

ESO Operational Transparency Forum

2 March 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>

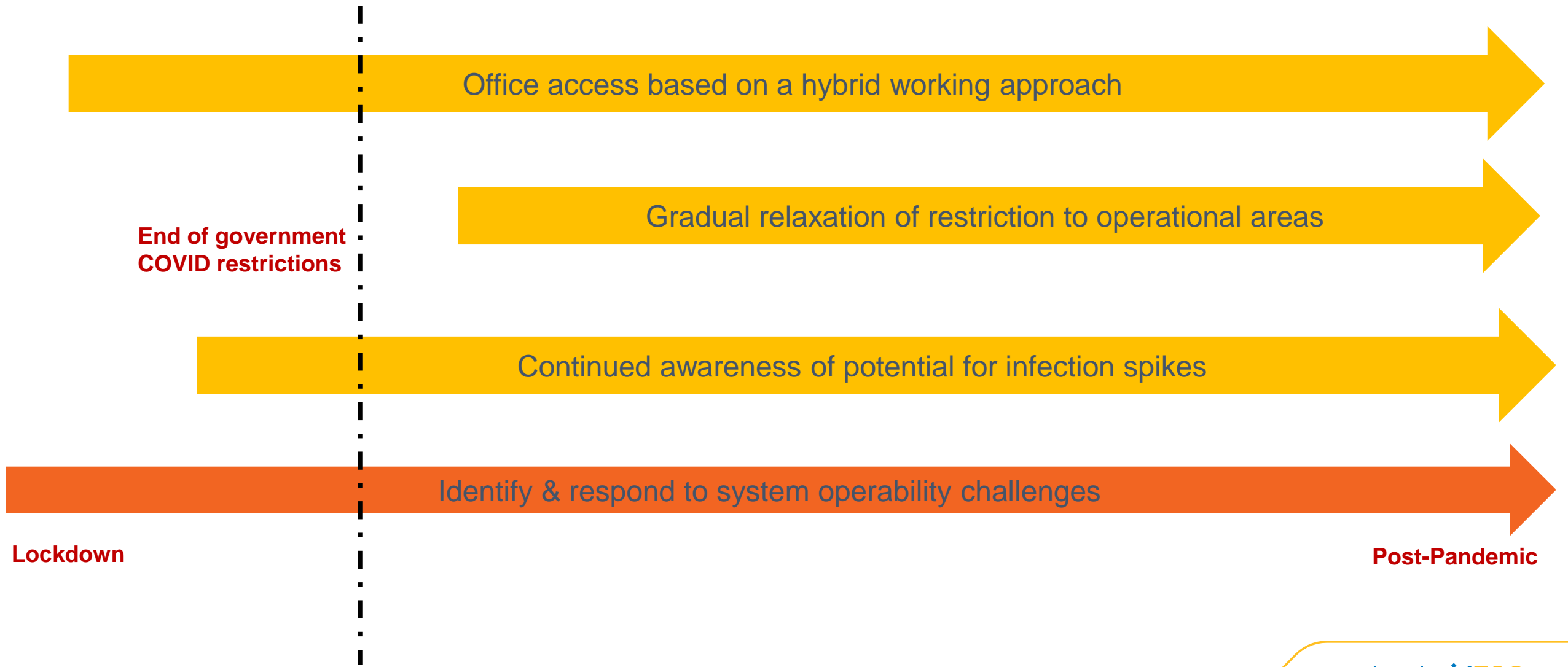
Regular Topics

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

Focus Areas

- Optimising Constraints in Real-Time
- Capacity Market Notification (CMN) Issue Update
- Domestic Reserve Scarcity trial - update
- Frequency Risk and Control Report (FRCR) consultation

Protecting critical staff to maintain critical operations



End of government
COVID restrictions

Office access based on a hybrid working approach

Gradual relaxation of restriction to operational areas

Continued awareness of potential for infection spikes

Identify & respond to system operability challenges

Lockdown

Post-Pandemic

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:

Manifest Error Process Overview

DC Performance Monitoring Update

Questions outstanding from previous weeks

Q: For assets participating in DC, if 10% of capacity is not held back when tendering (as per the rules), will this lead to punishment for those breaching this rule?

A: State of energy rules are designed to ensure that providers can fulfil the full energy delivery requirements of the service, under the range of operating conditions that are likely to occur. We expect providers to comply with service terms to avoid breaches.

Q: How is the progress on negative slow reserve?

A: An update was sent out via the [Future of Balancing Services](#) page on 25 February

Q: Last week you mentioned that a paper is being developed to assess TO's obligations under REMIT. Will this be shared with stakeholders?

A: This is an internal decision paper and will not be shared widely. Once we have an approach to share which has gone through the necessary governance between the various stakeholders we will communicate with external parties.

Q: How is Operating Reserve Requirement calculated?

A: We covered how Operating Reserve Requirements are set within the Reserve Setting presentation on 20 January 2021

Q: How are you getting on with publishing the Q&A log? Any update on when this will happen?

A: We are still working on this. As I'm sure you will appreciate the workload is high at the moment and we want to ensure that what we publish has been through the appropriate governance prior to publication. We are looking to publish in batches and will indicate a plan through this forum.

Questions outstanding from previous weeks

Q: Please can you provide a circular or some kind of update on the SP's/Dates that will be affected by the updated BSAD data.....otherwise we have to manually search through all of history to work out what has changed from a cashout perspective

A: Please see the table to the right containing impacted dates and settlement periods. It is worth noting that the updated data was system flagged so only the volume is used in the Elexon calculations and not the price.

Q: The BSAD data fixed the issue with SO-SO trades with EirGrid/SEMO being missing but not emergency instructions. For example NG requested an emergency assistance from RTE on 29 Aug 2021. TenneT requested an emergency assistance from NG on 6 Sep.

A: Updates have been submitted for all trades impacted including the two listed here

Settlement Date	Settlement Period
2021_01_05	23 - 26
2021_01_08	33 - 37
2021_01_12	29 - 30
2021_01_18	45 - 48
2021_01_19	15 - 18; 29 - 30
2021_01_26	35 - 36
2021_02_08	7 - 8
2021_02_09	25 - 28
2021_02_10	35 - 36
2021_02_16	23 - 24
2021_03_06	34 - 39
2021_03_11	12 - 13
2021_03_18	35 - 36
2021_04_13	32 - 41
2021_06_13	22
2021_07_12	37 - 42
2021_08_29	14 - 16
2021_09_06	34 - 43
2021_09_08	32 - 44
2021_09_09	21 - 46
2021_09_10	16 - 25
2021_09_14	30 - 46
2021_10_04	34 - 42
2021_11_02	34 - 38
2021_11_15	33 - 39
2021_11_23	22 - 39

Questions outstanding from previous weeks

Q: The constraints breakdown data suggests recent inertia interventions have averaged costs around £1m/day- presumably some of the thermal constraints can also be attributed to those actions- do we have any feel for how much? will the FRCR consultation on future min inertia need be providing more info?

A: For clarity, actions taken to increase system inertia are entirely separate from actions taken to manage constraint congestion. Last week we talked about constraint congestion which can be driven by a variety of limiting factors including the thermal limits of the circuits, the stability of the generation electrically nearby the constraint to withstand the transmission fault and the maintaining sufficient voltage support to manage the post-fault voltage stability. These actions will all be captured as constraint congestion.

Actions included in the inertia category of the breakdown are only actions to increase the inertia on the system and actions included in the voltage category of the breakdown are only those to specifically manage the voltage levels on the system.

So in answer to the question, no these costs are separate.

In terms of the FRCR consultation of future minimum inertia and what this will contain, you will have the opportunity to contribute to the consultation as covered later in today's forum.

Q: Is there a way to see live (or close to live) data of SG instructions for hydro pumped storage units?

A: No. However, we will keep this in the mix for our plans for future transparency. Thank you for the suggestion.

Questions outstanding from previous weeks

Q: Repetitive disturbance (voltage&/or frequency) are great stress tests for new power electronic technologies- multiple fault ride through, repeated freq response etc. Do we have any feedback on how many events occurred on the network in what time period; and are there any insights across performance?

A: The performance of power electronic technologies with regards to repetitive system disturbance events is the responsibility of individual Users. The ESO does not monitor the individual performance but would investigate any significant events affecting the security of the network. ESO also shares fault events information (GC0105 and GC0151) on the [ESO website](#).

Fault ride through compliance is a self-certification process but if the ESO is aware of any event ESO's compliance team would follow up with the users directly.

Q: During the evening peak of Thurs 17th, grid turned on E-PETEM (from cold) at 440£/MWh. There were over 10GW of offers in the stack significantly cheaper than this - £200MW cheaper on avg. "Can't comment on individual actions" etc but for market transparency these anomalous actions really need to be

A: In the Dispatch Transparency dataset these BOAs are labelled with a Unit Commitment categorisation. This means that these actions were required to ensure the minimum non-zero time or the minimum zero-time of the unit is adhered to due to previous or later actions.

Q: There was an action of 100mwh from E_CORB balanced up at £600 on Monday over the evening peak. Is there a reason this was used rather than many other cheaper plants available?

A: In the Dispatch Transparency dataset this BOA is showing with no alternative BMUs. So this was the cheapest option that could fulfil the requirement available in the BM for this settlement period.

Questions outstanding from previous weeks

Outstanding questions we are still working on

Q: How are the SO-SO balancing trades and emergency trades (volume and price) reported real time to the market? If they are not reported real time what steps is the ESO taking NOW to introduce this transparency immediately?

Q: Thanks for the reply re So-SO trades. It was that area rather than NGESO Market Unilateral Interconnector Trading actions I was looking at. Just to see if the 'Neighbours' initiate more late notice activity. With reference to: Is there any indication of the dates and Volumes of SO-SO Trading initiated by Trading parties?. Noting that Ireland have a more volatile system with frequent large scale curtailment of Wind.

Q: Does REMIT data always take priority over PN/MEL data? E.g. with Keadby currently, we should ignore FPN/MEL's because REMIT says 0MW even though FPN/MEL may not. I.e. does this hierarchy always prevail?

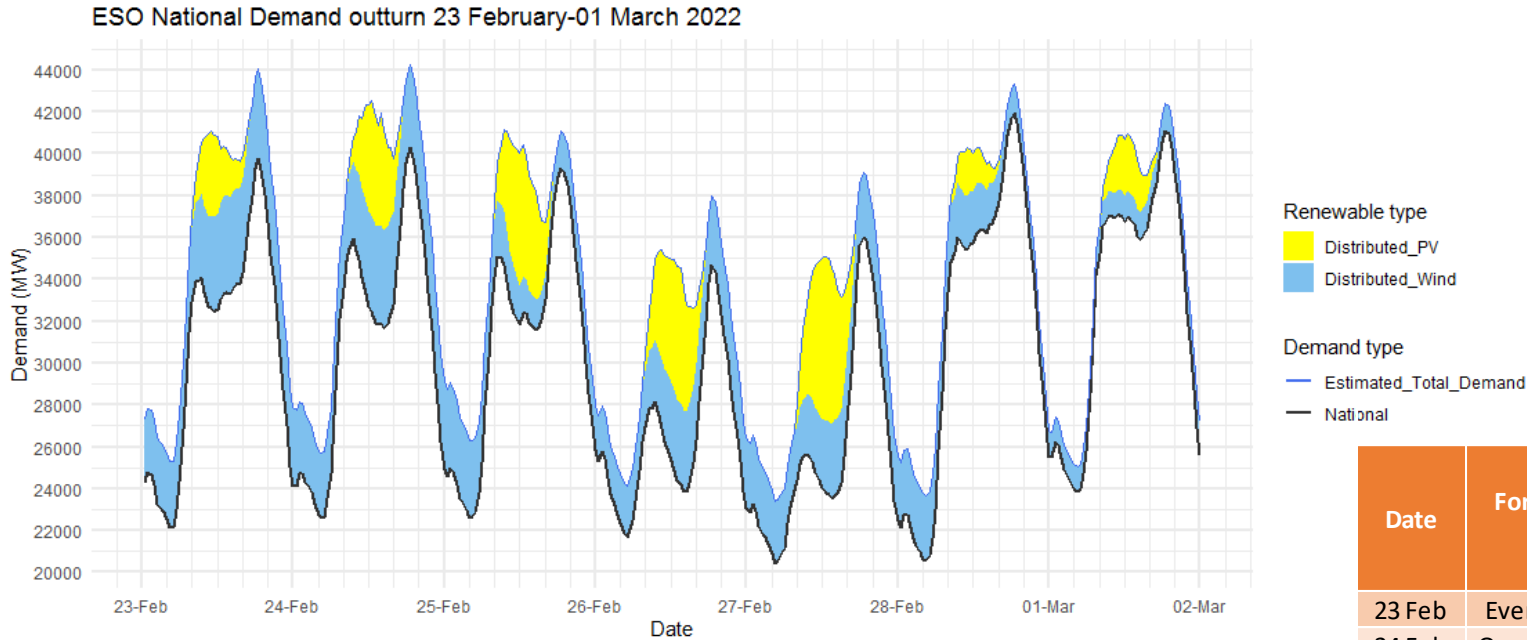
Q: There is a sharp frequency drop that occurs every day at 00:30. Can the National Grid give some color on what is the reason behind this?

Q: Clarity on BMU data: This is the data. A lot of wind units outturn data doesn't get published: Actual Generation Output Per Generation Unit (B1610) <https://www.bmreports.com/bmrs/?q=actgeneration/actualgeneration>. Referring to: There are a lot of wind BMUs that don't submit outturn meter data. Why is that? And can we get this data published please?

Q: Would you have a figure of how much wind got cut out due to the storm?

Q: Ref the interconns at 1200 day ahead and margins, how about changing the deadline for interconn pseudo PNs from 1300 hrs to 1200 hrs (or delay the first margin publication to 1300 hrs). Either way it prevents misleading data going out.

Demand | Last week demand out-turn

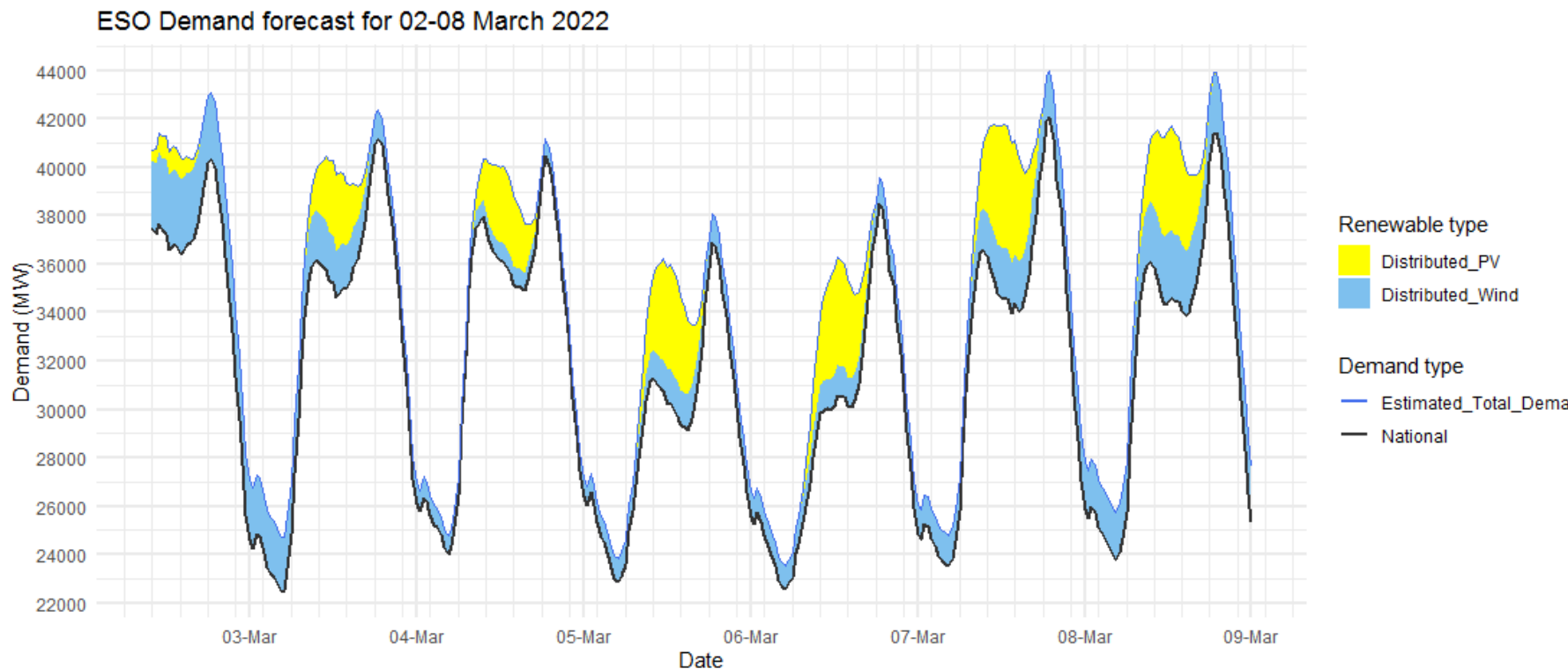


Date	Forecasting Point	FORECAST (Wed 23 Feb)		OUTTURN			
		National Demand (GW)	Dist. wind (GW)	National Demand (GW)	Triad Avoidance est. (GW)	N. Demand adjusted for TA (GW)	Dist. wind (GW)
23 Feb	Evening Peak	38.7	4.1	39.8	0.0	39.8	4.3
24 Feb	Overnight Min	22.0	3.2	22.6	n/a	n/a	3.1
24 Feb	Evening Peak	39.5	4.0	40.3	0.0	40.3	4.0
25 Feb	Overnight Min	21.5	3.7	22.6	n/a	n/a	3.7
25 Feb	Evening Peak	41.0	1.4	39.3	0.0	39.3	1.7
26 Feb	Overnight Min	21.5	2.7	21.7	n/a	n/a	2.4
26 Feb	Evening Peak	34.5	3.5	34.7	0.0	34.7	3.3
27 Feb	Overnight Min	20.3	3.0	20.4	n/a	n/a	3.0
27 Feb	Evening Peak	35.8	3.3	36.0	0.0	36.0	3.1
28 Feb	Overnight Min	20.3	3.6	20.6	n/a	n/a	3.1
28 Feb	Evening Peak	40.5	2.2	41.9	0.0	41.9	1.4
01 Mar	Overnight Min	23.0	1.8	23.9	n/a	n/a	1.2
01 Mar	Evening Peak	41.5	1.7	41.1	0.0	41.1	1.3

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



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.

		FORECAST (Wed 02 Mar)	
Date	Forecasting Point	National Demand (GW)	Dist. wind (GW)
02 Mar	Evening Peak	40.4	2.7
03 Mar	Overnight Min	22.5	2.2
03 Mar	Evening Peak	41.2	1.2
04 Mar	Overnight Min	24.0	0.8
04 Mar	Evening Peak	40.5	0.7
05 Mar	Overnight Min	22.9	0.9
05 Mar	Evening Peak	36.9	1.2
06 Mar	Overnight Min	22.6	1.0
06 Mar	Evening Peak	38.5	1.1
07 Mar	Overnight Min	23.5	1.3
07 Mar	Evening Peak	42.1	1.9
08 Mar	Overnight Min	23.8	2.0
08 Mar	Evening Peak	41.4	2.4

ESO Actions | Monday 21 February Peak

Date: 21/02/2022

SP: 37

Carbon Intensity (gCO₂/kWh)



CCGT



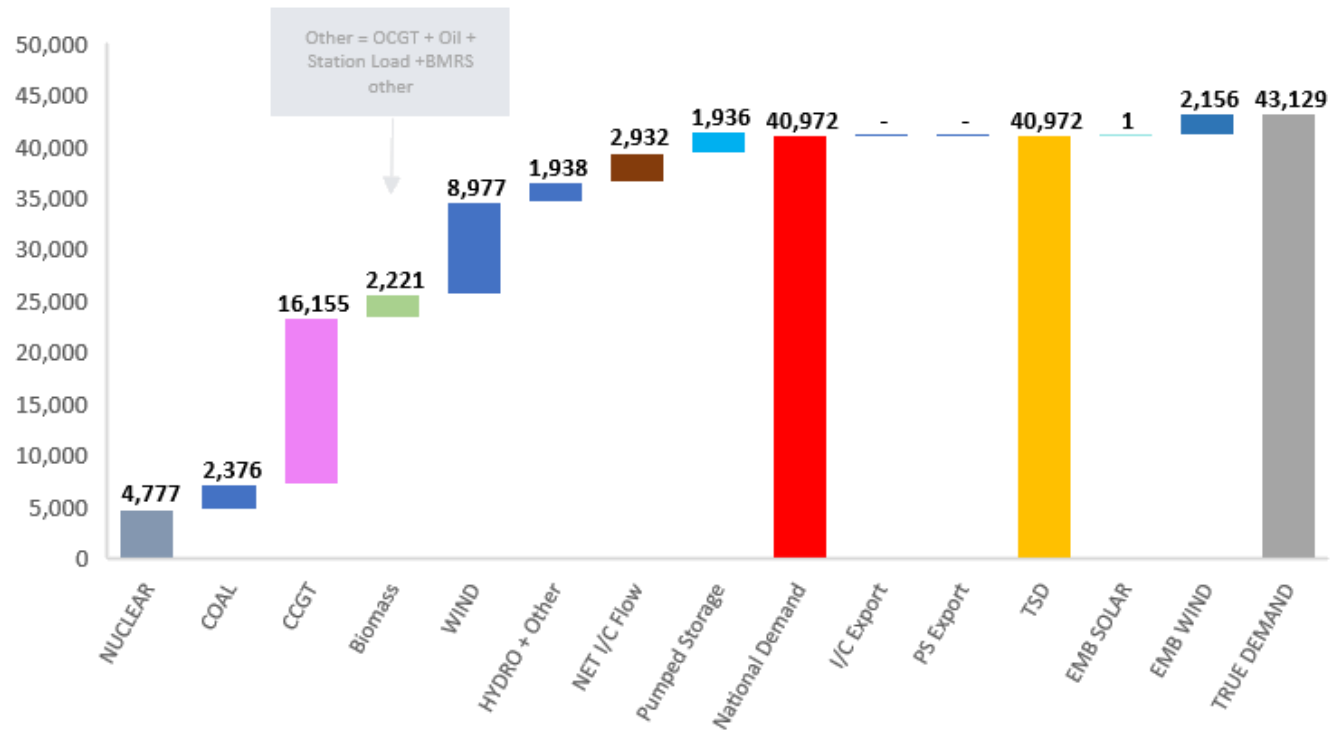
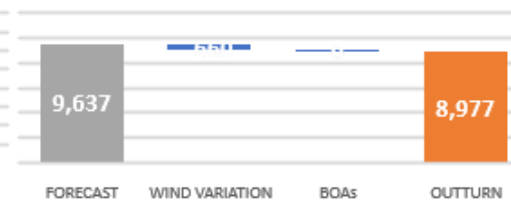
Biomass



I/C



WIND

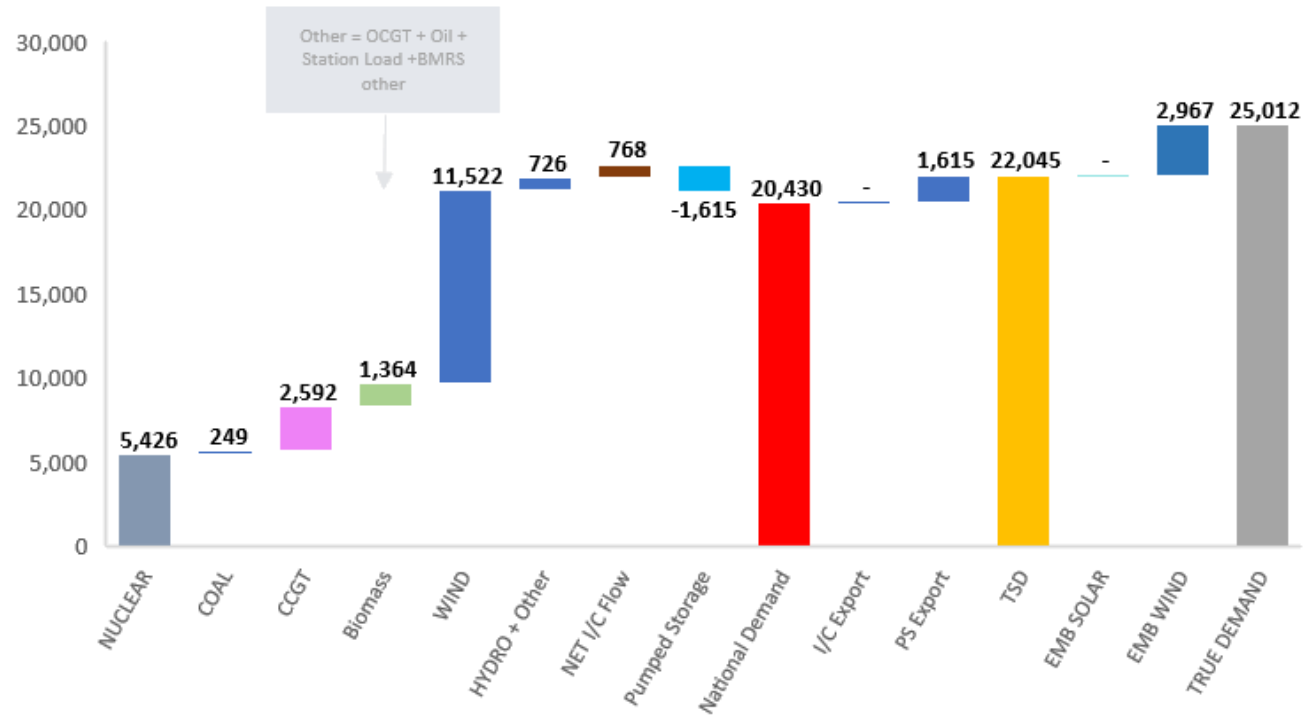
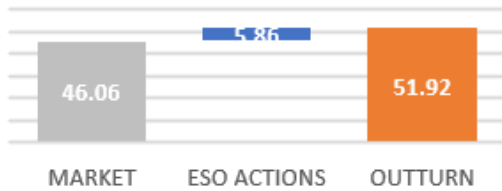


ESO Actions | Sunday 27 February Minimum

Date: 27/02/2022

SP: 9

Carbon Intensity (gCO₂/kWh)



CCGT



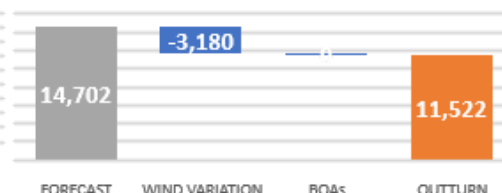
Biomass



I/C



WIND



Transparency | Costs & Constraint Breakdown

We have experienced a delay in our post processing of actions taken by the control room. This means that the cost data and constraint breakdown data is not ready for presentation today. We will provide a 2 week view at the forum next week and will update all our regular datasets as normal in the meantime.

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 2nd 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 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.

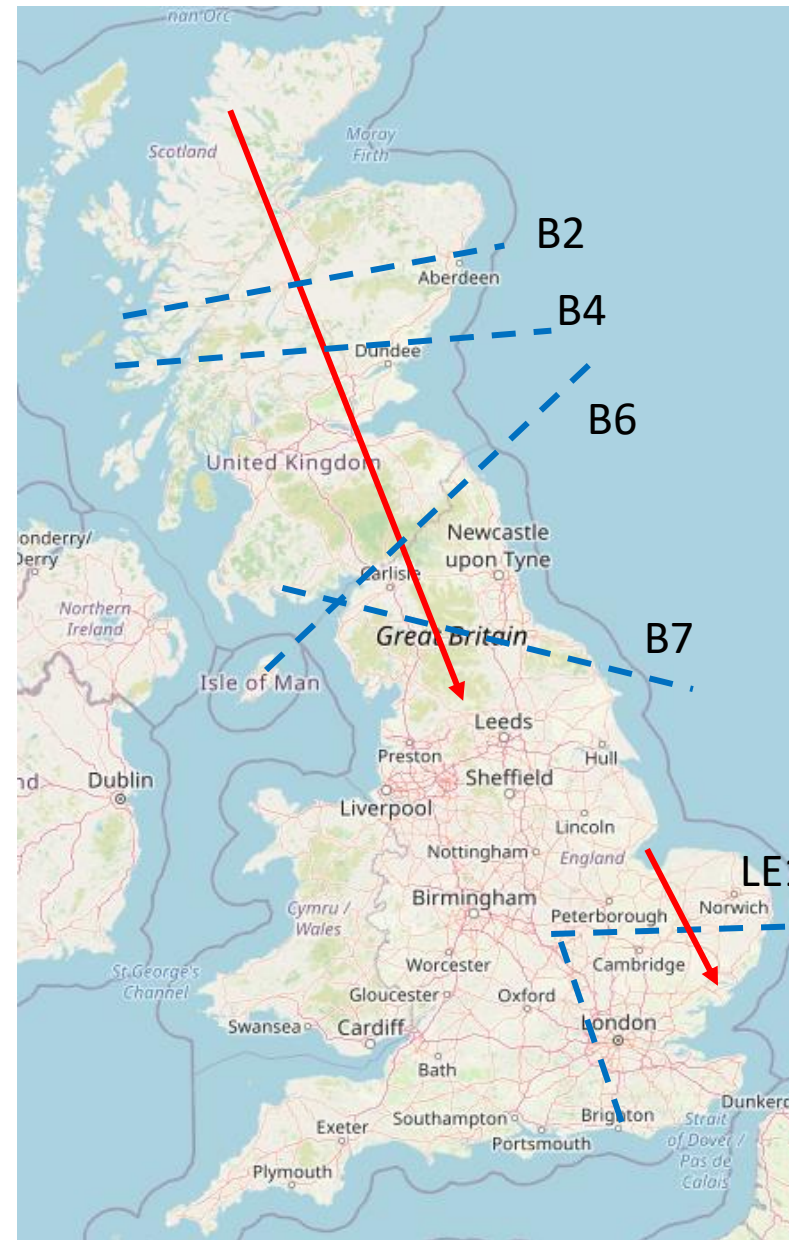
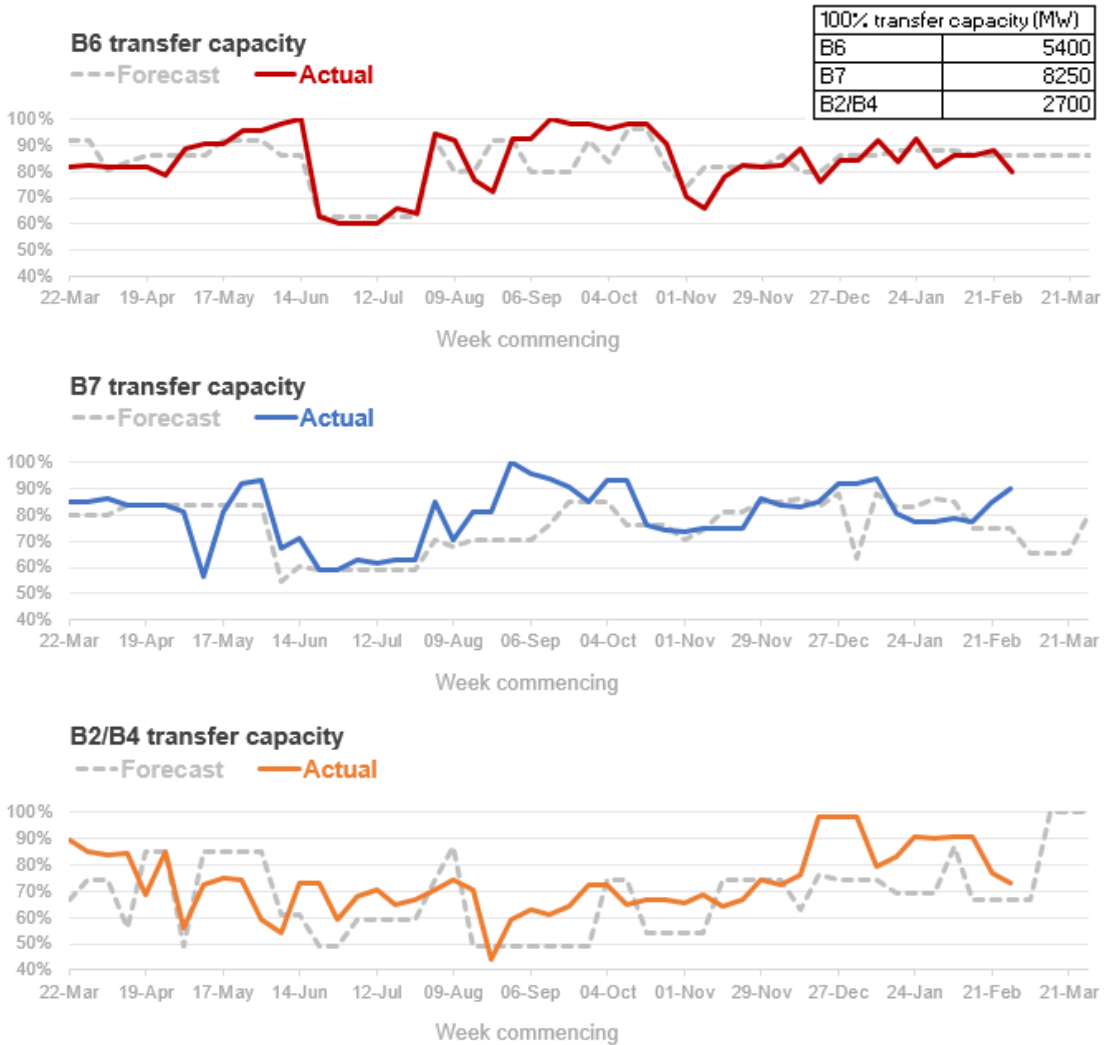
For higher surplus values, margins are expected to be adequate and there is a low likelihood of the ESO needing to use its tools. In such cases, we may even experience exports to Europe on the interconnectors over the peak depending on market prices.

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)
Thu	03/03/2022	39871	5922	3750	42317	3420
Fri	04/03/2022	40935	1781	4250	41355	1750
Sat	05/03/2022	39412	3272	4250	37886	5021
Sun	06/03/2022	39023	3311	4250	39054	3392
Mon	07/03/2022	40808	8034	4250	42394	6160
Tue	08/03/2022	40808	9928	4250	42021	8334
Wed	09/03/2022	40808	13196	4250	42113	10421

Transparency | Network Congestion



Optimising Constraints in Real-Time

We ensure consumer value by minimising constraint costs in two ways

- Maximise power flow through unconstrained areas of the system
- Maximise constraint limits to increase permitted power flow across constraint boundaries

To encourage power flow through unconstrained areas of the system we utilise:

- Non-commercial interconnectors
- Quadrature Boosters (QBs) and Series Compensators
- System reconfiguration (substations)

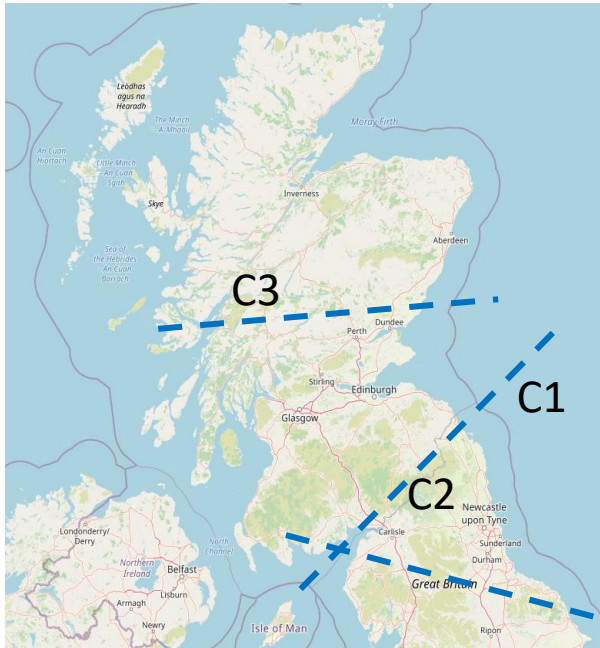
To maximise constraint limits to increase boundary flows:

- Utilisation of short term ratings
- MORE rating enhancements on OHL (overhead lines)
- Cable Thermal Monitors linked
- Forced cooling on transformers
- Utilising rating enhancements above the NCL (normal capability limit) of assets where Transmission Owners can provide them i.e. we request an enhanced OCL
- Inter-trip schemes

Real-time study tools are used to assess thermal / voltage and stability constraints to ensure operation is still within our security standards across all timescales.

A night in the life of a Transmission Security Manager

Handover: one critical outage over-running, one new fault, couple of new metering issues, wind above forecast



C1 as wind increases, we increase flow on the Western Link

C2 becomes active, we utilise one pair of series capacitors and re-switch one substation to increase relative impedance, encouraging flow away

C3 becomes active we arm one generator into intertrip and explore possibility of arming a second *

C4 never became active however we were in discussions with BMU operators as to availability

The ESO are open to new services and any innovative solutions and there is a market to encourage these system based solutions rather than simply building new assets

Capacity Market Notification (CMN) issue update

What Happened:

- Across the last 2 winters, three CMNs have been issued when margins were relatively healthy. Last one was on 24 Jan 2022.

Why did this happen?

- Late withdrawal of PN's combined with an issue in the MODIS CMN calculation logic.
- Under a specific set of circumstances, CMN margin is calculated to be too pessimistic.

Mitigation status:

- The ESO have started implementing a fix in MODIS and this is expected to complete in 4-5 weeks including UAT.
- Alternative interim fixes to avoid reoccurrence have been ruled out on the basis they would introduce the risk of missing a CMN in conditions when margins were genuinely tight (i.e. close to the +500MW CMN trigger).
- In the meantime, we continue to monitor margins and aim to investigate and engage with industry more quickly if any further spurious CMN's are issued as we now understand the root causes.
- ESO Corporate Affairs will continue their process and send twitter messages should a CMN be issued to confirm whether margins are still expected to be healthy by the control room.

Domestic Reserve Scarcity trial - update

Recap

- NG ESO have collaborated with Octopus Energy on a trial exploring domestic flexibility within the suppliers smart meter customer base.
- Domestic households will be incentivised to reduce their demand across a 2-hour time period.
- Demand turn down events will be initiated at the day ahead stage, based on thresholds set in publicly available data.
- The trial period will until the end of March 2022, and look to enact up to 10 separate events.

Update

- Test trial event took place Thursday 24/02 16:30 – 18:30.
- Over 25,000 households participated with an average volume of demand reduction of 20 MW across each settlement period in the window. Levels of participation have been factored into future forecasting methodology.
- To reflect the trial period now entering March and in light of recent market conditions, we are revising thresholds to ensure events are triggered and therefore maximise the learnings from the trial.

Time Window	12:00 day ahead de-rated margin forecast threshold (MW)
00:00 – 02:00	16,500
09:00 – 11:00	7,150
16:30 – 18:30	3,300

Useful Links

- [Original OTF presentation](#) (02.02.2022)
- [Octopus Energy Blog](#)

Frequency Risk and Control Report (FRCR) consultation

FRCR sets out the parameters for how often, for how long and how large frequency changes caused by sudden changes in demand/generation should be and sets out the criteria by which the ESO manages the risks.

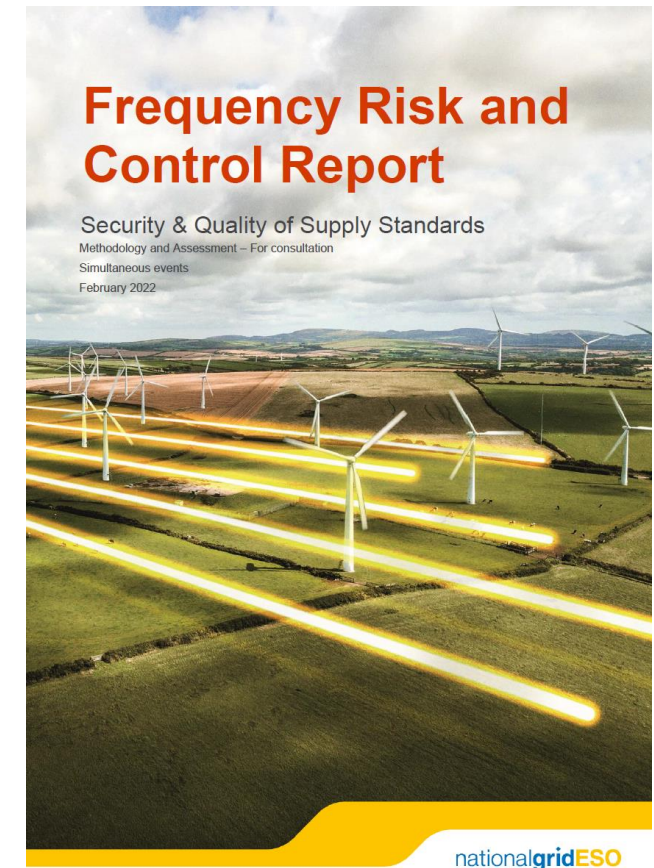
We are currently [consulting on our proposals](#) for 2022/23.

This year the report focuses on simultaneous events.

Key messages are:

- Current FRCR policy already covers ~75% of simultaneous events.
- To secure against the remaining ~25% of simultaneous events, response costs would increase by a factor of ~3.
- Therefore we are not recommending to secure the remaining ~25% of simultaneous events as not good value for the end consumer.

>>> Hence no change to existing FRCR policy.



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

