower (and potentially negative) surplus values, then this indicates operational margins could be tight and that there is a higher likelihood of the ESO needing to use its tools, such as issuing margins notices. We expect there to be sufficient supply available to respond to these signals to meet demand.


Margins are adequate for the next seven days.

Day	Date	Notified conventional generation (MW)	Wind (MW)	Interconnector availability (MW)	Peak demand (MW)	Indicative surplus (MW)
Wed	02/02/2022	43182	7962	3400	43210	7166
Thu	03/02/2022	43435	15030	3900	41422	15408
Fri	04/02/2022	43585	14741	3900	40732	15989
Sat	05/02/2022	42568	14369	3900	36946	17778
Sun	06/02/2022	43261	14048	3900	37494	17893
Mon	07/02/2022	44440	15066	3900	41242	15790
Tue	08/02/2022	44873	11601	3900	42955	11840

Transparency | Constraint Capacity

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





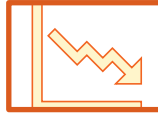
Domestic Reserve Scarcity Trial

New trial – Domestic reserve scarcity



Overview

- NG ESO is collaborating with Octopus Energy on a new trial exploring the potential participation of domestic flexibility from their smart meter customer base in provision of energy.
- This builds on the [Crowdflex:NIA project](#) and will feed into future NG ESO initiatives exploring flexibility.



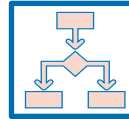
What is it?

- Domestic customers will be incentivised to reduce their household consumption during pre-defined 2-hour windows.
- Focusing on when market conditions imply low margins on the system, based on readily available market data.
- Octopus Energy will provide incentives to their customers and there will be no contractual energy and cashflow between Octopus and NG ESO.
- Trial window will run from 08/02/2022 to 31/03/2022.



Trial benefits

- Understand the pathway for participation of domestic flexibility in future markets.
- Applying live market conditions to trial events to build a robust set of evidence.
- Learn by doing approach will allow us to increase understanding of the volumes of flexibility from domestic households.
- Exploring capability of forecasting domestic flexibility.
- Review impacts of repeatability on consumer behaviour.



Trial impacts

- Initial expected volumes up to 150MW.
- Expect minimal impact on ENCC operations, however this will be continually reviewed.

Trial design – Overview

Trial details

- Potential for ten trial events across February and March.
- Focused on 3 different time slots that have been aligned with operational requirements, as agreed with ENCC.
- Aiming for at least 3 events in each time window.
- Only one event can be triggered per day.
- Events will only be enacted Monday – Friday.

Trial event trigger

- Trial events will be initiated when the 12:00 day ahead de-rated margins forecast fall below the pre-defined thresholds detailed below. Thresholds will be specific to each time window.
- Thresholds based on analysis from previous years, to ensure trial events are enacted so we can build a comprehensive data set.
- The trial process will be constantly reviewed, to ensure alignment with objectives of the trial.

Time Window	12:00 day ahead de-rated margin forecast threshold (MW)
00:00 – 02:00	15,000
09:00 – 11:00	6,500
16:30 – 18:30	3,000

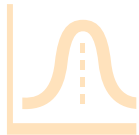
Trial design – Data

Forecasting



Octopus Energy will calculate an expected volume of reduction, based on consumption data from previous 20 weekdays. This will be aggregated at GSP level and provided daily for the following 23:00 – 23:00 window.

Baselining



Households consumption will be baselined based on previous consumption over a set period for the same day and settlement period.

Actual response



Customers have to 'Opt-in' to take part in the trial once a trial event has been initiated. Household consumption from smart meters will be compared against the baseline to calculate an overall response to the event.

Data from trial events will be fed back into all the calculations above, to improve accuracy as the trial progresses.

Next steps

- Trial window commences – 08/02/2022.
- Octopus Energy will recruit customers from 04/02/2022.
- Relevant updates and findings will be provided to OTF.
- Full write up of the trial will be published at a future date in Q1 22/23.
- Continual review throughout process to ensure alignment with objectives.

Future trial proposals aligned with ESO ambitions will be considered, these can be sent to box.balancingprogramme@nationalgrideso.com



Purpose of stability market design NIA project

- The Stability Market Design project is a research innovation project, looking at how to optimise a potential market for stability through a mix of long- and short-term procurement
- We are looking to work with our customers and stakeholders to develop and assess various design options, aiming to reach a high-level recommendation by March 2022

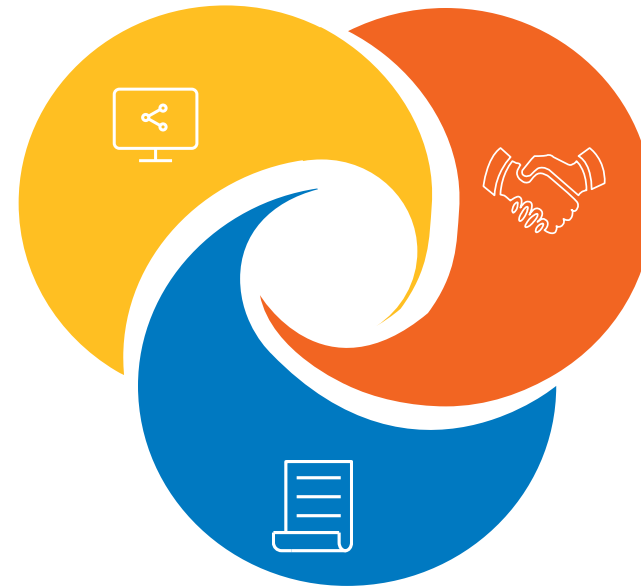
The purpose of the webinar is to share the progress of the project and our how we used your input in our overall assessment of options.

Sign up to our webinar on **Tuesday 8th February** [here](#) (via Eventbrite)

Information on the Stability Market Design project, and recording of our 1st webinar are available: <https://www.nationalgrideso.com/future-energy/projects/stability-market-design>

Innovation project,
study-based

Engaging with
wider industry



Started in Sept
2021 - aim to finish
by March 2022

Stability Market project timeline

Sep				Oct				Nov				Dec				Jan				Feb				Mar					
6	13	20	27	4	11	18	25	1	8	15	22	29	6	13	20	27	3	10	17	24	31	7	14	21	28	7	14	21	28

Setting the scene

Building Block & Straw-man (assessment & modelling)



Final recommendations



1st external webinar

Questionnaire



2nd external webinar
Tuesday 8th February

Contact us

Stability Market Design

- Amirhessam.Alikhanzadeh@nationalgrideso.com
- Sophie.Vancaloen@nationalgrideso.com
- Rend.Nawari@nationalgrideso.com

Enabling the transformation to a sustainable energy system: Our RIIO-2 BP2 webinar series

Webinars	Date & Times
Webinar 1: A look ahead to 2023 and beyond: our journey to enabling the transformation to a sustainable energy system	Monday 24th January (13:00-14:15)
Webinar 2: Looking ahead to 2023 and beyond: Control centre operations	Wednesday 26th January (13:00-14:15)
Webinar 3: Looking ahead to 2023 and beyond: Market development, transactions and our role in Europe since Brexit	Thursday 27th January (13:00-14:15)
Webinar 4: Looking ahead to 2023 and beyond: Our innovation priorities	Thursday 3rd February (13:00-14:15)
Webinar 5: Looking ahead to 2023 and beyond: Our commitment to providing open data and transparency	Monday 7th February (13:00-14:15)
Webinar 6: Looking ahead to 2023 and beyond: Enhancing our regional capability to meet net zero	Thursday 10th February (13:30 -14:45)
Webinar 7: Looking ahead to 2023 and beyond: Network development	Tuesday 22nd February (14:00-15:15)

The RIIO-2 Price Control:



Purpose of the webinars:

To share with stakeholders our initial thoughts for what could be new / materially changed from our 5-year business plan (covering 2021-2026), with respect to the RIIO-2 BP2 period.

Sign up to our webinars [here](#)
(This link will take you to our “Get Involved” ESO web page, where you can sign up to each of the webinars separately via Eventbrite)

Balancing Market Review Launch Webinar

9th Feb 12:00-13:30

Energy UK and Cornwall Insight will be hosting the launch webinar for the Balancing Market Review

[Register to join the webinar](#)

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.

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

Please remember to use the feedback poll after the event. We welcome feedback to understand what we are doing well and how we can improve the event ongoing.

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

